

CURRICULUM VITAE

Brian D. Athey, Ph.D.
Associate Professor
Department of Psychiatry
Bioinformatics Graduate Program
University of Michigan Medical School
2017 Palmer Commons
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EDUCATION

- 1976-1977 St. John's College; Annapolis, MD (Major: Classical Studies)
- 1980-1982 B.S. (Major: Biochemistry; Minors: Physics and Mathematics)
University of Michigan–Dearborn; Dearborn, MI
- 1982-1990 Ph.D. (Cellular and Molecular Biology: Biophysics Concentration)
Advisor: Professor John P. Langmore
Dissertation Title: “Chromatin Fibers are Left-handed Double Helicies”
University of Michigan; Ann Arbor, MI

PREDOCTORAL TRAINING

- 1982-1995 National Institutes of Health Predoctoral Fellowship
Cellular and Molecular Biology (CMB) Training Program: Biophysics
Concentration
Mentors: Professors John P. Langmore and Martha L. Ludwig
University of Michigan Medical School; Ann Arbor, MI

POSTDOCTORAL TRAINING

- 1990-1991 NIH Postdoctoral Fellowship
Developmental Biology Training Program
Mentors: Professors Bruce M. Carlson and Michael J. Welsh
University of Michigan Medical School; Ann Arbor, MI
- 1991-1993 NIH Postdoctoral Fellowship
Chemical and Hearing Senses Training Program
Mentors: Professor Richard A. Altshuler and David J. Anderson
Kresge Hearing Research Institute
University of Michigan Medical School; Ann Arbor, MI

SENIOR POSTDOCTORAL TRAINING

1998 CNS Anatomy Course, St. Hugh's College, University of Oxford (UK)

ACADEMIC APPOINTMENTS

1991-1993 Adjunct Lecturer, Department of Biology
University of Michigan

1995-1998 Assistant Professor, Department of Anatomy and Cell Biology
University of Michigan Medical School

1997-2000 Assistant Professor, Graduate Program in Medical Illustration
University of Michigan School of Art and Design

1997-2003 Visiting Assistant Professor, Optical Engineering (with Professor Emmett Leith)
Electrical Engineering and Computer Science (EECS)
College of Engineering
University of Michigan

1998-2003 Assistant Professor, Department of Cell and Developmental Biology
University of Michigan Medical School

1998-2003 Assistant Professor and Founding Member
Center for Biologic Nanotechnology
Department of Internal Medicine, Division of Allergy and Immunology
University of Michigan Medical School

2003- Associate Professor, Biomedical Informatics
Department of Psychiatry and Comprehensive Depression Center
University of Michigan Medical School

2003- Associate Professor
Michigan Institute for Nanotechnology for Medicine and Biology (M-NIMBS)
Department of Internal Medicine, Division of Allergy and Immunology
University of Michigan Medical School

2003- Visiting Associate Professor of Computer Science and Engineering (CSE
Division)
Electrical Engineering and Computer Science (EECS)
College of Engineering
University of Michigan

2003-2005 Visiting Associate Professor of Optical Engineering (with Professor Emmett
Leith)
Electrical Engineering and Computer Science (EECS)
College of Engineering
University of Michigan

2005- Associate Professor, Bioinformatics and Computational Biology

Bioinformatics Graduate Program
Center for Computational Medicine and Biology (CCMB)
University of Michigan Medical School

RESEARCH APPOINTMENTS

1994-1995 Research Investigator, Department of Anatomy and Cell Biology

ADMINISTRATIVE APPOINTMENTS

2000-2001 Academic Liaison, Research and Instructional Computing for the Health Sciences; Office of the Chief Information Officer (CIO)
University of Michigan

2001 Interim Director, Michigan Center for Biological Information (MCBI)
Office of the Vice President for Research (OVPR)
University of Michigan

2001-2006 Director, Michigan Center for Biological Information (MCBI)
Office of the Vice President for Research (OVPR)
University of Michigan
(Absorbed into the UM Center for Computational Medicine and Biology, CCMB, in 2006)

2003-2006 Director, Biomedical Informatics Core
Department of Psychiatry and Comprehensive Depression Center
University of Michigan Medical School

2005- Section Head, Biomedical Informatics
Department of Psychiatry
University of Michigan Medical School

2005- Associate Director and Co-founder (with Gilbert Omenn)
UM Center for Computational Medicine and Biology (CCMB)
University of Michigan Medical School

2006- Director of Information Technology (IT)
Department of Psychiatry
University of Michigan Medical School

INDUSTRIAL POSITIONS

1995-1997 Director, Biomedical Imaging Programs
Environmental Research Institute of Michigan (ERIM); Ann Arbor, MI

RESEARCH INTERESTS

- 1. ‘Integrative Biomedical Informatics’ and ‘Translational Bioinformatics’:** This research thrust is leading to increased understanding of systems models and mechanisms

of human health and disease, and will contribute to our understanding of the basis of 'individualized medicine'. These new disciplines involve integration of diverse bioinformatics data-types and information bases into disease-specific models and networks, allowing a researcher to explore the systems properties and complexity of biological and biomedical systems. This relies heavily on computer and information sciences, biostatistics, and bioinformatics. Several very fruitful collaborations across campus and the nation are already developing because of this work, being demonstrated initially with collaborators in the genetic heterogeneity of T2 diabetes mellitus (Boehnke, Scott), T1 diabetes complications of the peripheral nerves and of nephrons (Feldman, Kretzler), prostate cancer progression and gene fusion events (Chinnaiyan, Hood), and bipolar spectral disorders (McInnis). Gil Omenn is my major collaborator in these "driving biological problem" (DBP) projects. This integrative approach should also considerably speed discovery and validation of new and unexpected co-morbidities indicating shared pathways and mechanisms.

This is a new research thrust for me, started in the last four years, and is already quite productive, leading to several significant team-science based grant and contract activities I lead. The major efforts are 1) the NIH National Center for Integrative Biomedical Informatics, NCIBI.org, and 2) the Biomedical Informatics Program of the UM Clinical and Translational Sciences Award (CTSA) in the Michigan Institute for Clinical and Health Research (MICHHR).

Future clinical research application foci includes studying the co-morbidity of depression(s) and bipolar spectral disorder(s) with several other diseases, syndromes, and behaviors; including T2 diabetes, heart disease, cancer(s), cigarette smoking and drug abuse. My Co-I role as informatics lead in the NIH-NHLBI "Re-Engineering the Clinical Research Network" contract has helped to deliver a prototype IT/clinical informatics system called the "Honest Broker" to integrate diverse elements of clinical research records to study disease co-morbidities in a HIPPA compliant manner.

An overall goal of this thrust is to unify stratified and classified phenotypes of human research participants, leveraging the electronic patient record, with integrated and personalized molecular information. It is hoped this approach will allow for the diversity and variation of human health and disease to be better understood.

- 2. Computational Multiscale Modeling and Simulation of Macroscopic and Microscopic Biological Systems:** This research thrust has two components: 1) A 'macroscopic' Human Systems Biology (HSB) modeling and simulation thrust, building from earlier work on the NIH Visible Human Project (Anatomy), and the DARPA Virtual Soldier Project (Physiology, Function, Pathology); and 2) A 'Microscopic' cellular systems approach to further understand the hierarchal nature of the structure, function, and dynamics of the eukaryotic chromatin fiber. These are both long-standing research interests, and both involve multiscale theory, ontological descriptions machine learning for extension and linkage to other informational components, cutting-edge Integrative Biomedical Informatics, and experimental verification.

For the macroscopic HSB, future work will focus on integrating the nervous system in health and disease into existing human systems models which have ignored the nervous systems thus far (i.e. neither the Visible Human nor the Virtual Soldier have a brain or

integrated nervous system, central or peripheral). This work will take advantage of my background in advanced optical imaging and image processing. Additional aspects will involve modeling structural variation and uncertainty, and also the development of novel web portals to disseminate the work and build a world-wide community. This latter goal is already starting, in partnership with the Physiome project and the existing Visible Human collaboratory I started 10 years ago.

