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(54) **Title:** RESVERATROL-CONTAINING COMPOSITIONS FOR MODULATING GENE PRODUCT CONCENTRATION OR ACTIVITY

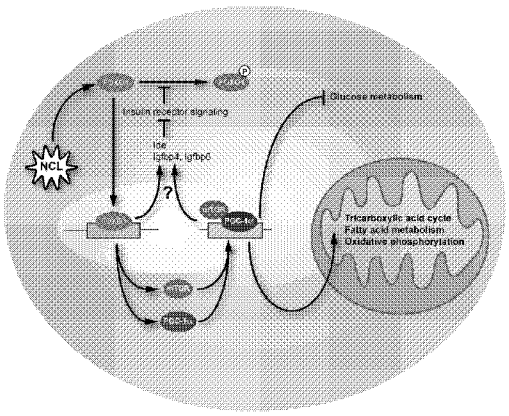

Figure 4

(57) **Abstract:** The present invention relates to a resveratrol-containing composition capable of modulating gene expression to an extent greater than that observed with resveratrol alone or with calorie restriction. The invention particularly pertains to such resveratrol-containing compositions that comprise resveratrol, a chelator, hyaluronic acid, and/or vitamin D and which upon administration to a recipient, increases the concentration or activity of a survival/longevity gene product and/or decreases the concentration or activity of a gene product that induces or causes cellular damage. Most preferably, the resveratrol-stabilizing composition will comprise the chelator phytic acid (inositol hexaphosphate; IP6), hyaluronic acid, and vitamin D. The invention further pertains to the use of such compositions in the treatment or prevention of cancer, cardiovascular disease, diseases associated with aging, and other conditions and illnesses.

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RESVERATROL-CONTAINING COMPOSITIONS FOR MODULATING GENE PRODUCT CONCENTRATION OR ACTIVITY

Cross-Reference To Related Applications:

[0001] This application claims priority from United States Patent Application Serial No. 10/971,017 (filed October 25, 2004; pending), which application claims priority to 60/513,225 (filed on October 23, 2003; lapsed), and to United States Patent Applications Serial Nos. 60/973,817 (filed on September 20, 2007; pending), 61/023,227 (filed on January 24, 2008; pending), 61/023,230 (filed on January 24, 2008; pending), 61/023,234 (filed on January 24, 2008; pending), 61/048,756 (filed on April 29, 2008; pending) and), 61/048,769 (filed on April 29, 2008; pending) all of which applications are herein incorporated by reference in their entirety.

Field of the Invention:

[0002] The present invention relates to a resveratrol-containing composition capable of modulating gene expression to an extent greater than that observed with resveratrol alone or with calorie restriction. The invention particularly pertains to such resveratrol-containing compositions that comprise resveratrol, a chelator, hyaluronic acid, and/or vitamin D and which, upon administration to a recipient, increases the concentration or activity of a survival/longevity gene product and/or decreases the concentration or activity of a gene product that induces or causes cellular damage. The invention particularly relates to the use of such compositions in the treatment or prevention of cancer, cardiovascular disease, diseases associated with aging, and other conditions and illnesses.

Background of the Invention:

[0003] Despite a high level of risk factors such as cholesterol, diabetes, hypertension and a high intake of saturated fat, French males display the lowest mortality rate from ischaemic heart disease and cardiovascular diseases in Western industrialized nations (36% lower than the USA and 39% lower than the UK). The so-called 'French Paradox' (a low mortality rate specifically from cardiovascular diseases) may be due mainly to the regular consumption of wine (Renaud, S. *et al.* (1998) "*The French Paradox And Wine Drinking*," Novartis Found. Symp. 216:208-222, 152-158).

[0004] Resveratrol (3,4',5-trihydroxy-*trans*-stilbene) is a naturally occurring phenolic compound found, for example in grape skins, that has been demonstrated to have beneficial properties relating to health of humans (Das, S. *et al.* (2007) "*Resveratrol: A Therapeutic Promise For Cardiovascular Diseases*," Recent Patents Cardiovasc. Drug Discov. 2(2):133-138; Mancuso, C. *et al.* (2007) "*Natural antioxidants in Alzheimer's disease*," Expert Opin. Investig. Drugs. 16(12):1921-1931; Baumann L. (2007) "*Botanical Ingredients In Cosmeceuticals*," J. Drugs Dermatol. 6(11):1084-1088; Meeran, S.M. *et al.* (2008) "*Cell Cycle Control As A Basis For Cancer Chemoprevention Through Dietary Agents*," Front. Biosci. 13:2191-2202; de la Lastra, C.A. *et al.* (2007) "*Resveratrol As An Antioxidant And Pro-Oxidant Agent: Mechanisms And Clinical Implications*," Biochem. Soc. Trans. 35(Pt 5):1156-1160; Das, S. *et al.* (2007) "*Anti-Inflammatory Responses Of Resveratrol*," Inflamm. Allergy Drug Targets 6(3):168-173; Cucciolla, V. *et al.* (Epub 2007 Jul 31) "*Resveratrol: From Basic Science To The Clinic*," Cell Cycle 6(20):2495-2510; Opie, L.H. *et al.* (Epub 2007 Jun 7) "*The Red Wine Hypothesis: From Concepts To Protective Signaling Molecules*," Eur. Heart J. 28(14):1683-1693; Chen, Y. *et al.* (2007) "*Review. Pro- And Anti-Angiogenesis Effects Of Resveratrol*," In Vivo 21(2):365-370 [Erratum in: In Vivo 21(6):1172 and 21(5):955]; Holme, A.L. *et al.* (2007) "*Resveratrol In Cell Fate Decisions*," J. Bioenerg. Biomembr. 39(1):59-63; Athar, M. *et al.* (Epub 2007 Jan 3) "*Resveratrol: A Review Of Preclinical Studies For Human Cancer Prevention*," Toxicol. Appl. Pharmacol. 224(3):274-283). In particular, resveratrol is believed to be beneficial to the functioning of the heart and in extending the life of human cells. Resveratrol, when used in dietary supplements, is generally produced as an alcohol extract from plant sources.

[0005] Calorie restricted diets have been shown to enhance survival and longevity by up-regulating survival/longevity genes or down-regulating genes whose expression enhances cellular damage (Edwards, M.G. *et al.* (2007) "*Gene Expression Profiling Of Aging Reveals Activation Of A P53-Mediated Transcriptional Program*," BMC Genomics 8:80; Anderson, R.M. *et al.* (2006) "*Calorie Restriction: Progress During Mid-2005-Mid-2006*," Exp. Gerontol. 41(12):1247-1249; Weindruch, R. *et al.* (2001) "*Microarray Profiling of Gene Expression in Aging and Its Alteration by Caloric Restriction in Mice*," J. Nutrition 131:918S–923S; Lee, K.-C. *et al.* (2003) "*Transcriptional Profiles Associated With Aging And Middle Age-Onset Caloric Restriction In Mouse Hearts*," Proc. Natl. Acad. Sci. (U.S.A.) 99(23): 14988–14993; Weindruch, R. *et al.* (2002) "*Effects Of Caloric Restriction On Gene Expression*," Nestle Nutr. Workshop Ser. Clin. Perform. Programme 6:17-28; 28-32; Mulligan, J.D. *et al.* (Epub 2007 Nov 1) "*Downregulation Of Plasma Insulin Levels And Hepatic Ppar gamma Expression During The First Week Of Caloric Restriction In Mice*," Exp. Gerontol. 43(3):146-153; Rodgers, J.T. *et al.* (Epub 2007 Nov 26) "*Metabolic Adaptations Through The PGC-1 Alpha*

And SIRT1 Pathways," FEBS Lett. 582(1):46-53; Swindell, W.R. (2007) "*Gene Expression Profiling Of Long-Lived Dwarf Mice: Longevity-Associated Genes And Relationships With Diet, Gender And Aging*," BMC Genomics. 8:353; Zhu, M. *et al.* (Epub 2007 Jun 6) "*Adipogenic Signaling In Rat White Adipose Tissue: Modulation By Aging And Calorie Restriction*," Exp. Gerontol. 42(8):733-744; Chiarpotto, E. *et al.* (2006) "*Molecular Mechanisms Of Calorie Restriction's Protection Against Age-Related Sclerosis*," IUBMB Life. 58(12):695-702; Lu, J. *et al.* (2007) "*Different Gene Expression Of Skin Tissues Between Mice With Weight Controlled By Either Calorie Restriction Or Physical Exercise*," Exp. Biol. Med. (Maywood). 232(4):473-480; Masternak, M.M. *et al.* (2007) "*pPARS In Calorie Restricted And Genetically Long-Lived Mice*," pPAR Res. 2007:28436; Fu, C. *et al.* (2006) "*Tissue Specific And Non-Specific Changes In Gene Expression By Aging And By Early Stage CR*," Mech. Ageing Dev. 127(12):905-916). As indicated by the above-cited references, mice have been used extensively as a model for genetic expression comparisons with humans. Without limitation, the validity of murine models to human gene expression reflects the fact that 98% of human and murine gene are homologous, and that mice and humans have about the same number of genes (*e.g.*, approximately 30,000).

[0006] Despite the established benefits of a calorie restricted diet, the severity of the required dietary regime has limited adoption of this approach to increasing longevity. It would therefore be desirable to provide an alternative route to obtaining the benefits of calorie restriction that would avoid the need for dietary regulation and that would be amenable to widespread adoption. The present invention is directed to this and other needs.

Summary of the Invention:

[0007] The present invention relates to a resveratrol-containing composition capable of modulating gene expression to an extent greater than that observed with resveratrol alone or with calorie restriction. The invention particularly pertains to such resveratrol-containing compositions that comprise resveratrol, a chelator, hyaluronic acid, and/or vitamin D and which, upon administration to a recipient, increases the concentration or activity of a survival/longevity gene product and/or decreases the concentration or activity of a gene product that induces or causes cellular damage. Most preferably, the resveratrol-stabilizing composition will comprise the chelator phytic acid (inositol hexaphosphate; IP6), hyaluronic acid, and vitamin D. The invention further pertains to the use of such compositions to up-regulate a survival/longevity gene or down-regulate a gene whose expression enhances cellular damage upon administration to a recipient. The invention particularly relates to the use of such compositions in the treatment or prevention of cancer, cardiovascular disease, diseases associated with aging, and other conditions and illnesses.

[0008] In detail, the invention provides a resveratrol-containing composition that, upon administration to a recipient, modulates the concentration or activity, relative to resveratrol alone or calorie restriction, of the product of a survival/longevity gene or the product of a gene whose expression enhances cellular damage. Administration is preferably by oral ingestion.

[0009] The invention further provides the embodiments of such compositions wherein the modulation alters:

(A) oxidative phosphorylation;
(B) actin filament length or polymerization;
(C) intracellular transport;
(D) organelle biogenesis;
(E) insulin signaling;
(F) glycolysis;
(G) gluconeogenesis; or
(H) fatty acid metabolism.

[0010] The invention further provides the embodiments of such compositions wherein the gene product is a survival/longevity gene product, and especially wherein the gene product is sSirtuin 1, or the forkhead Foxo1 transcription factor.

[0011] The invention further provides the embodiments of such compositions wherein the gene product is a gene product that enhances cellular damage, and especially wherein the gene product is encoded by the uncoupling protein 3, Pgc-1, or pyruvate dehydrogenase kinase 4 genes.

[0012] The invention further provides the embodiments of such compositions wherein the composition comprises:

(a) *trans*-resveratrol; and
(b) a metal chelating agent;

wherein the *trans*-resveratrol is encapsulated to thereby substantially preserve the ability of the composition to modulate the concentration or activity of the product of the survival/longevity gene or the product of the gene whose expression enhances cellular damage, from loss due to exposure of the *trans*-resveratrol to light or oxygen.

[0013] The invention further provides a method of ameliorating a symptom associated with an existing disease of an individual or for preventing the onset of the symptom in an individual prior to the occurrence of the disease in the individual, which comprises administering to the individual, a resveratrol-containing composition that modulates the concentration or activity,

relative to resveratrol alone or calorie restriction, of the product of a survival/longevity gene or the product of a gene whose expression enhances cellular damage, wherein the resveratrol is provided in an amount effective to cause a modulation of the concentration or activity of the gene that ameliorates the symptom of the disease, and wherein the disease is selected from the group consisting of: cardiovascular disease, cancer, macular degeneration, a disease associated with aging, and inflammation.

[0014] The invention further provides the embodiments of such method wherein the modulation alters:

(A) oxidative phosphorylation;
(B) actin filament length or polymerization;
(C) intracellular transport;
(D) organelle biogenesis;
(E) insulin signaling;
(F) glycolysis;
(G) gluconeogenesis; or
(H) fatty acid metabolism.

[0015] The invention further provides the embodiments of such method wherein the survival/longevity gene product is Sirtuin 1 or the forkhead Foxo1 transcription factor. The invention further provides the embodiments of such method wherein the gene whose expression enhances cellular damage encodes uncoupling protein 3 or pyruvate dehydrogenase kinase 4.

[0016] The invention further provides the embodiments of such method wherein said composition comprises:

(a) *trans*-resveratrol; and
(b) a metal chelating agent;

wherein the *trans*-resveratrol is encapsulated to thereby substantially preserve the ability of the composition to modulate the concentration or activity of the product of the survival/longevity gene or the product of the gene whose expression enhances cellular damage, from loss due to exposure of the *trans*-resveratrol to light or oxygen.

[0017] The invention further provides the embodiments of such method wherein the disease is cancer, or a disease associated with aging (especially a neurodegenerative disease).

[0018] The invention further provides the embodiments of such method wherein the composition additionally comprises quercetin, hyaluronic acid and/or vitamin D.

[0019] The invention further provides the embodiments of such method wherein the modulation is relative to resveratrol alone or wherein the modulation is relative to calorie restriction.

[0020] The invention further provides the embodiments of such methods wherein the gene product is a survival/longevity gene product, and especially wherein the gene product is Sirtuin 1, or the forkhead Foxo1 transcription factor.

[0021] The invention further provides the embodiments of such methods wherein the gene product is a gene product that enhances cellular damage, and especially wherein the gene product is encoded by the uncoupling protein 3, Pgc-1, or pyruvate dehydrogenase kinase 4 gene.

Brief Description of the Figures:

[0022] **Figure 1** shows the change in body weight of mice administered resveratrol or a composition of the present invention (Longevinex®) relative to control animals and animals maintained on a calorie restricted diet.

[0023] **Figure 2** shows the serum insulin level of mice administered resveratrol or a composition of the present invention (Longevinex®) relative to control animals and animals maintained on a calorie restricted diet.

[0024] **Figure 3** shows the serum glucose level of mice administered resveratrol ($P = 0.97$) or a composition of the present invention (Longevinex®) ($P = 0.07$) relative to control animals and animals maintained on a calorie restricted diet ($P = 0.10$).

[0025] **Figure 4** shows a schematic of a mechanism of action that is consistent with the observed biological activities of the compositions of the present invention.

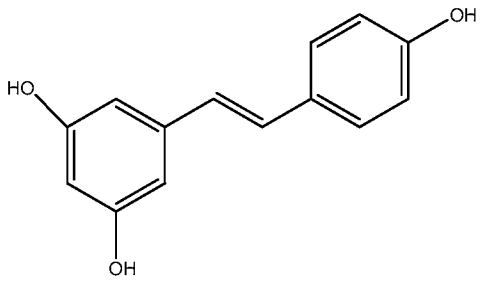
Description of the Preferred Embodiments:

[0026] The present invention relates to a resveratrol-containing composition (and especially a resveratrol-containing dietary composition (*i.e.*, a composition amenable for oral ingestion by a recipient)) capable of modulating gene expression to an extent greater than that observed with resveratrol alone or with calorie restriction. The invention particularly pertains to such resveratrol-containing compositions that comprise resveratrol, a chelator, hyaluronic acid, and/or vitamin D and which up-regulate a survival/longevity gene or down-regulate a gene whose expression enhances cellular damage upon administration to a recipient. Most preferably, the resveratrol-stabilizing composition will comprise the chelator phytic acid

(inositol hexaphosphate; IP6), hyaluronic acid, and vitamin D. The invention further pertains to the use of such compositions to up-regulate a survival/longevity gene or down-regulate a gene whose expression enhances cellular damage upon administration to a recipient. The mineral chelators of the present invention provide anti-aging effects, as evidence in differentiation of the genome.

A. Resveratrol

[0027] As used herein, the term "resveratrol" refers to the phytoalexin: 3,4',5-trihydroxy-*trans*-stilbene having the structure:



[0028] Resveratrol has been ascribed multiple beneficial biological effects (see, United States Patent No. 7,345,178, which listing of disclosed effects is herein incorporated by reference), including **preventing or treating cardiovascular disease** (see, *e.g.*, Das, S. *et al.* (2007) "*Resveratrol: A Therapeutic Promise For Cardiovascular Diseases*," Recent Patents Cardiovasc. Drug Discov. 2(2):133-138), Opie, L.H. *et al.* (Epub 2007 Jun 7) "*The Red Wine Hypothesis: From Concepts To Protective Signaling Molecules*," Eur. Heart J. 28(14):1683-1693; Bertelli, A.A. (Epub 2007 May 24) "*Wine, Research And Cardiovascular Disease: Instructions For Use*," Atherosclerosis 195(2):242-247; Providência, R. (2006) "*Cardiovascular Protection From Alcoholic Drinks: Scientific Basis Of The French Paradox*," Rev. Port. Cardiol. 25(11):1043-1058; Maulik, N. (2006) "*Reactive Oxygen Species Drives Myocardial Angiogenesis?*" Antioxid. Redox Signal. 8(11-12):2161-2168; Olas, B. *et al.* (2005) "*Resveratrol, A Phenolic Antioxidant With Effects On Blood Platelet Functions*," Platelets 16(5):251-260; Bradamante, S. *et al.* (2004) "*Cardiovascular Protective Effects Of Resveratrol*," Cardiovasc Drug Rev. 22(3):169-188; Hao, H.D. *et al.* (2004) "*Mechanisms Of Cardiovascular Protection By Resveratrol*," J. Med. Food 7(3):290-298), **preventing or treating cancer** (Jang, M. *et al.* (1997) "*Cancer Chemopreventive Activity Of Resveratrol, A Natural Product Derived From Grapes*," Science 275:218-220; Das, S. *et al.* (2007) "*Anti-Inflammatory Responses Of Resveratrol*," Inflamm. Allergy Drug Targets 6(3):168-173; de la Lastra, C.A. *et al.* (2007) "*Resveratrol As An Antioxidant And Pro-Oxidant Agent: Mechanisms And Clinical Implications*," Biochem. Soc. Trans. 35(Pt 5):1156-1160; Athar, M. *et al.* (Epub 2007 Jan 3) "*Resveratrol: A Review Of Preclinical Studies For Human Cancer Prevention*,"

Toxicol. Appl. Pharmacol. 224(3):274-283), Meeran, S.M. *et al.* (2008) "*Cell Cycle Control As A Basis For Cancer Chemoprevention Through Dietary Agents*," Front. Biosci. 13:2191-2202; Shankar, S. *et al.* (2007) "*Chemoprevention By Resveratrol: Molecular Mechanisms And Therapeutic Potential*," Front. Biosci. 12:4839-4854; Delmas, D. *et al.* (2006) "*Resveratrol As A Chemopreventive Agent: A Promising Molecule For Fighting Cancer*," Curr. Drug Targets 7(4):423-442; Signorelli, P. *et al.* (2005) "*Resveratrol As An Anticancer Nutrient: Molecular Basis, Open Questions And Promises*," J. Nutr. Biochem. 16(8):449-466; **preventing or treating macular degeneration** (United States Patent Application Serial No. 61/023,234; King, R.E. *et al.* (2005) "*Resveratrol reduces oxidation and proliferation of human retinal pigment epithelial cells via extracellular signal-regulated kinase inhibition*," Chem. Biol. Interact. 151(2):143-149; Sparrow, J.R. *et al.* (2003) "*A2E-epoxides damage DNA in retinal pigment epithelial cells. Vitamin E and other antioxidants inhibit A2E-epoxide formation*," J. Biol. Chem. 278(20):18207-18213), **attenuating or preventing diseases associated with aging, and other conditions and illnesses, including the incidence or severity of neurodegenerative diseases such as Alzheimer's Disease and Parkinson's Disease** (Baxter, R.A. (2008) "*Anti-Aging Properties Of Resveratrol: Review And Report Of A Potent New Antioxidant Skin Care Formulation*," J. Cosmet. Dermatol. 7(1):2-7; Engel, N. *et al.* (2008) "*Aging And Anti-Aging: Unexpected Side Effects Of Everyday Medication Through Sirtuin1 Modulation*," Int. J. Mol. Med. 21(2):223-232; Bickenbach, K.A. *et al.* (Epub 2007 Dec 21) "*Resveratrol Is An Effective Inducer Of Carg-Driven Tnf-Alpha Gene Therapy*," Cancer Gene Ther. 15(3):133-139; Putics, A. *et al.* (2008) "*Resveratrol Induces The Heat-Shock Response And Protects Human Cells From Severe Heat Stress*," Antioxid. Redox Signal. 10(1):65-75; Bass, T.M. *et al.* (Epub 2007 Aug 14) "*Effects Of Resveratrol On Lifespan In Drosophila melanogaster And Caenorhabditis elegans*," Mech. Ageing Dev. 128(10):546-552; Stefani, M. *et al.* (Epub 2007 Sep 5) "*The Effect Of Resveratrol On A Cell Model Of Human Aging*," Ann. N.Y. Acad. Sci. 1114:407-418; Heiss, E.H. *et al.* (Epub 2007 Jul 11) "*Chronic Treatment With Resveratrol Induces Redox Stress- And Ataxia Telangiectasia-Mutated (Atm)-Dependent Senescence In P53-Positive Cancer Cells*," J. Biol. Chem. 282(37):26759-26766; Mayo Clinic (2007) "*A Compound In Red Wine Makes Mice Live Longer, Healthier*," Mayo Clin. Health Lett. 25(5):4; Kim, D. *et al.* (Epub 2007 Jun 21) "*Sirt1 Deacetylase Protects Against Neurodegeneration In Models For Alzheimer's Disease And Amyotrophic Lateral Sclerosis*," EMBO J. 26(13):3169-3179), and **anti-inflammatory activity** (Das, S. *et al.* (2007) "*Anti-Inflammatory Responses Of Resveratrol*," Inflamm. Allergy Drug Targets 6(3):168-173).

[0029] Reseveratrol may be synthesized chemically (Farina, A. *et al.* (2006) "*An Improved Synthesis Of Resveratrol*," Nat. Prod. Res. 20(3):247-252), or, more preferably, may be extracted from plant sources. Resveratrol is found in at least 72 species of plants distributed

among 31 genera and 12 families (see, Counet, C. *et al.* (2006) "*Chocolate And Cocoa: New Sources Of Trans-Resveratrol And Trans-Piceid*," Food Chem. 98:649-657; Jang, M. *et al.* (1997) "*Cancer Chemopreventive Activity Of Resveratrol, A Natural Product Derived From Grapes*," Science 275:218-220; Wang, Y. *et al.* (2002) "*An LC-MS Method For Analyzing Total Resveratrol In Grape Juice, Cranberry Juice, And In Wine*," J. Agricult. Food Chem. 50(3):431-435). All of the families found to contain resveratrol belong to the spermatophytes division: Vitaceae, Myrtaceae, Dipterocarpaceae, Cyperaceae, Gnetaceae, Leguminosae, Pinaceae, Moraceae, Fagaceae, Liliaceae (Langcake, P. *et al.* (1976) "*The Production Of Resveratrol By Vitis Vinifera And Other Members Of The Vitaceae As A Response To Infection Or Injury*," Physiol. Plant Pathol. 9:77-86; Yoshiaki, T. *et al.* (2002) "*Biogenic Reactions On Stilbenetetramers From Vitaceaeous Plants*," Tetrahedron 58:9265-9271). Resveratrol has most often been reported in nonedible plants: vine, eucalyptus, spruce, and the tropical deciduous tree Bauhinia racemosa, Pterolobium Hexapetallum (Cassady, A. *et al.* (2000) "*Isoflavones, Lignans, And Stilbenes-Origins, Metabolism And Potential Importance To Human Health*," J. Science Food Agric. 80:1044-1062; Soleas, G. J. *et al.* (1997) "*Resveratrol: A Molecule Whose Time Has Come? And Gone?*," Clin. Biochem. 30:91-113). Reseveratrol is particularly found in grape skins and Giant Knotweed (see, Burns, J. *et al.* (2002) "*Plant Foods and Herbal Sources of Resveratrol*," J. Agric. Food Chem. 50(11):3337 -3340), cocoa and chocolate (Counet, C. *et al.* (2006) "*Chocolate And Cocoa: New Sources Of Trans-Resveratrol And Trans-Piceid*," Food Chem. 98:649-657). Peanut sprouts are also a rich source of resveratrol.

B. Modulation of Gene Product Concentration or Activity

[0030] The invention pertains to compositions that, upon administration to a recipient, increase the concentration or activity of a survival/longevity gene product and/or decrease the concentration or activity of a gene product that induces or causes cellular damage. As used herein, such increase (or decrease) in concentration or activity may be accomplished by any mechanism. For example, such increase (or decrease) may reflect a modulation of gene expression resulting in either increased (or decreased) expression of the gene encoding the survival/longevity gene product, or a gene that regulates (*e.g.*, induces or represses) or whose product regulates such expression or activity. Alternatively, or conjunctively, such increase (or decrease) in concentration or activity may reflect a modulation of the recipient's ability to degrade or stabilize any such gene products. Alternatively, or conjunctively, such increase (or decrease) in concentration or activity may reflect a modulation of the recipient's ability to enhance, accelerate, repress or decelerate the activity of any such gene products.

[0031] The modulation of concentration or activity discussed above may be a modulation of intracellular, intercellular and/or tissue concentration or activity of such survival/longevity gene products or such gene products that induce or cause cellular damage. Such modulation may be identified by assays of DNA expression, assays of gene product activity, assays of the level of gene product, assays of the rate of gene product turnover, etc. conducted in one or more types of cells, tissues, etc.

[0032] An increase in the concentration of a survival/longevity gene product may result from, for example, increased transcription of the gene that encodes the survival/longevity gene product, increased transcription of a gene that induces the expression of the gene that encodes the survival/longevity gene product, decreased transcription of a gene that represses the expression of the gene that encodes the survival/longevity gene product, decreased degradation or enhanced stabilization of expressed molecules of the survival/longevity gene product (leading to the enhanced accumulation of the survival/longevity gene product). Similarly, a decrease in the concentration of a survival/longevity gene product may result from, for example, decreased transcription of the gene that encodes the survival/longevity gene product, decreased transcription of a gene that induces the expression of the gene that encodes the survival/longevity gene product, increased transcription of a gene that represses the expression of the gene that encodes the survival/longevity gene product, increased degradation or decreased stabilization of expressed molecules of the survival/longevity gene product (leading to the enhanced dissipation of the survival/longevity gene product).

[0033] One aspect of the present invention thus relates to the use of resveratrol and resveratrol-containing compositions to modulate gene expression, and in particular, to modulate the expression of "survival/longevity" genes and/or "damage inducing" genes. As used herein, a compound is said to "modulate" gene expression if its administration results in a change in expression (relative to a control) of such genes of at least 10%. Modulation may involve an increase in expression ("up-regulation") or it may involve a decrease in expression ("down-regulation"). The term up-regulate thus denotes an increase of expression of at least 10%, at least 20%, at least 50%, at least 2-fold, at least 5-fold, or most preferably at least 10-fold (relative to a control). The term down-regulate conversely denotes a decrease of expression of at least 10%, at least 20%, at least 50%, at least 2-fold, at least 5-fold, or most preferably at least 10-fold (relative to a control).

[0034] A second aspect of the present invention thus relates to the use of resveratrol and resveratrol-containing compositions to modulate the concentration or activity of expressed products of "survival/longevity" genes and/or "damage inducing" genes. As used herein, a compound is said to "modulate" the concentration or activity of such expressed products if its

administration results in a change in an intracellular, intercellular or tissue concentration or activity (relative to a control) of such gene products of at least 10%. Modulation may, for example, involve an "enhanced accumulation" or an "enhanced activity" or, for example, it may involve a "diminished accumulation" or a "diminished activity." The term "enhanced accumulation" (or "enhanced activity") denotes an increase in concentration (or activity) of at least 10%, at least 20%, at least 50%, at least 2-fold, at least 5-fold, or most preferably at least 10-fold (relative to a control). The term "diminished accumulation" or "diminished activity." conversely denotes a decrease in concentration (or activity) of at least 10%, at least 20%, at least 50%, at least 2-fold, at least 5-fold, or most preferably at least 10-fold (relative to a control).

[0035] As used herein, a "survival/longevity" gene is a gene whose expression contributes to an increase in the survival or longevity of a subject (*e.g.*, a mammal, and particularly a human) expressing such gene. Conversely, a "damage inducing" gene is a gene whose expression contributes to DNA, cellular, or tissue damage in such subject. Such genes are responders to biological stressors, they initiate action in response to stressors such as radiation (*e.g.*, sunlight, gamma rays, UV light, etc.), radiomimetic agents (*e.g.*, vitamin D), heat, near starvation (calorie restriction, or its mimetic, resveratrol) by modulating their expression.

[0036] Examples of survival/longevity genes are provided in **Table 1**. Examples of genes whose expression enhances cellular damage are provided in **Table 2**. These Tables provide the gene's NCBI "ENTREZGENE" accession number. Most preferably, such genes are human genes. The Sirtuin 1 gene is known to control the rate of aging of living organisms by virtue of its ability to produce DNA repair enzymes and mimics the beneficial effects of calorie restriction. The *trans* form of resveratrol (but not *cis*-resveratrol) activates the Sirtuin 1 gene (Alcendor, R.R. (2007) "*Sirt1 Regulates Aging And Resistance To Oxidative Stress In The Heart*," Circulation Research 100(10):1512-1521; Howitz, K.T. *et al.* (2003) "*Small Molecule Activators Of Sirtuins Extend Saccharomyces Cerevisiae Lifespan*," Nature 425:191-196). The invention particularly pertains to compositions that increase the concentration of the Sirtuin 1 survival/longevity gene product. The invention further particularly pertains to compositions that increase the concentration of the forkhead Foxo1 (daf-16, dFoxO) transcription factor survival/longevity gene product.

Table 1
Exemplary Survival/Longevity Genes

39329	A430102J17Rik	Ppp2ca	Shb	Tnfrsf11a
39340	A430110N23Rik	Ppp2r2d	Shmt2	Tnfrsf18
0610007C21Rik	A530082C11Rik	Ppp2r3c	Shroom3	Tnfrsf1a
0610007L01Rik	A730008L03Rik	Ppp2r5c	Sirt1	Tnfsf5ip1

Table 1
Exemplary Survival/Longevity Genes

0610010F05Rik	A830018L16Rik	Ppp4r1l	Skil	Tnip1
0610037L13Rik	A930001N09Rik	Ppp5c	Skiv2l2	Tnks1bp1
0610037P05Rik	A930006D11Rik	Ppp6c	Slain2	Tnni3
0610040B10Rik	A930018M24Rik	Ppt2	Slc10a1	Tnni3k
0610042E11Rik	A930026I22Rik	Pqlc1	Slc12a4	Tnnt2
1110001A07Rik	Ahcyl1	Prdm4	Slc12a5	Tnpo1
1110002B05Rik	Amd1	Prdm5	Slc16a1	Tnpo2
1110003O08Rik	Ank	Prdx2	Slc16a4	Tnrc6a
1110005A03Rik	Arhgap18	Prdx3	Slc1a5	Tns4
1110007L15Rik	Arhgap20	Preb	Slc1a6	Tnxb
1110007M04Rik	Arhgap24	Prei4	Slc20a1	Toe1
1110008F13Rik	Arhgap29	Prkab2	Slc22a17	Tollip
1110008J03Rik	Arhgap4	Prkaca	Slc22a5	Tomm22
1110008P14Rik	Arhgap5	Prkcbp1	Slc25a11	Tomm34
1110014K08Rik	Arhgap9	Prkcdbp	Slc25a12	Tomm40
1110018J18Rik	Arhgdia	Prkch	Slc25a17	Tomm70a
1110019J04Rik	Arhgef1	Prkcn	Slc25a22	Top1
1110020G09Rik	Arhgef12	Prkcsh	Slc25a28	Top2b
1110028A07Rik	Arhgef17	Prkcz	Slc25a3	Topors
1110028C15Rik	Arhgef2	Prkrir	Slc25a32	Tor1aip2
1110032E23Rik	B230117O15Rik	Prlr	Slc25a33	Tpcn1
1110033M05Rik	B230118H07Rik	Prmt7	Slc25a34	Tpm1
1110036O03Rik	B230219D22Rik	Prodh	Slc25a36	Tpm3
1110038B12Rik	B230312A22Rik	Prosc	Slc25a4	Tpm4
1110038D17Rik	B230337E12Rik	Prpf6	Slc25a42	Tpp1
1110054O05Rik	B230380D07Rik	Prpsap1	Slc25a46	Tpp2
1110058L19Rik	B3galnt2	Prr12	Slc26a11	Tppp3
1110059E24Rik	B630005N14Rik	Prrc1	Slc27a1	Tpr
1110059G10Rik	B830007D08Rik	Prss12	Slc29a1	Tprkb
1110067D22Rik	B830028B13Rik	Prune	Slc31a1	Tpst1
1190017O12Rik	B930093H17Rik	Psap	Slc35a2	Traf3ip2
1300010M03Rik	C030002C11Rik	Pscd1	Slc35a3	Traip
1300012G16Rik	C030007I01Rik	Psd3	Slc35b1	Trak2
1500002I01Rik	C030044B11Rik	Psenen	Slc35b2	Trappc2
1500002O20Rik	C030046I01Rik	Pskh1	Slc36a2	Trappc2l
1500005K14Rik	C130057M05Rik	Psma2	Slc39a1	Trem3
1500011B03Rik	C130065N10Rik	Psma5	Slc39a10	Trex1
1500011K16Rik	C230091D08Rik	Psma6	Slc39a8	Trim11
1500031L02Rik	C430003N24Rik	Psma8	Slc40a1	Trim12
1500034J01Rik	C730025P13Rik	Psmb7	Slc44a1	Trim23
1600012F09Rik	Cdc73	Psmd11	Slc47a1	Trim26
1600015H20Rik	Col10a1	Psmd12	Slc4a2	Trim29
1600027N09Rik	Col19a1	Psmd4	Slc4a4	Trim3
1700001O22Rik	Col1a1	Psmd6	Slc4a7	Triobp
1700011B04Rik	Col1a2	Psmd8	Slc6a19	Trip4
1700017H01Rik	Col23a1	Pstk	Slc6a6	Trmt11
1700020C11Rik	Col27a1	Ptdss2	Slc6a9	Tro
1700021C14Rik	Col4a3bp	Ptgfrn	Slc7a1	Troap

Table 1
Exemplary Survival/Longevity Genes

1700021F05Rik	Col5a1	Ptms	Slc7a4	Trpc1
1700023D09Rik	Col6a2	Ptp4a3	Slc7a7	Trpc4ap
1700029F09Rik	D030011O10Rik	Ptpla	Slc9a1	Trpm4
1700029M20Rik	D030051N19Rik	Ptpn1	Slco1a4	Tsc22d1
1700030K09Rik	D230019N24Rik	Ptpn11	Slco3a1	Tsc22d4
1700040L02Rik	D330001F17Rik	Ptpn12	Slco5a1	Tsfm
1700051A21Rik	D330017J20Rik	Ptpn20	Slit3	Tsga10
1700113I22Rik	D430015B01Rik	Ptpn3	Slmap	Tsnax
1700127D06Rik	D430018E03Rik	Ptpra	Slmo2	Tspan13
1810007M14Rik	D530037H12Rik	Ptprg	Smarca2	Tspan18
1810011O10Rik	D630023B12Rik	Ptprs	Smarcc2	Tspan4
1810012P15Rik	D830046C22Rik	Pttg1	Smarcd3	Tspan7
1810013L24Rik	D930017J03Rik	Puf60	Smchd1	Tssc4
1810015C04Rik	D930020B18Rik	Pum1	Smcr7	Tsta3
1810020D17Rik	E030018N11Rik	Pus1	Smn1	Ttc1
1810021J13Rik	E130014J05Rik	Pxmp3	Smndc1	Ttc28
1810022K09Rik	E130303B06Rik	Pxn	Smoc2	Ttc32
1810026B05Rik	E330021D16Rik	Qk	Smpd1	Ttc33
1810029B16Rik	E430010N07Rik	Rab1	Smpdl3a	Ttc35
1810030N24Rik	E430018J23Rik	Rab11a	Smtn	Ttc9c
1810034K20Rik	EG226654	Rab11b	Smtnl2	Tub
1810035L17Rik	EG622645	Rab2	Smu1	Tuba4a
1810044A24Rik	EG633640	Rab20	Smurf1	Tuba8
1810049H13Rik	ENSMUSG00000050599	Rab21	Smyd1	Tubb2c
1810058I24Rik	ENSMUSG00000071543	Rab24	Smyd4	Tubb5
1810059G22Rik	ENSMUSG00000074466	Rab30	Snapap	Tufm
1810063B05Rik	ENSMUSG00000074670	Rab33b	Snapc1	Tug1
1810073N04Rik	ENSMUSG00000075401	Rab35	Snf1lk2	Tulp4
2010106G01Rik	Exdl1	Rab3a	Snora65	Twsg1
2010109N14Rik	G3bp1	Rab3gap1	Snrk	Txlna
2010111I01Rik	Galnt3	Rab3gap2	Snrp70	Txlnb
2010200O16Rik	Galnt4	Rab3il1	Snrpb2	Txndc1
2010305A19Rik	Galntl4	Rab43	Snrpd3	Txndc10
2010309E21Rik	Gart	Rab6	Snx12	Txndc12
2010315B03Rik	Kcna5	Rab8b	Snx13	Txndc14
2010320M18Rik	Kcna7	Rabep1	Snx16	Txndc4
2010321M09Rik	Kcng2	Rabgap1l	Socs3	Txnip
2210010L05Rik	Kcnj3	Rac1	Socs4	Txnl1
2210020M01Rik	Kcnj5	Rad17	Sorbs1	Txnl4
2210408I21Rik	Kcnk3	Rad23b	Sorcs2	Txnl4b
2310001A20Rik	Kcnv2	Rad54l2	Sort1	Tyk2
2310002L09Rik	Kctd10	Rag1ap1	Sost	Uaca
2310007O11Rik	Kctd2	Ralgps2	Sox17	Ubac1
2310011J03Rik	Kctd7	Ramp2	Sox4	Ubap1
2310014D11Rik	LOC100044376	Ranbp10	Sox9	Ubash3a
2310014F07Rik	LOC100044968	Ranbp2	Sp3	Ubd
2310016C16Rik	LOC100045002	Rap1a	Spag9	Ube1c
2310026E23Rik	LOC100045020	Rap1gap	Spcs1	Ube1l2

Table 1
Exemplary Survival/Longevity Genes

2310030G06Rik	LOC100045522	Rap2a	Speer7-ps1	Ube1x
2310033F14Rik	LOC100045629	Rap2b	Spg3a	Ube2b
2310036O22Rik	LOC100046086	Raph1	Spg7	Ube2d2
2310038H17Rik	LOC100046343	Rara	Spin1	Ube2d3
2310042E22Rik	LOC100046855	Rarb	Spink10	Ube2e1
2310043N10Rik	LOC100047028	Rarg	Spna2	Ube2f
2310044H10Rik	LOC100047385	Rasa1	Spnb1	Ube2h
2310046A06Rik	LOC100047539	Rasa3	Spnb2	Ube2n
2310047A01Rik	LOC100047601	Rasl2-9	Spop	Ube2o
2310047H23Rik	LOC100047794	Rassf7	Spry2	Ube2q2
2310047M10Rik	LOC100047915	Rb1cc1	Sqstm1	Ube2v1
2310061J03Rik	LOC100048376	Rbbp6	Srd5a2l2	Ube2v2
2310067B10Rik	LOC100048397	Rbj	Srebf1	Ube2w
2310076G13Rik	LOC100048439	Rbm12	Srebf2	Ube3a
2410001C21Rik	LOC100048863	Rbm20	Sri	Ubl4
2410002O22Rik	LOC640441	Rbm24	Srl	Ubl7
2410003K15Rik	LOC668206	Rbm27	Srp19	Ublcp1
2410004B18Rik	LOC675709	Rbm28	Srpr	Ubtf
2410005O16Rik	LOC677447	Rbm38	Ssbp3	Ubxd7
2410012H22Rik	Mtm1	Rbm39	Ssbp4	Uchl5
2410017P07Rik	OTTMUSG00000001305	Rbms1	Ssh1	Ucp2
2410017P09Rik	OTTMUSG00000016644	Rbms2	Ssr3	Ucp3
2410018C17Rik	P2ry5	Rbmxrt	Sstr5	Ufm1
2410018C20Rik	P2ry6	Rbpms	Ssu72	Ugcgl2
2410019A14Rik	Pabpc3	Rcan2	St13	Ugp2
2410022L05Rik	Pah	Rcl1	St3gal6	Umps
2410042D21Rik	Paics	Rdh13	St6galnac6	Ung
2510003E04Rik	Paip1	Reep5	St7	Unk
2510042H12Rik	Paip2	Rem2	St8sia2	Uqcc
2610001J05Rik	Palm	Retsat	St8sia4	Uqcrc1
2610008E11Rik	Papd1	Rev1	Stab1	Uqcrfs1
2610019F03Rik	Papd5	Rfc2	Stard10	Usp11
2610024B07Rik	Papola	Rfc4	Stat6	Usp19
2610028D06Rik	Papolg	Rfesd	Stbd1	Usp2
2610029I01Rik	Paqr7	Rfng	Stch	Usp21
2610030H06Rik	Paqr9	Rfwd3	Stip1	Usp22
2610101N10Rik	Pard3	Rfx1	Stk11	Usp34
2610200G18Rik	Pard6g	Rgl1	Stk19	Usp36
2610209M04Rik	Parp12	Rgma	Stk38	Usp45
2610301F02Rik	Pbef1	Rgs12	Stk39	Usp47
2610507B11Rik	Pbld	Rgs5	Stom	Usp52
2610528E23Rik	Pbrm1	Rhbdd2	Strn3	Usp54
2700029M09Rik	Pcbp2	Rhbdd3	Stx6	Usp9y
2700038N03Rik	Pcca	Rhbdf1	Stxbp2	Utp6
2700097O09Rik	Pcdh7	Rhd	Styx	Utrn
2810004N23Rik	Pcdh9	Rhobtb1	Suhw3	Uvrag
2810008M24Rik	Pcgf3	Rhobtb2	Sulf2	Uxt
2810410M20Rik	Pcgf6	Rhoq	Supt5h	V1ra5

Table 1
Exemplary Survival/Longevity Genes

2810422O20Rik	Pcm1	Ric8	Supv3l1	Vamp4
2810423A18Rik	Pcmt1	Ring1	Surf4	Vasn
2810430I11Rik	Pcnt	Rlbp1	Svep1	Vbp1
2810455D13Rik	Pcnx	Rmnd1	Sybl1	Vdac1
2900002H16Rik	Pcp4	Rmnd5b	Syk	Vdac2
2900006B11Rik	Pcp4l1	Rnaset2a	Syn2	Vdac3
2900008C10Rik	Pcsk7	Rnd1	Syngr2	Vdp
2900011G08Rik	Pctk1	Rnf11	Synj2bp	Vegfa
2900024O10Rik	Pctk2	Rnf13	Synpo	Vegfb
3010003L21Rik	Pctk3	Rnf139	Sypl	Vegfc
3010027C24Rik	Pdcd10	Rnf14	Taf2	Vezf1
3110003A17Rik	Pdcd4	Rnf149	Taf6	Vkorc1l1
3110031B13Rik	Pdcd6	Rnf167	Tanc1	Vldlr
3110043O21Rik	Pdcl	Rnf168	Taok2	Vps16
3110073H01Rik	Pdcl3	Rnf187	Taok3	Vps18
3110080E11Rik	Pde1a	Rnf2	Tap1	Vps29
3110082I17Rik	Pde2a	Rnf31	Tap2	Vps35
3222402P14Rik	Pde4dip	Rnf34	Tapt1	Vps36
3321401G04Rik	Pde6a	Rnf5	Tardbp	Vps37b
4432414F05Rik	Pde7a	Rnf6	Tatdn3	Vps4b
4631424J17Rik	Pdgfa	Rock1	Tbc1d10b	Vps54
4632404M16Rik	Pdha1	Rorc	Tbc1d15	Vwf
4632411B12Rik	Pdia3	RP23-136K12.4	Tbc1d19	Wac
4732416N19Rik	Pdia6	rp9	Tbc1d20	Wapal
4732418C07Rik	Pdk4	Rpap2	Tbc1d2b	Was
4832420A03Rik	Pdlim4	Rpe	Tbc1d5	Wbp4
4833408C14Rik	Pdlim5	Rpl15	Tbc1d7	Wdfy1
4833439L19Rik	Pds5b	Rpl27a	Tbcb	Wdr13
4921506J03Rik	Pdss1	Rpl37	Tbcc	Wdr21
4921509O07Rik	Pdxk	Rpl39	Tbce	Wdr22
4921513H07Rik	Pdzd11	Rpl3l	Tbcel	Wdr23
4921517N04Rik	Pecam1	Rpl7l1	Tbkbp1	Wdr3
4930402E16Rik	Pef1	Rpl8	Tbpl1	Wdr47
4930426L09Rik	Per1	Rplp2	Tbx19	Wdr5b
4930429B21Rik	Per3	Rpo1-3	Tbx20	Wdr92
4930432L08Rik	Perp	Rpo1-4	Tcap	Wdsof1
4930432O21Rik	Pex11c	Rpp30	Tcea1	Wfdc3
4930448F12Rik	Pex12	Rprml	Tcea3	Wipi2
4930453O09Rik	Pex19	Rps11	Tcf15	Wnk1
4930455C21Rik	Pex5	Rps26	Tcf20	Wtap
4930466F19Rik	Pex6	Rps6	Tcf25	Wwp2
4930486A15Rik	Pex7	Rps6ka1	Tcfe2a	Xbp1
4930505O20Rik	Pfdn1	Rps6ka4	Tcof1	Xdh
4930513N20Rik	Pfdn4	Rrad	Tcp1	Xlr5a
4930523C07Rik	Pfdn5	Rragc	Tcp11l2	Xpnpep1
4930524O07Rik	Pfkp	Rragd	Tcta	Xpr1
4930544L04Rik	Pfn2	Rras2	Tead4	Xrcc1
4930551A22Rik	Pgam2	Rrbp1	Tef	Xrcc6

Table 1
Exemplary Survival/Longevity Genes

4930554H23Rik	Pgbd5	Rrp1	Tesk1	Yap1
4930557J02Rik	Pggt1b	Rrp9	Tex2	Yeats2
4930570C03Rik	Pgr	Rsad1	Tex261	Yif1a
4930570E01Rik	Phc2	Rspry1	Tfam	Yipf3
4930573O21Rik	Phc3	Rtp3	Tfb2m	Yipf4
4930579G24Rik	Phf14	Rufy1	Tfpi	Yipf7
4932442K08Rik	Phf17	Rufy3	Tfrc	Ypel2
4933402C05Rik	Phf20l1	Rusc1	Tgds	Ypel3
4933403F05Rik	Phf3	Rwdd1	Tgfbr1	Ywhaq
4933404K13Rik	Phf6	Rxrb	Thbs4	Zadh1
4933407I18Rik	Phka2	Rxrg	Thnsl2	Zbed3
4933411K20Rik	Phkb	Ryk	Thoc1	Zbtb43
4933413C19Rik	Phkg1	Ryr2	Thoc4	Zbtb5
4933421A08Rik	Phlda1	S3-12	Thrb	Zc3h11a
4933426M11Rik	Phldb1	Sae2	Tie1	Zc3h12c
4933428L01Rik	Phpt1	Safb	Tigd2	Zc3h15
4933429D07Rik	Phyh	Samd5	Timm22	Zc3h6
4933433P14Rik	Pias4	Samd8	Timm50	Zc3h8
4933434E20Rik	Picalm	Samd9l	Timp3	Zcchc6
4933440H19Rik	Pigz	Saps3	Timp4	Zdhhc13
5033414K04Rik	Pik3ca	Sar1a	Tinagl	Zdhhc3
5033421C21Rik	Pik3ip1	Sars	Tjap1	Zeb1
5033423K11Rik	Pip5k1c	Sat1	Tk2	Zfand5
5033430J17Rik	Pir	Satb2	Tle6	Zfml
5330423I11Rik	Pitpna	Sbds	Tlk2	Zfp106
5330439A09Rik	Pitpnb	Sbf2	Tln1	Zfp110
5430402E10Rik	Pitpnc1	Sbk1	Tloc1	Zfp187
5430402P08Rik	Pitpnm1	Sc4mol	Tm2d1	Zfp191
5430407P10Rik	Pkd1	Scamp3	Tm2d2	Zfp213
5730470L24Rik	Pkia	Scap	Tm2d3	Zfp236
5730507A11Rik	Pkm2	Scara5	Tm4sf1	Zfp238
5730536A07Rik	Pkp2	Scarb1	Tm6sf2	Zfp26
5730601F06Rik	Pla2g10	Scarb2	Tm9sf2	Zfp260
5830404H04Rik	Pla2g2d	Sccpdh	Tm9sf3	Zfp277
5830415L20Rik	Pla2g5	Scfd1	Tmc1	Zfp289
5830428H23Rik	Plcd1	Schip1	Tmcc1	Zfp30
5830432E09Rik	Plce1	Scmh1	Tmcc3	Zfp313
5830436I19Rik	Pld3	Scn4b	Tmco1	Zfp319
5830457O10Rik	Pldn	Scoc	Tmed7	Zfp322a
5830469G19Rik	Plec1	Scube2	Tmem103	Zfp335
5830487K18Rik	Plekhh3	Scyl1	Tmem109	Zfp341
5930434B04Rik	Plekhj1	Scyl3	Tmem110	Zfp35
6230429P13Rik	Plekhm2	Sdcbp	Tmem112b	Zfp383
6330403M23Rik	Plekhn1	Sdccag10	Tmem115	Zfp384
6330407G11Rik	Plod3	Sdha	Tmem119	Zfp414
6330409N04Rik	Plp2	Sdhd	Tmem123	Zfp422
6330415G19Rik	Pls3	Sds	Tmem126b	Zfp422-rs1
6330417G04Rik	Pltp	Sec11a	Tmem132a	Zfp512

Table 1
Exemplary Survival/Longevity Genes

6330503C03Rik	Plvap	Sec14l1	Tmem142a	Zfp516
6330564D18Rik	Plxnb2	Sec22b	Tmem142c	Zfp560
6330569M22Rik	Pmm1	Sec23a	Tmem147	Zfp568
6430548M08Rik	Pno1	Sec31a	Tmem14c	Zfp579
6530404N21Rik	Pnpla1	Sec61a1	Tmem157	Zfp597
6530413G14Rik	Pnpla2	Sec61a2	Tmem159	Zfp608
6620401M08Rik	Pnpla6	Sele	Tmem167	Zfp628
6720462K09Rik	Pnrc2	Sema3b	Tmem168	Zfp629
6720475J19Rik	Podn	Sephs2	Tmem16f	Zfp639
6820401H01Rik	Poldip3	Sepp1	Tmem176a	Zfp644
7030402D04Rik	Polg2	Serbp1	Tmem176b	Zfp650
7030407E18Rik	Polr2d	Serinc1	Tmem182	Zfp651
7420416P09Rik	Polr2f	Serpinb6a	Tmem188	Zfp667
8030463A06Rik	Polr2h	Serpinb9	Tmem19	Zfp672
8030475D13Rik	Polr2i	Sertad2	Tmem30a	Zfp68
8430436O14Rik	Polr2k	Set	Tmem37	Zfp703
9030411M15Rik	Polr3gl	Setd7	Tmem38a	Zfp715
9030418K01Rik	Polr3k	Setd8	Tmem38b	Zfp719
9030425P06Rik	Pot1a	Setx	Tmem41a	Zfp740
9130011J15Rik	Pou6f1	Sf3a1	Tmem41b	Zfp758
9230110F11Rik	Ppap2b	Sf3b1	Tmem46	Zfp817
9230114K14Rik	Ppard	Sf3b2	Tmem50a	Zfp82
9330109K16Rik	Pparg	Sfrp5	Tmem55b	Zfyve21
9330120H11Rik	Ppargc1a	Sfrs1	Tmem57	Zhx2
9430010O03Rik	Pphln1	Sfrs10	Tmem64	Zhx3
9430013L17Rik	Ppic	Sfrs2ip	Tmem69	Zic2
9530018H14Rik	Ppif	Sfrs7	Tmem70	Zkscan17
9530018I07Rik	Ppig	Sfrs9	Tmem77	Zmat2
9530097N15Rik	Ppil2	Sfxn3	Tmem85	Zmat5
9930024M15Rik	Ppl	Sgca	Tmem86a	Zmym4
A030007L17Rik	Ppm1f	Sgcg	Tmem93	Zmynd10
A230046K03Rik	Ppme1	Sgk2	Tmem9b	Znrf1
A230051G13Rik	Ppp1ca	Sgta	Tmlhe	Zrsr1
A230062G08Rik	Ppp1r11	Sh2d3c	Tmod1	Zscan12
A230067G21Rik	Ppp1r12a	Sh2d4a	Tmod4	Zswim6
A230091C14Rik	Ppp1r12c	Sh3bgrl	Tmub1	Zyg11b
A330043J11Rik	Ppp1r13l	Sh3bp5l	Tmub2	Zyx
A330076H08Rik	Ppp1r2	Sh3d19	Tnfaip1	Zzef1
A430005L14Rik	Ppp1r3c	Sh3kbp1	Tnfaip8l1	

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

AA407175	Blvra	Ddah2	Gltscr2	Llgl1
AA415038	Bmi1	Ddb1	Glud1	Lmbrd1
AA987161	Bmp6	Ddb2	Glul	Lmln
Aadacl1	Bmpr1a	Ddit3	Gm104	Lmna
Aars	Bnip3	Ddr1	Gm561	Lmo4

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

Aasdhppt	Brd3	Ddr2	Gmeb1	Lmtk2
AB182283	Btaf1	Ddx1	Gmfb	LOC100040515
Abca4	Btbd14b	Ddx17	Gmppa	LOC100043489
Abca7	Btbd2	Ddx39	Gna-rs1	LOC100046468
Abcb4	Btbd3	Ddx51	Gnb2	LOC100046982
Abcb7	Btbd6	Ddx54	Gnb4	LOC552902
Abcd1	Btf3l4	Ddx58	Gne	Lonp1
Abce1	Btnl9	Ddx6	Gng10	Lor
Abhd1	Bxdc2	Deb1	Gnl3	Lpgat1
Abhd12	C130094E24	Dedd	Gnpda1	Lphn1
Abhd4	C2	Defb1	Golga2	Lrch1
Abi1	C77058	Defb5	Golga7	Lrch4
Abi2	C78441	Defcr15	Golgb1	Lrp10
Ablim2	C78651	Depdc7	Got1	Lrp2bp
Abra	C79741	Derl2	Got2	Lrp6
Abtb1	C86942	Des	Gpaa1	Lrpap1
Acaa2	C87259	Dfna5h	Gpam	Lrrc1
Acad11	Cab39	Dgat2	Gpatch1	Lrrc20
Acad9	Cabin1	Dgcr2	Gpbp1	Lrrc39
Acadl	Cacna1g	Dgka	Gpbp1l1	Lrrc3b
Acads	Cacna1h	Dgke	Gpc1	Lrrc40
Acadvl	Cacybp	Dguok	Gpc6	Lrrc44
Acbd3	Cadm4	Dhodh	Gpd1l	Lsm14a
Acbd5	Calm1	Dhrs1	Gper	Lsm14b
Acbd6	Calr	Dhrs7	Gpkow	Lsm3
Ace	Calr3	Dhx30	Gpr115	Ltb4dh
Aco2	Caml	Dhx32	Gpr137	Ltbp3
Acot5	Camsap1	Dhx34	Gpr175	Ltbp4
Acox3	Cand2	Dhx8	Gpr22	Ly6a
Acsl1	Canx	Dhx9	Gpr4	Lypla1
Acss2	Capg	Diablo	Gpr98	Lypla2
Acta1	Capn1	Diap1	Gpsn2	Lyrm4
Actb	Capns1	Diras1	Gpt2	Lyrm5
Actn1	Caprin1	Dirc2	Gpx3	Lysmd2
Actn2	Card10	Dkk3	Gramd1a	Lysmd3
Actn4	Caskin2	Dld	Grb14	Lztfl1
Actr1b	Casp8ap2	Dll4	Grina	Lztr1
Actr2	Casp9	Dlst	Grk1	M6prbp1
Acvr1b	Casq1	Dmd	Grk5	Macf1
Acvr2a	Cav1	Dmpk	Grlf1	Macrod1
Acvrl1	Cav2	Dmtf1	Grm8	Maf1
Acyp1	Cbfb	Dmwd	Grn	Magea5
Acyp2	Cblb	Dmxl2	Grpel2	Magee1
Adal	Cbr1	Dnahc9	Gsdmdc1	Magi3
Adam10	Cbx3	Dnaja3	Gsn	Mall
Adam15	Ccar1	Dnajb1	Gsta4	Man2b1
Adam21	Ccdc12	Dnajb4	Gstcd	Maob
Adamts10	Ccdc122	Dnajb9	Gstm1	Map1lc3a

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

Adamts2	Ccdc125	Dnajc12	Gstm2	Map1lc3b
Adamts7	Ccdc127	Dnajc3a	Gstm5	Map2k1ip1
Adamts9	Ccdc3	Dnajc7	Gstm7	Map2k2
Adar	Ccdc34	Dnm2	Gstp1	Map3k1
Adcy1	Ccdc47	Dock11	Gstt1	Map3k12
Adcy2	Ccdc58	Dock6	Gtf2a1	Map3k2
Adcy3	Ccdc69	Dom3z	Gtf2a2	Map3k7
Adcy6	Ccdc7	Dopey1	Gtf2e1	Map3k7ip1
Add1	Ccdc72	Dot1l	Gtf2e2	Map4k5
Adh5	Ccdc85b	Dpagt1	Gtf2h3	Mapbpip
Adra1b	Ccdc88a	Dph3	Gtf2h4	Mapk14
Adrbk1	Ccdc90a	Dpp8	Gtf3c1	Mapk6
Aebp1	Ccdc90b	Dpp9	Gtf3c4	Mapkapk2
Aes	Ccl9	Dpysl2	Gtpbp1	Mapre1
Afap1l1	Ccm2	Dpysl3	Gtpbp2	Marcks
Aff4	Ccnd3	Dr1	Gulo	Mat2a
Afg3l1	Ccng1	Drg1	Gyg	Mat2b
Aga	Ccnh	Dstn	Gyk	Matn4
Agbl5	Ccni	Dtnbp1	Gys1	Maz
Agpat1	Ccnl2	Dus3l	H2afv	Mbc2
Agpat5	Ccnt2	Dusp1	H2afy	Mbd2
Agrn	Ccr1	Dusp6	H2-Bl	Mbd3
Agtr1a	Ccr1l1	Dusp8	H2-Oa	Mbd5
Agxt2l2	Ccr5	Dvl2	H2-T24	Mboat5
Ahdc1	Ccs	Dync1h1	H6pd	Mbtps1
Ahr	Cct5	Dync1li2	Hadh	Mbtps2
Ahsa1	Cct7	Dyrk1a	Hadha	Mcf2l
AI118078	Cd151	E2f6	Hadhb	Mctp2
AI225934	Cd163	Eaf1	Hand2	Mdfic
AI413194	Cd200	Eapp	Hars	Mdh2
AI428479	Cd207	Ears2	Hars2	Med13
AI429363	Cd36	Ebag9	Hat1	Med16
AI462493	Cd38	Ece1	Hax1	Med19
AI480535	Cd74	Ecm1	Hccs	Med25
AI506816	Cd83	Ecm2	Hcfc1r1	Med30
AI597468	Cd93	Edaradd	Hcfc2	Med7
AI662270	Cd97	Edg3	Hdac2	Mef2b
AI662476	Cdadc1	Eea1	Hdac4	Mef2c
AI747699	Cdc27	Eef1a1	Hdac7a	Mef2d
AI790298	Cdc2l5	Eef1b2	Hdhd2	Megf11
AI837181	Cdc2l6	Eef1e1	Hdlbp	Megf8
AI848100	Cdc37	Eef2	Heatr5b	Mel13
AI852064	Cdc42ep3	Efcab2	Heatr6	Mertk
AI987944	Cdgap	Efemp2	Hectd1	Mesdc2
Ak7	Cdh13	Efnb3	Heph	Metrnl
Akap13	Cdipt	Egf	Herpud1	Mett10d
Akap2	Cdk5rap3	Egfl7	Heyl	Mex3c
Akp2	Cdk7	Egflam	Hfe2	Mfap4

