

Curriculum Vitae

Craig Eugene Cameron



Professor of Biochemistry and Molecular Biology
Holder of the Eberly Family Chair in Biochemistry and Molecular Biology
Department of Biochemistry and Molecular Biology
The Pennsylvania State University
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cec9@psu.edu (e-mail)

Education:

- May 1987 B.S., *magna cum laude*, Chemistry (major) and Mathematics (minor), Howard University, Washington, DC
- Jan. 1993 Ph.D., Biochemistry, Case Western Reserve University School of Medicine, Cleveland, OH

Professional Experience:

- Feb. 2015 – present Member, Molecular Carcinogenesis Program, Penn State Hershey Cancer Institute
- Jan. 2011 – Dec. 2012 Associate Head for Research and Graduate Education, Department of Biochemistry and Molecular Biology, The Pennsylvania State University
- Jul. 2005 – present Professor, Department of Biochemistry and Molecular Biology, The Pennsylvania State University
- Jan. 2007 – present Member, Training Faculty, Penn State MD-PhD Program, Penn State College of Medicine
- Jul. 2002 – Jun. 2005 Associate Professor, Department of Biochemistry and Molecular Biology, The Pennsylvania State University
- Aug. 1997 – Jun. 2002 Assistant Professor, Department of Biochemistry and Molecular Biology, The Pennsylvania State University
- Aug. 1997 – present Member, Graduate Program Faculty, Huck Institutes of the Life Sciences, The Pennsylvania State University
- Aug. 1997 – Jun. 2010 Member, Center for Biomolecular Structure and Function, The Pennsylvania State University

- Aug. 1997 – Jun. 2003 Member, NSF Research Training Program: Microbial Structural Biology, The Pennsylvania State University
- Aug. 1997 – Dec. 2006 Member, Option in Chemical Biology Huck Institute for Life Sciences, The Pennsylvania State University
- Jan. 1994 – Aug. 1997 NIH postdoctoral fellow in the laboratory of Dr. Stephen J. Benkovic, Department of Chemistry, The Pennsylvania State University Mechanism of strand transfer reactions catalyzed by retroviral reverse transcriptases; “dynamics-function” relationships of dihydrofolate reductase; biochemical and molecular genetic analysis of amino-imidazole-carboxamide ribotide transformylase/inosine monophosphate cyclohydrolase.
- 1993 Postdoctoral fellow in the laboratory of Dr. Jonathan P. Leis, Department of Biochemistry, Case Western Reserve University School of Medicine Intracellular regulation of Rous sarcoma virus protease activity.
- Aug. 1988 – Dec. 1992 NIH (MARC) predoctoral fellow in the laboratory of Dr. Jonathan P. Leis, Department of Biochemistry, Case Western Reserve University School of Medicine. Structure-function studies of the retroviral protease.

Research Interests:

RNA Polymerases and RNA-binding Proteins in Viral Infection and Mitochondrial Disease

Since its inception, the primary goal of this laboratory has been development of strategies to treat or to prevent infections by RNA viruses. We have used poliovirus and hepatitis C virus (HCV) as our primary model systems. Our expertise in virology, biochemistry and mechanistic enzymology brings a unique combination of intellectual and technical resources to the study of RNA viruses. Our initial focus was the viral RNA-dependent RNA polymerase (RdRp). In particular, we were interested in the kinetic, thermodynamic and structural basis for fidelity of nucleotide incorporation, a topic of considerable importance not only for accurate maintenance, transmission and expression of genetically encoded information but also for targeting the RdRp for antiviral therapy. These studies have led to exciting discoveries that have moved the lab into many new areas, including enzyme dynamics, vesicular trafficking, innate immunity, vaccine development and mitochondrial molecular biology. Our work is highly collaborative and includes research teams from academia (local, national and international), government and industry. We currently have projects in the following areas: RNA-dependent RNA polymerase mechanism, Picornavirus genome replication, Flavivirus genome replication, Enzymology of the flavivirus replicase, and Mitochondrial transcription and disease.

Honors and Awards:

- NIH R37 MERIT Award (2018-2028)
Fellow, American Academy of Microbiology (2016)
Fellow, American Association for the Advancement of Science (2014)
Special Recognition Award, Medical Alumni Board, CWRU School of Medicine (2014)

Genesis Scholar Award, HBCU Digest (2014)
Eberly Family Chair in Biochemistry and Molecular Biology (2013-present, PSU)
Dean's Climate and Diversity Award, Eberly College of Science (2011)
Distinguished Service Award, Eberly College of Science Alumni Society (2010)
Fellow, Academic Leadership Program, Committee on Institutional Cooperation (2007-2008)
Paul Berg Professorship (2005-2010 and 2010-2012, PSU)
American Heart Association Established Investigator Award (2003-2007)
Louis Martarano Career Development Professorship (2002-2005, PSU)
NCI Howard Temin Award (1997-2002)
NIH Postdoctoral Fellowship (1994-1997)
Marcus Singer Award for Excellence in Graduate Research (1992, CWRU)
NIH (MARC) Predoctoral Fellowship (1989-1992)
Phi Beta Kappa
Beta Kappa Chi Scientific Honor Society
Golden Key National Honor Society
NIH (MARC) Undergraduate Scholarship (1985-1987)
Howard University Trustee Scholarship (1983-1985)
Howard University Dean's List (1983-1987)

Professional Memberships:

American Association for the Advancement of Science
American Chemical Society
American Society for Biochemistry and Molecular Biology
American Society for Microbiology
American Society for Virology
RNA Society

Inventions and Patents:

PSU Inv. Dis. No. 99-2100
Title: RNA-dependent RNA Polymerase Substrates
Inventors: Cameron and Arnold
Filed: May 28, 1999

PSU Inv. Dis. No. 2002-2640
Title: Reagents to Study Hepatitis C Virus NS5a Protein
Inventors: Cameron
Filed: May 22, 2002

US Patent Application Serial No.: 60/398,458
PSU Inv. Dis. No. 2002-2675
Title: Use of Nucleoside P to Treat Acute and Persistent RNA Virus Infections
Inventors: Loakes, Brown, Negishi, Moriyama, Balzarini, Cameron, Arnold, Castro, Korneeva, and Graci.
Filed: September 24, 2002

Patent Application No.: WO/2003/039450

Territories: US (20050043268), EP (EP1441744), JP (2003541742)

PSU Inv. Dis. No. 2002-2675

Title: Improvements in or Relating to Inhibition of Viruses

Inventors: Loakes, Brown, Negishi, Moriyama, Balzarini, Cameron, Arnold, Castro, Korneeva, and Graci.

Filed: May 7, 2004

US Patent Application Serial No.:11/119,587

Title: Compounds and Methods for Inhibiting Hepatitis C Virus Replication

Inventors: Raney, Cameron, Dave, Sakon, Lu, Mackintosh , and Jennings

Filed: May 1, 2005; Issued December 16, 2008 (US 7,465,537)

US Patent Application Serial No.: 60/803,442

PSU Inv. Dis. No. 2006-3199

Title: Indole Nucleosides as Antiviral Agents

Inventors: Petersen and Cameron

Filed: May 30, 2006

PSU Inv. Dis. No. 2007-3400

Title: Analogues of 6-Methyl Purine Ribonucleosides as Antiviral Agents

Inventors: Petersen and Cameron

Filed: December 11, 2007

US Patent Application Serial No.: 11/963,930

Title: "Modified Polymerases and Attenuated Viruses and Methods of use Thereof"

PSU Inv. Disc. No.: 2006-3279

Inventors: Cameron, Arnold and Castro

Filed: December 24, 2007; Issued: March 10, 2010 (US 7,758,868)

US Patent Application Serial No.: 12/686,200

Title: "Attenuated Viruses, Vaccines and Methods of use Thereof"

PSU Inv. Disc. No.: 2006-3279

Inventors: Cameron, Arnold and August

Filed: January 12, 2010

US Provisional Patent Application Serial No.: 62/548,425

Title: Broad Spectrum Viral Inhibitor

PSU Inv. Disc. No.: 2017-4657

Inventors: Almo, Grove, Gizzi, Cameron and Arnold

Graduate Students, Postdoctoral Scholars and Research Associates:

Graduate students supervised

<u>Student</u>	<u>Degree/Date</u>
David Gohara	Ph.D./December 2001
Jamie Arnold	Ph.D.(Chemistry)/December 2003
Jungwook Hwang	M.S./August 2005

Harsh Pathak	Ph.D./May 2006
Uzodinma Uche	M.S.(Chemistry)/May 2007
Jason Graci	Ph.D./August 2007
Victoria Korneeva	Ph.D./August 2007
Jungwook Hwang	Ph.D.(Molecular Medicine)/August 2008
Hyung Suk Oh	Ph.D./December 2009
Alex Lugo	M.S.(Molecular Medicine)/August 2011
Daniel Cordek	Ph.D./December 2012
Cheri Lee	Ph.D./August 2015
Sixing Li	Ph.D./December 2015
Yao Wang	M.S./May 2016
Taylor Croom-Preez	Ph.D./August 2016
Sravani Banerjee	Ph.D./December 2017
Djoshkun Shengjuler	Ph.D./August 2017
Henry Hsiung	Ph.D./in progress
Calvin Yeager	Ph.D./in progress
Hyejeong Kim	Ph.D./in progress

Postdoctoral students supervised (Name/Degree/Institution & Date Granted/Period of Training/Current Status)

Lai Wei, M.D., Ph.D. (Beijing Medical University, Beijing, China, 1996)
July 1998 - August 1999
Professor and Director, Peking University Hepatology Institute
Vice President, International Cooperation, Peking University People's Hospital