For the microscopic chromatin work, a bioinformatics approach integrating the genomics, transcriptomics, proteomics, and cellular systems biology layers will help to provide models of “active” and “inactive” chromatin substrates. ChIP-chip data from public databases such as the ENCODE Project, and from bioinformatics-informed experiments, will be used to provide initial conditions for modeling nucleosomal placement and occupancy. A major theme will be to understand the topological aspects of chromatin in the nucleus (in situ), modeling connections to the nuclear matrix and scaffold elements (MARs and SARs), and using algorithms to model the torsional and structural changes implicated by sequence and connection-state to the matrix and/or scaffold. The major goal will be the continued development and testing of the multiscale theory of chromatin “under tension” to understand transcriptional regulatory network (TRN) complexes, the transition between interphase and metaphase states, and other biologically interesting dynamics. This work is being done in collaboration with mathematician Daniel Burns, and several well-known experimental collaborators.

- 3. Interdisciplinary Team Science.** I am a natural leader of interdisciplinary science teams which include combinations of experts from biology, medicine, bioinformatics, computer science, information science, bioengineering, mathematics, statistics, systems modeling, and complexity science. I will continue to pursue ‘big science’ and ‘small science’ in this fashion, collaborating with experts from diverse fields of knowledge related to research thrusts 1 and 2. I will also continue to teach interdisciplinary science at the graduate level, using bioinformatics, computational biology, and clinical informatics as touchstones.

GRANT/CONTRACT SUPPORT

Current

1/01-8/08 GR-238 (Athey, Brian D.)
Michigan Economic Development Corporation (MEDC)
“The Michigan Center for Biological Information (MCBI)”

The major goal of this project is to provide statewide bioinformatics and computational biology capabilities to the Michigan Core Technology Alliance infrastructure partners and institutions.

Role: PI \$10.3M Total Costs.
Now in no-cost extension phase.

9/04-9/07 N01-LM-3-3512 (Dev, Parvati)
National Institutes of Health - NLM

Advanced Network Infrastructure for Distributed Learning and Collaborative Research (HAVnet).

The major goal is establishing an Internet-based collaboration medical education teaching capability as part of the NLM SII program: subcontractor to Stanford University.

Role: PI, subcontract. \$121K Total Costs.

No-cost extension until Aug. 2007.

10/04-12/07 BAA-RM-04-23 (Clauw, Daniel)
National Institutes of Health - NHLBI
Michigan Clinical Research Collaboratory (MCRC): An Integrated Academic-Community Research Enterprise.

The major goal of this contract is to develop an “Honest Broker” system which will allow for the interaction of several distinct domains of the translational research medical record.

Role: Co-I \$3.05M Total Costs.

No-cost extension until Dec, 2007.

1/05-4/09 2 R01 AI 37141 (Baker, James R. Jr.)
National Institutes of Health-NIAID
Apoptosis in Thyroiditis.

The major goal of this effort is to provide bioinformatics support for Dr. Baker’s project.

Role: Consultant \$1.7M Total Costs.

9/05-8/10 1 U54 DA021519-01A1 (Athey, Brian D.)
National Institute of Health
National Center for Integrative Biomedical Informatics (NCIBI)

Focus is biomedical informatics data integration and modeling, including advanced biomedical Information Retrieval (IR) to accelerate NIH-funded research in complex and chronic biomedical diseases. This is one of the seven NIH National Centers for Biomedical Computing (NCBC).

Role: PI \$18.7M Total Costs with additional \$1.5M cost-share.

Pending

9/07-9/12 U54 RR023422-01 (Clauw, Daniel)
NIH / NCRR
Michigan Institute for Clinical and Health Research (MICHHR)

Role: Co-I, Director of the Biomedical Informatics Program (BIP)

~ \$71.1M Total Costs.

8/07-7/12 1R01DK079084-01 Burant, Charles (PI)
National Institute of Health
“Using Systems Biology to Understand Islet Adaptation and Failure in Diabetes”

The goals of this project are to combine novel metabolomic analysis techniques with bioinformatics to identify the way in which pancreatic islets adapt to differences in nutrient mix and supply.

Role: Co-I ~\$2.64M Total Costs.

Recent

- 1998-1999 “University of Michigan Next Generation Internet Implementation to Serve Visible Human Datasets: Phase I.” NIH-National Library of Medicine Contract. **B.D. Athey**, PI; 15% effort; \$66K Direct Costs.
- 1999-2002 “Nanomolecular Therapeutics for Cancer.” National Cancer Institute Contract. J.R. Baker, Jr., PI; **B.D. Athey**, Co-I; 20% effort; Task 3 - Imaging Component, \$720K Direct Costs.
- 2002-2004 “Novel Technologies for Noninvasive Detection, Diagnosis of Cancer.” National Cancer Institute–National Institutes of Health. Imaging subproject. **B.D. Athey**, Co-I; 20% effort. \$339K Direct Costs.
- 1999-2003 “University of Michigan Next Generation Internet (NGI) Implementation to Serve Visible Human Datasets: Phase II”. NIH-National Library of Medicine (NLM) Contract #N01-LM-0-3511. **B.D. Athey**, PI; 50% effort. \$4.95M Direct Costs.
- 2002-2004 “MEDC 270—Development of a Comprehensive Simulation-based Computer Software System Environment for Designing DNA-based Microarrays.” Michigan Economic Development Corporation; **B.D. Athey**, PI; 0% effort; \$52K Direct Costs.
- 2003-2006 BAA 02-03 Addendum 4. The Virtual Soldier. “Core Development Integration and Demonstration of the DARPA Virtual Soldier.” Defense Advanced Research Projects Agency. Cooperative Agreement Contract W81XH-04-0012. **B.D. Athey**, PI; 50% effort. Phase I. 20 months. \$9.96M Direct Costs.

Past

- 1992-1994 “Further Development of the Laser Scanning Confocal Microscopy/Digital Microscopy and Scientific Visualization Facility.” University of Michigan Office of Vice President for Research. **B.D. Athey** and D.J. Anderson, Co-Is; 0% effort; \$90K Direct Costs.
- 1993-1995 “Cellular Pathophysiology of Acute Renal Failure.” NIH-RO1. J.M. Weinberg, PI; **B.D. Athey**, Co-I; 5% effort. \$50K annual Direct Costs.
- 1993-1994 “An Image-Based Repository of Bio-Medical Imagery.” NIH/NLM HPCC Demonstration Project. NIH-RO1. W.B. Panko, PI; **B.D. Athey**, Co-I; 20% effort; \$200K Direct Costs. (2 of 3 years: PI moved).
- 1994-1995 “Development of Data Processing Methodology for the Visible Human/Embryo Projects I: Fourier Encoding of Contours.” Advanced Research Projects Agency (ARPA). **B.D. Athey**, PI; 20% effort; \$25K Direct Costs.
- 1994 “Feasibility Study of Sorbinil-Treated Sural Nerve Biopsies.” B.M. Carlson, PI; **B.D. Athey**, Co-I; 10% effort; \$100K Direct Costs.
- 1994-1995 “The Integration of Kodak Photo CD Technology into a Modern Biomedical Digital Imaging Environment.” **B.D. Athey**, M. Pao, and A. Warner, Co-Is; 0% effort; \$25K Direct Costs.

- 1994-1995 “Scalable System for Nerve Biopsy Analysis.” Hoffman-La Roche, LTD (Toronto, Canada). B.M. Carlson, PI; **B.D. Athey**, Co-I; 20% effort; \$1.56M Direct Costs.
- 1994-1996 “Center for Neural Communication Technology.” NIH-P41. D.J. Anderson, PI; **B.D. Athey**, Co-I; 5% effort; Project 3. \$95K Direct Costs.
- 1994-1996 “Development and Demonstration of a Networked Telepathology 3-D Imaging, Databasing and Communication System: Phase I.” Advanced Research Projects Agency (ARPA). **B.D. Athey**, PI; 25% effort; \$420K Direct Costs.
- 1995-1998 “AASERT Graduate Fellowship in Advanced Biomedical Imaging.” Advanced Research Projects Agency (ARPA). **B.D. Athey**, PI; 0% effort; \$114K Direct Costs.
- 1997 “Feasibility Assessment of Tissue Engineering, Regeneration and Fabrication Technology for Defense Purposes.” The Potomac Institute for Policy Studies. **B.D. Athey**, PI; 40% effort; \$50K Direct Costs.
- 1998 “Prospect: The Prostate Cancer Decision Support Architecture.” Internal Graduate Student Award from the University of Michigan NIH Prostate SPORE Grant, K.J. Pienta, PI; **B.D. Athey**, Co-I; 0% effort; \$5K Direct Costs.

