

## CURRICULUM VITAE

**Name:** Robert J. Robbins

**Home:** 21454 NE 143<sup>rd</sup> Street  
Woodinville, WASHINGTON 98077  
(425) 556-9386 (home)  
(206) 300-3443 (cell)  
  
rjr8222@gmail.com

### Education

PhD	Zoology	Michigan State University, East Lansing, Michigan
MS	Biology	Michigan State University, East Lansing, Michigan
BS	Zoology	Michigan State University, East Lansing, Michigan
AB	History	Stanford University, Palo Alto, California

**Research Interests:** Computer applications in biology; information systems design; database theory and design; software engineering; history of science; intellectual history of genetics; concept of the gene.

**Professional Affiliations:** American Association for the Advancement of Science  
American Society for Microbiology  
Association for Computing Machinery  
SIGMOD, SIGIR, SIGSOFT  
Genetics Society of America  
IEEE Computer Society

**Honors and Awards:** Listed in American Men and Women of Science  
Listed in Who's Who in the Midwest  
Listed in Who's Who of Emerging Leaders in America  
Listed in Who's Who in Frontier Science and Technology  
Outstanding Performance Award, NSF (1991)  
Outstanding Performance Award, NSF (1989)  
National Science Foundation National Needs Postdoctoral Fellowship (1978–1979)  
Sigma Xi Award for Meritorious Research (1977)  
National Science Foundation Predoctoral Fellowship (1974–1977)  
Phi Kappa Phi

### Positions Held:

Visiting Scientist  
Center for Research in Biological Systems (CRBS)  
University of California, San Diego  
La Jolla, CA 92093-0608  
9/10 – present

I have been involved with NSF-funded research activities that support coordination and inquiry at the interfaces of genomics and metagenomics with biodiversity, community ecology, and evolutionary biology. My responsibilities have included research, software development, and meeting coordination and logistics.

Vice President, Information Technology  
Fred Hutchinson Cancer Research Center  
1100 Fairview Avenue, North, J4-300  
Seattle, WA 98109  
9/95 – 5/09

As the first chief information officer for the FHCRC, my responsibilities have included: developing a strategic plan for the deployment of information technology in support of the Center's mission; developing alternative funding for technology-based research and information infrastructure; coordinating across the various research-computing projects at the Center; managing centralized computing and telecommunication for the institution, and growing the IT department to support the growth of the Center. During my tenure, we have successfully accomplished several very large IT projects, among them: deploying new enterprise management software systems (PeopleSoft); implementing a redundant, robust, high-speed network infrastructure; building integrated systems to support a metropolitan-area health-care organization (the Seattle Cancer Care Alliance). We also created a project-management office and pioneered a formal approach to project management at the Center. We have designed and deployed the IT infrastructure necessary to support the development of new facilities for the Center, including two major research buildings, a clinical outpatient facility, and an administration building, all totaling more than 750,000 square feet.

Program Director, Bioinformation Infrastructure Program  
Office of Health and Environmental Research, Department of Energy, Germantown, MD 20874  
9/93 – 9/95

responsibilities included advising the Director, OHER, the Program Manager for the Human Genome Project, and other DOE staff on matters and policies regarding bioinformation infrastructure relevant to DOE-supported biological research; advising the DOE/OHER research community on matters pertaining to scientific databases; serving as the DOE/OHER's representative and liaison with other agencies and organizations in matters pertaining to bioinformation infrastructure, especially in matters associated with the development of a national federated information infrastructure for biology.

Associate Professor of Medical Information  
School of Medicine, The Johns Hopkins University, Baltimore, MD 21205  
9/91 – 9/95

responsibilities included developing a research and training program in biomedical informatics; advising the Dean of Medicine on medical informatics; and participating in externally funded research in biomedical informatics

Associate Professor, Computer Science Department  
The Johns Hopkins University, Baltimore, MD 21205  
9/91 – 9/95

responsibilities included teaching courses in information-system design, biomedical informatics, and computational biology; supervising graduate student research; and participating in externally funded research activities.

Director, Laboratory for Applied Research in Academic Information  
William H. Welch Medical Library, The Johns Hopkins University, Baltimore, MD 21205  
9/91 – 9/93

responsibilities involved administering the Laboratory for Applied Research in Academic Information. This laboratory, with more than 35 full-time staff and over \$5,000,000 in external annual support, houses several externally funded research projects in biomedical computing,

most prominently the Genome Data Base. In addition, the Laboratory supports the computational needs of the Welch Medical Library and also provides some academic computing services to the School of Medicine.