Elena Sineva, Ph.D. (Bar Ilan University, Ramat Gan, Israel, 2000)
April 2000 – December 2001
Assistant Project Scientist II, Skaggs School of Pharmacy and Pharmaceutical Science, UCSD

Suresh Sharma, Ph.D. (University of Mumbai, India, 1999)
October 2000 – September 2004
Research Associate, Department of Biochemistry and Molecular Biology, The Pennsylvania State University

Luyun Huang, Ph.D. (SUNY Buffalo, 1999)
January 2001 – July 2005
Owner, PhD Translation Limited (Beijing, China)

Christian Castro, Ph.D. (Baylor University, Waco, TX, 2000)
May 2000 – December 2006
Senior Research Scientist, Department of Psychiatry, UT Southwestern Medical Center

Miaoqing Shen, Ph.D. (The Pennsylvania State University, University Park, PA)
August 2003 – December 2005
Research Associate, Department of Biomedical Sciences, Cornell University

Michele Hargittai, Ph.D. (University of Minnesota, Minneapolis, MN)

November 2001 – August 2007

Assistant Professor, Department of Chemistry, Saint Francis University, Loretto, PA

Qixin Wang, M.D., Ph.D. (Peking University, Beijing, China, 2001)

September 2003 – August 2007

Medical Advisor, Merck, Sharp and Dohme, Beijing, China

Akira Uchida, Ph.D. (Gifu University, Gifu, Japan, 2003)

January 2007 - March 2013

Senior Research Fellow, Nanyang Technological University, Singapore

Maria Fernanda Lodeiro, Ph.D. (University of Buenos Aires, Argentina, 2007)

April 2007 – December 2012

Research Associate, The Pennsylvania State University

Spencer Weeks, Ph.D. (University of Michigan, 2009)

March 2009 – December 2010

Thomas McCrory, Ph.D. (Pennsylvania State University, 2012)

January 2013 – December 2013

Andrew Woodman, Ph.D. (University of Warwick, 2015)

August 2015 – present

Shubeena Chib, Ph.D. (University of Arkansas for Medical Sciences, 2016)

July 2016 – December 2017

Scientist, Genentech, South San Francisco, CA

Wu Liu, Ph.D. (Tsinghua University, Beijing, China, 2015)

July 2016 - present

Markus Kastner, Ph.D. (Institute of Biophysics, Johannes Kepler University, Linz, Austria, 2016)

August 2016 - present

Research associates supervised (Name/Degree/Institution & Date Granted/Period of Training/Current Status)

Jamie Arnold, Ph.D. (The Pennsylvania State University, 2003)

January 2004 – present

Suresh Sharma, Ph.D. (University of Mumbai, Mumbai, India, 1999)

June 2006 - present

Ibrahim Moustafa, Ph.D. (St Andrews University, UK, 2004)

June 2006 - June 2016

Eric Smidansky, D.D.S. (Case Western Reserve University School of Dentistry, 1979)

August 2007 – June 2013

Maria Fernanda Lodeiro, Ph.D. (University of Buenos Aires, Argentina, 2007)

January 2013 – May 2015

Active Research Support:

Sponsor: National Institutes of Health; NIAID; R01 AI045818
Title: “RNA-Dependent RNA Polymerase Mechanism”
Duration: 07/01/99-04/30/20
Current Year Direct Costs: \$257,047
Role (Effort) PI (3.0 months)

Sponsor: National Institutes of Health; NIAID; R01 AI053531
Title: “Picornavirus Genome Replication”
Duration: 07/01/03-01/31/23
Current Year Direct Costs: \$307,321
Role (Effort) PI (3.0 months)

Sponsor: Human Frontier Science Program Organization
Title: “Stabilizing RNA virus vaccine strains by elucidating triggers and mechanisms of recombination”
Duration: 01/01/15-12/31/18
Current Year Direct Costs: \$100,000
Role (Effort) Co-PI (no formal effort requirement)

Sponsor: National Institutes of Health; NIAID; R01
Title: “Single-Cell Virology”
Duration: 07/01/15-05/31/19
Current Year Direct Costs: \$366,250
Role (Effort) Contact PI (1.0 months)

Teaching:

Aug. 1997 - May 2004 Instructor of record, Enzyme Structure-Function and Mechanism Journal Club (BMMB 510), Pennsylvania State University (Per semester, this course required one or two 50-minute presentations, one hour of organizational time and in-class critique and discussion leader for 13-14 sessions.)

Aug. 1998 – Dec. 2002 Instructor, Medical Virology (BMB/Micrb/Vet Sc 435), Pennsylvania State University (Per semester, this course requires 26, 50-minute lectures, corresponding preparation time and at least 60 additional hours for assisting students.)

Jan. 1999 - May 1999

Jan. 2011 - May 2011

Jan. 2014 - May 2014

Instructor, Survey of Biochemistry Literature (BMB 411), Pennsylvania State University (Per semester, this course requires 3, 50-min lectures, 30

hours of organizational and preparation time, facilitation of learning objectives in 12, 50-min sessions, and 6-12 hours for assisting students.)

- Aug. 2003 – present Instructor, Freshman Seminar (PSU 016), Pennsylvania State University (Per semester, this course requires 3, 50-minute lectures, corresponding preparation, facilitation of 12, 50-min sessions and 5-10 hours for assisting students.)
- Jan. 2012 - May 2012 Instructor, Laboratory in Molecular Genetics (BMB 445W), Pennsylvania State University. (I covered two sections for the first half of the semester. I had two teaching assistants. Per semester, this course requires 12, 50-minute lectures, corresponding preparation time, 24, 3-hour laboratory sessions and at least 60 hours for assisting students.)
- Jan. 2014 - May 2014 Instructor, Critical Analysis of the Scientific Literature (BMMB 598B), Pennsylvania State University.
- Jan. 2015 - May 2015 Instructor, General Virology (MICRB 415), Pennsylvania State University.
- Aug. 2017 - present Instructor, General Biochemistry (BMB 401), Pennsylvania State University. Average enrollment is 150 students. (Per semester, this course requires 26, 50-minute lectures, corresponding preparation time (260 hours for first year), and 45 hours for assisting students.)

Invited Talks:

International meetings and workshops

- [1] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Keystone Symposium on “Viral Genome Replication”
March 1996, Tamarron, Colorado
- [2] “Kinetic Analysis of Poliovirus RNA-dependent RNA Polymerase (3D^{pol}): Jumps in the Right Direction”
Fifth International Symposium on “Positive Strand RNA Viruses”
May 1998, St. Petersburg, Florida
- [3] “Biochemical Analysis of Poliovirus RNA Synthesis”
Satellite Symposium on “Viral RNA Replication and Transcription”
American Society for Virology – 18th Annual Meeting
July 1999, Amherst, Massachusetts
- [4] “Quasispecies, Error Catastrophe and the Antiviral Activity of Ribavirin”
NCI HIV Drug Resistance Program Symposium on “Understanding Antiviral Drug Resistance”
December 2000, Chantilly, Virginia

- [5] “Quasispecies, Error Catastrophe and the Antiviral Activity of Ribavirin”
Viruses and Cells Gordon Conference
June 2001, Tilton, New Hampshire
- [6] “Lethal mutagens: A promising new class of antiviral agents”
Case Western Reserve University Center for Aids Research
Mechanisms of Viral Latency: HIV and Its Co-factors (Session 4 – Evolution/Escape
Mechanisms/Drug Resistance)
May 2003, Cleveland, Ohio
- [7] “Biochemical analysis of HCV NS5a protein”
Tenth International Symposium on Hepatitis C Virus and Related Viruses
December 2003, Kyoto, Japan
- [8] “Incorporation fidelity of the viral RNA-dependent RNA polymerase”
European Study Group on the Molecular Biology of Picornaviruses
May 2005, Lunteren, The Netherlands
- [9] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
EMBL Workshop on RNA Viruses
August 2007, Vienna, Austria
- [10] “A universal strategy for vaccine development”
Session on: “Integrating Discovery and Applications”
American Society for Biochemistry and Molecular Biology Annual Meeting
April 2008, San Diego, CA
- [11] “Pre- and post-replication functions for the picornavirus 3CD protein”
European Study Group on the Molecular Biology of Picornaviruses
May 2008, Sitges (Barcelona), Spain
- [12] “Components of the picornavirus genome-replication machinery function in genome encapsidation”
2008 FASEB Virus Structure and Assembly Meeting
June 2008, Saxtons River, VT
- [13] “Picornavirus genome replication”
American Society for Virology Annual Meeting
July 2008, Ithaca, NY
- [14] “Dynamics of the viral RNA-dependent RNA polymerase: Determinant of incorporation fidelity and viral virulence and universal platform for live-virus vaccine design”
Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference
July 2009, Waterville Valley, NH
- [15] “New strategies to treat and prevent viral infection revealed from studies of mechanisms of ribavirin resistance”
10th Annual Symposium on Antiviral Drug Resistance
November 2009, Wyndham, VA