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

Akr1a4	Cdv3	Egfr	Hgs	Mfge8
Akr1b8	Cebpz	Egln1	Hhatl	Mfn1
Akr7a5	Cenpa	Egln3	Hiat1	Mfsd8
Akt1s1	Cenpq	Egr1	Hiatl1	Mgam
Alas1	Centa1	Ehbp1l1	Hibadh	Mgat1
Aldh1a3	Centa2	Ehd4	Hif1a	Mgat4b
Aldh2	Centb2	Ei24	Higd1b	Mgp
Aldh4a1	Centd1	Eif1ay	Hint3	Mgrn1
Aldh7a1	Centd2	Eif2ak1	Hirip3	Mif4gd
Aldh9a1	Centg2	Eif2s2	Hivep2	Mkl1
Alg12	Cetn3	Eif3e	Hk3	Mknk1
Alg13	Cfl1	Eif4a1	Hlf	Mlf1
Alg5	Cflar	Eif4a2	Hmcn1	Mlkl
Alkbh6	Cgnl1	Eif4b	Hmg20b	Mll2
Alkbh8	Cgrrf1	Eif4e2	Hmgb1	Mllt1
Als2cr2	Chac1	Eif4ebp1	Hmgb3	Mllt6
Anapc10	Chac2	Eif4g3	Hmgcl	Mlx
Anapc2	Chchd4	Eif5	Hmgcs1	Mlxip
Angptl2	Chd1	Eif5b	Hnrpab	Mlycd
Ank1	Chd2	Elac2	Hnrph3	Mme
Ankhd1	Chd4	Elf2	Hnrpk	Mmp15
Ankrd1	Chmp1b	Elk3	Hnrpl	Mmp1b
Ankrd10	Chmp2b	Ell	Hnrpll	Mmp2
Ankrd13a	Chordc1	Ell2	Hnrpr	Mmrn2
Ankrd13c	Chrac1	Elovl5	Hnrpul1	Mobkl3
Ankrd13d	Chrd	Elp3	Hoxd11	Mocos
Ankrd25	Chrng	Elp4	Hrasls	Mocs2
Ankrd28	Chst14	Eltd1	Hrc	Morc2a
Ankrd32	Chuk	Emb	Hs2st1	Mosc2
Ankrd37	Churc1	Emd	Hsd17b11	Mospd1
Ankrd38	Ciao1	Eme2	Hsd17b13	Mpa2l
Ankrd9	Cib1	Emg1	Hsd17b4	Mpp6
Anp32b	Cic	Emilin1	Hsdl2	Mpv17
Anxa3	Cilp2	Eml2	Hsp110	Mrfap1
Anxa6	Cisd2	Enc1	Hspa1b	Mrgprf
Aoc3	Cish	Eng	Hspa5	Mrpl1
Ap1s2	Ckm	Eno3	Hspb2	Mrpl15
Ap2a2	Ckmt2	Enpep	Hspb3	Mrpl17
Ap2b1	Clcn5	Enpp5	Hspb6	Mrpl19
Ap2m1	Cldnd1	Entpd5	Hspb7	Mrpl28
Ap4m1	Clec2d	Entpd6	Hspe1	Mrpl30
Ap4s1	Clic1	Ep300	Htra1	Mrpl32
Apbb1	Clic4	Epb4.1l3	Htra3	Mrpl36
Aplp2	Clint1	Epha4	Hus1	Mrpl38
Apobec2	Clk3	Ephb1	Hyal4	Mrpl4
Apod	Cln5	Ephb4	Iah1	Mrpl41
Apoe	Clock	Epm2aip1	Ibrdc2	Mrps17
Apool	Clptm1	Epn1	Id1	Mrps18c

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

Appl1	Clstn1	Eps15l1	Ide	Mrps22
Appl2	Cltc	Erc1	Idh3a	Mrps5
Arf1	Cmpk	Ergic3	Idh3b	Mrs2l
Arf3	Cmya5	Erlin1	Ifi30	Msl31
Arg2	Cndp2	Ero1lb	Ifit3	Msra
Arid4b	Cnot6l	Errfi1	Ifnar1	Msrb2
Arl1	Cnot7	Esco1	Ifnar2	Msrb3
Arl2bp	Cntfr	Esd	Ifngr1	Msx1
Arl3	Cntn4	Esf1	Ifngr2	Mtap4
Arl4a	Commd1	Esrrg	Ift122	Mtap7d1
Arl5b	Commd3	Etfa	Ift57	Mtbp
Arpc1a	Commd4	Etnk1	Igfbp4	Mtch2
Arpc1b	Commd5	Ets2	Igfbp6	Mterf
Arpc2	Comp	Ewsr1	Igsf11	Mterfd1
Arpc4	Cope	Exoc5	Igsf3	Mterfd2
Arrb1	Copg	Exosc1	Igsf8	Mterfd3
Art5	Cops2	Exosc10	Ihpk1	Mtif3
Asb1	Cops7a	Exosc7	Ikbkap	Mtmr1
Asb14	Coq10b	Exosc9	Il10rb	Mtmr3
Asb5	Coq9	Ext1	Il13ra1	Mtrr
Ascc3l1	Coro1b	Eya3	Il18bp	Mustn1
Asnsd1	Cox11	F11r	Il6st	Mxd4
Asph	Cox4i2	F13b	Ilk	Mxi1
Atad2b	Cox5a	F5	Ilvbl	Mxra8
Atf3	Cox8a	Fads3	Immp1l	Mybbp1a
Atg10	Cp	Fahd2a	Immp2l	Mybpc3
Atg3	Cpeb4	Fam18b	Immt	Myc
Atg4d	Cpm	Fancg	Imp3	Mycbp
Atg5	Cpsf1	Fap	Impa2	Myct1
Atp11b	Cpsf3	Fas	Impad1	Myd116
Atp13a1	Cpt1a	Fastkd1	Ints8	Myd88
Atp1a2	Cpt1b	Fastkd2	Ipmk	Myef2
Atp5h	Cramp1l	Fbln1	Ipo13	Myh14
Atp5s	Crat	Fbln2	Ipo7	Myh6
Atp6ap2	Crbn	Fbp2	Ipo8	Myl4
Atp6v0a2	Creb1	Fbxl2	Iqsec1	Myl7
Atp6v0d1	Creb3l1	Fbxl6	Iqwd1	Mylip
Atp6v1b2	Crebbp	Fbxo3	Irf4	Myo10
Atp6v1f	Crebzf	Fbxo30	Irs1	Myo1c
Atp9a	Creg1	Fbxw4	Isca2	Myo9b
Atp9b	Crip1	Fbxw5	Isg20	Myocd
Atpaf1	Crip2	Fcer2a	Isyna1	Myom1
Atpbd1c	Cript	Fcgr4	Itfg3	Mypn
Atpif1	Crnkl1	Fdx1	Itgb1bp1	N6amt1
Atr	Crot	Fem1c	Itgb1bp2	N6amt2
Atxn2	Cry1	Fert2	Itgb1bp3	Naca
Atxn7l1	Cryab	Fgfr1op	Itgb2	Nagpa
AU020772	Crybb1	Filip1	Itgb5	Nars

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

AU041133	Cryz	Fkbp10	Itih3	Nat5
Aup1	Csdc2	Fkbp5	Itk	Nbeal1
AV009015	Cse1l	Fkbp8	Itm2b	Nckap1l
AV024533	Csf2ra	Flcn	Itm2c	Ndst4
AV025504	Csl	Flii	Itpr3	Ndufa5
Avpr1a	Csnk1a1	Flot1	Ivns1abp	Ndufab1
AW046287	Csnk1d	Flot2	Jam2	Ndufaf1
AW112010	Csnk2a1	Flywch1	Jmjd1c	Ndufb3
AW209491	Cst3	Fmn1	Jmjd2a	Ndufb7
AW555464	Cst8	Fmo2	Jmjd6	Ndufb8
AW556556	Cstf2	Fmr1	Josd2	Ndufc1
AW742931	Ctage5	Fnbp1l	Jtv1	Ndufc2
Azi2	Ctcf	Fnip1	Jun	Ndufs1
Azin1	Ctgf	Foxa3	Kbtbd10	Ndufs2
Bach1	Ctps	Foxj2	Kbtbd5	Ndufs3
Bag4	Ctsb	Foxk1	Kcnip2	Ndufs5
Bambi	Ctsf	Foxk2	Khk	Ndufs7
Banp	Ctss	Foxo1	Kif1b	Ndufs8
Bat1a	Ctsz	Foxp1	Kif1c	Ndufv1
Bat2	Cttnbp2nl	Frag1	Kif21a	Ndufv2
Baz1a	Cul1	Frap1	Kif2a	Nedd4
Baz1b	Cul3	Frmd4b	Kif3a	Neil1
BB217526	Cxcl12	Frmd5	Kif5b	Nek3
Bbc3	Cxcl14	Fscn1	Klc3	Nf2
Bbs10	Cxxc1	Fth1	Klf11	Nfu1
BC003331	Cxxc5	Ftl1	Klf13	Ngly1
BC003885	Cyb561	Fuca2	Klf15	Ngrn
BC003965	Cyb5b	Fundc2	Klf16	Nid1
BC010304	Cyb5r3	Furin	Klf4	Nif3l1
BC010981	Cyb5r4	Fus	Klf7	Ninj1
BC011248	Cybasc3	Fxc1	Klhdc1	Nipbl
BC013529	Cyc1	Fxyd1	Klhdc3	Nkiras1
BC016495	Cyfip1	Fxyd5	Klhl13	Nkiras2
BC019943	Cyp1b1	Fzd10	Klhl22	Nlgn2
BC020077	Cyp27a1	Fzd2	Klhl23	Nmnat1
BC021395	Cyp2f2	Fzd9	Klhl24	Npc1
BC023882	Cys1	G0s2	Klhl4	Nppb
BC024659	D030063E12	G6pc2	Klhl9	Nras
BC024814	D0H4S114	Gaa	Klk1b24	Nrd1
BC025076	D10Ertd641e	Gab1	Kpna1	Nrp1
BC028440	D13Ertd787e	Gabpa	Kpna4	Nrp2
BC028528	D14Ertd16e	Gadd45b	Krr1	Nrtn
BC030183	D14Ertd581e	Gadd45g	Kti12	Nsmaf
BC030308	D15Ertd50e	Gale	Ktn1	Nt5c2
BC030336	D16H22S680E	Galk1	L1cam	Nt5c3
BC031353	D19Ertd721e	Gapdh	l7Rn6	Nub1
BC031781	D19Ertd737e	Gapvd1	Lace1	Nwd1
BC032203	D19Wsu162e	Garnl1	Lactb	Oasl2

Table 2
Exemplary Genes Whose Expression Enhances Cellular Damage

BC034069	D1Bwg1363e	Gas6	Lama2	Ogg1
BC037034	D2Ertd391e	Gata4	Lamb2	Oplah
BC037112	D3Ertd254e	Gba2	Laptm4a	Pfkfb2
BC038479	D3Wsu106e	Gbas	Larp1	Pfkfb4
BC039210	D4Ertd429e	Gbe1	Larp2	Pgc1
BC043098	D4Ertd571e	Gbf1	Larp4	Pgls
BC043476	D6Wsu176e	Gcdh	Larp5	Pygb
BC048679	D8Ertd457e	Gdi1	Lcmt1	Rars
BC049349	D8Ertd54e	Gdi2	Lcmt2	Rars2
BC057893	D8Ertd620e	Gdpd1	Ldb1	Rere
Bcam	D8Ertd82e	Gdpd5	Ldb3	Rnpepl1
Bcat2	D9Ertd402e	Gemin5	Ldhb	RP23-233B9.8
Bckdha	Daam1	Ggta1	Ldhd	Rsrc2
Bckdk	Dad1	Ghitm	Leo1	Smad1
Bcl2l13	Dap	Gimap4	Lgals3bp	Smad3
Bcl6b	Dapk2	Gimap8	Lgals7	Smad6
Bclaf1	Daxx	Git1	Lgmn	Ucp3
Bdp1	Dbh	Gja3	Lgr4	X83328
Bet1	Dcn	Gle1l	Lgr6	Xk
Bgn	Dctn1	Glg1	Lias	Xpo4
Bhlhb2	Dctn2	Gli1	Limd1	Xpo6
Bhlhb3	Dcun1d1	Glo1	Lims2	Xpot
Bicd2	Dcun1d2	Glod4	Lipe	Xrn1
Birc4	Dcun1d5	Gls	Lix1l	

C. Preferred Compositions of the Present Invention

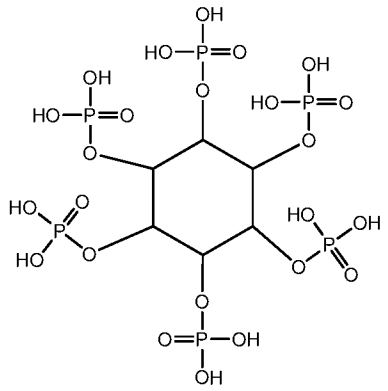
[0037] The invention particularly pertains to resveratrol-containing compositions in which the specific activity of the resveratrol has been stabilized or enhanced. As used herein, the term "specific activity" refers to the ratio of the extent of gene modulation (relative to control) per amount (mass) of administered resveratrol.

[0038] Preferably, such compositions will comprise a chelator, hyaluronic acid, and/or vitamin D. The invention particularly pertains to such compositions that comprise resveratrol (preferably, the compositions of the present invention will provide a composition dosage of from about 10 mg to about 2 g, more preferably from about 100 mg to about 500 mg), and at least one compound selected from the group consisting of an antioxidant (chelator), hyaluronic acid, and vitamin D. Preferably, the compositions of the present invention will contain resveratrol, an antioxidant, hyaluronic acid, and vitamin D.

[0039] As used herein the term "chelator" refers to an organic compound that bonds with and removes free metal ions from solution. Examples of suitable chelators include ethylenediaminetetraacetic acid (EDTA), histidine, antibiotic drugs of the tetracycline family,

pyridoxal 2-chlorobenzoyl hydrazone, desferrioxamine, dexrazoxane, deferasirox, pyoverdine, pseudan, citrate, NDGA (nordihydroguaiaretic acid: 1,4-bis[3,4-dihydroxyphenyl]2,3-dimethylbutane), ferulic acid and phytic acid. Preferably, the compositions of the present invention will provide a composition dosage of chelator of from about 1 g to about 15 g, more preferably from about 2 g to about 12 g.

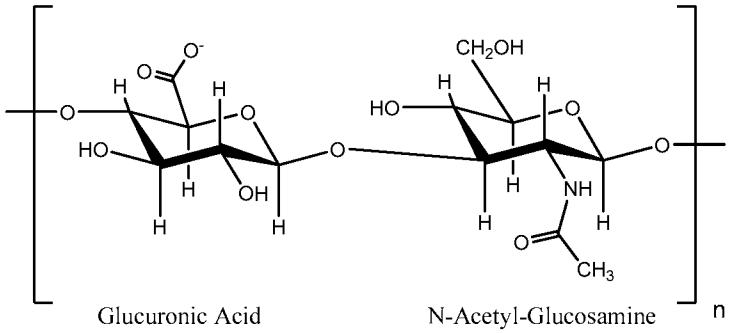
[0040] Phytic acid is a particularly preferred chelator for the purposes of the present invention. As used herein, the term "phytic acid" refers to inositol hexaphosphate ((2,3,4,5,6-pentaphosphonooxycyclohexyl) dihydrogen phosphate; also known as "IP6";) (see, Thorne Research, Inc. (2002) "*Inositol Hexaphosphate. Monograph*," Altern. Med. Rev. 7(3):244-248; Vucenik, I. *et al.* (2006) "*Protection Against Cancer By Dietary IP6 And Inositol*," Nutr. Cancer. 55(2):109-125; López, M.A. *et al.* (2004) "*Iron Availability: An Updated Review*," Int. J. Food Sci. Nutr. 55(8):597-606; Singh, R.P. *et al.* (2005) "*Prostate Cancer And Inositol Hexaphosphate: Efficacy And Mechanisms*," Anticancer Res. 25(4):2891-2903; Vucenik, I. *et al.* (2006) "*Cancer Inhibition By Inositol Hexaphosphate (IP6) And Inositol: From Laboratory To Clinic*," J. Nutr. 133(11 Suppl 1):3778S-3784S; Raboy, V. (2003) "*Myo-Inositol-1,2,3,4,5,6-Hexakisphosphate*," Phytochemistry. 64(6):1033-19043; Vohra, A. *et al.* (2003) "*Phytases: Microbial Sources, Production, Purification, And Potential Biotechnological Applications*," Crit. Rev. Biotechnol. 23(1):29-60; Fox, C.H. *et al.* (2002) "*Phytic Acid (IP6), Novel Broad Spectrum Anti-Neoplastic Agent: A Systematic Review*," Complement Ther. Med. 10(4):229-234; Grases, F. *et al.* (1999) "*Phytate (IP6) Is A Powerful Agent For Preventing Calcifications In Biological Fluids: Usefulness In Renal Lithiasis Treatment*," Anticancer Res. 19(5a):3717-3722; Jariwalla, R.J. (1999) "*Inositol Hexaphosphate (IP6) As An Anti-Neoplastic And Lipid-Lowering Agent*," Anticancer Res. 19(5a):3699-3702; Katayama T. (1999) "*Hypolipidemic Action Of Phytic Acid (IP6): Prevention Of Fatty Liver*," Anticancer Res. 19(5a):3695-3698). The structure of phytic acid is provided below:



[0041] Phytic acid is found in substantial amounts in whole grains, cereals, legumes, nuts, and seeds, and is the primary energy source for the germinating plant (Graf, E. (1983)

"*Applications of Phytic Acid*," J. Am. Oil. Chem. Soc 60:1861-1867). Phytic acid and its lower phosphorylated forms (such as IP3) are also found in most mammalian cells, where they assist in regulating a variety of important cellular functions (Szwergold, B.S. *et al.* (1987) "*Observation Of Inositol Pentakis- And Hexakisphosphates In Mammalian Tissues By ^{31}P NMR*," Biochem. Biophys. Res. Commun. 264:874-881). Phytic Acid is preferably provided in the form of rice bran (Srinivasan, M. (2007) "*Ferulic Acid: Therapeutic Potential Through Its Antioxidant Property*," J. Clin. Biochem. Nutr. (2007) 40(2):92-100; Kim, M.J. *et al.* (2007) "*Ferulic Acid Supplementation Prevents Trimethyltin-Induced Cognitive Deficits in Mice*," Biosci. Biotechnol. Biochem. (2007) 71(4):1063-1068). Phytic acid is reported to function as an antioxidant by chelating divalent cations such as copper and iron, thereby preventing the generation of reactive oxygen species responsible for cell injury and carcinogenesis (Harland, B.F. *et al.* (1987) "*Phytate In Foods*," World Rev. Nutr. Diet 52:235-259). The preferred composition dosage of phytic acid (for example, as rice bran) is in the range of 2000-12,000 mg.

[0042] As used herein, the term "hyaluronic acid" (also known as hyaluronan) refers to linear polymer composed of repeating disaccharides of D-glucuronic acid and D-N-acetylglucosamine, linked together via alternating β-1,4 and β-1,3 glycosidic bonds ([−β (1,4)-GlcUA−β (1,3)-GlcNAc−]$_n$). Hyaluronic acid can be 25,000 disaccharide repeats (n) in length:

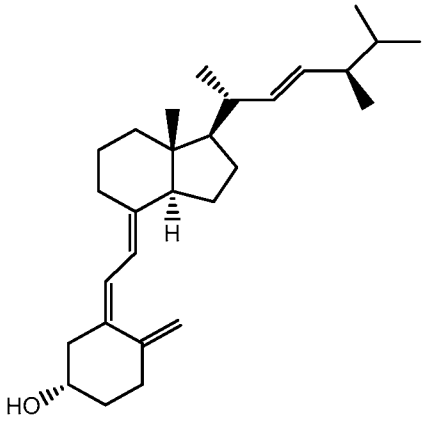


[0043] Hyaluronic acid is a water-retaining molecule that is generated naturally in the human body but in decreasing amounts as the body ages. Hyaluronic acid is a multifunctional glycosaminoglycan that forms the basis of the pericellular matrix of cells. Hyaluronic acid is synthesized by 3 different but related enzymes (hyaluronan synthases: HAS1, HAS2 and HAS3 (Weigel, P.H. *et al.* (1997) "*Hyaluronan Synthases*," J. Biol. Chem. 272:13997-14000; Tammi, M.I. *et al.* (2002) "*Hyaluronan And Homeostasis: A Balancing Act*," J. Biol. Chem. 277:4581-4584; Kakehi, K. *et al.* (2003) "*Hyaluronic Acid: Separation And Biological Implications*," J. Chromatogr. B Analyt. Technol. Biomed. Life Sci. 797(1-2):347-355; Radaeva, I.F. *et al.* (1997) "*Hyaluronic Acid: Biological Role, Structure, Synthesis, Isolation, Purification, And Application (Review)*" Prikl. Biokhim. Mikrobiol. 33(2):133-137; Stoolmiller, A.C. *et al.*

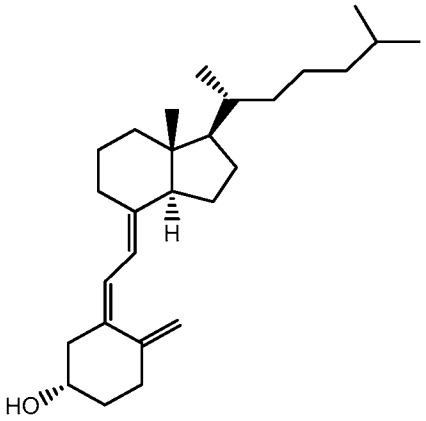
(1970) "*The Biosynthesis Of Hyaluronic Acid By Group A Streptococcus*," Expos. Annu. Biochim. Med. 30:65-78). U.S. Patent Application Publication 2004/0234497 discloses the use of hyaluronic acid for cancer drug delivery. The entire disclosure of that publication is incorporated herein by reference.

[0044] Hyaluronic acid has been traditionally extracted from rooster combs, from bovine or fish vitreous humor, from microbial production or from other sources (Rangaswamy, V. *et al.* (Epub 2007 Oct 24) "*An Efficient Process For Production And Purification Of Hyaluronic Acid From Streptococcus Equi Subsp. Zooepidemicus*," Biotechnol. Lett. 30(3):493-496; Gao, F. *et al.* (2006) "*Preparation And Characterization Of Hyaluronan Oligosaccharides For Angiogenesis Study*," J. Biomed. Mater. Res. B Appl. Biomater. 78(2):385-392; Blank, L.M. *et al.* (2005) "*Stable Production Of Hyaluronic Acid In Streptococcus Zooepidemicus Chemostats Operated At High Dilution Rate*," Biotechnol. Bioeng. 90(6):685-693; Kakehi, K. *et al.* (2003) "*Hyaluronic Acid: Separation And Biological Implications*," J. Chromatogr. B Analyt. Technol. Biomed Life Sci. 797(1-2):347-355; Volpi, N. *et al.* (2003) "*Purification And Characterization Of Hyaluronic Acid From The Mollusc Bivalve Mytilus Galloprovincialis*," Biochimie 85(6):619-625; Tawada, A. *et al.* (2002) "*Large-Scale Preparation, Purification, And Characterization Of Hyaluronan Oligosaccharides From 4-Mers To 52-Mers*," Glycobiology. 2002 Jul;12(7):421-426; Mahoney, D.J. *et al.* (2001) "*Novel Methods For The Preparation And Characterization Of Hyaluronan Oligosaccharides Of Defined Length*," Glycobiology. 11(12):1025-1033; Mcdonald, J. *et al.* (2002) "*Hyaluronan Minireview Series*," J. Biol. Chem. 277(7):4575-4579; Radaeva, I.F. *et al.* (1997) "*Hyaluronic Acid: Biological Role, Structure, Synthesis, Isolation, Purification, And Application (Review)*" Prikl. Biokhim. Mikrobiol. 33(2):133-137). Most preferably, the hyaluronic acid of the present invention is obtained from rooster combs. Hyaluronic acid is widely available commercially, and such preparations are suitable for the purposes of the present invention. Preferably, the compositions of the present invention will provide a composition dosage of hyaluronic acid of from about 1 mg to about 400 mg, more preferably from about 50 mg to about 200 mg.

[0045] As used herein, the term "Vitamin D" refers to a fat-soluble prohormone. Two major forms of vitamin D are vitamin D_2 (ergocalciferol) and vitamin D_3 (cholecalciferol) (DeLuca, H.F. *et al.* (1998) "*Mechanisms And Functions Of Vitamin D*," Nutr. Rev. 56:S4-S10):



Ergocalciferol (Vitamin D_2)



Cholecalciferol (Vitamin D_3)

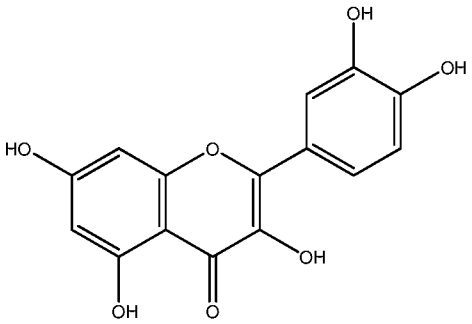
[0046] Vitamin D exhibits many biological actions. While vitamin D is widely known for its ability to stave off bone disease (rickets in growing children, osteoporosis in senior adults), it is becoming a central player in the battle against cancer. Regarding the role of vitamin D in immunity and cancer, vitamin D improves the chemotactic (affinity for) neutrophils to mobilize and migrate. Patients with rickets due to vitamin D deficiency are observed to have sluggish neutrophils that cannot migrate properly. Vitamin D stimulates the maturation of monocytes to macrophages. This results in an enlarged army of immune fighting cells to mount against tumors. Vitamin D is widely available commercially, and such preparations are suitable for the purposes of the present invention.

[0047] Vitamin D is essential for optimal muscle, bone, brain, immune and cardiovascular health and is undergoing re-discovery by aging researchers worldwide. Vitamin D supplementation up to 2000 IU has been shown to significantly reduce mortality rates, thus adding vitamin D to the lineup of molecules now considered to be true longevity factors (Autier, P. *et al.* (2007) "*Vitamin D Supplementation And Total Mortality: A Meta-Analysis Of Randomized Controlled Trials*," Arch Intern Med. 167(16):1730-1737). Its anti-calcifying properties (Zittermann, A. *et al.* (2007) "*Vitamin D And Vascular Calcification*," Curr. Opin. Lipidology 18(1):41-46) qualify vitamin D as another powerful agent that inhibits progressive overmineralization in the human body with advancing age and parallels the action of other mineral chelators in the compositions of the present invention. While the 1200 IU dose is three times more than the Recommended Daily Allowance, it is well within the Safe Upper Limit established by the National Academy of Sciences (2000 IU) and corresponds with a supplemental dosage recently found to be beneficial in a human clinical trial (Lappe, J.M. *et al.* (2007) "Vitamin D and calcium supplementation reduces cancer risk: results of a randomized trial," Amer. J. Clin. Nutr. 85(6):1586-1591). A 2,000 IU dosage is roughly equivalent the natural vitamin D3 produced by 15-30 minutes of total-body summer sun exposure at noontime

at a southern latitude, for which no side effects have been reported. Preferably, the compositions of the present invention will provide a composition dosage of vitamin D of from about 100 IU to about 100,000 IU, more preferably from about 1,000 IU to about 50,000 IU.

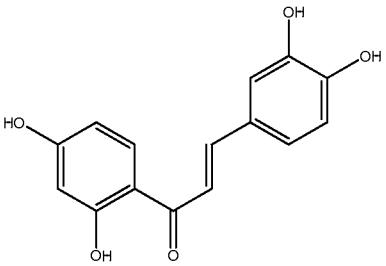
[0048] The compositions of the present invention may contain additional components, including additional active components that act to enhance resveratrol biological activity and inactive compounds (*e.g.*, flavorants, sweeteners, dyes, vitamins, amino acids (*e.g.*, lysine, proline, etc.), minerals, nutrients, etc.).

[0049] In particular, quercetin (3,3',4',5,7-pentahydroxy-2-phenylchromen-4-one)

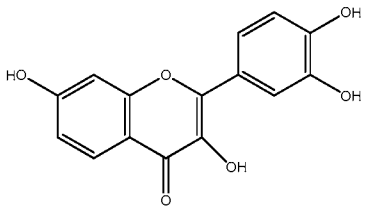


Quercetin

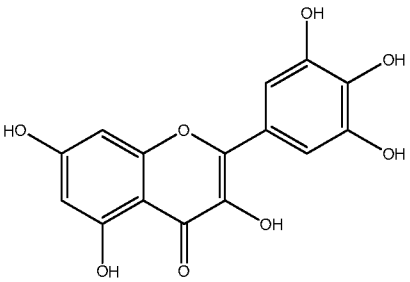
[0050] butein, fisetin, myricetin, kaempferol, cis-resveratrol or piceatannol may be added to the compositions.



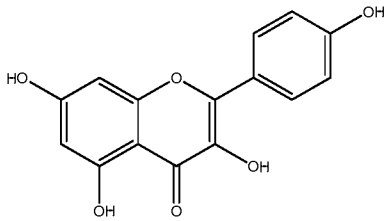
Butein [3,4,2',4'-tetrahydroxychalcone]



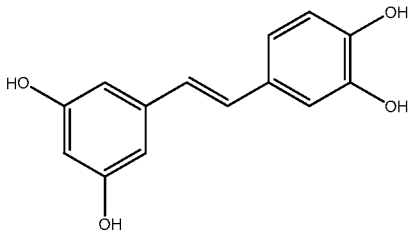
Fisetin [3,3'4',7-Tetrahydroxyflavone]



Myricetin [3,5,7-Trihydroxy-2-(3,4,5-trihydroxyphenyl)-4-chromenone]



Kaempferol [3,5,7-trihydroxy-2-(4-hydroxyphenyl)-4H-1-benzopyran-4-one]



Piceatannol [5-[(E)-2-(3,4-dihydroxyphenyl)vinyl]benzene-1,3-diol]
[also known as 3,4,3',5'-tetrahydroxy-trans-stilbene]

[0051] Such compounds are described, for example by Stecher, G. *et al.* (2001) ("*Determination Of Flavonoids And Stilbenes In Red Wine And Related Biological Products By HPLC And HPLC-ESI-MS-MS*," Fresenius J. Anal Chem. 2001 Sep;371(1):73-80).

[0052] Resveratrol is glucuronated in the human liver, which may reduce its bioavailability. Flavonoids, such as quercetin, inhibit resveratrol glucuronidation and thus may act to improve resveratrol bioavailability (see, de Santi, C. *et al.* (2000) "*Glucuronidation Of Resveratrol, A Natural Product Present In Grape And Wine, In The Human Liver*," Xenobiotica 30(11):1047-1054); De Santi, C. *et al.* (2000) "*Sulphation Of Resveratrol, A Natural Compound Present In Wine, And Its Inhibition By Natural Flavonoids*," Xenobiotica 30(9):857-866; De Santi, C. *et al.* (2000) "*Sulphation Of Resveratrol, A Natural Product Present In Grapes And Wine, In The Human Liver And Duodenum*," Xenobiotica 30(6):609-617). Quercetin may also act synergistically with resveratrol or independently of resveratrol to provide beneficial function (Kampkötter, A. *et al.* (Epub 2007 Oct 16) "*Increase Of Stress Resistance And Lifespan Of Caenorhabditis Elegans By Quercetin*," Comp. Biochem. Physiol. B Biochem. Mol. Biol. 149(2):314-323). (See also, Kaindl, U. *et al.* (2008) "*The Dietary Antioxidants Resveratrol And Quercetin Protect Cells From Exogenous Pro-Oxidative Damage,*" Food Chem. Toxicol. 46(4):1320-1326; Melzig, M.F *et al.* (2002) "*Induction Of Neutral Endopeptidase And Angiotensin-Converting Enzyme Activity Of Sk-N-Sh Cells In Vitro By Quercetin And Resveratrol,*" Pharmazie. 57(8):556-558; Hsu, C.L. *et al.* (2006) "*Induction Of Cell Apoptosis In 3T3-L1 Pre-Adipocytes By Flavonoids Is Associated With Their Antioxidant Activity*," Molec. Nutr. Food Res. 50(11):1072-1079; Chan, M.M. *et al.* (2000) "*Synergy Between Ethanol And Grape Polyphenols, Quercetin, And Resveratrol, In The Inhibition Of The Inducible Nitric Oxide Synthase Pathway*," Biochem. Pharmacol. 60(10):1539-1548; Nicholson S.K. *et al.* (2008) "*Effects Of Dietary Polyphenols On Gene Expression In Human Vascular Endothelial Cells*," Proc. Nutr. Soc. 67(1):42-47; Lemos, C. *et al.* (2007) "*Modulation Of Folate Uptake In Cultured Human Colon Adenocarcinoma Caco-2 Cells By Dietary Compounds*," Eur. J. Nutr 46(6):329-336).

[0053] Emulsifiers, fillers, binding agents, and the like may also be included in the compositions of the present invention.

[0054] In one embodiment, the compositions of the present invention comprise a novel combination of: small molecules such as quercetin and resveratrol with widespread preventive and therapeutic health properties; and/or collagen-building nutrients (such as vitamin C-ascorbate, lysine, proline, etc.); and a glycosaminoglycan such as a shortened (low molecular weight) chain of hyaluronic acid (HA) or its singular components (glucosamine, glucuronate) or chondroitin sulfate, which are linear disaccharides (sugar-like molecules) that serve as structural components of cartilage, but in this combination serve as synergistic co-healing agents in non-cellular (connective) tissue that surrounds living cells. The combination of glycosaminoglycans (hyaluronan, glucuronate or chondroitin) and/or ascorbate, lysine or proline, to encourage the generation of collagen, and small molecules, that operate on intra-cellular basis, comprise therapeutic or preventive action that encompasses the total tissue matrix. The combination of the present invention is intended for human or animal oral intake as a dietary supplement. In a sub-embodiment thereof, such compositions may comprise a combination of resveratrol and hyaluronan in a dietary supplement that serves to heal a variety of illnesses including some cancers. Resveratrol is known to be an anti-cancer molecule and to have other healing and longevity enhancing properties. Hyaluronan (hyaluronic acid, HA) is taken as an oral supplement or can be given intravenously to target cancer cells. When combined with or attached to other molecules, hyaluronan will deliver other anti-cancer and healing agents such as resveratrol to tumor sites. The combination may or may not include a chelating agent, an antioxidant and/or an emulsifier as described in my above-referenced co-pending patent application. When encapsulated or otherwise applied together, with or without those additives, resveratrol and HA have powerful healing properties for animals and humans.

[0055] Most preferably, the compositions of the present invention stabilize resveratrol specific activity such that the resveratrol of the compositions has a specific activity that is greater than that of resveratrol maintained in the presence of oxygen gas, or maintained in the absence of a chelator, hyaluronic acid, or vitamin D. Preferably, the amounts of the non-resveratrol constituents of the compositions will stabilize the composition's resveratrol so that it exhibits at least 10% more activity, at least 20% more activity, at least 50% more activity, at least 2-times the activity, at least 5-times the activity, or at least 10-times the activity of resveratrol maintained in the presence of oxygen gas, or maintained in the absence of a chelator, hyaluronic acid, or vitamin D and so that it remains capable of exhibiting such specific activity over extended periods (for example, 1, 2, 4, 6, 10, 12, 18, 24, or 36 months or

longer) at ambient conditions of temperature and humidity (*i.e.*, without need for special precautions as to temperature or humidity).

D. Packaging of the Preferred Compositions of the Present Invention

[0056] Resveratrol is typically unstable to light and oxidation (Shaanxi University of Science & Technology, Xianyang China (2007) "*Study On The Stability Of Resveratrol In Rhizoma Polygoni cuspidate*," Zhong Yao Cai. 30(7):805-80). The resveratrol of the present invention is preferably prepared, packaged and/or stored in a manner that maximizes its specific activity. It is preferred to prepare, package and/or store resveratrol in low light (or in the dark) and/or in low oxygen, so as to minimize light-induced degradation (*e.g.*, photo-isomerization) or oxygen-induced degradation. The preferred compositions of the present invention are formulated as dietary supplements for oral ingestion in the form of a pill, lozenge, capsule, elixir, syrup, etc. Other modalities of administration may alternatively be employed (*e.g.*, intranasal, parenteral, intravenous, intraarterial, topical, etc.).

[0057] In a first example of such preferred packaging, the compositions of the present invention are formulated as air-tight capsules in which encapsulation is conducted so as to prevent or minimize exposure to oxygen. In one embodiment, such encapsulation is conducted in an oxygen-free environment. For example, the components of the compositions of the present invention may be inserted into a capsule in an inert gas (*e.g.*, nitrogen, argon, etc.) environment. Preferably, a nitrogen bubble (*e.g.*, 5-20% of the capsule volume) may be introduced into the capsule to further stabilize and protect the components against oxidation (see, PCT Publication No. WO 01/08631, herein incorporated by reference). That international application has a corresponding U. S. patent application. Suitable capsules useful in the encapsulation of resveratrol and other oxidation prone ingredients of dietary supplements include Licaps® (Capsugel), an air-tight gelatin capsule. The presence of phytic acid, which has the ability to protect the components from metal-induced oxidation, augments such anti-oxidation precautions. A particularly preferred example of such a resveratrol-containing composition is Longevinex® (Resveratrol Partners, LLC, San Dimas, CA), which comprises resveratrol and phytic acid. Longevinex® contains as active ingredients (per capsule): 5 mg Vitamin E (as mixed tocopherols), 215 mg total resveratrol (obtained from French red wine and giant knotwood (*Polygonum cuspidatum*), and providing 100 mg of trans-resveratrol), 25 mg quercetin dihydrate, 75 mg phytic acid (rice bran extract), 380 mg rice bran oil, 55 mg sunflower lecithin.

[0058] Once a composition has been sealed into an air-tight capsule, it is important to maintain a low or no-oxygen environment in the packaging surrounding the capsules in order to

protect the composition from oxidation should a break or leak occur in the sealed capsule. Therefore, an oxygen absorbing packette is preferably employed to reduce the presence of free oxygen. Vacuum or nitrogen-flushed packaging (bottles, pill cases, etc.) in air-tight materials is desirable.

[0059] In an alternative embodiment, the components and compositions of the present invention may be prepared as a microencapsulated process (see, generally, Rubiana, M. *et al.* (2004) "*Drug Delivery Systems: Past, Present, and Future*," Current Drug Targets, 5(5):449-455). Micro-encapsulation is a process by which tiny particles or droplets (ranging in size from a few nanometers to one micron) are coated with a protective layer to create small capsules with controlled properties. Suitable micron-sized, encapsulated, preparations can be obtained using the microencapsulation processes of Maxx Performance Inc. (Chester, NY), Blue California (Rancho Santa Margarita, CA), Southwest Research Institute (San Antonio, TX), Coating Place, Inc. (Verona, WI), Microtek Laboratories (Dayton, OH), Particle Sciences, Inc. (Bethlehem, PA), etc. 3rd-generation Longevinex® ("Longevinex-3®") (Resveratrol Partners, LLC), which contains Vitamin D3, Vitamin E, Resveratrol, Quercetin, and Phytic Acid is a particularly preferred microencapsulated form of the compositions of the present invention.

[0060] The present invention further comprises a practical method of stabilizing quercetin and other easily oxidized dietary supplement ingredients which may come in contact with oxidizing metals.

E. Utility of the Compositions of the Present Invention

[0061] The compositions of the present invention enhance resveratrol's specific activity. The compositions of the present invention therefore find utility in the treatment of diseases (or in the amelioration of the symptoms of diseases) such as cardiovascular disease, cancer, macular degeneration, aging, neurodegenerative diseases (*e.g.*, Alzheimer's Disease, Parkinson's Disease, etc.) and inflammation in which the modulation of expression of "survival/longevity" genes and/or "damage inducing" genes is desired. Over time, as minerals such as calcium and iron accumulate in the human body, genes respond in deleterious ways. Liu, Y. *et al.* (2005) "*Global Genomic Approaches To The Iron-Regulated Proteome*," Ann. Clin. Lab. Sci. 35(3):230-239; Templeton, D.M. *et al.* (2003) "*Genetic Regulation Of Cell Function In Response To Iron Overload Or Chelation*," Biochim. Biophys. Acta. 1619(2):113-124; Ikeda, H. *et al.* (1992) "*Evidence That An Iron Chelator Regulates Collagen Synthesis By Decreasing The Stability Of Procollagen mRNA*," Hepatology 15(2):282-287. The present invention has particular utility in the treatment of macular degeneration, cancer and the conditions of aging.

1. Macular Degeneration

[0062] The prolongation of the human lifespan over the past few decades in the US has spawned the proliferation of macular degeneration, an age-related eye disease. While not resulting in total vision loss, the disease robs older adults of their central vision used for reading as well as color vision. Macular degeneration affects the visual center of the eye, called the macula. The macula is part of the retina where color-vision cells (cones) are located.

[0063] Macular degeneration is a progressive, age-related disease that can be broken down into four stages:

1. Beginning in about the third decade of life, the inability of the "garbage cleaning" cells, called the retinal pigment epithelia (RPE), to engulf and remove cellular debris from the back of the eyes, results in the formation of small microscopic deposits called lipofuscin (ly-poh-fus-kin). Lipofuscin is from by iron and copper-induced oxidation of cellular debris and its accumulation correlates with premature aging and shortened lifespan of organisms. The prevalence of macular degeneration is greater in Caucasians than persons with darkly-pigmented skin and Caucasians have more lipofuscin deposits in their retinas. Some of this cellular debris in the retina is comprised of used-up vitamin A that is shed from night-vision (rod) cells each morning in the human eye. The failure of the RPE cells to function results from accumulation of iron and calcium within the RPE.
2. Later, in about the fifth decade of life, there is progressive calcification of an underlying cellophane-thin retinal layer called Bruch's membrane, which resides between the RPE and the blood supply layer (choroid). While drusen that forms within the retina is partially composed of cholesterol, this lipid does not originate from the blood circulation or the liver where most cholesterol is produced. Calcifications within Bruch's membrane further impairs the exit of lipids (fats), protein, and cellular debris, from the photoreceptor layer, which results in the formation of yellow spots called drusen on the retina. Drusen can be observed during an eye examination using an ophthalmoscope. There is currently no method of removing drusen.
3. The death of the RPE cells is the third stage of this progressive disease. This is sometimes called RPE dropout. As the RPE cells are either impaired or have died, and Bruch's membrane is clogged with calcium, the photoreceptors then cannot be nourished and also begin to die off. There is currently no treatment for stages 1-3 of macular degeneration. Stage 1-3 is called the "dry" form of macular degeneration because it has not resulted in hemorrhage or edema or new blood vessel formation. About 85% of macular degeneration patients have the "dry" form of this disease.

4. As breaks in Bruch's membrane occur, or Bruch's membrane becomes totally calcified, the photoreceptor layer is deprived of oxygen and new blood vessels form (called neovascularization) which can invade the photoreceptor layer in the macula and impair vision; or there may be leakage of blood serum or frank release of red blood cells, which results in edema or hemorrhage. This is the more advanced and sight-threatening form of macular degeneration, often called "wet" macular degeneration because of the presence of the leakage of blood serum or red blood cells into the photoreceptor layer. This stage of the disease, if caught early, can be treated with laser beams, which can seal up leaky blood vessels. However, this treatment is only effective in delaying the progression of the disease, not curing it.

[0064] The cell cleansing process facilitated by the lysosomes cannot keep up with the accumulation of metabolic waste over a lifetime. The parafoveal ring, where rod cell density is highest, and therefore more discs of used-up vitamin A are shed, is where macular degeneration begins, and where the highest concentration of lipofuscin is observed in the retina. Eventually, the RPE cells die off with advancing age, which increases the burden on the remaining RPE cells to maintain a healthy retina.

[0065] In the past, lipofuscin has been considered a harmless wear-and-tear byproduct of cellular metabolism. One aspect of the present invention relates to the recognition that lipofuscin, which forms from iron and copper-induced oxidation, and hardens within lysosomal bodies within retinal pigment epithelial cells, sensitizes the retina to damage by mild amounts of radiation and oxidation. The retina becomes increasingly sensitive to blue-light damage with advancing age. Drusen formation within the retina is associated with RPE cell inability to produce superoxide dismutase, an endogenous antioxidant enzyme. Mice deficient in superoxide dismutase develop features that are typical of age-related macular degeneration in humans. Superoxide dismutase protects retinal cells against unbound (free) iron. High iron diets and cellular environments have been shown to reduce superoxide dismutase activity.

[0066] Retinal photoreceptors and retinal pigment epithelial cells are believed to be especially vulnerable to damage by low-molecular weight complexes of iron. Since antioxidants in the blood circulation may not always be able to cross the blood-retinal barrier, the retina produces its own protective antioxidants that bind iron. Iron chelators inhibit the adverse effects of unbound (free) iron (not bound to proteins). Heme oxygenase also serves in a similar manner to iron chelators to prevent retinal damage induced by loose iron.

[0067] Numerous agents have been used experimentally to clear up lipofuscin and drusen. Statin drugs, commonly used to reduce blood serum levels of cholesterol, have also been tested

to prevent lipofuscin deposits in animals. Statin drugs reduced lipofuscin formation but were toxic to the liver and brought about the early death of these animals. Piracetam, a derivative of the neurotransmitter GABA, now available as a dietary supplement, has been used successfully to reduce lipofuscin formation in brain tissues. Sorbinil is an enzyme inhibiting drug (aklose reductase inhibitor) that underwent unsuccessful human trials in the 1990s to prevent retinal problems associated with diabetes. Sorbinil has been shown to partially reduce lipofuscin deposits in the retinal pigment epithelium cells of rodents. Hydergine is a drug used to treat senile dementia. In a rodent study, hydergine was reported to have reduced brain lipofuscin levels, but also led to the early demise of the animals. The East Indian spice turmeric contains an antioxidant molecule called curcumin. Curcumin has been used in an experimental mouse study to reduce lipofuscin in the brain. Purslane is a flowering plant rich in magnesium, beta carotene and omega-3 oil. The provision of purslane to mice has been shown to reduce lipofuscin deposition in the brain of mice.

[0068] In a lab dish study, sulforaphane, an antioxidant molecule found in Brussels sprouts and broccoli in 1992, has been used successfully to reduce lipofuscin deposits in RPE cells exposed to blue light.

[0069] Intraperitoneal administration of lipoic acid to aged rats leads to a reduction and elevation in lipofuscin and enzyme activity, respectively, in the cortex, cerebellum, striatum, hippocampus, and hypothalamus of the brain. These results suggest that lipoic acid, a natural metabolic antioxidant, should be useful as a therapeutic tool in preventing neuronal dysfunction in aged individuals. Lipoic acid, a natural antioxidant produced within living tissues, and also available as a dietary supplement, has been shown to protect RPE cells from oxidative damage in lab dish studies.

[0070] Lipofuscin formation dramatically increases in brain tissues following alcohol consumption. Supplementation with high-dose grape seed flavonols prevents increase lipofuscin formation. Lipofuscin is an end-product of lipid peroxidation which dramatically increases following ethanol consumption.

[0071] Oolong and green tea drinks reverse the cognitive impairment and lipofuscin formation in mice. Epigallocatechin-3-gallate (EGCG), the major constituent of green tea, upregulates the activity of heme oxygenase in lab dish studies. Heme oxygenase is a protective enzyme against iron-induced oxidation, which occurs in the retina.

[0072] It has been shown that the provision of supplemental estrogen decreases lipofuscin deposition in brain tissues. In a lab dish study, the provision of lutein and zeaxanthin to RPE

cells reduced lipofuscin formation. In rodents given supplemental acetyl-L-carnitine, a decline in lipofuscin deposits has been measured in brain cells.

[0073] U. S Patent No. 5,747,536 describes the combined therapeutic use of L-carnitine, lower alkanoyl L-carnitines or the pharmacologically acceptable salts thereof, with resveratrol, resveratrol derivatives or resveratrol-containing natural products, for producing a medicament for the prophylaxis and treatment of cardiovascular disorders, peripheral vascular diseases and peripheral diabetic neuropathy.

[0074] Melanin is an iron-binding antioxidant in the retina. As melanin levels decline in the retina with advancing age, there is a greater accumulation of lipofuscin.

[0075] In one embodiment, the present invention relates to a composition comprising a combination of:

(a) A chelator such as inositol hexaphosphate (IP6), trans resveratrol, quercetin, or any polyphenol or bioflavonoid for metal(s) such as iron, copper, heavy metals;
(b) A calcium chelator, such as inositol hexaphosphate (IP6);
(c) A heme oxygenase activator, such as trans resveratrol, piceatannol, or any of resveratrol's natural analogs, or similar small molecules such as fisetin, myricetin, quercetin or other bioflavonoids;
(d) An agent that lowers the affinity of oxygen for red blood cells, such as inositol hexaphosphate (IP6); and, optionally
(e) Other antioxidants such as vitamin E, lutein/zeaxanthin, alpha lipoic acid.

[0076] The formulation functions to:

(1) Limit oxidation in retinal tissues (photoreceptors, retinal pigment epithelial cells (RPE), choroid, specifically mitochondria and lysosomes in RPE cells);
(2) Inhibit accumulation of lipofuscin deposits;
(3) Inhibit formation of drusen; and
(4) Limit calcifications to retinal tissues, especially Bruch's membrane.

2. Cancer

[0077] A major challenge in cancer therapy is to selectively target cytotoxic agents to tumor cells (Luo, Y. *et al.* (2000) "*A Hyaluronic Acid-Taxol Antitumor Bioconjugate Targeted To Cancer Cells*," Biomacromolecules 1(2):208-218). To decrease undesirable side effects of small molecule anticancer agents, many targeting approaches have been examined. One of the most promising methods involves the combination or covalent attachment of the cytotoxin with a macromolecular carrier, and in particular with hyaluronic acid (Luo, Y. *et al.* (1999)

"*Synthesis And Selective Cytotoxicity Of A Hyaluronic Acid-Antitumor Bioconjugate*," Bioconjug. Chem. 10(5):755-763; Luo, Y. *et al.* (2000) "*A Hyaluronic Acid-Taxol Antitumor Bioconjugate Targeted To Cancer Cells*," Biomacromolecules 1(2):208-218; Luo, Y. *et al.* (1999) "*Hyaluronic Acid-N-Hydroxysuccinimide: A Useful Intermediate For Bioconjugation*," Bioconjug. Chem. 12(6):1085-1088; Luo, Y. *et al.* (2002) "*Targeted Delivery Of Doxorubicin By HPMA Copolymer-Hyaluronan Bioconjugates*," Pharm. Res. 19(4):396-402).

[0078] In one embodiment, the present invention relates to a resveratrol- and hyaluronic acid-containing composition for the treatment of cancer comprising: resveratrol, hyaluronan, and optionally vitamin D and/or IP6. It is believed that these components act synergistically with one another to mediate an effect in curing and/or in preventing cancer in humans and/or in improving immunity (*e.g.*, immune system response) in patients threatened by tumors. This aspect of the present invention is based in part upon the recognition that natural molecules can boost cancer immunity, possibly in a manner similar to that observed in cancer-proof mice.

[0079] Upon provision with such composition, the sentinels of the innate immune system, dendritic cells, can be alerted and neutrophils, macrophages and natural killer cell activity can be significantly enhanced. The enhancement of vitamin D receptors via resveratrol is yet another major advantage of a combination approach to treat or prevent cancer. This approach appears to be more appropriate for senior adults, the highest risk group for cancer, who are often immune-compromised due to poor nutrition or lack of nutrient absorption. The fact that this therapy can now be immediately measured for effectiveness by non-invasive cancer cell counting technology means that expensive and equivocal tests on animals may not be required to prove efficacy.

[0080] Vitamin D exhibits many biological actions. While vitamin D is widely known for its ability to stave off bone disease (rickets in growing children, osteoporosis in senior adults), it is becoming a central player in the battle against cancer. Only recently is it also gaining attention as an antibiotic. Vitamin D-deficient mice exhibit a defective response from phagocyte cells in the face of infection or inflammation. Vitamin D deficiency is frequently associated with recurrent infections. Only about half of the macrophage cells accumulate at the site of inflammation in vitamin D-deficient animals compared to animals whose vitamin D levels are adequate.

[0081] To delve deeper into the role of vitamin D in immunity and cancer, vitamin D improves the chemotactic (affinity for) neutrophils to mobilize and migrate. Patients with rickets due to vitamin D deficiency are observed to have sluggish neutrophils that cannot migrate properly. Vitamin D stimulates the maturation of monocytes to macrophages. This

results in an enlarged army of immune fighting cells to mount against tumors. Greater attention is now being given to vitamin D as an anti-cancer weapon because of studies which show supplemental vitamin D drastically reduces the risk for all types of cancer. A study that employed 1100 IU of vitamin D3 produced a 60-77% reduction in cancer risk among women in Nebraska in just a 4-year period.

[0082] Even though cancer risk is lowest in sunnier and Equatorial areas geographically, where vitamin D levels are higher in sun-exposed populations, the protective effect of vitamin D against cancer has been repeatedly dismissed or discounted. The consumption of vitamin D orally eliminates the concern of skin cancer emanating from overexposure to unfiltered sun rays. One of the latest analyses shows that the risk of colon cancer can be halved by taking 2000 IU of vitamin D per day and that the risk for breast cancer can be halved by taking 3500 IU of vitamin D per day. The median dietary intake of vitamin D is only about 230 IU per day, so the prospect of food fortification or supplementation to prevent or treat cancer now becomes real.

[0083] In order for tissues to utilize and benefit from vitamin D they must have proteins in their outer coat (cell membrane) that are designed to receive and bind to vitamin D. For example, about 80% of human breast tumors produce vitamin D cell receptors, though gene expression (production) of vitamin D receptor is at low levels.

[0084] Vitamin D's ability to inhibit cancer may be heightened when it is aided by weak estrogen-like molecules in the diet. Resveratrol, an estrogen-like molecule commonly found in red wine, upregulates the vitamin D receptor in breast cancer cells without increasing cancer growth. Resveratrol, in effect, can sensitize breast cancer cells to the anti-cancer properties of vitamin D.

[0085] Laboratory experiments show that low-dose vitamin D3 does not reduce breast tumor cell growth but when combined with resveratrol, tumor cell numbers declines by 40%. At higher concentrations vitamin D3 reduces the number of breast cancer cells in a lab dish by about 25%, and this decline improves to 50% when combined with resveratrol. Whereas estrogen increases vitamin D receptor gene expression, it also stimulates breast tumor growth. Resveratrol does not have this drawback. Resveratrol potentiates or "weaponizes" the cancer-inhibiting effect of vitamin D.

[0086] Furthermore, resveratrol by itself has been shown to calm the response of phagocytes to foreign invaders like germs and tumor cells. Resveratrol dampens production of reactive oxygen species (free radicals) and normalizes particle ingestion in macrophage cells.

Therefore, resveratrol prevents the over-response of immune cells that can produce autoimmunity.

[0087] Resveratrol blocks cancer in so many ways that it is difficult to find a pathway for cancer that is not obstructed by resveratrol. Resveratrol induces the cell energy compartments in tumor cells, called mitochondria, to release an enzyme called cytochrome C oxidase that usually leads to a cascade of other enzymes that induce programmed cell death, called apoptosis. But a recent experiment also shows that resveratrol releases cytochrome C from ovarian tumor cells that leads to rapid cell death via a process called autophagy, a process where enzymes produced inside the tumor cell actually digest its innards (kind of a form of intracellular cannibalism). This is a form of cell suicide that resveratrol activates in tumor cells, but not healthy cells.

[0088] The contribution of innate immunity in surveillance of tumors is comparatively neglected in cancer biology. Phagocytosis, or "cell eating" is the cornerstone of the innate immune response. Focus has been directed to dendritic cells which are believed to be sentinels of the innate immune response. A limited number of immune-boosting agents have been investigated.

[0089] Skepticism surrounds interest in innate immune approaches to cancer treatment. For example, patients taking immune-suppressing don't necessarily develop cancer with more frequency. However, this may be misunderstood. An over-responsive immune system may lead to more tissue and organ damage that can be mortal to cancer patients. Most of the drugs used for breast cancer therapy induce immune suppression.

[0090] Nature's most potent iron chelator is inositol hexaphosphate (IP6), which is found in seeds and the bran fraction of whole grains. A low dosage of IP6 has been found to suppress the growth of rhabdomyosarcoma cells by 50%. Removal of IP6 allows these tumor cells to recover and grow once again. IP6-treated mice with injected tumors exhibit tumors that are 50 times smaller than non-treated mice. IP6 has also been shown to reduce the growth of injected fibrosarcoma cells in mice and prolong their survival.

[0091] In examining the immune enhancing properties of IP6 it has been shown that it boosts production of free radicals (superoxide) and the cell digesting action of neutrophils in the presence of bacteria. IP6 increases the release of interleukin-8.

[0092] The action of natural killer cells, which are involved in tumor cell destruction, is enhanced by IP6.

[0093] In one embodiment, the hyaluronic acid of such composition is conjugated to a chemotherapeutic agent. The invention particularly pertains to such compositions in which the chemotherapeutic agent is taxol. The invention particularly pertains to such compositions that additionally and preferably comprise a chelator, and/or vitamin D. Most malignant solid tumors contain elevated levels of Hyaluronic Acid (Rooney, P. *et al.* (1995) "*The Role Of Hyaluronan In Tumour Neovascularization (Review)*," Int. J. Cancer 60(5):632-636) and these high levels of HA production provide a matrix that facilitates invasion (Hua, Q. *et al.* (1993) "*Internalization Of Hyaluronan By Chondrocytes Occurs Via Receptor-Mediated Endocytosis*," J. Cell. Sci. 106(Pt 1):365-375; Luo, Y. *et al.* (2000) "*A Hyaluronic Acid-Taxol Antitumor Bioconjugate Targeted To Cancer Cells*," Biomacromolecules 1(2):208-218). Thus chemotherapeutic agents that are conjugated to Hyaluronic Acid target tumor cells, and can provide an effective anti-tumor dosage at lower overall concentration.

[0094] In brief, a preferred method of conjugation entails forming an NHS (N-hydroxy-succimimide derivative of the chemotherapeutic agent. Such a derivative can be made by adding a molar excess of dry pyridine to a stirred solution of Taxol and succinic anhydride in CH_2Cl_2 at room temperature. The reaction mixture is then stirred for several days at room temperature and then concentrated in vacuo. The residue is dissolved in 5 ml of CH_2Cl_2 and the produced Taxol-2'-hemisuccinate can be purified on silica gel (washed with hexane; eluted with ethyl acetate) to give the desired product (Luo, Y. *et al.* (1999) "*Synthesis And Selective Cytotoxicity Of A Hyaluronic Acid-Antitumor Bioconjugate*," Bioconjug. Chem. 10(5):755-763).

[0095] The N-hydroxy-succimimide derivative of the chemotherapeutic agent is then conjugated to adipic dihydrazido-functionalized hyaluronic acid. Adipic dihydrazido-functionalized hyaluronic acid is preferably prepared as described by Pouyani, T. *et al.* (1994) ("*Functionalized Derivatives Of Hyaluronic Acid Oligosaccharides - Drug Carriers And Novel Biomaterials*," Bioconjugate Chem. 5:339-347); Pouyani, T. *et al.* (1994) ("*Novel Hydrogels Of Hyaluronic Acid: Synthesis, Surface Morphology, And Solid-State NMR*," J. Am. Chem. Soc. 116:7515-7522); Vercruysse, K.P. *et al.* (1997) ("*Synthesis And In Vitro Degradation Of New Polyvalent Hydrazide Cross-Linked Hydrogels Of Hyaluronic Acid*," Bioconjugate Chem. 8:686-694). Thus, hyaluronic acid is preferably dissolved in water and an excess of adipic dihydrazide (ADH). The pH of the reaction mixture is adjusted to 4.75 by addition acid. Next, 1 equivalent of 1-Ethyl-3-[3-(dimethylamino)-propyl]carbodiimide (EDCI) is added in solid form. The pH of the reaction mixture is maintained at 4.75 by addition of acid. The reaction is quenched by addition of 0.1 N NaOH to adjust the pH of reaction mixture to 7.0. The reaction mixture is then transferred to pretreated dialysis tubing (Mw cutoff 3,500) and dialyzed

exhaustively against 100 mM NaCl, then 25% EtOH/H2O and finally water. The solution is then filtered through 0.2 m cellulose acetate membrane, flash frozen, and lyophilized (Luo, Y. *et al.* (1999) "*Synthesis And Selective Cytotoxicity Of A Hyaluronic Acid-Antitumor Bioconjugate*," Bioconjug. Chem. 10(5):755-763).

3. Aging

[0096] Calcification and rusting are major accelerators of aging. The human body is composed of cells that must continually be replaced or renewed from within, and a gooey substance that fills space between cells called collagen or connective tissue which also must be continually regenerated. As the human body ages at the cellular level, there is a slow accumulation of cellular debris called lipofuscin. The formation of lipofuscin is facilitated by the progressive accumulation of iron and calcium within cell bodies called lysosomes and mitochondria. A cell cleansing and renewal process called autophagy prevents the accumulation of lipofuscin. Progressive inability to remove cellular debris results in declining cell function and then premature death of the cell. A young cell efficiently removes debris from within. An old cell cannot efficiently remove debris and accumulates lipofuscin.

[0097] Calcification and rusting of cells impairs the cleansing of cellular debris (lipofuscin) from cells by enzymes produced by lysosomes, and results in impairment of cellular energy (ATP) produced by the mitochondria within cells. The compositions of the present invention inhibit and/or reverse cellular aging and/or connective tissue aging, and in particular, inhibit and/or reverse cellular aging and/or connective tissue aging caused by an accumulation of major minerals (*e.g.*, iron, calcium, etc.). As a consequence, recipients of the compositions of the present invention exhibit enhanced longevity and enhanced cellular and connective tissue health and structure.