Director, Informatics Activities (acting – detailed from NSF)  
DOE Human Genome Program, Department of Energy, Germantown, MD 20874  
12/90 – 9/91

responsibilities included advising the Director, OHER, the Program Manager for the Human Genome Project, and other Human Genome project staff on matters and policies regarding scientific databases relevant to the DOE Human Genome Project (DOE/HGP); advising the DOE/HGP research community on matters pertaining to scientific databases; serving as the DOE/HGP's representative and liaison with other agencies and organizations in matters pertaining to genome informatics; assisting with the planning and performance of merit review for informatics proposals relevant to the DOE/HGP.

Program Director, Database Activities in the Biological, Behavioral, and Social Sciences  
National Science Foundation, Washington, DC 20550  
1/90 – 9/91

responsibilities included initiating, developing, implementing, maintaining, and carrying out those procedures and operations necessary to establish and operate a new Program in the Directorate for Biological, Behavioral, and Social Sciences (BBS) to encourage and support research in BBS-related database theory and to encourage and support the implementation of BBS-related databases; advising the Assistant Director for BBS and advising the Division Directors and the Program Officers of BBS on matters and policies regarding scientific databases relevant to BBS-sponsored research; advising the BBS research community on matters pertaining to scientific databases; serving as the Directorate's representative and liaison with other Foundation directorates in matters pertaining to scientific databases; serving as the Directorate's and the Foundation's representative and liaison with other agencies and organizations in matters pertaining to biological databases; and carrying out original research in the area of biological database development and theory.

Staff Associate for Biotic Information Resources Development  
Division of Biotic Systems and Resources, National Science Foundation, Washington, DC 20550  
9/88 – 1/90

responsibilities included monitoring the field of computer science relevant to biology and preparing position papers and recommendations for senior NSF staff; reviewing and evaluating scientific research proposals involving scientific computing; making site visits to grantees where matters involving scientific computing are involved; consulting with Biotic Systems and Resources (BSR) grantees and contractors to formulate, plan, and design computer applications in the biological sciences; consulting with computer science experts to assess new technologies and methodologies; developing, planning, and holding workshops with BSR grantees; maintaining liaison with universities, other federal agencies, consultants, professional societies, grantees, and contractors with regard to matters involving biological computation; implementing and maintaining local area network for BSR.

Staff Associate for Research Networks  
Division of Biotic Systems and Resources, National Science Foundation, Washington, DC 20550  
9/87 – 9/88

responsibilities included assisting in the review and evaluation of scientific research proposals; implementing and maintaining local area networking capabilities; serving as Division representative and contact for matters pertaining to scientific computing; site-visiting grantees in relation to scientific computing objectives

Associate Professor, Departments of Biological Science and Zoology  
Michigan State University, East Lansing, Michigan 48824  
5/82 – 12/89 (on leave to NSF: 09/87 – 12/89)

performed research in animal behavior, ecology, and genetics; teaching responsibilities involved the design, administration, and instruction of large introductory biology courses; also taught introductory genetics to upper division undergraduates and population genetics to graduate students

Special Assistant to the Vice President for Research and Graduate Studies  
Michigan State University, East Lansing, Michigan 48824  
9/86 – 9/87

responsibilities involved the design, implementation, and administration of the University's programs for the care and use of research animals; service as chair of the University's Institutional Committee on Animal Care and Use; service as chair of special Dean's ad hoc advisory committee on animal research; drafting of University policy documents governing animal use and care

Assistant Professor, Departments of Biological Science and Zoology  
Michigan State University, East Lansing, Michigan 48824  
1/77 – 5/82

performed research in animal behavior, ecology, and genetics; teaching responsibilities involved the design, administration, and instruction of large (1000+ students) introductory biology courses

NSF Postdoctoral Fellow, Department of Wildlife & Fisheries Biology  
University of California, Davis, California 95616  
3/79 – 9/79 and 3/78 – 9/78

carried out research relating the behavioral phenomenon of taste-aversion learning with the applied problems of vertebrate pest control