- [16] “Towards a universal mechanism for viral attenuation and vaccine development”
American Society for Microbiology Annual Meeting (Division T Symposium)
May 2010, San Diego, CA
- [17] “Human mitochondrial transcription”
RNAP2010 – Structure, function and evolution of RNA polymerases
Biochemical Society (UK) and Wellcome Trust
September 2010, Hinxton, Cambridgeshire, England
- [18] “Human mitochondrial transcription”
The Expanding Roles of Mitochondria in Cell Biology and Disease
Howard Hughes Medical Institute
May 2011, Janelia Farm Research Center, VA
- [19] “Human mitochondrial transcription”
Mitochondrial Medicine 2011 Symposium
United Mitochondrial Disease Foundation
June 2011, Schaumburg, IL
- [20] “Regulation of mammalian mitochondrial transcription”
2011 FASEB conference: Mechanism and Regulation of Prokaryotic Transcription
June 2011, Saxtons River, VT
- [21] “Regulation of mammalian mitochondrial transcription”
2011 FASEB conference: Mitochondrial Assembly and Dynamics in Health, Disease and Aging
July 2011, Steamboat Grand Resort, CO
- [22] “HCV persistence and inhibition”
2012 International Symposium on RNA Viruses
Chang Gung University, Taoyuan, Taiwan
November 2012
- [23] “Principles and applications of RNA virus population diversity”
2012 International Symposium on Infectious Disease and Signal Transduction
November 2012, College of Medicine, National Cheng Kung University, Tainan City, Taiwan
- [24] “The implications of population genetics theory on survival and virulence of an RNA virus”
Workshop in Virus Evolution
March 2013, Hershey, PA
- [25] “When the genome is not enough: how hepatitis C virus expands its proteome”
2013 Meeting of the Society for General Microbiology (UK)
March 2013, Manchester, UK
- [26] “Contributions of HCV NS5a phosphorylation to viral replication and persistence”
Viruses and Cells Gordon Conference
May 2013, Il Ciocco, Barga, Italy

- [27] “Misregulated transcription in human mitochondria and disease”
2013 FASEB conference: Mitochondrial Assembly and Dynamics in Health, Disease and Aging
June 2013, Big Sky, MT
- [28] “Misregulated transcription in human mitochondria and disease”
11th International Conference on Environmental Mutagens
Foz do Iguassu, PR, Brazil
November 2013
- [29] “New paradigms for regulation of human mitochondrial transcription”
Session on: "Emerging Roles of Mitochondria in Cell signaling, Physiology and Disease"
American Society for Microbiology Annual Meeting (Division T Symposium)
April 2014, San Diego, CA
- [30] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
2014 International Symposium on RNA Viruses
Chang Gung University
October 2014, Taoyuan, Taiwan
- [31] “New paradigms for regulation of human mitochondrial transcription”
Session on: "Mitochondrial Genome Dynamics: New Concepts in Function and Disease"
Annual Meeting of the Biophysical Society
February 2015, Baltimore, MD
- [32] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Viral Diseases Panel, 18th International Conference on Emerging Infectious Diseases
US-Japan Cooperative Medical Sciences Program
January 2016, Bethesda, MD
- [33] “New Functional Forms of HCV NS5A Protein in vivo?”
Session on: "Recombination, Replication Fidelity and RdRp Structure"
Keystone Symposia: Positive-Strand RNA Viruses
May 2016, Austin, TX
- [34] “Regulation of Mitochondrial Transcription by TFAM-directed Sequence-specific mtDNA Looping”
Mitochondrial Medicine 2016 Symposium
United Mitochondrial Disease Foundation
June 2016, Seattle, WA
- [35] “Single-cell virology: On-chip investigation of viral infection dynamics”
European Study Group on the Molecular Biology of Picornaviruses
September 2016, les Diablerets, Switzerland
- [36] "Unexpected sequences and structures of mtDNA required for efficient transcription from the first heavy-strand promoter"

Translational Research in Mitochondria, Aging and Disease (TRiMAD) Symposium
Center for Mitochondrial and Epigenomic Medicine
Children's Hospital of Philadelphia
October 2016, Philadelphia, PA

- [37] “A new mechanistic class of antiviral ribonucleoside discovered by using magnetic tweezers to monitor the activity of a viral polymerase”
Nucleosides, Nucleotides & Oligonucleotides Gordon Research Conference
June 2017, Newport, RI
- [38] “Induction of phospholipid biosynthesis and membrane biogenesis by an RNA virus”
2018 International Symposium on RNA viruses
Tzu Chi University,
March 2018, Hualien, Taiwan
- [39] “The P3 A, B, C, and D’s of picornavirus genome replication”
European Study Group on the Molecular Biology of Picornaviruses
June 2018, Egmond aan Zee, The Netherlands
- [40] “Single-cell virology: On-chip investigation of viral infection dynamics”
Satellite Symposium on Single-Cell Virology
2018 Annual Meeting of the American Society for Virology
University of Maryland
July 2018, College Park, MD
- [41] “Distinct organelles for genome replication and virus assembly during poliovirus replication”
2018 FASEB Virus Structure and Assembly Meeting
July 2018, Steamboat Springs, CO

Universities or research institutions

- [1] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Unite de Physicochimie des Macromolecules Biologiques, Institut Pasteur, Paris, France
December 1995
- [2] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Max-Planck-Institut für Biochemie, Martinsried, Germany
December 1995
- [3] “Retrovirus Replication: Genesis and Exodus”
Department of Biochemistry and Molecular Biology, Pennsylvania State University,
University Park, PA
February 1996
- [4] “Kinetic Mechanism of Dihydrofolate Reductase Revisited”
Department of Biochemistry, School of Medicine, Case Western Reserve University,
Cleveland, OH
April 1996

- [5] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Center for Advanced Biotechnology and Medicine, Rutgers University, Piscataway, NJ
August 1996
- [6] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Department of Molecular Genetics, University of Medicine and Dentistry of New Jersey,
Robert Wood Johnson Medical School, Piscataway, NJ
October 1996
- [7] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Department of Microbiology and Immunology, Pennsylvania State University College of
Medicine, Hershey, PA
March 1997
- [8] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Laboratory of Infectious Diseases, NIAID, NIH, Bethesda, MD
April 1999
- [9] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Department of Microbiology and Immunology, Pennsylvania State University College of
Medicine, Hershey, PA
September 1999
- [10] “Towards a Pill for the Common Cold”
Department of Chemistry, Shippensburg University, Shippensburg, PA
October 1999
- [11] “Towards a Pill for the Common Cold”
Division of Science, Chatham College, Pittsburgh, PA
October 1999
- [12] “Towards a Pill for the Common Cold”
Department of Biology, Washington and Jefferson College, Washington, PA
October 1999
- [13] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Department of Biochemistry and Molecular Biology, Indiana University School of Medicine,
Indianapolis, IN
February 2000
- [14] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Department of Biochemistry and Molecular Biology, University of Arkansas for Medical
Sciences, Little Rock, AR
March 2000
- [15] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Department of Molecular Microbiology & Immunology, St. Louis University, St. Louis, MO

April 2000

- [16] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Laboratoire de biochimie, Département de chimie, Université catholique de Louvain,
Brussels, Belgium
May 2000
- [17] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Keynote Address for the 23rd Annual Student Research Symposium
UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ
July 2000
- [18] “Towards a Pill for the Common Cold”
Department of Chemistry, Western Maryland College, Westminster, MD
September 2000
- [19] “Towards a Pill for the Common Cold”
Department of Chemistry, Juniata College, Huntingdon, PA
September 2000
- [20] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Department of Chemistry, Edinboro University of Pennsylvania, Edinboro, PA
April 2001
- [21] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Department of Biochemistry and Microbiology, Cook College, Rutgers, New Brunswick, NJ
April 2001
- [22] “Structure, Function and Mechanism of the Poliovirus RNA-dependent RNA Polymerase”
Department of Molecular Genetics and Microbiology, SUNY, Stony Brook, NY
September 2001
- [23] “Quasispecies, Error Catastrophe and the Antiviral Activity of Ribavirin”
Organized Research Unit in Animal Virology, University of California, Irvine, CA
March 2002
- [22] “Structure, Function and Mechanism of the Poliovirus RNA-dependent RNA Polymerase”
Center for the Study of Hepatitis C Virus, Rockefeller University, New York, NY
April 2002
- [23] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe
and Beyond”
Department of Biochemistry, School of Medicine, Tulane University, New Orleans, LA
October 2002
- [24] “Building the HCV Replisome: The bricks are in place and the mortar is on the way”
Department of Microbiology, Immunology and Parasitology, Louisiana State University
Health Sciences Center, New Orleans, LA
October 2002

- [25] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe and Beyond”
Department of Microbiology & Immunology, University of Texas Medical Branch, Galveston, TX
January 2003
- [25] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe and Beyond”
Department of Microbiology & Immunology, University of Texas Health Science Center
San Antonio, TX
March 2003
- [26] “Biochemical Analysis of HCV NS5a Protein”
Peking University Hepatology Institute
Beijing, China
November 2003
- [27] “Viral RNA-dependent RNA Polymerases: Structure, Function, Mechanism and Inhibition”
Division of Pediatric Infectious Diseases, Vanderbilt University School of Medicine
Nashville, TN
December 2003
- [28] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”
Department of Chemistry, Temple University
Philadelphia, PA
April 2004
- [29] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”
Department of Biophysics and Biophysical Chemistry, Johns Hopkins University School of Medicine
Baltimore, MD
May 2004
- [30] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”
Department of Pharmacology, Case Western Reserve University School of Medicine
Cleveland, OH
September 2004
- [31] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”
Biochemistry Program, Ohio State University
Columbus, OH
October 2004
- [32] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”

Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences
Little Rock, AR
November 2004

- [33] “Exposure, Experience, Enthusiasm”
Bridging the Career Gap for Underrepresented Minorities (A workshop sponsored by NIAID/NIH)
Bethesda, MD
November 2005

- [34] “Biochemical and Biological Analysis of HCV NS5a Protein”
Department of Microbiology, Immunology and Molecular Genetics
University of Kentucky College of Medicine
November 2005