[0098] The human body ages at the cellular level by the slow accumulation of cellular debris called lipofuscin, which is facilitated by the progressive accumulation of iron and calcium within cell bodies called lysosomes and mitochondria. A cell cleansing and renewal process called autophagy prevents the accumulation of lipofuscin during the years of youthful growth, but this lysosomal mechanism declines once full growth is achieved due to accumulation of intracellular iron and calcium. Progressive inability to remove cellular debris results declining cell function and then premature death of the cell. A young cell efficiently removes debris from within. An old cell cannot efficiently remove debris and accumulates lipofuscin. The mitochondria, which provides cellular energy for lysosomal bodies to perform their cell cleansing activity, also becomes progressively calcified and ironized once childhood growth ceases. Only about 5% of mitochondria are functioning by age 80. Iron and calcium

chelators are proposed to remedy mitochondrial aging which impacts cellular functions such as lysosomal enzymatic activity

[0099] The human body ages within connective tissue by failure of cells called fibroblasts to regenerate collagen and hyaluronic acid, the latter being a space-filling, water-holding molecule. Collagen formation is facilitated by vitamins and amino acids in the diet (vitamin C, lysine, proline). Fibroblasts can be stimulated to produce hyaluronic acid by estrogen, made naturally in the body, and by estrogen-like molecules found in plants, called phytoestrogens, provided in the diet of by hyaluronic acid itself. Young females, by virtue of the ability to produce estrogen, exhibit thicker hair, smoother skin and more flexible joints, due to the abundance of hyaluronic acid. All of these being attributes of youthfulness.

[00100] The inability to regenerate hyaluronic acid results in tissues losing their physical integrity by virtue of loss of the space-filling properties of hyaluronic acid. Without adequate hyaluronic acid, a dehydrated state results and tissues shrink and shrivel up. For example, skin that is lacking hyaluronic acid will appear wrinkled and dry. Joint spaces will lack the cushioning and space-filling needed to prevent bone from rubbing on bone. The eyes will begin to shrink in size. Hair will thin due to the lack of hydration. These are the most prominent visible or cosmetic signs of aging.

[00101] In one embodiment, the present invention invention addresses both cellular and extracellular (connective tissue) aging, thus (a) preserving youthful function of living cells by removal of excess minerals, largely calcium and iron, from cells, this facilitating autophagy (cleanup of cellular debris, such as lipofuscin, via lysosomal enzymes) and (b) invigorating and preserving production of hyaluronan by stimulation of fibroblasts by HA, phytoestrogens (resveratrol, quercetin, genistein, are a few), to inhibition of degradation of HA by provision of metal chelators, such as phytic acid, ferulate, quercetin, resveratrol, etc.

[00102] In one embodiment, the present invention is a dietary supplement that addresses both cellular and non-cellular aging by its ability to:

(a) stimulate renewal of living cells from within via enzymatic degradation of cellular debris by intracellular lysosomal bodies. This is facilitated by the inclusion of metal (iron, copper, heavy metal) and calcium chelating molecules within the formula. Lysosomes lose their ability to enzymatically digest cellular debris with the progressive accumulation of iron, copper and other metals, and the crystallization of calcium.

(b) stimulate fibroblasts to produce hyaluronic acid at youthful levels again. This is accomplished by provision of orally-consumed molecules that stimulate fibroblasts to produce hyaluronic acid.

(c) metal chelating molecules that help maintain youthful lysosomal function are identified as antioxidants, like vitamin E or vitamin C, lipoic acid, metal chelators like IP6 phytate, quercetin, bioflavonoids or polyphenols, resveratrol. Resveratrol works by its ability to stimulate production of heme oxygenase, an enzyme that helps to control iron.

(d) molecules that inhibit crystallization of calcium are magnesium and IP6 phytate.

(e) orally consumed molecules that stimulate fibroblasts to produce hyaluronic acid are hyaluronic acid, glucosamine, chondroitin, or estrogen-like molecules such as genistein, lignans, hydroxytyrosol, or other molecules configured like estrogen. Orally consumed HA stimulates greater HA and chondroitin synthesis. Similarly, glucosamine stimulate fibroblasts to produce HA. Alternatively, or additionally, glucosamine stimulates synovial production of hyaluronic acid, which is primarily responsible for the lubricating and shock-absorbing properties of synovial fluid" (McCarty, M.F. (1998) "*Enhanced Synovial Production Of Hyaluronic Acid May Explain Rapid Clinical Response To High-Dose Glucosamine In Osteoarthritis*," Medical Hypotheses 50:507-510, 1998).

(f) orally consumed molecules that stimulate production of collagen are vitamin C, proline and lysine.

[00103] In such embodiment, the present invention relates to a resveratrol and hyaluronic acid-containing dietary supplement that restores youthful function and appearance to human cells and tissue. The invention particularly pertains to such compositions that additionally comprise a chelator, and/or vitamin D. Most preferably, the composition will comprise the chelator phytic acid (inositol hexaphosphate; IP6). The compositions of the present invention synergistically enhance the specific activity of the resveratrol and/or hyaluronic acid, and thus the compositions of the present invention provide an enhancement of activity above and beyond that obtained with the components administered individually. In such embodiment, the invention relates to a method for restoring youthful function and appearance to human cells and tissues comprising the following steps:

(a) stimulating renewal of living cells from within via enzymatic degradation of cellular debris by intracellular lysosomal bodies (preferably by providing a metal chelating molecule that helps maintain youthful lysosomal function, such molecules comprising antioxidants, such as vitamin E or vitamin C, lipoic acid, metal chelators like IP6 phytate, quercetin, bioflavonoids or polyphenols, and/or resveratrol); and

(b) stimulating fibroblasts to produce hyaluronic acid (comprises providing orally consumed molecules that stimulate fibroblasts to produce hyaluronic acid, such orally consumed molecules comprising, for example, hyaluronic acid, glucosamine, chondroitin, and/or estrogen-like molecules such as genistein, lignans, hydroxytyrosol, or other molecules configured like estrogen).

Preferably, such stimulation is achieved by the dietary administration of a composition comprising the stated compounds, more preferably in combination with an orally consumable molecule that stimulates production of collagen, such molecules comprising, for example, vitamin C, proline and/or lysine.

[00104] Without intending to be bound by any mechanism, when administered together, the four preferred components are believed to act in the following manner:

(a) **Vitamin D**: Vitamin D3 works as an agent that mimics the response to a biological stressor, solar radiation. In particular, vitamin D3 upregulates protective genes involved in activation of the immune system, particularly neutrophil count and motility, and aids in overcoming the decline in endogenous vitamin D3 production with advancing age due to thickening of the skin, which reduces sun/skin production of vitamin D. Furthermore, vitamin D3 works synergistically to breakdown IP6 to IP3, thought to be a major active molecule. Resveratrol also works synergistically to sensitize cells to vitamin D3 (sensitizes the vitamin D receptor on the cell surface). Vitamin D serves to break down IP6 to IP3, which is its primary active form. Vitamin D is also believed to act as an immune system enhancing agent, boosting innate immunity in humans. In this capacity, vitamin D has been shown experimentally to have important cancer-preventive and cancer-curing properties.

(b) **Resveratrol**: Resveratrol increases the sensitivity of the vitamin D receptor on the surface of cells, and thus is believed to act as an enhancing agent for vitamin D and as an anti-cancer agent. Resveratrol up-regulates the vitamin D receptor on the surface of cancer cells, and sensitizes cancer cells to vitamin D (Wietzke, J.A. *et al.* (2003) "*Phytoestrogen Regulation Of A Vitamin D3 Receptor Promoter And 1,25-Dihydroxyvitamin D3 Actions In Human Breast Cancer Cells*," J. Steroid Biochem. Molec. Biol. 84(2-3):149-157; Wietzke, J.A. *et al.* (2005) "*Regulation Of The Human*

Vitamin D3 Receptor Promoter In Breast Cancer Cells Is Mediated Through Sp1 Sites," Molec. Cell. Endocrinol. 230(1-2): 59-68). Resveratrol is also believed to be a monoamine oxidase inhibitor (MAO Inhibitor).

(c) **Hyaluronic acid**: Hyaluronic acid is the water gelling molecule of the human body which serves as its scaffolding and hydrating agent. As aging progresses, less Hyaluronic acid is produced, resulting in wrinkled skin, thinning hair, unlubricated joints. The chelators of the present composition also help to preserve hyaluronic acid in the body. The hyaluronic acid component and the mineral chelating components (*e.g.*, resveratrol, quercetin, phytic acid IP6, ferulate) work as a total anti-aging strategy to maintain youthful function within cells and connective tissues. Hyaluronic acid is believed to have an affinity to cancer cells. It is believed to serve as a delivery and targeting (drug delivery agent) molecule in blood circulation and to address aging of the connective tissue. The collapse and loss of integrity of connective tissue between cells provides the signs of aging (*e.g.*, skin wrinkling, hair thinning, joint stiffness, loss of stature, etc.). The addition of hyaluronic acid to the compositions of the present invention is believed to activate fibroblast cells in the human body to produce additional hyaluronic acid, thus serving to preserve connective tissue (collagen) in a youthful state (Yadav, A.K. *et al.* (2008) "*An Insight On Hyaluronic Acid In Drug Targeting And Drug Delivery*," J. Drug Target. 16(2):91-107; Liao, Y.H. *et al.* (2005) "*Hyaluronan: Pharmaceutical Characterization And Drug Delivery*," Drug Deliv. 12(6):327-342; Joddar, B. *et al.* (2006) "*Elastogenic Effects Of Exogenous Hyaluronan Oligosaccharides On Vascular Smooth Muscle Cells*," Biomaterials 27(33):5698-5707; Girish, K.S. *et al.* (2007) "*The Magic Glue Hyaluronan And Its Eraser Hyaluronidase: A Biological Overview*," Life Sci. 80(21):1921-1943).

(d) **Phytic Acid**: Phytic Acid, preferably in the form of rice bran, is believed to act as an iron and copper chelator and as an inhibitor of calcium cystallization. Phytic Acid also is believed to reduce the availability of metallic minerals that serve as growth factors in tumor cells. It is also believed to serve as a neutrophil priming and motility agent. Additionally, phytic acid has been found to be neuroprotective, and thus to attenuate the severity of conditions associated with neurodegenerative diseases (especially Parkinson's Disease, camptocormia, and Alzheimer's Disease) (Xu, Q. *et al.* (Epub 2007 Dec 27) "*Neuroprotective Effect Of The Natural Iron Chelator, Phytic Acid In A Cell Culture Model Of Parkinson's Disease*," Toxicology 245(1-2):101-108). The components of the compositions of the present invention are believed to enhance such neuroprotection.

[00105] The iron chelator, quercetin, if present, is believed to serve to increase immediate bioavailability of resveratrol by permitting more passes through the liver before it is metabolized.

[00106] The individual components of the composition are believed to act synergistically to enhance the effect of, for example, resveratrol. Without intending to be limited thereby, it is proposed that the body's control or chelation of iron and calcium regulates the rate of aging after full growth has been achieved. During childhood growth all the iron and calcium are directed towards production of new bone and new red blood cells (hemoglobin). The cessation of childhood growth results in excess iron, copper and calcium, which then progressively (a) calcifies and (b) rusts tissues. The lysosomes begin to accumulate iron and calcium, which results in their dysfunction. The mitochondria begin to malfunction as they also progressively rust and calcify. The compositions of the present invention are believed to be capable of limiting or slowing the progressive rusting and calcification of cells and cellular organelles to thereby facilitate a slowing or reversal of the aging process. The chelation is what controls the genes. Genes are then favorably upregulated or downregulated. Resveratrol and a copper chelator are believed to act: (1) as controllers of calcium concentration via upregulation of osteocalcin, the hormone that helps retain calcium in bones and (2) as controllers of iron concentration via heme oxygenase, an antioxidant enzyme.

[00107] MAO inhibitors and iron chelators have been proposed as treatments for Parkinson' s disease (Youdim, M.B. *et al.* (2004) "*Novel Bifunctional Drugs Targeting Monoamine Oxidase Inhibition And Iron Chelation As An Approach To Neuroprotection In Parkinson's Disease And Other Neurodegenerative Diseases*," J. Neural. Transm. 111(10-11):1455-1471; Yáñez, M. *et al.* (2006) *"(-)-Trans-Epsilon-Viniferin, A Polyphenol Present In Wines, Is An Inhibitor Of Noradrenaline And 5-Hydroxytryptamine Uptake And Of Monoamine Oxidase Activity*," Eur. J. Pharmacol. 542(1-3):54-60; Bureau, G. *et al.* (2008) "*Resveratrol And Quercetin, Two Natural Polyphenols, Reduce Apoptotic Neuronal Cell Death Induced By Neuroinflammation*," J. Neurosci. Res. 86(2):403-410; Singh, A. *et al.* (2003) "*Quercetin Potentiates L-Dopa Reversal Of Drug-Induced Catalepsy In Rats: Possible COMT/MAO Inhibition*," Pharmacol. 68(2):81-88; Gao, X. et al. (2007) "*Prospective Study Of Dietary Pattern And Risk Of Parkinson Disease*," Am. J. Clin. Nutr. 86(5):1486-1494; Johnson, S. (2001) "*Is Parkinson's Disease The Heterozygote Form Of Wilson's Disease: PD = 1/2 WD?*," Med. Hypotheses 56(2):171-173). The compositions of the present invention which contain the MAO inhibitor and copper chelator, resveratrol, the iron chelator and MAO inhibitor, quercetin, and the broad metal chelator, phytic acid are particularly preferred for the treatment of neurodegenerative diseases

(especially Parkinson's Disease, camptocormia, and Alzheimer's Disease) or in the amelioration of the symptoms of such diseases.

[00108] Having now generally described the invention, the same will be more readily understood through reference to the following examples, which are provided by way of illustration and are not intended to be limiting of the present invention unless specified.

Example 1
Comparative Effects of Resveratrol and the Compositions of the Present Invention

[00109] In order to determine if the compositions of the present invention were more effective than resveratrol alone in mediating a resveratrol biological activity, an analysis of gene expression was conducted, comparing the modulation of gene expression achieved by calorie restriction to the modulation of gene expression achieved by the compositions of the present invention.

[00110] Accordingly, the ability of resveratrol alone and the resveratrol-containing compositions of the present invention to up-regulate survival/longevity genes or down-regulate genes whose expression enhances cellular damage was compared using the expression profile of a calorie restricted ("CR") animal as a positive control and the expression profile of a normally fed animal as a negative control. Male B6CHF1 mice (2 months of age) were thus either placed on a 40% calorie restricted diet, provided commercially obtained trans-resveratrol (Sigma Chemical; 1.25 mg/kg per day), provided a resveratrol-containing composition of the present invention (Longevinex®; Resveratrol Associates, LLC; 100 mg *trans*-resveratrol containing capsule per 80 kg human per day (*i.e.*, 2.5 mg/kg per day of resveratrol (1.25 mg/kg per day *trans*-resveratrol) 0.31 mg/kg per day quercetin dihydrate, 0.94 mg/kg per day rice bran extract, 4.75 mg/kg per day rice bran oil and 0.70 mg/kg per day sunflower lecithin)). The mice were monitored until they had reached five months of age.

[00111] Body weight, serum glucose levels, serum insulin levels and lipid peroxidation in brain and muscle tissue were measured. The results showed that Longevinex® did not result in an increase in weight that was distinguishable from control animals (**Figure 1**). Serum insulin levels were found to be approximately the same as that observed in the calorie restricted animals (**Figure 2**). Serum glucose levels were found to be lower than that observed in the calorie restricted animals (**Figure 3**).

Example 2
Comparative Effects of Resveratrol and the Compositions of the Present Invention on Gene Expression in Cardiac Tissue

[00112] The profile of expressed genes in the cardiac tissue of mice receiving resveratrol or a composition of the present invention (Longevinex®) was compared to that of mice placed on a calorie restricted diet and control mice. Gene expression was monitored using an Affymetrix MG430 2.0 Array, containing 45,101 probe sets per array. In cases in which the array represented the same gene with multiple probes, the probe set with the highest signal intensity was employed. Unknown genes (including uncharacterized ESTs and cDNA sequences were not analyzed. Thus, the array provided a means for analyzing 20,341 genes having a single Entrez Gene ID. Analysis was conducted substantially as described by Lee, C.-K. *et al.* (2002) "*Transcriptional Profiles Associated With Aging And Middle Age-Onset Caloric Restriction In Mouse Hearts*," Proc. Natl. Acad. Sci. (U.S.A.) 99:14988-14993, herein incorporated by reference. The mean of all arrays in a group were calculated. The means of treated groups were compared to the mean of the control group, and the statistical significance of any differences were determined using two-tailed *t*-tests ($P < 0.01$). The results of the analysis are presented in **Table 3** (CO, control; CR, calorie restricted; RES, resveratrol; LGX, Longevinex®; FC, fold change. FC is calculated as the mean of the treated group divided by the mean of the control group, and this value is then log-transformed (base 2) for statistical purposes. As an example, a gene that is expressed at 100 in the control and 200 in a treated group would be have an Fc of 2 (*i.e.*, a twofold increase in expression); a gene that is expressed at 100 in the control and 50 in the treated group, would have an Fc of -2 (*i.e.*, a twofold decrease in expression).

[00113] Treatment of human umbilical vein epithelial cells with ferulic acid, quercetin or resveratrol has been reported to result in changes to gene expression of greater than 2-fold down-regulation of 363 genes, and greater than 2-fold up-regulation of 233 genes of 10,000 genes probed (Nicholson, S.K. *et al.* (2008) "*Effects Of Dietary Polyphenols On Gene Expression In Human Vascular Endothelial Cells*," Proc. Nutr. Soc. 67(1):42-47). In contrast, **Table 3** shows that *2,829* genes were found to exhibit a statistically significant change in expression in treated vs. control mice. Of these genes, 7% were found to exhibit altered expression in mice that had been subjected to only calorie restriction; 8% were found to exhibit altered expression in mice subjected only to resveratrol. Combining calorie restriction with resveratrol administration failed to alter the expression of any additional genes. In contrast, administration of Longevinex® was found to alter the expression of 61% of the 2,829 genes. Administration of Longevinex® to calorie restricted mice was found to alter the expression of an additional 2% of the genes. Administration of Longevinex® to mice receiving resveratrol

was found to alter the expression of an additional 21% of the genes. Thus, Longevinex® alone or in combination with other regimens was found to affect 85% (2,406) of the total genes showing altered expression.

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1415670_at	Lgx only	987	1139	1187	1378	1.15	1.20	1.40	Copg
1415671_at	Res & Lgx	2454	2539	2030	2071	1.03	-1.21	-1.19	Atp6v0d1
1415672_at	Res & Lgx	3213	2819	2637	2262	-1.14	-1.22	-1.42	Golga7
1415677_at	Res & Lgx	706	747	933	934	1.06	1.32	1.32	Dhrs1
1415679_at	Lgx only	4825	4129	3776	3154	-1.17	-1.28	-1.53	Psenen
1415684_at	Lgx only	638	573	490	381	-1.11	-1.30	-1.67	Atg5
1415696_at	Res only	6629	7063	5491	5988	1.07	-1.21	-1.11	Sar1a
1415700_a_at	Res & Lgx	5461	5179	3791	2603	-1.05	-1.44	-2.10	Ssr3
1415704_a_at	Lgx only	5010	4472	3850	3285	-1.12	-1.30	-1.52	Cdv3
1415707_at	Lgx only	1111	1317	1468	1535	1.19	1.32	1.38	Anapc2
1415714_a_at	Res & Lgx	4941	4632	2720	2379	-1.07	-1.82	-2.08	2610209M04Rik
1415723_at	Res & Lgx	4272	3466	3385	3062	-1.23	-1.26	-1.40	Eif5
1415733_a_at	Lgx only	13615	13963	9719	9991	1.03	-1.40	-1.36	1110019J04Rik
1415735_at	Lgx only	2025	2617	3355	3642	1.29	1.66	1.80	Ddb1
1415736_at	Res & Lgx	4957	3953	2536	1805	-1.25	-1.95	-2.75	Pfdn5
1415738_at	Res & Lgx	1914	1941	1575	1395	1.01	-1.22	-1.37	Txndc12
1415742_at	Lgx only	749	837	856	987	1.12	1.14	1.32	Aup1
1415746_at	Lgx only	726	949	1075	1501	1.31	1.48	2.07	Cic
1415749_a_at	Lgx only	2368	2397	2111	1912	1.01	-1.12	-1.24	Rragc
1415754_at	Lgx only	3512	3195	3099	2411	-1.10	-1.13	-1.46	Polr2f
1415755_a_at	Lgx only	2983	3602	3890	4068	1.21	1.30	1.36	Ube2v1
1415756_a_at	Res & Lgx	3581	3290	2710	2706	-1.09	-1.32	-1.32	Snapap
1415757_at	Lgx only	901	1073	1189	1337	1.19	1.32	1.48	Gbf1
1415764_at	Lgx only	3381	3218	2545	2419	-1.05	-1.33	-1.40	Zc3h11a
1415783_at	Lgx only	4869	4728	4237	3960	-1.03	-1.15	-1.23	Vps35
1415788_at	Lgx only	1490	1572	1169	1046	1.05	-1.27	-1.42	Ublcp1
1415791_at	Res & Lgx	2983	2870	2364	1805	-1.04	-1.26	-1.65	Rnf34
1415797_at	Lgx only	319	488	522	805	1.53	1.64	2.53	Ddr1
1415802_at	Res & Lgx	8566	8379	4763	4548	-1.02	-1.80	-1.88	Slc16a1
1415812_at	Lgx only	31926	36029	41778	58920	1.13	1.31	1.85	Gsn
1415814_at	CR only	1760	2239	1514	1433	1.27	-1.16	-1.23	Atp6v1b2
1415816_at	Res only	5617	5279	4428	5553	-1.06	-1.27	-1.01	Cct7
1415818_at	Lgx only	2554	2785	2838	3335	1.09	1.11	1.31	Anxa6
1415830_at	Lgx only	586	494	424	318	-1.19	-1.38	-1.84	Orc5l
1415834_at	Res only	579	703	419	430	1.21	-1.38	-1.35	Dusp6
1415840_at	Res & Lgx	1636	1461	974	856	-1.12	-1.68	-1.91	Elovl5
1415850_at	Res & Lgx	824	880	1129	1093	1.07	1.37	1.33	Rasa3
1415856_at	Lgx only	148	168	172	242	1.14	1.16	1.63	Emb
1415875_at	Res only	83	38	34	51	-2.19	-2.43	-1.63	3010003L21Rik
1415876_a_at	Lgx only	13888	14344	16149	18965	1.03	1.16	1.37	Rps26
1415879_a_at	Lgx only	33385	37008	41034	49898	1.11	1.23	1.49	Rplp2
1415882_at	Res only	20588	18774	17207	17741	-1.10	-1.20	-1.16	Ghitm
1415886_at	All	637	966	1017	1132	1.51	1.60	1.78	Sh2d3c
1415901_at	Lgx only	1435	1699	1682	1903	1.18	1.17	1.33	Plod3
1415907_at	Lgx only	1656	1817	2329	2446	1.10	1.41	1.48	Ccnd3
1415909_at	Res & Lgx	1788	1949	1414	1451	1.09	-1.26	-1.23	Stip1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1415915_at	Res & Lgx	2843	3059	3559	3668	1.08	1.25	1.29	Ddx1
1415930_a_at	Lgx only	14546	13685	14019	11677	-1.06	-1.04	-1.25	Map1lc3b
1415935_at	Res & Lgx	1687	1988	2011	2446	1.18	1.19	1.45	Smoc2
1415947_at	CR only	7499	6219	8373	7163	-1.21	1.12	-1.05	Creg1
1415951_at	Lgx only	496	588	587	717	1.19	1.18	1.45	Fkbp10
1415961_at	Lgx only	2152	2177	2503	3192	1.01	1.16	1.48	Itm2c
1415966_a_at	Lgx only	29789	33932	35207	35979	1.14	1.18	1.21	Ndufv1
1415971_at	CR only	1825	1273	1649	1440	-1.43	-1.11	-1.27	Marcks
1415974_at	Lgx only	1694	2075	2211	2392	1.22	1.31	1.41	Map2k2
1415977_at	Lgx only	444	603	658	715	1.36	1.48	1.61	Isyna1
1415987_at	Lgx only	8838	9568	10218	11109	1.08	1.16	1.26	Hdlbp
1415990_at	CR & Lgx	27024	32941	29714	35847	1.22	1.10	1.33	Vdac2
1415991_a_at	Res & Lgx	3051	3384	4293	4892	1.11	1.41	1.60	Klhdc3
1415996_at	All	10650	22628	23188	27989	2.12	2.18	2.63	Txnip
1415998_at	Lgx only	33371	40497	35239	46095	1.21	1.06	1.38	Vdac1
1416013_at	Res & Lgx	926	1171	1314	1772	1.26	1.42	1.91	Pld3
1416014_at	All	1518	981	801	662	-1.55	-1.90	-2.29	Abce1
1416016_at	Res & Lgx	232	236	387	358	1.02	1.67	1.55	Tap1
1416019_at	Res only	336	291	275	269	-1.15	-1.22	-1.25	Dr1
1416027_at	Res & Lgx	2414	2298	1834	1569	-1.05	-1.32	-1.54	Pdcd6
1416032_at	Lgx only	1053	1425	1776	1638	1.35	1.69	1.56	Tmem109
1416046_a_at	Lgx only	4982	5500	3916	3426	1.10	-1.27	-1.45	Fuca2
1416048_at	Res & Lgx	1089	1174	1589	1635	1.08	1.46	1.50	Phc2
1416050_a_at	Lgx only	903	1023	1209	1283	1.13	1.34	1.42	Scarb1
1416051_at	Lgx only	128	165	178	252	1.28	1.39	1.97	C2
1416061_at	Lgx only	1318	1255	1052	964	-1.05	-1.25	-1.37	Tbc1d15
1416064_a_at	Res only	12341	12004	9273	10433	-1.03	-1.33	-1.18	Hspa5
1416069_at	CR only	1055	1396	1197	1313	1.32	1.13	1.24	Pfkp
1416079_a_at	Lgx only	1323	1494	1456	1611	1.13	1.10	1.22	Arpc1a
1416082_at	Res & Lgx	13983	13415	11321	10270	-1.04	-1.24	-1.36	Rab1
1416091_at	Lgx only	1996	2372	2622	3315	1.19	1.31	1.66	Mtap4
1416106_at	Lgx only	1108	939	1035	775	-1.18	-1.07	-1.43	Kti12
1416111_at	CR & Lgx	368	212	288	138	-1.74	-1.28	-2.68	Cd83
1416112_at	Lgx only	7587	9334	8583	12194	1.23	1.13	1.61	Cox8a
1416113_at	Lgx only	1810	1965	2224	2559	1.09	1.23	1.41	Fkbp8
1416125_at	Lgx only	550	764	772	809	1.39	1.40	1.47	Fkbp5
1416129_at	Lgx only	1270	1118	1078	734	-1.14	-1.18	-1.73	Errfi1
1416140_a_at	Lgx only	1672	1904	1977	1952	1.14	1.18	1.17	Dhx30
1416142_at	Lgx only	614	690	511	333	1.12	-1.20	-1.85	Rps6
1416155_at	Res & Lgx	3723	3890	2824	2551	1.04	-1.32	-1.46	Hmgb3
1416175_a_at	Res & Lgx	21409	19416	15845	13003	-1.10	-1.35	-1.65	Vdac3
1416176_at	Lgx only	2064	1801	1869	1358	-1.15	-1.10	-1.52	Hmgb1
1416177_at	Res & Lgx	884	734	669	666	-1.20	-1.32	-1.33	Rbmxrt
1416181_at	Res only	1982	1958	1504	1705	-1.01	-1.32	-1.16	Mesdc2
1416183_a_at	Lgx only	40384	48786	54318	64528	1.21	1.35	1.60	Ldhb
1416185_a_at	Lgx only	4447	4224	3331	2724	-1.05	-1.33	-1.63	Adh5

Table 3									
Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1416186_at	Lgx only	404	340	342	213	-1.19	-1.18	-1.90	Pnrc2
1416195_at	Lgx only	1575	1576	1933	2022	1.00	1.23	1.28	RP23-136K12.4
1416209_at	CR & Lgx	3673	4359	4108	4135	1.19	1.12	1.13	Glud1
1416210_at	Lgx only	2605	2387	2225	2041	-1.09	-1.17	-1.28	Imp3
1416223_at	Lgx only	629	633	838	882	1.01	1.33	1.40	Sh3bp5l
1416226_at	Lgx only	1514	1558	2186	2127	1.03	1.44	1.40	Arpc1b
1416238_at	Lgx only	982	1045	1322	1446	1.06	1.35	1.47	Tie1
1416240_at	Lgx only	22627	18896	18958	17768	-1.20	-1.19	-1.27	Psmb7
1416252_at	Lgx only	1031	1322	1235	1464	1.28	1.20	1.42	Stk38
1416254_a_at	Lgx only	432	478	497	673	1.11	1.15	1.56	Vps16
1416256_a_at	CR only	4550	5806	4704	5339	1.28	1.03	1.17	Tubb5
1416259_at	CR & Lgx	573	393	417	336	-1.46	-1.37	-1.71	Pex12
1416261_at	Lgx only	328	394	350	470	1.20	1.07	1.43	Tmem19
1416268_at	Lgx only	4666	4083	4613	3784	-1.14	-1.01	-1.23	Ets2
1416271_at	CR & Lgx	3787	4661	4246	5035	1.23	1.12	1.33	Perp
1416272_at	Lgx only	4874	4932	3921	3693	1.01	-1.24	-1.32	Map2k1ip1
1416280_at	Lgx only	1640	1595	1340	1270	-1.03	-1.22	-1.29	Sae2
1416283_at	Res & Lgx	1026	1225	1415	1355	1.19	1.38	1.32	Gart
1416284_at	Lgx only	5006	5498	6000	6739	1.10	1.20	1.35	Mrpl28
1416292_at	Res & Lgx	13464	12624	11145	11453	-1.07	-1.21	-1.18	Prdx3
1416294_at	Lgx only	1274	1556	1654	2003	1.22	1.30	1.57	Scamp3
1416300_a_at	Lgx only	81172	93900	86598	106206	1.16	1.07	1.31	Slc25a3
1416312_at	Res only	1570	1597	1351	1503	1.02	-1.16	-1.04	Rars
1416315_at	Lgx only	1812	2063	2221	2496	1.14	1.23	1.38	Abhd4
1416326_at	Lgx only	8540	9522	10268	12292	1.11	1.20	1.44	Crip1
1416329_at	CR only	1231	933	1064	976	-1.32	-1.16	-1.26	Cyfip1
1416331_a_at	Lgx only	4998	5244	6828	7398	1.05	1.37	1.48	Nfe2l1
1416339_a_at	Lgx only	1730	1851	1929	2312	1.07	1.12	1.34	Prkcsh
1416340_a_at	Lgx only	1678	1836	2208	2386	1.09	1.32	1.42	Man2b1
1416350_at	Lgx only	209	134	177	85	-1.56	-1.18	-2.46	Klf16
1416366_at	Lgx only	27546	25654	21110	19836	-1.07	-1.30	-1.39	Ndufc2
1416368_at	Lgx only	3559	3865	3913	4425	1.09	1.10	1.24	Gsta4
1416369_at	Lgx only	728	542	558	430	-1.34	-1.30	-1.69	Hiatl1
1416371_at	Lgx only	934	773	973	1314	-1.21	1.04	1.41	Apod
1416384_a_at	Lgx only	3771	3990	4230	4569	1.06	1.12	1.21	Cope
1416393_at	Lgx only	5020	5227	4128	2942	1.04	-1.22	-1.71	Emg1
1416405_at	Lgx only	5254	5912	7260	10205	1.13	1.38	1.94	Bgn
1416411_at	Lgx only	3752	3573	3504	3347	-1.05	-1.07	-1.12	Gstm2
1416412_at	Res & Lgx	716	471	369	274	-1.52	-1.94	-2.61	Nsmaf
1416414_at	Lgx only	461	561	703	739	1.22	1.52	1.60	Emilin1
1416417_a_at	Lgx only	29794	33340	35044	38096	1.12	1.18	1.28	Ndufb7
1416424_at	Lgx only	3969	4305	4914	5377	1.08	1.24	1.35	M6prbp1
1416425_at	Lgx only	3908	4090	4560	4505	1.05	1.17	1.15	Pex19
1416427_at	Lgx only	14038	14608	14480	17881	1.04	1.03	1.27	Ccni
1416436_a_at	Res & Lgx	3463	3513	2761	2608	1.01	-1.25	-1.33	Uqcc
1416438_at	Lgx only	1704	1946	2041	2300	1.14	1.20	1.35	Puf60

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1416452_at	Lgx only	5918	6059	6368	7090	1.02	1.08	1.20	Oat
1416455_a_at	Lgx only	49845	53641	55445	64019	1.08	1.11	1.28	Cryab
1416457_at	Lgx only	1208	1356	1592	1930	1.12	1.32	1.60	Ddah2
1416462_at	Res & Lgx	3796	3321	2539	2621	-1.14	-1.49	-1.45	Caprin1
1416478_a_at	Lgx only	49370	54196	49980	56965	1.10	1.01	1.15	Mdh2
1416479_a_at	Lgx only	3314	4024	3824	5065	1.21	1.15	1.53	Tmem14c
1416494_at	Lgx only	24034	24945	28712	32059	1.04	1.19	1.33	Ndufs5
1416496_at	CR & Lgx	9192	10747	9867	10827	1.17	1.07	1.18	Mrfap1
1416498_at	CR & Lgx	1234	1020	1151	968	-1.21	-1.07	-1.28	Ppic
1416502_a_at	Res & Lgx	1327	1624	1659	1918	1.22	1.25	1.45	Preb
1416506_at	Lgx only	5718	5208	4876	4228	-1.10	-1.17	-1.35	Psma6
1416510_at	Lgx only	5555	6339	5912	6679	1.14	1.06	1.20	Mrpl4
1416513_at	Lgx only	1582	2144	2762	2762	1.35	1.75	1.75	Lamb2
1416514_a_at	Lgx only	888	805	648	439	-1.10	-1.37	-2.02	Fscn1
1416517_at	Lgx only	411	441	486	580	1.07	1.18	1.41	Pnpla6
1416524_at	Lgx only	4034	4167	4527	5256	1.03	1.12	1.30	Spop
1416540_at	Lgx only	1017	1340	1386	1769	1.32	1.36	1.74	Hgs
1416547_at	Lgx only	12925	12431	11457	10620	-1.04	-1.13	-1.22	Ndufb3
1416555_at	Res & Lgx	2837	2868	2221	2008	1.01	-1.28	-1.41	Ei24
1416563_at	Lgx only	1374	1532	1043	788	1.11	-1.32	-1.74	Ctps
1416576_at	Lgx only	230	236	432	441	1.02	1.88	1.92	Socs3
1416587_a_at	Res & Lgx	372	605	623	822	1.63	1.68	2.21	Xrcc1
1416595_at	Lgx only	1722	1750	1272	1269	1.02	-1.35	-1.36	Mrps22
1416604_at	Lgx only	55121	62820	59589	71198	1.14	1.08	1.29	Cyc1
1416612_at	Lgx only	424	520	635	826	1.23	1.50	1.95	Cyp1b1
1416621_at	Res & Lgx	869	1007	1063	1287	1.16	1.22	1.48	Llgl1
1416629_at	Lgx only	412	524	548	620	1.27	1.33	1.50	Slc1a5
1416634_at	Res & Lgx	3167	2719	1899	1420	-1.16	-1.67	-2.23	5730536A07Rik
1416635_at	Res & Lgx	4444	3643	3384	2684	-1.22	-1.31	-1.66	Smpdl3a
1416637_at	Lgx only	525	603	661	780	1.15	1.26	1.49	Slc4a2
1416647_at	Lgx only	5775	6096	7099	7557	1.06	1.23	1.31	Bckdha
1416648_at	Lgx only	2599	3174	3890	4330	1.22	1.50	1.67	Dync1h1
1416656_at	Lgx only	1412	1659	1596	1864	1.18	1.13	1.32	Clic1
1416668_at	Lgx only	10958	10417	8267	7237	-1.05	-1.33	-1.51	Ttc35
1416680_at	Res & Lgx	2599	1810	1455	813	-1.44	-1.79	-3.20	Ube3a
1416683_at	Lgx only	1687	2209	2493	2585	1.31	1.48	1.53	Plxnb2
1416690_at	Res & Lgx	1379	1680	1929	1834	1.22	1.40	1.33	Gtpbp2
1416699_at	Res only	6446	6175	4968	5208	-1.04	-1.30	-1.24	1110008F13Rik
1416703_at	Lgx only	2541	2311	2251	1680	-1.10	-1.13	-1.51	Mapk14
1416706_at	Res only	408	412	258	254	1.01	-1.58	-1.61	Rpe
1416708_a_at	Lgx only	807	815	975	1044	1.01	1.21	1.29	Gramd1a
1416709_a_at	Res & Lgx	1287	1148	920	920	-1.12	-1.40	-1.40	Ngrn
1416713_at	Lgx only	920	1162	1424	2002	1.26	1.55	2.18	Tppp3
1416730_at	Lgx only	436	492	540	650	1.13	1.24	1.49	Rcl1
1416731_at	Lgx only	1678	1349	1389	1118	-1.24	-1.21	-1.50	Top2b
1416737_at	Lgx only	1600	2387	2293	2936	1.49	1.43	1.84	Gys1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1416740_at	Lgx only	1068	1202	1516	1606	1.13	1.42	1.50	Col5a1
1416749_at	CR only	4558	5528	3766	3810	1.21	-1.21	-1.20	Htra1
1416752_at	Lgx only	18842	22289	23077	26541	1.18	1.22	1.41	Ldb3
1416755_at	CR & Lgx	1571	1157	1295	897	-1.36	-1.21	-1.75	Dnajb1
1416766_at	Lgx only	2214	2261	2504	2834	1.02	1.13	1.28	Mosc2
1416791_a_at	Lgx only	1176	1162	1174	1630	-1.01	-1.00	1.39	Nxf1
1416805_at	Lgx only	1361	1327	1132	959	-1.03	-1.20	-1.42	1110032E23Rik
1416808_at	Res & Lgx	2839	2486	1876	1518	-1.14	-1.51	-1.87	Nid1
1416819_at	CR only	7318	8511	7739	8109	1.16	1.06	1.11	Cdc37
1416824_at	Res & Lgx	6820	5799	4916	4447	-1.18	-1.39	-1.53	B230118H07Rik
1416832_at	Lgx only	179	250	238	315	1.40	1.33	1.76	Slc39a8
1416836_at	Lgx only	2043	2339	2345	2519	1.15	1.15	1.23	Lrp10
1416841_at	Lgx only	761	651	582	494	-1.17	-1.31	-1.54	1110059E24Rik
1416842_at	Lgx only	5799	5337	5053	4625	-1.09	-1.15	-1.25	Gstm5
1416845_at	Res & Lgx	253	365	392	412	1.44	1.55	1.63	Tmem132a
1416867_at	Res only	539	510	644	503	-1.06	1.19	-1.07	Bet1
1416883_at	Res & Lgx	3457	4227	5144	5330	1.22	1.49	1.54	Clptm1
1416884_at	Lgx only	1755	1451	1259	1064	-1.21	-1.39	-1.65	Cbx3
1416896_at	Res only	354	336	521	404	-1.05	1.47	1.14	Rps6ka1
1416903_at	Lgx only	2268	2513	2807	2977	1.11	1.24	1.31	Nucb1
1416912_at	Lgx only	2816	2469	2287	1840	-1.14	-1.23	-1.53	6330407G11Rik
1416928_at	Res & Lgx	295	289	197	136	-1.02	-1.50	-2.16	Rbm12
1416931_at	Lgx only	695	726	597	533	1.05	-1.16	-1.30	Nif3l1
1416933_at	Res & Lgx	1482	1837	2077	2466	1.24	1.40	1.66	Por
1416940_at	Lgx only	9984	10810	10055	11650	1.08	1.01	1.17	Ppif
1416943_at	Lgx only	1721	1477	1227	872	-1.16	-1.40	-1.97	Ube2e1
1416953_at	CR only	2136	3722	2891	2928	1.74	1.35	1.37	Ctgf
1416963_at	Res only	4471	4553	3878	4212	1.02	-1.15	-1.06	Ubac1
1416981_at	Lgx only	926	912	1189	1623	-1.02	1.28	1.75	Foxo1
1416990_at	Lgx only	926	985	1107	1231	1.06	1.19	1.33	Rxrb
1417000_at	Lgx only	448	513	582	661	1.14	1.30	1.48	Abtb1
1417006_at	Lgx only	917	923	1024	1208	1.01	1.12	1.32	Commd4
1417007_a_at	Lgx only	2381	1901	1585	1243	-1.25	-1.50	-1.92	Vps4b
1417008_at	Lgx only	4995	5792	7236	8553	1.16	1.45	1.71	Crat
1417010_at	Lgx only	1566	1338	1138	897	-1.17	-1.38	-1.75	Zfp238
1417018_at	Lgx only	442	453	487	682	1.03	1.10	1.54	Efemp2
1417026_at	Lgx only	1683	1749	1357	1217	1.04	-1.24	-1.38	Pfdn1
1417044_at	Lgx only	959	1047	1076	1385	1.09	1.12	1.44	Lcmt1
1417049_at	CR only	693	515	650	556	-1.34	-1.07	-1.25	Rhd
1417061_at	All	1418	1003	1945	1761	-1.41	1.37	1.24	Slc40a1
1417065_at	CR only	667	1043	914	758	1.56	1.37	1.14	Egr1
1417068_a_at	Res & Lgx	1030	1108	1271	1589	1.08	1.23	1.54	Ptpn1
1417073_a_at	Lgx only	2797	2634	1839	1346	-1.06	-1.52	-2.08	Qk
1417075_at	Lgx only	2020	1802	1853	1594	-1.12	-1.09	-1.27	2010309E21Rik
1417081_a_at	Lgx only	3594	4012	4252	4459	1.12	1.18	1.24	Syngr2
1417082_at	Lgx only	1946	1607	1455	1101	-1.21	-1.34	-1.77	Anp32b

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1417091_at	Lgx only	520	510	358	207	-1.02	-1.45	-2.51	Chuk
1417105_at	Lgx only	5064	4514	4396	4198	-1.12	-1.15	-1.21	Trappc2l
1417109_at	Res & Lgx	1215	1681	1773	1883	1.38	1.46	1.55	Tinagl
1417112_at	Res & Lgx	3493	4015	4629	4787	1.15	1.33	1.37	Arl2bp
1417124_at	Lgx only	7386	6930	5048	4243	-1.07	-1.46	-1.74	Dstn
1417127_at	Lgx only	53	106	136	186	2.01	2.58	3.52	Msx1
1417142_at	Res & Lgx	852	935	1104	1181	1.10	1.30	1.39	4932442K08Rik
1417146_at	Res & Lgx	605	807	893	1039	1.33	1.48	1.72	2410018C20Rik
1417165_at	Lgx only	2346	2465	2903	2874	1.05	1.24	1.23	Mbd2
1417168_a_at	Lgx only	2358	2585	3131	3801	1.10	1.33	1.61	Usp2
1417170_at	Lgx only	1459	1405	1174	1121	-1.04	-1.24	-1.30	Lztfl1
1417174_at	Res & Lgx	1039	958	738	798	-1.08	-1.41	-1.30	1810021J13Rik
1417177_at	Lgx only	462	447	437	628	-1.03	-1.06	1.36	Galk1
1417180_at	Res & Lgx	754	837	1024	1133	1.11	1.36	1.50	Pcsk7
1417185_at	Lgx only	9497	9130	8221	7632	-1.04	-1.16	-1.24	Ly6a
1417190_at	Lgx only	4733	4553	5431	6212	-1.04	1.15	1.31	Pbef1
1417191_at	Lgx only	3776	3337	3338	2706	-1.13	-1.13	-1.40	Dnajb9
1417207_at	Lgx only	80	144	149	248	1.79	1.86	3.09	Dvl2
1417209_at	Lgx only	1828	1950	2173	2377	1.07	1.19	1.30	Sertad2
1417226_at	Lgx only	812	921	967	1224	1.13	1.19	1.51	Fbxw4
1417228_at	Lgx only	535	649	639	835	1.21	1.19	1.56	Capn1
1417233_at	Res & Lgx	2926	2760	2274	1898	-1.06	-1.29	-1.54	Chchd4
1417238_at	Lgx only	767	878	883	1108	1.15	1.15	1.44	Ewsr1
1417239_at	Lgx only	1936	1557	1139	998	-1.24	-1.70	-1.94	Cetn3
1417240_at	Res & Lgx	1783	2528	2699	3377	1.42	1.51	1.89	Zyx
1417241_at	Res & Lgx	3699	3394	2641	1970	-1.09	-1.40	-1.88	X83328
1417258_at	Res & Lgx	4947	4979	3931	3307	1.01	-1.26	-1.50	Cct5
1417271_a_at	Lgx only	4442	4716	5165	6247	1.06	1.16	1.41	Eng
1417273_at	Res & Lgx	8604	12748	23951	27986	1.48	2.78	3.25	Pdk4
1417285_a_at	Lgx only	32713	36339	37425	43067	1.11	1.14	1.32	Ndufa5
1417291_at	Res & Lgx	1425	1410	2175	2102	-1.01	1.53	1.47	Tnfrsf1a
1417294_at	Lgx only	1787	1927	2326	2186	1.08	1.30	1.22	Akr7a5
1417297_at	All	145	259	295	450	1.79	2.03	3.10	Itpr3
1417304_at	Lgx only	198	308	367	470	1.56	1.85	2.37	Chrd
1417306_at	Lgx only	427	464	581	668	1.09	1.36	1.56	Tyk2
1417307_at	Lgx only	1236	1290	1344	1544	1.04	1.09	1.25	Dmd
1417308_at	Lgx only	15382	20160	20634	26200	1.31	1.34	1.70	Pkm2
1417311_at	Lgx only	47051	55061	51583	64453	1.17	1.10	1.37	Crip2
1417312_at	Lgx only	1316	1798	2877	4398	1.37	2.19	3.34	Dkk3
1417327_at	Lgx only	3779	3050	2884	2338	-1.24	-1.31	-1.62	Cav2
1417334_at	Lgx only	308	321	400	466	1.04	1.30	1.51	Stk19
1417349_at	Lgx only	3676	3837	3192	2742	1.04	-1.15	-1.34	Pldn
1417357_at	Lgx only	1014	1076	1189	1373	1.06	1.17	1.35	Emd
1417367_at	Lgx only	11894	11153	11043	9572	-1.07	-1.08	-1.24	Ppp2ca
1417369_at	Lgx only	2848	3279	3554	4089	1.15	1.25	1.44	Hsd17b4
1417373_a_at	CR & Res	57174	74618	40192	59746	1.31	-1.42	1.04	Tuba4a

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1417382_at	CR & Res	5433	4021	4266	4657	-1.35	-1.27	-1.17	Entpd5
1417389_at	Lgx only	4932	5697	6811	9117	1.16	1.38	1.85	Gpc1
1417392_a_at	Lgx only	386	416	569	884	1.08	1.47	2.29	Slc7a7
1417394_at	Lgx only	1516	1224	998	705	-1.24	-1.52	-2.15	Klf4
1417397_at	Lgx only	364	447	480	576	1.23	1.32	1.58	Slc9a1
1417398_at	CR & Lgx	2047	1670	1999	1532	-1.23	-1.02	-1.34	Rras2
1417399_at	Lgx only	4367	4901	4815	5943	1.12	1.10	1.36	Gas6
1417402_at	Lgx only	3863	4030	3439	3158	1.04	-1.12	-1.22	1190017O12Rik
1417409_at	Lgx only	1660	1563	1378	1058	-1.06	-1.20	-1.57	Jun
1417423_at	All	1931	2829	3104	4003	1.47	1.61	2.07	Grina
1417433_at	Res only	1695	1694	1291	1499	-1.00	-1.31	-1.13	Lypla2
1417437_at	CR only	643	802	739	810	1.25	1.15	1.26	Xrcc6
1417441_at	Lgx only	970	856	665	557	-1.13	-1.46	-1.74	Dnajc12
1417446_at	Res & Lgx	817	1066	1009	1405	1.31	1.24	1.72	Slc12a4
1417466_at	Lgx only	22355	20101	19656	17738	-1.11	-1.14	-1.26	Rgs5
1417475_at	Lgx only	541	682	670	846	1.26	1.24	1.57	Atp13a1
1417476_at	Lgx only	1158	1444	1386	1454	1.25	1.20	1.26	Fbxw5
1417478_a_at	Res & Lgx	2285	1692	1323	979	-1.35	-1.73	-2.34	Ppp2r3c
1417490_at	Lgx only	17449	20356	20005	21458	1.17	1.15	1.23	Ctsb
1417493_at	Lgx only	1896	1748	1628	1370	-1.09	-1.17	-1.38	Bmi1
1417494_a_at	Lgx only	3168	2535	2703	2081	-1.25	-1.17	-1.52	Cp
1417503_at	Lgx only	813	899	1044	1230	1.11	1.29	1.51	Rfc2
1417507_at	Res only	303	313	206	250	1.04	-1.47	-1.21	Cyb561
1417516_at	Res & Lgx	1417	1442	975	1093	1.02	-1.45	-1.30	Ddit3
1417533_a_at	Res & Lgx	3526	3994	5408	5733	1.13	1.53	1.63	Itgb5
1417536_at	Lgx only	1523	1489	1327	1156	-1.02	-1.15	-1.32	Zmat2
1417544_a_at	Lgx only	1725	2092	2186	2613	1.21	1.27	1.52	Flot2
1417552_at	Lgx only	368	330	315	219	-1.12	-1.17	-1.68	Fap
1417562_at	Res & Lgx	5225	5748	7049	8132	1.10	1.35	1.56	Eif4ebp1
1417564_at	Lgx only	1045	942	849	682	-1.11	-1.23	-1.53	Med7
1417574_at	Lgx only	4249	4227	4829	5635	-1.01	1.14	1.33	Cxcl12
1417578_a_at	Lgx only	1318	1466	1614	1933	1.11	1.23	1.47	Gmppa
1417581_at	Lgx only	327	311	206	118	-1.05	-1.59	-2.77	Dhodh
1417588_at	CR only	70	24	64	43	-2.88	-1.10	-1.62	Galnt3
1417590_at	Res & Lgx	1193	1414	1657	1976	1.19	1.39	1.66	Cyp27a1
1417592_at	Lgx only	1276	1544	1813	1967	1.21	1.42	1.54	Frap1
1417606_a_at	Lgx only	8113	8165	6538	5977	1.01	-1.24	-1.36	Calr
1417611_at	Lgx only	410	483	562	660	1.18	1.37	1.61	Tmem37
1417614_at	Lgx only	52366	62118	63982	71743	1.19	1.22	1.37	Ckm
1417626_at	Lgx only	20898	23134	29205	31629	1.11	1.40	1.51	Pde4dip
1417629_at	CR only	550	726	507	529	1.32	-1.08	-1.04	Prodh
1417631_at	Res only	576	686	816	800	1.19	1.42	1.39	Mknk1
1417636_at	Lgx only	357	496	550	864	1.39	1.54	2.42	Slc6a9
1417637_a_at	Lgx only	740	721	597	561	-1.03	-1.24	-1.32	Hmg20b
1417659_at	Res & Lgx	2296	1809	1478	837	-1.27	-1.55	-2.74	Vps29
1417664_a_at	Lgx only	413	416	589	585	1.01	1.43	1.42	Ndrg3

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1417665_a_at	Lgx only	1641	1906	2136	2541	1.16	1.30	1.55	Cpsf1
1417669_at	Lgx only	1917	2203	2177	2365	1.15	1.14	1.23	Abhd12
1417673_at	Res & Lgx	9046	10264	7598	7548	1.13	-1.19	-1.20	Grb14
1417680_at	Lgx only	1039	914	800	514	-1.14	-1.30	-2.02	Kcna5
1417681_at	Lgx only	2481	2417	2057	1755	-1.03	-1.21	-1.41	Nudt21
1417683_at	Lgx only	3002	3170	2902	2615	1.06	-1.03	-1.15	Diablo
1417693_a_at	Lgx only	2110	2468	2597	3325	1.17	1.23	1.58	Gab1
1417712_at	Lgx only	9771	8265	8035	6481	-1.18	-1.22	-1.51	Eif2s2
1417715_a_at	Lgx only	37732	44662	43599	56266	1.18	1.16	1.49	Got2
1417722_at	Lgx only	2172	2787	2703	3093	1.28	1.24	1.42	Pgls
1417724_at	Lgx only	963	827	712	620	-1.17	-1.35	-1.55	Thoc4
1417727_at	Lgx only	595	659	764	845	1.11	1.28	1.42	Sfrs9
1417728_at	Lgx only	1083	1178	1375	1363	1.09	1.27	1.26	Mbd3
1417730_at	Res & Lgx	759	785	1047	1112	1.03	1.38	1.47	Ext1
1417762_a_at	Lgx only	15317	17412	16383	18728	1.14	1.07	1.22	Rpl8
1417775_at	Lgx only	385	504	537	605	1.31	1.40	1.57	Rpo1-4
1417777_at	Lgx only	300	380	359	417	1.27	1.20	1.39	Ltb4dh
1417778_at	Lgx only	592	523	478	322	-1.13	-1.24	-1.84	Zfp35
1417791_a_at	Lgx only	752	638	524	553	-1.18	-1.43	-1.36	Zfml
1417807_at	Lgx only	404	370	322	268	-1.09	-1.25	-1.51	2700038N03Rik
1417814_at	CR only	1089	821	1021	931	-1.33	-1.07	-1.17	Pla2g5
1417825_at	Res & Lgx	10020	8920	8393	8135	-1.12	-1.19	-1.23	Esd
1417827_at	Lgx only	1987	1887	1725	1334	-1.05	-1.15	-1.49	Ngly1
1417840_at	Lgx only	655	635	537	493	-1.03	-1.22	-1.33	1500031L02Rik
1417842_at	CR only	735	604	602	618	-1.22	-1.22	-1.19	Caml
1417865_at	Res only	1877	1747	1566	1714	-1.07	-1.20	-1.09	Tnfaip1
1417868_a_at	Lgx only	1651	1315	950	698	-1.26	-1.74	-2.36	Ctsz
1417889_at	Lgx only	11804	10711	10232	8376	-1.10	-1.15	-1.41	Apobec2
1417893_at	Lgx only	350	308	313	275	-1.14	-1.12	-1.27	Sfxn3
1417912_at	Lgx only	4436	4290	4051	3653	-1.03	-1.10	-1.21	Tmem93
1417916_a_at	Lgx only	2557	2471	2075	1814	-1.03	-1.23	-1.41	Fxc1
1417928_at	Lgx only	930	1019	1145	1635	1.10	1.23	1.76	Pdlim4
1417933_at	Lgx only	1003	1029	1202	1834	1.03	1.20	1.83	Igfbp6
1417936_at	Res & Lgx	627	556	388	317	-1.13	-1.62	-1.98	Ccl9
1417951_at	Res & Lgx	39914	46728	50392	54619	1.17	1.26	1.37	Eno3
1417953_at	Lgx only	721	903	916	1106	1.25	1.27	1.53	D6Wsu176e
1417963_at	CR only	1666	1274	1799	1621	-1.31	1.08	-1.03	Pltp
1417970_at	Lgx only	2618	2363	2180	1814	-1.11	-1.20	-1.44	Atp5s
1417974_at	Lgx only	1516	1151	1001	799	-1.32	-1.51	-1.90	Kpna4
1417983_a_at	Lgx only	654	514	464	439	-1.27	-1.41	-1.49	Ube2v2
1417985_at	All	980	658	657	521	-1.49	-1.49	-1.88	Nrarp
1418000_a_at	Lgx only	44199	45002	51725	57791	1.02	1.17	1.31	Itm2b
1418004_a_at	Lgx only	1596	1844	2175	2741	1.16	1.36	1.72	Tmem176b
1418007_at	Lgx only	559	548	518	370	-1.02	-1.08	-1.51	1810007M14Rik
1418025_at	Res & Lgx	1814	1542	1141	1035	-1.18	-1.59	-1.75	Bhlhb2
1418031_at	Res & Lgx	433	559	602	614	1.29	1.39	1.42	Myo9b

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1418048_at	Lgx only	2291	1894	1822	1403	-1.21	-1.26	-1.63	1110059G10Rik
1418049_at	Lgx only	564	707	732	893	1.25	1.30	1.58	Ltbp3
1418058_at	Lgx only	1896	1822	1556	1532	-1.04	-1.22	-1.24	Eltd1
1418085_at	Lgx only	119	169	209	189	1.42	1.76	1.59	Prkcz
1418090_at	Lgx only	393	473	619	747	1.20	1.58	1.90	Plvap
1418093_a_at	Lgx only	180	168	242	294	-1.07	1.34	1.63	Egf
1418124_at	Res & Lgx	3982	4177	4816	5241	1.05	1.21	1.32	Tmem85
1418128_at	Lgx only	2612	3481	3429	3842	1.33	1.31	1.47	Adcy6
1418148_at	Res & Lgx	1168	915	1700	1493	-1.28	1.46	1.28	Abhd1
1418181_at	Lgx only	6615	7164	10513	10742	1.08	1.59	1.62	Ptp4a3
1418183_a_at	Lgx only	2041	1857	1603	1381	-1.10	-1.27	-1.48	Pscd1
1418186_at	Lgx only	1322	1528	1723	2106	1.16	1.30	1.59	Gstt1
1418187_at	Lgx only	2289	2761	3034	3198	1.21	1.33	1.40	Ramp2
1418209_a_at	Res & Lgx	3685	3274	2816	2402	-1.13	-1.31	-1.53	Pfn2
1418223_at	Res & Lgx	2693	2594	2189	2015	-1.04	-1.23	-1.34	Sec11a
1418228_at	Lgx only	3494	3467	2926	2282	-1.01	-1.19	-1.53	Nfu1
1418244_at	Res & Lgx	3970	4253	2852	2563	1.07	-1.39	-1.55	Nat5
1418261_at	All	412	712	724	860	1.73	1.76	2.09	Syk
1418275_a_at	Lgx only	977	937	845	806	-1.04	-1.16	-1.21	Elf2
1418277_at	Lgx only	5601	5071	4822	3833	-1.10	-1.16	-1.46	rp9
1418296_at	Lgx only	743	895	936	1162	1.20	1.26	1.56	Fxyd5
1418302_at	Res & Lgx	1279	1585	1792	2129	1.24	1.40	1.66	Ppt2
1418306_at	CR only	212	99	186	157	-2.15	-1.14	-1.35	Crybb1
1418308_at	Lgx only	312	316	235	144	1.02	-1.33	-2.17	Hus1
1418310_a_at	CR only	27	74	31	71	2.71	1.13	2.59	Rlbp1
1418325_at	Res only	530	450	302	356	-1.18	-1.75	-1.49	Sephs2
1418327_at	Lgx only	6638	6594	5327	4629	-1.01	-1.25	-1.43	1110058L19Rik
1418328_at	Lgx only	9663	10359	12241	14054	1.07	1.27	1.45	Cpt1b
1418364_a_at	Res & Lgx	6214	6280	8701	10097	1.01	1.40	1.62	Ftl1
1418373_at	Res & Lgx	20321	25840	28141	36744	1.27	1.38	1.81	Pgam2
1418384_at	Lgx only	2697	2580	2446	2128	-1.05	-1.10	-1.27	Apool
1418394_a_at	All	1313	1651	1851	2002	1.26	1.41	1.52	Cd97
1418395_at	Res only	2083	2050	2622	2487	-1.02	1.26	1.19	Slc47a1
1418421_at	Lgx only	409	447	356	219	1.09	-1.15	-1.87	Bcl6b
1418427_at	Lgx only	4160	3689	3518	2931	-1.13	-1.18	-1.42	Kif5b
1418433_at	Lgx only	2097	2223	2417	2813	1.06	1.15	1.34	Cab39
1418456_a_at	Lgx only	1322	1134	961	777	-1.17	-1.37	-1.70	Cxcl14
1418461_at	Lgx only	137	207	161	226	1.52	1.18	1.65	Sh3d19
1418462_at	Lgx only	938	943	764	665	1.01	-1.23	-1.41	Exosc9
1418464_at	Lgx only	54	55	98	186	1.02	1.80	3.42	Matn4
1418467_at	CR & Lgx	1961	2626	2477	2773	1.34	1.26	1.41	Smarcd3
1418479_at	CR & Lgx	971	752	799	628	-1.29	-1.22	-1.55	Vps54
1418483_a_at	Lgx only	801	694	755	588	-1.15	-1.06	-1.36	Ggta1
1418495_at	Res only	310	349	161	194	1.13	-1.93	-1.60	Zc3h8
1418506_a_at	Res only	20857	23088	24680	25457	1.11	1.18	1.22	Prdx2
1418518_at	Lgx only	701	821	854	1036	1.17	1.22	1.48	Furin