HONORS AND AWARDS

- 1982-1995 National Institutes of Health Predoctoral Fellowship
Cellular and Molecular Biology (CMB) Training Program: Biophysics Concentration
Mentors: Professors John P. Langmore and Martha L. Ludwig
University of Michigan Medical School; Ann Arbor, MI
- 1990-1991 National Institutes of Health Postdoctoral Fellowship
Developmental Biology Training Program
Mentors: Professors Bruce M. Carlson and Michael J. Welsh
University of Michigan Medical School; Ann Arbor, MI
- 1991-1993 National Institutes of Health Postdoctoral Fellowship
Chemical and Hearing Senses Training Program
Kresge Hearing Research Institute
Mentors: Professor Richard A. Altshuler and David J. Anderson
University of Michigan; Ann Arbor, MI
- 2000-2004 Peace Fellowship
Mentor: Henry C. Kelly
Federation of American Scientists (FAS.org); Washington, D.C.
- 2005 Conference Co-Chair; Intelligent Systems for Molecular Biology (ISMB) 13th
Annual Meeting of the International Society for Computational Biology (ISCB)
Detroit, MI.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- 1982-1990 Microscopy Society of America

- 1994- Optical Society of America (Ann Arbor, MI branch)
- 1996- Friends of the National Library of Medicine (NLM)
- 1997-2003 American Association of Anatomists (AAA)
- 2000- The Society for Computer Simulation International (SCS)
- 2004- American Medical Informatics Association (AMIA)
- 2005- International Society for Computational Biology (ISCB)

EDITORIAL ADVISORY BOARD

- 2005- Biomedical Computation Review. Quarterly journal supported by the National Institutes of Health through the NIH Roadmap for Medical Research, Grant U54 GM072970.

PEER-REVIEW SERVICES

- 1995-1999 Ad hoc Reviewer: Office of Naval Research, Defense Advanced Research Projects Agency (DARPA)
- 2000 Reviewer, Army Research Office (ARO)
- 2000 Reviewer/Panel Member, Bioengineering Research Partnership Grants, Special Study Section, National Eye Institute/National Institutes of Health
- 2001 Reviewer/Panel Member, Bioinformatics Study Section, ITR Small Grant Awards, National Science Foundation
- 2002 Reviewer/Panel Member, Washington Advisory Group (WAG) LLC, Missouri Life Science Research Capacity Contracts Program
- 2002-2004 Reviewer/Panel Member, NIH Computational Biology Study Section ZRG1 SSS-H (01), Center for Scientific Review, National Institutes of Health
- 2003-2005 Reviewer/Panel Member, NIH Neuroinformatics Study Section ZRG1 SSS-E (55), Center for Scientific Review, National Institutes of Health
- 2003-2005 Reviewer/Panel Member, NIH Human Brain Project Study Section Center for Scientific Review, National Institutes of Health
- 2003- Reviewer/Panel Member, Integration of Middleware, NSF-NMIA Panel Review, National Science Foundation
- 2003- Reviewer/Panel Member, NIH Biomedical Computing (BISTI) Review Panel, Center for Scientific Review, National Institutes of Health
- 2005-2006 Ad hoc Reviewer, Army Research Office (ARO)
- 2007 Special Emphasis Panel Member, Review of RFA DE-07-009. National Institute of Dental & Craniofacial Research
- 2007 Pilot award reviewer, Michigan Institute for Clinical and Health Research (MICHHR).

TEACHING ACTIVITIES

Course Instructor

- 1990-1993 Biology 516 and 416: “Biophysical Chemistry.” University of Michigan, Department of Biology. Course directed toward first year graduate students and undergraduate seniors.

- 1998 University of Michigan School of Information 608: “Medical Informatics: Theory and Practice.” Designed and taught jointly with A.J. Warner.
- 1997-1998 School of Art and Design 622: “Biomedical Graphical Computing for Artists.” Assisted by A. Ade (GSI).
- 2007- Mathematics 547: “Sequence Analysis”; D.M. Burns, Course master; B.D. Athey, instructor giving 6-8 lectures on chromatin structure and mechanics.

Course Master

- 2005-2006 Bioinformatics and Computational Biology 526; Rigorous introductory graduate course on fundamental concepts; 4 credit hours (including laboratory).
- 2007- Bioinformatics and Computational Biology 527. Reworked curriculum of BI 526 for BI concentrators and quantitatively-focused graduate students; 4 credit hours (including laboratory).
- 2008- Bioinformatics and Computational Biology 555: Clinical Informatics. Starts Winter Term 2008; 3 credit hours.

Graduate Short-Course

- 1991 Anatomy and Cell Biology 850: “A Short-Course in Confocal Microscopy.” A week-long graduate-level introduction to confocal microscopy and related computer image analysis and display techniques.

Graduate Lectures

- 1991-1993 Anatomy and Cell Biology 530: “Cell Biology.” Invited lectures on “The Structure of Chromatin” and “The Cell Nucleus.”
- 1992-1994 Engineering 503: “Scientific Visualization.” Invited lecturer on “Visualizing Data Obtained from Microscopes.” College of Engineering graduate-level course.
- 1993-1995 Anatomy and Cell Biology 580: “Morphological Methods of Microscopy.” Invited lecturer on “Basic Confocal Imaging: Theory and Practice.” Directed towards second-year health sciences graduate students.

Grand Rounds

- 1996 “Biomedical Diagnostic Imaging.” University of Michigan Comprehensive Cancer Center Grand Rounds, University of Michigan Hospital.
- 2006 “Biomedical Informatics in the 21st Century and its Potential to Transform Medical Research and Practice.” University of Michigan Medical School, Department of Psychiatry Grand Rounds. (Oct. 18, 2006).

Departmental Seminars

- 1991 “Three-dimensional Visualization of Cells and Tissues Using the Confocal Microscope.” Department of Anatomy and Cell Biology.
- 1992 “Confocal Microscopy.” Department of Surgery.
- 1992 “The Light Microscopic Study of Tissues.” Nephrology Division, Department of Internal Medicine.
- 1995 “Medical Informatics, Telemedicine, and the Need for Medical Information Specialists—Opportunities and Challenges.” University of Michigan School of Information.
- 1996 “The Evolution of Microscopy as an Information Science.” University of Michigan School of Information.
- 1998 “Microscopic Holography, Holography, and Range Imaging: Recent Results and Future Biological Applications.” University of Michigan Department of Anatomy and Cell Biology.

- 2005 “The DARPA Virtual Soldier Project: Concept and Demonstration.”
Bioinformatics Graduate Seminar (April, 2005)
- 2006 “The National Center for Integrative Biomedical Informatics (NCIBI).”
Bioinformatics Graduate Program Seminar (Sept. 13, 2006).
- 2007 “Computational and Informatics Approaches to Understanding Physiological and
Anatomical Changes During Acute Ballistic Trauma.” Research Discussion.
Department of Anesthesiology, University of Michigan (May 16, 2007).

Medical School/Hospital Administration

- 2001 “Innovative Technologies for Academic Health Centers.” Given twice to: The
Health System Executive Committee and the UMHS Information Technology
Strategic Advisory Committee (IT-SAC).
- 2001 “Life Sciences and Bioinformatics Activities in Michigan: Overview and
Strategic Considerations.” Invited Presentation to the University of Michigan
Health System CIO Executive Committee.
- 2003 Michigan Center for Biological Information (MCBI) self-study report given to:
1) The University of Michigan Medical School Administration (Dean and
Associate Dean for Research) and the UM VP of Research;
and 2) an invited external review committee of bioinformatics experts.