### **Publications:**

- 2016 Advances in biodiversity: metagenomics and the unveiling of biological dark matter. *Standards in Genomic Sciences*, 11(1):69. (First author, with Leonard Krishtalka and John Wooley, co-authors)
- 2014 Genomic standards consortium projects. *Standards in Genomic Sciences*. 9:599-601. (20<sup>th</sup> author, with Field D, Sterk P, Kottmann R, De Smet JW, Amaral-Zettler L, Cochrane G, Cole JR, Davies N, Dawyndt P, Garrity GM, Gilbert JA, Glöckner FO, Hirschman L, Klenk HP, Knight R, Kyrpides N, Meyer F, Karsch-Mizrachi I, Morrison N, San Gil I, Sansone S, Schriml L, Tatusova T, Ussery D, Yilmaz P, White O, Wooley J, Caporaso G., co-authors)
- 2014 Meeting report: Advancing practical applications of biodiversity ontologies. *Standards in Genomic Sciences*. 9:17. (11th author, with Ramona L Walls, Robert Guralnick, John Deck, Adam Buntzman, Pier Luigi Buttigieg, Neil Davies, Michael W Denslow, Rachel E Gallery, J Jacob Parnell, David Osumi-Sutherland, Philippe Rocca-Serra, John Wiczorek, Jie Zheng, co-authors)

- 2014 Report of the 14<sup>th</sup> Genomic Standards Consortium Meeting, Oxford, UK, September 17-21, 2012. *Standards in Genomic Sciences*. **9**:1236-1250. (14th author, with Neil Davies, Dawn Field, Linda Amaral-Zettler, Katharine Barker, Mesude Bicak, Sarah Bourlat, Jonathan Coddington, John Deck, Alexei Drummond, Frank Oliver Glöckner, Chris Meyer, Norman Morrison, Matthias Obst, Robert Robbins, Lynn Schriml, Peter Sterk, Steven Stones-Havas., co-authors)
- 2013 Meeting Report: GBIF hackathon-workshop on Darwin Core and sample data (22-24 May 2013). *Standards in Genomic Sciences*. **9**:614-627. (12th author, with John Wieczorek, Olaf Banki, Stan Blum, John Deck, Markus Döring, Gabriele Dröge, Dag Endresen, Philip Goldstein, Patrick Leary, Leonard Krishtalka, Eamonn O'Tuama, Robert J Robbins, Tim Robertson, Pelin Yilmaz, co-authors)
- 2013 Clarifying concepts and terms in biodiversity informatics. *Standards in Genomic Sciences*. **8**:352-359. (11th author, with Deck J, Barker K, Beaman R, Buttigieg PL, Dröge G, Guralnick R, Miller C, Tuama EÓ, Murrell Z, Parr C, Schigel D, Stucky B, Walls R, Wieczorek J, Morrison N, Wooley J., co-authors)
- 2012 Conceptualizing a Genomics Software Institute (GSI). *Standards in Genomic Sciences*. **6**:136-144. (6th author, with Gilbert JA, Catlett C, Desai N, Knight R, White O, Sankaran R, Sansone SA, Field D, Meyer F., co-authors)
- 2012 Report of the 13<sup>th</sup> Genomic Standards Consortium Meeting, Shenzhen, China, March 4-7, 2012. *Standards in Genomic Sciences*. **6**:276-286. (14th author, with Gilbert JA, Bao Y, Wang H, Sansone SA, Edmunds SC, Morrison N, Meyer F, Schriml LM, Davies N, Sterk P, Wilkening J, Garrity GM, Field D, Smith DP, Mizrahi I, Moreau C., co-authors)
- 2012 RCN4GSC Meeting Report: Initiating a Testbed for Managing Data at the Interface of Biodiversity and Genomics/Metagenomics, May 2011. *Standards in Genomic Sciences*. **7**:171-174. (First author, with Beach J, Blum S, Dawyndt P, Deck J, Kottmann R, Morrison N, Tuama EÓ, San Gil I, Vieglas D, Wieczorek J, Wooley J., co-authors)
- 2012 RCN4GSC Workshop Report: Modeling a Testbed for Managing Data at the Interface of Biodiversity and (Meta)Genomics, April 2011. *Standards in Genomic Sciences*. **7**:153-158. (First author, with Cochrane G, Davies N, Dawyndt P, Kottmann R, Krishtalka LK, Morrison N, Ó Tuama E, San Gil I, Wooley J, co-authors)
- 2012 RCN4GSC Workshop Report: Managing Data at the Interface of Biodiversity and (Meta)Genomics, March 2011. *Standards in Genomic Sciences*. **7**:159-165. (First author, with Amaral-Zettler L, Bik H, Blum S, Edwards J, Field D, Garrity G, Gilbert JA, Kottmann R, Krishtalka L, Lapp H, Lawrence C, Morrison N, Ó Tuama E, Parr C, San Gil I, Schindel D, Schriml L, Vieglas D, Wooley J., co-authors)
- 2011 Policy and data-intensive scientific discovery in the beginning of the 21st century. *OMICS*. **15**:221-225. (8<sup>th</sup> author, with Ozdemir V, Smith C, Bongiovanni K, Cullen D, Knoppers BM, Lowe A, Peters M, Stewart E, Yee G, Yu YK, Kolker E., co-authors)
- 2011 Long-Term Ecological Research Program: Report of the 30 Year Review Committee. *National Science Foundation Publication bio12001*.  
<http://www.nsf.gov/pubs/2012/bio12001/bio12001.pdf>
- 2011 Long-Term Ecological Research Program: Report of the 30 Year Review Committee. *National Science Foundation Publication bio12001*.  
<http://www.nsf.gov/pubs/2012/bio12001/bio12001.pdf>
- 2011 Data Management for LTER: 1980-2010. *National Science Foundation Publication bio12002*.  
<http://www.nsf.gov/pubs/2012/bio12002/bio12002.pdf>
- 2011 Effects of a Web-based intervention on women's breast health behaviors. *Transl Behav Med*. **1**:155-164. (Second author, with Bowen DJ, Bush N, Meischke H, Ludwig A, Wooldridge J., co-authors)

