

## CURRICULUM VITAE

**Stuart Campbell Ray, M.D.**

revised December 2005

### DEMOGRAPHIC INFORMATION

#### Current Appointments:

2003-present Associate Professor of Medicine, Division of Infectious Diseases  
Member, Immunology Faculty  
Department of Medicine, Johns Hopkins University School of Medicine  
Department of Oncology, Division of Viral Oncology

**Personal data:** Division of Infectious Diseases  
Department of Medicine  
Johns Hopkins University School of Medicine  
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Baltimore, Maryland 21287  
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#### Education and training:

##### Undergraduate:

1982-84 California Institute of Technology, California  
1984-86 B.S. Molecular Biology (cum laude), Vanderbilt University, Tennessee

##### Medical School:

1986-90 M.D. Vanderbilt University School of Medicine, Tennessee

##### Postgraduate Training:

1990-1993 Residency (Medicine) Johns Hopkins Hospital, Maryland  
1993-1995 Research Fellowship (Infectious Diseases) Johns Hopkins Hospital, Maryland  
1996-1997 Clinical Fellowship (Infectious Diseases) Johns Hopkins Hospital, Maryland

#### Professional experience:

1995-1996 Assistant Chief of Service (Instructor) Department of Medicine  
Johns Hopkins University School of Medicine  
1997-2000 Information Systems Officer Department of Medicine  
Johns Hopkins University School of Medicine  
1997-2003 Assistant Professor of Medicine Division of Infectious Diseases  
Department of Medicine  
Johns Hopkins University School of Medicine

## RESEARCH ACTIVITIES

### Publications:

#### Peer-reviewed

1. Pappas RS, Sweetman BJ, Ray S, and Hellerqvist CG. Monomer sequence determination of carbohydrates using fast-atom bombardment mass spectrometry of periodate oxidized acetate ester derivatives. *Carbohydrate Research* 1990; 197:1-14.
2. Cavener DR and Ray SC. Eukaryotic start and stop translation sites. *Nucl Acids Res* 1991; 19:3185-3192.
3. Ray SC, Siliciano RF, and Bollinger RC. Vaccines and immunotherapy for human immunodeficiency virus type 1 (HIV-1) infection: a brief review. *Venereology* 1993; 6:93-94.
4. Baskar PV, Ray SC, Rao R, Quinn TC, Hildreth JEK, and Bollinger RC. The presence of HIV-1 similar to North American strains in India. *AIDS Res Human Retroviruses* 1994; 10:1039-1041.
5. Markham RB, Yu X, Farzadegan H, Ray SC, and Vlahov D. HIV-1 *env* and *p17<sup>gag</sup>* sequence variation in polymerase chain reaction positive, seronegative injection drug users. *JID* 1995; 171:797-804.
6. Strunnikova N, Ray SC, Livingston RA, Rubalcaba E, and Viscidi RP. Convergent evolution within the V3 Loop domain of Human Immunodeficiency Virus type 1 in association with disease progression. *J Virol* 1995; 69:7548-7558.
7. Heldman AW, Hartert TV, Ray SC, Daoud EG, Kowalski TE, Pompili VJ, Sisson SD, Tidmore WC, vom Eigen KA, Goodman SN, Lietman PS, Petty BG, and Flexner C. Oral antibiotic treatment of right-sided Staphylococcal endocarditis in injection drug users: prospective randomized comparison with parenteral therapy. *Am J Med* 1996; 101:68-76.
8. Schwartz DH, Viscidi R, Laeyendecker O, Song H, Ray SC, Michael N. Predominance of defective proviral sequences in an HIV+ long-term non-progressor. *Immunol Lett* 1996; 51:3-6.
9. Pan D, Hsu K, and Ray SC. Ecchymoses and eschars at sites of injection. *Lancet* 1997; 349:1364.
10. Lubaki N, Ray SC, Dhruva B, Quinn TC, Siliciano RF, and Bollinger RC. Characterization of a polyclonal cytolytic T lymphocyte response to Human Immunodeficiency Virus in persons without clinical progression. *JID* 1997; 6:1360-1367.
11. Ray SC, Lubaki N, Dhruva BR, Siliciano RF, and Bollinger RC. Autologous strain-specific cytolytic T lymphocyte responses directed against Human Immunodeficiency Virus type 1 *env*. *AIDS Res Hum Retrov* 1998;14: 3-13.
12. Strunnikova N, Ray SC, Lancioni C, Nguyen M, and Viscidi RP. Evolution of Human Immunodeficiency Virus type 1 in relation to disease progression in children. *J Human Virol* 1998; 1:224-239.
13. Wang Y-M, Ray SC, Laeyendecker O, Ticehurst JR, and Thomas DT. Assessment of Hepatitis C Virus sequence complexity by the electrophoretic mobility of both single- and double-stranded DNA. *J Clin Micro* 1998; 36(10):2982-2989.
14. Ray S. Capnocytophaga canimorsus sepsis [letter] *N Engl J Med* 1999;340(19):1513-4.
15. Lole KS, Bollinger RC, Paranjape RS, Gadkari D, Kulkarni SS, Novak NG, Ingersoll R, Sheppard HW, and Ray SC. Full-length Human Immunodeficiency Virus type 1 genomes from subtype C-infected seroconverters in India, with evidence of inter-subtype recombination. *J Virol* 1999; 73(1):152-160.
16. Dibbern DA and Ray SC. Recrudescence of treated neurosyphilis in an HIV-positive host. *Mayo Clin Proc* 1999; 74(1):53-56.