High School Student Mentoring

- 1998-1999 K.K. Pandya (Greenhills School; Ann Arbor, MI)
- 2001-2003 B. Root (Pioneer High School; Ann Arbor, MI)
- 2001-2002 D. Welsh (Huron High School; Ann Arbor, MI)

Undergraduate Student Mentoring

- 1991-1993 A. Chien (Department of Physics; with J.M. Weinberg)
- 1998-1999 J. Dixon (Gallaudet University Fellow)

Undergraduate & Graduate Student Group Mentoring

- 2001-2003 Faculty Leader: University of Michigan Student Chapter, Pugwash International
(with support from the University of Michigan Life Sciences Society and Values
Program).

Masters Student Mentoring

- 1993-1994 A.B. Mackersie (M.S., EECS; with D.J. Anderson)
- 1994-1995 P. Ray (MLS, School of Information and Library Studies; with M. Pao and A.J.
Warner)
- 1994-1995 P.V. Ketty (M.S., EECS; with D.J. Anderson)
- 1995-1996 J.S. Glick (M.F.A., Medical Illustration; with J.L. Lillie)
- 1995-1996 J. Song (MSI, School of Information; Miranda L. Pao Medical Informatics
Student Fellowship; with A.J. Warner)
- 1995-1996 J. Williams (MSI, School of Information; Digital Information Associate Fellow;
with A.J. Warner)
- 1995-1996 G. Hsu (M.S., Physiology)
- 1995-1997 H. Fogel (M.S., Biological Sciences)
- 1996 M.A. Nolte (MSI, School of Information; with A.J. Warner)

1996 P. McClay (MSI, School of Information; with A.J. Warner)
 1996-1999 A.S. Ade (M.S., Biological Sciences)
 2001-2003 G. Durka-Pelok (M.S., Information Sciences; with T. Weymouth)
 2006- S. R. Pulagiri (Bioinformatics; with D.M. Burns)

Doctoral Student Mentoring

1991–1993 D.-Y. Shieu (Ph.D., EECS; D. J. Anderson, Chair; B.D. Athey, cognate member)
 1998-2000 B.S. Hoover (Ph.D., EECS; E.N. Leith, Chair; B.D. Athey, cognate member)
 1998-2003 K.D. Mills (Ph.D., EECS; E.N. Leith, Chair; B.D. Athey, Co-Chair and cognate member)
 1999-2004 D. Wagner (Ph.D., EECS; F. Jahanian, Chair; B.D. Athey, cognate member)
 2000-2003 N. Sowapotowak (Ph.D., EECS; J. Fessler, Chair; B.D. Athey, cognate member)
 2001-2003 A. Zimmerman (Ph.D., School of Information; M. Hedstrom, Chair; B.D. Athey, cognate member)
 2001-2004 T.J. Hacker (Ph.D., EECS; B. Noble, Co-chair; B.D. Athey, Co-Chair)
 2001-2006 W. Chein (Ph.D., EECS; T. Norris, Chair; B.D. Athey, cognate member; E.N. Leith, Chair, deceased)
 2003–2005 J. Han (Ph.D. Pre-Candidate, EECS; F. Jahanian, Chair; B.D. Athey, cognate member)
 2003- S. Subramanian (Ph.D. Candidate, Bioinformatics; B.D. Athey, Chair)
 2003- Y.J. Kim (Ph.D. Candidate, EECS; J. Patel, Chair, B.D. Athey, Co-Chair)
 2005- C. Santos (Ph.D. Candidate, Bioinformatics; B.D. Athey, Co-Chair with D.J. States)
 2005- Y. Tian (Ph.D., Candidate, Computer Science and Engineering; B.D. Athey, Co-Chair with J. Patel)
 2006- P. Harrington (Ph.D. Pre-Candidate, Bioinformatics; B.D. Athey, Co-Chair with A.O. Hero)
 2006- S. Sarntivijai (Ph.D. Pre-candidate, Bioinformatics; B.D. Athey, Co-Chair with D.J. States)

Postdoctoral Scholar Mentoring

1991 Dr. G. Avinash (Ph.D., Bioengineering, University of Michigan; with A.L. Nuttal)
 1993-1994 Dr. C. Viguie (Ph.D. Nutrition, University of California, Berkeley; with B.M. Carlson)
 1994-1995 Dr. G.D. Guttman (Ph.D., Biophysics; University of California–Berkeley)
 1999-2002 Dr. I. Lee (Ph.D., Biophysics, Korean National University; with J.R. Baker, Jr.)
 2002-2005 Dr. A.D. Boyd (M.D., University of Texas Southwestern)
 2003 Dr. A.A. Dombkowski (Ph.D., University of Michigan)

Fellow and House Officer Mentoring

2005- Dr. J. Norman (M.D., Ph.D., Stanford University); Biomedical Informatics
 2005 Dr. D. Hanauer (M.D., Harvard Medical School); Biomedical Informatics

Visiting Faculty Collaborators (On Sabbatical or Visiting Professors)

1993 G.J. Brakenhoff, Ph.D. (Professor, University of Amsterdam)
 1996 C.E. Schutt, Ph.D. (Professor, Department of Chemistry, Princeton University)

- 1997 A.J. Warner, Ph.D. (Associate Professor; University of Michigan, School of Information)
- 2002 B. Orr, Ph.D. (Professor, Department of Physics, University of Michigan)
- 2002 D.R. Hilbelink, Ph.D. (Professor, Department of Anatomy, University of South Florida)
- 2004 K.V. Mardia, Ph.D. (Senior Research Professor, University of Leeds)

COMMITTEE AND ADMINISTRATIVE SERVICES

International

- 2000-2002 Biological Weapons Working Group, Federation of American Scientists (FAS). Active participant on the FAS Biological Weapons and Toxin Convention (BWTC) treaty negotiation team - an NGO representative to the Geneva Convention.
- 2005 Conference Co-Chair; Intelligent Systems for Molecular Biology (ISMB) 13th Annual Meeting of the International Society for Computational Biology (ISCB); Detroit, MI.
- 2007 Steering Committee – IEEE 7th International Symposium on Bioinformatics and Bioengineering.

National

- 1988 Special advisory panel to the National Institute for Dental Research to formulate a plan for an Internet-based head and neck anatomy atlas. Invited member. Organized by the American Association of Anatomists (AAA).
- 2000 Discipline Co-leader - Health Sciences Editorial Board for Multimedia Educational Resources for Learning and Online Teaching (MERLOT.org)
- 2002- University of Michigan Representative, Coalition for Academic Scientific Computing (CASC); Washington, D.C.
- 2006 Integrated Research Team (IRT), U.S. Army Medical Research and Materiel Command (USAMRMC) and Telemedicine and Advanced Technology Research Command (TATRC). Invited participant and speaker.
- 2006 Panel member, Computing Research Association (CRA)-NIH Computing Research Challenges in Biomedicine Workshop, National Institute for General Medical Science (NIGMS), June 15-16, 2006. The object of this workshop was to develop a list of action items that will have impact within the NIH and computing communities.
- 2007- PubMed Plus: New Directions in Publishing and Data Mining. Society for Neuroscience leadership conference. Working Group 1 – “Capturing Experimental Design Metadata in ways that Facilitate Data Mining.” June 18-19, 2007.

University of Michigan

- 1997-1999 Media Union Virtual Reality Committee.
- 2000-2001 Member, the University of Michigan Presidential Information Revolution Commission (PIRC). Infrastructure Subcommittee Co-Chair, Research Subcommittee.
- 2000 University of Michigan/IBM Life Sciences Liaison.

- 2001-2005 Michigan GRID for Research Infrastructure and Development (M-GRID)
Co-founder with H.A. Neal and W.R. Martin, and Executive Committee member.
- 2005 UM Presidential Advisory Group (PAG). Invited speaker and participant.
October, 2005.
- 2005- Member, Center for Computational Medicine and Biology (CCMB) Executive
Committee.
- 2005- Chair, NIH National Center for Integrative Biomedical Informatics (NCIBI)
Executive Committee.
- 2006- Member, MSCRIBE Advisory Council.
- 2006- Co-Chair (with Sharon Glozter), University of Michigan Committee on Research
Cyberinfrastructure, sponsored jointly by the Office of the VP Research (OVPR)
and Office of the Vice Provost for Academic Information.
- 2007- Member, UM Steering Committee, Institute for Complex Adaptive Matter
(ICAM).