- 2009 Security and privacy requirements for a multi-institutional cancer research data grid: an interview-based study. *BMC Medical Informatics and Decision Making* 9:31. (Second author, with F. J. Manion, W. A. Weems and R. S. Crowley, co-authors)
- 2004 What do we mean by internet access? A framework for health researchers. *Preventing Chronic Disease*. 1(4): 1–17. (Last author, with N. Bush, D. Bowen, J. Wooldridge, A. Ludwig, and H. Meischke, co-authors)
- 2003 Early Experience with a Web-based intervention to inform risk of breast cancer. 2003. *Journal of Health Psychology*. 8(1):175-186. (Last author, with D. Bowen, A. Ludwig, N. Bush, H. Unruh, H. Meischke, J. Wooldridge, co-authors)
- 1996 Bioinformatics: Essential infrastructure for global biology. *Journal of Computational Biology*, 3:465-478.
- 1996 Comparative genomics: A new integrative biology. In Collado-Vides, J., Magasanik, B., and Smith, T. F. (Eds) *Integrative Approaches to Molecular Biology*. Cambridge, Massachusetts: MIT Press. pp. 63-90.
- 1995 Information infrastructure. *IEEE Engineering in Medicine and Biology*, 14(6): 746-759.
- 1995 Informatics and the human genome project. *IEEE Engineering in Medicine and Biology*. 14(6): 694-701. (First author, with D. Benton and J. Snoddy, co-authors)
- 1994 Genome informatics I: Community databases. *Journal of Computational Biology*, 1:173–190.
- 1994 Representing genomic maps in a relational database. In S. Suhai (ed.) *Computational Methods in Genome Research*. New York: Plenum Publishing Company. pp. 85-96.
- 1994 Biological Databases: A New Scientific Literature. *Publishing Research Quarterly*, 10:1–27.
- 1993 Coat color genetics of *Peromyscus*. IV. Variable white, a new dominant mutation in the deer mouse. *Journal of Heredity*, 85:48–52. (Second author, with K. Cowling, G. R. Haigh, S. K. Teed, and W. D. Dawson, co-authors)
- 1993 *Bioinformatics, Supercomputing and Complex Genome Analysis*. Singapore: World Scientific Publishing Company. 850 pp. (fourth editor, with H. A. Lim, J. W. Fickett, C. R. Cantor co-editors)
- 1993 CCM92 informatics report. In Cuticchia, A. J., Pearson, P. L., and H. P. Klinger (eds) Chromosome Coordinating Meeting 1992, *Genome Priority Reports, vol. 1*. Basel: S. Karger A. G.
- 1993 The GDB Human Genome Data Base Anno 1993. *Nucleic Acids Research*, 21:3003–3006. (Fourth author, with A. J. Cuticchia, K. H. Fasman, D. T. Kingsbury, and P. L. Pearson, co-authors)
- 1993 Genome informatics: Requirements and challenges. In H. A. Lim, J. W. Fickett, C. R. Cantor, and R. J. Robbins (eds) *Bioinformatics, Supercomputing and Complex Genome Analysis*. Singapore: World Scientific Publishing Company.
- 1992 Challenges in the Human Genome Project. *IEEE Engineering in Medicine and Biology*. 11:25–34.
- 1992 The GDB Human Genome Data Base Anno 1992. *Nucleic Acids Research*, 20(Supplement):2201–2206. (Fourth author, with P. L. Pearson, N. W. Matheson, and D. C. Flescher, co-authors)
- 1991 The human genome initiative — Do databases reflect current progress? *Science*, 254:215–215. (Fourth author, with P. L. Pearson, B. Maidak, and M. Chipperfield, co-authors)
- 1991 Report of the informatics committee. *Cytogenetics and Cell Genetics*, 58:779–784. (Fourth author, with C. J. Rawlings, C. Brunn, S. Bryant, and R. E. Lucier, co-authors)
- 1986 Suboesophageal ganglion as a site of insectistatic action of chlordimeform to the cabbage armyworm, *Mamestra brassicae*, L. *International Pest Control*, 28:12–19. (Third author, with T. Shimizu and J. Fukami, co-authors)
- 1985 File transfer between incompatible computer systems. *Acronyms*, 15:10–12.
- 1985 *CHORDATE DEVELOPMENT: A Brief Introduction*. Lansing, Michigan: Wm McKinney Publishers, Inc., 120 pp.