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1418528_a_at	Res & Lgx	4483	4424	3749	3167	-1.01	-1.20	-1.42	Dad1
1418530_at	Lgx only	282	250	196	154	-1.13	-1.44	-1.84	Nup160
1418532_at	Lgx only	180	202	332	354	1.12	1.85	1.97	Fzd2
1418551_at	Lgx only	34184	47198	44002	56324	1.38	1.29	1.65	Mybpc3
1418560_at	Lgx only	42487	47719	46215	55194	1.12	1.09	1.30	Pdha1
1418563_at	Res & Lgx	1576	1497	1007	795	-1.05	-1.57	-1.98	Serbp1
1418578_at	Lgx only	718	782	1230	1501	1.09	1.71	2.09	Dgka
1418583_at	Lgx only	4503	4409	3800	2964	-1.02	-1.19	-1.52	Hint3
1418584_at	Lgx only	2929	2748	2413	2257	-1.07	-1.21	-1.30	Ccnh
1418589_a_at	Res & Lgx	5966	5443	3817	3292	-1.10	-1.56	-1.81	Mlf1
1418593_at	Lgx only	967	1039	1128	1548	1.08	1.17	1.60	Taf6
1418595_at	Lgx only	3838	4270	5239	5576	1.11	1.37	1.45	S3-12
1418604_at	CR only	118	179	95	148	1.51	-1.24	1.25	Avpr1a
1418621_at	Lgx only	6696	7127	7710	8254	1.06	1.15	1.23	Rab2
1418640_at	Lgx only	445	396	366	260	-1.12	-1.22	-1.71	Sirt1
1418644_a_at	Res & Lgx	2290	2528	3079	3754	1.10	1.34	1.64	Stk11
1418646_at	Lgx only	576	557	801	953	-1.03	1.39	1.65	Gna-rs1
1418649_at	Res & Lgx	1817	1689	1010	1064	-1.08	-1.80	-1.71	Egln3
1418658_at	Lgx only	3201	2867	2597	2170	-1.12	-1.23	-1.48	2410005O16Rik
1418659_at	Lgx only	655	451	573	399	-1.45	-1.14	-1.64	Clock
1418665_at	Res only	432	341	817	509	-1.27	1.89	1.18	Impa2
1418681_at	Lgx only	167	97	90	44	-1.73	-1.85	-3.80	Alg13
1418700_at	Res only	2166	2223	2693	2292	1.03	1.24	1.06	Lias
1418703_at	Res & Lgx	1788	1937	2728	2973	1.08	1.53	1.66	Rbms1
1418714_at	Lgx only	176	149	306	402	-1.19	1.74	2.28	Dusp8
1418726_a_at	Lgx only	96588	107808	105192	136735	1.12	1.09	1.42	Tnnt2
1418739_at	CR only	115	61	145	180	-1.88	1.26	1.56	Sgk2
1418749_at	Lgx only	829	963	993	1502	1.16	1.20	1.81	Psd3
1418759_at	CR only	65	25	85	74	-2.61	1.30	1.14	Ptpn20
1418763_at	Res only	1354	1349	1037	1054	-1.00	-1.31	-1.28	Nit2
1418773_at	Lgx only	997	1127	1373	1342	1.13	1.38	1.35	Fads3
1418775_at	Res & Lgx	1330	1611	1775	2047	1.21	1.33	1.54	AI837181
1418782_at	Lgx only	1857	2604	2789	2699	1.40	1.50	1.45	Rxrg
1418817_at	Lgx only	868	707	713	565	-1.23	-1.22	-1.54	Chmp1b
1418835_at	Lgx only	1187	1202	996	645	1.01	-1.19	-1.84	Phlda1
1418838_at	Lgx only	1243	1517	1333	1771	1.22	1.07	1.43	Abcd1
1418840_at	Lgx only	667	575	556	501	-1.16	-1.20	-1.33	Pdcd4
1418846_at	CR only	103	199	99	162	1.93	-1.04	1.57	Ap4m1
1418847_at	Lgx only	28	28	56	92	-1.04	1.95	3.24	Arg2
1418861_at	Res only	887	950	1409	1371	1.07	1.59	1.55	Pias4
1418863_at	Lgx only	1860	2280	2226	2561	1.23	1.20	1.38	Gata4
1418869_a_at	Lgx only	678	738	805	954	1.09	1.19	1.41	Pus1
1418874_a_at	Lgx only	5030	5073	6091	6369	1.01	1.21	1.27	Psmd4
1418885_a_at	Res & Lgx	906	1107	1173	1863	1.22	1.30	2.06	Idh3b
1418899_at	Lgx only	1067	834	819	715	-1.28	-1.30	-1.49	Ufm1
1418924_at	Lgx only	89	173	226	307	1.95	2.54	3.45	Rassf7

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1418926_at	Res & Lgx	3012	2659	2326	2255	-1.13	-1.29	-1.34	Zeb1
1418928_a_at	Lgx only	958	1057	1130	1663	1.10	1.18	1.74	2310038H17Rik
1418929_at	Lgx only	410	472	537	581	1.15	1.31	1.42	Ift57
1418933_at	Res only	8	28	16	13	3.76	2.08	1.68	Slc1a6
1418947_at	CR only	247	343	289	319	1.39	1.17	1.29	Nek3
1418952_at	Res & Lgx	9461	9278	12035	12244	-1.02	1.27	1.29	Txlnb
1418967_a_at	Lgx only	302	261	219	209	-1.16	-1.38	-1.45	St7
1418968_at	Lgx only	2166	1884	1630	1473	-1.15	-1.33	-1.47	Rb1cc1
1418986_a_at	Lgx only	1097	1006	854	642	-1.09	-1.28	-1.71	Uxt
1418987_at	Res only	161	117	260	269	-1.38	1.61	1.67	Pla2g2d
1418988_at	Res & Lgx	2768	2378	2028	1916	-1.16	-1.36	-1.44	Pex7
1418996_a_at	Lgx only	3436	3503	3043	2693	1.02	-1.13	-1.28	Lyrm5
1419013_at	Res only	438	501	605	499	1.14	1.38	1.14	Gpatch1
1419026_at	Lgx only	910	978	1211	1131	1.08	1.33	1.24	Daxx
1419037_at	Lgx only	1248	1228	1010	1005	-1.02	-1.24	-1.24	Csnk2a1
1419062_at	Lgx only	646	672	717	873	1.04	1.11	1.35	Epb4.1l3
1419070_at	CR only	274	536	312	423	1.96	1.14	1.54	Cys1
1419072_at	Lgx only	1253	1214	1154	1035	-1.03	-1.09	-1.21	Gstm7
1419074_at	Lgx only	669	635	434	385	-1.05	-1.54	-1.74	Chac2
1419081_at	Lgx only	620	617	514	392	-1.00	-1.21	-1.58	Atg10
1419109_at	Res & Lgx	19560	22347	25933	31691	1.14	1.33	1.62	Hrc
1419131_at	CR only	10	65	30	43	6.52	2.99	4.25	F13b
1419144_at	Lgx only	328	358	484	596	1.09	1.48	1.81	Cd163
1419158_a_at	CR only	760	935	726	788	1.23	-1.05	1.04	Hars2
1419164_at	Res & Lgx	1598	1612	1126	698	1.01	-1.42	-2.29	Zfp260
1419169_at	Lgx only	1118	1026	941	817	-1.09	-1.19	-1.37	Mapk6
1419170_at	Lgx only	2926	2624	2049	1889	-1.12	-1.43	-1.55	Tmem157
1419174_at	Lgx only	1433	1234	1044	1065	-1.16	-1.37	-1.34	2410004B18Rik
1419182_at	Lgx only	525	545	632	749	1.04	1.20	1.43	Svep1
1419186_a_at	Res & Lgx	779	684	511	470	-1.14	-1.52	-1.66	St8sia4
1419214_at	Res only	146	199	310	284	1.36	2.12	1.94	Tnfrsf11a
1419238_at	Lgx only	154	255	316	301	1.66	2.06	1.96	Abca7
1419258_at	Lgx only	1711	1423	1294	1111	-1.20	-1.32	-1.54	Tcea1
1419272_at	Res only	428	435	585	498	1.02	1.37	1.16	Myd88
1419292_at	Lgx only	3158	3740	4270	4656	1.18	1.35	1.47	Htra3
1419295_at	Res only	209	211	411	276	1.01	1.96	1.32	Creb3l1
1419297_at	CR only	149	66	122	147	-2.25	-1.22	-1.01	H2-Oa
1419302_at	Res & Lgx	794	919	1108	1247	1.16	1.40	1.57	Heyl
1419333_at	Lgx only	392	461	414	572	1.18	1.06	1.46	1110008J03Rik
1419352_at	Lgx only	1989	1829	1498	1340	-1.09	-1.33	-1.48	I7Rn6
1419354_at	Lgx only	1196	1159	1578	1790	-1.03	1.32	1.50	Klf7
1419358_at	Lgx only	207	323	185	348	1.56	-1.11	1.68	Sorcs2
1419366_at	Res & Lgx	642	733	782	1009	1.14	1.22	1.57	Zmat5
1419375_at	Res & Lgx	1257	1211	921	872	-1.04	-1.36	-1.44	Wbp4
1419398_a_at	Lgx only	10797	11078	10041	8759	1.03	-1.08	-1.23	Reep5
1419415_a_at	CR only	1168	905	1009	964	-1.29	-1.16	-1.21	Rarg

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1419428_a_at	Lgx only	1374	1692	1993	2038	1.23	1.45	1.48	Gaa
1419429_at	Res & Lgx	79	137	161	223	1.74	2.04	2.83	Cntfr
1419452_at	Lgx only	1034	914	835	680	-1.13	-1.24	-1.52	Uchl5
1419455_at	Lgx only	6361	6701	5697	5310	1.05	-1.12	-1.20	Il10rb
1419470_at	Res & Lgx	865	849	644	649	-1.02	-1.34	-1.33	Gnb4
1419477_at	Res only	35	98	190	144	2.81	5.44	4.12	Clec2d
1419484_a_at	Lgx only	20734	22346	11461	5733	1.08	-1.81	-3.62	Gbas
1419491_at	Res only	13	40	52	67	3.14	4.08	5.30	Defb1
1419495_at	Lgx only	2055	1752	1771	1374	-1.17	-1.16	-1.50	Immp2l
1419499_at	Lgx only	7940	7261	10653	11012	-1.09	1.34	1.39	Gpam
1419518_at	All	7504	12289	3758	4518	1.64	-2.00	-1.66	Tuba8
1419527_at	Lgx only	403	437	548	829	1.08	1.36	2.06	Comp
1419550_a_at	Lgx only	2491	2352	1855	1537	-1.06	-1.34	-1.62	Stk39
1419569_a_at	Res only	681	700	1171	1519	1.03	1.72	2.23	Isg20
1419584_at	Lgx only	521	505	846	843	-1.03	1.62	1.62	Ttc28
1419609_at	CR only	53	133	65	112	2.53	1.24	2.13	Ccr1
1419630_a_at	CR & Lgx	549	668	630	755	1.22	1.15	1.37	Trim11
1419631_at	Res & Lgx	119	146	218	228	1.23	1.84	1.92	Was
1419645_at	Lgx only	463	390	335	288	-1.19	-1.38	-1.61	Cstf2
1419657_a_at	CR & Lgx	1163	874	858	623	-1.33	-1.36	-1.87	Slc25a36
1419660_at	Lgx only	4264	3723	4383	3253	-1.15	1.03	-1.31	1600012F09Rik
1419687_at	Lgx only	8909	9784	12046	13075	1.10	1.35	1.47	Macrod1
1419736_a_at	Res & Lgx	3408	3084	2455	1934	-1.10	-1.39	-1.76	Eif1ay
1419762_at	Res & Lgx	38	84	155	154	2.18	4.03	4.01	Ubd
1419787_a_at	Lgx only	312	385	461	581	1.24	1.48	1.86	Zfp628
1419824_a_at	Res & Lgx	455	428	270	228	-1.06	-1.69	-2.00	A230062G08Rik
1419952_at	Lgx only	27	55	105	168	2.03	3.90	6.26	1700023D09Rik
1420099_at	CR only	203	411	349	286	2.02	1.72	1.40	D13Ertd787e
1420123_at	Res & Lgx	3511	3401	5048	5686	-1.03	1.44	1.62	Tcta
1420183_at	Lgx only	234	252	360	451	1.08	1.54	1.93	Lor
1420325_at	Res only	57	130	144	132	2.26	2.52	2.30	Cramp1l
1420329_at	Lgx only	567	517	392	323	-1.10	-1.45	-1.76	4930455C21Rik
1420339_at	Res only	309	242	217	225	-1.28	-1.43	-1.37	LOC100047915
1420374_at	Res & Lgx	758	989	1238	1240	1.31	1.63	1.64	Foxj2
1420375_at	Res & Lgx	401	402	615	593	1.00	1.53	1.48	Kif3a
1420377_at	Lgx only	89	105	134	173	1.18	1.50	1.94	St8sia2
1420387_at	Res & Lgx	2021	2029	1347	1414	1.00	-1.50	-1.43	Mpv17
1420388_at	Lgx only	160	221	219	350	1.38	1.37	2.19	Prss12
1420405_at	Lgx only	181	177	327	423	-1.02	1.81	2.34	Slco1a4
1420427_a_at	CR only	1499	1159	1676	1564	-1.29	1.12	1.04	Dhx32
1420497_a_at	Res only	446	471	707	611	1.06	1.58	1.37	Cebpz
1420502_at	Lgx only	1203	971	967	740	-1.24	-1.24	-1.63	Sat1
1420507_a_at	Res & Lgx	787	742	523	391	-1.06	-1.50	-2.01	3110031B13Rik
1420513_at	Res & Lgx	4347	3651	3096	2640	-1.19	-1.40	-1.65	Efcab2
1420580_at	Res only	108	171	205	173	1.59	1.90	1.60	4930429B21Rik
1420617_at	CR & Lgx	1660	2030	1377	1316	1.22	-1.21	-1.26	Cpeb4

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1420619_a_at	Lgx only	9782	11497	12736	14220	1.18	1.30	1.45	Aes
1420654_a_at	Lgx only	836	1010	530	414	1.21	-1.58	-2.02	Gbe1
1420657_at	CR & Lgx	978	1762	1973	2727	1.80	2.02	2.79	Ucp3
1420684_at	Lgx only	184	272	311	338	1.48	1.70	1.84	Acox3
1420693_at	Lgx only	12144	13502	14705	16745	1.11	1.21	1.38	Myom1
1420703_at	Lgx only	230	242	309	412	1.05	1.34	1.79	Csf2ra
1420707_a_at	Res only	15	45	86	56	3.03	5.79	3.77	Traip
1420711_a_at	Res & Lgx	1740	1664	1104	1160	-1.05	-1.58	-1.50	Pxmp3
1420715_a_at	Res only	264	353	394	398	1.34	1.49	1.51	Pparg
1420727_a_at	Lgx only	834	685	683	642	-1.22	-1.22	-1.30	Tmlhe
1420770_at	Lgx only	119	204	196	229	1.71	1.64	1.92	Klk1b24
1420812_at	Res only	636	684	880	887	1.08	1.38	1.39	Hdac7a
1420815_at	Res & Lgx	6531	5930	4529	3754	-1.10	-1.44	-1.74	Gdi2
1420829_a_at	Res & Lgx	1575	1422	1004	915	-1.11	-1.57	-1.72	Ywhaq
1420850_at	Lgx only	811	697	641	504	-1.16	-1.27	-1.61	Crnkl1
1420851_at	Lgx only	742	595	613	560	-1.25	-1.21	-1.32	Pard6g
1420858_at	Lgx only	4637	3856	3968	3017	-1.20	-1.17	-1.54	Pkia
1420886_a_at	Res & Lgx	3739	3833	4963	5400	1.03	1.33	1.44	Xbp1
1420890_at	Res & Lgx	5214	4425	2406	1933	-1.18	-2.17	-2.70	Hccs
1420895_at	Lgx only	917	770	710	650	-1.19	-1.29	-1.41	Tgfbr1
1420909_at	Lgx only	2678	2641	1885	1364	-1.01	-1.42	-1.96	Vegfa
1420911_a_at	Lgx only	3466	3820	3678	4193	1.10	1.06	1.21	Mfge8
1420925_at	Lgx only	72	124	151	175	1.71	2.08	2.42	Tub
1420960_at	Res only	96	110	192	231	1.15	1.99	2.40	Fancg
1420965_a_at	Lgx only	874	1154	1487	1587	1.32	1.70	1.82	Enc1
1420969_at	Lgx only	466	483	535	830	1.04	1.15	1.78	Btbd14b
1420981_a_at	Lgx only	827	972	964	1187	1.18	1.17	1.44	Lmo4
1420990_at	Res only	312	320	517	236	1.02	1.65	-1.32	Chd1
1420991_at	Lgx only	53384	52666	61602	72604	-1.01	1.15	1.36	Ankrd1
1421019_at	Lgx only	4065	3950	3600	3047	-1.03	-1.13	-1.33	1700021F05Rik
1421025_at	Lgx only	849	1055	1040	1273	1.24	1.22	1.50	Agpat1
1421027_a_at	Res & Lgx	1926	1835	1240	1194	-1.05	-1.55	-1.61	Mef2c
1421042_at	Res only	445	458	615	583	1.03	1.38	1.31	Arhgef2
1421054_at	Lgx only	720	688	568	429	-1.05	-1.27	-1.68	Xpo4
1421087_at	CR & Lgx	659	948	669	1049	1.44	1.02	1.59	Per3
1421096_at	Res & Lgx	343	231	143	153	-1.48	-2.39	-2.24	Trpc1
1421099_at	Lgx only	201	206	279	348	1.03	1.39	1.74	Bhlhb3
1421140_a_at	Lgx only	966	1184	1048	1522	1.23	1.09	1.57	Foxp1
1421164_a_at	Lgx only	790	1029	1101	1483	1.30	1.39	1.88	Arhgef1
1421174_at	CR only	170	74	105	131	-2.29	-1.62	-1.30	Irf4
1421254_a_at	Res & Lgx	8190	8322	11932	11052	1.02	1.46	1.35	Sgcg
1421265_a_at	Lgx only	2787	3702	3156	4067	1.33	1.13	1.46	Rbm38
1421287_a_at	Res & Lgx	1918	2165	2346	2394	1.13	1.22	1.25	Pecam1
1421292_a_at	Lgx only	1159	1309	1372	1641	1.13	1.18	1.42	A730008L03Rik
1421301_at	Res & Lgx	25	50	65	79	2.01	2.64	3.20	Zic2
1421361_at	Res only	7	12	14	17	1.71	1.97	2.36	Grk1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1421373_at	Lgx only	150	180	225	291	1.20	1.50	1.94	Cox4i2
1421374_a_at	Res & Lgx	22933	26328	30566	37711	1.15	1.33	1.64	Fxyd1
1421425_a_at	Lgx only	16449	16822	17946	19197	1.02	1.09	1.17	Rcan2
1421444_at	Res only	74	60	18	28	-1.23	-4.13	-2.61	Pgr
1421468_at	Lgx only	901	957	947	1325	1.06	1.05	1.47	Kcnj3
1421530_a_at	Lgx only	27	71	53	97	2.66	1.98	3.62	Grm8
1421534_at	Lgx only	811	795	808	606	-1.02	-1.00	-1.34	Dfna5h
1421541_a_at	Lgx only	21	44	48	100	2.09	2.27	4.69	Mef2b
1421654_a_at	Lgx only	1679	1993	2038	2187	1.19	1.21	1.30	Lmna
1421657_a_at	Lgx only	586	697	816	882	1.19	1.39	1.51	Sox17
1421712_at	Res only	44	104	121	85	2.35	2.74	1.93	Sele
1421729_a_at	Res & Lgx	681	584	500	370	-1.17	-1.36	-1.84	Fert2
1421733_a_at	Res & Lgx	1129	1104	1432	1650	-1.02	1.27	1.46	Tpst1
1421743_a_at	Res & Lgx	9703	10330	11559	11327	1.06	1.19	1.17	Pcbp2
1421750_a_at	Lgx only	2246	2231	1829	1446	-1.01	-1.23	-1.55	Vbp1
1421797_a_at	Lgx only	557	651	646	772	1.17	1.16	1.39	Snx12
1421808_at	Res only	72	37	25	26	-1.92	-2.88	-2.71	Defb5
1421810_at	Lgx only	868	921	932	1143	1.06	1.07	1.32	Dgcr2
1421813_a_at	Lgx only	18627	21854	22085	24924	1.17	1.19	1.34	Psap
1421820_a_at	Lgx only	2152	2587	2644	3110	1.20	1.23	1.45	Nf2
1421826_at	Lgx only	702	623	580	445	-1.13	-1.21	-1.58	Dll4
1421861_at	Lgx only	1285	1602	1652	1882	1.25	1.28	1.46	Clstn1
1421871_at	Lgx only	1104	837	695	549	-1.32	-1.59	-2.01	Sh3bgrl
1421872_at	Lgx only	911	910	719	556	-1.00	-1.27	-1.64	Rab24
1421880_at	Res only	970	1061	1162	1121	1.09	1.20	1.16	Mtmr1
1421887_a_at	Lgx only	10860	11944	14384	16154	1.10	1.32	1.49	Aplp2
1421894_a_at	Lgx only	1285	1111	1077	876	-1.16	-1.19	-1.47	Tpp2
1421900_at	Lgx only	704	851	937	1086	1.21	1.33	1.54	Eif2ak1
1421910_at	CR & Lgx	616	466	496	388	-1.32	-1.24	-1.58	Tcf20
1421929_at	Res & Lgx	584	771	1070	1011	1.32	1.83	1.73	Epha4
1421960_at	Lgx only	251	313	373	451	1.25	1.48	1.79	Adcy3
1421985_a_at	Lgx only	1206	1190	1259	970	-1.01	1.04	-1.24	Eif4e2
1422063_a_at	Res & Lgx	303	432	514	657	1.43	1.70	2.17	Pex5
1422085_at	Res only	89	141	178	209	1.58	2.00	2.34	Tbx19
1422122_at	Lgx only	45	52	102	145	1.15	2.26	3.23	Fcer2a
1422157_a_at	Res & Lgx	1891	1621	1425	1408	-1.17	-1.33	-1.34	Itgb1bp1
1422160_at	Res & Lgx	194	137	98	86	-1.42	-1.99	-2.24	H2-T24
1422183_a_at	Res & Lgx	456	433	718	774	-1.05	1.57	1.70	Adra1b
1422185_a_at	Lgx only	2280	2364	3023	3264	1.04	1.33	1.43	Cyb5r3
1422202_at	All	187	261	266	299	1.39	1.42	1.60	Thrb
1422250_at	Res only	74	95	175	109	1.29	2.36	1.47	Map3k2
1422253_at	Res only	72	82	22	25	1.14	-3.30	-2.84	Col10a1
1422273_at	CR only	17	64	65	79	3.66	3.75	4.54	Mmp1b
1422303_a_at	Lgx only	115	142	161	192	1.24	1.40	1.67	Tnfrsf18
1422325_at	CR only	99	54	92	79	-1.85	-1.08	-1.25	Magea5
1422349_at	Res only	108	91	204	164	-1.19	1.88	1.51	Ccr1l1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1422368_at	CR only	63	20	70	73	-3.19	1.12	1.17	V1ra5
1422429_at	Res & Lgx	3906	3945	3274	3064	1.01	-1.19	-1.27	Rnf14
1422431_at	Res & Lgx	174	193	294	266	1.11	1.69	1.53	Magee1
1422442_at	Res & Lgx	2592	2482	1984	1860	-1.04	-1.31	-1.39	Smu1
1422443_at	CR only	2188	2545	2408	2383	1.16	1.10	1.09	Xpnpep1
1422470_at	CR & Lgx	10633	8053	8886	6881	-1.32	-1.20	-1.55	Bnip3
1422476_at	Lgx only	632	824	773	895	1.30	1.22	1.42	Ifi30
1422479_at	CR only	1246	1673	1146	1250	1.34	-1.09	1.00	Acss2
1422505_at	Res & Lgx	2509	2529	2006	2084	1.01	-1.25	-1.20	Chrac1
1422514_at	Lgx only	811	912	1085	1253	1.12	1.34	1.54	Aebp1
1422521_at	Lgx only	1147	1461	1635	2058	1.27	1.43	1.79	Dctn1
1422536_at	Lgx only	92593	100541	105298	145101	1.09	1.14	1.57	Tnni3
1422559_at	Res & Lgx	2320	2134	1617	1469	-1.09	-1.44	-1.58	Ube2n
1422562_at	Lgx only	4072	5149	5749	7406	1.26	1.41	1.82	Rrad
1422568_at	Lgx only	4621	4163	3766	3704	-1.11	-1.23	-1.25	Ndel1
1422579_at	Lgx only	2795	2515	2100	1950	-1.11	-1.33	-1.43	Hspe1
1422580_at	Lgx only	21473	23970	33904	66655	1.12	1.58	3.10	Myl4
1422589_at	Lgx only	1557	2101	1799	2359	1.35	1.16	1.51	Rab3a
1422594_at	Res only	1164	1044	782	887	-1.12	-1.49	-1.31	5730470L24Rik
1422597_at	Lgx only	1172	1880	1299	1581	1.60	1.11	1.35	Mmp15
1422598_at	Lgx only	376	482	558	667	1.28	1.48	1.77	Casq1
1422601_at	Lgx only	678	602	614	451	-1.13	-1.11	-1.50	Serpinb9
1422622_at	Lgx only	1987	2361	2556	2886	1.19	1.29	1.45	Nos3
1422624_at	Res & Lgx	585	523	324	366	-1.12	-1.80	-1.60	Rev1
1422631_at	CR only	459	290	354	311	-1.58	-1.30	-1.47	Ahr
1422636_at	Lgx only	484	476	356	311	-1.02	-1.36	-1.55	Dmtf1
1422647_at	Lgx only	551	486	766	945	-1.13	1.39	1.72	Ring1
1422654_at	Res & Lgx	6849	8679	9035	10593	1.27	1.32	1.55	Sgca
1422656_at	Lgx only	348	337	280	194	-1.03	-1.24	-1.79	Rasl2-9
1422669_at	Res & Lgx	1326	1103	925	768	-1.20	-1.43	-1.72	Ebag9
1422678_at	Lgx only	8205	10614	8228	11571	1.29	1.00	1.41	Dgat2
1422687_at	Res only	342	422	540	502	1.23	1.58	1.47	Nras
1422704_at	Lgx only	912	889	790	692	-1.03	-1.16	-1.32	Gyk
1422710_a_at	Lgx only	204	256	533	712	1.26	2.62	3.50	Cacna1h
1422731_at	Lgx only	1938	1979	1826	1508	1.02	-1.06	-1.29	Limd1
1422750_a_at	Lgx only	12	15	16	26	1.27	1.32	2.13	Zmynd10
1422754_at	Lgx only	5302	6134	5414	7120	1.16	1.02	1.34	Tmod1
1422759_a_at	Lgx only	716	910	1014	972	1.27	1.42	1.36	Xpo6
1422771_at	Lgx only	662	616	845	1033	-1.07	1.28	1.56	Smad6
1422794_at	Lgx only	2668	2498	2540	2197	-1.07	-1.05	-1.21	Cul3
1422797_at	Lgx only	2497	2556	2816	3053	1.02	1.13	1.22	Mapbpip
1422799_at	Lgx only	1417	2232	2331	3007	1.58	1.64	2.12	Bat2
1422801_at	Lgx only	1868	2054	2333	2401	1.10	1.25	1.29	G3bp1
1422811_at	Lgx only	1842	1949	3745	4459	1.06	2.03	2.42	Slc27a1
1422819_at	Lgx only	1868	1541	1669	1324	-1.21	-1.12	-1.41	Mrpl36
1422820_at	Res & Lgx	1160	1556	2287	3124	1.34	1.97	2.69	Lipe

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1422845_at	Res & Lgx	2601	2532	1767	1768	-1.03	-1.47	-1.47	Canx
1422855_at	Lgx only	1072	1244	1287	1505	1.16	1.20	1.40	Cpsf3
1422858_at	Res & Lgx	647	600	471	385	-1.08	-1.37	-1.68	Trip4
1422869_at	CR only	322	486	356	429	1.51	1.11	1.33	Mertk
1422880_at	Res only	3821	4166	5178	4697	1.09	1.36	1.23	Sypl
1422884_at	Res & Lgx	2609	2458	1699	1360	-1.06	-1.54	-1.92	Snrpd3
1422888_at	Res & Lgx	2451	2326	1824	1740	-1.05	-1.34	-1.41	Rnf5
1422895_at	Lgx only	1484	1345	1128	1085	-1.10	-1.32	-1.37	Vamp4
1422904_at	Lgx only	1644	2057	2434	3071	1.25	1.48	1.87	Fmo2
1422919_at	Lgx only	1447	1561	1174	1081	1.08	-1.23	-1.34	Hrasls
1422927_at	Lgx only	9559	8873	9036	7917	-1.08	-1.06	-1.21	Yipf7
1422975_at	Lgx only	270	215	239	143	-1.25	-1.13	-1.88	Mme
1423025_a_at	Res & Lgx	4676	4201	3674	3128	-1.11	-1.27	-1.50	Schip1
1423038_at	CR only	739	613	619	676	-1.21	-1.19	-1.09	Stx6
1423044_at	Lgx only	3560	3888	3058	2626	1.09	-1.16	-1.36	Prosc
1423047_at	Lgx only	1895	2061	2077	2332	1.09	1.10	1.23	Tollip
1423049_a_at	Lgx only	87808	100652	95761	125022	1.15	1.09	1.42	Tpm1
1423067_at	Lgx only	1021	1177	1166	1322	1.15	1.14	1.29	Cdk5rap3
1423072_at	Res & Lgx	9143	7426	14144	14099	-1.23	1.55	1.54	6720475J19Rik
1423073_at	Res & Lgx	2730	2611	1976	1859	-1.05	-1.38	-1.47	Cmpk
1423078_a_at	Res only	281	268	138	193	-1.05	-2.03	-1.45	Sc4mol
1423083_at	Lgx only	829	634	640	576	-1.31	-1.30	-1.44	Rab33b
1423085_at	Lgx only	2081	2337	2335	2878	1.12	1.12	1.38	Efnb3
1423086_at	Lgx only	581	574	944	865	-1.01	1.62	1.49	Npc1
1423104_at	Lgx only	1861	2159	1551	1285	1.16	-1.20	-1.45	Irs1
1423107_at	Res & Lgx	13435	12780	18773	18511	-1.05	1.40	1.38	Ube2b
1423115_at	Lgx only	1874	2293	2021	2497	1.22	1.08	1.33	St6galnac6
1423116_at	Lgx only	367	369	418	514	1.01	1.14	1.40	Dom3z
1423117_at	Lgx only	1641	1974	2060	2325	1.20	1.26	1.42	Pum1
1423120_at	Lgx only	1872	1820	2582	2866	-1.03	1.38	1.53	Ide
1423145_a_at	Lgx only	67091	70639	67884	94069	1.05	1.01	1.40	Tcap
1423159_at	Lgx only	8820	7770	8104	7185	-1.14	-1.09	-1.23	Dld
1423167_at	Lgx only	2048	1950	1592	1289	-1.05	-1.29	-1.59	Mobkl3
1423185_a_at	Lgx only	1046	1030	1125	1433	-1.01	1.08	1.37	Ubap1
1423195_at	Lgx only	770	772	644	545	1.00	-1.20	-1.41	Hiat1
1423210_a_at	Lgx only	15838	13912	13292	11593	-1.14	-1.19	-1.37	Nola3
1423238_at	CR only	10141	11875	10734	10997	1.17	1.06	1.08	Itgb1bp2
1423245_at	Lgx only	2212	2559	2650	2839	1.16	1.20	1.28	Cops7a
1423247_at	Res & Lgx	1654	1535	1377	1412	-1.08	-1.20	-1.17	Txndc4
1423283_at	Res only	2245	2516	2704	2323	1.12	1.20	1.03	Pitpna
1423289_a_at	Lgx only	590	520	490	411	-1.14	-1.21	-1.44	1810029B16Rik
1423296_at	Res & Lgx	4260	3917	3455	3149	-1.09	-1.23	-1.35	Psmd8
1423315_at	Res only	239	239	393	245	-1.00	1.64	1.03	Bbc3
1423332_at	Lgx only	7044	6555	6145	5521	-1.07	-1.15	-1.28	Sdcbp
1423347_at	Lgx only	1717	1446	1257	946	-1.19	-1.37	-1.81	Sec23a
1423362_at	Lgx only	1116	1401	1546	2127	1.26	1.38	1.91	Sort1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1423365_at	Lgx only	220	341	321	487	1.55	1.46	2.22	Cacna1g
1423368_at	Res only	26862	24889	23668	24004	-1.08	-1.13	-1.12	Laptm4a
1423369_at	Lgx only	512	450	400	277	-1.14	-1.28	-1.84	Fmr1
1423373_at	Lgx only	1662	1543	1231	1041	-1.08	-1.35	-1.60	Rpp30
1423383_a_at	Lgx only	3010	3451	3134	3991	1.15	1.04	1.33	Osbpl9
1423393_at	Res & Lgx	9550	11356	12552	12982	1.19	1.31	1.36	Clic4
1423407_a_at	Res & Lgx	1285	1527	1976	2493	1.19	1.54	1.94	Fbln2
1423423_at	Res & Lgx	3996	3941	3047	3212	-1.01	-1.31	-1.24	Pdia3
1423425_at	Lgx only	639	706	761	947	1.10	1.19	1.48	1300012G16Rik
1423431_a_at	Res & Lgx	1593	1952	2320	2336	1.23	1.46	1.47	Mybbp1a
1423440_at	Lgx only	631	546	529	467	-1.15	-1.19	-1.35	1110001A07Rik
1423441_at	Lgx only	4060	3903	3850	3452	-1.04	-1.05	-1.18	Tfb2m
1423448_at	Res & Lgx	4469	4669	6840	6850	1.04	1.53	1.53	Rab11b
1423449_a_at	Lgx only	1823	2337	2121	2533	1.28	1.16	1.39	Actn4
1423459_at	Lgx only	3896	3424	3126	2505	-1.14	-1.25	-1.56	Cops2
1423474_at	Res & Lgx	2213	2036	1686	1390	-1.09	-1.31	-1.59	Top1
1423485_at	Lgx only	523	580	631	930	1.11	1.21	1.78	Rad54l2
1423486_at	Res & Lgx	4116	3309	2762	2491	-1.24	-1.49	-1.65	Cript
1423490_at	Lgx only	3791	3965	3044	2767	1.05	-1.25	-1.37	Fbxo3
1423494_at	CR only	38	105	93	45	2.79	2.46	1.20	2310042E22Rik
1423512_at	Lgx only	664	554	571	494	-1.20	-1.16	-1.35	AW209491
1423529_at	Lgx only	76	62	55	20	-1.22	-1.38	-3.78	G6pc2
1423535_at	Lgx only	4603	3572	3482	2393	-1.29	-1.32	-1.92	LOC100047794
1423557_at	Res & Lgx	4123	4659	2949	2995	1.13	-1.40	-1.38	Ifngr2
1423565_at	Lgx only	6741	7261	5935	5619	1.08	-1.14	-1.20	Paics
1423577_at	CR only	866	691	713	759	-1.25	-1.22	-1.14	Ankrd32
1423588_at	Res & Lgx	1204	1118	984	929	-1.08	-1.22	-1.30	Arpc4
1423599_a_at	Lgx only	741	579	555	467	-1.28	-1.33	-1.59	Pdcl
1423609_a_at	Lgx only	2102	2341	2391	3062	1.11	1.14	1.46	Mgat1
1423611_at	CR only	736	949	973	1010	1.29	1.32	1.37	Akp2
1423620_at	Lgx only	428	413	295	207	-1.04	-1.45	-2.07	Cenpq
1423629_at	Lgx only	842	1015	1126	1457	1.21	1.34	1.73	Dnm2
1423642_at	CR & Res	11579	15048	8041	9198	1.30	-1.44	-1.26	Tubb2c
1423643_at	Lgx only	1071	1196	843	821	1.12	-1.27	-1.30	Ddx39
1423647_a_at	Res only	344	396	605	457	1.15	1.76	1.33	Zdhhc3
1423648_at	CR only	1771	2210	1681	1872	1.25	-1.05	1.06	Pdia6
1423657_at	Res & Lgx	1515	1485	1236	1166	-1.02	-1.23	-1.30	Cdipt
1423662_at	Res & Lgx	1443	1423	991	902	-1.01	-1.46	-1.60	Atp6ap2
1423663_at	CR only	1057	1384	1080	1178	1.31	1.02	1.12	Flcn
1423667_at	All	8373	7112	6577	5613	-1.18	-1.27	-1.49	Mat2a
1423669_at	Lgx only	1075	1350	1555	2209	1.26	1.45	2.05	Col1a1
1423670_a_at	CR & Lgx	3169	3700	3314	3615	1.17	1.05	1.14	Srpr
1423676_at	Lgx only	58661	62536	61203	80373	1.07	1.04	1.37	Atp5h
1423685_at	Lgx only	1108	1452	1375	1574	1.31	1.24	1.42	Aars
1423694_at	CR only	1790	2077	2089	1818	1.16	1.17	1.02	Kctd10
1423697_at	Lgx only	6981	6288	6277	5248	-1.11	-1.11	-1.33	Psmd6

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1423710_at	Lgx only	9222	11179	10001	11429	1.21	1.08	1.24	Dlst
1423711_at	Res & Lgx	2316	2307	1924	1627	-1.00	-1.20	-1.42	Ndufaf1
1423725_at	Lgx only	985	705	674	762	-1.40	-1.46	-1.29	Pls3
1423734_at	Lgx only	5006	5612	5707	6496	1.12	1.14	1.30	Rac1
1423737_at	Lgx only	24235	26450	27218	29730	1.09	1.12	1.23	Ndufs3
1423753_at	CR only	1118	734	898	856	-1.52	-1.24	-1.31	Bambi
1423759_a_at	Res & Lgx	4031	3513	2876	2736	-1.15	-1.40	-1.47	Tmco1
1423766_at	Res & Lgx	1610	1380	1025	987	-1.17	-1.57	-1.63	Pak1ip1
1423767_at	Lgx only	2146	2025	1774	1497	-1.06	-1.21	-1.43	2810410M20Rik
1423771_at	Lgx only	815	750	811	1094	-1.09	-1.00	1.34	Prkcdbp
1423773_at	Lgx only	4627	3985	3629	2816	-1.16	-1.28	-1.64	Gpbp1
1423780_at	Lgx only	10898	11906	12709	12518	1.09	1.17	1.15	Hibadh
1423785_at	Lgx only	11606	13426	11821	15052	1.16	1.02	1.30	Egln1
1423790_at	Lgx only	1487	1751	2032	2310	1.18	1.37	1.55	Dap
1423793_at	Res & Lgx	936	1073	1319	1580	1.15	1.41	1.69	D2Ertd391e
1423810_at	CR only	1783	2180	1746	1816	1.22	-1.02	1.02	Ppme1
1423822_a_at	Lgx only	730	653	569	558	-1.12	-1.28	-1.31	Tmem168
1423845_at	Lgx only	460	477	805	739	1.04	1.75	1.61	Csdc2
1423847_at	Res & Lgx	231	270	401	391	1.17	1.73	1.69	Ncapd2
1423849_a_at	Lgx only	616	713	916	1030	1.16	1.49	1.67	Clk3
1423852_at	Lgx only	50	52	68	154	1.03	1.36	3.07	Tmem46
1423857_at	Res & Lgx	13121	11472	8712	6533	-1.14	-1.51	-2.01	Mrpl30
1423881_at	Lgx only	1929	2007	2122	2477	1.04	1.10	1.28	Saps3
1423882_at	Lgx only	933	840	739	618	-1.11	-1.26	-1.51	Rfwd3
1423883_at	Lgx only	21573	22608	26023	29695	1.05	1.21	1.38	Acsl1
1423892_at	CR only	3733	2926	4320	4066	-1.28	1.16	1.09	Apbb1
1423896_a_at	Lgx only	7953	9503	10177	13002	1.19	1.28	1.63	Rnf187
1423907_a_at	Lgx only	21309	20866	21974	17327	-1.02	1.03	-1.23	Ndufs8
1423909_at	Lgx only	670	657	729	1002	-1.02	1.09	1.50	Tmem176a
1423919_at	Lgx only	445	348	353	351	-1.28	-1.26	-1.27	BC023882
1423927_at	Res & Lgx	510	626	737	770	1.23	1.45	1.51	Slc35b2
1423939_a_at	Lgx only	6662	5968	5430	4027	-1.12	-1.23	-1.65	Yif1a
1423947_at	Res & Lgx	1479	1457	2188	2164	-1.01	1.48	1.46	1110008P14Rik
1423951_at	Lgx only	936	768	718	654	-1.22	-1.30	-1.43	Tm2d3
1423958_a_at	Lgx only	1601	1398	1213	998	-1.15	-1.32	-1.60	Ttc33
1423960_at	Res & Lgx	1368	1371	1946	2010	1.00	1.42	1.47	Mboat5
1423961_at	Res & Lgx	1414	1142	839	602	-1.24	-1.69	-2.35	LOC100045629
1423967_at	Lgx only	903	1044	1073	1359	1.16	1.19	1.51	Palm
1423969_at	All	723	538	512	442	-1.34	-1.41	-1.64	Nup37
1423972_at	Lgx only	31981	34252	35126	43175	1.07	1.10	1.35	Etfa
1423973_a_at	Lgx only	644	716	819	1000	1.11	1.27	1.55	Arf3
1423978_at	Lgx only	920	1504	1209	1467	1.64	1.31	1.59	Sbk1
1423991_at	Lgx only	392	425	448	564	1.08	1.14	1.44	Nol14
1423993_at	Lgx only	4392	3844	3630	3056	-1.14	-1.21	-1.44	Atp6v1f
1424000_a_at	Lgx only	20066	22495	23422	27778	1.12	1.17	1.38	Rps11
1424002_at	Res & Lgx	2495	2175	1827	1785	-1.15	-1.37	-1.40	Pdcl3

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1424005_at	Lgx only	3828	3557	3275	3040	-1.08	-1.17	-1.26	B230219D22Rik
1424010_at	Lgx only	168	233	382	732	1.38	2.27	4.36	Mfap4
1424025_at	Res & Lgx	5858	5688	4312	4383	-1.03	-1.36	-1.34	BC013529
1424027_at	Res only	619	902	924	853	1.46	1.49	1.38	Pxn
1424028_at	Lgx only	874	861	614	481	-1.02	-1.42	-1.82	5830457O10Rik
1424033_at	Res & Lgx	935	735	479	332	-1.27	-1.95	-2.82	Sfrs7
1424036_at	Lgx only	1422	1354	1874	1752	-1.05	1.32	1.23	Prpf6
1424038_a_at	Lgx only	2801	3278	3181	3602	1.17	1.14	1.29	2310044H10Rik
1424040_at	Lgx only	5989	7521	7112	8135	1.26	1.19	1.36	Mtap7d1
1424053_a_at	Res & Lgx	5291	5313	6583	6840	1.00	1.24	1.29	Tcf25
1424054_at	Res & Lgx	1063	1467	1588	1882	1.38	1.49	1.77	Btbd2
1424058_at	Lgx only	640	771	767	944	1.21	1.20	1.48	Prrc1
1424066_at	Lgx only	990	1038	1084	1324	1.05	1.09	1.34	Dus3l
1424077_at	Res only	654	544	493	479	-1.20	-1.33	-1.37	Gdpd1
1424081_at	Res & Lgx	380	271	291	277	-1.40	-1.31	-1.37	Pcgf6
1424099_at	Lgx only	2023	1663	1332	1265	-1.22	-1.52	-1.60	2310016C16Rik
1424101_at	Res & Lgx	874	934	533	583	1.07	-1.64	-1.50	Hnrpl
1424105_a_at	Lgx only	3516	2620	3158	2273	-1.34	-1.11	-1.55	Pttg1
1424109_a_at	Res & Lgx	6904	7061	6174	6463	1.02	-1.12	-1.07	Glo1
1424115_at	CR & Lgx	1970	2313	2291	2496	1.17	1.16	1.27	Ppp5c
1424121_at	Lgx only	986	890	677	523	-1.11	-1.46	-1.88	Commd1
1424126_at	CR & Res	6092	9782	4437	5967	1.61	-1.37	-1.02	Alas1
1424134_at	Lgx only	646	529	499	436	-1.22	-1.29	-1.48	Rspry1
1424138_at	Lgx only	1703	1927	1979	2218	1.13	1.16	1.30	Rhbdf1
1424139_at	Lgx only	5935	4960	4416	3478	-1.20	-1.34	-1.71	Rap1a
1424140_at	Res only	146	192	243	196	1.32	1.67	1.35	Gale
1424141_at	Lgx only	2745	3324	3767	4195	1.21	1.37	1.53	Hectd1
1424147_at	Res & Lgx	3868	4234	2946	2570	1.09	-1.31	-1.50	Ahsa1
1424149_at	CR only	435	531	523	573	1.22	1.20	1.32	Nsmce2
1424150_at	Lgx only	438	540	561	688	1.23	1.28	1.57	Gdpd5
1424151_at	Res & Lgx	2327	2380	1795	1679	1.02	-1.30	-1.39	Jtv1
1424154_a_at	Lgx only	4155	3735	3761	3368	-1.11	-1.10	-1.23	Isca2
1424159_at	Res & Lgx	618	578	459	454	-1.07	-1.34	-1.36	1300010M03Rik
1424160_at	Lgx only	563	486	499	420	-1.16	-1.13	-1.34	Alg5
1424162_at	CR only	115	37	144	125	-3.15	1.25	1.08	Trim29
1424163_at	Lgx only	615	642	714	803	1.04	1.16	1.31	Rmnd5b
1424167_a_at	Lgx only	367	456	568	734	1.24	1.55	2.00	Pmm1
1424175_at	CR & Lgx	4138	5751	4597	7356	1.39	1.11	1.78	Tef
1424178_at	Lgx only	8368	8313	7872	6995	-1.01	-1.06	-1.20	Tmem38a
1424179_at	Lgx only	642	594	541	431	-1.08	-1.19	-1.49	Plekhj1
1424184_at	Lgx only	33037	35163	37503	45711	1.06	1.14	1.38	Acadvl
1424191_a_at	Lgx only	613	688	706	837	1.12	1.15	1.36	Tmem41a
1424209_at	Lgx only	1349	1298	1166	988	-1.04	-1.16	-1.37	Rars2
1424210_at	Res & Lgx	892	764	657	670	-1.17	-1.36	-1.33	Erlin1
1424211_at	CR & Lgx	1496	2374	1415	1975	1.59	-1.06	1.32	Slc25a33
1424216_a_at	Lgx only	1633	1442	1293	1181	-1.13	-1.26	-1.38	Papola

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1424223_at	Lgx only	7099	8501	6040	6025	1.20	-1.18	-1.18	1700020C11Rik
1424236_at	Lgx only	741	789	838	950	1.06	1.13	1.28	Tbc1d10b
1424237_at	Res only	1047	1010	1262	1184	-1.04	1.21	1.13	Zfp639
1424247_at	Lgx only	543	591	600	802	1.09	1.10	1.48	Erc1
1424249_a_at	All	434	271	226	252	-1.60	-1.92	-1.72	Arhgap9
1424255_at	Res & Lgx	2458	2688	3230	3339	1.09	1.31	1.36	Supt5h
1424258_at	Lgx only	955	696	690	604	-1.37	-1.38	-1.58	Polr2d
1424261_at	Res & Lgx	1144	871	714	580	-1.31	-1.60	-1.97	Zfp672
1424274_at	Res & Lgx	1795	1574	1426	1084	-1.14	-1.26	-1.66	Vdp
1424276_at	Lgx only	410	338	308	258	-1.22	-1.33	-1.59	Snx16
1424280_at	Res & Lgx	2125	1767	1658	1182	-1.20	-1.28	-1.80	Mospd1
1424303_at	Lgx only	90	76	59	26	-1.19	-1.53	-3.47	Depdc7
1424309_a_at	Res & Lgx	2945	2961	2220	1975	1.01	-1.33	-1.49	Mocs2
1424318_at	Lgx only	2148	2040	1851	1802	-1.05	-1.16	-1.19	1110067D22Rik
1424321_at	Lgx only	351	263	228	169	-1.34	-1.54	-2.07	Rfc4
1424324_at	Lgx only	956	712	539	403	-1.34	-1.77	-2.37	Esco1
1424346_at	Lgx only	2287	1920	1820	1658	-1.19	-1.26	-1.38	Ppp6c
1424349_a_at	Res & Lgx	2326	1877	1516	1263	-1.24	-1.53	-1.84	Lpgat1
1424356_a_at	Lgx only	770	697	694	603	-1.10	-1.11	-1.28	Metrnl
1424359_at	Lgx only	1036	1229	2242	2519	1.19	2.16	2.43	Oplah
1424361_at	Lgx only	294	408	530	653	1.39	1.80	2.22	BC019943
1424372_at	Res & Lgx	3282	2988	2215	2091	-1.10	-1.48	-1.57	Mrpl32
1424374_at	Lgx only	1936	1845	1535	1363	-1.05	-1.26	-1.42	Gimap4
1424377_at	Lgx only	1007	971	895	801	-1.04	-1.12	-1.26	BC003885
1424380_at	Lgx only	434	432	512	559	-1.01	1.18	1.29	Vps37b
1424384_a_at	Lgx only	726	981	1007	1092	1.35	1.39	1.50	Znrf1
1424390_at	Lgx only	597	493	481	472	-1.21	-1.24	-1.26	Nupl1
1424391_at	CR & Lgx	3544	3195	3213	2673	-1.11	-1.10	-1.33	Nrd1
1424403_a_at	Lgx only	254	221	348	376	-1.15	1.37	1.48	Rufy3
1424406_at	Lgx only	1180	1319	1489	1520	1.12	1.26	1.29	Bcl2l13
1424408_at	Lgx only	3655	3925	4168	4751	1.07	1.14	1.30	Lims2
1424416_at	Lgx only	2199	2535	2429	2712	1.15	1.10	1.23	Nkiras2
1424424_at	Lgx only	1819	1642	1309	892	-1.11	-1.39	-2.04	Slc39a1
1424430_at	Res only	647	598	475	466	-1.08	-1.36	-1.39	Mterfd2
1424433_at	Res & Lgx	3043	3150	2599	2241	1.04	-1.17	-1.36	Msrb2
1424434_at	Res & Lgx	2817	2667	2219	2042	-1.06	-1.27	-1.38	BC024814
1424447_at	Lgx only	404	418	462	566	1.03	1.14	1.40	1700030K09Rik
1424461_at	Res & Lgx	4865	4886	3994	3716	1.00	-1.22	-1.31	Dctn2
1424463_at	Res & Lgx	1299	1043	945	877	-1.24	-1.37	-1.48	2210010L05Rik
1424465_at	Lgx only	957	881	710	583	-1.09	-1.35	-1.64	Ccdc58
1424467_at	Lgx only	1725	2308	2228	2625	1.34	1.29	1.52	Phldb1
1424473_at	Lgx only	911	823	725	502	-1.11	-1.26	-1.81	Polr2h
1424479_at	Lgx only	39	46	64	119	1.18	1.64	3.02	Cst8
1424500_at	Lgx only	1020	947	744	637	-1.08	-1.37	-1.60	Utp6
1424505_at	Lgx only	1309	1213	1172	895	-1.08	-1.12	-1.46	Rmnd1
1424510_at	Lgx only	783	733	627	574	-1.07	-1.25	-1.36	Nudt6

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1424517_at	CR only	403	529	450	495	1.31	1.12	1.23	Ccdc12
1424520_at	Res only	687	597	550	610	-1.15	-1.25	-1.13	2010305A19Rik
1424526_a_at	Lgx only	630	568	533	439	-1.11	-1.18	-1.43	Tgds
1424527_at	Lgx only	1547	1612	1940	2049	1.04	1.25	1.32	Ppp2r2d
1424531_a_at	Lgx only	1693	2053	2103	2408	1.21	1.24	1.42	Tcea3
1424539_at	Res & Lgx	4074	4359	3294	2993	1.07	-1.24	-1.36	Ubl4
1424541_at	Res & Lgx	5299	4888	3970	2986	-1.08	-1.33	-1.77	Tmem70
1424545_at	Res & Lgx	4029	3665	2845	2585	-1.10	-1.42	-1.56	BC003965
1424553_at	Lgx only	3262	3958	4239	4357	1.21	1.30	1.34	Hhatl
1424559_at	Lgx only	301	268	241	157	-1.13	-1.25	-1.92	Rpap2
1424562_a_at	Lgx only	#####	112473	113888	167622	1.08	1.10	1.61	Slc25a4
1424564_at	Lgx only	1274	1360	1557	1708	1.07	1.22	1.34	2410001C21Rik
1424572_a_at	Lgx only	1146	1213	1654	1775	1.06	1.44	1.55	H2afy
1424585_at	Lgx only	895	932	1128	1160	1.04	1.26	1.30	Ranbp10
1424594_at	Lgx only	3378	3499	3621	4257	1.04	1.07	1.26	Lgals7
1424595_at	Lgx only	1220	1320	1490	2039	1.08	1.22	1.67	F11r
1424598_at	Lgx only	2389	1604	1838	1438	-1.49	-1.30	-1.66	Ddx6
1424614_at	Lgx only	2262	2581	3033	2935	1.14	1.34	1.30	Frag1
1424635_at	Lgx only	40976	41854	46791	54473	1.02	1.14	1.33	Eef1a1
1424639_a_at	Lgx only	1837	2131	2120	2408	1.16	1.15	1.31	Hmgcl
1424642_at	Res & Lgx	839	793	585	514	-1.06	-1.43	-1.63	Thoc1
1424643_at	Lgx only	361	461	466	524	1.28	1.29	1.45	Tcof1
1424644_at	Lgx only	751	910	920	970	1.21	1.22	1.29	Tbcc
1424669_at	Res & Lgx	1167	1216	852	883	1.04	-1.37	-1.32	Zfyve21
1424682_at	Lgx only	844	922	1107	1316	1.09	1.31	1.56	Atpbd1c
1424683_at	Lgx only	15130	13625	13449	10806	-1.11	-1.12	-1.40	1810015C04Rik
1424686_at	Lgx only	397	485	579	584	1.22	1.46	1.47	Heatr6
1424700_at	Lgx only	1348	1564	1695	1953	1.16	1.26	1.45	Tmem38b
1424715_at	All	1674	1255	2440	2317	-1.33	1.46	1.38	Retsat
1424720_at	Lgx only	1275	1563	1533	1790	1.23	1.20	1.40	Mgat4b
1424727_at	Lgx only	73	105	145	185	1.43	1.99	2.54	Ccr5
1424728_at	CR & Lgx	991	816	861	760	-1.21	-1.15	-1.30	BC011248
1424736_at	Res & Lgx	18836	21343	24570	28063	1.13	1.30	1.49	Eef2
1424744_at	Lgx only	318	193	275	639	-1.65	-1.16	2.01	Sds
1424745_at	Lgx only	533	595	714	779	1.11	1.34	1.46	Agxt2l2
1424746_at	Res & Lgx	5066	5452	6046	7004	1.08	1.19	1.38	Kif1c
1424749_at	Res & Lgx	491	453	785	669	-1.08	1.60	1.36	Wdfy1
1424776_a_at	Lgx only	1323	1302	1746	1740	-1.02	1.32	1.32	Slc25a28
1424777_at	Lgx only	572	536	703	792	-1.07	1.23	1.38	Wdr21
1424790_at	Lgx only	1894	2211	3370	4182	1.17	1.78	2.21	Slc25a42
1424791_a_at	Lgx only	2967	3682	3547	3765	1.24	1.20	1.27	Bcam
1424795_a_at	Res only	62	70	170	154	1.13	2.74	2.48	1700001O22Rik
1424819_a_at	Lgx only	557	580	605	719	1.04	1.09	1.29	Ric8
1424827_a_at	Lgx only	5109	5113	4471	3838	1.00	-1.14	-1.33	Csnk1a1
1424842_a_at	Lgx only	554	516	684	759	-1.07	1.24	1.37	Arhgap24
1424850_at	Lgx only	392	341	315	258	-1.15	-1.24	-1.52	Map3k1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1424873_at	Res & Lgx	906	801	637	641	-1.13	-1.42	-1.41	Rnf2
1424878_at	CR & Lgx	255	508	463	632	1.99	1.82	2.48	Lrch4
1424898_at	CR only	144	51	82	114	-2.84	-1.76	-1.27	Slc10a1
1424912_at	Lgx only	417	508	500	569	1.22	1.20	1.36	Slc25a17
1424918_at	Res & Lgx	893	857	631	559	-1.04	-1.42	-1.60	Tbc1d19
1424929_a_at	Lgx only	239	284	385	449	1.19	1.61	1.88	Trim26
1424942_a_at	CR only	55	147	154	55	2.69	2.81	1.00	Myc
1424954_a_at	Lgx only	657	753	904	1030	1.15	1.38	1.57	Pip5k1c
1424956_at	Lgx only	246	311	380	513	1.26	1.55	2.09	Ahdc1
1424978_at	Res only	23	79	87	88	3.44	3.76	3.82	Odf4
1424988_at	Lgx only	1652	1684	1806	2065	1.02	1.09	1.25	Mylip
1424990_at	Lgx only	890	960	1037	1205	1.08	1.17	1.35	Tmem142a
1424996_at	Lgx only	650	688	746	875	1.06	1.15	1.35	Cflar
1425024_at	CR only	104	28	94	50	-3.79	-1.11	-2.09	E430018J23Rik
1425057_at	Res only	88	164	237	176	1.85	2.68	1.98	Pbld
1425079_at	CR only	40	118	72	60	2.96	1.79	1.51	Tm6sf2
1425114_at	Res & Lgx	795	765	561	544	-1.04	-1.42	-1.46	Rbbp6
1425143_a_at	Lgx only	25337	27260	28070	34606	1.08	1.11	1.37	Ndufs1
1425158_at	Res & Lgx	1320	1302	1751	1907	-1.01	1.33	1.44	Tbx20
1425164_a_at	Lgx only	265	328	383	483	1.24	1.44	1.82	Phkg1
1425189_a_at	Res & Lgx	3583	3540	2889	2383	-1.01	-1.24	-1.50	Mrpl15
1425214_at	Lgx only	324	237	207	133	-1.37	-1.57	-2.44	P2ry6
1425225_at	Lgx only	94	142	190	249	1.51	2.02	2.64	Fcgr4
1425228_a_at	Lgx only	1536	1652	1255	1078	1.08	-1.22	-1.43	Dguok
1425243_at	Lgx only	115	120	196	325	1.04	1.70	2.82	Cd207
1425257_at	Lgx only	7	19	41	16	2.89	6.34	2.39	Acot5
1425270_at	Res & Lgx	3017	2790	2111	1975	-1.08	-1.43	-1.53	Kif1b
1425274_at	Res & Lgx	4607	4976	3462	3212	1.08	-1.33	-1.43	Asph
1425314_at	Res only	27	57	96	118	2.10	3.57	4.36	Gpr98
1425332_at	Lgx only	11194	12729	12529	16323	1.14	1.12	1.46	Zfp106
1425333_at	Lgx only	410	538	624	856	1.31	1.52	2.09	Rab43
1425340_a_at	CR & Lgx	1281	1481	1447	1573	1.16	1.13	1.23	Ptpra
1425341_at	Lgx only	2691	3341	3786	4027	1.24	1.41	1.50	Kcnk3
1425350_a_at	Res & Lgx	106	147	186	212	1.38	1.75	2.00	Myef2
1425455_a_at	Lgx only	4248	4028	3479	3392	-1.05	-1.22	-1.25	Churc1
1425480_at	Res & Lgx	2113	2091	1616	1298	-1.01	-1.31	-1.63	Cnot6l
1425492_at	Res & Lgx	2530	2180	1751	1792	-1.16	-1.44	-1.41	Bmpr1a
1425519_a_at	Res & Lgx	1769	1610	2963	2821	-1.10	1.67	1.59	Cd74
1425521_at	Lgx only	337	279	205	188	-1.21	-1.64	-1.79	Paip1
1425558_at	Res only	136	59	28	101	-2.32	-4.94	-1.34	Klc3
1425589_at	Lgx only	148	111	123	38	-1.34	-1.21	-3.88	Hsd17b13
1425617_at	Lgx only	243	296	355	486	1.22	1.46	1.99	Dhx9
1425639_at	Lgx only	209	211	342	342	1.01	1.63	1.64	Centa2
1425646_at	Lgx only	141	96	96	68	-1.46	-1.47	-2.08	BC016495
1425674_a_at	Lgx only	2104	1965	1606	1495	-1.07	-1.31	-1.41	Ssu72
1425677_a_at	Lgx only	11130	10594	9470	8378	-1.05	-1.18	-1.33	Ank1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1425682_a_at	Lgx only	518	419	373	288	-1.24	-1.39	-1.80	Tprkb
1425702_a_at	Lgx only	574	571	734	946	-1.01	1.28	1.65	Enpp5
1425706_a_at	Lgx only	371	337	391	239	-1.10	1.05	-1.55	Ddb2
1425718_a_at	Lgx only	33649	29835	25700	23101	-1.13	-1.31	-1.46	Ivns1abp
1425742_a_at	Lgx only	11487	11684	12973	13668	1.02	1.13	1.19	Tsc22d1
1425753_a_at	Res only	701	793	434	484	1.13	-1.61	-1.45	Ung
1425760_a_at	Lgx only	378	450	540	627	1.19	1.43	1.66	Pitpnm1
1425764_a_at	Lgx only	2958	3344	3747	4049	1.13	1.27	1.37	Bcat2
1425780_a_at	Lgx only	1362	1035	1202	963	-1.32	-1.13	-1.41	Tmem167
1425792_a_at	Res & Lgx	599	793	1003	995	1.32	1.67	1.66	Rorc
1425795_a_at	Res & Lgx	2655	2581	1359	1207	-1.03	-1.95	-2.20	Map3k7
1425826_a_at	Lgx only	6893	8508	10213	13158	1.23	1.48	1.91	Sorbs1
1425894_at	CR only	315	164	315	398	-1.92	1.00	1.26	Mrgprf
1425895_a_at	Lgx only	2855	3457	3880	4028	1.21	1.36	1.41	Id1
1425904_at	Res only	34	52	104	62	1.53	3.06	1.82	Satb2
1425930_a_at	Lgx only	698	638	680	563	-1.09	-1.03	-1.24	Mlx
1425933_a_at	Res & Lgx	1038	1091	859	854	1.05	-1.21	-1.21	Nt5c2
1425940_a_at	Lgx only	184	208	306	319	1.13	1.66	1.73	Ssbp3
1425978_at	Res & Lgx	1850	1652	1140	1026	-1.12	-1.62	-1.80	Myocd
1425993_a_at	Res & Lgx	1379	1079	897	848	-1.28	-1.54	-1.63	Hsp110
1426000_at	Lgx only	164	196	167	317	1.19	1.02	1.93	Oxtr
1426016_a_at	Lgx only	55	65	130	164	1.18	2.39	3.00	Tro
1426068_at	Lgx only	935	868	767	692	-1.08	-1.22	-1.35	Slc7a4
1426089_a_at	Lgx only	1823	1590	1565	1314	-1.15	-1.17	-1.39	BC003331
1426100_a_at	Lgx only	218	225	310	338	1.03	1.42	1.55	Tk2
1426114_at	Res & Lgx	5491	5041	29756	25956	-1.09	5.42	4.73	Hnrpab
1426118_a_at	Lgx only	1454	1702	1714	1820	1.17	1.18	1.25	Tomm40
1426179_a_at	Lgx only	910	1026	1204	1351	1.13	1.32	1.48	Twsg1
1426187_a_at	Lgx only	1603	1568	1266	1056	-1.02	-1.27	-1.52	Hax1
1426195_a_at	Lgx only	29737	32186	35405	39796	1.08	1.19	1.34	Cst3
1426235_a_at	Res & Lgx	2374	2866	5732	6147	1.21	2.41	2.59	Glul
1426241_a_at	Lgx only	771	982	908	1062	1.27	1.18	1.38	Scmh1
1426249_at	Res & Lgx	1302	1459	1804	2108	1.12	1.39	1.62	Adrbk1
1426254_at	Lgx only	1276	1145	917	731	-1.12	-1.39	-1.75	Tm2d1
1426257_a_at	Res & Lgx	1948	2192	2318	2595	1.13	1.19	1.33	Sars
1426263_at	Lgx only	1203	1175	1108	911	-1.02	-1.09	-1.32	Cadm4
1426269_at	Res & Lgx	684	560	450	371	-1.22	-1.52	-1.85	Sybl1
1426277_at	Lgx only	386	336	445	519	-1.15	1.15	1.34	C730025P13Rik
1426279_at	Lgx only	770	726	591	516	-1.06	-1.30	-1.49	5830415L20Rik
1426285_at	Lgx only	2453	2580	2755	3223	1.05	1.12	1.31	Lama2
1426286_at	Lgx only	335	275	211	119	-1.22	-1.59	-2.81	Noc3l
1426297_at	Lgx only	466	452	754	680	-1.03	1.62	1.46	Tcfe2a
1426307_at	Res & Lgx	1936	1817	1474	1311	-1.07	-1.31	-1.48	Cyb5r4
1426337_a_at	CR & Lgx	32	84	49	110	2.64	1.55	3.45	Tead4
1426344_at	Lgx only	475	506	511	653	1.07	1.08	1.38	Gle1l
1426347_at	CR only	783	635	743	686	-1.23	-1.05	-1.14	2010321M09Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1426353_at	Lgx only	1157	1203	1210	1377	1.04	1.05	1.19	Stat6
1426380_at	Lgx only	4215	4149	4647	5122	-1.02	1.10	1.22	Eif4b
1426386_at	Res & Lgx	1464	1483	1190	993	1.01	-1.23	-1.47	Rpl7l1
1426390_a_at	Lgx only	22906	23329	19114	18319	1.02	-1.20	-1.25	Arf1
1426398_at	Lgx only	989	893	750	661	-1.11	-1.32	-1.50	Ube2w
1426400_a_at	Res & Lgx	9253	10079	10609	11708	1.09	1.15	1.27	Capns1
1426406_at	Res & Lgx	2553	2947	3706	4584	1.15	1.45	1.80	Setd8
1426416_a_at	Res & Lgx	1595	1370	1005	953	-1.16	-1.59	-1.67	Yipf4
1426423_at	Res & Lgx	820	1004	1130	1251	1.22	1.38	1.53	Shmt2
1426436_at	Lgx only	760	764	675	568	1.00	-1.13	-1.34	Tmem159
1426440_at	Lgx only	2254	2820	2177	2947	1.25	-1.04	1.31	Dhrs7
1426444_at	Res only	314	254	467	460	-1.24	1.48	1.46	Rhbdd2
1426445_at	Lgx only	1978	2219	2502	2536	1.12	1.26	1.28	Ctage5
1426446_at	Lgx only	312	312	438	458	1.00	1.40	1.47	6430548M08Rik
1426452_a_at	Lgx only	202	256	129	77	1.26	-1.57	-2.64	Rab30
1426455_at	Lgx only	402	394	369	274	-1.02	-1.09	-1.47	Sdccag10
1426457_at	Lgx only	9329	9212	7693	6876	-1.01	-1.21	-1.36	Slmap
1426468_at	Res only	1223	1032	910	976	-1.18	-1.34	-1.25	0610037L13Rik
1426477_at	Lgx only	1012	893	905	676	-1.13	-1.12	-1.50	Rasa1
1426480_at	Lgx only	2278	2147	2786	3030	-1.06	1.22	1.33	Sbds
1426481_at	Res & Lgx	1112	1028	1505	1624	-1.08	1.35	1.46	Klhl22
1426482_at	Lgx only	3505	2977	2762	2410	-1.18	-1.27	-1.45	Prkrir
1426495_at	Lgx only	348	251	218	208	-1.39	-1.59	-1.68	2410042D21Rik
1426539_at	Lgx only	295	365	390	465	1.24	1.32	1.58	Usp11
1426567_a_at	Res only	434	445	254	264	1.02	-1.71	-1.64	Pqlc1
1426586_at	Lgx only	17315	21329	19691	21472	1.23	1.14	1.24	Slc25a11
1426596_a_at	All	539	412	417	219	-1.31	-1.29	-2.46	Smn1
1426607_at	Lgx only	304	267	198	175	-1.14	-1.54	-1.73	EG633640
1426613_a_at	Lgx only	1480	1201	1246	838	-1.23	-1.19	-1.77	Snrpb2
1426614_at	Lgx only	741	922	870	1015	1.25	1.18	1.37	Prkcbp1
1426624_a_at	Res & Lgx	2908	3005	4008	4108	1.03	1.38	1.41	Ypel3
1426629_at	Lgx only	450	528	534	613	1.17	1.19	1.36	Dhx8
1426643_at	Lgx only	959	1059	1176	1265	1.10	1.23	1.32	Elp3
1426646_at	Lgx only	3289	3191	2689	2507	-1.03	-1.22	-1.31	9130011J15Rik
1426648_at	Lgx only	3467	4510	4856	5396	1.30	1.40	1.56	Mapkapk2
1426670_at	Res & Lgx	701	789	1130	1113	1.13	1.61	1.59	Agrn
1426671_a_at	Lgx only	1307	1327	1062	766	1.02	-1.23	-1.71	Rbm39
1426675_at	Lgx only	1376	1180	884	626	-1.17	-1.56	-2.20	Tomm70a
1426681_at	Lgx only	284	309	369	440	1.09	1.30	1.55	Unk
1426682_at	Lgx only	1328	1222	1113	852	-1.09	-1.19	-1.56	LOC100046343
1426688_at	Lgx only	30012	35064	33818	42859	1.17	1.13	1.43	Sdha
1426690_a_at	Res & Lgx	1211	1395	1784	2490	1.15	1.47	2.06	Srebf1
1426691_at	Lgx only	818	960	944	1189	1.17	1.15	1.45	Tjap1
1426700_a_at	Lgx only	310	327	417	406	1.06	1.35	1.31	Usp52
1426717_at	Res & Lgx	1834	1766	1219	1092	-1.04	-1.50	-1.68	Nipa2
1426718_at	Res & Lgx	972	829	713	726	-1.17	-1.36	-1.34	Skiv2l2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1426731_at	Lgx only	15714	18402	19327	23750	1.17	1.23	1.51	Des
1426741_a_at	Lgx only	1254	1098	1044	860	-1.14	-1.20	-1.46	Fastkd2
1426743_at	Lgx only	3106	3174	2664	2485	1.02	-1.17	-1.25	Appl2
1426752_at	Res only	1165	945	826	990	-1.23	-1.41	-1.18	Phf17
1426760_at	Res & Lgx	1194	1065	823	781	-1.12	-1.45	-1.53	Ipo8
1426773_at	Lgx only	6830	8123	9064	9354	1.19	1.33	1.37	Mfn1
1426774_at	Res & Lgx	607	595	485	347	-1.02	-1.25	-1.75	Parp12
1426794_at	Lgx only	934	1249	1207	1600	1.34	1.29	1.71	Ptprs
1426799_at	Lgx only	826	683	610	489	-1.21	-1.35	-1.69	Rab8b
1426819_at	Lgx only	9939	6798	6585	3448	-1.46	-1.51	-2.88	LOC100048439
1426820_at	Lgx only	5084	5617	5406	6361	1.10	1.06	1.25	2610507B11Rik
1426830_a_at	Lgx only	3633	3395	3097	2585	-1.07	-1.17	-1.41	Ahcyl1
1426833_at	Lgx only	846	870	1103	1089	1.03	1.30	1.29	Eif4g3
1426854_a_at	Lgx only	4159	4032	3462	3261	-1.03	-1.20	-1.28	Set
1426857_a_at	Lgx only	5854	4850	5610	4740	-1.21	-1.04	-1.23	Hsdl2
1426866_at	Lgx only	571	766	674	802	1.34	1.18	1.41	Chst14
1426886_at	Res & Lgx	872	844	723	633	-1.03	-1.21	-1.38	Cln5
1426895_at	Res & Lgx	897	707	604	450	-1.27	-1.48	-1.99	Zfp191
1426898_at	Res only	391	401	533	528	1.03	1.36	1.35	Map3k7ip1
1426900_at	Lgx only	986	807	644	600	-1.22	-1.53	-1.64	Jmjd1c
1426948_at	Res & Lgx	3583	4241	4782	5859	1.18	1.33	1.64	Tpr
1426952_at	Lgx only	524	503	478	259	-1.04	-1.10	-2.02	Arhgap18
1426964_at	Lgx only	1856	1813	1314	1265	-1.02	-1.41	-1.47	3110003A17Rik
1426965_at	Lgx only	402	405	499	568	1.01	1.24	1.41	Rap2a
1426969_at	Res & Lgx	551	378	376	287	-1.46	-1.46	-1.92	Trim23
1426976_at	Lgx only	3711	3721	4100	4747	1.00	1.10	1.28	Usp47
1426979_at	Lgx only	993	1192	1354	1332	1.20	1.36	1.34	Mlxip
1426982_at	Res & Lgx	535	607	880	853	1.13	1.65	1.59	Flywch1
1426984_at	Res & Lgx	291	540	554	854	1.86	1.91	2.94	2310067B10Rik
1426992_at	Res & Lgx	1745	1757	1076	1052	1.01	-1.62	-1.66	Xpr1
1427028_at	Lgx only	556	635	615	891	1.14	1.11	1.60	Lgr6
1427039_at	Lgx only	1834	2329	2407	2983	1.27	1.31	1.63	Epn1
1427040_at	Lgx only	1252	987	952	855	-1.27	-1.31	-1.46	Mdfic
1427045_at	Lgx only	778	817	1248	1424	1.05	1.60	1.83	Synpo
1427051_at	Res & Lgx	454	548	673	770	1.21	1.48	1.70	Tnks1bp1
1427058_at	Res only	8484	8530	6619	7155	1.01	-1.28	-1.19	Eif4a1
1427073_at	Res only	1956	2206	1536	1648	1.13	-1.27	-1.19	Lace1
1427084_a_at	Lgx only	686	606	508	463	-1.13	-1.35	-1.48	Map4k5
1427099_at	Res only	320	486	646	461	1.52	2.02	1.44	Maz
1427117_at	Lgx only	619	616	790	979	-1.01	1.28	1.58	Mtmr3
1427120_at	Lgx only	835	688	573	468	-1.21	-1.46	-1.78	Zfp26
1427129_a_at	Lgx only	1545	1252	1132	930	-1.23	-1.36	-1.66	Hnrpr
1427132_at	Lgx only	348	463	524	564	1.33	1.51	1.62	Sbf2
1427139_at	Lgx only	795	940	925	1054	1.18	1.16	1.33	Adamts10
1427144_at	Res & Lgx	1131	1047	680	637	-1.08	-1.66	-1.78	Hnrpll
1427146_at	Res & Lgx	673	839	1204	1613	1.25	1.79	2.40	AI790298