17. Echavarria MS, Ray SC, Ambinder R, Dumler JS, and Charache P. PCR detection of adenovirus in a bone marrow transplant recipient: hemorrhagic cystitis as a presenting manifestation of disseminated disease. *J Clin Micro* 1999; 37(3):686-689.
18. Ray SC, Wang Y-M, Laeyendecker O, Ticehurst JR, Villano SA, Thomas DL. Acute Hepatitis C Virus structural gene sequences as predictors of persistent viremia: Hypervariable region 1 as a decoy. *J Virol* 1999; 73(4):2938-46.
19. Ray SC, Mao Q, Lanford RE, Bassett S, Laeyendecker OB, Wang Y-M, Thomas DT. Hypervariable region 1 sequence stability during hepatitis C virus replication in chimpanzees. *J Virol* 2000; 74(7):3058-66.
20. Thomas DL, Astemborski J, Vlahov D, Strathdee SA, Ray SC, Nelson KE, Galai N, Nolt KR, Laeyendecker O, Todd JA. Determinants of the quantity of hepatitis C virus RNA. *J Infect Dis* 2000; 181(3):844-851.
21. Persaud D, Pierson T, Ruff C, Finzi D, Chadwick KR, Margolick JB, Ruff A, Hutton N, Ray S, Siliciano RF. A stable latent reservoir for HIV-1 in resting CD4<sup>+</sup> T lymphocytes in infected children. *J Clin Invest* 2000; 105(7):995-1003.
22. Ray SC, Arthur RR, Carella A, Bukh J, and Thomas DL. Genetic epidemiology of hepatitis C virus throughout Egypt. *J Infect Dis* 2000; 182(3):698-707.
23. Nousbaum J-B, Polyak SJ, Ray SC, Sullivan DG, Larson AM, Carithers RL Jr, Gretch DR. Prospective characterization of full-length hepatitis C virus NS5A quasispecies during induction and combination antiviral therapy. *J Virology* 2000; 74(19):9028-9038.
24. Mao Q, Ray SC, Laeyendecker O, Ticehurst JR, Strathdee SA, Vlahov D, and Thomas DL. HIV seroconversion and evolution of the hepatitis C quasispecies. *J Virology* 2001; 75(7):3259-67.
25. Hermankova M, Ray SC, Ruff C, Powell Davis M, Ingersoll R, D'Aquila RT, Quinn TC, Siliciano JD, Siliciano RF, Persaud D, Stasis in the drug resistance profiles of HIV-1 in the plasma of infected children and adults on protease inhibitor-containing combination therapy with <50 copies/ml of plasma HIV-1 RNA. *JAMA* 2001; 286(2): 196-207.
26. Dumler JS, Barbet AF, Bekker CPJ, Dasch GA, Palmer GH, Ray SC, Rikihisa Y, Rurangirwa FR. Reorganization of Genera in the Families Rickettsiaceae and Anaplasmataceae in the Order Rickettsiales; Unification of Some Species of *Ehrlichia* with *Anaplasma*, *Cowdria* with *Ehrlichia*, and *Ehrlichia* with *Neorickettsia*; Descriptions of Five New Species Combinations; and Designation of *Ehrlichia equi* and "HGE agent" as Subjective Synonyms of *Ehrlichia phagocytophila*. *Int J Syst Evol Microbiol* 2001; 51: 2145-2165.
27. Thimme R, Oldach D, Chang K-M, Steiger C, Ray SC, and Chisari FV. Determinants of viral clearance and persistence during acute hepatitis C virus infection. *J Exp Med* 2001; 194: 1395-1406.
28. Wilson LE, Umemura T, Astemborski J, Ray SC, Alter HJ, Strathdee SA, Vlahov D, and Thomas DL. SEN Virus and Injection Drug Users. *JID* 2001; 184(10): 1315-9.
29. Mehta SH, Cox A, Hoover DR, Wang X-H, Mao Q, Ray S, Strathdee SA, Vlahov D, and Thomas DL. Protection against persistence of Hepatitis C. *Lancet* 2002; 359(9316): 1478-83.
30. Sulkowski MS, Ray SC, and Thomas DL. Needlestick transmission of hepatitis C. *JAMA* 2002; 287(10): 2406-13.
31. Ruff CT, Ray SC, Kwon P, Zinn R, Pendleton A, Hutton N, Ashworth R, Gange S, Quinn TC, Siliciano RF, and Persaud D. Persistence of Wild Type Virus and Lack of Temporal Structure in the Latent Reservoir for HIV-1 in Pediatric Patients with Extensive Antiretroviral Exposure. *J Virology* 2002; 76(18): 9481-92.
32. Wilbe K, Salminen M, Laukannen T, McCutchan F, Ray SC, Albert J, and Leitner T. Characterization of novel recombinant HIV-1 genomes using the branching index. *Virology* 2003; 316: 116-25.