- [35] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe and Beyond”
DARPA Workshop on State-Dependent Delays in Regulatory Networks
Center for Discrete Mathematics & Theoretical Computer Science, Rutgers University
Piscataway, NJ
March 2006

- [36] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe and Beyond”
Department of Microbiology and Molecular Genetics, Harvard Medical School
Boston, MA
March 2006

- [37] “More Than Two Metal Ions in the Mechanism for Phosphoryl Transfer Catalyzed by the Viral RNA-dependent RNA Polymerase”
Department of Biochemistry and Molecular Biology, Michigan State University
Kalamazoo, MI
April 2006

- [38] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Chemistry and Biochemistry, University of Maryland, Baltimore County
Baltimore, MD
October 2006

- [39] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Biochemistry and Molecular Biology, UMDNJ – New Jersey Medical School
Newark, NJ
October 2006

- [40] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Chemistry, Lincoln University
Lincoln University, PA
February 2007

- [41] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Biomedical Sciences, Division of Microbial Pathogenesis & Immune Response,
Meharry Medical College
Nashville, TN
March 2007
- [42] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Biochemistry and Molecular Biology, Colorado State University
Fort Collins, CO
April 2007
- [43] “Building and Managing a Team”
1st NIAID New Investigator Workshop (A workshop sponsored by NIAID/NIH)
Bethesda, MD
October 2007
- [44] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Microbiology and Immunology, SUNY Buffalo School of Medicine
Buffalo, NY
October 2007
- [45] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Biochemistry, Case Western Reserve University School of Medicine
Cleveland, OH
April 2008
- [46] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Microbiology and Immunology, University of Michigan School of Medicine
Ann Arbor, MI
September 2008
- [47] “Towards a universal strategy for viral attenuation and vaccine development”
Department of Cell Biology and Molecular Genetics, University of Maryland
College Park, MD
October 2008
- [48] “Composition, organization and assembly of the picornavirus VPg uridylylation complex”
Keynote address: Virology Training Program Retreat, University of Maryland
College Park, MD
October 2008
- [49] “Exploiting the RNA virus quasispecies for antiviral and vaccine development”
Carolina Vaccine Institute, University of North Carolina
Chapel Hill, NC
November 2008
- [50] “Exploiting the RNA virus quasispecies for antiviral and vaccine development”
Distinguished Lecture Series, Huck Institutes of the Life Sciences, Pennsylvania State University

State College, PA
December 2008

- [51] “Exploiting the RNA virus quasispecies for antiviral and vaccine development”
Department of Microbiology and Immunology, Georgetown University Medical Center
Washington, DC
April 2009

- [52] “Exploiting the RNA virus quasispecies for antiviral and vaccine development”
Center for Biologics Evaluation and Research, U.S. Food and Drug Administration
Bethesda, MD
June 2009

- [53] “Exploiting the RNA virus quasispecies for antiviral and vaccine development”
Department of Microbiology and Immunology, Indiana University School of Medicine (IUPUI)
Indianapolis, IN
September 2009

- [54] “RNA-dependent RNA polymerase (in)fidelity: Mechanisms, consequences and applications”
Department of Chemistry, St. Francis University
Loretto, PA
November 2009

- [55] “NS5A: The Swiss army knife of the hepatitis C virus”
Department of Chemistry, The City College of New York
New York, NY
August 2010

- [56] “NS5A: The Swiss army knife of the hepatitis C virus”
Department of Biological Sciences, Rutgers University
Newark, NJ
October 2010

- [57] “NS5A: The Swiss army knife of the hepatitis C virus”
Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences
Little Rock, AR
November 2010

- [58] “NS5A: The Swiss army knife of the hepatitis C virus”
Department of Microbiology and Immunology and Division of Infectious Diseases, Johns
Hopkins Medical Institutions
Baltimore, MD
November 2010

- [59] “Principles and applications of RNA virus population diversity”
Microbial and Viral Evolution Program, Kavli Institute of Physics, University of California
Santa Barbara, CA
February 2011

- [60] “Human mitochondrial transcription”
Department of Animal Biology, School of Veterinary Medicine, University of Pennsylvania
Philadelphia, PA
April 2011
- [61] “NS5A: The Swiss army knife of the hepatitis C virus”
Department of Molecular Microbiology and Immunology
University of Missouri-Columbia
Columbia, MO
September 2011
- [62] “Principles and applications of RNA virus population diversity”
Molecular Basis of Disease Distinguished Lecture Series
Department of Biology, Georgia State University
Atlanta, GA
October 2011
- [63] “Transitioning to the translational: Hepatitis C virus persistence and inhibition”
Department of Biomolecular Chemistry, University of Wisconsin School of Medicine and
Public Health
Madison, Wisconsin
May 2012
- [64] “Transitioning to the translational: Hepatitis C virus persistence and inhibition”
Department of Microbiology and Immunology, University of Buffalo School of Medicine
Buffalo, NY
May 2012
- [65] “Transitioning to the translational: Hepatitis C virus persistence and inhibition”
Center for Mitochondrial and Epigenetic Medicine
Children’s Hospital of Philadelphia and University of Pennsylvania
Philadelphia, PA
May 2012
- [66] “Transitioning to the translational: Hepatitis C virus persistence and inhibition”
Department of Molecular Biology and Microbiology and Immunology
School of Medicine, Case Western Reserve University
Cleveland, OH
June 2012
- [67] “Hepatitis C virus persistence and inhibition”
2012 Diversity and Health Disparity Symposium
Intramural Research Program, National Institute of Drug Abuse
Baltimore, MD
August 2012
- [68] “Hepatitis C virus persistence and inhibition”

Department of Microbiology and Immunology
Penn State College of Medicine
Hershey, PA
October 2012

- [69] “Hepatitis C virus persistence and inhibition”
Program in Infection and Pathobiology
Baker Institute for Animal Health
College of Veterinary Medicine
Cornell University
Ithaca, NY
March 2013
- [70] "Human mitochondrial transcription"
National Institute of Environmental Health Sciences
Research Triangle Park, NC
September 2013
- [71] "mtDNA mutations and cancer"
Department of Biochemistry
University of Illinois
Urbana-Champaign, IL
October 2013
- [72] “Hepatitis C virus persistence and inhibition”
Department of Microbiology and Immunology
University of Texas Health Science Center San Antonio
San Antonio, TX
April 2014
- [73] “Misregulated mitochondrial transcription and disease”
Department of Chemistry and Biochemistry
University of Maryland Baltimore County
Baltimore, MD
May 2014
- [74] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
UCSF Program in Host-Pathogen Systems and Evolution (Symposium/Retreat)
University of California San Francisco, Mission Bay Campus
San Francisco, CA
August 2014
- [75] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Novartis Institute for Tropical Diseases
Singapore
October 2014

- [76] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Division of Structural Biology and Biochemistry
School of Biological Sciences
Nanyang Technological University
Singapore
October 2014
- [77] "The viral RNA-dependent RNA polymerase: A target for antiviral therapy and viral attenuation"
Taichung Medical University
Taichung, Taiwan
October 2014
- [78] “Misregulated mitochondrial transcription and disease”
University of Kansas Cancer Center
Kansas City, KS
April 2015
- [79] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Department of Biochemistry and Molecular Biology
Thomas Jefferson University
Philadelphia, PA
September 2015
- [80] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Harbin Veterinary Research Institute
Harbin, People's Republic of China
September 2015
- [81] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Department of Life Science and Institute of Biotechnology
National Dong Hwa University
Hualien, Taiwan
March 2016
- [82] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Chang Gung University
TaoYuan, Taiwan
March 2016
- [83] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
Department of Molecular Biosciences

University of Texas at Austin
Austin, TX
May 2016

- [84] “Single-cell virology: On-chip investigation of viral replication dynamics”
Department of Microbiology
Hong Kong University
Hong Kong
February 2017
- [85] “Single-cell virology: On-chip investigation of viral replication dynamics”
Department of Medical Laboratory Science and Biotechnology
China Medical University at Taichung
Taichung, Taiwan
February 2017
- [86] “Single-cell virology: On-chip investigation of viral replication dynamics”
Graduate Institute of Biomedical Sciences
Chang Gung University
Taoyuan, Taiwan
February 2017
- [87] “Single-cell virology: On-chip investigation of viral replication dynamics”
Distinguished Scientist Seminar Series
College of Medicine
University of South Alabama
Mobile, AL
March 2017
- [88] “Single-cell virology: On-chip investigation of viral replication dynamics”
Department of Chemistry and Biochemistry
University of Texas at Arlington
Arlington, TX
April 2017
- [89] “Single-cell virology: On-chip investigation of viral replication dynamics”
Ernie Simms Lecture
Department of Microbiology
Washington University of St. Louis
St. Louis, MO
May 2017
- [90] “New Approaches to Study the Mechanism and Biology of Antiviral Nucleos(t)ides”
Department of Biology
Gettysburg College
Gettysburg, PA
September 2017

- [91] Dr. Milton J. Hernandez Lecture in Mentoring Excellence
NIAID Bridging the Career Gap: Promoting Diversity in Biological Research
NIAID, NIH
Rockville, MD
October 2017
- [92] “Targeting a viral polymerase for antiviral therapy: Insight from studies of single molecules and single, infected cells”
T32 Trainee-Invited Speaker
Department of Pharmacology and Physiology
University of Rochester Medical Center
Rochester, NY
April 2018
- [93] “Targeting a viral polymerase for antiviral therapy: Insight from studies of single molecules and single, infected cells”
Department of Molecular and Cellular Biochemistry
Indiana University
Bloomington, IN
April 2018
- [94] “Targeting a viral polymerase for antiviral therapy: Insight from studies of single molecules and single, infected cells”
Microbiology Graduate Program Seminar Series
Department of Microbial Pathogenesis
Yale University School of Medicine
New Haven, CT
April 2018
- [94] “Targeting a viral polymerase for antiviral therapy: Insight from studies of single molecules and single, infected cells”
Department of Microbiology and Immunology
University of Michigan School of Medicine
Ann Arbor, MI
June 2018