University of Michigan Medical School/Health System

- 1992 Fellowship Selection Committee, Chemical and Hearing Senses Training Grant,
Kresge Hearing Research Institute.
- 1997-1999 Medical School Faculty Information Technology Committee.
- 1998-1999 Diagnostic Imaging Advisory Committee.
- 2000-2002 Information Technology Faculty Advisory Committee (IT-FAC).
- 2004 Biomedical Informatics Design Team Member. Lead Designer reporting to Senior
Associate Dean for Research and Graduate Studies and UM Associate VP
Research. Led to creation of Center for Computational Medicine and Biology
(CCMB) with Co-founder Gil Omenn.
- 2004- UM Depression Center Steering Committee.
- 2005- Member, UM Depression Center Clinical Informatics Research Group.
- 2005- Non-voting alternate member, Operating Committee for the Endowment for the
Basic Sciences (EBS).
- 2005- Member, First-year Curriculum Working Group, Bioinformatics Graduate
Program, Center for Computational Medicine and Biology (CCMB).
- 2006- Member, UMHS Information Technology Strategic Advisory Committee (IT-
SAC).
- 2006- Founder and Leader (with Gil Omenn), Health Informatics Research Organization
(HIRO) coordinating group for clinical informatics research activities at UM.
- 2007- Co-Chair (with Glenn Hiller), UMMS Coordinating Research Information
Technology (CRIT) Committee.
- 2007- Member, MICHR Operating Committee.

Department—University of Michigan

- 1995-2001 Cell Biology Lab (CBL) and Microscopy and Image Analysis Laboratory (MIAL)
Committee.
- 1999 Anatomy Teaching Laboratory Committee.
- 2005- Psychiatry Department Senior Leadership Council (PSLC).
- 2006- Chair, Department of Psychiatry IT Committee.

CONSULTING POSITIONS

- 1988 Virogen Laboratories, Inc.; Ann Arbor, MI
Automated, Molecular Biology-based Viral Detection Systems
- 1993-1995 Convex Computer Corporation; Richardson, TX
Medical Image Processing, Storage and Retrieval
- 1995 I-MED Link, Inc.; Bethesda, MD
Internationally Distributed Telemedical School Networking
- 1995-1996 Hoffmann-La Roche, LTD; Toronto, Canada
Medical Image Processing
- 1996 Meridian Instruments, Inc.; Okemos, MI
Laser Scanning Confocal Microscopy
- 1997 LaBat-Anderson Consulting, Inc.; McLean, VA
Secondary Reviewer for Medical Free-Electron Laser Grants Program Office of
Naval Research
- 1997-1999 Potomac Institute for Policy Studies; Arlington, VA
Technology Consultant for DARPA Unconventional Pathogen Counter-measures
Program
- 1999-2000 Innervision Imaging, Inc.; Farmington Hills, MI
Microscopic Laparoscopy
- 2000 Telemed, Inc.; Annapolis, MD
High Performance Medical Modeling and Simulation for Surgical Trauma
Applications
- 2000 Ethereal Technologies, Inc.; Ann Arbor, MI
3-D Display Technology
- 2001-2003 Altarum Institute; Ann Arbor, MI
Novel Medical and Life Sciences Applications
- 2002 U.S. Army Medical Research and Materiel Command; Ft. Detrick, MD
CBNR Responsiveness Training Network Architecture
- 2004 University of Hawaii; Honolulu, HI
Bioterrorism and Computer Modeling
- 2004-2005 University Clinical, Education and Research Associates (UCERA)
Biophotonics and Biosensors
University of Hawaii; Honolulu, HI

VISITING PROFESSORSHIPS, SEMINARS, AND EXTRAMURAL INVITED PRESENTATIONS

- 1992 “Envisioning Information.” Invited participant in the Prairie Festival, The Land Institute. Salina, KS. May 1992. Institute Faculty - Visiting Professorship.
- 1993 “A Systems Approach to Visualizing Confocal Microscopy Data in Three Dimensions.” Department of Biomedical Engineering, University of California–San Diego. March 1993. Extramural departmental seminar.
- 1993 “An Efficient Surface Rendering Technique Using Fourier Descriptors to Visualize Three-Dimensional Biomedical Image Data Sets.” IEEE 36th Midwest Symposium. August 1993. Invited extramural presentation.
- 1994 “Visualizing 3-D Biological Structure Using the Confocal Microscope.” Optical Society of America, Michigan Chapter. Ann Arbor, MI. Invited extramural presentation.

- 1994 "Confocal Microscopy of Tissues and Cells of Clinical Interest." Department of Biology, Oakland University; Rochester, MI. Extramural departmental seminar.
- 1994 "A Networked Computer System to Visualize Reconstructed Embryos in Three Dimensions." NICHD Workshop on Computer-Assisted Embryo Imaging. National Institutes of Health. May 1994. Invited extramural presentation.
- 1995 "A Modern Imaging Collaboratory for Anatomy." FASEB meeting, Atlanta, GA. May 1995. Plenary speaker. Invited extramural presentation.
- 1996 "Medicine and Terabits." Presenter, University of Michigan College of Engineering/State of Michigan Joint Conference (with Wistra Institute/Republic of Germany) on Ultra Highspeed Optical Networks. October 1996. Invited extramural presentation and guest faculty.
- 1996 "Using the Visible Human as an Image Database Locator." National Library of Medicine First Annual Conference on the Visible Human. October 1996. Invited extramural presentation.
- 1996 "Tissue Imaging." Defense Science Research Council. November 1996. Invited extramural presentation.
- 1996 "Semi-Automated Electron Microscopy Service for Pathology." Guest Faculty Member/Plenary Lecturer, First Annual Conference on Anatomic Pathology Informatics, Imaging, and the Internet. University of Pittsburgh Medical Center. November 1996. Visiting Professorship and conference co-founder (now in 10th year).
- 1997 "GIS and Medicine: New Frontiers." A half-day workshop organized by B.D. Athey and given to the University of Michigan research community. Funded by the University of Michigan Office of the Vice-President for Research and the Rackham School of Graduate Studies. March 1997. Organizer and visiting Professorship.
- 1997 "Multi- and Hyper-spectral Geo-sensing Capabilities Transferred to the Microscope and Mesoscope." First International Conference of Multispectral Microscopy. Warner-Lambert, Parke-Davis Research Division. June 1997. Invited extramural presentation and guest faculty.
- 1997 "Visualizing the Patten Embryological Collection." National Institute of Child Health and Development. October 1997. Invited extramural presentation.
- 1998 "Modeling of Biological Systems (MOBS)." Invited participant, course planning session. Woods Hole Marine Biological Laboratory. R. Silver, Course Director. Supported by the Burroughs Welcome Foundation. January and March 1998. Visiting Professorship.
- 1998 "The Visible Human Female WWW Browser and the Next Generation Internet (NGI)." 2nd Visible Human Conference, Bethesda, MD. October 1998. Invited extramural presentation.
- 1999 "A Virtual Reality System for Human Gross Anatomy Instruction." Medicine Meets Virtual Reality 7; San Francisco, CA. January 1999. Invited extramural presentation.
- 1999 "NGI Delivery of Visible Human Data in Support of Anatomy Training." Pittsburgh Supercomputing Center Speaker Series; Carnegie Mellon University; Pittsburgh, PA. April 1999. Invited extramural presentation.
- 1999 "Nanoscale Platforms for Therapeutic Delivery." Defense Sciences Research Council. September 1999. Invited extramural presentation.
- 1999 "High Performance Landmark Driven Navigation of the Visible Human." AIPR, Cosmos Club, Washington, D.C. October 1999. Invited extramural presentation.