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1427165_at	Res & Lgx	1308	1233	814	792	-1.06	-1.61	-1.65	Il13ra1
1427166_a_at	Lgx only	1401	1747	2035	2399	1.25	1.45	1.71	Spg7
1427170_at	All	74	25	24	13	-2.94	-3.10	-5.66	Psma8
1427197_at	Lgx only	496	530	403	303	1.07	-1.23	-1.64	Atr
1427201_at	Lgx only	551	457	565	769	-1.20	1.03	1.40	Mustn1
1427228_at	Lgx only	2099	2379	3387	3964	1.13	1.61	1.89	Palld
1427239_at	CR & Lgx	552	808	637	680	1.46	1.15	1.23	Ift122
1427240_at	Lgx only	815	1013	1033	1520	1.24	1.27	1.86	Dock6
1427241_at	Lgx only	610	547	387	384	-1.12	-1.58	-1.59	Papolg
1427260_a_at	Res & Lgx	2978	2624	2355	1823	-1.13	-1.26	-1.63	Tpm3
1427266_at	All	1181	848	784	732	-1.39	-1.51	-1.61	Pbrm1
1427296_at	Res & Lgx	4758	5054	3684	3677	1.06	-1.29	-1.29	BC010304
1427312_at	Lgx only	12654	14384	15939	18697	1.14	1.26	1.48	Cmya5
1427314_at	Res & Lgx	2995	2439	2188	1689	-1.23	-1.37	-1.77	Tmed7
1427319_at	CR & Lgx	694	468	551	427	-1.48	-1.26	-1.63	A230046K03Rik
1427342_at	Res & Lgx	802	683	597	499	-1.18	-1.35	-1.61	Fastkd1
1427395_a_at	Lgx only	74	37	30	33	-2.00	-2.51	-2.27	Aldh1a3
1427418_a_at	Lgx only	1864	1555	1250	796	-1.20	-1.49	-2.34	Hif1a
1427432_a_at	Lgx only	2372	2225	1569	1292	-1.07	-1.51	-1.84	Sfrs10
1427447_a_at	Res & Lgx	1080	1415	1561	1854	1.31	1.44	1.72	Triobp
1427490_at	Lgx only	356	348	274	236	-1.02	-1.30	-1.51	Abcb7
1427529_at	Res only	151	90	67	82	-1.68	-2.25	-1.84	Fzd9
1427555_at	Lgx only	35	64	76	96	1.85	2.18	2.76	Mll2
1427557_at	Lgx only	180	201	256	281	1.11	1.42	1.56	Alg12
1427604_a_at	Lgx only	871	1023	1176	1356	1.17	1.35	1.56	Atp9a
1427661_a_at	Res & Lgx	382	474	594	597	1.24	1.56	1.56	Tssc4
1427689_a_at	Lgx only	1261	1266	1376	1652	1.00	1.09	1.31	Tnip1
1427720_a_at	Lgx only	2747	2851	3040	3415	1.04	1.11	1.24	Rrp1
1427728_at	CR only	34	97	56	57	2.88	1.65	1.68	Chrng
1427735_a_at	CR & Res	8359	12700	12493	12108	1.52	1.49	1.45	Acta1
1427873_at	Lgx only	17	54	56	110	3.19	3.31	6.50	Defcr15
1427874_at	Lgx only	1399	1574	1815	1899	1.13	1.30	1.36	Zfp313
1427876_at	Lgx only	1630	1676	1431	1226	1.03	-1.14	-1.33	Zc3h15
1427886_at	Lgx only	969	755	581	374	-1.28	-1.67	-2.59	Pom121
1427888_a_at	CR & Lgx	5357	6838	6596	7987	1.28	1.23	1.49	Spna2
1427894_at	Lgx only	472	396	538	682	-1.19	1.14	1.44	Vasn
1427898_at	Lgx only	822	714	616	515	-1.15	-1.33	-1.60	Rnf6
1427901_at	Lgx only	3381	3126	2782	2128	-1.08	-1.22	-1.59	Mrps18c
1427903_at	Res & Lgx	5849	5774	4732	4224	-1.01	-1.24	-1.38	Phpt1
1427913_at	Lgx only	2402	2230	1819	1452	-1.08	-1.32	-1.65	Rwdd1
1427918_a_at	Lgx only	7544	7921	8074	9445	1.05	1.07	1.25	Rhoq
1427929_a_at	Lgx only	610	746	507	763	1.22	-1.20	1.25	Pdxk
1427943_at	Lgx only	6234	5441	5157	3929	-1.15	-1.21	-1.59	Acyp2
1427947_at	CR only	493	623	501	547	1.26	1.02	1.11	BC028440
1427955_a_at	Lgx only	6984	7396	5948	4819	1.06	-1.17	-1.45	Deb1
1427971_at	Lgx only	957	802	781	608	-1.19	-1.22	-1.57	Cdc73

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1427983_at	Lgx only	514	395	447	362	-1.30	-1.15	-1.42	Suhw3
1427990_at	Lgx only	355	290	266	214	-1.22	-1.34	-1.66	Usp45
1427996_at	Lgx only	850	752	733	605	-1.13	-1.16	-1.41	BC028528
1427997_at	Res & Lgx	3311	2612	2104	1880	-1.27	-1.57	-1.76	1110007M04Rik
1428029_a_at	Res & Lgx	4750	5138	6149	6341	1.08	1.29	1.33	H2afv
1428061_at	Res & Lgx	945	762	578	474	-1.24	-1.64	-1.99	Hat1
1428064_at	Lgx only	545	548	561	729	1.01	1.03	1.34	Centd2
1428071_at	Lgx only	1332	1392	1595	1813	1.04	1.20	1.36	1110038D17Rik
1428083_at	CR & Lgx	11028	17747	12934	18091	1.61	1.17	1.64	2310043N10Rik
1428084_at	Lgx only	1028	928	751	646	-1.11	-1.37	-1.59	Krr1
1428100_at	Lgx only	710	679	484	450	-1.05	-1.47	-1.58	Sfrs1
1428103_at	CR & Lgx	1072	830	813	700	-1.29	-1.32	-1.53	Adam10
1428124_at	Lgx only	422	302	322	263	-1.40	-1.31	-1.60	Gtf2e1
1428128_at	Res & Lgx	1502	1659	2529	2521	1.10	1.68	1.68	4921506J03Rik
1428134_at	Lgx only	16660	18474	18163	20707	1.11	1.09	1.24	Coq9
1428143_a_at	Res & Lgx	6354	8097	11246	12003	1.27	1.77	1.89	Pnpla2
1428158_at	Res & Lgx	1535	1812	2043	2286	1.18	1.33	1.49	Akt1s1
1428160_at	Lgx only	2716	2030	1757	1025	-1.34	-1.55	-2.65	Ndufab1
1428173_at	Lgx only	437	537	595	762	1.23	1.36	1.74	Eml2
1428179_at	Lgx only	43162	47906	48747	57849	1.11	1.13	1.34	Ndufv2
1428182_at	Lgx only	840	966	980	1096	1.15	1.17	1.30	Prpsap1
1428198_at	Lgx only	360	322	266	217	-1.12	-1.36	-1.66	Adal
1428201_at	CR only	2131	2525	2452	2729	1.19	1.15	1.28	2310036O22Rik
1428206_at	Res only	104	76	36	108	-1.38	-2.90	1.04	Ccdc69
1428213_at	Res & Lgx	2496	2367	1629	1372	-1.05	-1.53	-1.82	Nsmce4a
1428230_at	CR only	963	819	985	833	-1.18	1.02	-1.16	Prkcn
1428235_at	Lgx only	19980	23234	20415	24655	1.16	1.02	1.23	Sdhd
1428236_at	Lgx only	556	408	377	306	-1.36	-1.48	-1.81	Acbd5
1428244_at	Lgx only	821	1001	1063	1344	1.22	1.29	1.64	Larp1
1428250_at	Lgx only	150	122	155	259	-1.23	1.03	1.73	Gper
1428251_at	Lgx only	464	397	316	330	-1.17	-1.47	-1.40	Smchd1
1428253_at	Res & Lgx	1966	1803	1418	1374	-1.09	-1.39	-1.43	Chmp2b
1428256_at	Res & Lgx	2199	1822	1588	1576	-1.21	-1.39	-1.40	2310047H23Rik
1428260_at	Res & Lgx	200	180	123	107	-1.11	-1.62	-1.88	Spg3a
1428277_at	Lgx only	2436	2410	1959	1529	-1.01	-1.24	-1.59	Otud6b
1428282_at	Lgx only	1073	922	1060	757	-1.16	-1.01	-1.42	Tbce
1428299_at	Res & Lgx	1060	1010	682	653	-1.05	-1.55	-1.62	Dyrk1a
1428307_at	Lgx only	1160	1032	931	745	-1.12	-1.24	-1.56	Zdhhc13
1428316_a_at	Res & Lgx	6077	4954	4136	3051	-1.23	-1.47	-1.99	Fundc2
1428332_at	CR & Lgx	2444	3279	2758	3376	1.34	1.13	1.38	Pik3ip1
1428335_a_at	Lgx only	810	785	691	580	-1.03	-1.17	-1.40	Scfd1
1428357_at	Res only	190	206	336	219	1.08	1.77	1.15	2610019F03Rik
1428365_a_at	Lgx only	2043	2396	2896	3413	1.17	1.42	1.67	Lonp1
1428366_at	All	798	646	577	485	-1.23	-1.38	-1.65	1600027N09Rik
1428370_at	CR only	128	228	179	125	1.78	1.40	-1.03	1500011B03Rik
1428380_at	Res & Lgx	2352	2151	1639	1394	-1.09	-1.44	-1.69	0610007C21Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1428382_at	Lgx only	964	1129	1473	1531	1.17	1.53	1.59	Smarcc2
1428391_at	Lgx only	267	295	348	432	1.10	1.30	1.62	Rab3il1
1428395_at	Lgx only	487	508	647	727	1.04	1.33	1.49	Smurf1
1428405_at	Lgx only	9641	10670	11324	12596	1.11	1.17	1.31	Hcfc1r1
1428412_at	Lgx only	2036	2091	2325	2629	1.03	1.14	1.29	Tm9sf3
1428421_a_at	Lgx only	2913	2410	2394	2019	-1.21	-1.22	-1.44	Glod4
1428423_at	Lgx only	1714	1643	1657	1494	-1.04	-1.03	-1.15	Pcgf3
1428427_at	CR only	92	36	39	101	-2.53	-2.37	1.10	Fbxl2
1428431_at	Res & Lgx	1390	1453	1755	1963	1.04	1.26	1.41	2310047A01Rik
1428436_at	Res & Lgx	1165	1047	815	839	-1.11	-1.43	-1.39	Lsm14a
1428440_at	Lgx only	8819	10649	10766	12943	1.21	1.22	1.47	Slc25a12
1428441_at	Lgx only	2992	2477	1975	1655	-1.21	-1.51	-1.81	Cisd2
1428443_a_at	Lgx only	732	902	816	1006	1.23	1.11	1.37	Rap1gap
1428465_at	Lgx only	6696	7010	5690	4717	1.05	-1.18	-1.42	Tmem147
1428468_at	All	950	768	805	688	-1.24	-1.18	-1.38	3110043O21Rik
1428476_a_at	Lgx only	441	575	672	824	1.30	1.52	1.87	Elac2
1428494_a_at	Lgx only	3176	3065	2853	2679	-1.04	-1.11	-1.19	Polr2i
1428495_at	Res & Lgx	2251	1796	1512	1278	-1.25	-1.49	-1.76	2410003K15Rik
1428503_a_at	Lgx only	2042	1913	1596	1490	-1.07	-1.28	-1.37	Nkiras1
1428505_at	Lgx only	4503	4374	3908	2889	-1.03	-1.15	-1.56	Ccdc90b
1428507_at	Lgx only	1620	1610	1433	1331	-1.01	-1.13	-1.22	Hdhd2
1428508_at	Lgx only	415	458	547	572	1.10	1.32	1.38	Tbc1d2b
1428510_at	Lgx only	331	473	485	525	1.43	1.46	1.58	Lphn1
1428515_at	Lgx only	845	790	736	569	-1.07	-1.15	-1.48	2410012H22Rik
1428519_at	Lgx only	3006	3200	2041	1928	1.06	-1.47	-1.56	2610528E23Rik
1428540_at	Lgx only	162	219	253	370	1.35	1.56	2.28	3321401G04Rik
1428544_at	Res & Lgx	1458	1331	1205	1043	-1.10	-1.21	-1.40	0610007L01Rik
1428549_at	Lgx only	404	587	708	973	1.45	1.75	2.41	Ccdc3
1428551_at	All	518	361	300	223	-1.44	-1.72	-2.32	Trmt11
1428552_at	Res & Lgx	2497	2020	1544	1257	-1.24	-1.62	-1.99	2610001J05Rik
1428554_a_at	Lgx only	2768	2661	2626	2233	-1.04	-1.05	-1.24	1810035L17Rik
1428564_at	Lgx only	417	459	555	738	1.10	1.33	1.77	Zfp579
1428580_at	Lgx only	1441	1418	1326	1067	-1.02	-1.09	-1.35	Blvra
1428585_at	Lgx only	720	831	840	1309	1.15	1.17	1.82	Actn1
1428587_at	Res & Lgx	2171	2060	1437	1374	-1.05	-1.51	-1.58	Tmem41b
1428589_at	Lgx only	7082	6392	5436	4990	-1.11	-1.30	-1.42	Mrpl41
1428593_at	Res only	436	336	287	244	-1.30	-1.52	-1.79	1700029F09Rik
1428594_at	Lgx only	1864	1998	1599	1255	1.07	-1.17	-1.48	Garnl1
1428598_at	All	663	946	941	976	1.43	1.42	1.47	Tbc1d7
1428613_at	Res only	548	583	786	754	1.06	1.43	1.38	Ldhd
1428615_at	CR only	1077	892	1088	1153	-1.21	1.01	1.07	P2ry5
1428617_at	Res & Lgx	1207	1018	969	859	-1.19	-1.25	-1.41	Hcfc2
1428626_at	Lgx only	750	726	685	550	-1.03	-1.09	-1.36	Lysmd2
1428651_at	CR & Lgx	5284	4538	5141	4573	-1.16	-1.03	-1.16	Klhl24
1428652_at	Res & Lgx	341	312	224	199	-1.09	-1.53	-1.72	0610010F05Rik
1428668_at	Lgx only	921	942	1096	1235	1.02	1.19	1.34	Acbd3

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1428682_at	CR only	181	79	159	142	-2.29	-1.14	-1.27	Zc3h6
1428691_at	Lgx only	1373	1505	1521	1856	1.10	1.11	1.35	Chd2
1428697_at	Lgx only	1082	1076	1176	1398	-1.01	1.09	1.29	Dpp8
1428707_at	Lgx only	2825	3531	3687	4608	1.25	1.31	1.63	Ptms
1428715_at	Res & Lgx	561	444	367	278	-1.26	-1.53	-2.02	2810423A18Rik
1428722_at	Lgx only	59642	62216	62442	77221	1.04	1.05	1.29	Ckmt2
1428723_at	Lgx only	404	425	515	657	1.05	1.27	1.62	2310047M10Rik
1428728_at	CR only	232	387	266	290	1.67	1.15	1.25	Ddx51
1428731_at	Lgx only	946	1052	960	1147	1.11	1.01	1.21	Usp54
1428748_at	Lgx only	426	369	313	221	-1.16	-1.36	-1.93	5830428H23Rik
1428749_at	Res & Lgx	631	573	372	387	-1.10	-1.69	-1.63	Dmxl2
1428758_at	CR & Res	2386	1678	1803	1967	-1.42	-1.32	-1.21	Tmem86a
1428767_at	Lgx only	347	345	449	482	-1.00	1.30	1.39	Gsdmdc1
1428769_at	Res only	568	531	411	491	-1.07	-1.38	-1.16	Tatdn3
1428782_a_at	Res & Lgx	40904	44865	48798	54806	1.10	1.19	1.34	Uqcrc1
1428786_at	Res only	261	274	406	363	1.05	1.55	1.39	Nckap1l
1428789_at	CR only	425	281	383	383	-1.51	-1.11	-1.11	Ralgps2
1428791_at	Lgx only	2024	2245	2339	2646	1.11	1.16	1.31	Ube2h
1428807_at	Lgx only	24	19	27	66	-1.30	1.10	2.72	Pabpc3
1428810_at	Lgx only	1298	1336	1428	1643	1.03	1.10	1.27	2700097O09Rik
1428812_at	Res only	600	608	802	795	1.01	1.34	1.33	1700040L02Rik
1428829_at	CR & Lgx	827	624	677	551	-1.32	-1.22	-1.50	6820401H01Rik
1428831_at	Lgx only	626	553	446	354	-1.13	-1.40	-1.77	6230429P13Rik
1428835_at	Lgx only	1354	1406	2031	2409	1.04	1.50	1.78	Myh14
1428845_at	Res & Lgx	2313	2038	1791	1813	-1.14	-1.29	-1.28	Bclaf1
1428848_a_at	Lgx only	2317	2709	2961	3010	1.17	1.28	1.30	Macf1
1428884_at	Lgx only	1347	1481	1302	1707	1.10	-1.03	1.27	Tmem57
1428890_at	Lgx only	1103	993	869	687	-1.11	-1.27	-1.61	Fem1c
1428897_at	Res & Lgx	1192	1158	601	686	-1.03	-1.98	-1.74	2610029I01Rik
1428899_at	Res & Lgx	6189	6125	4734	4774	-1.01	-1.31	-1.30	Tmem182
1428914_at	Res & Lgx	1933	2302	2457	2903	1.19	1.27	1.50	2310014D11Rik
1428919_at	Res & Lgx	753	645	488	360	-1.17	-1.54	-2.09	Fgfr1op
1428926_at	Lgx only	1791	2110	2525	2734	1.18	1.41	1.53	1110003O08Rik
1428945_at	Res only	511	424	286	365	-1.21	-1.79	-1.40	Ube1l2
1428949_at	Lgx only	1079	913	908	601	-1.18	-1.19	-1.80	Xpot
1428982_at	Res & Lgx	465	367	261	211	-1.27	-1.78	-2.20	Atad2b
1428998_at	Lgx only	1201	1404	1356	1719	1.17	1.13	1.43	Phf3
1429001_at	Res only	370	340	478	410	-1.09	1.29	1.11	Pir
1429024_at	Lgx only	3812	4605	4484	5982	1.21	1.18	1.57	Rbm20
1429028_at	Lgx only	460	366	348	309	-1.26	-1.32	-1.49	Dock11
1429034_at	Lgx only	277	217	197	144	-1.28	-1.41	-1.93	Eme2
1429042_at	Res & Lgx	583	493	381	355	-1.18	-1.53	-1.64	2010200O16Rik
1429057_at	Res & Lgx	412	390	249	239	-1.06	-1.65	-1.73	Narg1l
1429070_at	Lgx only	166	214	221	297	1.29	1.33	1.79	4933440H19Rik
1429085_at	Lgx only	3041	3379	3563	3775	1.11	1.17	1.24	Vezf1
1429103_at	Res & Lgx	4218	4035	2877	2623	-1.05	-1.47	-1.61	Tomm22

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1429107_at	Lgx only	2462	2746	3278	3325	1.12	1.33	1.35	Zfp650
1429119_at	Lgx only	962	917	756	744	-1.05	-1.27	-1.29	Iah1
1429121_at	Lgx only	375	263	322	170	-1.43	-1.16	-2.20	4921517N04Rik
1429137_at	Lgx only	193	143	138	92	-1.36	-1.40	-2.09	2810422O20Rik
1429144_at	Res only	14307	13184	10505	13791	-1.09	-1.36	-1.04	Prei4
1429146_at	Lgx only	1179	1070	980	860	-1.10	-1.20	-1.37	6620401M08Rik
1429155_at	Res only	996	805	760	789	-1.24	-1.31	-1.26	4933411K20Rik
1429160_at	Res & Lgx	684	523	484	470	-1.31	-1.41	-1.45	Mtif3
1429183_at	Lgx only	4351	3822	4249	3307	-1.14	-1.02	-1.32	Pkp2
1429186_a_at	Lgx only	1223	1135	973	934	-1.08	-1.26	-1.31	Cdadc1
1429188_at	Lgx only	1122	1148	907	855	1.02	-1.24	-1.31	Cox11
1429194_at	Lgx only	546	487	456	394	-1.12	-1.20	-1.39	Tigd2
1429196_at	Lgx only	1381	1472	2063	2670	1.07	1.49	1.93	Rabgap1l
1429206_at	Lgx only	3457	4642	4046	4930	1.34	1.17	1.43	Rhobtb1
1429209_at	CR only	179	101	118	196	-1.78	-1.52	1.09	Col23a1
1429223_a_at	Res & Lgx	2792	2374	2100	1610	-1.18	-1.33	-1.73	Hfe2
1429243_at	Res & Lgx	597	537	380	369	-1.11	-1.57	-1.62	1110054O05Rik
1429253_at	Lgx only	562	445	513	371	-1.26	-1.10	-1.52	Zmym4
1429264_at	Lgx only	496	426	359	315	-1.16	-1.38	-1.58	C030044B11Rik
1429278_at	Res only	1094	1016	863	869	-1.08	-1.27	-1.26	Nubpl
1429281_at	Res & Lgx	323	264	201	185	-1.22	-1.60	-1.75	2610008E11Rik
1429300_at	Lgx only	742	943	806	1172	1.27	1.09	1.58	Ankrd9
1429321_at	Lgx only	284	215	514	719	-1.32	1.81	2.53	Rnf149
1429328_at	Lgx only	5245	4514	4643	3961	-1.16	-1.13	-1.32	Nsfl1c
1429335_at	Lgx only	320	284	287	200	-1.13	-1.12	-1.60	Snapc1
1429352_at	CR only	291	116	140	150	-2.52	-2.08	-1.95	Mocos
1429362_a_at	Res & Lgx	1201	1528	1807	2347	1.27	1.50	1.95	Sf3b2
1429364_at	Lgx only	108	72	103	47	-1.51	-1.05	-2.30	4930579G24Rik
1429367_at	Lgx only	693	717	798	936	1.03	1.15	1.35	Wipi2
1429375_at	Lgx only	1484	1372	1276	913	-1.08	-1.16	-1.63	Anapc10
1429395_at	Lgx only	138	142	96	54	1.02	-1.45	-2.55	Gstcd
1429400_at	Lgx only	189	176	206	314	-1.07	1.09	1.66	Clcn5
1429407_at	Lgx only	188	211	333	337	1.12	1.77	1.79	Pex11c
1429413_at	Res & Lgx	292	246	187	156	-1.18	-1.56	-1.88	Cpm
1429425_at	Res & Lgx	3510	3354	2840	2532	-1.05	-1.24	-1.39	Rnf139
1429454_at	Res & Lgx	1848	1764	1340	1334	-1.05	-1.38	-1.38	Gapvd1
1429460_at	CR only	15	60	60	28	4.09	4.13	1.89	Gpr115
1429486_at	CR only	1047	1648	912	1004	1.57	-1.15	-1.04	Pfkfb2
1429487_at	Lgx only	1134	1266	1668	1601	1.12	1.47	1.41	Ppp1r12a
1429505_at	CR & Lgx	2791	1949	2450	1714	-1.43	-1.14	-1.63	2310076G13Rik
1429514_at	Lgx only	4969	4087	4128	2951	-1.22	-1.20	-1.68	Ppap2b
1429521_at	Lgx only	323	250	235	153	-1.29	-1.37	-2.12	Alkbh8
1429532_at	Res only	865	998	1089	938	1.15	1.26	1.08	Morc2a
1429534_a_at	Lgx only	10910	12210	12327	12968	1.12	1.13	1.19	Immt
1429553_at	Lgx only	151	181	260	574	1.20	1.73	3.81	Cilp2
1429556_at	Lgx only	2326	2174	1662	1363	-1.07	-1.40	-1.71	2610024B07Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1429570_at	Res only	126	63	36	102	-2.00	-3.45	-1.24	Mlkl
1429621_at	Lgx only	839	1173	1240	1343	1.40	1.48	1.60	Cand2
1429648_at	Lgx only	637	552	475	461	-1.15	-1.34	-1.38	Slc35a3
1429681_a_at	Lgx only	21171	22951	25817	28204	1.08	1.22	1.33	Gpsn2
1429698_at	Res & Lgx	163	155	82	89	-1.05	-1.99	-1.83	Mterf
1429710_at	Res & Lgx	839	763	558	459	-1.10	-1.51	-1.83	Styx
1429723_at	Res & Lgx	2893	2604	1673	1495	-1.11	-1.73	-1.94	6330409N04Rik
1429764_at	CR only	2988	2220	3256	2552	-1.35	1.09	-1.17	1500005K14Rik
1429771_at	Lgx only	927	823	776	635	-1.13	-1.19	-1.46	3110073H01Rik
1429783_at	Res & Lgx	13193	13213	10275	9645	1.00	-1.28	-1.37	Pdlim5
1429819_at	Lgx only	393	378	337	275	-1.04	-1.17	-1.43	Nmnat1
1429836_at	CR only	142	251	216	269	1.78	1.53	1.90	Ugcgl2
1429860_at	CR only	43	117	154	113	2.69	3.56	2.61	LOC677447
1429888_a_at	Lgx only	4996	5288	5443	6090	1.06	1.09	1.22	Hspb2
1429915_at	Lgx only	56	63	79	116	1.12	1.42	2.08	4930426L09Rik
1429918_at	CR only	433	297	409	416	-1.46	-1.06	-1.04	Arhgap20
1429961_at	CR & Lgx	308	198	313	200	-1.55	1.02	-1.54	1700021C14Rik
1429990_at	Lgx only	114	138	174	186	1.21	1.52	1.63	Hyal4
1430000_at	CR only	71	24	62	56	-2.92	-1.16	-1.27	B230117O15Rik
1430045_at	CR & Res	416	259	269	292	-1.61	-1.55	-1.42	Tsnax
1430078_a_at	Lgx only	284	264	259	154	-1.07	-1.09	-1.85	Ogg1
1430089_at	Lgx only	355	291	227	142	-1.22	-1.57	-2.50	5830469G19Rik
1430095_at	Lgx only	90	95	135	240	1.06	1.50	2.66	D930020B18Rik
1430123_a_at	Lgx only	13843	13323	16691	18357	-1.04	1.21	1.33	Akr1a4
1430137_at	Res only	148	166	220	222	1.12	1.49	1.51	LOC100043489
1430170_at	Res only	162	131	69	89	-1.24	-2.35	-1.82	Bbs10
1430224_at	Res only	101	97	238	112	-1.03	2.36	1.12	Wfdc3
1430253_at	Lgx only	114	159	173	252	1.40	1.52	2.22	2900006B11Rik
1430292_a_at	Res & Lgx	3466	3219	2398	2125	-1.08	-1.45	-1.63	1810030N24Rik
1430309_at	Res & Lgx	1747	1890	2535	2577	1.08	1.45	1.47	Nipbl
1430378_at	Res & Lgx	205	160	103	72	-1.28	-2.00	-2.85	2900011G08Rik
1430388_a_at	Lgx only	1818	2657	2347	2718	1.46	1.29	1.49	Sulf2
1430474_a_at	Res & Lgx	8337	8097	5357	5222	-1.03	-1.56	-1.60	Mtch2
1430518_at	Lgx only	85	28	55	17	-3.02	-1.56	-5.03	5430402E10Rik
1430519_a_at	Lgx only	939	787	784	667	-1.19	-1.20	-1.41	Cnot7
1430527_a_at	Res & Lgx	2831	2873	3201	3440	1.01	1.13	1.22	Rnf167
1430544_at	Lgx only	259	358	390	468	1.39	1.51	1.81	5830404H04Rik
1430656_a_at	Res & Lgx	3948	3401	2556	2175	-1.16	-1.54	-1.82	Asnsd1
1430676_at	CR & Lgx	26	92	89	122	3.52	3.39	4.65	Col19a1
1430685_at	Res only	17	41	35	64	2.38	2.07	3.78	6330503C03Rik
1430736_at	Lgx only	176	135	173	48	-1.31	-1.02	-3.70	9030411M15Rik
1430768_at	Lgx only	206	134	121	101	-1.54	-1.70	-2.03	9530018H14Rik
1430770_at	Res & Lgx	56	28	13	12	-1.97	-4.28	-4.68	3110080E11Rik
1430781_at	Lgx only	164	131	118	78	-1.26	-1.39	-2.11	Ak7
1430799_at	Res & Lgx	68	35	14	18	-1.91	-4.91	-3.76	5830432E09Rik
1430818_at	CR only	37	121	118	66	3.27	3.20	1.78	Tmc1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1430835_at	CR only	112	29	98	107	-3.85	-1.14	-1.05	Ccdc125
1430883_at	CR only	103	36	71	54	-2.83	-1.44	-1.89	4933402C05Rik
1430910_at	CR only	173	44	108	126	-3.91	-1.60	-1.37	4930544L04Rik
1430999_a_at	Res & Lgx	840	643	415	329	-1.31	-2.02	-2.55	Scoc
1431043_at	Lgx only	596	596	738	893	-1.00	1.24	1.50	Kbtbd5
1431255_at	CR only	604	385	610	572	-1.57	1.01	-1.06	Calr3
1431287_at	CR only	71	140	68	62	1.97	-1.05	-1.15	Pcm1
1431293_a_at	Res & Lgx	2705	1856	1662	1146	-1.46	-1.63	-2.36	Cldnd1
1431302_a_at	CR & Lgx	4139	2946	3637	2685	-1.41	-1.14	-1.54	Nudt7
1431322_at	Lgx only	704	836	854	982	1.19	1.21	1.40	Igsf3
1431415_a_at	Lgx only	681	643	595	493	-1.06	-1.14	-1.38	Tbpl1
1431428_a_at	Lgx only	1082	1202	1304	1403	1.11	1.21	1.30	Nosip
1431429_a_at	Lgx only	858	839	1095	1129	-1.02	1.28	1.32	Arl4a
1431473_at	Lgx only	18	7	25	81	-2.53	1.36	4.43	5330423I11Rik
1431498_at	Res only	94	120	187	171	1.28	1.99	1.82	9530097N15Rik
1431551_at	Lgx only	62	105	104	164	1.69	1.68	2.64	2610028D06Rik
1431561_a_at	Res only	485	676	690	684	1.39	1.42	1.41	Dhx34
1431587_at	Res only	70	55	24	53	-1.28	-2.90	-1.32	Ccdc7
1431610_at	Res only	49	101	141	107	2.05	2.87	2.18	5330439A09Rik
1431618_a_at	CR & Res	325	230	221	179	-1.41	-1.47	-1.82	D14Ertd581e
1431619_a_at	Lgx only	3465	3627	4405	4627	1.05	1.27	1.34	Dtnbp1
1431679_at	Res only	49	89	165	104	1.80	3.35	2.11	2510042H12Rik
1431746_a_at	Lgx only	3679	3526	2924	2509	-1.04	-1.26	-1.47	Ube1c
1431785_at	Lgx only	175	194	145	90	1.11	-1.20	-1.94	Rnaset2a
1431796_at	Lgx only	31	106	75	91	3.40	2.40	2.93	2810430I11Rik
1431804_a_at	Res & Lgx	690	548	337	279	-1.26	-2.04	-2.47	Sp3
1431822_a_at	Res & Lgx	3622	3320	2534	2374	-1.09	-1.43	-1.53	Azi2
1431827_a_at	Lgx only	896	797	717	590	-1.12	-1.25	-1.52	Tlk2
1431853_at	CR only	92	40	75	92	-2.33	-1.22	1.00	4933413C19Rik
1431893_a_at	Res & Lgx	638	758	379	436	1.19	-1.68	-1.46	Pdss1
1431900_a_at	CR only	32	90	31	85	2.79	-1.06	2.64	Foxa3
1431934_at	Lgx only	72	109	81	157	1.51	1.13	2.18	4930505O20Rik
1431986_at	Res only	197	193	296	133	-1.02	1.50	-1.48	4933421A08Rik
1431998_at	CR only	69	14	61	59	-4.95	-1.14	-1.16	4930432L08Rik
1432000_a_at	Lgx only	342	378	448	482	1.11	1.31	1.41	Dedd
1432016_a_at	CR only	31956	37162	31250	32250	1.16	-1.02	1.01	Idh3a
1432057_a_at	Lgx only	662	743	770	911	1.12	1.16	1.38	Prdm5
1432073_at	Res & Lgx	3205	3584	2249	2107	1.12	-1.43	-1.52	1700113I22Rik
1432122_at	Lgx only	128	89	121	44	-1.44	-1.05	-2.91	Lrrc44
1432158_a_at	Res & Lgx	2091	1924	1569	1489	-1.09	-1.33	-1.40	Trappc2
1432207_a_at	Lgx only	454	448	459	350	-1.01	1.01	-1.30	Toe1
1432248_at	Lgx only	31	74	52	105	2.36	1.66	3.36	5430402P08Rik
1432271_a_at	Res & Lgx	1856	1636	1172	967	-1.13	-1.58	-1.92	Dcun1d5
1432348_at	Lgx only	59	61	97	183	1.03	1.63	3.09	4930524O07Rik
1432369_at	CR & Res	60	139	152	155	2.30	2.52	2.57	3010027C24Rik
1432420_a_at	Lgx only	1929	1605	1516	1137	-1.20	-1.27	-1.70	2310002L09Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1432444_a_at	Lgx only	1027	964	956	784	-1.07	-1.08	-1.31	Eapp
1432457_at	Res only	99	147	183	188	1.48	1.85	1.90	4930448F12Rik
1432466_a_at	Lgx only	9714	10651	13047	18186	1.10	1.34	1.87	Apoe
1432533_a_at	Lgx only	372	420	476	655	1.13	1.28	1.76	Slc35a2
1432543_a_at	Res only	510	488	700	806	-1.04	1.37	1.58	Klf13
1432560_at	Res only	52	58	122	70	1.13	2.37	1.35	1700127D06Rik
1432590_at	CR only	156	51	107	119	-3.09	-1.46	-1.31	4930573O21Rik
1432625_at	Res only	32	59	123	62	1.81	3.78	1.90	5830487K18Rik
1432626_at	Lgx only	132	227	247	311	1.72	1.87	2.36	5730507A11Rik
1432648_at	Res only	67	77	17	67	1.16	-4.01	1.01	4930466F19Rik
1432662_at	Res only	37	77	112	109	2.11	3.05	2.97	0610042E11Rik
1432735_at	Lgx only	256	258	314	474	1.01	1.23	1.86	1700017H01Rik
1432930_at	Res only	200	222	294	287	1.11	1.47	1.43	4930453O09Rik
1433048_at	CR only	185	107	139	196	-1.74	-1.33	1.06	4933428L01Rik
1433132_at	CR only	86	27	80	127	-3.21	-1.07	1.47	Edaradd
1433148_at	CR only	226	484	386	319	2.14	1.71	1.41	4930513N20Rik
1433164_at	Res only	54	99	180	154	1.82	3.31	2.83	4930570E01Rik
1433207_at	Lgx only	57	67	66	136	1.17	1.14	2.37	5033430J17Rik
1433241_at	Lgx only	142	102	87	51	-1.39	-1.63	-2.79	9430013L17Rik
1433253_at	Lgx only	40	88	74	128	2.21	1.86	3.24	5033423K11Rik
1433314_at	Lgx only	77	51	77	21	-1.52	1.00	-3.65	4930486A15Rik
1433442_at	Lgx only	2641	2244	1952	1694	-1.18	-1.35	-1.56	Klhl9
1433464_at	Lgx only	1806	2481	2178	2563	1.37	1.21	1.42	Ipo13
1433503_at	Res & Lgx	5903	5778	4609	4467	-1.02	-1.28	-1.32	Zadh1
1433504_at	Lgx only	18431	20243	22647	25548	1.10	1.23	1.39	Pygb
1433514_at	Lgx only	1169	1037	957	909	-1.13	-1.22	-1.29	Etnk1
1433518_at	Lgx only	529	567	612	674	1.07	1.16	1.27	Lcmt2
1433519_at	Lgx only	2411	2000	2022	1774	-1.21	-1.19	-1.36	Nucks1
1433520_at	Lgx only	1068	1427	1464	1816	1.34	1.37	1.70	Scap
1433521_at	Res & Lgx	1059	954	812	613	-1.11	-1.31	-1.73	Ankrd13c
1433522_at	Lgx only	465	508	536	616	1.09	1.15	1.32	Pskh1
1433528_at	Lgx only	1899	1634	1420	1242	-1.16	-1.34	-1.53	Gtf2a2
1433537_at	Lgx only	1183	1089	1042	737	-1.09	-1.14	-1.60	4833408C14Rik
1433539_at	Res & Lgx	2660	2213	1775	1485	-1.20	-1.50	-1.79	Commd3
1433544_at	Lgx only	1808	1547	1540	1070	-1.17	-1.17	-1.69	Als2cr2
1433555_at	Lgx only	416	379	412	237	-1.10	-1.01	-1.75	Eaf1
1433556_at	Res & Lgx	138	182	263	232	1.32	1.90	1.68	Centa1
1433561_at	Lgx only	660	543	419	307	-1.22	-1.58	-2.15	Centb2
1433575_at	Lgx only	3214	2986	2497	1537	-1.08	-1.29	-2.09	Sox4
1433585_at	Lgx only	1024	898	841	644	-1.14	-1.22	-1.59	Tnpo1
1433597_at	Res & Lgx	3769	3787	2160	1597	1.00	-1.75	-2.36	9430010O03Rik
1433599_at	Lgx only	331	323	351	222	-1.03	1.06	-1.49	Baz1a
1433645_at	Lgx only	1238	1288	985	887	1.04	-1.26	-1.40	Slc44a1
1433648_at	Lgx only	3984	3473	3149	2552	-1.15	-1.26	-1.56	Spag9
1433656_a_at	Lgx only	1182	1107	1036	879	-1.07	-1.14	-1.34	Gnl3
1433664_at	Res & Lgx	664	522	428	377	-1.27	-1.55	-1.76	Ube2q2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1433676_at	Res & Lgx	12728	12400	8809	8342	-1.03	-1.44	-1.53	Wnk1
1433682_at	Lgx only	618	849	914	1124	1.37	1.48	1.82	Arhgef17
1433686_at	Lgx only	489	533	546	724	1.09	1.12	1.48	Cabin1
1433691_at	Res & Lgx	10244	10216	6379	5292	-1.00	-1.61	-1.94	Ppp1r3c
1433698_a_at	Res & Lgx	2618	2633	2921	3059	1.01	1.12	1.17	Txnl4
1433700_at	Res & Lgx	1009	844	673	749	-1.19	-1.50	-1.35	4933433P14Rik
1433705_at	Lgx only	300	269	253	170	-1.11	-1.19	-1.77	Zfp213
1433712_at	Lgx only	362	437	443	538	1.20	1.22	1.48	AW555464
1433717_at	All	1355	1876	1743	2058	1.38	1.29	1.52	D19Wsu162e
1433718_a_at	Lgx only	862	744	773	554	-1.16	-1.12	-1.56	LOC100047028
1433722_at	Lgx only	1946	2601	2972	3714	1.34	1.53	1.91	Akap13
1433725_at	Res & Lgx	840	1078	1085	1123	1.28	1.29	1.34	Acvr1b
1433727_at	Lgx only	79	101	90	160	1.28	1.15	2.03	BC038479
1433733_a_at	Lgx only	179	226	163	115	1.26	-1.10	-1.55	Cry1
1433738_at	Res & Lgx	1127	966	802	666	-1.17	-1.40	-1.69	Papd5
1433741_at	Lgx only	877	693	635	628	-1.26	-1.38	-1.40	Cd38
1433746_at	Lgx only	484	409	361	275	-1.18	-1.34	-1.76	Wdr3
1433751_at	Lgx only	580	428	435	248	-1.36	-1.33	-2.34	Slc39a10
1433760_a_at	Lgx only	732	943	926	1027	1.29	1.26	1.40	Rhbdd3
1433765_at	Lgx only	521	587	784	834	1.13	1.50	1.60	Ube2o
1433770_at	Lgx only	4705	4826	3514	3354	1.03	-1.34	-1.40	Dpysl2
1433772_at	Res & Lgx	820	636	421	437	-1.29	-1.95	-1.87	Stch
1433790_at	CR only	350	155	281	350	-2.26	-1.25	-1.00	Troap
1433794_at	Lgx only	1506	1268	1106	881	-1.19	-1.36	-1.71	Setx
1433799_at	Lgx only	877	735	582	537	-1.19	-1.51	-1.63	Rdh13
1433808_at	Lgx only	912	1110	1207	1392	1.22	1.32	1.53	D330001F17Rik
1433811_at	Res & Lgx	1795	2006	2548	2534	1.12	1.42	1.41	Mllt6
1433847_at	Lgx only	747	626	504	348	-1.19	-1.48	-2.15	D330017J20Rik
1433868_at	Lgx only	702	663	569	482	-1.06	-1.23	-1.46	Btbd3
1433875_at	Lgx only	1471	1304	1208	1141	-1.13	-1.22	-1.29	4732418C07Rik
1433883_at	Lgx only	3597	3657	2717	2316	1.02	-1.32	-1.55	Tpm4
1433891_at	Res & Lgx	1002	916	685	639	-1.09	-1.46	-1.57	Lgr4
1433897_at	Res & Lgx	1769	1483	1048	773	-1.19	-1.69	-2.29	AI597468
1433898_at	Lgx only	236	213	201	140	-1.11	-1.18	-1.69	AV025504
1433910_at	Lgx only	1523	1421	1465	1231	-1.07	-1.04	-1.24	Zcchc6
1433914_at	Res & Lgx	589	442	369	340	-1.33	-1.60	-1.73	AI747699
1433918_at	Res & Lgx	1665	1645	1006	852	-1.01	-1.65	-1.95	Atg4d
1433922_at	Res & Lgx	1341	1190	903	781	-1.13	-1.48	-1.72	Rab35
1433926_at	Res & Lgx	1929	1830	1548	1580	-1.05	-1.25	-1.22	Dync1li2
1433931_at	Lgx only	1207	1431	1706	2152	1.18	1.41	1.78	C030046I01Rik
1433952_at	Res & Lgx	1764	2403	2540	2663	1.36	1.44	1.51	Tufm
1433953_at	Lgx only	1145	1007	993	868	-1.14	-1.15	-1.32	Zfp277
1433979_at	Lgx only	1885	2263	1938	2261	1.20	1.03	1.20	Rbms2
1433986_at	Lgx only	2432	2354	2145	2176	-1.03	-1.13	-1.12	BC024659
1434001_at	Res & Lgx	591	503	394	398	-1.17	-1.50	-1.48	Ttc9c
1434008_at	Lgx only	1391	940	1006	885	-1.48	-1.38	-1.57	Scn4b

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1434009_at	Res & Lgx	624	786	1028	1225	1.26	1.65	1.96	Grlf1
1434018_at	Lgx only	996	1035	1127	1368	1.04	1.13	1.37	BC043098
1434059_at	Lgx only	519	522	671	756	1.00	1.29	1.46	B230312A22Rik
1434064_at	Res & Lgx	474	589	715	770	1.24	1.51	1.62	Tmem142c
1434066_at	Lgx only	807	953	1127	1361	1.18	1.40	1.69	Gtf3c1
1434067_at	Res only	21	38	74	62	1.83	3.54	2.96	AI662270
1434072_at	Lgx only	893	774	728	646	-1.15	-1.23	-1.38	Smcr7
1434075_at	Res & Lgx	1023	923	673	623	-1.11	-1.52	-1.64	BC030336
1434082_at	Lgx only	1059	957	940	850	-1.11	-1.13	-1.25	Pctk2
1434084_at	Lgx only	536	417	380	265	-1.28	-1.41	-2.02	5730601F06Rik
1434088_at	Lgx only	814	957	921	1043	1.18	1.13	1.28	Zkscan17
1434096_at	Lgx only	760	778	873	1035	1.02	1.15	1.36	Slc4a4
1434105_at	Lgx only	1682	1795	2023	2368	1.07	1.20	1.41	Epm2aip1
1434115_at	Lgx only	3429	4304	3972	4713	1.26	1.16	1.37	Cdh13
1434131_at	Lgx only	1087	1126	1252	1367	1.04	1.15	1.26	Rufy1
1434135_at	Lgx only	634	615	511	451	-1.03	-1.24	-1.40	B3galnt2
1434138_at	Lgx only	910	747	789	685	-1.22	-1.15	-1.33	Prune
1434140_at	CR only	1207	1781	1342	1311	1.48	1.11	1.09	Mcf2l
1434153_at	CR & Lgx	845	1513	953	1127	1.79	1.13	1.33	Shb
1434174_at	Res only	619	536	463	444	-1.16	-1.34	-1.40	Lysmd3
1434200_at	Res & Lgx	604	514	322	304	-1.17	-1.88	-1.99	BC010981
1434205_at	Res & Lgx	3650	3118	2521	1621	-1.17	-1.45	-2.25	Ppp2r5c
1434234_at	Lgx only	23	72	52	115	3.07	2.22	4.92	Zfp341
1434238_at	Lgx only	417	408	282	247	-1.02	-1.48	-1.69	Taf2
1434248_at	Res only	842	810	1061	848	-1.04	1.26	1.01	Prkch
1434268_at	Lgx only	761	830	965	1097	1.09	1.27	1.44	Adar
1434271_at	Res & Lgx	520	568	711	747	1.09	1.37	1.44	Gba2
1434273_at	Lgx only	11070	12667	12227	13559	1.14	1.10	1.22	BC034069
1434277_a_at	CR only	774	1200	842	881	1.55	1.09	1.14	Ypel2
1434278_at	Lgx only	1459	881	1015	473	-1.66	-1.44	-3.09	Mtm1
1434281_at	Lgx only	1018	999	812	698	-1.02	-1.25	-1.46	1500034J01Rik
1434283_at	Res & Lgx	893	1206	1278	1477	1.35	1.43	1.65	LOC100044968
1434284_at	Res & Lgx	829	710	613	588	-1.17	-1.35	-1.41	Bdp1
1434296_at	Lgx only	291	265	237	224	-1.10	-1.23	-1.30	BC049349
1434303_at	Lgx only	1077	1189	2323	2458	1.10	2.16	2.28	Raph1
1434320_at	Lgx only	512	413	369	377	-1.24	-1.39	-1.36	Gtf3c4
1434328_at	Lgx only	2487	2492	2004	1703	1.00	-1.24	-1.46	Rpl15
1434339_at	Res & Lgx	966	835	676	499	-1.16	-1.43	-1.94	Fnbp1l
1434344_at	Lgx only	1331	1208	1085	944	-1.10	-1.23	-1.41	Gpkow
1434354_at	Lgx only	3473	3028	2675	2382	-1.15	-1.30	-1.46	Maob
1434356_a_at	Lgx only	6321	5829	5156	4746	-1.08	-1.23	-1.33	Psma5
1434372_at	Lgx only	2170	1834	1771	1504	-1.18	-1.23	-1.44	AW112010
1434378_a_at	Lgx only	952	996	1039	1163	1.05	1.09	1.22	Mxd4
1434387_at	Lgx only	2313	2828	3081	3362	1.22	1.33	1.45	Itfg3
1434392_at	Res & Lgx	1484	1245	1133	925	-1.19	-1.31	-1.61	Usp34
1434402_at	Lgx only	683	631	619	432	-1.08	-1.10	-1.58	Samd8

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1434405_at	Res & Lgx	1119	991	685	678	-1.13	-1.63	-1.65	Fnip1
1434422_at	CR & Lgx	232	140	152	120	-1.66	-1.53	-1.94	AI428479
1434441_at	Lgx only	1752	1522	1369	1299	-1.15	-1.28	-1.35	1110018J18Rik
1434442_at	CR only	391	549	429	449	1.40	1.10	1.15	Stbd1
1434461_at	Res & Lgx	1215	1185	926	822	-1.03	-1.31	-1.48	Zfp715
1434487_at	Lgx only	1586	1697	2179	2499	1.07	1.37	1.58	Mef2d
1434493_at	Lgx only	158	164	101	106	1.03	-1.57	-1.50	1810022K09Rik
1434511_at	Lgx only	1331	1195	1108	920	-1.11	-1.20	-1.45	Phkb
1434516_at	Lgx only	1502	1422	1254	1162	-1.06	-1.20	-1.29	Pstk
1434518_at	Res & Lgx	918	972	1104	1186	1.06	1.20	1.29	Phka2
1434558_at	Lgx only	280	256	227	155	-1.09	-1.23	-1.81	Wdr47
1434565_at	Res & Lgx	1072	1078	773	729	1.01	-1.39	-1.47	Cgrrf1
1434586_a_at	Lgx only	2001	1938	1529	1209	-1.03	-1.31	-1.66	Ptdss2
1434597_at	Lgx only	2702	3318	3044	3746	1.23	1.13	1.39	Larp5
1434604_at	Lgx only	1414	1229	1298	1039	-1.15	-1.09	-1.36	Eif5b
1434610_at	Res & Lgx	2684	3974	4970	6496	1.48	1.85	2.42	Plec1
1434613_at	Lgx only	2786	2883	1811	1538	1.03	-1.54	-1.81	1810013L24Rik
1434625_at	Lgx only	882	647	703	609	-1.36	-1.25	-1.45	4930432O21Rik
1434642_at	Res & Lgx	3093	2964	4527	4450	-1.04	1.46	1.44	Hsd17b11
1434647_at	Lgx only	754	584	603	458	-1.29	-1.25	-1.65	Egflam
1434648_a_at	Lgx only	900	688	589	361	-1.31	-1.53	-2.50	Ccm2
1434655_at	Lgx only	206	244	274	363	1.18	1.33	1.76	Foxk1
1434665_at	Lgx only	1767	1845	1861	2289	1.04	1.05	1.30	Aga
1434671_at	Lgx only	1246	959	1311	840	-1.30	1.05	-1.48	B230337E12Rik
1434672_at	Lgx only	1613	1191	1046	779	-1.35	-1.54	-2.07	Gpr22
1434714_at	Lgx only	227	243	341	399	1.07	1.50	1.76	Ero1lb
1434736_at	Lgx only	894	1036	1010	1326	1.16	1.13	1.48	Hlf
1434765_at	Lgx only	788	738	602	509	-1.07	-1.31	-1.55	Ep300
1434775_at	Lgx only	573	537	690	773	-1.07	1.20	1.35	Pard3
1434791_at	Lgx only	746	909	934	1128	1.22	1.25	1.51	Atp6v0a2
1434792_at	Lgx only	639	423	604	401	-1.51	-1.06	-1.60	2010320M18Rik
1434805_at	Lgx only	439	529	521	670	1.20	1.19	1.53	Mllt1
1434822_at	Lgx only	1213	1095	1009	970	-1.11	-1.20	-1.25	Pphln1
1434824_at	Lgx only	1740	2163	2205	2627	1.24	1.27	1.51	Baz1b
1434826_at	Lgx only	548	525	447	344	-1.04	-1.23	-1.59	Rfesd
1434835_at	Lgx only	1066	952	926	824	-1.12	-1.15	-1.29	Wapal
1434838_at	Lgx only	4161	4913	5731	5398	1.18	1.38	1.30	Kcng2
1434864_at	Res & Lgx	690	688	467	358	-1.00	-1.48	-1.93	Nipa1
1434891_at	Lgx only	949	1098	1092	1555	1.16	1.15	1.64	Ptgfrn
1434896_at	Res & Lgx	968	863	618	562	-1.12	-1.57	-1.72	Zfp422-rs1
1434900_at	Lgx only	265	301	367	406	1.13	1.38	1.53	Mkl1
1434904_at	Res & Lgx	462	569	661	898	1.23	1.43	1.94	Hivep2
1434909_at	Res & Lgx	2412	2355	1922	1743	-1.02	-1.26	-1.38	Rragd
1434916_at	Lgx only	470	406	406	314	-1.16	-1.16	-1.50	Vkorc1l1
1434927_at	Lgx only	38292	44321	50306	62045	1.16	1.31	1.62	Hspb7
1434930_at	Lgx only	665	821	984	1031	1.23	1.48	1.55	Tpcn1