Companies

- [1] “Mechanism of HIV RT-catalyzed DNA Strand Transfer Reactions”
Discovery Research, Viropharma, Inc., Malvern, PA
August 1997
- [2] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Discovery Research, Viropharma, Inc., Exton, PA
February 1999
- [3] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Antiviral Therapy, Schering-Plough Research Institute, Kenilworth, NJ

March 1999

- [4] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Department of Molecular Virology and Host Defense, SmithKline Beecham Pharmaceuticals,
Collegeville, PA
May 1999
- [5] “Mechanistic Studies of Poliovirus RNA-dependent RNA Polymerase”
Antiviral Research, Merck Research Laboratories, West Point, PA
August 1999
- [6] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
Antiviral Therapy, Schering-Plough Research Institute, Kenilworth, NJ
November 1999
- [7] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
BioMega Research Division, Boehringer Ingelheim Canada Ltd., Laval, Canada
February 2000
- [8] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
BioChem Pharma, Montreal, Canada
February 2000
- [9] “Insight into Mechanism of Action of Ribavirin from Studies with Poliovirus Polymerase”
DuPont, West Point, PA
August 2000
- [10] “Targeting the Viral RNA-dependent RNA Polymerase for Antiviral Drug Development”
ICN Pharmaceuticals, Inc., Costa Mesa, CA
October 2000
- [11] “Targeting the Viral RNA-dependent RNA Polymerase for Antiviral Drug Development”
Wyeth Ayerst Research, Pearl River, NY
August 2001
- [12] “Targeting the Viral RNA-dependent RNA Polymerase for Antiviral Drug Development”
Gilead Sciences, San Francisco, CA
August 2001
- [13] “Targeting the Viral RNA-dependent RNA Polymerase for Antiviral Drug Development”
Eli Lilly, Indianapolis, IN
October 2001
- [14] “Designing Lethal Mutagens of the RNA Virus Genome”
ICN Pharmaceuticals, Costa Mesa, CA
February 2002

- [15] “The Viral RNA-dependent RNA Polymerase: Forcing Riboviruses to the Edge of Catastrophe and Beyond”
Gilead Sciences, San Francisco, CA
February 2003
- [16] “Biochemical and Biological Analysis of HCV NS5a Protein”
Bristol Myers Squibb Company, Wallingford, CT
March 2004
- [17] “Biochemical and Biological Analysis of HCV NS5a Protein”
Roche Palo Alto, Palo Alto, CA
May 2004
- [18] “Biochemical and Biological Analysis of HCV NS5a Protein”
Valeant Pharmaceuticals International, Costa Mesa, CA
August 2004
- [19] “Biochemical and Biological Analysis of HCV NS5a Protein”
Pfizer Global Research and Development, La Jolla, CA
August 2005
- [20] “Biochemical and Biological Analysis of HCV NS5a Protein”
Genelabs Technologies, Inc., Redwood City, CA
March 2006
- [21] “HCV NS5A Protein: Functions in Genome Replication, Genome Persistence and Antagonism of the Innate Immune Response”
PTC Therapeutics, Inc., South Plainfield, NJ
March 2008
- [22] “HCV NS5A Protein: Functions in Genome Replication, Genome Persistence and Antagonism of the Innate Immune Response”
Merck Research Laboratories, West Point, PA
October 2008
- [23] “HCV NS5A Protein: Functions in Genome Replication, Genome Persistence and Antagonism of the Innate Immune Response”
Gilead Sciences, Foster City, CA
January 2009
- [24] “HCV NS5A Protein: Functions in Genome Replication, Genome Persistence and Antagonism of the Innate Immune Response”
Roche Palo Alto, Palo Alto, CA
January 2009
- [25] “Targets and mechanisms for development of antiviral therapeutics to treat infections by positive-strand RNA viruses”

Schering-Plough Research Institute, Kenilworth, NJ
March 2009

- [26] “HCV NS5A Protein: Functions in Genome Replication, Genome Persistence and Antagonism of the Innate Immune Response”
Merck Frosst Centre for Therapeutic Research, Montreal, Quebec, Canada
June 2010
- [27] “Anti-HCV therapeutics: Opportunities and complications”
Roche, Nutley, NJ
September 2011
- [28] “Avoiding a billion dollar mistake: Mitochondrial (dys)function as a contributor to drug toxicity”
Alios Biopharma, San Francisco, CA
February 2013
- [29] “Avoiding a billion dollar mistake: Mitochondrial (dys)function as a contributor to drug toxicity”
PTC Therapeutics, South Plainfield NJ
September 2013 (via skype)
- [30] “Avoiding a billion dollar mistake: Mitochondrial (dys)function as a contributor to drug toxicity”
Anylam Pharmaceuticals, Boston, MA
September 2013
- [31] “Next-Gen Virology: Use of microfluidics and live-cell imaging to study poliovirus replication at the single-cell level”
PTC Therapeutics, South Plainfield NJ
April 2015
- [30] “Avoiding a billion dollar mistake: Mitochondrial (dys)function as a contributor to drug toxicity”
AbbVie, Inc., North Chicago, IL
July 2015
- [31] “Targeting a viral polymerase for antiviral therapy: Insight from studies of single molecules and single, infected cells”
New England BioLabs,
May 2018

Publications:

Refereed Journal Articles

- [1] Bizub, D., Weber, I.T., **Cameron, C.E.**, Leis, J.P., and Skalka, A.M. (1991). A range of catalytic efficiencies with avian retroviral protease subunits genetically linked to form single polypeptide chains. **J. Biol. Chem.** **266**, 4951-4958.

- [2] Grinde, B., **Cameron, C.E.**, Leis, J., Weber, I., Wlodawer, A., Burstein, H., Bizub, D., and Skalka, A.M. (1992). Mutations that alter the activity of the Rous sarcoma virus protease. **J. Biol. Chem.** **267**, 9481-9490.
- [3] Grinde, B., **Cameron, C.E.**, Leis, J., Weber, I., Wlodawer, A., Burstein, H., and Skalka, A.M. (1992). Analysis of substrate interactions of the Rous sarcoma virus wild type and mutant proteases and human immunodeficiency virus-1 protease using a set of systematically altered peptide substrates. **J. Biol. Chem.** **267**, 9491-9498.
- [4] **Cameron, C.E.**, Grinde, B., Jentoft, J., Leis, J., Weber, I., Copeland, T., and Wlodawer, A. (1992). Mechanism of inhibition of the retroviral protease by a Rous sarcoma virus peptide substrate representing the cleavage site between the gag p2 and p10 proteins. **J. Biol. Chem.** **267**, 23735-23741.
- [5] **Cameron, C.E.**, Grinde, B., Jacques, P., Jentoft, J., Leis, J., Weber, I., and Wlodawer, A. (1993). Comparison of the substrate binding pockets of the Rous sarcoma virus and human immunodeficiency virus type 1 proteases. **J. Biol. Chem.** **268**, 11711-11720.
- [6] **Cameron, C.E.**, Ridky, T.W., Shulenin, S., Leis, J., Weber, I., Wlodawer, A., Burstein, H., Bizub-Bender, D., and Skalka, A.M. (1994). Mutational analysis of the substrate binding pocket of the Rous sarcoma virus and human immunodeficiency virus-1 proteases. **J. Biol. Chem.** **269**, 11170-11177.
- [7] Wills, J.W., **Cameron, C.E.**, Wilson, C.B., Xiang, Y., Bennett, R.P., and Leis, J. (1994). An assembly domain of the Rous sarcoma virus gag protein required late in budding. **J. Virol.** **68**, 6605-6618.
- [8] Ghosh, M., Howard, K.J., **Cameron, C.E.**, Benkovic, S.J., Hughes, S.H., and Le Grice, S.F.J. (1995). Truncating α -helix E' of p66 human immunodeficiency virus reverse transcriptase modulates RNase H function and impairs DNA strand transfer. **J. Biol. Chem.** **270**, 7068-7076.
- [9] Cirino, N.M., **Cameron, C.E.**, Smith, J.S., Roth, M.J., Benkovic, S.J., and Le Grice, S.F.J. (1995). Divalent cation modulation of the ribonuclease functions of human immunodeficiency virus reverse transcriptase. **Biochemistry** **34**, 9936-9943.
- [10] Ridky, T.W., **Cameron, C.E.**, Cameron, J.D., Leis, J., Copeland, T., Wlodawer, A., Weber, I.T., and Harrison, R.W. (1996). Human immunodeficiency virus type 1 protease substrate specificity is limited by interactions between substrate amino acids bound in adjacent enzyme subsites. **J. Biol. Chem.** **271**, 4709-4717.
- [11] Ridky, T.W., Bizub-Bender, D., **Cameron, C.E.**, Weber, I.T., Wlodawer, A., Copeland, T., Skalka, A.M., and Leis, J. (1996). Programming the Rous sarcoma virus protease to cleave new substrate sequences. **J. Biol. Chem.** **271**, 7719-7724.