- 2000 “Visualization and Manipulation of Visible Human Datasets Using the Next Generation Internet (Internet2).” Metropolitan Washington Computer Assisted Surgery Society. March 2000. Invited extramural presentation.
- 2000 “Postmodern Anatomy and its Enabling Technologies.” First Annual Digital Human Workshop, National Library of Medicine. Member, Conference Organizing Committee and invited extramural presentation.
- 2000 “Visible Human Project Distributed Visualization.” with T.J. Hacker. NGI/NREN Workshop V, 'Gigabit Networking: The End-to-End View.' NASA Ames Research Center, Moffett Field, CA. August 14-16, 2000. This conference was organized by the White House Presidential Information Technology Advisory Committee (PITAC), and the NASA National Research and Education Network (NREN). Only NIH selectee. Invited extramural presentation.
- 2000 “Towards a Visible Human National Educational Collaboratory.” The Third Visible Human Project Conference. NLM, Bethesda, MD. Oct 6th, 2000. Invited extramural presentation.
- 2000 “Directed Nano-Dendrimeric Modeling and Simulation.” Talk given 3 times: 1) National Cancer Institute Unconventional Innovations Program (UIP) PI Meeting; 2) The Midwest Clinical Society (Chicago, IL), and 3) the BioMEMS and Biomedical Nanotechnology 2000 Conference, Columbus, OH; October 2000. Invited extramural presentations.
- 2000 “21st Century Pathology Informatics and Integration into the Emerging Hospital Information System.” American College of Pathology, San Diego, CA. October 2000. Keynote Address. Invited extramural presentation.
- 2001 “Account Allocations on the Grid.” First Global Grid Forum & European Data-grid Conference, Account Models Research Group. Amsterdam, Netherlands. March 4th - 9th, 2001. Invited extramural presentation.
- 2001 “Michigan’s Emerging Position in the Global Information Infrastructure for the Life Sciences.” Van Andel Research Institute. March 2001. Invited extramural presentation.
- 2001 “How to Move from Static to Something Moving End-to-End or The How? And Why? Of Infrastructure.” Internet2 National Meeting, Washington, D.C. April 2001. Invited extramural presentation.
- 2001 “Michigan-Based Imaging Capabilities to Respond to Terrorist Threats.” Private briefing given to Senator Carl Levin, Ranking Member: Senate Armed Services Committee. November 2001. Invited extramural presentation - Government.
- 2001 “Grid Computing Solutions for the Physical and Life Sciences.” SC2001 Sun HPC Consortium, Denver, CO. November 11, 2001. Invited extramural presentation.
- 2001 “A Methodology for Account Management in Grid Computing Environments.” SC2001 Grid 2001 Workshop, Denver, CO. November 12, 2001. Invited extramural presentation.
- 2001 “Application Responsibilities in End-to-End Network Performance.” SC2001 Internet2 End-to-End Performance Workshop, Denver, CO. November 15, 2001. Invited extramural presentation.
- 2001 “Maximizing End-to-End Network Performance.” High Energy/Nuclear Physics Internet2 Working Group, Ann Arbor, MI. October 5, 2001. Invited extramural presentation.
- 2002 “Deploying Scalable Information Infrastructure (SII) End-to-End: The Role of Middleware and Standards.” International Conference on Virtual Worlds and Simulation. San Antonio, TX. January 27-31, 2002. Invited extramural presentation.

- 2002 “Deploying Scalable Information Infrastructure (SII) End-to-End: The Role of Middleware and Standards.” U.S. Department of Defense ASBREM off-year TARA review. Baltimore, MD. February 13-14, 2002. Invited extramural presentation made to the Surgeon Generals of all the U.S Military Services - Government.
- 2002 “The End-to-End Performance Effects of Parallel TCP Sockets on a Lossy Wide-Area Network.” IEEE-CS/ACM International Parallel and Distributed Processing Symposium (IPDPS). April 2002. Invited extramural presentation.
- 2002 “Simplification and Diversity: An Ecosystem Mimic to the Rapid, Robust Scalable Information Infrastructure (SII) Deployment of CBNR Trauma Environments.” Special seminar to Dr. Robert Foster, Director of Biosystems, DDR&E, Undersecretary of Defense for S&T. April 2002. Invited briefing for White House input – Government.
- 2002 “How to Avoid Spaghetti While Scaling Just-in-Time Training Capabilities.” NASA/MITAC Conference on Just-in-Time Training in Medicine. Virginia Commonwealth University. May 13, 2002. Visiting Professorship.
- 2002 “The Michigan Center for Biological Information (MCBI).” Invited speaker. Michigan Life Sciences Corridor Biotechnology Symposium, Lansing, MI. May 14, 2002. Invited extramural presentation.
- 2002 “Bioinformatics and IT Infrastructure for the Life Sciences.” Invited speaker. CIMIT and the Harvard/MIT HST Program. Boston, MA. July 16, 2002. Visiting Professorship.
- 2002 “Experiences Using Web100 for Visible Human Testbeds.” Web100 Evaluator’s Workshop, Boulder, CO. Aug. 1, 2002. Invited extramural presentation.
- 2002 “UM BioGrid Update.” Given at Michigan Center for Biological Information (MCBI), to state-wide audience. Conference organizer. Sept. 17, 2002. Invited extramural presentation.
- 2002 “The Visible Human Today.” iGrid 2002 Conference. Amsterdam, The Netherlands. September 26, 2002. Plenary speaker. Invited extramural presentation.
- 2002 “Bioinformatics and Bioimaging IT Infrastructure: What is the MCBI and the CTA?” 1st Annual Conference of Pathology Bioinformatics, University of Michigan. November 13, 2002. Seminar.
- 2003 “Future Needs for Bioinformatics, Computational Biology, Bioengineering, and Biomedical Imaging Requiring Next Generation Supercomputing.” DARPA High Productivity Computing Systems (HPCS) Workshop. Arlington, VA. January 17, 2003. Invited extramural presentation - Government.
- 2003 “Future Needs for Bioinformatics, Computational Biology, Bioengineering, and Biomedical Imaging Requiring Next Generation BioGrids.” SURA Biogrid Workshop Research Triangle Park, NC. January 29, 2003. Visiting Professorship.
- 2003 “Future Needs for Bioinformatics, Computational Biology, and Health Sciences Informatics Requiring Next Generation BioGrids.” Tripler Army Medical Center (TAMC), Honolulu, HI. February 27, 2003. Invited extramural presentation - Government.
- 2003 “Optimizing H.P. Computing Grid Resources for the Bioterrorism Application.” U.S. Army DoD Pacific Command. Bioterrorism Retreat, Maui High Performance Computing Center (MHPCC). Maui, HI. March 1, 2003. Invited extramural presentation - Government.
- 2003 “Lessons Learned: 12 Years of the Visible Human at the University of Michigan. Invited Plenary panel talk. FASEB. April 18, 2003. Invited extramural presentation.