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1434934_at	Res & Lgx	4033	3850	2890	2753	-1.05	-1.40	-1.46	Atpaf1
1434936_at	Lgx only	374	413	491	592	1.10	1.31	1.58	Hirip3
1434942_at	Res & Lgx	901	696	666	528	-1.30	-1.35	-1.71	Esf1
1434944_at	Lgx only	6233	7918	9727	9182	1.27	1.56	1.47	Dmpk
1434967_at	Res & Lgx	535	436	358	324	-1.23	-1.49	-1.65	Zswim6
1434978_at	Lgx only	1957	2176	1745	1353	1.11	-1.12	-1.45	4933403F05Rik
1434981_at	Res only	109	143	215	123	1.31	1.97	1.12	E130303B06Rik
1434997_at	Lgx only	592	529	618	756	-1.12	1.04	1.28	Cdc2l6
1435016_at	Lgx only	3394	3426	2781	2210	1.01	-1.22	-1.54	Trak2
1435017_at	Lgx only	3573	4157	4007	4259	1.16	1.12	1.19	Mel13
1435018_at	Lgx only	872	1011	949	1112	1.16	1.09	1.28	5930434B04Rik
1435032_at	Lgx only	747	869	992	1031	1.16	1.33	1.38	Golgb1
1435091_at	Lgx only	591	460	474	418	-1.29	-1.25	-1.41	Zfp568
1435117_a_at	Lgx only	460	552	597	615	1.20	1.30	1.34	Rbj
1435135_at	Res & Lgx	6817	7003	9784	10952	1.03	1.44	1.61	Aadacl1
1435153_at	Lgx only	764	784	688	591	1.03	-1.11	-1.29	Btbd6
1435169_at	CR only	1062	1377	1382	1273	1.30	1.30	1.20	A930001N09Rik
1435180_at	Lgx only	460	729	770	1246	1.58	1.67	2.71	Podn
1435183_at	All	452	596	827	928	1.32	1.83	2.05	Tbkbp1
1435224_at	Lgx only	1147	1340	1495	1677	1.17	1.30	1.46	Crebbp
1435242_at	Res & Lgx	596	524	452	456	-1.14	-1.32	-1.31	Pds5b
1435248_a_at	Lgx only	793	736	625	445	-1.08	-1.27	-1.78	Btaf1
1435250_at	Res & Lgx	509	498	329	263	-1.02	-1.55	-1.93	Ints8
1435261_at	Res & Lgx	2639	2800	3398	4623	1.06	1.29	1.75	4732416N19Rik
1435295_at	Res only	394	484	605	566	1.23	1.54	1.44	Dopey1
1435340_at	Lgx only	409	634	611	728	1.55	1.49	1.78	Jmjd2a
1435349_at	Lgx only	646	526	503	317	-1.23	-1.28	-2.04	Nrp2
1435351_at	CR only	601	471	619	512	-1.28	1.03	-1.18	2310026E23Rik
1435360_at	Lgx only	1234	1322	1550	1828	1.07	1.26	1.48	Zfp651
1435377_at	Res & Lgx	561	417	320	302	-1.34	-1.75	-1.86	2410002O22Rik
1435378_at	Lgx only	977	1013	1221	1341	1.04	1.25	1.37	2210020M01Rik
1435386_at	Lgx only	966	1325	1564	2231	1.37	1.62	2.31	Vwf
1435437_at	Lgx only	1823	1595	1637	1411	-1.14	-1.11	-1.29	Setd7
1435441_at	Res only	366	339	487	474	-1.08	1.33	1.29	Ablim2
1435442_at	Res & Lgx	1660	1466	1220	1214	-1.13	-1.36	-1.37	Wdsof1
1435443_at	Lgx only	715	866	940	998	1.21	1.31	1.40	Eya3
1435461_at	Res & Lgx	2568	2130	1753	1415	-1.21	-1.46	-1.81	Magi3
1435490_at	CR only	110	246	176	195	2.23	1.60	1.77	Hk3
1435505_at	Res only	1051	1219	1346	1482	1.16	1.28	1.41	Dmwd
1435524_at	Lgx only	1085	1246	1347	1415	1.15	1.24	1.30	2010109N14Rik
1435526_at	Lgx only	566	469	430	359	-1.21	-1.32	-1.58	Tor1aip2
1435527_at	Lgx only	1442	1796	2081	2372	1.24	1.44	1.64	Nfic
1435529_at	Res & Lgx	949	677	595	504	-1.40	-1.60	-1.88	OTTMUSG00000016644
1435543_at	Lgx only	986	868	772	684	-1.14	-1.28	-1.44	LOC100048863
1435547_at	Lgx only	1442	1468	1270	1189	1.02	-1.14	-1.21	ENSMUSG00000075401

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1435548_at	Lgx only	726	703	596	466	-1.03	-1.22	-1.56	Mrs2l
1435549_at	Lgx only	434	440	504	549	1.01	1.16	1.26	Trpm4
1435554_at	Res & Lgx	1663	1372	1080	922	-1.21	-1.54	-1.80	Tmcc3
1435556_at	Lgx only	530	463	373	373	-1.15	-1.42	-1.42	Zfp597
1435589_at	Res & Lgx	510	650	831	1114	1.27	1.63	2.18	Ccdc85b
1435641_at	Res & Lgx	437	400	308	300	-1.09	-1.42	-1.45	9530018I07Rik
1435655_at	Lgx only	248	223	189	131	-1.11	-1.31	-1.89	Snora65
1435674_at	Lgx only	361	478	368	510	1.33	1.02	1.41	Rhobtb2
1435679_at	Lgx only	1778	1866	1603	1228	1.05	-1.11	-1.45	Optn
1435693_at	CR only	348	448	320	452	1.29	-1.09	1.30	Mall
1435695_a_at	Lgx only	876	756	620	449	-1.16	-1.41	-1.95	A030007L17Rik
1435743_at	Res & Lgx	987	808	671	634	-1.22	-1.47	-1.56	Klhl23
1435754_at	Res & Lgx	1015	818	741	714	-1.24	-1.37	-1.42	Zyg11b
1435768_at	Lgx only	919	909	725	632	-1.01	-1.27	-1.46	Arid4b
1435774_at	Lgx only	487	394	360	292	-1.24	-1.35	-1.67	AV024533
1435777_at	Lgx only	1189	995	853	715	-1.19	-1.39	-1.66	E030018N11Rik
1435782_at	Lgx only	166	244	291	295	1.47	1.75	1.78	LOC668206
1435808_at	Res & Lgx	579	704	924	1015	1.22	1.60	1.75	A230051G13Rik
1435813_at	Lgx only	2373	3193	3181	3356	1.35	1.34	1.41	Mypn
1435864_a_at	Res & Lgx	2251	2148	1526	1411	-1.05	-1.48	-1.59	1810063B05Rik
1435874_at	Lgx only	1005	1045	939	727	1.04	-1.07	-1.38	Prkab2
1435900_at	Res & Lgx	775	768	643	518	-1.01	-1.20	-1.49	Zbtb43
1435912_at	Lgx only	670	587	579	475	-1.14	-1.16	-1.41	Ubxd7
1435947_at	Lgx only	647	572	495	456	-1.13	-1.31	-1.42	2810455D13Rik
1436014_a_at	CR only	449	349	494	518	-1.28	1.10	1.16	Rusc1
1436026_at	Lgx only	476	418	620	736	-1.14	1.30	1.54	Zfp703
1436033_at	Lgx only	879	984	1031	1238	1.12	1.17	1.41	BC031353
1436041_at	CR & Lgx	1831	1425	1788	1414	-1.28	-1.02	-1.29	LOC100046086
1436045_at	Lgx only	381	321	282	216	-1.19	-1.35	-1.76	Tsga10
1436059_at	Res & Lgx	254	366	397	446	1.44	1.56	1.75	Rfx1
1436075_at	Lgx only	280	256	422	622	-1.09	1.51	2.22	Sfrp5
1436081_a_at	Lgx only	1053	1205	1255	1434	1.14	1.19	1.36	Zfp414
1436112_at	Res only	158	196	325	246	1.24	2.06	1.55	AI118078
1436113_a_at	Res only	2773	2845	2148	2176	1.03	-1.29	-1.27	St13
1436121_a_at	Lgx only	1870	1812	1483	1122	-1.03	-1.26	-1.67	Nsmce1
1436122_at	Res only	242	299	396	310	1.24	1.64	1.28	Zfp667
1436157_at	Lgx only	1826	1496	1478	1265	-1.22	-1.24	-1.44	Ccar1
1436188_a_at	CR only	7033	11508	7677	9091	1.64	1.09	1.29	Ndrg4
1436208_at	CR & Lgx	551	716	663	794	1.30	1.20	1.44	Asb1
1436214_at	Lgx only	567	465	395	293	-1.22	-1.44	-1.93	1110028C15Rik
1436215_at	Lgx only	642	508	549	433	-1.26	-1.17	-1.48	Ipmk
1436233_at	Lgx only	1039	871	997	736	-1.19	-1.04	-1.41	Btnl9
1436240_at	Lgx only	382	383	308	256	1.00	-1.24	-1.49	Sost
1436243_at	Lgx only	2945	3472	2166	1917	1.18	-1.36	-1.54	Frmd5
1436275_at	Lgx only	5589	6926	4236	4096	1.24	-1.32	-1.36	Kcnip2
1436299_at	Res & Lgx	1490	1306	1113	877	-1.14	-1.34	-1.70	Gls

Table 3									
Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1436310_at	Lgx only	199	301	245	313	1.51	1.23	1.57	Gemin5
1436332_at	Lgx only	32378	38509	38078	46348	1.19	1.18	1.43	Hspb6
1436339_at	Lgx only	6840	6976	10138	9417	1.02	1.48	1.38	1810058I24Rik
1436342_a_at	Lgx only	1693	1473	1337	1170	-1.15	-1.27	-1.45	D19Ertd721e
1436367_at	Lgx only	3325	3749	4038	4164	1.13	1.21	1.25	C130094E24
1436377_at	Res only	595	716	830	810	1.20	1.40	1.36	Gpr137
1436408_at	Lgx only	88	45	76	29	-1.95	-1.16	-3.02	Rprml
1436425_at	Lgx only	182	121	125	126	-1.50	-1.45	-1.45	Ankrd38
1436446_at	Res & Lgx	675	568	441	416	-1.19	-1.53	-1.62	2310007O11Rik
1436505_at	CR only	722	511	816	739	-1.41	1.13	1.02	Ppig
1436511_at	Res & Lgx	675	634	510	460	-1.06	-1.32	-1.47	BC031781
1436521_at	Lgx only	995	1371	1104	1496	1.38	1.11	1.50	Slc36a2
1436537_at	CR only	624	518	554	573	-1.20	-1.13	-1.09	Zfp629
1436538_at	Res & Lgx	425	320	201	116	-1.33	-2.12	-3.68	Ankrd37
1436546_at	Res & Lgx	1262	1105	994	881	-1.14	-1.27	-1.43	Lix1l
1436547_at	CR only	380	285	282	352	-1.33	-1.34	-1.08	Dgke
1436562_at	Lgx only	579	545	498	363	-1.06	-1.16	-1.59	Ddx58
1436584_at	Res & Lgx	825	721	541	545	-1.15	-1.53	-1.51	Spry2
1436594_at	Lgx only	180	124	152	103	-1.45	-1.18	-1.74	Zfp719
1436609_a_at	Lgx only	4537	4960	5297	5655	1.09	1.17	1.25	Lrpap1
1436650_at	CR & Lgx	729	1049	944	1072	1.44	1.30	1.47	Filip1
1436665_a_at	Lgx only	3944	5547	5624	7673	1.41	1.43	1.95	Ltbp4
1436739_at	Lgx only	2627	2725	2561	2047	1.04	-1.03	-1.28	Agtr1a
1436747_at	Lgx only	2419	2508	2836	3129	1.04	1.17	1.29	1110014K08Rik
1436797_a_at	Lgx only	1519	1814	1790	2289	1.19	1.18	1.51	Surf4
1436809_a_at	All	1520	2518	2464	2994	1.66	1.62	1.97	Spin1
1436817_at	Lgx only	1182	1030	929	752	-1.15	-1.27	-1.57	Exoc5
1436842_at	Res & Lgx	3911	3696	2482	2369	-1.06	-1.58	-1.65	B230380D07Rik
1436844_at	Lgx only	536	431	451	371	-1.24	-1.19	-1.44	AW046287
1436865_at	CR only	308	173	311	209	-1.78	1.01	-1.47	Slc26a11
1436867_at	CR only	23230	28014	23888	25409	1.21	1.03	1.09	Srl
1436883_at	Lgx only	558	425	421	399	-1.31	-1.32	-1.40	Mbtps2
1436918_at	Lgx only	857	823	801	562	-1.04	-1.07	-1.53	LOC100044376
1436947_a_at	Lgx only	4903	4267	3399	2703	-1.15	-1.44	-1.81	Txnl1
1436984_at	Lgx only	752	734	574	497	-1.02	-1.31	-1.51	Abi2
1436985_at	Res & Lgx	1800	1660	1487	1422	-1.08	-1.21	-1.27	Zfp644
1436999_at	Res only	619	512	464	480	-1.21	-1.33	-1.29	5033414K04Rik
1437026_at	Lgx only	472	457	287	194	-1.03	-1.65	-2.44	BC057893
1437069_at	Lgx only	1632	1471	1282	972	-1.11	-1.27	-1.68	Osbpl8
1437077_at	Res & Lgx	2086	1987	1493	1649	-1.05	-1.40	-1.26	Dcun1d2
1437092_at	Res & Lgx	535	440	282	286	-1.22	-1.90	-1.87	LOC100048376
1437111_at	Lgx only	474	441	430	320	-1.08	-1.10	-1.48	Zc3h12c
1437136_at	Res only	60	130	240	141	2.17	4.00	2.35	5830436I19Rik
1437143_a_at	All	4498	3397	2547	1894	-1.32	-1.77	-2.38	Txndc1
1437148_at	CR & Lgx	7652	9004	8835	9409	1.18	1.15	1.23	Arpc2
1437149_at	Lgx only	2370	2826	3182	3347	1.19	1.34	1.41	Slc6a6

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1437151_at	Lgx only	1757	1972	2085	2237	1.12	1.19	1.27	Usp22
1437216_at	Lgx only	363	289	295	210	-1.25	-1.23	-1.73	Ccdc88a
1437236_a_at	Lgx only	449	348	371	302	-1.29	-1.21	-1.49	Zfp110
1437241_at	CR only	760	1025	755	926	1.35	-1.01	1.22	Klf11
1437283_at	Lgx only	376	462	480	662	1.23	1.28	1.76	Tnpo2
1437287_at	Res & Lgx	2217	1647	1611	1014	-1.35	-1.38	-2.19	1110020G09Rik
1437290_at	Lgx only	1027	946	711	722	-1.09	-1.44	-1.42	Impad1
1437354_at	Res & Lgx	1278	1069	925	811	-1.20	-1.38	-1.58	C230091D08Rik
1437382_at	Lgx only	1211	1154	1069	922	-1.05	-1.13	-1.31	Acvr2a
1437394_at	Lgx only	343	383	446	567	1.12	1.30	1.65	Centg2
1437397_at	Res & Lgx	277	210	181	160	-1.32	-1.53	-1.73	Prlr
1437398_a_at	All	781	1052	1289	1566	1.35	1.65	2.01	Aldh9a1
1437403_at	Lgx only	41	70	69	98	1.72	1.69	2.41	Samd5
1437405_a_at	Lgx only	5956	7647	8743	11879	1.28	1.47	1.99	Igfbp4
1437426_at	Lgx only	275	200	273	162	-1.37	-1.01	-1.70	Wac
1437432_a_at	Res only	220	153	98	165	-1.44	-2.25	-1.33	Trim12
1437442_at	Res & Lgx	1223	963	774	621	-1.27	-1.58	-1.97	Pcdh7
1437449_at	Lgx only	727	595	602	560	-1.22	-1.21	-1.30	Rsad1
1437482_at	Res & Lgx	7128	6639	4396	3270	-1.07	-1.62	-2.18	Srd5a2l2
1437484_at	Res & Lgx	321	372	527	541	1.16	1.64	1.68	Zbtb5
1437513_a_at	Lgx only	5779	5896	6781	7125	1.02	1.17	1.23	Serinc1
1437533_at	Res & Lgx	2000	1894	1502	1237	-1.06	-1.33	-1.62	Birc4
1437537_at	Res & Lgx	249	339	340	398	1.36	1.36	1.60	Casp9
1437704_at	Res & Lgx	194	157	376	378	-1.23	1.93	1.94	2900024O10Rik
1437729_at	Lgx only	1474	1094	793	412	-1.35	-1.86	-3.58	Rpl27a
1437740_at	Lgx only	763	1122	1005	1343	1.47	1.32	1.76	Plekhm2
1437741_at	Lgx only	2327	2390	1778	1560	1.03	-1.31	-1.49	Rab21
1437785_at	Lgx only	474	397	463	337	-1.19	-1.03	-1.41	Adamts9
1437869_at	Res & Lgx	14570	13664	11826	11731	-1.07	-1.23	-1.24	3222402P14Rik
1437875_at	Lgx only	2753	2607	2485	2181	-1.06	-1.11	-1.26	Bicd2
1437900_at	Lgx only	566	564	505	437	-1.00	-1.12	-1.30	4930523C07Rik
1437917_at	Lgx only	370	334	293	223	-1.11	-1.26	-1.65	D530037H12Rik
1438024_at	Res & Lgx	3610	3226	2484	2237	-1.12	-1.45	-1.61	Ccdc90a
1438026_at	Lgx only	623	498	498	393	-1.25	-1.25	-1.58	Zfp560
1438045_at	Lgx only	737	678	702	495	-1.09	-1.05	-1.49	Eea1
1438047_at	Res & Lgx	1053	1176	1296	1256	1.12	1.23	1.19	Zfp384
1438062_at	CR only	588	372	440	434	-1.58	-1.34	-1.36	4832420A03Rik
1438077_at	Lgx only	18	38	17	62	2.11	-1.09	3.42	Nlrp4a
1438097_at	Lgx only	611	574	490	391	-1.06	-1.25	-1.56	Rab20
1438169_a_at	Lgx only	747	494	424	347	-1.51	-1.76	-2.15	Frmd4b
1438195_at	Lgx only	2915	3104	2321	2279	1.06	-1.26	-1.28	Gpd1l
1438208_at	Res only	286	277	424	361	-1.03	1.48	1.26	Taok2
1438213_at	Lgx only	15	30	39	79	2.00	2.61	5.30	A830018L16Rik
1438229_at	Res only	843	887	609	701	1.05	-1.38	-1.20	Pggt1b
1438238_at	Lgx only	231	217	198	106	-1.07	-1.17	-2.18	2010315B03Rik
1438241_at	Lgx only	525	593	734	837	1.13	1.40	1.59	Rgma

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1438258_at	CR & Res	3530	2388	4783	3703	-1.48	1.35	1.05	Vldlr
1438340_at	Lgx only	219	117	157	125	-1.86	-1.40	-1.75	A930006D11Rik
1438349_at	Lgx only	195	145	121	75	-1.34	-1.61	-2.60	BC043476
1438400_at	Lgx only	1226	1403	1426	1614	1.14	1.16	1.32	4632411B12Rik
1438416_at	Lgx only	1855	2525	2386	2992	1.36	1.29	1.61	Med16
1438422_at	Res & Lgx	1011	996	736	664	-1.01	-1.37	-1.52	Lrrc20
1438444_at	Lgx only	9	29	35	26	3.33	3.99	3.02	Spink10
1438510_a_at	Lgx only	910	841	730	535	-1.08	-1.25	-1.70	Hars
1438512_at	Res only	68	151	177	104	2.21	2.59	1.52	BC048679
1438532_at	Lgx only	292	307	310	176	1.05	1.06	-1.66	Hmcn1
1438610_a_at	Lgx only	887	695	489	435	-1.28	-1.82	-2.04	Cryz
1438658_a_at	All	1738	1228	1017	715	-1.42	-1.71	-2.43	Edg3
1438673_at	Lgx only	759	586	535	411	-1.29	-1.42	-1.85	Slc4a7
1438676_at	CR & Lgx	499	296	432	285	-1.68	-1.16	-1.75	Mpa2l
1438678_at	Lgx only	3261	2863	2608	2178	-1.14	-1.25	-1.50	1500011K16Rik
1438691_at	Res only	664	655	437	488	-1.01	-1.52	-1.36	Zzef1
1438693_at	Res & Lgx	311	353	461	515	1.14	1.48	1.66	Tmem110
1438895_at	Res only	571	519	762	647	-1.10	1.33	1.13	A430102J17Rik
1438908_at	Lgx only	246	204	303	415	-1.21	1.23	1.69	Map3k12
1438909_at	Lgx only	51	62	76	173	1.23	1.49	3.41	Sccpdh
1438910_a_at	Lgx only	3956	3657	4466	5068	-1.08	1.13	1.28	Stom
1439008_at	Lgx only	251	272	389	478	1.09	1.55	1.91	Zfp319
1439010_at	Lgx only	1107	987	790	675	-1.12	-1.40	-1.64	Larp4
1439024_at	CR only	297	211	222	198	-1.41	-1.34	-1.50	Bag4
1439029_at	Lgx only	629	843	709	1038	1.34	1.13	1.65	Gpt2
1439055_at	Lgx only	13	23	23	25	1.76	1.80	1.89	OTTMUSG-00000001305
1439078_at	Lgx only	188	135	137	90	-1.39	-1.37	-2.08	Klhl4
1439143_at	CR & Lgx	411	604	540	582	1.47	1.32	1.42	A930018M24Rik
1439153_at	Lgx only	917	1123	739	645	1.22	-1.24	-1.42	Ibrdc2
1439189_at	CR only	592	915	521	472	1.54	-1.14	-1.25	D630023B12Rik
1439244_a_at	Lgx only	2004	1777	2537	3175	-1.13	1.27	1.58	Tnrc6a
1439266_a_at	Res & Lgx	524	404	272	229	-1.30	-1.93	-2.29	Polr3k
1439364_a_at	Lgx only	1881	2097	2565	2782	1.11	1.36	1.48	Mmp2
1439397_at	All	322	190	197	172	-1.69	-1.63	-1.88	Fmn1
1439460_a_at	All	2411	1816	1398	1125	-1.33	-1.73	-2.14	Zfp289
1439483_at	Res only	47	63	129	96	1.33	2.71	2.02	AI506816
1439488_at	Lgx only	427	660	693	889	1.55	1.62	2.08	Dot1l
1439509_at	Res only	161	198	257	226	1.22	1.59	1.40	2900008C10Rik
1439529_at	Res & Lgx	293	347	451	554	1.18	1.54	1.89	A430110N23Rik
1439675_at	Res only	1299	1589	964	977	1.22	-1.35	-1.33	4933429D07Rik
1439793_at	Lgx only	539	391	382	304	-1.38	-1.41	-1.77	Gja3
1439797_at	Lgx only	324	388	353	514	1.20	1.09	1.59	Ppard
1439815_at	Lgx only	1354	1602	1962	2028	1.18	1.45	1.50	Heatr5b
1439821_at	Res only	147	79	51	75	-1.86	-2.91	-1.96	Lrp2bp
1440018_at	Lgx only	32	47	70	136	1.48	2.21	4.30	A330043J11Rik
1440096_at	Lgx only	360	318	281	177	-1.13	-1.28	-2.03	Ecm2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1440143_at	Lgx only	141	181	180	383	1.28	1.28	2.71	Pigz
1440232_at	Res only	47	67	145	121	1.41	3.07	2.55	EG622645
1440234_at	Lgx only	1187	1250	1054	915	1.05	-1.13	-1.30	1810012P15Rik
1440279_at	Lgx only	326	267	247	189	-1.22	-1.32	-1.73	Txndc10
1440335_at	Lgx only	2118	2238	2120	1677	1.06	1.00	-1.26	LOC100046468
1440478_at	Res only	176	92	68	123	-1.90	-2.57	-1.43	LOC100047601
1440480_at	Lgx only	60	174	203	293	2.89	3.38	4.87	AB182283
1440520_a_at	CR only	147	330	264	161	2.24	1.79	1.09	1700051A21Rik
1440537_at	Res only	313	264	495	395	-1.19	1.58	1.26	Kcnv2
1440542_at	Res only	82	53	18	48	-1.54	-4.45	-1.72	7420416P09Rik
1440561_at	Lgx only	65	85	111	158	1.30	1.70	2.43	C87259
1440739_at	CR only	524	357	538	443	-1.47	1.03	-1.18	Vegfc
1440781_at	CR only	133	48	101	60	-2.75	-1.32	-2.21	B830007D08Rik
1440831_at	Res only	1257	1218	923	944	-1.03	-1.36	-1.33	Bach1
1440838_at	Lgx only	431	523	579	624	1.21	1.34	1.45	AI852064
1440841_at	Lgx only	745	669	622	529	-1.11	-1.20	-1.41	BB217526
1440849_at	CR only	660	558	616	573	-1.18	-1.07	-1.15	6330417G04Rik
1440874_at	CR only	311	151	297	337	-2.06	-1.05	1.08	Slco5a1
1440908_at	Lgx only	346	365	317	547	1.06	-1.09	1.58	D030063E12
1440934_at	Lgx only	102	101	173	224	-1.00	1.70	2.20	AW742931
1440969_at	All	199	103	102	67	-1.93	-1.94	-2.95	BC030308
1441001_at	Lgx only	52	82	140	150	1.59	2.70	2.91	AI225934
1441075_at	Lgx only	317	274	260	171	-1.16	-1.22	-1.86	Nostrin
1441081_a_at	Lgx only	202	199	256	320	-1.02	1.27	1.58	1110038B12Rik
1441139_at	CR only	2413	2791	2076	2479	1.16	-1.16	1.03	ENSMUSG-00000071543
1441174_a_at	Res & Lgx	123	85	72	87	-1.44	-1.71	-1.41	Lmln
1441229_at	Res & Lgx	174	114	73	70	-1.52	-2.36	-2.48	D230019N24Rik
1441266_at	Res & Lgx	812	636	542	457	-1.28	-1.50	-1.78	Strn3
1441320_a_at	Res & Lgx	602	634	812	873	1.05	1.35	1.45	AI413194
1441438_at	CR only	269	183	277	225	-1.47	1.03	-1.20	Gpc6
1441536_at	Lgx only	18	44	32	86	2.39	1.74	4.68	Hmgcs1
1441590_at	Lgx only	1067	1051	1373	1614	-1.01	1.29	1.51	Kcnj5
1441970_at	Lgx only	419	391	340	302	-1.07	-1.23	-1.39	E430010N07Rik
1441987_at	Res & Lgx	585	488	465	395	-1.20	-1.26	-1.48	Mbd5
1442002_at	Lgx only	348	254	303	186	-1.37	-1.15	-1.87	7030402D04Rik
1442027_at	Lgx only	1531	1126	1055	790	-1.36	-1.45	-1.94	Nbeal1
1442050_at	Res & Lgx	328	298	521	618	-1.10	1.59	1.88	Zfp608
1442064_at	Res & Lgx	84	144	242	284	1.71	2.88	3.37	AW556556
1442090_at	Res only	33	77	108	83	2.30	3.24	2.47	8030463A06Rik
1442174_at	Lgx only	360	314	499	581	-1.15	1.39	1.61	Tspan18
1442186_at	Res & Lgx	215	323	448	443	1.50	2.09	2.06	LOC100045002
1442362_at	Res & Lgx	165	113	51	64	-1.45	-3.22	-2.59	Gm104
1442434_at	Res only	466	588	765	673	1.26	1.64	1.44	D8Ertd82e
1442659_at	Lgx only	332	320	312	473	-1.04	-1.07	1.42	Pcdh9
1442695_at	Lgx only	49	67	48	156	1.35	-1.03	3.15	C030007I01Rik
1442732_at	CR only	380	683	596	574	1.80	1.57	1.51	Hadhb

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1442757_at	CR & Res	432	288	287	372	-1.50	-1.50	-1.16	Lrch1
1442867_at	Res only	135	148	262	224	1.10	1.94	1.65	Megf11
1442926_at	Lgx only	10	49	42	75	5.07	4.40	7.80	1700011B04Rik
1443103_at	CR only	69	23	45	45	-2.98	-1.53	-1.53	D830046C22Rik
1443416_at	Lgx only	197	253	192	328	1.28	-1.03	1.66	C79741
1443483_at	Lgx only	59	59	64	17	1.01	1.08	-3.39	Xlr5a
1443632_at	CR only	10172	12920	10060	11150	1.27	-1.01	1.10	Obscn
1443682_at	Res only	259	192	424	371	-1.35	1.64	1.43	AI662476
1443854_at	Lgx only	405	288	380	192	-1.41	-1.07	-2.11	Hand2
1443856_at	Lgx only	726	687	651	538	-1.06	-1.11	-1.35	Rabep1
1443896_at	Lgx only	748	888	896	1033	1.19	1.20	1.38	Tbc1d5
1443932_at	Res & Lgx	2283	1935	1827	1552	-1.18	-1.25	-1.47	Klhdc1
1443935_at	Res only	401	429	494	464	1.07	1.23	1.16	BC032203
1444041_at	Lgx only	146	127	94	62	-1.15	-1.55	-2.35	AU041133
1444112_at	Lgx only	1457	1326	1343	1080	-1.10	-1.09	-1.35	ENSMUSG-00000074466
1444217_at	Lgx only	212	168	299	382	-1.26	1.41	1.80	Mrpl38
1444254_at	CR only	84	28	74	105	-2.95	-1.12	1.26	Tns4
1444294_at	Lgx only	127	204	249	265	1.61	1.97	2.10	4930551A22Rik
1444370_at	CR only	46	16	60	24	-2.80	1.31	-1.91	C77058
1444456_at	Lgx only	245	268	240	176	1.09	-1.02	-1.39	9030425P06Rik
1444494_at	All	2200	1830	1616	1601	-1.20	-1.36	-1.37	Kbtbd10
1444537_at	Lgx only	219	296	347	346	1.35	1.59	1.58	AI429363
1444684_at	Lgx only	50	23	43	16	-2.18	-1.15	-3.18	8030475D13Rik
1444766_at	Lgx only	107	102	101	31	-1.04	-1.06	-3.48	Atxn7l1
1445191_at	CR only	187	125	201	197	-1.50	1.08	1.05	Exdl1
1445459_at	Lgx only	50	100	93	186	2.00	1.87	3.72	Sstr5
1446062_at	Res only	58	100	121	102	1.74	2.10	1.77	B830028B13Rik
1446214_at	CR only	18	68	77	45	3.67	4.16	2.45	D430018E03Rik
1446678_at	Lgx only	37	60	62	121	1.62	1.68	3.26	D14Ertd16e
1446781_at	CR only	95	21	55	68	-4.54	-1.73	-1.39	D8Ertd54e
1446812_at	Res & Lgx	890	716	584	552	-1.24	-1.52	-1.61	LOC100040515
1446842_at	CR only	68	13	26	27	-5.38	-2.60	-2.47	D4Ertd571e
1447035_at	Lgx only	41	91	109	139	2.21	2.63	3.36	A230091C14Rik
1447095_at	Lgx only	109	130	166	195	1.19	1.52	1.79	C86942
1447923_at	Lgx only	781	678	544	448	-1.15	-1.44	-1.74	1810026B05Rik
1447967_at	Res only	256	260	440	360	1.01	1.72	1.41	Tmem69
1447981_at	CR only	68	13	66	56	-5.40	-1.03	-1.21	C78441
1448091_at	CR & Lgx	18	85	41	75	4.74	2.28	4.20	D15Ertd50e
1448100_at	Res & Lgx	4461	4342	3733	3467	-1.03	-1.20	-1.29	4833439L19Rik
1448116_at	Res & Lgx	3337	3991	4522	5277	1.20	1.35	1.58	Ube1x
1448122_at	CR & Lgx	8342	9257	8220	9546	1.11	-1.01	1.14	Tcp1
1448143_at	Lgx only	6719	7951	7830	8811	1.18	1.17	1.31	Aldh2
1448145_at	Lgx only	304	323	454	535	1.06	1.50	1.76	Wwp2
1448148_at	Res & Lgx	1666	2147	2587	3224	1.29	1.55	1.94	Grn
1448153_at	Lgx only	60488	68353	63338	84246	1.13	1.05	1.39	Cox5a
1448154_at	Lgx only	19344	22511	19920	25912	1.16	1.03	1.34	Ndrg2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1448163_at	Lgx only	798	1050	981	1240	1.32	1.23	1.55	Gnpda1
1448167_at	Lgx only	684	808	806	1130	1.18	1.18	1.65	Ifngr1
1448174_at	Lgx only	1875	1928	2181	2232	1.03	1.16	1.19	Cul1
1448181_at	CR only	1549	2211	1745	1742	1.43	1.13	1.12	Klf15
1448185_at	Lgx only	5495	7055	5636	8302	1.28	1.03	1.51	Herpud1
1448188_at	Lgx only	5526	6650	8466	12288	1.20	1.53	2.22	Ucp2
1448189_a_at	Lgx only	2277	2853	3180	3351	1.25	1.40	1.47	Flii
1448196_at	Res & Lgx	3368	2651	2008	1537	-1.27	-1.68	-2.19	Mat2b
1448198_a_at	Lgx only	38229	43229	40539	48367	1.13	1.06	1.27	Ndufb8
1448199_at	Res only	679	631	507	543	-1.08	-1.34	-1.25	Ankrd10
1448206_at	Lgx only	6419	7041	7577	10844	1.10	1.18	1.69	Psma2
1448208_at	Lgx only	632	474	499	348	-1.34	-1.27	-1.82	Smad1
1448209_a_at	Lgx only	246	316	363	502	1.29	1.48	2.04	Slc22a17
1448212_at	Lgx only	1004	973	746	707	-1.03	-1.35	-1.42	Tnfsf5ip1
1448221_at	CR only	4042	4996	4086	4247	1.24	1.01	1.05	Bat1a
1448224_at	Lgx only	1460	1359	1117	995	-1.07	-1.31	-1.47	Tfam
1448225_at	Lgx only	498	691	692	796	1.39	1.39	1.60	Gpaa1
1448240_at	Lgx only	1199	1319	1410	1668	1.10	1.18	1.39	Mbtps1
1448242_at	Lgx only	1162	1336	1617	1835	1.15	1.39	1.58	Sec61a1
1448244_at	Lgx only	1573	1505	1192	813	-1.05	-1.32	-1.93	Lypla1
1448252_a_at	Lgx only	7588	7012	6014	5451	-1.08	-1.26	-1.39	Eef1b2
1448258_a_at	Lgx only	6413	6297	5305	4246	-1.02	-1.21	-1.51	Spcs1
1448269_a_at	Res & Lgx	613	517	374	350	-1.19	-1.64	-1.75	Klhl13
1448276_at	Lgx only	1808	2156	1862	2730	1.19	1.03	1.51	Tspan4
1448284_a_at	Lgx only	37586	40364	44938	56730	1.07	1.20	1.51	Ndufc1
1448287_at	Lgx only	4436	4040	3639	2830	-1.10	-1.22	-1.57	Rpo1-3
1448304_a_at	Res & Lgx	3053	2867	2183	1770	-1.06	-1.40	-1.72	Rab6
1448313_at	Lgx only	2609	2807	3061	3302	1.08	1.17	1.27	Tpp1
1448325_at	Res & Lgx	757	893	1112	1080	1.18	1.47	1.43	Myd116
1448327_at	Lgx only	30728	36837	37776	43889	1.20	1.23	1.43	Actn2
1448330_at	Res & Lgx	7365	8521	9720	11395	1.16	1.32	1.55	Gstm1
1448336_at	Lgx only	1711	1622	1611	1433	-1.05	-1.06	-1.19	Drg1
1448339_at	Res & Lgx	4104	3995	2913	2634	-1.03	-1.41	-1.56	Tmem30a
1448341_a_at	Lgx only	321	317	503	653	-1.01	1.57	2.04	Stxbp2
1448345_at	Lgx only	1081	1303	1204	1435	1.21	1.11	1.33	Tomm34
1448346_at	CR only	2920	2207	2287	2450	-1.32	-1.28	-1.19	Cfl1
1448351_at	Lgx only	1035	1248	1300	1665	1.21	1.26	1.61	Coro1b
1448356_at	Lgx only	2083	1903	1705	1572	-1.09	-1.22	-1.32	Ube2d2
1448362_at	Lgx only	1772	2097	2189	2519	1.18	1.24	1.42	Dnajc7
1448363_at	Res & Lgx	2486	2740	3232	3785	1.10	1.30	1.52	Yap1
1448365_at	Res & Lgx	1790	1723	1184	1227	-1.04	-1.51	-1.46	Exosc7
1448379_at	Res only	647	563	413	518	-1.15	-1.57	-1.25	Pot1a
1448380_at	Res & Lgx	1020	1208	1439	1659	1.19	1.41	1.63	Lgals3bp
1448388_a_at	Lgx only	2505	2405	1802	1158	-1.04	-1.39	-2.16	1110002B05Rik
1448402_at	Lgx only	1415	1869	2287	2869	1.32	1.62	2.03	Tln1
1448412_a_at	Lgx only	3472	4076	4244	4721	1.17	1.22	1.36	Tsc22d4

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1448415_a_at	Lgx only	387	438	593	653	1.13	1.53	1.69	Sema3b
1448416_at	Lgx only	16601	20394	19345	31156	1.23	1.17	1.88	Mgp
1448417_at	Lgx only	1000	1181	1301	1299	1.18	1.30	1.30	Ninj1
1448429_at	Res & Lgx	3339	3198	2421	1974	-1.04	-1.38	-1.69	Gyg
1448430_a_at	CR & Lgx	8516	10720	9639	10638	1.26	1.13	1.25	Naca
1448432_at	Lgx only	369	514	544	661	1.40	1.48	1.79	Plcd1
1448438_at	Lgx only	2204	1814	1971	1577	-1.22	-1.12	-1.40	Derl2
1448463_at	Lgx only	4645	4072	3480	3091	-1.14	-1.33	-1.50	4933434E20Rik
1448467_a_at	Lgx only	1218	1447	1612	1817	1.19	1.32	1.49	Ehbp1l1
1448476_at	CR & Lgx	5612	6609	6127	7217	1.18	1.09	1.29	Nap1l4
1448480_at	Res & Lgx	1000	728	556	360	-1.37	-1.80	-2.78	Nip7
1448484_at	Res & Lgx	5744	5110	3530	3419	-1.12	-1.63	-1.68	Amd1
1448488_at	CR & Lgx	831	1036	919	1013	1.25	1.11	1.22	Mrps5
1448492_a_at	Res & Lgx	4733	4441	3842	3020	-1.07	-1.23	-1.57	Psmd12
1448493_at	CR & Lgx	9202	6905	8442	6228	-1.33	-1.09	-1.48	Paip2
1448495_at	Lgx only	723	911	890	1046	1.26	1.23	1.45	Tsta3
1448498_at	Lgx only	793	1061	951	1228	1.34	1.20	1.55	Rps6ka4
1448505_at	Res & Lgx	1738	1400	1033	860	-1.24	-1.68	-2.02	C1d
1448508_at	Lgx only	237	284	322	442	1.20	1.36	1.86	Traf3ip2
1448517_at	Lgx only	2047	2144	1562	1376	1.05	-1.31	-1.49	Timm22
1448527_at	Lgx only	1955	1753	1345	1338	-1.12	-1.45	-1.46	Pdcd10
1448533_at	Res & Lgx	3076	2967	2613	2263	-1.04	-1.18	-1.36	Tbcb
1448535_at	Lgx only	306	250	237	154	-1.22	-1.29	-1.98	Elp4
1448536_at	Lgx only	4579	4812	3261	2727	1.05	-1.40	-1.68	Lsm3
1448537_at	Res & Lgx	2417	2026	1762	1591	-1.19	-1.37	-1.52	Ttc1
1448543_at	Res & Lgx	1715	1494	908	822	-1.15	-1.89	-2.09	Slmo2
1448548_at	Lgx only	1328	1385	1288	1631	1.04	-1.03	1.23	Tulp4
1448549_a_at	Res only	1179	1068	850	1106	-1.10	-1.39	-1.07	Dpagt1
1448559_at	Lgx only	5131	5547	6227	7143	1.08	1.21	1.39	Flot1
1448564_at	Res only	511	609	713	573	1.19	1.40	1.12	Cib1
1448565_at	Lgx only	2831	2386	2740	1942	-1.19	-1.03	-1.46	Ppp1r11
1448567_at	Lgx only	590	668	763	806	1.13	1.29	1.37	Tmem115
1448568_a_at	CR only	688	524	629	533	-1.31	-1.09	-1.29	Slc20a1
1448570_at	Lgx only	1666	1576	1258	948	-1.06	-1.32	-1.76	Gmfb
1448579_at	Lgx only	2689	2976	3392	3692	1.11	1.26	1.37	Glg1
1448585_at	Res only	751	809	578	655	1.08	-1.30	-1.15	Gtf2h4
1448591_at	CR only	1010	720	1099	736	-1.40	1.09	-1.37	Ctss
1448613_at	Lgx only	1206	1308	1426	1969	1.08	1.18	1.63	Ecm1
1448615_at	Res & Lgx	769	858	1028	1113	1.12	1.34	1.45	Ccs
1448621_a_at	Res & Lgx	7092	7555	5213	5291	1.07	-1.36	-1.34	Smpd1
1448623_at	Lgx only	1699	1287	1178	807	-1.32	-1.44	-2.11	Tmem123
1448625_at	Res & Lgx	1612	1957	2268	2558	1.21	1.41	1.59	Golga2
1448637_at	Lgx only	1033	1248	1507	1924	1.21	1.46	1.86	Med25
1448638_at	Res only	68	79	140	150	1.17	2.06	2.21	Mtbp
1448644_at	Lgx only	1286	1471	1597	1684	1.14	1.24	1.31	Pef1
1448645_at	Lgx only	2239	2328	1993	1844	1.04	-1.12	-1.21	Msl31

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1448649_at	Lgx only	540	500	484	392	-1.08	-1.12	-1.38	Enpep
1448684_at	Res & Lgx	4396	3940	3485	3517	-1.12	-1.26	-1.25	Ppp1r2
1448696_at	Res only	95	115	47	40	1.20	-2.03	-2.37	Heph
1448700_at	Lgx only	4037	3143	2765	2331	-1.28	-1.46	-1.73	G0s2
1448717_at	CR only	889	671	980	830	-1.32	1.10	-1.07	Gcdh
1448720_at	Lgx only	342	284	279	229	-1.21	-1.23	-1.49	Lrrc40
1448724_at	Res only	4162	4532	2682	2820	1.09	-1.55	-1.48	Cish
1448727_at	Lgx only	269	370	398	484	1.37	1.48	1.80	Tle6
1448729_a_at	CR & Lgx	1559	1304	1446	1143	-1.20	-1.08	-1.36	39329
1448737_at	Lgx only	4695	4240	4264	3613	-1.11	-1.10	-1.30	Tspan7
1448760_at	Lgx only	643	554	539	457	-1.16	-1.19	-1.41	Zfp68
1448762_at	Res & Lgx	1357	1116	910	676	-1.22	-1.49	-2.01	Rad17
1448769_at	Lgx only	2415	2426	2058	1875	1.00	-1.17	-1.29	Slc35b1
1448770_a_at	Lgx only	6679	6835	5272	3909	1.02	-1.27	-1.71	Atpif1
1448771_a_at	Lgx only	49028	51355	54395	64994	1.05	1.11	1.33	Fth1
1448788_at	Res & Lgx	1474	1445	1194	1065	-1.02	-1.24	-1.38	Cd200
1448792_a_at	Res only	137	80	49	1448	-1.71	-2.79	10.55	Cyp2f2
1448797_at	Res & Lgx	945	842	674	584	-1.12	-1.40	-1.62	Elk3
1448809_at	Res & Lgx	2605	2313	1681	1641	-1.13	-1.55	-1.59	Cse1l
1448810_at	Res & Lgx	397	445	638	701	1.12	1.61	1.77	Gne
1448826_at	Lgx only	95590	115497	118388	173815	1.21	1.24	1.82	Myh6
1448830_at	Lgx only	5138	4291	4152	3187	-1.20	-1.24	-1.61	Dusp1
1448835_at	Res & Lgx	5346	5044	3924	3656	-1.06	-1.36	-1.46	E2f6
1448838_at	Lgx only	386	350	281	214	-1.10	-1.37	-1.81	Topors
1448840_at	Lgx only	461	474	456	753	1.03	-1.01	1.63	Tmub1
1448844_at	Lgx only	1373	1278	1179	983	-1.07	-1.17	-1.40	Cyb5b
1448853_at	Lgx only	5831	5559	4659	4095	-1.05	-1.25	-1.42	Synj2bp
1448856_a_at	Res & Lgx	2552	2477	2140	2204	-1.03	-1.19	-1.16	Msra
1448860_at	Res only	17	35	50	64	2.14	3.02	3.84	Rem2
1448864_at	Lgx only	3508	4978	4574	4515	1.42	1.30	1.29	Snrk
1448867_at	Lgx only	2465	2370	1926	1977	-1.04	-1.28	-1.25	Tmem9b
1448883_at	Lgx only	986	1264	880	1339	1.28	-1.12	1.36	Lgmn
1448884_at	Lgx only	742	688	554	408	-1.08	-1.34	-1.82	Gtf2e2
1448885_at	CR only	299	214	340	415	-1.40	1.14	1.39	Rap2b
1448893_at	Lgx only	851	1373	1459	1947	1.61	1.71	2.29	Ncor2
1448894_at	Lgx only	832	852	961	1170	1.02	1.15	1.41	Akr1b8
1448900_at	Lgx only	4895	4713	4330	3890	-1.04	-1.13	-1.26	D16H22S680E
1448903_at	Lgx only	7279	5973	5176	3901	-1.22	-1.41	-1.87	39340
1448917_at	Lgx only	1574	1229	1326	1221	-1.28	-1.19	-1.29	Med30
1448918_at	Lgx only	1286	1478	1757	1991	1.15	1.37	1.55	Slco3a1
1448943_at	Lgx only	4428	4185	3289	2623	-1.06	-1.35	-1.69	Nrp1
1448947_at	Lgx only	2361	2309	1900	1544	-1.02	-1.24	-1.53	2810004N23Rik
1448948_at	Lgx only	1247	1146	1163	1058	-1.09	-1.07	-1.18	Rag1ap1
1448956_at	Lgx only	3964	4452	6177	9601	1.12	1.56	2.42	Stard10
1448960_at	Lgx only	1075	1032	1164	1411	-1.04	1.08	1.31	Cxxc5
1448970_at	Lgx only	3836	3551	3364	2960	-1.08	-1.14	-1.30	Slc25a46

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1448971_at	Lgx only	389	353	307	236	-1.10	-1.26	-1.65	2410022L05Rik
1448987_at	Lgx only	43424	51619	52391	80140	1.19	1.21	1.85	Acadl
1448993_at	Res & Lgx	2740	2404	1834	1517	-1.14	-1.49	-1.81	Atg3
1449014_at	Res only	881	843	642	705	-1.05	-1.37	-1.25	Lactb
1449025_at	Lgx only	548	576	657	774	1.05	1.20	1.41	Ifit3
1449026_at	Res & Lgx	503	552	779	792	1.10	1.55	1.57	Ifnar1
1449042_at	Lgx only	936	870	1132	1241	-1.08	1.21	1.33	Ctcf
1449044_at	Lgx only	1437	1195	953	801	-1.20	-1.51	-1.79	Eef1e1
1449045_at	Lgx only	952	1152	1135	1427	1.21	1.19	1.50	Afg3l1
1449046_a_at	Lgx only	1537	1426	1431	1340	-1.08	-1.07	-1.15	Josd2
1449058_at	Lgx only	143	148	92	232	1.04	-1.55	1.63	Gli1
1449062_at	Lgx only	347	452	475	608	1.30	1.37	1.75	Khk
1449063_at	Res only	1262	1084	930	1007	-1.16	-1.36	-1.25	Sec22b
1449071_at	Lgx only	25977	29211	40937	73543	1.12	1.58	2.83	Myl7
1449072_a_at	Lgx only	1737	1759	1601	1044	1.01	-1.09	-1.66	N6amt2
1449078_at	Res & Lgx	1395	1028	1025	751	-1.36	-1.36	-1.86	St3gal6
1449080_at	All	447	289	283	232	-1.55	-1.58	-1.93	Hdac2
1449088_at	Lgx only	1611	1389	2284	2373	-1.16	1.42	1.47	Fbp2
1449096_at	Lgx only	1028	1107	863	714	1.08	-1.19	-1.44	Ccdc127
1449106_at	Lgx only	16622	17727	24198	34324	1.07	1.46	2.07	Gpx3
1449108_at	Lgx only	7575	7320	6088	4914	-1.03	-1.24	-1.54	Fdx1
1449113_at	Res only	848	830	647	687	-1.02	-1.31	-1.23	Gpbp1l1
1449123_at	Lgx only	84	43	111	29	-1.96	1.32	-2.93	Itih3
1449124_at	Res & Lgx	310	370	480	455	1.19	1.55	1.47	Rgl1
1449125_at	Lgx only	202	143	142	96	-1.42	-1.43	-2.11	Tnfaip8l1
1449138_at	Lgx only	3517	3750	4329	4360	1.07	1.23	1.24	Sf3b1
1449140_at	Lgx only	273	266	217	136	-1.03	-1.26	-2.00	Nudcd2
1449145_a_at	Lgx only	11453	13083	13559	16570	1.14	1.18	1.45	Cav1
1449151_at	Lgx only	508	569	665	675	1.12	1.31	1.33	Pctk3
1449187_at	Lgx only	529	457	392	333	-1.16	-1.35	-1.59	Pdgfa
1449217_at	Lgx only	230	198	132	111	-1.16	-1.74	-2.07	Casp8ap2
1449256_a_at	Lgx only	2956	2919	3638	3430	-1.01	1.23	1.16	Rab11a
1449269_at	Lgx only	168	147	139	61	-1.15	-1.21	-2.75	F5
1449281_at	Lgx only	1873	2466	2400	2905	1.32	1.28	1.55	Nrtn
1449298_a_at	Lgx only	237	268	246	322	1.13	1.04	1.36	Pde1a
1449300_at	Lgx only	553	544	493	380	-1.02	-1.12	-1.46	Cttnbp2nl
1449304_at	Lgx only	463	404	649	649	-1.15	1.40	1.40	2310061J03Rik
1449333_at	Lgx only	549	662	682	852	1.21	1.24	1.55	Sf3a1
1449335_at	Lgx only	5926	8089	8111	11301	1.37	1.37	1.91	Timp3
1449338_at	Lgx only	3319	3175	3019	2290	-1.05	-1.10	-1.45	D10Ertd641e
1449345_at	Res only	139	99	60	69	-1.40	-2.32	-2.02	Ccdc34
1449348_at	Lgx only	2011	1876	1690	1475	-1.07	-1.19	-1.36	Mpp6
1449354_at	Res & Lgx	959	1115	1378	1597	1.16	1.44	1.67	Zrsr1
1449355_a_at	Lgx only	676	967	976	975	1.43	1.44	1.44	Eps15l1
1449356_at	Lgx only	1478	999	1176	608	-1.48	-1.26	-2.43	Asb5
1449357_at	Res & Lgx	286	192	172	175	-1.49	-1.67	-1.64	2310030G06Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1449363_at	Res only	306	165	208	182	-1.86	-1.47	-1.68	Atf3
1449368_at	Lgx only	25201	21347	33485	36603	-1.18	1.33	1.45	Dcn
1449372_at	Res only	1022	867	1303	1225	-1.18	1.27	1.20	Dnajc3a
1449388_at	Lgx only	707	620	583	439	-1.14	-1.21	-1.61	Thbs4
1449396_at	Lgx only	250	389	302	405	1.56	1.21	1.62	Aoc3
1449398_at	Lgx only	8560	9487	11462	12020	1.11	1.34	1.40	Rpl3l
1449400_at	Lgx only	22	43	45	102	1.93	2.04	4.58	Csl
1449408_at	Lgx only	3014	3550	3724	3878	1.18	1.24	1.29	Jam2
1449491_at	Lgx only	1509	1650	1845	1973	1.09	1.22	1.31	Card10
1449505_at	Res & Lgx	2070	2142	1758	1736	1.03	-1.18	-1.19	Kpna1
1449511_a_at	Lgx only	661	691	781	854	1.05	1.18	1.29	Ssbp4
1449514_at	CR only	2473	1904	2807	2301	-1.30	1.14	-1.07	Grk5
1449547_at	Res & Lgx	2990	2491	1986	1510	-1.20	-1.51	-1.98	Asb14
1449551_at	Lgx only	1623	1886	1869	1988	1.16	1.15	1.22	Myo1c
1449553_at	CR & Lgx	868	640	1034	1201	-1.36	1.19	1.38	2610200G18Rik
1449566_at	Lgx only	2519	2746	3461	3832	1.09	1.37	1.52	Nkx2-5
1449575_a_at	Res & Lgx	13795	15659	17129	18543	1.14	1.24	1.34	Gstp1
1449588_at	Lgx only	588	491	438	385	-1.20	-1.34	-1.53	Abca4
1449592_at	CR only	1101	791	1255	1092	-1.39	1.14	-1.01	Tcf15
1449813_at	Res only	276	352	86	217	1.27	-3.22	-1.27	Zfp30
1449818_at	CR only	1563	2002	1765	1942	1.28	1.13	1.24	Abcb4
1449842_at	Res & Lgx	718	590	533	420	-1.22	-1.35	-1.71	1810059G22Rik
1449845_a_at	Lgx only	745	860	974	1211	1.16	1.31	1.63	Ephb4
1449849_a_at	Lgx only	371	465	477	508	1.26	1.29	1.37	Fbxl6
1449851_at	Lgx only	442	679	726	810	1.54	1.64	1.83	Per1
1449852_a_at	CR only	6223	8480	5751	5735	1.36	-1.08	-1.09	Ehd4
1449860_at	Lgx only	730	574	585	447	-1.27	-1.25	-1.63	Higd1b
1449872_at	Lgx only	1222	1194	1026	765	-1.02	-1.19	-1.60	Hspb3
1449935_a_at	CR only	3719	4445	4158	4213	1.20	1.12	1.13	Dnaja3
1449942_a_at	Lgx only	2010	2379	2324	2472	1.18	1.16	1.23	Ilk
1449944_a_at	Res only	767	785	647	741	1.02	-1.19	-1.03	Sec61a2
1449964_a_at	Lgx only	2099	2072	3263	3012	-1.01	1.55	1.43	Mlycd
1449969_at	Lgx only	1482	1463	1356	1042	-1.01	-1.09	-1.42	Tmod4
1450016_at	Lgx only	26432	25470	23049	19945	-1.04	-1.15	-1.33	Ccng1
1450023_at	Lgx only	732	879	873	1230	1.20	1.19	1.68	Gtpbp1
1450031_at	Lgx only	1227	1176	1239	982	-1.04	1.01	-1.25	Aff4
1450054_at	Lgx only	2952	3635	3914	4173	1.23	1.33	1.41	Add1
1450067_a_at	Res & Lgx	2875	2957	2406	2199	1.03	-1.19	-1.31	1810034K20Rik
1450086_at	Lgx only	172	236	254	316	1.37	1.48	1.84	Gmeb1
1450095_a_at	Lgx only	387	339	395	207	-1.14	1.02	-1.87	Acyp1
1450122_at	Lgx only	539	488	473	337	-1.11	-1.14	-1.60	Ptprg
1450123_at	Lgx only	11629	13643	15609	19737	1.17	1.34	1.70	Ryr2
1450138_a_at	Lgx only	3319	3219	2766	2714	-1.03	-1.20	-1.22	Serpinb6a
1450180_a_at	Lgx only	38	71	80	181	1.85	2.09	4.70	Rara
1450195_at	Lgx only	35	102	106	144	2.91	3.04	4.11	Ndst4
1450199_a_at	Lgx only	795	979	986	1080	1.23	1.24	1.36	Stab1