33. Persaud D, Siberry GK, Ahonkhai A, Kajdas J, Monie D, Hutton N, Watson DC, Quinn TC, Ray SC, and Siliciano RF. Continued production of drug-sensitive human immunodeficiency virus type 1 in children on combination antiretroviral therapy who have undetectable viral loads. *J Virology* 2004;78(2):968-79.
34. Lanford RE, Guerra B, Chavez D, Bigger C, Brasky KM, Wang XH, Ray SC, and Thomas DL. Cross-genotype immunity to hepatitis C virus. *J Virology* 2004;78(3):1575-81.
35. Kieffer TL, Finucane MM, Nettles RE, Quinn TC, Broman KW, Ray SC, Persaud D, and Siliciano RF. Genotypic analysis of HIV-1 drug resistance at the limit of detection: virus production without evolution in treated adults with undetectable HIV loads. *J Infect Dis* 2004; 189:1452.
36. Liu Z, Netski D, Mao Q, Laeyendecker O, Ticehurst J.R., Wang X.-H., Thomas DL, and Ray SC. Accurate representation of the hepatitis C virus quasispecies in 5.2-kilobase amplicons. *J Clin Microbiol* 2004; 42(9):4223-9.
37. Kieffer TL, Kwon P, Nettles RE, Han Y, Ray SC, and Siliciano RF. G->A hypermutation in protease and RT regions of HIV-1 residing in resting CD4+ T cells in vivo. *J Virology* 2005; 79(3):1975-80.
38. Li K, Foy E, Ferreon JC, Nakamura M, Ferreon ACM, Ikeda M, Ray SC, Gale M, and Lemon SM. Immune evasion by hepatitis C virus NS3/4A protease-mediated cleavage of the Toll-like receptor 3 adaptor protein TRIF. *Proc Natl Acad Sci (USA)* 2005; 102(8): 2992-7.
39. Nettles RE, Kieffer TL, Kwon P, Monie D, Han Y, Parsons T, Cofrancesco J Jr, Gallant JE, Quinn TC, Jackson B, Flexner C, Carson K, Ray S, Persaud D, Siliciano RF. Intermittent HIV-1 viremia (Blips) and drug resistance in patients receiving HAART. *JAMA* 2005;293(7):817-29.
40. Laeyendecker O, Zhang GW, Quinn TC, Garten R, Ray SC, Lai S, Liu W, Chen J, Yu XF. Molecular Epidemiology of HIV-1 Subtypes in Southern China. *J AIDS*. 2005;38(3):356-362.
41. Monie D, Simmons RP, Nettles RE, Kieffer TL, Zhou Y, Zhang H, Karmon S, Ingersoll R, Chadwick K, Zhang H, Margolick JB, Quinn TC, Ray SC, Wind-Rotolo M, Miller M, Persaud D, Siliciano RF. A Novel Assay Allows Genotyping of the Latent Reservoir for Human Immunodeficiency Virus Type 1 in the Resting CD4+ T Cells of Viremic Patients. *J Virol*. 2005; 79(8):5185-202.
42. Cox AL, Netski DM, Mosbrugger T, Sherman SG, Strathdee S, Ompad D, Vlahov D, Chien D, Shyamala V, Ray SC, and Thomas DL. Prospective evaluation of community-acquired acute hepatitis C. *Clin Infect Dis* 2005; 40(7):951-8.
43. Cox AL, Mosbrugger T, Mao Q, Liu Z, Wang XH, Yang HC, Sidney J, Sette A, Pardoll D, Thomas DL, Ray SC. Cellular immune selection with hepatitis C virus persistence in humans. *J Exp Med*. 2005; 201(11):1741-52.
44. Ray SC, Fanning L, Wang XH, Netski DM, Kenny-Walsh E, Thomas DL. Divergent and convergent evolution after a common-source outbreak of hepatitis C virus. *J Exp Med*. 2005; 201(11):1753-9.
45. Cox AL, Mosbrugger T, Lauer GM, Pardoll D, Thomas DL, Ray SC. Comprehensive analyses of CD8+ T cell responses during longitudinal study of acute human hepatitis C. *Hepatology*. 2005;42(1):104-112.
46. Netski DM, Mosbrugger T, Depla E, Maertens G, Ray SC, Hamilton RG, Roundtree S, Thomas DL, McKeating J, and Cox AL. Humoral immune response in acute HCV infection. *Clin Infect Dis* 2005; 41(5):667-75.

