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(54) Title: COMPOSITIONS AND METHODS TO TREAT CANCER WITH CUPREDOXINS AND CPG RICH DNA

(57) Abstract: The present invention relates to compositions comprising CpG rich DNA from Pseudomonas aeruginosa. The compositions optionally comprise a cupredoxin. The present invention includes specific CpG DNAs from Pseudomonas aeruginosa that are useful for treating cancer and other conditions in patients. These compositions are optionally in a pharmaceutically acceptable carrier and also optionally comprise a cupredoxin. The present invention further relates to methods to express proteins near cancer cells. These methods may be used to express therapeutic or diagnostic proteins near cancer cells in a patient suffering from cancer or other conditions, and can also be used for diagnosing cancer in a patient. This method uses the gene for azurin from P. aeruginosa as an expression system for azurin or heterologous proteins in P. aeruginosa or heterologous cells.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/86393

A. CLASSIFICATION OF SUBJECT MATTER
IPC: Please See Continuation Sheet

USPC: Please See Continuation Sheet
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)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2005/018662 A1 (BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS) 03 March 2005 (03.03.2005), see entire document.	1-32
A, P	WO 2007/024368 A2 (THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS) 01 March 2007 (01.03.2007), see entire document.	1-32
A	US 7084105 B2 (CHAKRABARTY et al) 01 August 2006 (01.08.2006), see entire document.	1-32
A	US 2006/0149037 A1 (CHAKRABARTY et al) 06 July 2006 (06.07.2006), see entire document.	1-32
A, T	US 7381701 B2 (CHAKRABARTY et al) 03 June 2008 (03.06.2008), see entire document.	1-32
A, P	US 2006/0292136 A1 (CHAKRABARTY et al) 28 December 2006 (28.12.2006), see entire document.	1-32

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WU. H.J. Azurin of pathogenic Neisseria ssp. is involved in defense against hydrogen peroxide and survival within cervical epithelial cells. Infection and Immunity. December 2005, Vol 73. No. 12, pages 8444-8448, see entire document.	1-32
A	PUNJ. V. Microbial-based therapy of cancer. Cancer Biology and Therapy. August 2004, Vol 3. Issue 8, pages 708-714, see entire document.	1-32
A	PUNJ. V. Bacterial cupredoxin azurin and its interactions with the tumor suppressor protein p53. Biochemical and Biophysical Research Communications. 2003, Vol 312, pages 109-114, see entire document.	1-32
Y, P	MAHFOUZ. M. Bacterial proteins and CpG-rich extrachromosomal DNA in potential cancer therapy. Plasmid. 2007, Vol 57, pages 4-17, see entire document.	1-32
A	PUNJ. V. Bacterial cupredoxin azurin as a inducer of apoptosis and regression in huamn breast cancer. Oncogene. 2004, Vol. 23, pages 2367-2378, see entire document.	1-32
A	YAMADA. T. Bacterial redox protein azurin, tumor suppressor protein p53, and regression of cancer. PNAS. October 29, 2002, Vol 99. No. 22, pages 14098-14103, see entire document.	1-32
Y	YAMADA. T. Internalization of bacterial redox protein azurin in mammalian cells: entry domain and specificity. Cellular Microbiology. 2005, Vol 7. No. 10, pages 1418-1431, see entire document.	1-32

Continuation of B. FIELDS SEARCHED Item 1:
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Continuation of B. FIELDS SEARCHED Item 3:
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search terms: inventor names pseudomonas aeruginosa, nucleic acid, dna, peptide, cupredoxin, cancer, melanoma, azurin, treatment, CpG, bacterial dna, copper redox protein, neisseria, vibrio bordetella, laz, plastocyanin, stellacyanin, detect, diagnosis, fusion protein, heterologous, breast cancer, lung, colorectal, prostate, pancreas, pharmaceutical

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