- 1984 Two-rod method for simultaneous measurement of mandibular and thoracic leg movements of the cabbage armyworm, *Mamestra brassicae* (Lepidoptera: Noctuidae). *Applied Entomology and Zoology*, 19:254–256. (Third author, with T. Shimizu & J. Fukami, co-authors)
- 1984 ELF communications systems ecological monitoring program. Small vertebrates: small mammals and nesting birds. In *Compilation of 1983 Annual Reports of the Navy ELF Communications System Ecological Monitoring Program*, Technical Report E06549–8, Volume 2, Section G. Chicago: IIT Research Institute, 80 pp. (third author, with D. L. Beaver, R. W. Hill, & J. H. Asher, Jr., co-authors)
- 1983 ELF communications systems ecological monitoring program. Small vertebrates: small mammals and nesting birds. In *Compilation of 1982 Annual Reports of the Navy ELF Communications System Ecological Monitoring Program*, Technical Report E06516–5, Section G. Chicago: IIT Research Institute, 104 pp. (third author, with D. L. Beaver, R. W. Hill, & J. H. Asher, Jr., co-authors)
- 1983 DNA structure. *BioScience*, 33:356.
- 1982 *The Sweep of Life*. Lansing, Michigan: Wm McKinney Publishers, Inc., 68 pp.
- 1982 Blonde, a new mutation in *Peromyscus maniculatus* affecting fur, skin, and eye pigmentation. *Journal of Heredity*, 73:69–70. (Second author, with B. M. Pratt, co-author)
- 1981 *Solutions to Problems in Suzuki, Griffiths, and Lewontin, An Introduction to Genetic Analysis*. San Francisco: W. H. Freeman and Company, 114 pp.
- 1981 *Solutions Manual to Accompany GENETICS: A Brief Introduction*. Lansing, Michigan: Wm McKinney Publishers, Inc., 62 pp.
- 1981 *Instructor's Guide to Accompany Suzuki, Griffiths, and Lewontin, An Introduction to Genetic Analysis*. San Francisco: W. H. Freeman and Company, 113 pp.
- 1981 *GENETICS: A Brief Introduction*. Lansing, Michigan: Wm McKinney Publishers, Inc., 168 pp.
- 1981 Considerations in the design of test methods for measuring bait shyness. In E. W. Schafer, Jr., and C. R. Walker (Eds.) *Vertebrate Pest Control Management and Materials: Third Conference, ASTM STP 752*. Philadelphia: American Society for Testing and Materials, pp. 113–123.
- 1980 Taste-aversion learning and its implications for rodent control. In J. P. Clark and R. E. Marsh (Eds.) *Proceedings Ninth Vertebrate Pest Conference*, Fresno, California. Published at the University of California, Davis, California, pp. 114–121.
- 1980 Sex affects the initial strength but not the extinction of poison-based taste aversions in deer mice (*Peromyscus maniculatus bairdi*). *Behavioral and Neural Biology*, 30:80–89.
- 1980 Learning and nonlearned neophobia enhancement both contribute to the formation of illness-induced taste aversions by deer mice (*Peromyscus maniculatus bairdi*). *Animal Learning & Behavior*, 8:534–542.
- 1980 A simple method for measuring the mandibular movements of the cabbage armyworm (*Mamestra brassica*, L.). *Applied Entomology and Zoology*, 15:352–355. (Fourth author, with T. Shimizu, K. Matsuzawa, & S. Yagi, co-authors)
- 1980 Additional comments on 'Steinbeck and de Maupassant: A parallel occurrence.' *Steinbeck Quarterly*, 13:86.
- 1979 The effect of flavor preexposure upon the acquisition and retention of poison-based taste aversions in deer mice: Latent inhibition or partial reinforcement? *Behavioral and Neural Biology*, 25:387–397.
- 1978 Poison-based taste aversion learning in deer mice (*Peromyscus maniculatus bairdi*). *Journal of Comparative and Physiological Psychology*, 92:642–650.
- 1977 Taste-aversion learning in *Peromyscus* (Doctoral dissertation, Michigan State University). *Dissertation Abstracts International*, 38:1086B. (University Microfilms No. 77–18)
- 1977 An accurate, inexpensive, calibrated drinking tube. *Laboratory Animal Science*, 27:1038–039.