#### **Invited editorial**

1. Ray SC, Quinn TC. Sex and the genetic diversity of HIV-1. *Nature Med* 2000;6(1):23-25.

## Book Chapter

Thomas DL, Ray SC, Lemon SM. Hepatitis C. In: Mandell GL, Bennett JE, Dolin R, eds. Principles and Practices of Infectious Diseases. Sixth ed. Philadelphia: Churchill Livingstone; 2004:1736-60.

## Software

<u>Title</u>	<u>1<sup>st</sup> Publication</u>	<u>Function</u>
InterBas	2	Analysis of cooperativity among sites surrounding eukaryotic translation start and stop codons
GlycoSpec	1	Expert system for determining the sequence of complex carbohydrates based on data generated by using mass spectroscopy
DistRate	6	Calculation of rates of evolution from longitudinal sequence data
Clonotyper	13	Calculation of inter- and intraclonotype distances
BabelFish		File format interconversion, genetic distance calculation
SimPlot	15	Similarity plot generation, bootscanning, and informative site analysis to detect viral recombination (analytical use of SimPlot by others described in more than 150 publications)
EpiPlot	15	Analysis of HIV sequence variation in well-characterized CTL epitopes
VarPlot	18	Analysis of sequence variation (genetic distance, $d_N$ , $d_S$ , $d_N/d_S$ , and $d_N-d_S$ ) in a sliding window
NimbleTree	35	Graphical user interface (MS Windows) for PHYLIP and PAUP* analysis
VisSPA	46	Visual signature pattern analysis

## EDUCATIONAL ACTIVITIES

### Teaching at JHU:

#### Classroom instruction

##### Medical students

- Medicine Basic Clerkship (1996-present, Monthly lecturer)
- 2<sup>nd</sup> Year Microbiology Course (1997-present, ID Faculty Coordinator)
- 1<sup>st</sup> Year Medical Student Journal Club (2000-present, Small Group Leader)
- Principles of Immunology (2001-present, Course faculty and Small Group Leader)
- 2<sup>nd</sup> Year Medical Pharmacology Course (1999-2001, Immunology Small Group Leader)
- Clinical Pathologic Conference (10/20/2000, Clinical Discussant)