- [12] Xiang, Y., **Cameron, C.E.**, Wilson, C., Wills, J., and Leis, J. (1996). Fine mapping and characterization of the Rous sarcoma virus Pr76gag late assembly domain. **J. Virol.** **70**, 5695-5700.
- [13] Shao, H., Robek, M.D., Threadgill, D.S., Mankowski, L.S., **Cameron, C.E.**, Fuller, F.J., and Payne, S.J. (1997). Characterization and mutational studies of equine infectious anemia virus dUTPase. **Biochim. Biophys. Acta** **1339**, 181-191.
- [14] **Cameron, C.E.**, Ghosh, M., Le Grice, S.F.J., and Benkovic, S.J. (1997). Mutations in HIV reverse transcriptase which alter RNase H activity and decrease strand transfer efficiency are suppressed by HIV nucleocapsid protein. **Proc. Natl. Acad. Sci. (USA)** **94**, 6700-6705.
- [15] **Cameron, C.E.** and Benkovic, S.J. (1997). Evidence for a functional role of the dynamics of glycine-121 of *Escherichia coli* dihydrofolate reductase obtained from kinetic analysis of a site-directed mutant. **Biochemistry** **36**, 15792-15800.
- [16] Arnold, J.J. and **Cameron, C.E.** (1999). Poliovirus RNA-dependent RNA polymerase (3D^{pol}) is sufficient for template switching in vitro. **J. Biol. Chem.** **274**, 2706-2716.
- [17] Arnold, J.J., Ghosh, S.K.B., Bevilacqua, P.C., and **Cameron, C.E.** (1999). Single-nucleotide resolution of RNA strands in the presence of their RNA complements. **BioTechniques** **27**, 450-456.
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- [19] Arnold, J.J., Ghosh, S.K.B., and **Cameron, C.E.** (1999). Poliovirus RNA-dependent RNA polymerase (3D^{pol}): Divalent cation modulation of primer, template and nucleotide selection. **J. Biol. Chem.** **274**, 37060-37069.
- [20] Arnold, J.J. and **Cameron, C.E.** (2000). Poliovirus RNA-dependent RNA polymerase (3D^{pol}): Assembly of stable, elongation-competent complexes by using a symmetrical primer/template substrate (sym/sub). **J. Biol. Chem.** **275**, 5329-5336.
- [21] Gohara, D.W., Crotty, S., Arnold, J.J., Yoder, J.D., Andino, R., and **Cameron, C.E.** (2000). Poliovirus RNA-dependent RNA polymerase (3D^{pol}): Structural, biochemical and biological analysis of conserved structural motifs A and B. **J. Biol. Chem.** **275**, 25523-25532.
- [22] Zhong, W., Ferrari, E., Lesburg, C., Maag, D., Ghosh, S.K.B., **Cameron, C.E.**, Lau, J.Y.N., and Hong, Z. (2000). Template/primer requirements and single nucleotide incorporation by hepatitis C virus nonstructural protein 5B polymerase. **J. Virol.** **74**, 9134-9143.
- [23] Crotty, S., Maag, D., Arnold, J.J., Zhong, W., Lau, J.Y.N., Hong, Z., Andino, R., and **Cameron, C.E.** (2000). The broad-spectrum antiviral ribonucleoside ribavirin is an RNA virus mutagen. **Nature Medicine** **6**, 1375-1379. Erratum in: *Nat Med* 2001 Feb;7(2):255.

- [24] Tackett, A.J., Wei, L., **Cameron, C.E.**, and Raney, K.D. (2001). Unwinding of nucleic acids by HCV NS3 helicase is sensitive to the structure of the duplex. **Nucleic Acids Res.** **29**, 565-572.
- [25] Wei, L., Huhn, J.S., Mory, A., Pathak, H.B., Sosnovtsev, S.V., Green, K.Y., and **Cameron, C.E.** (2001). Proteinase-polymerase precursor as the active form of feline calicivirus RNA-dependent RNA polymerase. **J. Virol.** **75**, 1211-1219.
- [26] Crotty, S., **Cameron, C.E.**, and Andino, R. (2001). RNA virus error catastrophe: Direct molecular test by using ribavirin. **Proc. Natl. Acad. Sci. (USA)** **98**, 6895-6900. Epub 2001 May 22.
- [27] Hong, Z., **Cameron, C.E.**, Walker, M.P., Castro, C., Yao, N., Lau, J.Y., and Zhong, W. (2001). A novel mechanism to ensure terminal initiation by hepatitis C virus NS5B polymerase. **Virology** **285**, 6-11.
- [28] Maag, D., Castro, C., Hong, Z., and **Cameron, C.E.** (2001). Hepatitis C virus RNA-dependent RNA polymerase (NS5B) as a mediator of the antiviral activity of ribavirin. **J. Biol. Chem.** **276**, 46094-46098. Epub 2001 Oct 15.
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- [36] Arnold, J.J., Gohara, D.W., and **Cameron, C.E.** (2004). Poliovirus RNA-dependent RNA polymerase (3D^{pol}): Pre-steady-state kinetic analysis of ribonucleotide incorporation in the presence of manganese. **Biochemistry** **43**, 5138-5148.
- [37] Gohara, D.W., Arnold, J.J., and **Cameron, C.E.** (2004). Poliovirus RNA-dependent RNA polymerase (3D^{pol}): kinetic, thermodynamic, and structural analysis of ribonucleotide selection. **Biochemistry** **43**, 5149-5158.
- [38] de Miranda, J.R., Drebot, M., Tyler, S., Shen, M., **Cameron, C.E.**, Stoltz, D.B., and Camazine, S.M. (2004). Complete nucleotide sequence of Kashmir bee virus and comparison with acute bee paralysis virus. **J. Gen. Virol.** **85**, 2263-2270.
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- [2] **Cameron, C.E.** and Cline S.D. (2012). Mitochondrial Gene Expression. **Biochimica et Biophysica Acta (BBA)- Gene Regulatory Mechanisms**. Volume 1819, Issues 9-10, 913-1112.

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- [1] Leis, J.P. and **Cameron, C.E.** (1994). Engineering proteases with altered specificity. **Curr. Opin. Biotechnol.** **5**, 403-408.
- [2] **Cameron, C.E.** and Castro, C. (2001). The mechanism of action of ribavirin: Lethal mutagenesis of RNA virus genomes mediated by the viral RNA-dependent RNA polymerase. **Curr. Opin. Infect. Dis.** **14**, 757-764.
- [3] Graci, J.D. and **Cameron, C.E.** (2002). Quasispecies, error catastrophe and the antiviral activity of ribavirin. **Virology** **298**, 175-180.
- [4] Hong, Z. and **Cameron, C.E.** (2002). Pleiotropic mechanisms of ribavirin antiviral activities. **Prog. Drug Res.** **59**, 41-69.
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- [9] Graci, J.D., and **Cameron, C.E.** (2006). Mechanisms of action of ribavirin against distinct viruses. **Rev. Med. Virol.** **16**, 37-48.
- [10] Graci, J.D. and **Cameron C.E.** (2008) Therapeutically targeting RNA viruses via lethal mutagenesis. **Future Virology** **3**, 553-566.
- [11] **Cameron, C.E.**, Moustafa, I.M. and Arnold, J.J. (2009). Dynamics: The missing link between structure and function of the viral RNA-dependent RNA polymerase? **Curr. Opin. Struct. Biol.** **19**, 768-74.
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- [14] Cordek, D.G., Bechtel, J.T., Maynard, A., Kazmierski, W.M. and **Cameron, C.E.** (2011). Targeting the NS5A protein of HCV: an emerging option. *Drugs of the Future* (Prous Thomson Reuters) **36**, 691-711.
- [15] Arnold, J.J., Smidansky E.D., Moustafa, I.M., and **Cameron, C.E.** (2012). Human mitochondrial RNA polymerase: Structure-function, mechanism and inhibition. **Biochim. Biophys. Acta.** **1819**, 948-60.
- [16] **Cameron, C.E.** (2013). Future virology: A mitochondriac's perspective. **Future Virol.** **8**, 933-935.
- [17] Li, S., Kiehne, J., Sinoway, L.I., **Cameron, C.E.** and Huang, T.J. (2013). Microfluidic opportunities in the field of nutrition. **Lab Chip**, **13**, 3993-4003. PMC3875330
- [18] **Cameron, C.E.**, Moustafa, I.M. and Arnold, J.J. (2016). Fidelity of nucleotide incorporation by the RNA-dependent RNA polymerase from poliovirus. **Enzymes** **39**, 293-323.

Book Reviews

- [1] **Cameron, C.E.** (1999). A review of: Hepatitis C Protocols. *Methods in Molecular Medicine*, Volume 19 (Edited by Johnson Yiu-Nam Lau). **Quarterly Review in Biology** **74**, 509-510.

Abstracts:

(Only abstracts for 2017 are shown; the name of the presenting author is underlined.)