- 1975 Observations of birds exploiting a central Michigan fruit tree. *Jack-Pine Warbler*, 53:118–25. (First author with C. Casbon & G. E. Hattis, co-authors)

#### Invited Talks:

- 2016 Adding Sidenotes to a PDF File. Technical Briefing Presentation. GSA Board Meeting, Seattle, WA
- 2016 Reconceiving Biodiversity: Implications from (Meta)Genomics. Invited talk: Ottawa, Canada, 1 Jun 2016
- 2014 Genomics and Metagenomics: What is the Role of the Darwin Core? TDWG 2014 Annual Conference Elmia Congress Centre, Jönköping, Sweden, October 27-31, 2014
- 2013 Big Data: Yet Another Buzzword or Actual Big Deal? BRIITE Semi-annual Meeting, 11 - 13 Dec, 2013. Salk Institute for Biological Studies, La Jolla, CA
- 2012 How Diverse is the Biosphere? TDWG 2012 Annual Conference, People's Palace, Beijing, China 22-26 Oct 2012.
- 2012 Data Management for LTER@100. 2012 LTER All Scientists Meeting, 10-13 Sep, 2012. Estes Park, CO
- 2012 Aligning Expectations with Resources: What's the Trick? BRIITE Semi-annual Meeting, 5 - 7 Sep, 2012. St Jude Children's Research Hospital Memphis, TN
- 2012 Half of Our Biosphere is Missing. Keynote Presentation, Global Biodiversity Informatics Conference 2012. Copenhagen, Denmark, 2-4 Jul 2012
- 2012 Biodiversity Working Group Report. Genomic Standards Consortium, Annual Meeting, 5 - 7 Mar, 2012. Shenzhen, China
- 2011 Biodiversity Working Group Report. Genomic Standards Consortium, Annual Meeting, 28-30 Sep, 2011. Bremen, Germany
- 2011 IT Architecture: Mastering Complexity With Design. BRIITE Semi-annual Meeting, 7-9 Sep 2011. St Jude Children's Research Hospital Memphis, TN
- 2008 Data Centers Get Serious: Unlimited Demand Meets Practical Reality. Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 10–12 September 2008. St. Jude Children's Research Hospital. Memphis, Tennessee.
- 2007 Implementing Security Without Inhibiting Research: Mission Impossible? Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 3–5 October 2007. UCSF. San Francisco, California.
- 2006 Research Computing Grows Up. Spring Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 3–5 May 2006. Memorial Sloan-Kettering Cancer Center. New York, New York.
- 2005 Data Management in the Research Laboratory: The Sine Qua Non of 21st-Century Science. Mayo Clinic: Informatics Grand Rounds. 10 June 2005. Rochester, Minnesota.
- 2005 IT Operations: Making IT Work in a Profoundly Heterogeneous Environment Spring Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 27–29 April 2005. MD Anderson Cancer Center. Houston, Texas.
- 2005 Multi-Institution Collaborative Computing: What Does it Really Take? Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 2–4 November 2005. Salk Institute for Biological Studies. La Jolla, California.
- 2005 The Future of Biodiversity Informatics – What's Possible, What's Not. GBIF Workshop on Building SpeciesBanks: How Shall We Shape the Future? 2–4 March 2005. Amsterdam, The Netherlands
- 2004 Bioinformatics and the Independent Research Institute. AIRI Annual Meeting. 22–24 September. Grand Rapids, Michigan.