##### Graduate students

- Viral Oncology (2005-present, hepatitis viruses)
- Advanced (graduate) Immunology (2005-present, Viral Immunology)
- BSPH Graduate Immunology (2005, immune response to hepatitis viruses)
- Advanced Topics in Immunology (9-12/2003, co-Director)
- Introduction to Bioinformatics (9/24-9/28/2001, Phylogenetic Analysis)

#### Clinical instruction

- Firm faculty member (Department of Medicine, Barker firm, 2000-present)
- Inpatient Attending Physician (HIV/AIDS Service, 3-4 weeks per year, 1997-present)
- Preceptor to postdoctoral fellows (Moore HIV/AIDS Clinic, 1997-1999)
- Assistant Chief of Service (Department of Medicine, 1995-1996)

#### CME instruction

- Topics in Clinical Medicine (1998-present, Meet the Professor)
- HIV Preceptorship program (1999-present, HIV and HCV lecturer)
- Clinical Care of the Patient with HIV (2005, lecturer)
- Johns Hopkins Infectious Diseases Update (2005, lecturer)

### Mentoring:

#### Fellowship Mentor:

- Andrea L. Cox, M.D., Ph.D., postdoctoral fellow in Infectious Diseases, 2000-2003

**Graduate Students:**

Kai-Wei Lin, Ph.D. candidate in Immunology, 2001-present  
Emily Patterson, Ph.D. candidate in Immunology, 2002-present  
Kimberly Dowd, Ph.D. candidate in Immunology, 2003-present

**Thesis committee:**

Theodore Pierson, thesis committee member, 2000-2001  
Daphne Monie, thesis committee member, 2001-2004  
Tara Kieffer, thesis committee member, 2002-2004  
Anding Shen, thesis committee member, 2004  
Rebecca Garten, thesis committee member, 2002-2005  
Haili Zhang, thesis committee member, 2004-2005  
Tamara Flys, thesis committee member, 2004-present  
Amanda Chase, thesis committee chair, 2004-present  
Eric Lutz, thesis committee member, 2005-present  
Hung-Chih "Andrew" Yang, thesis committee member, 2005-present

**Training grant participation:**

Infectious Diseases Fellowship Program, 1997 - present  
Immunology Graduate Training Program, 2001 – present  
Viral Oncology Graduate Program, 2004-present

**Editorial Activities:**

**Editorial Board appointments:**

Los Alamos National Lab HCV Sequence Database - <http://hcv.lanl.gov> (2003-present)

**Journal peer review:**

*AIDS*  
*AIDS Research and Human Retroviruses*  
*American Journal of Tropical Medicine and Hygiene*  
*Antimicrobial Agents and Chemotherapy*  
*Hepatology*  
*Journal for the Institute for Laboratory Animal Research*  
*Journal of Experimental Medicine*  
*Journal of General Internal Medicine*  
*Journal of Hepatology*  
*Journal of Infectious Diseases*  
*Journal of Interferon and Cytokine Research*  
*Journal of Molecular Evolution*  
*Journal of the Acquired Immune Deficiency Syndromes*  
*Journal of Virology*  
*Molecular Biology and Evolution*  
*Nature Medicine*  
*Osler Medical Journal* (Faculty Sponsor)  
*Viral Immunology*

**CLINICAL ACTIVITIES**

**Certification:**

Maryland medical license	D45308 (exp 9/30/2005)
Maryland Controlled Subst	M37463 (exp 6/30/2007)
Federal DEA	BR 389 5236 (exp 4/30/2006)

**Boards:**

National Board of Medical Examiners (July 1991)  
American Board of Internal Medicine, Internal Medicine (Sept 1993, Nov 2003, #149933)  
American Board of Internal Medicine, Infectious Diseases (Nov 1998, #149933)

**Service Responsibilities**

Polk Service: Infectious Diseases (HIV/AIDS) inpatient attending  
1 month/year 1997-2003, 3-6 weeks/year 2004-2006