- [1] Anderson, C., Aponte-Diaz, D. and Cameron, C. E. (2017). HRV-C induces PI4P biosynthesis by hijacking the ARF1-GBF1 pathway. **UMBC 20th Undergraduate Research Poster Symposium in the Chemical and Biological Sciences.** (Baltimore, MD) (**Poster**)
- [2] Aponte-Diaz D., Banerjee S., Shengjuler D. and Cameron C.E. (2017). Poliovirus 3CD protein induces PI4P synthesis by hijacking the GBF1-Arf1 pathway. **American Society for Virology 36th Annual Meeting.** (Madison, WI) (**Talk**)
- [3] Liu, W., Caglar, M. U., Mao, Z., Wilke, C. O., Huang, T. J. and Cameron, C. E. (2017). Mechanistic Differences of Antivirals Revealed by Microfluidics-Based Single-Cell Virology. **21st International Conference on Miniaturized Systems for Chemistry and Life Sciences (μTAS 2017)** (Savannah, USA) (**Poster**)
- [4] Martinez, A., Woodman, A., Arnold, J. J., Liu, X. and Cameron, C. E. (2017)> Mechanism of 'Forced-Copy Choice' Recombination by an Enterovirus Polymerase. **American Society for Virology 36th Annual Meeting.** (Madison, WI) (**Poster**)
- [5] Oliver, G. O., Arnold, J. J., Lugo, A. J., Kastner, M, and **Cameron, C. E.** (2017). Biophysical and biochemical characterization of mitochondrial transcription on chimeric and authentic mitochondrial DNA templates. **7th Annual Undergraduate Research Symposium.** (University Park, PA) (**Poster**)
- [6] Oliver, G. O., Arnold, J. J., Lugo, A. J., Kastner, M, and **Cameron, C. E.** (2017). Biophysical and biochemical characterization of mitochondrial transcription on chimeric and authentic mitochondrial DNA templates. **UMBC 20th Undergraduate Research Poster Symposium in the Chemical and Biological Sciences.** (Baltimore, MD) (**Poster**)
- [7] Wang, Z., Sharma, S. D. and **Cameron, C. E.** (2017) Construction and characterization of a CFP-expressing Poliovirus. **UMBC 20th Undergraduate Research Poster Symposium in the Chemical and Biological Sciences.** (Baltimore, MD) (**Poster**)
- [8] Wang, Z., Sharma, S. D., **Cameron, C.E.** (2017) Construction and characterization of a recombinant Poliovirus expressing cyan fluorescent protein. **10th Annual Postdoc Research Exhibition,** (University Park, PA) (**Poster**)
- [9] Wang, Z., **Sharma, S.D.** and Cameron, C.E. (2017) Construction and Characterization of a CFP-Tagged Poliovirus. **7th Annual Undergraduate Research Symposium,** (University Park, PA) (**Poster**)
- [10] Woodman, A., Fitzgerald F. K. and Cameron C. E. (2017). Recombination in EV71. **American Society for Virology 36th Annual Meeting.** (Madison, WI) (**Talk**)

Service:

To Pennsylvania State University

1998 - 2002

Graduate Candidacy Exam Committee

1998 & 1999

Admissions Committee, Summer Undergraduate Research Program,
Life Sciences Consortium

1998 - 1999	Selection Committee, Marker Lectures in Genetic Engineering
1998 & 1999	Judge, Graduate Student Research Exhibition
1999 - 2000	Chair, Selection Committee, Marker Lectures in Genetic Engineering
1999 - 2000	Faculty Search Committee: Host-Microbe Interactions
1999 - 2002	Dean's Committee on "Climate"
2000	Post-tenure Faculty Review Committee
2001 - 2002	Chair, Subcommittee for Junior Faculty Affairs, Climate Committee
2002 - 2007	BMB Climate and Diversity Committee
2002 - present	Honors Advisor
2002 - 2003	Faculty Search Committee: Structural Biology
2002 - 2004	Faculty and Staff Achievement Awards Committee
2003 - 2007	Endowed Positions Search Committee
2003 - present	Honors Student Advisory Committee
7/1/2003 - 6/30/07	ECoS Representative, University Faculty Senate
2003 - 2004	Search Committee for Head of Department of Chemistry
2004 - 2005	Faculty Search Committee: Gene Regulation
2004 - 2006	Dean's Committee on "Vision"
2005 - 2006	Eberly College of Science Summer Outreach Program for grades 4-8
2005 - 2007	BMB Promotion and Tenure Committee
2006 - present	Head then Member, Advisory Committee, X-ray Crystallography Facility, Huck Institute of the Life Sciences
2007 - present	Conferences Advisory Committee, Outreach, Conferences and Institutes
2007	Modular BL3 Building and Design Committee
2007 - 2008	Search Committee for ECoS Directors of Outreach (K-14 & Professional Development)
2007 - 2008	Eberly College of Science Faculty Scholar Medal Nominating Committee
2007 - 2008	Huck Institute of the Life Sciences Promotion and Tenure Committee
1/1/2008 - 12/31/13	Member, Institutional Biosafety Committee
2008 - 2010	University Promotion and Tenure Review Committee
2008 - 2015	Head, Advisory Committee, Electron Microscopy Facility, Huck Institute of the Life Sciences
2009 - 2013	BMMB Graduate Student Recruiting Committee
2009	Eberly College of Science Distinguished Professorship Screening Committee
2009 - 2012	Member, University Selection Committee for Faculty Scholar Medal (Chair, 2011 and 2012)
2010 - present	Member, BMB Department Head Executive Committee
2010 - 2012	Co-chair, Graduate Affairs Committee
2010 - 2015	Member, University Immediate Tenure Review Committee (Chair, 2011-2012 and 2013-2014)
2010 - present	Member, Advisory Committee, Shared Fermentation Facility
2010 - 2015	Member, President's Award Committee for Excellence in Academic Integration (Chair, 2013-2014 and 2014-2015)
2011 - 2012	Junior Faculty Mentoring Committee (<i>ex officio</i>)
2011 - 2012	Member, BMB Post Tenure Review Committee
2011 - 2012	Co-chair, BMB Faculty Search Committee: Molecular Virology and Prokaryotic Systems Biology
2012 - 2013	Member, Search Committee, Director of the Penn State Hershey Cancer Institute

2013 – 2015	Member, BMB Promotion and Tenure Committee
2013 – 2014	Member, Life Sciences Instrumentation Group, Huck Institutes of the Life Sciences
2013 – 2014	Member, Search Committee, Director of Forensics Program, ECoS
2014	Member, Strategic Planning Advisory Committee, ECoS
2014 – 2015	Member, Search Committee, Dean of Eberly College of Science, PSU
2014 – 2015	Member, Search Committee, BSL3 Pathogens, Huck/ECoS/AgSci
2015 – 2016	Co-chair, Search Committee, BSL3 Virologist, BMB/Huck
2016 – present	Member, Advisory Committee, Genomics Core Facility
2016 – present	Chair, Institutional Review Entity, Office of Research Protections
2017 – present	Member, Search Committee, Director of the Huck Institutes of the Life Sciences
2017 – present	Member, Faculty Advisory Committee, Center of Excellence in Industrial Biotechnology
2018 – 2019	Member, BMB Promotion and Tenure Committee
2018 – 2019	Member, BMB Faculty Search Committee

To Profession

1998 - 2012	Member, Congressional Liaison Committee, Joint Steering Committee for Public Policy (aka Coalition for the Life Sciences)
1999	Organizer, Symposium on “ <i>Understanding Biological Pathways: A Biophysical Perspective</i> ,” held on May 28, 1999, at Pennsylvania State University and sponsored by the Eberly College of Science, Bristol-Myers Squibb and SmithKline Beecham
1999	Chair, Workshop on Caliciviruses and Astroviruses (I), American Society for Virology 19 th Annual Meeting, Fort Collins, CO
2000	Member (<i>ad hoc</i>), International and Cooperative Projects Study Section, Center for Scientific Review, National Institutes of Health
2001	Co-Organizer, Penn State’s 20 th Summer Symposium in Molecular Biology, “Emerging Viral Disease”, June 13-16.
2001 - 2005	Member, International and Cooperative Projects Study Section, Center for Scientific Review, National Institutes of Health
2001 - present	<i>Ad hoc</i> reviewer for National Science Foundation (grants)
2002	Member, Special Emphasis Panel Technical Evaluation Group: Drug Development for Opportunistic Infections-Hepatitis C, DAIDS/NIAID/NIH
2002 - 2003	<i>Ad hoc</i> reviewer for Ohio Cancer Research Associates (grants)
2002	Member, Membership Task Force, American Society for Biochemistry and Molecular Biology
2002	Member, Special Emphasis Panel Technical Evaluation Group: Impact of Microbial Interactions on Infectious Diseases, DMID/NIAID/NIH
2002	<i>Ad hoc</i> reviewer for Louisiana Board of Regents (grants)
2002 - 2005	Chair, Local Organizing Committee, 2005 Annual Meeting of the American Society for Virology
2003	Member, Special Emphasis Panel Technical Evaluation Group: National Biocontainment Laboratories, DMID/NIAID/NIH
2003	Member, Special Emphasis Panel Technical Evaluation Group: Regional