- 2004 IT Support for Grant Funded Research: Where Are We Now and Where Should We Be Going? Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 22–24 September 2004. Fred Hutchinson Cancer Research Center. Seattle, Washington.
- 2003 Background Standards – The Critical Missing Piece. NIST workshop: Information Science Standards to Enable Biomedical Research. 4–5 November 2003. Bethesda, Maryland.
- 2003 Digital Publishing Support. Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 10–13 September 2003. Seattle, Washington.
- 2003 Strategic Planning for IT Support of Grant-funded Research. Fall Meeting, BRIITE (Biomedical Research Institutions Information Technology Exchange). 10–13 September 2003. Seattle, Washington.
- 2002 Integrating Bioinformatics Data into Science: From Molecules to Biodiversity. 18th International CODATA Conference, 29 Sep–3 Oct 2002. Montreal, Canada.
- 2001 Bioinformatics and the New Information Technologies. The Canadian Biodiversity Network Conference, 1–4 Mar 2001. Ottawa, Ontario, Canada.
- 2000 Leadership by Example. AAAS Annual Meeting, 17–22 Feb 2000. Washington, DC.
- 1998 Economic Impact of Bioinformatics. ATCC Bioinformatics Symposium, 6 November 1998. Bethesda, Maryland.
- 1998 Information, Logistics, and 21<sup>st</sup> Century Research. Cancer Centers Administrators Forum, 12 October 1998. Portland, Oregon.
- 1998 Information Technology: The Foundation for 21st Century Research. Keynote Address, Self Graduate Fellowship Retreat, 16-18 August 1998. Kansas City, Missouri.
- 1998 What is Biological Informatics? (keynote address) Australian National Academy of Sciences Conference on Biological Informatics. Canberra, Australia. 6-8 July 1998.
- 1998 Systems Development in Research Organizations. Invited talk, Office of the Vice President for Research, Northwestern University, Evanston, Illinois. 16 February 1998.
- 1997 Next Steps for Working Scientists: Access to Data. CODATA Conference on Scientific and Technical Data Exchange and Integration. Bethesda, MD: 15-17 December 1997.
- 1997 21st Century Biology: The Role of Information Technology. Association of Independent Research Institutes (AIRI) Annual Meeting. Seattle, Washington: 21-24 October 1997.
- 1997 21st Century Biology: Informatics in the Post-Genome Era. The Pfizer Inc.—Olga G. Nalbandov / Beckman Institute Symposium on Bioinformatics, Structure, and Function. University of Illinois at Urbana-Champaign: 29 May – 1 June 1997.
- 1997 New Technologies for Research Administration. Society of Research Administrators, Joint Seattle/Pacific Northwest Chapter – Canadian Section Workshop: Research Administration: Proactive Approach to Tomorrow. University of Washington, Seattle, WA: 24 March 1997.
- 1996 Information Management: The Key to the Human Genome Project. Current Topics in Health Sciences Librarianship. Baltimore, MD: 24-27 June 1996
- 1996 Bioinformatics: Essential Infrastructure. Office for Economic Coordination and Development Megascience Meeting, Washington, DC, 6 June 1996.
- 1996 Fast Company: Provocateurs on the Edges of Science, Information Technology, and Power. Consumer Health Informatics Symposium, Fred Hutchinson Cancer Research Center. Seattle, WA: 24 April 1996.
- 1995 Genome Informatics, the *Sine Qua Non* of Genomic Research. Fourth International Conference on Bioinformatics and Genome Research; San Francisco, California, 5–7 June 1995.
- 1995 Biological Data and the Global Information Infrastructure. Annual Meeting of the American Chemical Society, Anaheim, California, 2–6 April 1995.
- 1995 Information Systems Architecture: Making Computers Work for People. Fred Hutchinson Cancer Research Center, Seattle, Washington, 9 March 1995.