Infectious Diseases Consultation Service - attending  
3 weeks/year spring 2005  
Viral Hepatitis Clinic (direct patient care)  
1 half-day session every 2 weeks  
Attending coverage for Barker Firm Assistant Chief of Service  
5 days per year (2000-present)

## **ORGANIZATIONAL ACTIVITIES**

### **Institutional Administrative Appointments:**

Department of Medicine Computer Network Services Steering Committee, **Chair** (1999-present)  
Clinical Systems Advisory Council (1996-present)  
Immunology Council Executive Committee (2003-present, Vice Chair 2005-2006)  
Infectious Diseases Fellowship Curriculum Committee (2004-present, **Chair**)  
Infectious Diseases/Immunology Subcommittee (2004-present, Chair 2004-2005)  
of JHU SOM Curriculum Reform Committee

### *Previous:*

Clinical Data and Documentation [JHM Medical Records] Committee (1997-2005; **Chair**, 2000-2005)  
Medical Care Evaluation Committee (2000-2005)  
Committee on Information Systems to Support Clinical Investigation (2002-2005)  
Information Systems Officer, Department of Medicine (1997-2000)  
OrderNet (Physician Order Entry) Review Committee (1993-2001, **Chair** 1996-1997)  
Department of Medicine Intern Selection Committee (1996, 2001)  
Department of Medicine Information Services Strategic Planning Committee (1996-1998)  
Antibiotic Subcommittee (1996-2002)  
Critical Pathways Steering Committee (1997-2000)  
Institutional Computing Standards Committee (1997-2000)

### **Professional Societies:**

Alpha Omega Alpha honor medical society (member, 1990-present)  
American Association for the Advancement of Science (member)  
American Association for the Study of Liver Diseases (member)  
American College of Physicians-American Society for Internal Medicine (member)  
American Society for Microbiology (member)  
Infectious Disease Society of America (member)  
Society for Molecular Biology and Evolution (member)

### **Conference Session Chair**

Viral Immunopathogenesis (symposium #36) moderator, October 2003, venue: 41st Annual Meeting of the  
IDSA (San Diego, CA), sponsor: Infectious Diseases Society of America

### **Study Section/Advisory Panel:**

GMA2 (NIH, June 2000)  
Health Research Board of Ireland (Reviewer, April 2002)  
Health Research Board of Ireland (Reviewer, November 2002)  
ATCC Animal Virology Advisory Committee (Manassas, VA, June 2002)  
EVR (NIH, October 2002)  
ZRG1 SEP (NIH, April 2003)  
EVR SEP (NIH, July 2003)  
MPRC-B (NIH, October 2003)  
ATCC Animal Virology Advisory Committee (Manassas, VA, January 2004)  
AARR SEP (NIH, April 2004)  
AARR SEP (NIH, July 2004)  
REAP III (Veterans Health Administration, December 2004)  
AARR SEP (NIH, March 2005)