Biocontainment Laboratories, DMID/NIAID/NIH

7/1/2003-6/30/2008	
7/1/2010-9/30/2015	
7/1/2017-6/30/2022	Member, Editorial Board, <i>J. Biol. Chem.</i>
2003	Member (<i>ad hoc</i>), Virology Study Section, Center for Scientific Review, NIH
1/1/2004-12/31/2018	Member, Editorial Board, <i>J. Virol.</i>
2004	Member, Special Emphasis Panel Technical Evaluation Group: Biodefense and Emerging Infectious Disease Research Opportunities, NIAID/NIH
2004 – 2010	Member (appointed), Education and Professional Development Committee, American Society for Biochemistry and Molecular Biology
2004 – 2008	Member (appointed), Minority Affairs Committee, American Society for Biochemistry and Molecular Biology
2004	Chair, Workshop on Antivirals and Interferons (I), American Society for Virology 23 rd Annual Meeting, Montreal, Quebec, Canada
8/30/2004	Member, Panel for discussion of public access to NIH-sponsored research, convened by Dr. Elias A. Zerhouni, Director, National Institutes of Health
2005	Member, Special Emphasis Panel Technical Evaluation Group: Centers for Hepatitis C Research
2005 – 6/30/2009	Member, Molecular Genetics A Study Section, Center for Scientific Review, NIH
2005	Chair, Session on: Cis-acting RNA elements and trans-acting factors, European Study Group on the Molecular Biology of Picornaviruses, Lunteren, The Netherlands
2005	Invited Participant, NRC Workshop: Role of an Antiviral Compound in the Global Poliovirus Eradication Initiative
2006	Member, Special Emphasis Panel Technical Evaluation Group: Partnerships for Hepatitis C Vaccine Development
2006	Thrust Area Manager, Mitigation and Treatment Thrust Area, BioTech Master-Class Workshop, Defense Threat Reduction Agency, Fort Belvoir, VA
2006	Convener, ASBMB Award Ceremony for Exemplary Contributions to Education, American Society for Biochemistry and Molecular Biology Annual Meeting, San Francisco, CA
2007	Convener, ASBMB Award Ceremony for Exemplary Contributions to Education, American Society for Biochemistry and Molecular Biology Annual Meeting, Washington, DC
2007	Chair, Session on Infectious Diseases in Minority Populations: Hepatitis C, American Society for Biochemistry and Molecular Biology Annual Meeting, Washington, DC
2007	Chair, Session on Functional Analysis of Virus Proteins, Eighth International Symposium on Positive-strand RNA Viruses, Washington, DC
2007	Chair, Workshop on Innate Immunity (II) – New Twists on Virus-Host Interactions, American Society for Virology 26 th Annual Meeting, Corvallis, OR
2007	Member, Training and Career Opportunities Subcommittee, FASEB
7/1/07 – 6/30/13	Member, ASBMB Today Editorial Advisory Board

- 7/1/08 – 6/30/09
2008 Chair-Elect, Division T (RNA Viruses) of the American Society for Microbiology
Convener, ASBMB Award Ceremony for Exemplary Contributions to
Education, American Society for Biochemistry and Molecular Biology Annual
Meeting, San Diego, CA
- 2008 Co-Chair, Session on Integrating Discovery and Application, American
Society for Biochemistry and Molecular Biology Annual Meeting,
Washington, DC
- 2008 Chair, Session F: Genome replication and gene expression – 1, European
Study Group on the Molecular Biology of Picornaviruses, Barcelona, Spain
- 2008 Chair, Workshop on RNA Virus Replication & Gene Expression II,
American Society for Virology 27th Annual Meeting, Ithaca, NY
- 2008 – 2011 Chair, Minority Affairs Committee,
American Society for Biochemistry and Molecular Biology
- 2008 – 2011 Member (*ex officio*, non-voting), Council,
American Society for Biochemistry and Molecular Biology
- 11/18/08 – 6/30/13 Member, Board of Scientific Counselors, National Institute of Diabetes and
Digestive and Kidney Diseases, NIH
- 2009 Chair, Session on HIV: Activation and Anatonism of Host Defense,
American Society for Biochemistry and Molecular Biology Annual
Meeting, New Orleans, LA
- 7/1/09 – 6/30/10
2009 – 2010 Chair, Division T (RNA Viruses) of the American Society for Microbiology
Thematic Organizer, Hypertension: Mechanisms, Therapies and Disparities,
American Society for Biochemistry and Molecular Biology Annual
Meeting (2010), Anaheim, CA
- 7/15/09 – 7/16/12 Councilor for Animal Virology, American Society for Virology
- 2009-2013
2014-2018 Member, Editorial Board, *Viruses*
- 2009 Chair, Workshop on Hepatitis Viruses, American Society for Virology 28th
Annual Meeting, Vancouver, BC, Canada
- 2009 Member, 2012 Keystone Symposia Biochemistry/Structural Biology Study
Group
- 2009 – 2011 Thematic Organizer, Obesity, American Society for Biochemistry and
Molecular Biology Annual Meeting (2011), Washington, DC
- 2009 – 2011 Co-organizer, Viral Genome Replication Meeting (sponsored by ASM),
February 2011, Banff, Alberta, Canada
- 2011 – 2012 Guest Editor, Special issue: The Regulation of Mitochondrial Gene
Expression, BBA – Gene Regulatory Mechanisms
- 7/1/10 – 6/30/11
2011 – 2012 Councilor for Division T (RNA viruses), American Society for Microbiology
Past Chair, Minority Affairs Committee,
American Society for Biochemistry and Molecular Biology
- 2011 Discussion Leader, Virus Nanomachines: Structure and Catalysis, Viruses &
Cells Gordon Conference, Lucca (Barga), Italy
- 2011 Member and Co-chair, Special Emphasis Panel, Cell Biology IRG, Center for
Scientific Review, NIH
- 2011 – 2012 Member, Nominations Committee, American Society for Virology
- 2012 Member, Site Visit Review Team, Laboratory of Emerging Pathogens, Center
for Biologics Evaluation and Research, US FDA

- 2012 Member, Special Emphasis Panel (ZAI1 UKS-M (M2) 1), DEA/NIAID/NIH
- 2012 Member, Panel for review of the Biological Chemistry Graduate Program and Chemistry Training Track, UT Southwestern Graduate School of Biomedical Sciences, Dallas, TX
- 2012 – 2015 Member (elected), Public Affairs Advisory Committee, American Society for Biochemistry and Molecular Biology
- 2012 Co-chair, Session on: Eradication and antiviral strategies: Antivirals, European Study Group on the Molecular Biology of Picornaviruses, St. Raphaël, France
- 2012 Chair, Workshop on Antivirals and Therapeutic Interferons (I), American Society for Virology 31st Annual Meeting, Madison, WI
- 2012 – 2014 Thematic Organizer, Mitochondria & Metabolism, American Society for Biochemistry and Molecular Biology Annual Meeting (2014), San Diego, CA
- 2013 Co-chair, Virology workshop: RNA – so much more than a genome 2013 Meeting of the Society for General Microbiology, Manchester, UK
- 2013 Chair, Workshop on Virus-Host Interactions: Positive Strand RNA Viruses (III), American Society for Virology 32nd Annual Meeting, University Park, PA
- 2014 – present Member, Advisory Committee, Research Center for Emerging Viral Infections, Chang Gung University, Tao Yuan, Taiwan
- 2014 – 2015 Advisor, Graduate Student Public Affairs Committee (GSPAC), American Society for Biochemistry and Molecular Biology
- 8/8/2014 – 6/14/2018 Member, National Science Advisory Board for Biosecurity, Office of the Director, National Institutes of Health
- 10/2014 – 11/2015 Organizer, Fifth Annual Translational Research In Mitochondria, Aging and Disease (TRiMAD) 2015, State College, PA
- 2015 Discussion Leader, Transcription and Translation, Viruses & Cells Gordon Conference, Girona, Spain
- 8/2015 – 7/2017 Member, Editorial Board, *Mitochondrion*
- 7/1/2016 – present Member, Molecular Genetics B Study Section, Center for Scientific Review, NIH
- 2017 Member, Panel for review of the Biological Chemistry Graduate Program, UT Southwestern Graduate School of Biomedical Sciences, Dallas, TX
- 2018 – present Member, Editorial Board, *JoVE Biochemistry*
- 2019 Discussion Leader, Viruses & Cells Gordon Conference, Lucca (Barga) Italy

To Industry

- 2000 Consultant (contracted) for Antiviral Therapy, Schering-Plough Research Institute, Kenilworth, NJ
- 2000 Consultant (contracted) for Biochem Pharma, Inc., Laval, Quebec, Canada
- 2001 – 2003 Consultant (contracted) for Discovery Research, ICN Pharmaceuticals, Costa Mesa, CA
- 2003 Consultant (ad hoc) for Ribapharm, Inc., Costa Mesa, CA
- 2003 – 2006 Consultant (contracted) Migenix (formerly Micrologix Biotech, Inc.), Vancouver, British Columbia, Canada
- 2003 – 2004 Consultant (contracted) Akros Pharma, Inc. Princeton, NJ

2004 – 2006 Consultant (ad hoc) Valeant Pharmaceuticals International (formerly Ribapharm), Costa Mesa, CA

2005 Consultant, Pfizer Global Research and Development, La Jolla, CA

2006 – 2008 Consultant (ad hoc), Genelabs Technologies, Inc., Redwood City, CA

2007 Consultant (ad hoc), XTL Biopharmaceuticals Ltd., Valley Cottage, NY

2008 Consultant (contracted) Merck Research Laboratories, West Point, PA

2008 Consultant (contracted) InterMune, Brisbane, CA

2009, 2011, 2013 Consultant (contracted) Gilead Sciences, Inc., Foster City, CA

2009 Consultant (contracted) Roche Palo Alto LLC, Palo Alto, CA

2010 Consultant (contracted) Merck Frosst, Montreal, Quebec, Canada

2010 Consultant (contracted) GlaxoSmithKline LLC, Research Triangle Park, NC

2012 Consultant (contracted) BioCryst Pharmaceuticals, Inc., Birmingham, AL

2012 – 2013 Consultant (contracted) Bristol-Myers Squibb Company, Princeton, NJ

2013 Consultant (contracted) Alios Biopharma, San Francisco, CA

2013 Consultant (contracted) PTC Therapeutics, South Plainfield, NJ

2014 – 2016 Consultant (contracted) Finnegan, Henderson, Farabow, Garrett & Dunner LLP, Washington, DC

2015 – present Consultant (contracted) Latham & Watkins LLP, Washington, DC

2015 – present Consultant (contracted) Abbvie, North Chicago, IL

2016 – present Consultant (contracted) Atea Pharmaceuticals, Inc., Boston, MA