Table 3									
Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1450203_at	Lgx only	5141	5970	4705	4331	1.16	-1.09	-1.19	Smyd1
1450308_a_at	Res & Lgx	373	389	657	764	1.04	1.76	2.05	Xrn1
1450355_a_at	Res only	432	329	314	351	-1.31	-1.38	-1.23	Capg
1450361_at	CR only	129	52	132	65	-2.47	1.02	-1.99	Prop1
1450376_at	Lgx only	2003	2127	2276	2577	1.06	1.14	1.29	Mxi1
1450377_at	Lgx only	165	219	246	321	1.33	1.49	1.94	LOC640441
1450395_at	Lgx only	1580	1719	1822	2403	1.09	1.15	1.52	Slc22a5
1450405_at	Res & Lgx	725	643	354	320	-1.13	-2.05	-2.27	Mrpl19
1450409_a_at	Lgx only	1748	1899	2253	2570	1.09	1.29	1.47	4930570C03Rik
1450415_at	CR only	56	17	56	44	-3.33	-1.01	-1.29	Pde6a
1450424_a_at	CR only	188	296	252	253	1.58	1.34	1.34	Il18bp
1450431_a_at	Res & Lgx	11524	12897	16998	18939	1.12	1.48	1.64	Nedd4
1450435_at	Lgx only	277	284	353	397	1.03	1.27	1.44	L1cam
1450449_a_at	Lgx only	3983	4570	4434	5830	1.15	1.11	1.46	2900002H16Rik
1450490_at	Lgx only	417	575	570	646	1.38	1.37	1.55	Kcna7
1450519_a_at	Lgx only	4324	5666	5682	6518	1.31	1.31	1.51	Prkaca
1450531_at	CR only	102	24	54	78	-4.30	-1.90	-1.30	H2-Bl
1450584_at	Res only	25	69	107	61	2.76	4.32	2.45	Hoxd11
1450623_at	Lgx only	3269	3884	4094	4247	1.19	1.25	1.30	Gnb2
1450627_at	Res & Lgx	10383	11098	8410	8645	1.07	-1.23	-1.20	Ank
1450649_at	Lgx only	1489	966	883	760	-1.54	-1.69	-1.96	Gng10
1450650_at	Lgx only	987	1096	1732	1739	1.11	1.76	1.76	Myo10
1450662_at	Lgx only	584	632	750	830	1.08	1.28	1.42	Tesk1
1450664_at	CR & Lgx	1309	969	977	814	-1.35	-1.34	-1.61	Gabpa
1450670_at	Lgx only	884	1083	1043	1276	1.22	1.18	1.44	Dbh
1450672_a_at	Lgx only	892	966	977	1154	1.08	1.10	1.29	Trex1
1450678_at	CR only	384	292	365	338	-1.32	-1.05	-1.14	Itgb2
1450690_at	Lgx only	1537	1178	953	774	-1.30	-1.61	-1.98	Ranbp2
1450691_at	Res only	621	793	919	894	1.28	1.48	1.44	Caskin2
1450700_at	Res & Lgx	1859	1642	1543	1404	-1.13	-1.20	-1.32	Cdc42ep3
1450706_a_at	Lgx only	2959	2743	2744	2114	-1.08	-1.08	-1.40	Arl3
1450714_at	Res & Lgx	2451	2021	1702	1453	-1.21	-1.44	-1.69	Azin1
1450729_at	Lgx only	637	561	625	508	-1.14	-1.02	-1.25	Hs2st1
1450735_at	Res & Lgx	2114	2019	1724	1463	-1.05	-1.23	-1.45	Pno1
1450738_at	Lgx only	938	886	1089	1210	-1.06	1.16	1.29	Kif21a
1450740_a_at	Res & Lgx	4235	4039	3546	3025	-1.05	-1.19	-1.40	Mapre1
1450744_at	Lgx only	488	355	297	213	-1.38	-1.65	-2.29	Ell2
1450759_at	Res only	852	857	1146	1021	1.01	1.35	1.20	Bmp6
1450791_at	Lgx only	15042	15107	14450	8913	1.00	-1.04	-1.69	Nppb
1450798_at	Lgx only	819	1305	1266	1651	1.59	1.54	2.01	Tnxb
1450801_at	Res & Lgx	37	93	146	227	2.53	3.98	6.20	Adam21
1450816_at	Res only	384	341	301	362	-1.13	-1.27	-1.06	Polg2
1450839_at	Res only	1123	1002	829	1015	-1.12	-1.35	-1.11	D0H4S114
1450840_a_at	Lgx only	50799	56471	65223	75285	1.11	1.28	1.48	Rpl39
1450842_a_at	CR & Lgx	2062	1704	1758	1347	-1.21	-1.17	-1.53	Cenpa
1450857_a_at	Lgx only	2960	3430	3914	4745	1.16	1.32	1.60	Col1a2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1450866_a_at	Lgx only	3015	3253	3652	3857	1.08	1.21	1.28	Mrpl17
1450878_at	Lgx only	2049	1928	1635	1368	-1.06	-1.25	-1.50	Sri
1450879_at	Lgx only	610	710	716	993	1.16	1.17	1.63	Atp9b
1450883_a_at	CR only	31708	23985	32717	30704	-1.32	1.03	-1.03	Cd36
1450890_a_at	Lgx only	948	726	729	585	-1.31	-1.30	-1.62	Abi1
1450891_at	Lgx only	5718	5089	4197	3750	-1.12	-1.36	-1.53	Srp19
1450894_a_at	Res & Lgx	2906	3585	3746	3815	1.23	1.29	1.31	Ap2m1
1450897_at	Lgx only	1688	1363	1427	1165	-1.24	-1.18	-1.45	Arhgap5
1450903_at	Lgx only	1020	958	834	627	-1.06	-1.22	-1.63	Rad23b
1450927_at	Lgx only	514	591	685	712	1.15	1.33	1.39	Lztr1
1450934_at	Res & Lgx	22353	18933	16228	15963	-1.18	-1.38	-1.40	Eif4a2
1450948_a_at	Lgx only	827	736	541	458	-1.12	-1.53	-1.81	Mrpl1
1450953_at	Res & Lgx	2794	2661	2247	2084	-1.05	-1.24	-1.34	Ciao1
1450957_a_at	Lgx only	14361	13299	20795	20648	-1.08	1.45	1.44	Sqstm1
1450958_at	Lgx only	5954	4641	4404	4138	-1.28	-1.35	-1.44	Tm4sf1
1450965_at	Res & Lgx	1995	2296	2538	3135	1.15	1.27	1.57	Tex261
1450966_at	Lgx only	927	836	863	679	-1.11	-1.07	-1.37	Crot
1450968_at	Lgx only	39927	41899	42555	55205	1.05	1.07	1.38	Uqcrfs1
1450970_at	Lgx only	25949	32719	31690	36332	1.26	1.22	1.40	Got1
1450971_at	Res & Lgx	551	827	965	1069	1.50	1.75	1.94	Gadd45b
1450974_at	Res & Lgx	776	1077	1180	1212	1.39	1.52	1.56	Timp4
1450994_at	Lgx only	2773	2136	2256	1821	-1.30	-1.23	-1.52	Rock1
1451002_at	Lgx only	54266	62734	61354	75692	1.16	1.13	1.39	Aco2
1451006_at	Lgx only	1143	1483	1634	1746	1.30	1.43	1.53	Xdh
1451010_at	Lgx only	656	786	728	858	1.20	1.11	1.31	Nol11
1451017_at	Lgx only	1586	1728	1871	2173	1.09	1.18	1.37	Ergic3
1451019_at	Lgx only	1338	1281	1678	2014	-1.04	1.25	1.51	Ctsf
1451022_at	Lgx only	545	506	713	852	-1.08	1.31	1.56	Lrp6
1451025_at	Lgx only	2443	2161	1929	1347	-1.13	-1.27	-1.81	Arl1
1451050_at	Lgx only	3147	2948	2847	2290	-1.07	-1.11	-1.37	Nt5c3
1451051_a_at	Lgx only	837	1040	1137	1455	1.24	1.36	1.74	Scyl1
1451067_at	Lgx only	3259	4112	4448	4416	1.26	1.37	1.36	Sgta
1451070_at	Lgx only	2031	2545	2472	3265	1.25	1.22	1.61	Gdi1
1451074_at	Res & Lgx	4210	3824	3180	2816	-1.10	-1.32	-1.49	Rnf13
1451096_at	Lgx only	29178	32946	32150	36689	1.13	1.10	1.26	Ndufs2
1451099_at	Lgx only	535	685	718	838	1.28	1.34	1.57	Mbc2
1451104_a_at	CR & Lgx	1056	1430	1492	1790	1.35	1.41	1.69	Snrp70
1451118_a_at	Lgx only	790	918	855	1042	1.16	1.08	1.32	2410018C17Rik
1451119_a_at	Lgx only	2418	2685	3222	3877	1.11	1.33	1.60	Fbln1
1451121_a_at	Res & Lgx	1112	1325	1636	1783	1.19	1.47	1.60	Gltscr2
1451126_at	Lgx only	4627	4444	5283	5589	-1.04	1.14	1.21	Maf1
1451134_a_at	Res & Lgx	1207	953	612	601	-1.27	-1.97	-2.01	Tm2d2
1451144_at	All	1442	1150	986	886	-1.25	-1.46	-1.63	Bxdc2
1451159_at	Res & Lgx	4282	5561	6247	8339	1.30	1.46	1.95	Arhgef12
1451168_a_at	Res & Lgx	4732	5809	6829	7722	1.23	1.44	1.63	Arhgdia
1451177_at	Res & Lgx	6681	6017	4465	4080	-1.11	-1.50	-1.64	Dnajb4

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1451187_at	Lgx only	4203	4110	3516	3225	-1.02	-1.20	-1.30	0610037P05Rik
1451204_at	Res only	2057	1633	1312	1410	-1.26	-1.57	-1.46	Scara5
1451217_a_at	Lgx only	6459	5713	5401	4388	-1.13	-1.20	-1.47	Immp1l
1451219_at	Lgx only	915	777	738	662	-1.18	-1.24	-1.38	Ormdl1
1451223_a_at	Lgx only	2697	2588	2232	1739	-1.04	-1.21	-1.55	Btf3l4
1451225_at	Lgx only	6229	6428	6944	7210	1.03	1.11	1.16	Ptpn11
1451226_at	Lgx only	1149	1523	1685	2053	1.32	1.47	1.79	Pex6
1451232_at	Lgx only	6475	6003	4860	4346	-1.08	-1.33	-1.49	Cd151
1451244_a_at	Lgx only	1155	1068	902	915	-1.08	-1.28	-1.26	Zfp422
1451245_at	Lgx only	1838	1659	1561	1417	-1.11	-1.18	-1.30	Lrrc3b
1451248_at	Res & Lgx	1477	1443	1184	1086	-1.02	-1.25	-1.36	Prmt7
1451254_at	Res & Lgx	1081	1005	719	681	-1.08	-1.50	-1.59	Ikbkap
1451269_at	Lgx only	1025	970	886	831	-1.06	-1.16	-1.23	Pdzd11
1451272_a_at	Res & Lgx	1518	1300	972	856	-1.17	-1.56	-1.77	Ube2f
1451274_at	Lgx only	18853	24930	23212	26074	1.32	1.23	1.38	Ogdh
1451281_at	Res only	182	134	126	176	-1.36	-1.44	-1.03	Zscan12
1451284_at	Lgx only	824	1042	937	1011	1.26	1.14	1.23	Yipf3
1451285_at	Lgx only	1415	1654	1921	2284	1.17	1.36	1.61	Fus
1451290_at	Lgx only	19210	20375	21862	26463	1.06	1.14	1.38	Map1lc3a
1451291_at	CR only	985	1221	1225	1080	1.24	1.24	1.10	Obfc2b
1451293_at	CR only	334	573	472	317	1.71	1.41	-1.05	Rrp9
1451295_a_at	Res & Lgx	645	582	1919	1477	-1.11	2.98	2.29	Chd4
1451297_at	Res only	17	25	80	44	1.45	4.66	2.55	Gulo
1451298_at	Lgx only	536	562	684	976	1.05	1.28	1.82	Plekhh3
1451312_at	Lgx only	31762	35863	37350	45671	1.13	1.18	1.44	Ndufs7
1451316_a_at	Res & Lgx	5859	5369	3411	3242	-1.09	-1.72	-1.81	Picalm
1451343_at	Lgx only	832	752	752	595	-1.11	-1.11	-1.40	Vps36
1451344_at	Lgx only	284	314	447	534	1.11	1.57	1.88	Tmem119
1451349_at	Lgx only	129	111	75	50	-1.16	-1.73	-2.56	BC020077
1451364_at	Res & Lgx	1068	1040	814	549	-1.03	-1.31	-1.94	Polr3gl
1451369_at	Lgx only	1208	1284	1405	1759	1.06	1.16	1.46	Commd5
1451381_at	Lgx only	3059	2545	2352	2042	-1.20	-1.30	-1.50	1810020D17Rik
1451382_at	Res & Lgx	247	447	470	562	1.81	1.90	2.28	Chac1
1451388_a_at	Lgx only	1122	1092	1224	1351	-1.03	1.09	1.20	Atp11b
1451405_at	Lgx only	3973	4289	5228	5041	1.08	1.32	1.27	Pcca
1451415_at	CR only	1529	2052	1641	1570	1.34	1.07	1.03	1810011O10Rik
1451420_at	Res & Lgx	2878	2478	2242	2325	-1.16	-1.28	-1.24	Ccdc47
1451427_a_at	Lgx only	1907	2012	2224	2426	1.05	1.17	1.27	Egfl7
1451448_a_at	Lgx only	1765	1548	1206	984	-1.14	-1.46	-1.79	1110005A03Rik
1451453_at	Lgx only	246	248	265	336	1.01	1.08	1.36	Dapk2
1451455_at	Res only	273	220	478	374	-1.24	1.75	1.37	Thnsl2
1451462_a_at	Lgx only	1261	1287	1200	958	1.02	-1.05	-1.32	Ifnar2
1451465_at	Lgx only	1407	1531	1643	1908	1.09	1.17	1.36	Ubl7
1451471_at	Lgx only	421	391	360	290	-1.08	-1.17	-1.45	Ears2
1451488_at	Lgx only	7929	9254	9001	10760	1.17	1.14	1.36	1110028A07Rik
1451502_at	CR only	160	305	224	282	1.90	1.40	1.76	Pla2g10

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1451508_at	Lgx only	1347	1314	1107	988	-1.02	-1.22	-1.36	Larp2
1451523_a_at	Lgx only	1126	879	1016	827	-1.28	-1.11	-1.36	Mif4gd
1451538_at	Lgx only	135	123	153	242	-1.10	1.13	1.78	Sox9
1451553_at	Lgx only	713	650	619	510	-1.10	-1.15	-1.40	Art5
1451561_at	Res & Lgx	450	622	809	978	1.38	1.80	2.18	Prr12
1451583_a_at	Res & Lgx	69	119	158	261	1.72	2.29	3.78	BC025076
1451604_a_at	Lgx only	658	716	707	849	1.09	1.07	1.29	Acvrl1
1451622_at	Lgx only	2006	2187	2476	2643	1.09	1.23	1.32	Lmbrd1
1451663_a_at	Lgx only	743	755	847	912	1.02	1.14	1.23	Trim3
1451665_a_at	Res & Lgx	5435	4923	4504	4166	-1.10	-1.21	-1.30	Ap4s1
1451674_at	Lgx only	114	131	180	195	1.15	1.57	1.70	Slc12a5
1451678_at	Res & Lgx	2482	2409	1553	1507	-1.03	-1.60	-1.65	Narf
1451700_a_at	Res & Lgx	2076	2271	2807	2740	1.09	1.35	1.32	1110007L15Rik
1451728_at	Lgx only	792	823	931	1122	1.04	1.17	1.42	Wdr13
1451741_a_at	Lgx only	732	614	585	518	-1.19	-1.25	-1.41	Cdk7
1451742_a_at	Lgx only	14534	14261	12397	11426	-1.02	-1.17	-1.27	Ugp2
1451782_a_at	Lgx only	2095	2186	2027	2552	1.04	-1.03	1.22	Slc29a1
1451789_a_at	CR only	651	1037	851	972	1.59	1.31	1.49	Ryk
1451803_a_at	Lgx only	6764	8556	8339	9104	1.26	1.23	1.35	Vegfb
1451820_at	Lgx only	131	214	241	536	1.64	1.84	4.10	Diras1
1451839_a_at	CR only	890	1444	1029	1071	1.62	1.16	1.20	Pde7a
1451854_a_at	Lgx only	383	572	575	694	1.49	1.50	1.81	Shroom3
1451857_a_at	Lgx only	194	239	319	373	1.23	1.64	1.92	Notum
1451883_at	Res & Lgx	401	497	932	825	1.24	2.32	2.06	ENSMUSG-00000074670
1451902_at	Lgx only	572	427	446	344	-1.34	-1.28	-1.66	Zfp758
1451911_a_at	Lgx only	784	928	1055	1218	1.18	1.35	1.55	Ace
1451974_at	Lgx only	3494	3897	3875	4394	1.12	1.11	1.26	Osbpl2
1451984_at	Res & Lgx	1996	1833	1480	1574	-1.09	-1.35	-1.27	Hnrpul1
1452012_a_at	Lgx only	688	561	589	433	-1.23	-1.17	-1.59	Exosc1
1452024_a_at	Lgx only	972	977	1305	1295	1.00	1.34	1.33	Ldb1
1452043_at	Lgx only	638	593	728	510	-1.07	1.14	-1.25	2310011J03Rik
1452047_at	Res & Lgx	2343	2094	1524	1383	-1.12	-1.54	-1.69	Cacybp
1452057_at	Lgx only	1040	1024	1176	1469	-1.02	1.13	1.41	Actr1b
1452058_a_at	Res & Lgx	8691	8360	5764	5728	-1.04	-1.51	-1.52	Rnf11
1452072_at	Res & Lgx	1185	937	765	822	-1.27	-1.55	-1.44	Myct1
1452080_a_at	Lgx only	1213	1057	971	775	-1.15	-1.25	-1.57	Dcun1d1
1452088_at	Res only	153	231	81	127	1.51	-1.89	-1.21	Zbed3
1452091_a_at	CR & Lgx	852	1127	962	1169	1.32	1.13	1.37	Rbm28
1452110_at	Lgx only	459	361	351	327	-1.27	-1.31	-1.41	Mtrr
1452130_at	Res & Lgx	1764	1802	966	869	1.02	-1.83	-2.03	Txndc14
1452140_at	Res & Lgx	867	934	1137	1294	1.08	1.31	1.49	Tbc1d20
1452141_a_at	Lgx only	25419	26171	28265	32953	1.03	1.11	1.30	Sepp1
1452143_at	All	21772	24259	24942	27902	1.11	1.15	1.28	Spnb2
1452145_at	Lgx only	524	698	748	1076	1.33	1.43	2.06	H6pd
1452152_at	Lgx only	2710	2333	2165	1785	-1.16	-1.25	-1.52	Clint1
1452155_a_at	Res & Lgx	3205	3897	4271	4549	1.22	1.33	1.42	Ddx17

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1452156_a_at	Lgx only	4703	5715	5941	7648	1.22	1.26	1.63	Nisch
1452159_at	Res & Lgx	1379	1311	1056	977	-1.05	-1.31	-1.41	2310001A20Rik
1452173_at	Lgx only	26826	30831	34012	38315	1.15	1.27	1.43	Hadha
1452174_at	Res & Lgx	500	634	880	1000	1.27	1.76	2.00	Srebf2
1452202_at	Lgx only	1135	1145	1336	1475	1.01	1.18	1.30	Pde2a
1452203_at	All	2414	1686	1491	1035	-1.43	-1.62	-2.33	Obfc2a
1452208_at	Lgx only	485	620	638	696	1.28	1.31	1.43	Prdm4
1452213_at	Res & Lgx	1320	1264	1036	845	-1.04	-1.27	-1.56	Tex2
1452214_at	Lgx only	1513	1185	1126	850	-1.28	-1.34	-1.78	Skil
1452221_a_at	Lgx only	1063	1125	1281	1393	1.06	1.20	1.31	Cxxc1
1452222_at	Lgx only	1656	1643	1732	2090	-1.01	1.05	1.26	Utrn
1452225_at	Lgx only	1335	1061	1047	1000	-1.26	-1.28	-1.33	2010106G01Rik
1452250_a_at	Lgx only	2260	2785	2667	3592	1.23	1.18	1.59	Col6a2
1452262_at	Lgx only	708	642	550	557	-1.10	-1.29	-1.27	Grpel2
1452286_at	Res & Lgx	6581	4659	2979	2444	-1.41	-2.21	-2.69	Slain2
1452291_at	Lgx only	564	461	566	360	-1.22	1.00	-1.57	Centd1
1452292_at	Lgx only	1094	1334	1435	1847	1.22	1.31	1.69	Ap2b1
1452296_at	Lgx only	237	266	412	579	1.12	1.74	2.45	Slit3
1452308_a_at	Lgx only	4905	5839	6466	6497	1.19	1.32	1.32	Atp1a2
1452309_at	Lgx only	721	839	763	1132	1.16	1.06	1.57	Cgnl1
1452318_a_at	Res & Lgx	536	385	278	289	-1.39	-1.93	-1.86	Hspa1b
1452319_at	CR only	283	194	251	220	-1.46	-1.13	-1.28	Zfp82
1452327_at	Lgx only	904	1190	1305	1397	1.32	1.44	1.55	Iqsec1
1452329_at	Res & Lgx	265	311	451	486	1.17	1.71	1.84	Plekhn1
1452330_a_at	Lgx only	2664	2991	3519	4501	1.12	1.32	1.69	Mxra8
1452333_at	Res & Lgx	475	512	815	822	1.08	1.71	1.73	Smarca2
1452335_at	Res & Lgx	485	467	382	319	-1.04	-1.27	-1.52	Mfsd8
1452339_at	Lgx only	320	425	415	535	1.33	1.30	1.67	Adamts7
1452374_at	Lgx only	756	605	602	553	-1.25	-1.26	-1.37	Zfp322a
1452375_at	Lgx only	1059	1280	1336	1441	1.21	1.26	1.36	Aldh4a1
1452395_at	Res & Lgx	550	421	386	295	-1.31	-1.42	-1.87	Med19
1452398_at	Lgx only	1052	998	837	640	-1.05	-1.26	-1.64	Plce1
1452401_at	Lgx only	1940	1839	1632	1573	-1.05	-1.19	-1.23	Wtap
1452411_at	Lgx only	261	364	308	474	1.40	1.18	1.82	Lrrc1
1452432_at	Lgx only	2342	2445	2339	1802	1.04	-1.00	-1.30	Tfpi
1452446_a_at	Lgx only	1260	1260	1436	1569	1.00	1.14	1.25	Tmub2
1452462_a_at	Lgx only	342	469	538	591	1.37	1.58	1.73	Banp
1452469_a_at	Res & Lgx	1833	2687	2690	3184	1.47	1.47	1.74	Smtn
1452472_at	Lgx only	128	142	189	242	1.11	1.47	1.89	Rtp3
1452499_a_at	Res only	705	659	530	573	-1.07	-1.33	-1.23	Kif2a
1452502_at	Lgx only	190	121	131	88	-1.56	-1.45	-2.15	ENSMUSG-00000050599
1452509_at	CR only	114	33	80	89	-3.44	-1.44	-1.29	Usp9y
1452587_at	Lgx only	3962	3990	3352	3268	1.01	-1.18	-1.21	Actr2
1452596_at	Lgx only	4654	3854	3014	2105	-1.21	-1.54	-2.21	Polr2k
1452601_a_at	Lgx only	978	969	1221	1242	-1.01	1.25	1.27	Acbd6
1452607_at	Lgx only	978	917	707	587	-1.07	-1.38	-1.67	2610030H06Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1452608_at	Res & Lgx	727	527	412	452	-1.38	-1.76	-1.61	Mycbp
1452625_at	Lgx only	772	766	950	1078	-1.01	1.23	1.40	Kctd2
1452653_at	Lgx only	1121	1286	1501	1804	1.15	1.34	1.61	Slc25a22
1452657_at	Lgx only	1898	1692	1530	1326	-1.12	-1.24	-1.43	Ap1s2
1452661_at	Res & Lgx	4325	6173	1466	1666	1.43	-2.95	-2.60	Tfrc
1452689_at	Res only	1202	1315	1457	1353	1.09	1.21	1.13	Zfp512
1452694_at	Lgx only	1776	1941	2134	2382	1.09	1.20	1.34	Ihpk1
1452698_at	Lgx only	1101	1252	1139	1500	1.14	1.04	1.36	Tsfm
1452709_at	Res & Lgx	590	680	819	833	1.15	1.39	1.41	Poldip3
1452714_at	Lgx only	872	1040	976	1284	1.19	1.12	1.47	Tanc1
1452737_at	Lgx only	1487	1388	1103	899	-1.07	-1.35	-1.65	2810008M24Rik
1452745_at	Lgx only	788	1066	1236	1408	1.35	1.57	1.79	1810044A24Rik
1452749_at	Lgx only	1136	1094	893	738	-1.04	-1.27	-1.54	Papd1
1452753_at	Res only	837	908	529	625	1.08	-1.58	-1.34	Foxk2
1452761_a_at	Lgx only	485	513	599	1042	1.06	1.24	2.15	8430436O14Rik
1452767_at	Lgx only	2638	2966	3499	3821	1.12	1.33	1.45	Rrbp1
1452776_a_at	Res only	663	841	1073	970	1.27	1.62	1.46	Nub1
1452813_a_at	Res & Lgx	2436	2172	1960	1741	-1.12	-1.24	-1.40	Tmem188
1452843_at	Res & Lgx	3451	4038	4593	5346	1.17	1.33	1.55	Il6st
1452844_at	Res only	751	823	1059	1074	1.10	1.41	1.43	Pou6f1
1452856_at	Res only	739	644	536	657	-1.15	-1.38	-1.13	Crebzf
1452866_at	CR & Res	2752	2260	2177	2385	-1.22	-1.26	-1.15	Nars
1452867_at	Lgx only	2212	1946	1780	1556	-1.14	-1.24	-1.42	Col4a3bp
1452871_at	Lgx only	416	352	302	259	-1.18	-1.38	-1.61	Neil1
1452874_at	Lgx only	2271	2311	2091	1836	1.02	-1.09	-1.24	2510003E04Rik
1452877_at	Lgx only	2296	2197	1472	1361	-1.05	-1.56	-1.69	2700029M09Rik
1452885_at	Lgx only	1428	1377	2182	2172	-1.04	1.53	1.52	Sfrs2ip
1452897_at	CR & Lgx	696	543	615	531	-1.28	-1.13	-1.31	Cdc2l5
1452901_at	Lgx only	1170	1145	777	693	-1.02	-1.50	-1.69	Creb1
1452913_at	Lgx only	2974	3092	3677	4408	1.04	1.24	1.48	Pcp4l1
1452918_at	Res & Lgx	829	733	480	371	-1.13	-1.73	-2.23	D19Ertd737e
1452920_a_at	Lgx only	1190	1193	1012	760	1.00	-1.18	-1.57	Ppil2
1452952_at	Res & Lgx	922	773	689	632	-1.19	-1.34	-1.46	9030418K01Rik
1452953_at	Res & Lgx	992	827	679	580	-1.20	-1.46	-1.71	Fam18b
1452960_at	Lgx only	245	207	208	163	-1.18	-1.18	-1.51	Scyl3
1452965_at	Res only	29	40	111	84	1.36	3.79	2.86	Ankrd13d
1452972_at	Lgx only	1013	814	912	729	-1.25	-1.11	-1.39	Ttc32
1452977_at	Lgx only	531	595	622	751	1.12	1.17	1.42	Zhx3
1452985_at	Lgx only	878	899	1344	1287	1.02	1.53	1.47	Uaca
1452999_at	Lgx only	842	889	680	565	1.06	-1.24	-1.49	Smndc1
1453007_at	CR only	283	386	348	337	1.36	1.23	1.19	3110082I17Rik
1453013_at	Res & Lgx	382	472	620	612	1.23	1.62	1.60	Zfp740
1453014_a_at	Lgx only	1817	2542	2796	3042	1.40	1.54	1.67	Sec31a
1453023_at	Lgx only	617	600	801	808	-1.03	1.30	1.31	Ankhd1
1453028_at	Lgx only	215	210	184	94	-1.03	-1.17	-2.29	4631424J17Rik
1453039_at	Lgx only	590	726	780	855	1.23	1.32	1.45	Zfp335

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1453058_at	Lgx only	174	168	136	55	-1.04	-1.28	-3.18	Wdr5b
1453059_at	Lgx only	8551	8336	7741	7324	-1.03	-1.10	-1.17	2310046A06Rik
1453062_at	CR only	223	400	295	433	1.80	1.33	1.95	A930026I22Rik
1453097_a_at	Lgx only	1577	1678	1749	2148	1.06	1.11	1.36	Ubtf
1453119_at	Res & Lgx	559	481	365	290	-1.16	-1.53	-1.92	Otud1
1453129_a_at	Lgx only	557	617	773	837	1.11	1.39	1.50	Rgs12
1453137_at	Lgx only	1023	1022	916	767	-1.00	-1.12	-1.33	Fbxo30
1453149_at	Lgx only	290	191	219	111	-1.52	-1.33	-2.61	Slc25a32
1453154_at	CR only	79	24	84	44	-3.27	1.06	-1.78	1700029M20Rik
1453155_at	Lgx only	2675	2692	2995	3076	1.01	1.12	1.15	Tmem50a
1453160_at	Lgx only	738	596	734	458	-1.24	-1.01	-1.61	Med13
1453180_at	Res only	782	784	635	639	1.00	-1.23	-1.23	6530404N21Rik
1453187_at	All	605	410	365	248	-1.48	-1.66	-2.44	Ociad2
1453191_at	Lgx only	374	503	391	738	1.34	1.04	1.97	Col27a1
1453196_a_at	Res & Lgx	254	340	389	411	1.34	1.53	1.62	Oasl2
1453206_at	Res & Lgx	890	1145	1255	1633	1.29	1.41	1.84	Acad9
1453212_at	Lgx only	319	237	226	141	-1.34	-1.41	-2.27	Zfp383
1453224_at	Res & Lgx	809	940	1461	1631	1.16	1.81	2.02	Zfand5
1453257_at	Lgx only	853	753	660	637	-1.13	-1.29	-1.34	Agpat5
1453271_at	Res & Lgx	1296	1098	939	900	-1.18	-1.38	-1.44	Phf14
1453296_at	CR only	113	32	90	134	-3.51	-1.25	1.19	Tmem103
1453312_at	Lgx only	790	818	632	503	1.04	-1.25	-1.57	Iqwd1
1453377_at	Res & Lgx	606	603	406	399	-1.00	-1.49	-1.52	Sh2d4a
1453391_at	CR only	28	75	84	70	2.64	2.97	2.47	Speer7-ps1
1453399_at	Res & Lgx	607	726	1159	1232	1.20	1.91	2.03	Ccnt2
1453412_a_at	CR only	2089	2711	2591	2801	1.30	1.24	1.34	Sec14l1
1453486_a_at	Lgx only	1455	1240	1142	1034	-1.17	-1.27	-1.41	Scube2
1453494_at	Res only	98	79	44	66	-1.23	-2.21	-1.49	4921513H07Rik
1453502_at	Lgx only	77	79	94	27	1.02	1.22	-2.82	2210408I21Rik
1453552_at	CR & Lgx	1567	1069	1454	980	-1.47	-1.08	-1.60	2310014F07Rik
1453572_a_at	Lgx only	2411	2727	2793	3149	1.13	1.16	1.31	Plp2
1453592_at	Lgx only	3846	3055	3329	2431	-1.26	-1.16	-1.58	Lrrc39
1453673_at	Lgx only	76	65	94	172	-1.18	1.24	2.26	LOC100046982
1453728_a_at	Lgx only	3261	3568	2905	2627	1.09	-1.12	-1.24	Mrps17
1453729_a_at	Lgx only	41216	43763	46983	55549	1.06	1.14	1.35	Rpl37
1453731_a_at	Lgx only	3325	2887	2681	2049	-1.15	-1.24	-1.62	Tmem77
1453739_at	Res & Lgx	450	425	316	266	-1.06	-1.42	-1.69	Tmem126b
1453740_a_at	Lgx only	2063	2311	2547	2926	1.12	1.24	1.42	Ccnl2
1453761_at	Res only	74	144	179	199	1.95	2.43	2.71	Phf6
1453795_at	Lgx only	1896	2038	2175	2434	1.08	1.15	1.28	Fahd2a
1453804_a_at	Lgx only	804	758	637	604	-1.06	-1.26	-1.33	Orc4l
1453821_at	Res only	642	596	1039	923	-1.08	1.62	1.44	N6amt1
1453850_at	Lgx only	43	35	37	131	-1.24	-1.19	3.01	1500002I01Rik
1453851_a_at	Lgx only	352	496	457	640	1.41	1.30	1.82	Gadd45g
1453865_a_at	Res & Lgx	869	969	1199	1124	1.12	1.38	1.29	Otud5
1453866_a_at	Lgx only	43	74	75	126	1.71	1.73	2.91	Xk

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1453898_at	CR only	501	793	335	384	1.58	-1.49	-1.30	Itgb1bp3
1453913_a_at	Lgx only	849	962	1213	1299	1.13	1.43	1.53	Tap2
1453976_at	CR only	143	76	125	134	-1.89	-1.15	-1.07	4432414F05Rik
1453983_a_at	Lgx only	927	804	894	635	-1.15	-1.04	-1.46	Mett10d
1454017_at	Res & Lgx	25	38	74	84	1.54	3.00	3.41	4921509O07Rik
1454020_at	Lgx only	51	52	75	163	1.04	1.49	3.21	4930554H23Rik
1454021_a_at	CR only	1143	1359	1194	1279	1.19	1.04	1.12	Exosc10
1454023_a_at	Lgx only	385	503	469	613	1.31	1.22	1.59	D1Bwg1363e
1454034_a_at	Lgx only	569	709	792	894	1.25	1.39	1.57	Usp21
1454047_a_at	CR only	276	183	203	229	-1.51	-1.36	-1.20	2410017P07Rik
1454074_a_at	Res & Lgx	1611	1425	1123	900	-1.13	-1.43	-1.79	Rsrc2
1454092_a_at	Res only	593	635	442	463	1.07	-1.34	-1.28	Gtf2h3
1454109_a_at	Res & Lgx	591	481	406	366	-1.23	-1.46	-1.61	Jmjd6
1454116_a_at	Lgx only	1801	1594	1238	1086	-1.13	-1.46	-1.66	Mterfd1
1454189_at	Lgx only	73	110	141	142	1.51	1.93	1.94	4930557J02Rik
1454206_a_at	Lgx only	392	464	580	728	1.18	1.48	1.86	Adam15
1454214_a_at	Lgx only	746	743	637	541	-1.00	-1.17	-1.38	2410019A14Rik
1454236_a_at	Res only	269	286	159	248	1.06	-1.69	-1.08	Ppp4r1l
1454395_at	Lgx only	439	558	623	761	1.27	1.42	1.73	4632404M16Rik
1454455_at	Lgx only	72	65	114	167	-1.10	1.59	2.33	6530413G14Rik
1454466_at	CR only	80	13	67	52	-6.28	-1.18	-1.54	4933407I18Rik
1454606_at	Lgx only	1497	1775	1754	1897	1.19	1.17	1.27	4933426M11Rik
1454611_a_at	Res only	4696	4347	3422	3420	-1.08	-1.37	-1.37	Calm1
1454612_at	Lgx only	610	597	535	437	-1.02	-1.14	-1.40	Mex3c
1454613_at	Lgx only	978	1329	1415	1720	1.36	1.45	1.76	Dpysl3
1454619_at	Lgx only	1392	1555	1880	2331	1.12	1.35	1.67	Tmem112b
1454626_at	Lgx only	3655	3568	2821	2614	-1.02	-1.30	-1.40	Cltc
1454631_at	Lgx only	639	592	552	433	-1.08	-1.16	-1.48	Gtf2a1
1454638_a_at	Lgx only	1004	949	703	592	-1.06	-1.43	-1.70	Pah
1454644_at	Lgx only	470	566	617	705	1.20	1.31	1.50	6330569M22Rik
1454645_at	Res & Lgx	3953	5231	5398	6226	1.32	1.37	1.57	Mgrn1
1454646_at	Res only	5976	6134	4613	4866	1.03	-1.30	-1.23	Tcp11l2
1454647_at	Lgx only	3249	2669	2518	2112	-1.22	-1.29	-1.54	Acad11
1454654_at	Lgx only	1244	1418	1330	1645	1.14	1.07	1.32	Dirc2
1454658_at	Res only	790	826	1079	882	1.05	1.37	1.12	Ilvbl
1454666_at	Lgx only	2164	1836	1500	1233	-1.18	-1.44	-1.76	LOC100046855
1454670_at	Lgx only	1041	1359	1101	1577	1.31	1.06	1.51	Rere
1454679_at	Lgx only	374	407	335	481	1.09	-1.12	1.29	D8Ertd457e
1454682_at	Lgx only	1062	918	870	788	-1.16	-1.22	-1.35	A430005L14Rik
1454693_at	Lgx only	512	617	534	706	1.20	1.04	1.38	Hdac4
1454697_at	Lgx only	1244	1274	1567	1632	1.02	1.26	1.31	Tloc1
1454704_at	Lgx only	8488	8673	9500	10160	1.02	1.12	1.20	Scarb2
1454706_at	Res & Lgx	841	933	1147	1655	1.11	1.36	1.97	Uvrag
1454709_at	CR only	1558	1256	1428	1353	-1.24	-1.09	-1.15	Tmem64
1454718_at	CR only	405	601	518	565	1.48	1.28	1.40	Nagpa
1454723_at	Lgx only	553	511	424	378	-1.08	-1.31	-1.46	1110033M05Rik

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1454727_at	Lgx only	1394	1215	977	798	-1.15	-1.43	-1.75	Afap1l1
1454730_at	All	769	590	524	464	-1.30	-1.47	-1.66	Tapt1
1454733_at	Res only	911	985	1221	1082	1.08	1.34	1.19	Nod1
1454739_at	Res & Lgx	644	552	440	462	-1.17	-1.46	-1.39	Cdc27
1454745_at	Lgx only	3289	3105	2800	2804	-1.06	-1.17	-1.17	Arhgap29
1454749_at	Lgx only	684	403	1251	1482	-1.70	1.83	2.17	Pcnt
1454753_at	Lgx only	1587	2106	2105	2294	1.33	1.33	1.45	Rnpepl1
1454759_at	Lgx only	438	629	684	820	1.43	1.56	1.87	Git1
1454780_at	Res & Lgx	369	411	559	501	1.12	1.52	1.36	Galntl4
1454797_at	Res & Lgx	1016	1208	1395	1607	1.19	1.37	1.58	Tmem55b
1454801_at	Lgx only	432	318	409	291	-1.36	-1.06	-1.48	Ankrd28
1454813_at	Lgx only	14224	13070	12391	10412	-1.09	-1.15	-1.37	Ccdc72
1454820_at	Res & Lgx	41	115	186	231	2.83	4.59	5.68	BC037034
1454834_at	Lgx only	2775	2711	2558	2415	-1.02	-1.08	-1.15	Nfib
1454848_at	Lgx only	465	542	638	645	1.16	1.37	1.39	Ppp1r12c
1454861_at	Lgx only	629	688	770	967	1.09	1.22	1.54	Txlna
1454868_at	Lgx only	1589	2148	2178	2607	1.35	1.37	1.64	D4Ertd429e
1454887_at	Lgx only	747	899	852	1049	1.20	1.14	1.41	Pak2
1454888_at	Res & Lgx	1357	1167	902	903	-1.16	-1.50	-1.50	Pfdn4
1454892_at	Lgx only	2663	2785	3279	3697	1.05	1.23	1.39	Pitpnb
1454894_at	Lgx only	1514	1552	1292	1165	1.03	-1.17	-1.30	LOC100045522
1454895_at	Res & Lgx	580	737	920	969	1.27	1.59	1.67	Cybasc3
1454906_at	Res & Lgx	1336	1248	925	804	-1.07	-1.44	-1.66	Rarb
1454914_at	Lgx only	1116	1031	928	845	-1.08	-1.20	-1.32	2610101N10Rik
1454915_at	Res & Lgx	351	379	517	591	1.08	1.47	1.68	Rab3gap2
1454921_at	Lgx only	2860	2668	2533	1763	-1.07	-1.13	-1.62	Gm561
1454922_at	Res & Lgx	927	893	748	601	-1.04	-1.24	-1.54	Wdr92
1454928_at	Lgx only	431	638	710	848	1.48	1.65	1.97	Safb
1454930_at	CR only	902	684	840	692	-1.32	-1.07	-1.30	Tbcel
1454934_at	CR only	783	941	754	809	1.20	-1.04	1.03	Ppm1f
1454937_at	Lgx only	411	351	295	228	-1.17	-1.39	-1.80	B630005N14Rik
1454938_at	Lgx only	1417	1321	1222	1011	-1.07	-1.16	-1.40	Snx13
1454955_at	Lgx only	6741	6181	6145	5319	-1.09	-1.10	-1.27	Ipo7
1454960_at	Lgx only	737	915	886	1114	1.24	1.20	1.51	Smad3
1454964_at	CR only	4312	5102	4189	4991	1.18	-1.03	1.16	BC021395
1454977_at	Lgx only	235	290	342	395	1.23	1.46	1.68	AU020772
1454979_at	Lgx only	940	990	1118	1206	1.05	1.19	1.28	Diap1
1454980_at	Lgx only	2726	3305	3169	3859	1.21	1.16	1.42	4930402E16Rik
1454985_at	Lgx only	374	389	391	531	1.04	1.05	1.42	D030051N19Rik
1454991_at	Res & Lgx	1439	1242	1003	894	-1.16	-1.43	-1.61	Slc7a1
1454997_at	CR only	2397	3094	2233	2451	1.29	-1.07	1.02	Msrb3
1455014_at	Res & Lgx	1453	1054	833	759	-1.38	-1.75	-1.91	AV009015
1455018_at	Lgx only	1301	1669	1774	2383	1.28	1.36	1.83	Lmtk2
1455025_at	Res only	1073	1005	788	849	-1.07	-1.36	-1.26	Paqr9
1455051_at	Lgx only	500	578	720	851	1.16	1.44	1.70	Rnf31
1455061_a_at	Lgx only	19692	20976	24991	27704	1.07	1.27	1.41	Acaa2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1455081_at	Lgx only	393	471	526	526	1.20	1.34	1.34	Txnl4b
1455082_at	Lgx only	455	375	356	312	-1.21	-1.28	-1.46	Cblb
1455090_at	Lgx only	2902	3308	2931	3642	1.14	1.01	1.26	Angptl2
1455105_at	Lgx only	1072	1049	833	740	-1.02	-1.29	-1.45	Ptpn12
1455118_at	Res & Lgx	1938	1850	1436	1478	-1.05	-1.35	-1.31	D9Ertd402e
1455131_at	Lgx only	2218	2140	2041	1890	-1.04	-1.09	-1.17	Opa3
1455142_at	Lgx only	409	403	306	230	-1.02	-1.34	-1.78	Socs4
1455143_at	Res & Lgx	326	441	617	772	1.35	1.89	2.36	Nlgn2
1455152_at	Res & Lgx	2267	2135	1838	1619	-1.06	-1.23	-1.40	AI462493
1455153_at	Lgx only	505	453	471	342	-1.11	-1.07	-1.47	Zfp236
1455155_at	Lgx only	1223	1091	976	862	-1.12	-1.25	-1.42	Lsm14b
1455157_a_at	Res & Lgx	788	737	1180	1481	-1.07	1.50	1.88	BC039210
1455159_at	Lgx only	527	455	447	310	-1.16	-1.18	-1.70	Appl1
1455164_at	Lgx only	1752	2160	2211	2588	1.23	1.26	1.48	Cdgap
1455166_at	Res & Lgx	1049	897	812	763	-1.17	-1.29	-1.37	Arl5b
1455188_at	Res only	445	474	263	378	1.06	-1.69	-1.18	Ephb1
1455197_at	Res only	89	155	200	137	1.74	2.24	1.54	Rnd1
1455204_at	Res & Lgx	1784	1576	1400	1239	-1.13	-1.27	-1.44	Pitpnc1
1455205_a_at	Lgx only	1304	1651	1627	1812	1.27	1.25	1.39	Usp19
1455207_at	Lgx only	687	606	578	507	-1.13	-1.19	-1.36	2410017P09Rik
1455210_at	Lgx only	573	682	716	811	1.19	1.25	1.42	Zhx2
1455226_at	Res & Lgx	980	1142	1530	1869	1.17	1.56	1.91	Spnb1
1455244_at	Res & Lgx	3049	2993	2023	1746	-1.02	-1.51	-1.75	Daam1
1455267_at	Lgx only	1101	1050	793	685	-1.05	-1.39	-1.61	Esrrg
1455268_at	Res & Lgx	575	477	313	321	-1.20	-1.84	-1.79	Dph3
1455285_at	Res & Lgx	760	771	569	445	1.01	-1.34	-1.71	Slc31a1
1455288_at	Res & Lgx	1136	1274	1630	1957	1.12	1.43	1.72	1110036O03Rik
1455293_at	Lgx only	249	208	259	124	-1.20	1.04	-2.02	Leo1
1455296_at	Lgx only	784	1049	929	1119	1.34	1.19	1.43	LOC100047385
1455300_at	Res & Lgx	629	510	389	317	-1.23	-1.62	-1.98	E130014J05Rik
1455307_at	Lgx only	487	544	697	794	1.12	1.43	1.63	BC037112
1455309_at	Res & Lgx	761	829	1263	1387	1.09	1.66	1.82	Tmem16f
1455312_at	Lgx only	785	972	944	1067	1.24	1.20	1.36	Phc3
1455320_at	CR & Lgx	3658	2918	2870	2793	-1.25	-1.27	-1.31	AI480535
1455340_at	Res & Lgx	576	384	329	275	-1.50	-1.75	-2.09	D030011O10Rik
1455349_at	Lgx only	697	526	549	463	-1.32	-1.27	-1.50	LOC100048397
1455353_at	Lgx only	968	809	836	782	-1.20	-1.16	-1.24	Tmcc1
1455356_at	Lgx only	320	299	499	662	-1.07	1.56	2.07	Camsap1
1455387_at	Res & Lgx	1358	1115	995	758	-1.22	-1.36	-1.79	Nufip2
1455390_at	Lgx only	1575	1427	1439	1118	-1.10	-1.09	-1.41	Alkbh6
1455434_a_at	Res & Lgx	6402	5782	5247	4407	-1.11	-1.22	-1.45	Ktn1
1455442_at	Res & Lgx	74	104	176	197	1.41	2.37	2.67	Slc6a19
1455450_at	Lgx only	1232	1200	1327	1592	-1.03	1.08	1.29	Ptpn3
1455456_a_at	Lgx only	1242	1516	1332	1587	1.22	1.07	1.28	Timm50
1455462_at	Res & Lgx	218	251	334	356	1.15	1.53	1.63	Adcy2
1455479_a_at	Res & Lgx	12338	12135	7678	6396	-1.02	-1.61	-1.93	Ube2d3

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1455482_at	All	516	724	797	1018	1.40	1.54	1.97	Ap2a2
1455491_at	Res & Lgx	1099	1208	811	846	1.10	-1.36	-1.30	Hnrph3
1455506_at	Lgx only	5998	5890	8637	9404	-1.02	1.44	1.57	Slc25a34
1455508_at	Lgx only	354	367	312	217	1.04	-1.14	-1.63	A530082C11Rik
1455538_at	Lgx only	942	726	609	472	-1.30	-1.55	-2.00	6330403M23Rik
1455585_at	Lgx only	601	526	486	404	-1.14	-1.24	-1.49	Rnf168
1455587_at	Res only	11	16	20	21	1.39	1.75	1.82	BC030183
1455588_at	Res & Lgx	1065	816	578	556	-1.30	-1.84	-1.91	Lyrm4
1455655_a_at	Res & Lgx	1506	1115	925	831	-1.35	-1.63	-1.81	Tardbp
1455688_at	Lgx only	951	817	745	702	-1.16	-1.28	-1.35	Ddr2
1455689_at	Lgx only	270	358	391	488	1.33	1.45	1.81	Fzd10
1455700_at	Res & Lgx	1328	1183	811	664	-1.12	-1.64	-2.00	Mterfd3
1455702_at	Lgx only	584	734	962	803	1.26	1.65	1.37	Wdr22
1455733_at	Res & Lgx	135	216	228	227	1.60	1.69	1.68	Taok3
1455734_at	CR & Lgx	1289	881	1118	921	-1.46	-1.15	-1.40	Crbn
1455741_a_at	Res & Lgx	1206	1346	1718	2034	1.12	1.42	1.69	Ece1
1455750_at	Res & Lgx	1072	1041	733	717	-1.03	-1.46	-1.50	A230067G21Rik
1455757_at	Res & Lgx	522	526	371	305	1.01	-1.41	-1.71	D3Ertd254e
1455794_at	Lgx only	566	625	809	1034	1.10	1.43	1.83	Smtnl2
1455832_a_at	Res only	420	352	325	287	-1.19	-1.29	-1.46	Umps
1455854_a_at	Res & Lgx	470	513	771	829	1.09	1.64	1.76	Ssh1
1455870_at	Lgx only	2176	2652	2908	3503	1.22	1.34	1.61	Akap2
1455873_a_at	Lgx only	271	383	402	483	1.41	1.48	1.78	Vps18
1455884_at	Lgx only	508	747	821	851	1.47	1.62	1.67	Dpp9
1455914_at	Lgx only	168	138	101	93	-1.22	-1.66	-1.81	AI987944
1455915_at	CR only	191	132	150	138	-1.44	-1.27	-1.38	Galnt4
1455922_at	Lgx only	1213	1256	1440	1560	1.04	1.19	1.29	Rab3gap1
1455936_a_at	CR & Lgx	1540	2056	1827	2200	1.33	1.19	1.43	Rbpms
1455944_at	Lgx only	153	127	219	289	-1.21	1.43	1.88	Zfp516
1455945_at	Lgx only	192	166	136	117	-1.16	-1.41	-1.65	Zfp817
1456046_at	Lgx only	3587	3017	2786	2266	-1.19	-1.29	-1.58	Cd93
1456058_at	Lgx only	807	745	690	598	-1.08	-1.17	-1.35	Rbm27
1456059_at	Lgx only	4664	4475	3594	3214	-1.04	-1.30	-1.45	Psmd11
1456061_at	Res & Lgx	740	574	371	258	-1.29	-1.99	-2.87	Gimap8
1456065_at	CR only	128	49	171	119	-2.60	1.33	-1.07	Ubash3a
1456092_at	Lgx only	86	52	58	26	-1.67	-1.49	-3.35	Kctd7
1456099_at	Res only	128	174	254	207	1.35	1.98	1.61	D930017J03Rik
1456161_at	Lgx only	403	283	297	279	-1.42	-1.36	-1.44	0610040B10Rik
1456169_at	Res only	128	171	178	144	1.34	1.39	1.13	EG226654
1456210_at	Lgx only	150	178	101	68	1.18	-1.48	-2.21	5430407P10Rik
1456241_a_at	Lgx only	3667	3705	4635	4984	1.01	1.26	1.36	1810073N04Rik
1456257_at	Res only	495	565	327	409	1.14	-1.51	-1.21	C130065N10Rik
1456315_a_at	Res & Lgx	5639	5549	3253	2716	-1.02	-1.73	-2.08	Ptpla
1456398_at	Lgx only	1951	1675	1544	1204	-1.16	-1.26	-1.62	Tug1
1456487_at	Lgx only	270	438	425	592	1.62	1.57	2.19	Adcy1
1456599_at	CR only	106	165	118	109	1.55	1.11	1.03	Nxt2

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1456604_a_at	Lgx only	2365	2051	1676	1367	-1.15	-1.41	-1.73	Pcmt1
1456611_at	Lgx only	462	581	505	608	1.26	1.09	1.31	D430015B01Rik
1456625_at	Lgx only	192	140	145	126	-1.37	-1.33	-1.52	Aasdhppt
1456643_at	Lgx only	386	308	278	233	-1.25	-1.39	-1.65	9230114K14Rik
1456659_at	Lgx only	319	363	307	153	1.14	-1.04	-2.08	LOC552902
1456727_a_at	Res & Lgx	2775	2975	4693	5107	1.07	1.69	1.84	Csnk1d
1456768_a_at	Lgx only	1333	1602	1733	2588	1.20	1.30	1.94	Mmrn2
1456774_at	Lgx only	324	594	806	961	1.83	2.49	2.97	Ppp1r13l
1456777_at	CR & Lgx	38	14	75	13	-2.79	1.95	-3.02	Mgam
1456827_at	Lgx only	196	148	119	61	-1.33	-1.64	-3.22	AA987161
1456836_at	CR only	151	39	112	115	-3.85	-1.34	-1.31	Itk
1456871_a_at	Res only	1810	1658	2405	2210	-1.09	1.33	1.22	Phf20l1
1456888_at	Lgx only	252	244	313	371	-1.03	1.24	1.47	Pfkfb4
1456896_at	Res only	473	464	642	654	-1.02	1.36	1.38	6720462K09Rik
1456914_at	Lgx only	239	197	190	142	-1.21	-1.26	-1.69	Slc16a4
1457058_at	Lgx only	245	319	349	556	1.31	1.43	2.27	Adamts2
1457111_at	Res only	267	251	189	227	-1.07	-1.41	-1.18	AA415038
1457276_at	Res only	149	225	240	200	1.51	1.61	1.35	Snf1lk2
1457285_at	Lgx only	1194	1178	764	664	-1.01	-1.56	-1.80	Zfp187
1457334_at	All	286	516	618	643	1.80	2.16	2.25	C130057M05Rik
1457401_at	Lgx only	63	89	114	167	1.41	1.81	2.64	Dnahc9
1457448_at	CR only	154	79	90	117	-1.94	-1.71	-1.32	Pnpla1
1457501_at	Res only	20	78	111	63	3.99	5.68	3.23	RP23-233B9.8
1457508_at	Res & Lgx	400	281	286	239	-1.42	-1.40	-1.67	C430003N24Rik
1457557_at	Lgx only	81	31	72	23	-2.59	-1.13	-3.55	A330076H08Rik
1457626_at	Res only	58	84	135	152	1.44	2.31	2.59	D3Wsu106e
1457671_at	Lgx only	767	700	555	483	-1.10	-1.38	-1.59	9330120H11Rik
1457681_at	Lgx only	1108	992	1385	1651	-1.12	1.25	1.49	2610301F02Rik
1457707_at	Res & Lgx	55	71	153	177	1.29	2.78	3.21	Mctp2
1457745_at	Res only	361	391	519	505	1.08	1.44	1.40	Gpr4
1457747_at	Res only	8	14	30	35	1.77	3.81	4.34	9330109K16Rik
1457801_at	CR only	268	388	343	329	1.45	1.28	1.23	9930024M15Rik
1458058_at	Lgx only	149	104	122	59	-1.44	-1.21	-2.53	7030407E18Rik
1458190_at	Res only	120	146	291	240	1.21	2.41	2.00	Arhgap4
1458311_at	Res only	249	304	433	381	1.22	1.74	1.53	Usp36
1458353_at	Res only	162	269	340	244	1.66	2.10	1.51	Nwd1
1458438_at	Lgx only	240	181	180	118	-1.33	-1.34	-2.03	Ccdc122
1458455_at	Lgx only	566	438	512	358	-1.29	-1.11	-1.58	Abra
1458461_at	Res only	12	21	40	20	1.66	3.22	1.57	E330021D16Rik
1458478_at	Res only	65	48	12	53	-1.36	-5.63	-1.23	9230110F11Rik
1458482_at	Lgx only	1340	1453	1156	1017	1.08	-1.16	-1.32	Tnni3k
1458624_at	Res & Lgx	1590	1831	2206	2675	1.15	1.39	1.68	Rbm24
1458780_at	Res only	20	68	74	55	3.33	3.61	2.70	D8Ertd620e
1458863_at	Res only	152	101	37	85	-1.50	-4.15	-1.79	6330415G19Rik
1459108_a_at	Res & Lgx	219	259	328	445	1.18	1.50	2.03	Yeats2
1459220_at	Lgx only	138	217	222	276	1.57	1.61	2.00	C78651

Table 3

Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1459363_at	Lgx only	312	405	407	506	1.30	1.31	1.62	Atxn2
1459578_at	Res only	54	61	155	88	1.12	2.85	1.62	AA407175
1460033_at	CR only	74	180	125	105	2.42	1.69	1.42	C030002C11Rik
1460053_at	CR only	242	144	218	221	-1.68	-1.11	-1.10	Smyd4
1460113_at	CR only	104	187	144	134	1.80	1.38	1.29	B930093H17Rik
1460165_at	Res & Lgx	9064	9043	7129	6522	-1.00	-1.27	-1.39	Ppp1ca
1460167_at	Lgx only	988	1120	1063	1253	1.13	1.08	1.27	Aldh7a1
1460169_a_at	Lgx only	2453	3136	3555	4351	1.28	1.45	1.77	Pctk1
1460177_at	Res & Lgx	1301	1575	1640	1671	1.21	1.26	1.28	Cndp2
1460184_at	Lgx only	36182	38955	42606	49147	1.08	1.18	1.36	Hadh
1460189_at	Res & Lgx	4600	3988	3323	2755	-1.15	-1.38	-1.67	Wdr23
1460194_at	Lgx only	12145	13386	14000	14613	1.10	1.15	1.20	Phyh
1460196_at	Lgx only	1079	1068	1158	1385	-1.01	1.07	1.28	Cbr1
1460210_at	Lgx only	683	848	775	1026	1.24	1.13	1.50	Pkd1
1460214_at	CR only	27	97	92	108	3.67	3.46	4.07	Pcp4
1460216_at	Lgx only	5275	5712	6310	7377	1.08	1.20	1.40	Acads
1460230_at	Lgx only	106	114	120	192	1.07	1.13	1.81	Syn2
1460239_at	Lgx only	3477	3308	3484	3037	-1.05	1.00	-1.15	Tspan13
1460251_at	Lgx only	464	467	407	262	1.01	-1.14	-1.77	Fas
1460254_at	Res & Lgx	1563	1408	1168	924	-1.11	-1.34	-1.69	1810049H13Rik
1460271_at	CR only	157	66	118	125	-2.38	-1.33	-1.26	Trem3
1460276_a_at	Lgx only	822	886	967	1097	1.08	1.18	1.33	Gpr175
1460321_at	CR only	129	52	117	105	-2.48	-1.10	-1.23	Cntn4
1460326_at	Res & Lgx	1395	1325	1867	1690	-1.05	1.34	1.21	Pik3ca
1460328_at	Res & Lgx	619	628	880	862	1.01	1.42	1.39	Brd3
1460329_at	Res only	713	637	458	504	-1.12	-1.56	-1.42	LOC675709
1460330_at	Lgx only	1601	1521	1413	1219	-1.05	-1.13	-1.31	Anxa3
1460331_at	Res & Lgx	5861	5156	4527	4030	-1.14	-1.29	-1.45	Tm9sf2
1460336_at	Lgx only	2689	2686	4293	5218	-1.00	1.60	1.94	Ppargc1a
1460337_at	CR only	4383	5948	3663	4114	1.36	-1.20	-1.07	Sh3kbp1
1460344_at	Lgx only	1002	1085	1313	1398	1.08	1.31	1.40	2310033F14Rik
1460396_at	Lgx only	483	621	790	817	1.29	1.63	1.69	Ddx54
1460409_at	Lgx only	1345	1292	1713	2001	-1.04	1.27	1.49	Cpt1a
1460412_at	CR only	58	20	45	57	-2.84	-1.30	-1.03	1600015H20Rik
1460420_a_at	Lgx only	634	820	934	1142	1.29	1.47	1.80	Egfr
1460428_at	Lgx only	919	958	1120	1123	1.04	1.22	1.22	Ankrd13a
1460432_a_at	Lgx only	12140	9937	10609	8730	-1.22	-1.14	-1.39	Eif3e
1460433_at	Lgx only	662	763	813	1034	1.15	1.23	1.56	Entpd6
1460435_at	Lgx only	573	713	699	935	1.25	1.22	1.63	1500002O20Rik
1460444_at	Lgx only	329	323	411	491	-1.02	1.25	1.49	Arrb1
1460500_at	Lgx only	313	176	158	98	-1.78	-1.98	-3.20	5033421C21Rik
1460510_a_at	Res & Lgx	3505	3184	2702	2908	-1.10	-1.30	-1.21	Coq10b
1460539_at	Res only	68	139	141	153	2.04	2.07	2.25	4933404K13Rik
1460547_a_at	Res & Lgx	4912	3450	2670	1733	-1.42	-1.84	-2.84	Hnrpk
1460552_at	Lgx only	2039	2109	2286	2886	1.03	1.12	1.42	Ascc3l1
1460557_at	Lgx only	1577	1866	1401	1297	1.18	-1.13	-1.22	Supv3l1

Table 3									
Probe Set ID	Treatment	CO mean	CR mean	RES mean	LGX mean	FC CR	FC Res	FC Lgx	Entrez Info
1460559_at	Lgx only	2459	2747	3020	4193	1.12	1.23	1.71	Ankrd25
1460570_at	Lgx only	90	123	168	176	1.36	1.87	1.95	Pgbd5
1460573_at	Res & Lgx	838	611	460	341	-1.37	-1.82	-2.46	AI848100
1460576_at	Res & Lgx	1390	1299	1107	878	-1.07	-1.26	-1.58	LOC100047539
1460580_at	Lgx only	950	1086	1029	1226	1.14	1.08	1.29	Pcnx
1460586_at	Lgx only	802	890	990	1316	1.11	1.23	1.64	Megf8
1460603_at	Res only	703	632	490	590	-1.11	-1.43	-1.19	Samd9l
1460607_at	CR only	43	102	138	99	2.38	3.21	2.30	Igsf11
1460610_at	Lgx only	191	208	233	328	1.09	1.22	1.72	Agbl5
1460614_at	Lgx only	331	289	291	199	-1.14	-1.14	-1.66	LOC100045020
1460624_at	Res & Lgx	363	266	217	198	-1.36	-1.67	-1.83	6330564D18Rik
1460643_at	Lgx only	270	360	304	400	1.34	1.13	1.48	Ell
1460644_at	Lgx only	2028	2060	2523	2936	1.02	1.24	1.45	Bckdk
1460645_at	Res & Lgx	1384	1178	880	926	-1.17	-1.57	-1.49	Chordc1
1460648_at	Lgx only	1100	1245	1478	1574	1.13	1.34	1.43	Nr2f6
1460674_at	Lgx only	477	623	657	970	1.31	1.38	2.04	Paqr7
1460675_at	Lgx only	412	429	642	729	1.04	1.56	1.77	Igsf8
1460695_a_at	Lgx only	2491	2664	2132	1926	1.07	-1.17	-1.29	2010111I01Rik
1460704_at	Lgx only	664	756	815	930	1.14	1.23	1.40	Rfng
1460716_a_at	Lgx only	2287	2216	2090	1679	-1.03	-1.09	-1.36	Cbfb
1460720_at	Res & Lgx	1749	2092	2554	2716	1.20	1.46	1.55	Trpc4ap
1460732_a_at	Lgx only	495	527	571	770	1.06	1.15	1.56	Ppl
AFFX-b-ActinMur/M12481_3_at	Res & Lgx	37967	41791	48255	54572	1.10	1.27	1.44	Actb
AFFX-GapdhMur/M32599_M_at	Lgx only	90974	104691	98912	122441	1.15	1.09	1.35	Gapdh

[00114] Several genes of particular interest showed expression patterns indicating that compounds of the present invention (Longevinex®) up-regulated survival/longevity genes or down-regulate genes whose expression enhances cellular damage to a greater extent than resveratrol:

(A) The sirtuin family of genes, and in particular Sirtuin 1, are thought to be critical mediators of extended lifespans (Boily, G. *et al.* (2008) "*SirT1 Regulates Energy Metabolism And Response To Caloric Restriction In Mice*," PLoS ONE 3(3):e1759; Huang, J. *et al.* (2008) "*SIRT1 Overexpression Antagonizes Cellular Senescence with Activated ERK/S6k1 Signaling in Human Diploid Fibroblasts*," PLoS ONE 3(3):e1710). Whereas mice receiving resveratrol showed only a 1.22 fold decrease in expression and mice subjected to a calorie restricted diet showed only a 1.12 fold reduction in Sirtuin 1 expression, expression of Sirtuin 1 was found to be decreased 1.71 fold in mice receiving Longevinex®.

(B) Pgc-1α (peroxisome proliferative activated receptor, gamma, coactivator 1 alpha; ppargc1a) is a transcriptional co-factor that controls energy metabolism and mitochondrial biogenesis; its expression is increased in skeletal muscle tissue upon long-term calorie restriction (Conley, K.E. *et al.* (2007) "*Mitochondrial Dysfunction and Age*," Curr. Opin. Clin. Nutr. Metab. Care. 10(6):688-692; Wu, Z. *et al.* (2007) "*Targeting PGC-1 Alpha To Control Energy Homeostasis*," Expert Opin. Ther. Targets 11(10):1329-1338). Whereas mice receiving resveratrol showed only a 1.6 fold increase in expression and mice subjected to a calorie restricted diet showed no increase in Pgc-1α expression, mice receiving Longevinex® showed a 1.94 fold increase in Pgc-1α expression.