## RECOGNITION

### Invited Talks:

- Current Concepts in the Management of Acute HIV Infection, June 1999, venue: 3<sup>rd</sup> International AIDS Symposium (Riyadh, Saudi Arabia via closed-circuit TV), sponsor: King Faisal Specialist Hospital and Research Center, Saudi Arabia
- Hepatitis C Co-Infection, October 2000, venue: 4<sup>th</sup> Johns Hopkins Brazil HIV Conference (Rio de Janeiro, Brazil), sponsors: Johns Hopkins and Brazil Health Ministry
- Hepatitis C Co-Infection, September 2000, venue: Interscience Conference on Antimicrobial Agents and Chemotherapy (Toronto, Canada), sponsor: American Society for Microbiology
- Hepatitis C Co-Infection, February 2001, venue: Improving the Management of HIV Disease: Advanced Course in HIV Pathogenesis, Antiretrovirals, and Other Selected Issues in HIV Disease Management (Atlanta, GA), sponsor: International AIDS Society-USA
- Hepatitis C Co-Infection, April 2001, venue: Improving the Management of HIV Disease: An Advanced CME Course in HIV Pathogenesis, Antiretrovirals, and Other Selected Issues in HIV Disease Management (San Francisco, CA), sponsor: International AIDS Society-USA
- Clinical and virological events during acute HCV infection, April 2001, venue: Hôpital Henri Mondor, Université Paris XII (Paris, France), sponsor: Jean-Michel Pawlotsky, M.D., Ph.D.
- Update on Acute HCV Infection, June 2001, venue: Northern New England Infectious Diseases Society annual meeting (Portsmouth, NH), sponsor: W. Kemper Alston, M.D.
- Clinical Virology of Hepatitis C (Early Morning Workshop), November 2001, venue: 52<sup>nd</sup> Annual Meeting of the AASLD (Dallas, TX), sponsor: American Association for the Study of Liver Diseases
- Update on HCV, November 2001, venue/sponsor: Delaware HIV Consortium Annual Meeting (Wilmington, DE)
- Clinical Update on HIV and HCV, February 2002, venue: Symposium on HIV, HCV, and Corrections (Baltimore, MD), sponsor: Pennsylvania/MidAtlantic AIDS Education and Training Center
- Hepatitis C Pathogenesis, February 2002, venue: 9<sup>th</sup> Conference on Retroviruses and Opportunistic Infections (Seattle, WA), sponsor: Foundation for Retrovirology and Human Health (NIAID/CDC).
- Sequence variation of HCV during acute infection, February 2002, venue: ID/Virology Conference, University of Washington (Seattle, WA), sponsor: Steven Polyak, Ph.D.
- HIV and HCV: Comparative Virology, April 2002, venue: Expert Perspectives III: Strategies for the Management of HIV/HCV Coinfection (Aspen, CO), sponsor: Projects in Knowledge
- HCV & HCV/HIV coinfection, new information, April 2002, venue: Update on the 9th Annual Retrovirus Conference and Hepatitis C and HCV/HIV Coinfection (New York, NY), sponsor: NATAP
- Viral Polymorphism: Signal amidst the Noise, April 2002, venue: HIV: Works in Progress or Planning seminar (Nashville, TN), sponsor: Richard D'Aquila, M.D., Vanderbilt University
- Viral genomic variability and the design of peptide antigens, April 2002, venue: Seminar at NIAID Rockledge (Bethesda, MD), sponsor: Viral Hepatitis Interest Group
- Diagnosis and Treatment of HIV/HBV and HIV/HCV Coinfections, May 2002, venue: IAPAC Sessions 2002 (Chicago, IL), sponsor: International Association of Physicians in AIDS Care
- HIV+HCV Coinfection: A Multi-faceted Challenge, June 2002, venue: Hepatitis C: Diagnosis and Management of the Chronically Infected Patient (Lebanon, NH), sponsor: Dartmouth-Hitchcock Medical Center
- Hepatitis C, June 2002, venue: Obstetrics and Gynecology Grand Rounds (Baltimore, MD), sponsor: Franklin Square Hospital Center
- HCV Virology and the Effects of Treatment, June 2002, venue: Clinician's Companion VI (Laguna Niguel, CA), sponsor: Projects in Knowledge
- HIV+HCV Coinfection: A Multi-faceted Challenge, August 2002, venue: Intensive Review in Correctional Medicine (Baltimore, MD), sponsor: JHU CME office
- Infectious Diseases in the Electronic Age (Meet the Professor sessions), October 2002, venue: Infectious Diseases Society of America Annual Meeting (Chicago, IL), sponsor: IDSA
- Advances in Understanding the Virology of Hepatitis C, October 2002, venue: Infectious Diseases Society of America Annual Meeting (Chicago, IL), sponsor: IDSA
- Serum Transaminases and Viral Hepatitis, February 2003, venue: Fort Meade Medical Grand Rounds, sponsor: National Security Agency
- HCV Immunovirology, March 2003, venue: Osler Medicine and Science Lecture, sponsor: JHU Department of Medicine



HCV and HIV: Current Concepts and Treatment Options, March 2003, venue: Improving the Management of HIV Disease: An Advanced CME Course in HIV Pathogenesis, Antiretrovirals, and Other Selected Issues in HIV Disease Management (Los Angeles, CA), sponsor: International AIDS Society-USA

Hepatitis B and C in Pregnancy, March 2003, venue: St. Joseph's Hospital OB/Gyn Grand Rounds, sponsor: Baltimore County Department of Health