- 2003 “MCBI’s Plans: Biological Data Integration.” Michigan Center for Biological Information (MCBI) Retreat, Lansing, MI. August 20, 2003. Conference Organizer. Invited extramural presentation.
- 2003 “Next Generation Internet (NGI) Implementation to Serve Visible Human Datasets Phase II: Development of Test Beds.” NLM/NGI Visible Human Reverse Site Visit, Bethesda, MD. August 26, 2003. Invited extramural presentation.
- 2003 “Life Sciences Informatics Grids: Myth, Reality and Promise.” Scientific Computing Workshop - WSU: Plenary Lecture, Detroit, MI. September 19, 2003. Visiting Professorship.
- 2003 “Modeling and Simulation to Enhance Bioterrorism Preparedness.” BioTerrorism Summit, Honolulu, HI. October 20, 2003. Invited extramural presentation - Government.
- 2003 “Funding opportunities for Bioinformatics US Army OntoExpress.” USAMRMC Bioinformatics Workshop, Fort Detrick, MD. November 4, 2003. Invited extramural presentation - Government.
- 2004 “SEWG: Human Aided Information Processing Systems for Data Exploration, Analysis and Decision Making.” DARPA Systems Engineering Working Group, Palo Alto, CA. March 3, 2004. Invited extramural presentation - Government.
- 2004 “Information Technology Security as Intertwined with Privacy and Confidentiality in Biomedical Research” 12th annual University of Miami Conference, Clinical Ethics: Debates, Decisions, Solutions. April 16, 2004. Invited extramural presentation.
- 2004 “The DARPA Virtual Soldier Program: Presentation to members of the Michigan Congressional Delegation.” July 14, 2004. Invited extramural presentation - Government.
- 2004 “Challenges of HIPAA Regulations in Academic Biomedical Research, MedInfo 2004. Sept. 7-11, 2004. Invited extramural presentation.
- 2004 “Clinical Research Information Fabric: A Federated Clinical Research Infrastructure Approach.” A.D. Boyd, D.A. Junscher, K.A. Smith, A.C. Bliton, J.C. Ogden, D.A. Williams, B.D. Athey, J.F. Greden, and D.C. Clauw. Inventory and Evaluation of Clinical Research Networks (IECRN) Conference. Rockville, MD. May 31, 2006. Invited extramural presentation.
- 2004 “Walden: A Scalable Solution for Grid Account Management.” B.A. Kirschner, T.J. Hacker, W.A. Adamson, and B.D. Athey. Presentation at the 5th International Workshop on Grid Computing (GRID 2004). Pittsburgh, PA. November 8, 2004. Invited extramural presentation.
- 2005 “The Virtual Soldier Project.” B.D. Athey. Plenary Lecture. Medicine Meets Virtual Realty (MMVR). Invited extramural presentation. Keynote Address. January 27, 2005.
- 2005 “The Challenges of Big 'Science' and the Limits of the Individual.” IUPS Physiome Project. San Diego, CA, March 30, 2005. <http://nbc.net/physiome/schedule.htm> Visiting Professorship.
- 2005 “The DARPA Virtual Soldier Project and Human Systems Biology.” Computational Physiology: From Genome to Physiome. San Diego, CA. March 30, 2005. Visiting Professorship.
- 2005 “Biophotonics and Biosensors: Applications to Medicine - Lessons from Michigan.” Keynote address, Emerging Technology Seminar. University of Hawaii-Manoa, Honolulu, HI. April 14, 2005. Visiting Professorship.

- 2005 Opening and Closing Addresses. 13th International Society of Molecular Biology Annual Meeting. June 25-29, 2005. Conference Co-organizer; Invited extramural presentation.
- 2005 "The DARPA Virtual Soldier Program. A Multiscale Experiment, Modeling, Simulation R&D Program." US Army Research Office (ARO) Workshop - 'Multiscale Phenomenon: Experiment, Theory, and Modeling.' Closed strategy meeting. Army Research Office Headquarters. Research Triangle Park, Durham, NC. July 17, 2005. Invited extramural presentation - Government.
- 2005 "The Challenges of Big Science and the Limits of the Individual: Case Studies of the NLM Visible Human and the DARPA Virtual Soldier Projects." American Medical Informatics Association (AMIA). Washington, D.C. October 23, 2005. Invited extramural presentation.
- 2006 "The Virtual Patient, the Digital Human, and Integrative Biomedical Informatics." Medicine Meets Virtual Reality (MMVR-14). Long Beach, CA. January 26, 2006. Invited extramural presentation.
- 2006 "A Multiscale Experimental, Modeling and Simulation R&D Program." Society for Medical Innovation and Technology (SMIT). Asilomar, CA. May 11, 2006. Invited extramural presentation.
- 2006 "Multiscale Modeling, Systems Biology, and the Digital Human Project - Statistical Perspectives." Plenary Keynote Lecture. Leeds 25th Annual Statistical Research Workshop (LASR). University of Leeds, Leeds United Kingdom. July 4, 2006. Visiting Professorship.
- 2006 "Two Biomedical Research Paradigms and Emerging Issues." Science Commons Symposium at the National Academy of Sciences (NAS). Oct. 3, 2006. Invited extramural presentation.
- 2006 "The Emergence of Human Systems Biology and its Origins in the Visible Human Project." Plenary Keynote Lecture. Keck Center 16th Annual Research Conference. Texas Medical Center, Houston, TX. Oct 13, 2006. Visiting Professorship.
- 2006 "From the 20th Century to 'Flatland': Computational Medicine and Biology in the 21st Century." Presentation to IBM Research and Life Sciences Executive Leadership, Wadsworth Labs, White Plains, NY. Oct. 24, 2006. Invited extramural presentation.
- 2006 "Diabetes Research Opportunities in Collaboration with the NIH National Center for Biomedical Informatics (NCIBI). NIDDK Diabetes Research and Training Center Directors Annual Meeting. Nov. 1, 2006. Invited extramural presentation.
- 2006 "The Clinical Translational Sciences Award (CTSA) and Informatics." American Medical Informatics Association (AMIA) 2006. Brian Athey and Joel Saltz, Panel Co-Chairs. Nov. 13, 2006. Invited extramural presentation.
- 2007 "The Future of the NLM Visible Human." Invited Participant, Planning Meeting: Visible Human Project: Scope and Scale for the Future." Bethesda, MD. Jan. 16, 2007.
- 2007 "From the 20th Century to 'Flatland' - Fissures in the Biomedical Knowledge Landscape: Challenges, Opportunities, and Responsibilities." Designing Cyberinfrastructure for Collaboration and Innovation. Emerging Frameworks and Strategies for Enabling and Controlling Knowledge. National Academy of Engineering, Washington, D.C. Jan 29-30, 2007. Invited extramural presentation.
- 2007 "Towards Personalized Medicine in Surgery: Anatomical Variation, Multiscale Data, and Bringing Together Practice, Education, and Training." Panel: Interactive Real-Time Surgical Education on the Web: Exploring the New Paradigm in the Age of Google.

- Medicine Meets Virtual Reality. Long Beach, CA. Feb. 15, 2007. Invited extramural presentation.
- 2007 “Biomedical Informatics in the 21st Century and its Potential to Transform Biomedical Research and Practice.” Scientific Computing Institute (SCI), University of Utah. May, 2007. Invited extramural presentation.
- 2007 “The NIH National Center for Biomedical Informatics - Overview and Collaborative Opportunities.” INDY 2007 Midwest Regional Bioinformatics Conference. Indianapolis, IN. May 31, 2007. Invited extramural Platform presentation.
- 2007 "NIH National Center for Integrative Biomedical Informatics (NCIBI)" Cyberinfrastructure and Multiscale Modeling Approaches. Summer Institute, UCSD. LaJolla, CA. July 30, 2007. Visiting Pofessorship.

PATENTS

- 1998 Patent Disclosure, USPTO: “Dynamic Brace to Relieve Carpal Tunnel Syndrome.”