(C) Uncoupling protein-3 is believed to be a target of Pgc-1α and to play a role in fatty acid metabolism; its expression is increased in cardiac tissue upon long-term calorie restriction (Bézaire, V. *et al.* (Epub 2007 Jan 3) "*Uncoupling Protein-3: Clues In An Ongoing Mitochondrial Mystery*," FASEB J. 21(2):312-324; Chan, C.B. *et al.* (2006) "*Uncoupling Proteins: Role In Insulin Resistance And Insulin Insufficiency*," Curr. Diabetes Rev. 2(3):271-283). Whereas mice receiving resveratrol showed only a 2.02 fold increase in expression and mice subjected to a calorie restricted diet showed only a 1.8 fold increase in uncoupling protein-3 expression, mice receiving Longevinex® showed a 2.79 fold increase in uncoupling protein-3 expression.

(D) Pyruvate dehydrogenase kinase 4 coordinates fuel selection during fasting to promote fatty acid metabolism (Sugden, M.C. *et al.* (2006) "*Mechanisms Underlying Regulation Of The Expression And Activities Of The Mammalian Pyruvate Dehydrogenase Kinases*," Arch. Physiol. Biochem. 112(3):139-149; Pilegaard, H. *et al.* (2004)

"*Transcriptional Regulation Of Pyruvate Dehydrogenase Kinase 4 In Skeletal Muscle During And After Exercise*," Proc. Nutr. Soc. 63(2):221-226; Sugden, M.C. (2003) "PDK4: A factor in fatness?," Obes. Res. 11(2):167-169). It is a target of Pgc-1α and is induced in multiple tissues by long-term calorie restriction. Whereas mice receiving resveratrol showed only a 2.78 fold increase in expression and mice subjected to a calorie restricted diet showed only a 1.48 fold increase in pyruvate dehydrogenase kinase 4 expression, mice receiving Longevinex® showed a 3.25 fold increase in pyruvate dehydrogenase kinase 4 expression.

[00115] Analysis of the genes up-regulated or down-regulated by a compound of the present invention (Longevinex®) revealed that oxidative phosphorylation genes, which are involved in mitochondrial ATP production, were markedly up-regulated (**Table 4**).

Table 4

FC CR	FC RES	FCLGX	Gene
1.11	1.14	1.32	Ndufa5
-1.00	-1.20	-1.42	Ndufaf1
-1.04	-1.13	-1.22	Ndufb3
1.13	1.06	1.27	Ndufb8
1.12	1.18	1.28	Ndufb7
-1.34	-1.55	-2.65	Ndufab1
1.07	1.20	1.51	Ndufc1
-1.07	-1.30	-1.39	Ndufc2
1.08	1.11	1.37	Ndufs1
1.13	1.10	1.26	Ndufs2
1.09	1.12	1.23	Ndufs3
1.04	1.19	1.33	Ndufs5
1.13	1.18	1.44	Ndufs7
-1.02	1.03	-1.23	Ndufs8
1.14	1.18	1.21	Ndufv1
1.11	1.13	1.34	Ndufv2
1.17	1.13	1.43	Sdha
1.16	1.02	1.23	Sdhd
1.46	1.29	1.49	Sulf2
1.01	-1.25	-1.33	Uqcc
1.10	1.19	1.34	Uqcrc1
1.05	1.07	1.38	Uqcrfs1
1.20	1.50	1.94	Cox4i2
1.13	1.05	1.39	Cox5a
1.23	1.13	1.61	Cox8a

Example 4
Biochemical Pathways Affected by the Compositions of the Present Invention

[00116] Recent research has suggested that complex traits are emergent properties of molecular networks that are modulated by complex genetic loci and environmental factors.Chen, Y. *et al.* (Epub 2008 Mar 16) "*Variations In DNA Elucidate Molecular Networks That Cause Disease*," Nature 452(7186):429-435).

[00117] Indeed, research within the last decade has revealed that most chronic illnesses such as cancer, cardiovascular and pulmonary diseases, neurological diseases, diabetes, and autoimmune diseases exhibit dysregulation of multiple cell signaling pathways (Harikumar, K.B. *et al.* (Epub February 15, 2008) "*Resveratrol: A Multitargeted Agent For Age-Associated Chronic Diseases*," Cell Cycle. 2008:7(8)). The compounds of the present invention were therefore evaluated for their effect on the expression of biochemical pathways and were found to affect the expression of genes involved in 220 biological processes ($P < 0.05$) by (**Table 5**).

Table 5

GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0051128	Regulation Of Cellular Component Organization And Biogenesis	CR only	0.0277	51	5	–	–
GO:0001558	Regulation Of Cell Growth	CR only	–	74	5	–	–
GO:0006820	Anion Transport	CR only	–	155	6	–	–
GO:0008361	Regulation Of Cell Size	CR only	–	102	6	–	–
GO:0016049	Cell Growth	CR only	–	90	5	–	–
GO:0030217	T Cell Differentiation	CR only	–	55	3	–	–
GO:0030595	Leukocyte Chemotaxis	CR only	–	18	2	–	–
GO:0045580	Regulation Of T Cell Differentiation	CR only	–	15	2	–	–
GO:0045792	Negative Regulation Of Cell Size	CR only	–	16	2	–	–
GO:0048705	Skeletal Morphogenesis	CR only	–	20	2	–	–
GO:0051246	Regulation Of Protein Metabolic Process	CR only	–	204	8	–	–
GO:0033554	Cellular Response To Stress	RES only	0.0074	14	–	3	–
GO:0006888	ER To Golgi Vesicle-Mediated Transport	RES only	0.0284	16	–	3	–
GO:0000723	Telomere Maintenance	RES only	–	17	–	3	–
GO:0001958	Endochondral Ossification	RES only	–	8	–	2	–
GO:0006281	DNA Repair	RES only	–	178	–	13	–
GO:0006353	Transcription Termination	RES only	–	6	–	2	–
GO:0006446	Regulation Of Translational Initiation	RES only	–	20	–	4	–
GO:0006596	Polyamine Biosynthetic Process	RES only	–	5	–	2	–
GO:0006625	Protein Targeting To Peroxisome	RES only	–	5	–	2	–
GO:0006825	Copper Ion Transport	RES only	–	9	–	3	–
GO:0006919	Caspase Activation	RES only	–	16	–	3	–
GO:0006974	Response To DNA Damage Stimulus	RES only	–	217	–	15	–
GO:0006983	ER Overload Response	RES only	–	5	–	2	–
GO:0007017	Microtubule-Based Process	RES only	–	155	–	12	–
GO:0007091	Mitotic Metaphase/Anaphase Transition	RES only	–	8	–	2	–
GO:0007143	Female Meiosis	RES only	–	8	–	2	–
GO:0008299	Isoprenoid Biosynthetic Process	RES only	–	19	–	3	–
GO:0045351	Interferon Type I Biosynthetic Process	RES only	–	6	–	2	–
GO:0045577	Regulation Of B Cell Differentiation	RES only	–	8	–	2	–
GO:0046330	Positive Regulation Of JNK Cascade	RES only	–	8	–	2	–
GO:0048193	Golgi Vesicle Transport	RES only	–	37	–	6	–
GO:0050673	Epithelial Cell Proliferation	RES only	–	30	–	4	–
GO:0006119	Oxidative Phosphorylation	LGX only	0.0001	39	–	–	10
GO:0042773	ATP Synthesis Coupled Electron Transport	LGX only	0.0019	11	–	–	5

Table 5

GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0030036	Actin Cytoskeleton Organization And Biogenesis	LGX only	0.0024	146	—	—	34
GO:0006629	Lipid Metabolic Process	LGX only	0.0146	535	—	—	89
GO:0044255	Cellular Lipid Metabolic Process	LGX only	0.0147	459	—	—	80
GO:0001701	In Utero Embryonic Development	LGX only	0.0195	101	—	—	19
GO:0040008	Regulation Of Growth	LGX only	0.0242	135	—	—	23
GO:0000375	RNA Splicing, Via Transesterification Reactions	LGX only	0.0251	39	—	—	10
GO:0000398	Nuclear Mrna Splicing, Via Spliceosome	LGX only	0.0251	39	—	—	10
GO:0006366	Transcription From RNA Polymerase II Promoter	LGX only	0.0264	392	—	—	72
GO:0006357	Regulation Of Transcription From RNA Polymerase II Promoter	LGX only	0.0276	351	—	—	59
GO:0016044	Membrane Organization And Biogenesis	LGX only	0.0292	209	—	—	34
GO:0006066	Alcohol Metabolic Process	LGX only	0.0299	222	—	—	41
GO:0065002	Intracellular Protein Transport Across A Membrane	LGX only	0.0372	59	—	—	16
GO:0006099	Tricarboxylic Acid Cycle	LGX only	0.0396	23	—	—	7
GO:0009060	Aerobic Respiration	LGX only	0.0396	24	—	—	7
GO:0044265	Cellular Macromolecule Catabolic Process	LGX only	0.0417	201	—	—	41
GO:0006006	Glucose Metabolic Process	LGX only	0.0441	83	—	—	16
GO:0045333	Cellular Respiration	LGX only	0.0484	28	—	—	8
GO:0000038	Very-Long-Chain Fatty Acid Metabolic Process	LGX only	—	5	—	—	3
GO:0000059	Protein Import Into Nucleus, Docking	LGX only	—	15	—	—	7
GO:0000186	Activation Of MAPKK Activity	LGX only	—	10	—	—	5
GO:0001525	Angiogenesis	LGX only	—	124	—	—	26
GO:0001568	Blood Vessel Development	LGX only	—	188	—	—	42
GO:0001570	Vasculogenesis	LGX only	—	27	—	—	8
GO:0001839	Neural Plate Morphogenesis	LGX only	—	40	—	—	9
GO:0001841	Neural Tube Formation	LGX only	—	39	—	—	9
GO:0001843	Neural Tube Closure	LGX only	—	29	—	—	7
GO:0001935	Endothelial Cell Proliferation	LGX only	—	8	—	—	4
GO:0002026	Cardiac Inotropy	LGX only	—	10	—	—	4
GO:0003007	Heart Morphogenesis	LGX only	—	32	—	—	8
GO:0005978	Glycogen Biosynthetic Process	LGX only	—	11	—	—	5
GO:0006007	Glucose Catabolic Process	LGX only	—	44	—	—	11
GO:0006098	Pentose-Phosphate Shunt	LGX only	—	7	—	—	3
GO:0006118	Electron Transport	LGX only	—	303	—	—	65
GO:0006120	Mitochondrial Electron Transport, NADH To Ubiquinone	LGX only	—	6	—	—	5
GO:0006171	Camp Biosynthetic Process	LGX only	—	14	—	—	5
GO:0006259	DNA Metabolic Process	LGX only	—	524	—	—	77
GO:0006323	DNA Packaging	LGX only	—	209	—	—	37
GO:0006325	Establishment And/Or Maintenance Of Chromatin Architecture	LGX only	—	203	—	—	34
GO:0006333	Chromatin Assembly Or Disassembly	LGX only	—	80	—	—	15
GO:0006352	Transcription Initiation	LGX only	—	27	—	—	7
GO:0006354	RNA Elongation	LGX only	—	5	—	—	3
GO:0006367	Transcription Initiation From RNA Polymerase II Promoter	LGX only	—	11	—	—	5

Table 5

GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0006396	RNA Processing	LGX only	—	319	—	—	63
GO:0006397	Mrna Processing	LGX only	—	213	—	—	43
GO:0006414	Translational Elongation	LGX only	—	19	—	—	6
GO:0006461	Protein Complex Assembly	LGX only	—	122	—	—	28
GO:0006468	Protein Amino Acid Phosphorylation	LGX only	—	545	—	—	83
GO:0006470	Protein Amino Acid Dephosphorylation	LGX only	—	99	—	—	18
GO:0006473	Protein Amino Acid Acetylation	LGX only	—	12	—	—	4
GO:0006508	Proteolysis	LGX only	—	545	—	—	85
GO:0006520	Amino Acid Metabolic Process	LGX only	—	198	—	—	34
GO:0006606	Protein Import Into Nucleus	LGX only	—	53	—	—	13
GO:0006612	Protein Targeting To Membrane	LGX only	—	15	—	—	5
GO:0006631	Fatty Acid Metabolic Process	LGX only	—	142	—	—	35
GO:0006635	Fatty Acid Beta-Oxidation	LGX only	—	13	—	—	6
GO:0006638	Neutral Lipid Metabolic Process	LGX only	—	21	—	—	6
GO:0006641	Triacylglycerol Metabolic Process	LGX only	—	17	—	—	6
GO:0006662	Glycerol Ether Metabolic Process	LGX only	—	23	—	—	6
GO:0006766	Vitamin Metabolic Process	LGX only	—	57	—	—	14
GO:0006807	Nitrogen Compound Metabolic Process	LGX only	—	315	—	—	49
GO:0006869	Lipid Transport	LGX only	—	67	—	—	16
GO:0006913	Nucleocytoplasmic Transport	LGX only	—	89	—	—	23
GO:0006914	Autophagy	LGX only	—	21	—	—	8
GO:0007031	Peroxisome Organization And Biogenesis	LGX only	—	22	—	—	7
GO:0007182	Common-Partner SMAD Protein Phosphorylation	LGX only	—	8	—	—	4
GO:0007190	Adenylate Cyclase Activation	LGX only	—	12	—	—	4
GO:0007242	Intracellular Signaling Cascade	LGX only	—	915	—	—	133
GO:0007369	Gastrulation	LGX only	—	55	—	—	13
GO:0007498	Mesoderm Development	LGX only	—	44	—	—	13
GO:0007507	Heart Development	LGX only	—	158	—	—	39
GO:0007512	Adult Heart Development	LGX only	—	9	—	—	4
GO:0007517	Muscle Development	LGX only	—	105	—	—	19
GO:0008016	Regulation Of Heart Contraction	LGX only	—	27	—	—	9
GO:0008286	Insulin Receptor Signaling Pathway	LGX only	—	24	—	—	7
GO:0009308	Amine Metabolic Process	LGX only	—	294	—	—	46
GO:0009653	Anatomical Structure Morphogenesis	LGX only	—	993	—	—	143
GO:0009790	Embryonic Development	LGX only	—	387	—	—	61
GO:0009792	Embryonic Development Ending In Birth Or Egg Hatching	LGX only	—	190	—	—	32
GO:0010003	Gastrulation (Sensu Mammalia)	LGX only	—	17	—	—	6
GO:0015804	Neutral Amino Acid Transport	LGX only	—	6	—	—	3
GO:0015908	Fatty Acid Transport	LGX only	—	6	—	—	3
GO:0016071	Mrna Metabolic Process	LGX only	—	240	—	—	45
GO:0016192	Vesicle-Mediated Transport	LGX only	—	365	—	—	61
GO:0016310	Phosphorylation	LGX only	—	601	—	—	95
GO:0016311	Dephosphorylation	LGX only	—	111	—	—	20
GO:0016481	Negative Regulation Of Transcription	LGX only	—	223	—	—	40
GO:0016485	Protein Processing	LGX only	—	58	—	—	14

Table 5

GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0016540	Protein Autoprocessing	LGX only	–	30	–	–	9
GO:0016567	Protein Ubiquitination	LGX only	–	36	–	–	9
GO:0016568	Chromatin Modification	LGX only	–	152	–	–	27
GO:0016574	Histone Ubiquitination	LGX only	–	5	–	–	3
GO:0019395	Fatty Acid Oxidation	LGX only	–	20	–	–	8
GO:0019752	Carboxylic Acid Metabolic Process	LGX only	–	403	–	–	78
GO:0030163	Protein Catabolic Process	LGX only	–	162	–	–	31
GO:0030239	Myofibril Assembly	LGX only	–	12	–	–	5
GO:0030323	Respiratory Tube Development	LGX only	–	58	–	–	12
GO:0030324	Lung Development	LGX only	–	57	–	–	12
GO:0030855	Epithelial Cell Differentiation	LGX only	–	34	–	–	8
GO:0030856	Regulation Of Epithelial Cell Differentiation	LGX only	–	7	–	–	3
GO:0030865	Cortical Cytoskeleton Organization And Biogenesis	LGX only	–	10	–	–	5
GO:0031032	Actomyosin Structure Organization And Biogenesis	LGX only	–	16	–	–	5
GO:0032147	Activation Of Protein Kinase Activity	LGX only	–	28	–	–	8
GO:0035051	Cardiac Cell Differentiation	LGX only	–	13	–	–	6
GO:0035239	Tube Morphogenesis	LGX only	–	128	–	–	25
GO:0035295	Tube Development	LGX only	–	174	–	–	36
GO:0042254	Ribosome Biogenesis And Assembly	LGX only	–	97	–	–	18
GO:0042692	Muscle Cell Differentiation	LGX only	–	58	–	–	14
GO:0043009	Chordate Embryonic Development	LGX only	–	187	–	–	32
GO:0043087	Regulation Of Gtpase Activity	LGX only	–	59	–	–	12
GO:0043623	Cellular Protein Complex Assembly	LGX only	–	39	–	–	11
GO:0043631	RNA Polyadenylation	LGX only	–	11	–	–	4
GO:0044257	Cellular Protein Catabolic Process	LGX only	–	116	–	–	27
GO:0045214	Sarcomere Organization	LGX only	–	9	–	–	4
GO:0045761	Regulation Of Adenylate Cyclase Activity	LGX only	–	16	–	–	5
GO:0045893	Positive Regulation Of Transcription, DNA-Dependent	LGX only	–	225	–	–	44
GO:0045944	Positive Regulation Of Transcription From RNA Polymerase II Promoter	LGX only	–	186	–	–	34
GO:0046058	Camp Metabolic Process	LGX only	–	17	–	–	5
GO:0046777	Protein Amino Acid Autophosphorylation	LGX only	–	29	–	–	9
GO:0048276	Gastrulation (Sensu Vertebrata)	LGX only	–	24	–	–	7
GO:0048514	Blood Vessel Morphogenesis	LGX only	–	160	–	–	36
GO:0048646	Anatomical Structure Formation	LGX only	–	171	–	–	34
GO:0050658	RNA Transport	LGX only	–	48	–	–	11
GO:0051028	Mrna Transport	LGX only	–	45	–	–	11
GO:0051146	Striated Muscle Cell Differentiation	LGX only	–	26	–	–	11
GO:0051170	Nuclear Import	LGX only	–	54	–	–	13
GO:0055001	Muscle Cell Development	LGX only	–	13	–	–	5
GO:0055002	Striated Muscle Cell Development	LGX only	–	12	–	–	5
GO:0055007	Cardiac Muscle Cell Differentiation	LGX only	–	9	–	–	6
GO:0055012	Ventricular Cardiac Muscle Cell Differentiation	LGX only	–	6	–	–	4
GO:0051016	Barbed-End Actin Filament Capping	CR & RES	0.0487	17	2	3	–

Table 5

GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0030029	Actin Filament-Based Process	CR & LGX	0.0049	157	6	–	37
GO:0006084	Acetyl-Coa Metabolic Process	CR & LGX	0.0068	33	3	–	11
GO:0045941	Positive Regulation Of Transcription	CR & LGX	0.0119	267	8	–	48
GO:0006915	Apoptosis	CR & LGX	0.0172	537	14	–	84
GO:0012501	Programmed Cell Death	CR & LGX	0.0198	544	14	–	84
GO:0046356	Acetyl-Coa Catabolic Process	CR & LGX	0.0396	24	2	–	8
GO:0008219	Cell Death	CR & LGX	0.0410	564	14	–	84
GO:0006364	Rrna Processing	CR & LGX	–	50	3	–	11
GO:0006519	Amino Acid And Derivative Metabolic Process	CR & LGX	–	253	8	–	41
GO:0006796	Phosphate Metabolic Process	CR & LGX	–	714	17	–	114
GO:0006839	Mitochondrial Transport	CR & LGX	–	20	2	–	9
GO:0007005	Mitochondrion Organization And Biogenesis	CR & LGX	–	58	4	–	19
GO:0007167	Enzyme Linked Receptor Protein Signaling Pathway	CR & LGX	–	252	9	–	46
GO:0007179	Transforming Growth Factor Beta Receptor Signaling Pathway	CR & LGX	–	42	3	–	11
GO:0009056	Catabolic Process	CR & LGX	–	474	13	–	79
GO:0016265	Death	CR & LGX	–	564	14	–	84
GO:0030833	Regulation Of Actin Filament Polymerization	CR & LGX	–	10	2	–	4
GO:0008104	Protein Localization	RES & LGX	0.0007	663	–	38	127
GO:0015031	Protein Transport	RES & LGX	0.0011	581	–	38	121
GO:0045184	Establishment Of Protein Localization	RES & LGX	0.0028	610	–	38	123
GO:0006886	Intracellular Protein Transport	RES & LGX	0.0098	357	–	26	75
GO:0006605	Protein Targeting	RES & LGX	0.0099	161	–	12	34
GO:0044249	Cellular Biosynthetic Process	RES & LGX	0.0107	710	–	45	117
GO:0009058	Biosynthetic Process	RES & LGX	0.0120	979	–	60	155
GO:0006412	Translation	RES & LGX	0.0364	338	–	25	62
GO:0044262	Cellular Carbohydrate Metabolic Process	RES & LGX	0.0471	221	–	18	49
GO:0005975	Carbohydrate Metabolic Process	RES & LGX	–	316	–	21	60
GO:0005976	Polysaccharide Metabolic Process	RES & LGX	–	42	–	9	15
GO:0005977	Glycogen Metabolic Process	RES & LGX	–	31	–	7	13
GO:0006091	Generation Of Precursor Metabolites And Energy	RES & LGX	–	390	–	24	88
GO:0006112	Energy Reserve Metabolic Process	RES & LGX	–	35	–	7	13
GO:0006413	Translational Initiation	RES & LGX	–	40	–	6	9
GO:0006511	Ubiquitin-Dependent Protein Catabolic Process	RES & LGX	–	109	–	9	27
GO:0006512	Ubiquitin Cycle	RES & LGX	–	356	–	27	79
GO:0007178	Transmembrane Receptor Protein Serine/Threonine Kinase Signaling Pathway	RES & LGX	–	75	–	7	19
GO:0007264	Small Gtpase Mediated Signal Transduction	RES & LGX	–	320	–	22	62
GO:0008380	RNA Splicing	RES & LGX	–	162	–	12	30
GO:0009059	Macromolecule Biosynthetic Process	RES & LGX	–	525	–	35	90
GO:0019941	Modification-Dependent Protein Catabolic Process	RES & LGX	–	111	–	9	27
GO:0043085	Positive Regulation Of Enzyme Activity	RES & LGX	–	40	–	5	11
GO:0043280	Positive Regulation Of Caspase Activity	RES & LGX	–	17	–	3	5

Table 5							
GO ID	Biological Processes	Treatment	Changed by LT-CR	Number of Genes in Series	CR	RES	LGX
GO:0043281	Regulation Of Caspase Activity	RES & LGX	–	27	–	5	8
GO:0045454	Cell Redox Homeostasis	RES & LGX	–	40	–	6	9
GO:0050790	Regulation Of Catalytic Activity	RES & LGX	–	241	–	21	53
GO:0008064	Regulation Of Actin Polymerization And/Or Depolymerization	All	0.0139	30	5	4	9
GO:0030832	Regulation Of Actin Filament Length	All	0.0139	31	5	4	9
GO:0046907	Intracellular Transport	All	0.0287	523	16	43	113
GO:0008154	Actin Polymerization And/Or Depolymerization	All	0.0414	39	5	6	12
GO:0051649	Establishment Of Cellular Localization	All	0.0467	653	17	45	125
GO:0006457	Protein Folding	All	–	124	6	13	34
GO:0006996	Organelle Organization And Biogenesis	All	–	897	27	53	158
GO:0007010	Cytoskeleton Organization And Biogenesis	All	–	403	12	26	70
GO:0007018	Microtubule-Based Movement	All	–	72	4	9	14
GO:0030041	Actin Filament Polymerization	All	–	17	2	3	7
GO:0051258	Protein Polymerization	All	–	32	6	6	8

[00118] Calorie restriction affected genes associated with 5% of these processes, administration of resveratrol affected genes associated with 10% of these processes. Compounds of the present invention (*e.g.*, Longevinex®) were found to affect 85% of these processes. Administration of resveratrol to calorie restricted mice failed to affect any genes in any of these processes. Administration of Longevinex® to calorie restricted mice was found to affect genes associated with 8% of these processes. Administration of both resveratrol and Longevinex® was found to affect genes associated with 12% of these processes. **Table 6** shows the modulation of the genes of the oxidative phosphorylation pathway (GO:0006119) caused by calorie restriction (CR), resveratrol alone (Res), or the compositions of the present invention (LGX).

Table 6 Modulation Of The Genes Of The Oxidative Phosphorylation Pathway (GO:0006119)			
Gene	Fold Change		
	CR	Res	LGX
Atp6v0d1	1.03	-1.21	-1.19
Atp6v1b2	1.27	-1.16	-1.23
Ndufv1	1.14	1.18	1.21
Ndufc2	-1.07	-1.30	-1.39
Atp6v1d	1.13	-1.09	-1.05
Ndufs3	1.09	1.12	1.23
Atp6v1f	-1.14	-1.21	-1.44
Ndufs7	1.13	1.18	1.44
Uqcrh	1.05	-1.40	-1.34

Table 6 Modulation Of The Genes Of The Oxidative Phosphorylation Pathway (GO:0006119)			
Gene	Fold Change		
	CR	Res	LGX
Atp5j	1.07	-1.00	1.24
Cyc1	1.14	1.08	1.29
Atp5b	1.10	1.01	1.27
Atp5k	1.05	1.02	1.24
Atp5a1	1.09	1.02	1.29
Atp5h	1.07	1.04	1.37
1110020P15Rik	1.06	1.09	1.26
Ndufs1	1.08	1.11	1.37
Atp5f1	1.09	1.08	1.19
Uqcr	1.03	1.10	1.30
Atp6v1a	-1.04	-1.18	-1.35
Ndufb9	1.07	1.07	1.25
Atp6v1h	-1.17	-1.19	-1.11
Uqcrb	-1.09	-1.00	-1.22
Msh2	1.05	-1.03	-1.15
Atp6v1c1	-1.10	-1.07	-1.06
Atp6v1c2	2.17	1.42	-1.00
Atp6v0d2	1.04	1.65	1.21
Atp7a	-1.13	-1.18	-1.29
Atp5c1	-1.16	-1.28	-1.16
Atp5g1	1.26	-1.58	-1.17
Atp6v1e1	1.05	-1.42	-1.42
Atp6v1e2	1.11	1.28	1.30
Ndufa7	-1.07	-1.14	-1.07
Atp5g3	1.06	-1.11	-1.01

[00119] **Table 7** shows the modulation of the genes of the glucose metabolism pathway (GO:0006006) caused by calorie restriction (CR), resveratrol alone (Res), or the compositions of the present invention (LGX).

Table 7 Modulation Of The Genes Of The Glucose Metabolism Pathway (GO:0006006)			
Gene	Fold Change		
	CR	Res	LGX
Pgam2	1.27	1.38	1.81
Pkm2	1.31	1.34	1.70
Pgls	1.28	1.24	1.42
Eno3	1.17	1.26	1.37

Table 7
Modulation Of The Genes Of The Glucose Metabolism Pathway (GO:0006006)

Gene	Fold Change		
	CR	Res	LGX
Atf3	-1.86	-1.47	-1.68
Pdk4	1.48	2.78	3.25
H6pd	1.33	1.43	2.06
Pcx	1.40	1.33	1.60
Fbp2	-1.16	1.42	1.47
Pfkp	1.32	1.13	1.24
Pik3ca	-1.05	1.34	1.21
Hibadh	1.09	1.17	1.15
Sds	-1.65	-1.16	2.01
Hk3	2.23	1.60	1.77
Hkdc1	2.64	2.10	1.68
Ldhb	1.21	1.35	1.60
Mdh1	1.07	1.08	1.41
Ogdh	1.32	1.23	1.38
Gapdh	1.15	1.09	1.35
Pdha1	1.12	1.09	1.30
Tpi1	1.15	1.06	1.24
Mdh2	1.10	1.01	1.15
Pgm2l1	1.19	1.31	1.11
Pdk1	-1.01	1.01	-1.18
Hk1	1.12	-1.24	-1.34
Prkaa1	-1.08	1.17	-1.38
Mapk14	-1.10	-1.13	-1.51
Pck1	1.68	2.36	4.03
Aldoart1	2.17	2.37	3.08
G6pd2	1.93	1.37	2.90
Ldhal6b	1.15	1.45	2.73
Ldhc	1.94	2.25	2.44
Gpd1	1.83	1.51	2.41
Adipoq	1.74	1.24	2.14
Eno2	-1.19	1.32	1.86
Akt1	1.11	1.66	1.73
Bpgm	-1.28	1.35	1.57
Pdha2	1.78	-1.03	1.57
Npy1r	1.11	1.37	1.53
Gapdhs	1.35	1.62	1.50
G6pdx	1.30	1.00	1.38
Adpgk	-1.02	1.24	1.37
Ins1	1.19	1.49	1.37

Table 7
Modulation Of The Genes Of The Glucose Metabolism Pathway (GO:0006006)

Gene	Fold Change		
	CR	Res	LGX
Aldoc	-1.32	1.14	1.32
Pdk2	1.11	1.11	1.24
Aldob	-1.06	1.24	1.21
Pdk3	-2.02	-1.04	1.21
Pgm1	1.05	1.14	1.21
Fbp1	-1.50	-1.25	1.20
Slc2a8	1.11	1.30	1.19
Gpd2	1.48	-1.41	1.17
Gck	1.16	1.26	1.16
Pgd	1.20	-1.05	1.16
Dcxr	1.05	1.08	1.14
Rpia	1.04	1.06	1.12
Tnf	-1.16	-1.73	1.11
Atf4	-1.06	1.07	1.10
Nr3c1	1.14	-1.14	1.10
Taldo1	1.12	1.04	1.08
Pgam1	1.15	1.01	1.07
Aldoart2	-1.05	1.16	1.05
Ldha	1.10	-1.03	1.04
Lrrc16	1.00	-1.10	1.03
Pgm2	1.11	1.09	1.03
Pfkm	1.13	1.07	1.02
Pgk2	-1.79	1.29	-1.01
6430537H07Rik	-1.26	-1.73	-1.04
Pck2	1.06	-1.09	-1.05
Bad	1.05	1.10	-1.07
Dlat	1.05	-1.09	-1.07
Dhtkd1	-1.45	-1.32	-1.08
Pfkl	1.19	-1.15	-1.11
Car5a	-2.59	1.19	-1.14
Pdx1	-3.03	-1.37	-1.14
Cacna1a	-1.31	1.03	-1.21
Acn9	-1.04	-1.08	-1.22
Fabp5	1.14	-1.13	-1.26
Ppara	1.14	-1.06	-1.28
Uevld	-1.01	-1.12	-1.28
Pgm3	1.13	-1.09	-1.29
Ganc	-1.26	1.08	-1.30
Lep	-1.57	-1.96	-1.43

Table 7 Modulation Of The Genes Of The Glucose Metabolism Pathway (GO:0006006)			
Gene	Fold Change		
	CR	Res	LGX
Pklr	1.12	-1.08	-1.47
G6pc	1.42	-1.62	-1.71
Onecut1	-1.32	-2.13	-2.05

[00120] **Table 8** shows the modulation of the genes of the tricarboxylic acid metabolism pathway (GO:0006099) caused by calorie restriction (CR), resveratrol alone (Res), or the compositions of the present invention (LGX).

Table 8 Modulation Of The Genes Of The Tricarboxylic Acid Metabolism Pathway (GO:0006099)			
Gene	Fold Change		
	CR	Res	LGX
Idh3b	1.22	1.30	2.06
Cs	1.22	1.07	1.46
Sdhd	1.16	1.02	1.23
Sdha	1.17	1.13	1.43
Sdhb	1.08	1.13	1.42
Mdh1	1.07	1.08	1.41
Aco2	1.16	1.13	1.39
Idh2	1.12	1.21	1.36
2610507B11Rik	1.10	1.06	1.25
Dlst	1.21	1.08	1.24
Fh1	-1.01	1.05	1.18
Mdh2	1.10	1.01	1.15
Idh3a	1.16	-1.02	1.01
Sdhc	-1.01	-1.06	-1.20
Suclg2	-1.03	-1.00	-1.25
Polr3h	-1.19	-1.20	-1.34
Sucla2	1.01	-1.01	1.05
Suclg1	1.08	-1.07	1.00
Mdh1b	-1.23	-1.20	-1.00
Atp5g3	1.06	-1.11	-1.01
Idh3g	1.02	-1.06	-1.02
Aco1	1.00	-1.01	-1.05

[00121] **Table 9** shows the modulation of the genes of the fatty acid metabolism pathway (GO:0006631) caused by calorie restriction (CR), resveratrol alone (Res), or the compositions of the present invention (LGX).

Table 9
Modulation Of The Genes Of The Fatty Acid Metabolism Pathway (GO:0006631)

Gene	Fold Change		
	CR	Res	LGX
Ucp3	1.80	2.02	2.79
Pex5	1.43	1.70	2.17
Syk	1.73	1.76	2.09
Tnxb	1.59	1.54	2.01
Acox3	1.48	1.70	1.84
Scap	1.34	1.37	1.70
Hadhb	1.80	1.57	1.51
Pex7	-1.16	-1.36	-1.44
Slc27a1	1.06	2.03	2.42
Prkar2b	1.95	2.01	2.24
Acadl	1.19	1.21	1.85
Crat	1.16	1.45	1.71
Tnfrsf1a	-1.01	1.53	1.47
Cav1	1.14	1.18	1.45
Cpt1b	1.07	1.27	1.45
Hsd17b4	1.15	1.25	1.44
Acaa2	1.07	1.27	1.41
Gpam	-1.09	1.34	1.39
Hadh	1.08	1.18	1.36
Fads3	1.13	1.38	1.35
Lypla2	-1.00	-1.31	-1.13
Acsl6	-1.15	-1.23	-1.26
Elovl5	-1.12	-1.68	-1.91
Aasdh	-1.06	-1.69	-2.00
Qk	-1.06	-1.52	-2.08
Acox2	1.17	1.01	2.52
Acot5	2.89	6.34	2.39
Ptgis	1.16	1.17	1.66
Ppard	1.20	1.09	1.59
Acsf3	1.28	1.17	1.57
Cpt1a	-1.04	1.27	1.49
Hadha	1.15	1.27	1.43
Mlycd	-1.01	1.55	1.43
Acads	1.08	1.20	1.40
Acadvl	1.06	1.14	1.38
Acsl1	1.05	1.21	1.38
Apoa2	1.24	1.29	1.34
Agpat6	1.15	1.15	1.32
Echdc2	1.06	1.19	1.32

Table 9
Modulation Of The Genes Of The Fatty Acid Metabolism Pathway (GO:0006631)

Gene	Fold Change		
	CR	Res	LGX
Ech1	1.00	1.06	1.30
Dci	1.06	1.13	1.24
Tpi1	1.15	1.06	1.24
Mecr	-1.04	1.09	1.21
Phyh	1.10	1.15	1.20
Ltc4s	1.46	-1.05	1.19
Elovl1	-1.03	1.15	1.18
Scp2	-1.02	1.06	1.16
Acot7	1.20	1.03	1.06
Ptges2	1.20	1.04	-1.03
Echs1	1.07	1.01	-1.09
Mcat	1.04	1.01	-1.15
Acsl3	-1.91	-2.10	-1.17
2010111I01Rik	1.07	-1.17	-1.29
Acsl4	-1.34	-1.20	-1.35
Crot	-1.11	-1.07	-1.37
Prkaa1	-1.08	1.17	-1.38
Prkab2	1.04	-1.07	-1.38
Mapk14	-1.10	-1.13	-1.51
Lypla1	-1.05	-1.32	-1.93
Ndufab1	-1.34	-1.55	-2.65
Scd1	2.18	1.67	3.27
Fasn	2.54	1.54	3.10
Agt	1.42	1.57	2.50
Baat	2.33	2.78	2.42
Elovl6	2.36	1.27	2.38
Alox8	1.27	1.12	2.31
Lcn5	1.58	1.74	2.30
Acot4	1.58	1.65	2.24
Acsm3	-1.03	1.12	2.21
Adipoq	1.74	1.24	2.14
Mlstd1	-1.18	1.29	1.78
Slc27a3	1.31	1.84	1.65
Acsbg1	1.64	2.24	1.62
Acot12	-1.09	-1.16	1.59
Acot2	-1.35	2.13	1.58
Abat	-1.16	1.03	1.56
Lta4h	1.38	1.68	1.49
Elovl3	-1.12	1.11	1.47

Table 9
Modulation Of The Genes Of The Fatty Acid Metabolism Pathway (GO:0006631)

Gene	Fold Change		
	CR	Res	LGX
Acsm1	1.27	1.25	1.43
Alox15	1.12	1.10	1.43
Lypla3	1.31	1.42	1.41
Slc27a2	-1.52	-1.96	1.41
Elovl7	1.41	1.20	1.39
Fads2	1.10	1.15	1.39
Ptgs1	1.18	1.26	1.37
Brca1	-1.08	1.29	1.36
Ptgs2	1.01	1.25	1.35
Scd2	1.19	-1.03	1.33
Aacs	1.35	-1.12	1.32
Alox5	1.18	1.22	1.32
Fads1	1.19	1.27	1.28
Ces3	-1.16	1.06	1.23
Pdpn	-1.14	-1.04	1.22
Aloxe3	-1.14	1.00	1.21
Ggtla1	-1.03	1.15	1.20
Slc27a4	1.23	1.25	1.20
Acsl5	1.19	1.04	1.19
Acot11	1.22	-1.08	1.18
Alox12e	-2.02	-2.10	1.18
Aldh5a1	1.25	1.15	1.17
Adipor2	-1.16	1.11	1.15
Hao3	-1.71	-4.04	1.13
Olah	1.33	-1.02	1.11
Myo5a	1.21	1.09	1.09
Tyrp1	-1.43	-1.18	1.09
Acot8	1.05	-1.05	1.08
Acsm5	-1.38	1.14	1.08
Hnf1a	1.20	1.81	1.06
Fcer1a	1.55	1.73	1.05
Fa2h	-1.27	1.18	1.04
Prkag2	-1.05	-1.16	1.03
Alox12	1.04	1.08	1.02
Prkab1	-1.12	1.04	1.02
Ehhadh	-1.02	1.12	1.00
Pecr	-1.01	-1.03	1.00
Degs1	1.02	-1.16	-1.00
Scd3	-1.37	1.36	-1.01

Table 9
Modulation Of The Genes Of The Fatty Acid Metabolism Pathway (GO:0006631)

Gene	Fold Change		
	CR	Res	LGX
Acadm	-1.02	-1.10	-1.02
Pccb	1.01	-1.01	-1.02
Prkag1	1.09	-1.14	-1.02
Acox1	-1.06	1.06	-1.03
Cpt2	-1.14	1.01	-1.03
Tbxas1	1.00	-1.06	-1.03
Pex13	-1.05	-1.03	-1.04
C1qtnf2	-1.23	-1.02	-1.05
Slc27a5	-1.57	-1.03	-1.05
Ptges3	-1.08	-1.03	-1.07
Acoxl	-1.85	-1.39	-1.08
Alox5ap	1.07	-1.08	-1.09
Ankrd23	1.06	1.23	-1.09
Adipor1	1.08	1.03	-1.10
Cyb5	-1.10	-1.21	-1.10
Ptgds	-1.29	1.05	-1.10
Ptgds2	-1.77	-1.02	-1.12
Acsm2	-1.33	1.06	-1.19
Cpt1c	-1.69	1.29	-1.22
Ncf1	-1.16	1.07	-1.25
Ppara	1.14	-1.06	-1.28
Elovl4	1.00	1.45	-1.29
Mlstd2	-1.20	-1.19	-1.29
Oxsm	-1.02	1.04	-1.29
Plp1	-1.03	1.06	-1.29
Cryl1	-1.44	-1.14	-1.31
Prkaa2	-1.17	-1.22	-1.31
Elovl2	-1.91	-1.31	-1.34
Rnpep	1.13	-1.07	-1.36
Acsbg2	-1.55	-1.14	-1.37
Ptges	-1.05	-1.30	-1.38
Prkag3	-1.24	1.34	-1.45
Hpgd	1.17	-1.14	-2.59

[00122] A study of the expression of 20,341 genes in cardiac tissue revealed that 2,829 genes exhibited statistically significant differences in expression ($P<0.01$). Of these, 7% (approximately 189 genes) exhibited altered expression in animals subjected only to calorie reduced diets; 8% (approximately 226 genes) exhibited altered expression in animals receiving

only resveratrol; no additional genes exhibited altered expression in animals that received resveratrol and which were subjected to calorie reduced diets. In contrast, 61% of the 20,341 genes (approximately 1,729 genes) exhibited altered expression in animals receiving only compounds of the present invention (*e.g.*, Longevinex®); an additional 2% of the genes (approximately 56 genes) exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®) and which had been subjected to calorie reduced diets; an additional 21% of the genes (approximately 594 genes) exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®) and resveratrol; an additional 1% of the genes (approximately 28 genes) exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®), resveratrol and which had been subjected to calorie reduced diets.

[00123] The above data demonstrates that compounds of the present invention (*e.g.*, Longevinex®) were effective in modulating gene expression in hear tissue to an extent surpassing even that of calorie restriction. Similar effects have been observed in non-heart tissue. A study of the expression of 20,341 genes in brain tissue revealed that 3,572 genes exhibited statistically significant differences in expression ($P<0.01$). Of these, 124 genes exhibited altered expression in animals subjected only to calorie reduced diets; 424 genes exhibited altered expression in animals receiving only resveratrol; 10 genes exhibited altered expression in animals that received resveratrol and which were subjected to calorie reduced diets. In contrast, 2,560 genes exhibited altered expression in animals receiving only compounds of the present invention (*e.g.*, Longevinex®); 19 additional genes exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®) and which had been subjected to calorie reduced diets; 430 additional genes exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®) and resveratrol; 5 additional genes exhibited altered expression in animals that had received compounds of the present invention (*e.g.*, Longevinex®), resveratrol and which had been subjected to calorie reduced diets.

Example 4
Model Mechanism of Action of the Compositions of the Present Invention

[00124] The compounds of the present invention were thus found to greatly exceed the modulation of gene expression observed upon calorie restriction and to alter the expression of genes in key patyhways of lipid metabolism, glucose metabolism, oxidative phosphorylation, the Kreb's cycle, ATP synthesis and fatty acid β oxidation. In summary, the compounds of the present invention were found to have a greater specific activity than resveratrol alone, both in terms of the number of genes and the number of different biochemical pathways affected. The

results are significant since calorie restriction (CR) is considered the unequivocal method of prolonging life in all forms of life. Generally, reduction of 50% of caloric intake doubles the lifespan of any organism. The above-described experiments demonstrate that the compositions of the present invention exert a more powerful influence over genome expression than resveratrol or CR, and marks the first time any technology has been shown to exceed the effects of CR. Furthermore, the compositions of the present invention were found to influence genome expression at an earlier stage of life than CR (which requires a life-long adherence to a CR diet to differentiate genes).

[00125] Without intending to be bound by any mechanism of action, the above results suggest that the compounds of the present invention act by enhancing the activity of the forkhead Foxo1 (daf-16, dFoxO) transcription factor (**Figure 5**). Studies in model organisms has shown that Foxo1 mediates lifespan expression by enhancing gene expression. Insulin/IGF-1 signaling phosphorylates Foxo1, thereby causing it to be excluded from the nucleus and downregulating its actions. The compounds of the present invention decrease insulin and IGF-1 signaling thereby decreasing Foxo1 phosphorylation. Consistent with this model are the observations that the insulin receptor signaling pathway (*e.g.*, GO:008286; genes Ide, Igfbp4, and Igfbp6) is affected by the compounds of the present invention. Expression of Foxo1 is increased by 1.75 fold. The compounds of the present invention mediate decreased glycolysis and increased gluconeogenesis (*e.g.*, GO:0006006), enhanced Pgc-1α expression (thereby leading to stimulation of Pdk4 expression (*e.g.*, a 1.94 fold increase in Ppargc1α and a 3.25 fold increase in Pdk4), increased expression of lipid metabolism genes (*e.g.*, a 2.79 fold increase in Ucp3, 1.49 fold increase in Cpt1a, and a 1.45 fold increase in Cpt1b). Lipid and fatty acid metabolism genes GO:0006629 and GO:0006635 are uniquely affected by the compounds of the present invention. The compounds of the present invention thus exert a more pronounced favorable effect on key processes affected by calorie restriction and resveratrol (*e.g.*, chromatin remodeling, transcription from RNA polymerase II promoter, and the ubiquitin cycle. Genes GO:0006333 and GO:0006367 are uniquely affected by the compounds of the present invention; Gene GO:0006512 is affected by resveratrol and Longevinex®. Thus, in sum, a proposed mechanism of action is that the compositions of the present invention deliver resveratrol to cells, where it passes through cell walls, enters the cytoplasm, and facilitates the translocation of Foxo1 gene into the cell nucleus, which produces the longevity effects.

[00126] All publications and patents mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication or patent application was specifically and individually indicated to be incorporated by reference in its entirety. While the invention has been described in connection with specific embodiments thereof, it will be

understood that it is capable of further modifications and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice within the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth.

What Is Claimed Is:

Claim 1. A resveratrol-containing composition that, upon administration to a recipient, modulates the concentration or activity, relative to resveratrol alone or calorie restriction, of the product of a survival/longevity gene or the product of a gene whose expression enhances cellular damage.

Claim 2. The resveratrol-containing composition of claim 1, wherein said modulation alters:

(A) oxidative phosphorylation;
(B) actin filament length or polymerization;
(C) intracellular transport;
(D) organelle biogenesis;
(E) insulin signaling;
(F) glycolysis;
(G) gluconeogenesis; or
(H) fatty acid metabolism

in said recipient.

Claim 3. The resveratrol-containing composition of any of claims 1-2, wherein said survival/longevity gene product is Sirtuin 1 or the forkhead Foxo1 transcription factor.

Claim 4. The resveratrol-containing composition of any of claims 1-3, wherein said gene whose expression enhances cellular damage encodes uncoupling protein 3 or pyruvate dehydrogenase kinase 4.

Claim 5. The resveratrol-containing composition of any of claims 1-4, wherein said composition comprises:

(a) *trans*-resveratrol; and
(b) a metal chelating agent;

wherein said *trans*-resveratrol is encapsulated to thereby substantially preserve the ability of said composition to modulate the concentration or activity of said product of said survival/longevity gene or said product of said gene whose expression enhances cellular damage, from loss due to exposure of said *trans*-resveratrol to light or oxygen.

Claim 6. The resveratrol-containing composition of claim 5, wherein said metal chelating agent is nordihydroguaiaretic acid.

Claim 7. The resveratrol-containing composition of claim 5, wherein said metal chelating agent is phytic acid.

Claim 8. The resveratrol-containing composition of any of claims 5-7, wherein said composition additionally comprises quercetin.

Claim 9. The resveratrol-containing composition of any of claims 5-8, wherein said composition additionally comprises hyaluronic acid.

Claim 10. The resveratrol-containing composition of any of claims 5-9, wherein said composition additionally comprises vitamin D.

Claim 11. The resveratrol-containing composition of any of claims 5-10, wherein said encapsulation of resveratrol is a microencapsulation.

Claim 12. The use of a resveratrol-containing composition for the manufacture of a medicament for ameliorating a symptom associated with an existing disease of an individual or for preventing onset of said symptom in an individual prior to the occurrence of said disease in said individual, wherein said resveratrol-containing composition modulates the concentration or activity, relative to resveratrol alone or calorie restriction, of the product of a survival/longevity gene or the product of a gene whose expression enhances cellular damage, and wherein said disease is selected from the group consisting of: cardiovascular disease, cancer, macular degeneration, a disease associated with aging, and inflammation.

Claim 13. The use of the resveratrol-containing composition of claim 12, wherein said modulation alters:

(A) oxidative phosphorylation;
(B) actin filament length or polymerization;
(C) intracellular transport;
(D) organelle biogenesis;
(E) insulin signaling;
(F) glycolysis;
(G) gluconeogenesis; or
(H) fatty acid metabolism

in said individual.

Claim 14. The use of the resveratrol-containing composition of any of claims 12-13, wherein said survival/longevity gene product is Sirtuin 1 or the forkhead Foxo1

transcription factor.

Claim 15. The use of the resveratrol-containing composition of any of claims 12-14, wherein said gene whose expression enhances cellular damage encodes uncoupling protein 3 or pyruvate dehydrogenase kinase 4.

Claim 16. The use of the resveratrol-containing composition of any of claims 12-15, wherein said composition comprises:

(a) *trans*-resveratrol; and

(b) a metal chelating agent;

wherein said *trans*-resveratrol is encapsulated to thereby substantially preserve the ability of said composition to modulate the concentration or activity of said product of said survival/longevity gene or said product of said gene whose expression enhances cellular damage, from loss due to exposure of said *trans*-resveratrol to light or oxygen.

Claim 17. The use of the resveratrol-containing composition of any of claims 12-16, wherein said disease is cancer.

Claim 18. The use of the resveratrol-containing composition of any of claims 12-16, wherein said disease is a disease associated with aging.

Claim 19. The use of the resveratrol-containing composition of claim 18, wherein said disease associated with aging is a neurodegenerative disease.

Claim 20. The use of the resveratrol-containing composition of any of claims 12-19, wherein said composition additionally comprises quercetin, hyaluronic acid and/or vitamin D.

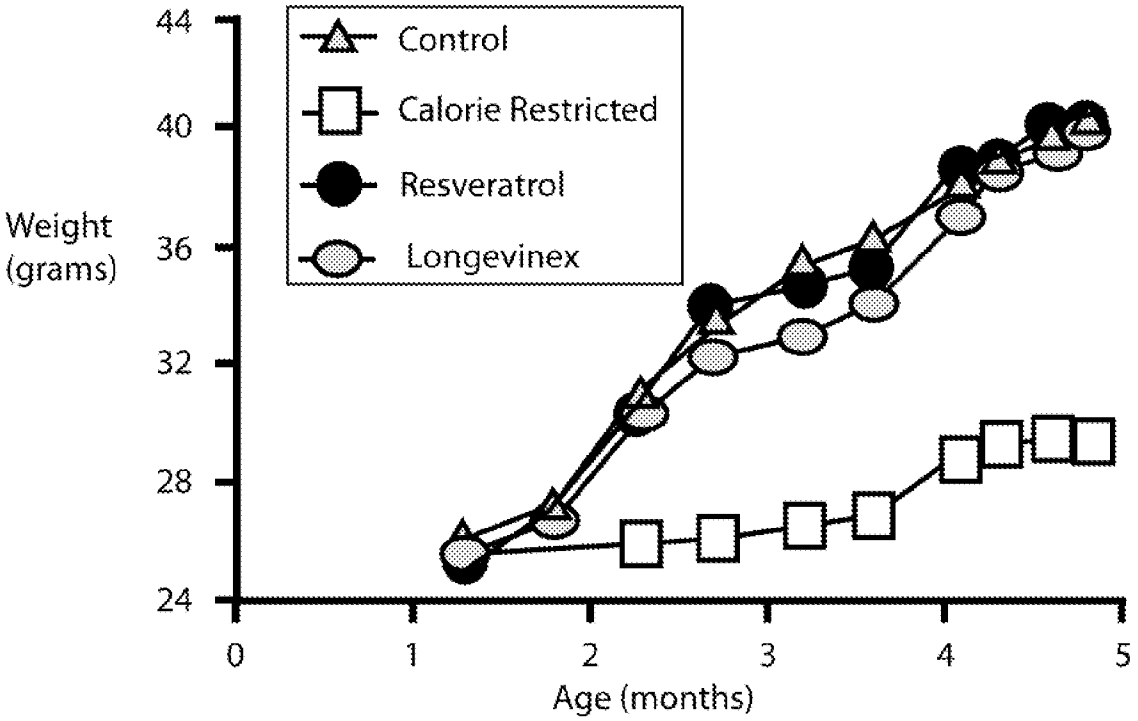


Figure 1

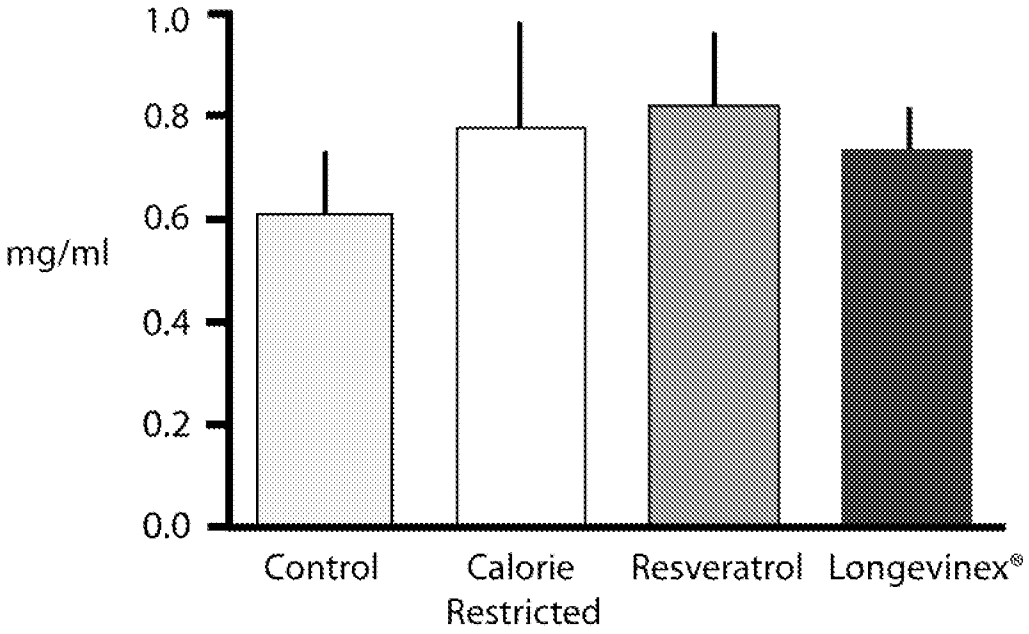
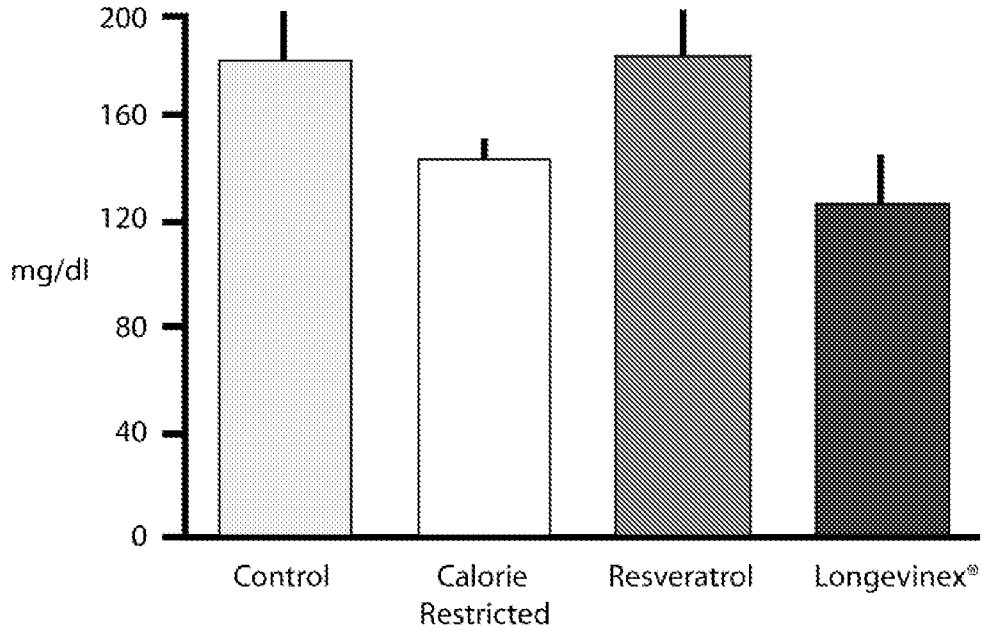


Figure 2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160
120
mg/dl
80
40
0
Control
Calorie Restricted
Resveratrol
Longevinex®

Figure 3

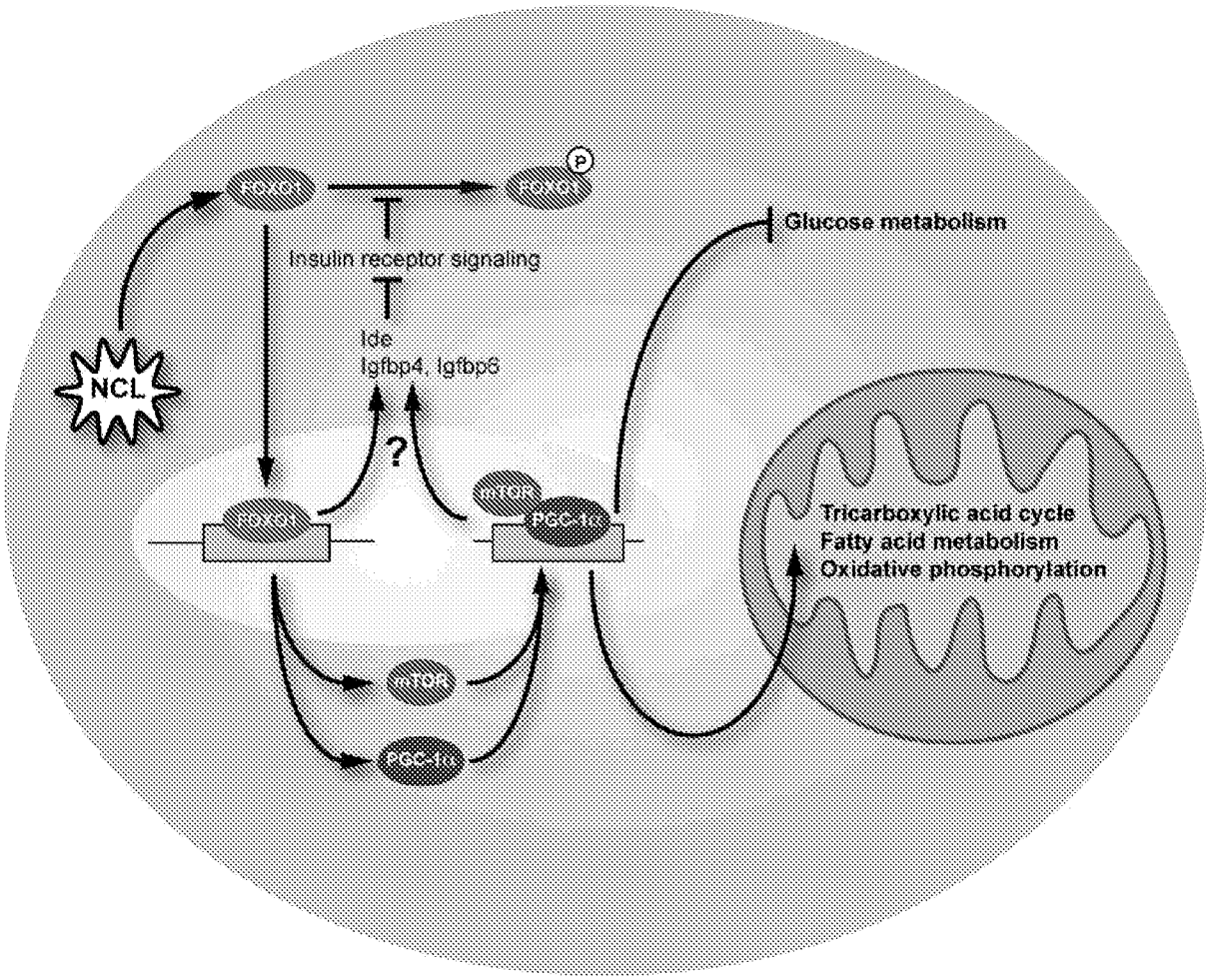
NCL
Insulin receptor signaling
Ide
Igfbp4, Igfbp6
?
Glucose metabolism
Tricarboxylic acid cycle
Fatty acid metabolism
Oxidative phosphorylation

Figure 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/76707

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61K 31/05, A61K 31/7056 (2008.04)
USPC - 514/043; 514/733
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC - 514/043; 514/733
IPC(8) - A61K 31/05, A61K 31/7056

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 514/043; 514/733
IPC(8) - A61K 31/05, A61K 31/7056 (text search)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (USPT,PGPB,EPAB,JPAB), Yahoo, Google Scholar; Search terms used: resveratrol longevity Sirtuin SIRT Foxo gene expression caloric oxidative phosphorylation actin filament intracellular transport biogenesis insulin signaling glycolysis gluconeogenesis apoptosis fatty acid metabolism cancer macular aging inflammation ca

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0149466 A1 (Milburn et al.) 28 June 2007 (28.06.2007), abstract, para [1075], [1094], [1104], [1108], [1094], [1170], [1281], [1285], [1165], [1150], [1125], [1159], [1314], [1504], [1505], [1437], [1491], [1312], [1142]-[1144], [1311], [1494]; claim 145	1-3, 12-14
Y	US 2005/0136537 A1 (Sinclair et al.) 23 June 2005 (23.06.2005), para [0002]-[0004], [1180], [1292]	1-3, 12-14
A	US 20070043050 A1 (Nunes et al.) 22 February 2007 (22.02.2007), entire document	1-3, 12-14

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
20 November 2008 (20.11.2008)

Date of mailing of the international search report
04 DEC 2008

Name and mailing address of the ISA/US
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Form PCT/ISA/210 (second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/76707

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 4-11, 15-20
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US 08/76707

resveratrol longevity Sirtuin SIRT Foxo gene expression caloric oxidative phosphorylation actin filament intracellular transport biogenesis insulin signaling glycolysis gluconeogenesis apoptosis fatty acid metabolism cancer macular aging inflammation cardiovascular