Viral Hepatitis and HIV, June 2003, venue: 6th Ryan White CARE Act Clinical Conference (Orlando, FL), sponsor: HRSA HIV/AIDS Bureau

HIV and HCV at the Extremes of Evolution, July 2003, venue: T-10 Theoretical Biology group (Los Alamos, NM), sponsor: Los Alamos National Laboratory

Acute Viral Hepatitis: Extraordinary Variation, October 2003, venue: Department of Emergency Medicine Grand Rounds (Johns Hopkins Hospital)

Viral Immunopathogenesis (symposium #36, moderator), October 2003, venue: 41<sup>st</sup> Annual Meeting of the IDSA (San Diego, CA), sponsor: Infectious Diseases Society of America

Evolution at the Extremes: Hepatitis C Viral Sequence Variation, November 2003, venue: Infectious Diseases/Microbiology and Molecular Immunology Joint Conference (Johns Hopkins University)

Hemigenomic Analysis of Hepatitis C Sequence Variation in a Common-Source Outbreak in Relation to Predicted HLA Class I Epitopes, February 2004, venue: 11<sup>th</sup> Conference on Retroviruses and Opportunistic Infections (San Francisco, CA), sponsor: Foundation for Retrovirology and Human Health (NIAID/CDC).

Update on Hepatitis Coinfection, March 2004, venue: Update on the 11<sup>th</sup> Annual Retrovirus Conference (New York, NY), sponsor: NATAP

Recent Advances in the Management of Viral Hepatitis Coinfection, March 2004, venue: 6<sup>th</sup> Johns Hopkins Brazil HIV Conference (Rio de Janeiro, Brazil), sponsors: Johns Hopkins and Brazil Health Ministry

Reasons for Optimism and Caution in the Management of HCV+HIV Co-infection, May 2004, venue: Improving the Management of HIV Disease (Washington, DC), sponsor: International AIDS Society-USA

HCV Sequence Variation at the Extremes of Evolution, May 2004, venue: HIV/HCV lab seminar (Massachusetts General Hospital, Boston, MA), sponsor: Georg Lauer & Bruce Walker

Hepatitis, July 2004, venue: Region III STD/HIV Prevention Training Center, sponsor: CDC and Baltimore City Health Department

Management of Hepatitis C in Difficult-to-Treat Populations, Sept 2004, venue: Update on Hepatitis Management (Raleigh, NC), sponsor: Liver Institute For Education & Research

Evolution and Immunity during Acute and Chronic HCV Infection, Oct 2004, venue: Seminar Series, Center for the Study of Hepatitis C (Rockefeller University, NYC), sponsor: Charlie Rice

Molecular Epidemiology of HIV Working Group, Dec 2004, venue: Council on Foreign Relations (New York, NY), sponsor: Laurie Garrett

Escape and Reversion of Hepatitis C Protein Sequences, Feb 2005, venue: Workshop on Vaccines for Hepatitis C (Bethesda, MD), sponsor: NIAID, NIH

HCV in vivo: Lessons from Acute and Chronic Infection, Apr 2005, venue: UTMB Hepatitis Research Seminar (Galveston, TX), sponsor: UTMB / Stanley Lemon

HIV Cases from the Wards, Apr 2005, venue: Clinical Care of the Patient with HIV Infection (Baltimore, MD), sponsor: JHU

Hepatitis Coinfection, July 2005, venue: Johns Hopkins HIV/AIDS Satellite Symposium (IAS, Rio de Janeiro, Brazil), sponsor: JHU

Hepatitis A-E, Aug 2005, venue: Infectious Diseases in Primary Care (Santa Fe, NM), sponsor: US Micron

Gastrointestinal Infections, Aug 2005, venue: Infectious Diseases in Primary Care (Santa Fe, NM), sponsor: US Micron

HCV fitness in vivo: inferences from acute and chronic infection, Sep 2005, venue: FDA CBER Emerging Infectious Diseases Research Working Group (Bethesda, MD), sponsor: CBER / Kathy Carbone

Acute Hepatitis / Chronic hepatitis (2 lectures), Sept 2005, venue: 10<sup>th</sup> Annual Comprehensive Review for Board Preparation (Ritz-Carlton, Tysons Corner, VA), sponsor: CBC, Inc.