BIBLIOGRAPHY

Peer-Reviewed Publications

1. Williams, S.P.*, **B.D. Athey***, L.J. Muglia, R.S. Schappe, A.H. Gough and J.P. Langmore. 1986. “Chromatin Fibers are Left-Handed Double Helices with Diameter and Mass Per Unit Length that Depend on Linker Length.” *J. Biophys.*, 49:233-248. **Indicates equal first-author contribution.* (Plenary presentation for the 1985 Biophysical Discussions entitled, “Macromolecular Assembly Analyzed by Converging Structural Techniques”. First published description of the crossed-linker model for chromatin).
2. Smith, M.F.*, **B.D. Athey***, S.P. Williams and J.P. Langmore. 1990. “Radial Density Distribution of Chromatin: Evidence that Chromatin Fibers Have Solid Cores.” *J. Cell Biol.* 110:245-254. **Indicates equal first-author contribution.*
3. **Athey, B.D.**, M.F. Smith, D.A. Rankert, S.P. Williams and J.P. Langmore. 1990. “The Diameters of Frozen-Hydrated Chromatin Fibers Increase with DNA Linker Length: Evidence in Support of Variable Diameter Models for Chromatin.” *J. Cell Biol.* 111:795-806.
4. Grober, J.S., B.L. Bowen, H. Ebling, **B.D. Athey**, C. Thompson, D.A. Fox and L.M. Stoolman. 1993. “Monocyte-Endothelial Adhesion in Chronic Rheumatoid Arthritis. In Situ Detection of Selectin and Integrin-Dependent Interactions.” *J. Clin. Invest.* 91:2609-2619.
5. Raphael, Y.R., **B.D. Athey**, Y. Wang, and J.E. Hawkins. 1993. “Reticular Lamina Structure and Repair after Noise Injury.” (“Structure de la lame reticulee et reparations suite a un traumatisme acoustique.”) *Revue de Laryngologie Otologie Rhinologie.* 114(3):171-175.
6. Raphael, Y.R., **B.D. Athey**, Y. Wang, M.K. Lee and R.A. Altschuler. 1994. “F-actin and Spectrin in the Organ of Corti: Comparative Distribution in Different Cell Types and Mammalian Species.” *Hearing Res.* 76(1-2):173-187.
7. Nurko, S., K. Sogabe, J.A. Davis, N.F. Roeser, M. Defrain, A. Chien, D. Hinshaw, **B.D. Athey**, W.M. Meixner, M.A. Venkatachalam and J.M. Weinberg. 1994. “Contribution of Actin Cytoskeleton Alterations to ATP Depletion and Calcium-Induced, Rabbit Proximal Tubule Cell Injury.” *Am. J. of Phys.*, F39-F52.
8. Brakenhoff, G.J., J. Squier, T. Norris, A. Blitov, M.H. Wade and **B.D. Athey**. 1996. “Realtime Two-Photon Confocal Microscopy Using a Femtosecond, Amplified Ti: Sapphire

- System.” J. of Microsc., 181:253-259. (First demonstration of real-time 2-photon microscopy of living tissues.)
9. **Athey, B.D.**, A.J. Warner, J.C. Laby, W.M. Meixner, J. Chung and J.P. Williams. 1996. “Using the Visible Human as an Image Database Locator.” The 1st National Library of Medicine (NLM) Conference on the Visible Human. Eds: R.A. Banvard and M.J. Ackerman. Peer-reviewed electronic publication.
 10. Ade, A.S., W.M. Meixner and **B.D. Athey**. 1998. “The Visible Human Female WWW Browser and the Next Generation Internet (NGI).” The 2nd National Library of Medicine (NLM) Conference on the Visible Human. Eds: R.A. Banvard and M.J. Ackerman. Peer-reviewed electronic publication.
 11. Clark, H.A., K. Kopelman, **B.D. Athey**, A.S. Ade, W.M. Meixner, D. Hill, R. Lightle, M. Hoyer and M.A. Philbert. 1998. “Subcellular Optochemical Nanobiosensors: Probes Encapsulated By Biologically Localized Embedding (PEBBLES).” Sensors and Actuators B, Chemical, 51:12-16.
 12. **Athey, B.D.**, F. Bookstein, A. Ade, M.W. Meixner and A. Wetzel. 1999. “High Performance Landmark Driven Navigation of the Visible Human.” Vol. 3905, SPIE Proceedings, invited paper.
 13. Ade, A.S., F.L. Bookstein, and **B.D. Athey**. 2000. “The University of Michigan Next Generation Internet Implementation to Serve Visible Human Datasets.” The 3rd National Library of Medicine (NLM) Conference on the Visible Human. Peer-reviewed electronic publication). Eds: R.A. Banvard and M.J. Ackerman,
 14. Wetzel, A.W., A. Ade, F.L. Bookstein, W. Green and **B.D. Athey**. 2000. “Representation and Performance Issues in Navigating Visible Human Datasets.” The 3rd National Library of Medicine (NLM) Conference on the Visible Human. Peer-reviewed electronic publication. <http://medlineplus.nlm.nih.gov/research/visible/vhpconf2000/authors/wetzel/wetzel.pdf>.
 15. Bookstein, F.L., **B.D. Athey**, W.D. Green and A.W. Wetzel. 2000. “Navigating Solid Medical Images by Pencils of Sectioning Planes.” Proceedings of SPIE, 4121:117-127.
 16. Higgins, G.*, **B.D. Athey***, J. Bassingthwaighte, J. Burgess, H. Champion, K. Cleary, P. Dev, J. Duncan, M. Hopmeier, D. Jenkins, C. Johnson, H. Kelly, R. Leitch, W. Lorensen, D. Metaxas, V. Spitzer, N. Vaidehi, K. Vosburgh and R. Winslow. 2001. “Modeling & Simulation in Medicine: Towards an Integrated Framework.” Comput. Aided Surg, 6(1):32-39. (* indicates equal first-authorship)
 17. Lee, I., **B.D. Athey**, A.W. Wetzel, and J.R. Baker Jr. 2001. “Molecular Dynamics Studies on Folic Acid and Fluorescein-Derivatized PAMAM Dendrimers.” Technical Proceedings of the 2001 International Conference on Computational Nanoscience and Nanotechnology. Nanotech 2001 Vol. 2. Pp. 13-16.
 18. Mills, K.D., L. Deslaurier, D.S. Dilworth, S.M. Grannell, B.G. Hoover, **B.D. Athey**, and E.N. Leith. 2001. “Investigation of Ultrafast Time Gating by Spatial Filtering.” Applied Optics 40: 2282-2289.
 19. Leith, E.N., K.D. Mills, L. Deslaurier, S.M. Grannell, B.G. Hoover, D.S. Dilworth, H.S. Chen, M.P. Shih, J. Lopez and B.D. Athey. 2001. “Information Optics Concepts Applied to Image Formation in Highly Scattering Media.” in Optical Processing and Computing: A Tribute to Adolf Lohmann. Eds: Casasent, David P.; Caulfield, H. John; Dallas, William J.; and Harold H Szu. Proceedings of SPIE Volume: 4392-4. ISSU 4392, pp. 1-8.
 20. Hacker, T.J. and **B.D. Athey**. 2001. “A Methodology for Account Management in Grid Computing Environments.” Proceedings of the 2nd International Workshop on Grid

- Computing. Nov. 2001. Denver, CO. Lecture Notes in Computer Science, Vol. 22242:133-144. Springer Verlag Press.
21. Leith, E.N., Mills K.D., Dilworth, D.S., **B.D. Athey**, and S.M. Grannell. 2001. "Holographic Methods for Imaging into Volume Media." in Wave Optics and VLSI Photonic Devices for Information Processing, Eds: Pierre Ambs and Fred R. Beyette. Dec. 2001. Proc. SPIE Vol. 4435, pp. 1-6.
 22. Mangrulkar, R, **Athey BD**, Brebner E, Moidu K, Pulido P, Woolliscroft J. 2002. "Telemedicine/telehealth: an international perspective. Telemedicine and medical/health education." *Telemed J. E. Health*. 2002 Spring; 8(1):49-60.
 23. Lee, I., **B.D. Athey**, J.R. Baker, A. Wetzel, W.M. Meixner and J.R. Baker, Jr. 2002. "Structural Molecular Dynamic Studies on Therapeutically-Applied Polyamidoamine Dendrimers: The Effects of pH and Surface Derivatization Group." *Macromolecules*, 35(11):4510-4520.
 24. Hoover, B.G., L. Deslauriers, S.M. Grannell, R.E. Ahmed, D.S. Dilworth, **B.D. Athey** and E.N. Leith. 2002. "Correlations Among Angular Wave Component Amplitudes in Elastic Multiple-scattering Random Media." *Phys Rev E Stat. Nonlin. Soft Matter Phys*, 65(2 Pt 2):026614.
 25. Leith, E.N., K.D. Mills, S. Grannell, D.S. Dilworth, **B.D. Athey** and J. Lopez. 2002. "Analysis of Time-gated Imaging through Scattering Media by a Fourier Optics Approach." *J. Opt. Soc. Am. A, Opt Image Sci Vis*, 19(3):532-536.
 26. Walker, D.S., W.Y. Lee, N. Skov, C. Berger and **B.D. Athey**. 2002. "Investigating User Requirements: Computer-based Anatomy Learning Modules for Multiple User Testbeds." *JAMIA*, 9(4):311-319.
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