- 1994 Bioinformatics: Making the Genome Project Possible. Ameritech Endowed Lecture Series; Michigan State University, East Lansing, Michigan; 14 December 1994.
- 1994 The Genome Experience: Is Retroactive Integration Possible? BrainMap '94; San Antonio, Texas; 4–5 December 1994.
- 1994 A Microbial Information System as a Model Organism. Third International *E. coli* Genome Meeting; Marine Biological Laboratory, Woods Hole, Massachusetts; 5 November 1994.
- 1994 Towards a Federated Information Infrastructure for Biology. Invited talk, School of Information and Library Sciences, University of Michigan, Ann Arbor, Michigan; 1 November 1994.
- 1994 Scientific Databases – State of the Art and Future Directions. Panel discussion; 20th International Conference on Very Large Databases; Santiago, Chile, 12–15 September 1994.
- 1994 Community Databases: Towards a Federated Information Infrastructure. MIMBD, Stanford, California, 9–12 August 1994.
- 1994 Genome Informatics: Toward a Federated Information Infrastructure (keynote address). The Third International Conference on Bioinformatics and Genome Research; Tallahassee, Florida; 1–4 June 1994.
- 1994 Computing the Genome: Efforts to Reverse Engineer Humans. David D. Lattanze Center for Executive Studies in Information Systems. Towson, Maryland; 7 April 1994.
- 1994 Comparative Genomics: A New Integrative Biology. First International Workshop on Integrative Approaches to Molecular Biology. Cuernavaca, Morelos, Mexico; 19–24 February 1994.
- 1994 The Human Genome Project: Unraveling the Instructions for Creating Life. The Philosophical Society of Washington. Washington, DC; 21 January 1994
- 1993 The Transformation of GDB: A Case Study. Genome Informatics Workshop IV. Yokohama, Japan; 13–15 December 1993.
- 1993 The Transformation of GDB: A Case Study. Brain Map '93. San Antonio, Texas; 4–6 December 1993.
- 1993 Computational Challenges of the Genome Project: What is a Gene? Genetics Department Seminar, Cedars Sinai Medical Center. Los Angeles, California; 11 May 1993.
- 1993 Biological Databases: A New Scientific Literature. Keynote Address. Council of Biological Editors Annual Meeting. San Diego, California; 9–11 May 1993.
- 1993 Online Mendelian Inheritance in Man and Genome Databases. Info–Fair 93: Connecting to Biomedical Information. Meeting sponsored by the Countway Library of Medicine and the Massachusetts Medical Society. Boston, Massachusetts; 2 April 1993.
- 1993 The Challenge of Biological Data Management. Program Seminar, Beckman Institute, University of Illinois, Urbana, Illinois; 22 January 1993.
- 1992 GDB: New directions. First International Chromosome Coordinating Committee Meeting (CCM–92); Baltimore, Maryland; 15–16 November 1992.
- 1992 GDB: The Human Genome Database. Society for Scholarly Publishing Top Management Round Table on Strategic Risk Taking: Electronic Innovation in Scholarly Publishing; Baltimore, Maryland; 12–13 November 1992.
- 1992 The Challenge of Biological Data Management: The Human Genome Project as Case Study. ISMM First International Conference on Information and Knowledge Management (CIKM–92); Baltimore, Maryland; 8–11 November 1992.
- 1992 Representing Genomic Maps in a Relational Database. Deutsches Krebsforschungszentrum Conference on Computational Methods in Genome Research; Heidelberg, Germany; 1–4 July 1992.
- 1992 Keynote Address. The Second International Conference on Bioinformatics, Supercomputing, and Complex Genome Analysis; St. Petersburg Beach, Florida; 4–7 June 1992.
- 1992 Genome Informatics: Requirements and Challenges. International Symposium on Recent Advances in the Human Genome Project; Tokyo, Japan; 6–7 March 1992.

- 1992 Accessing the Genome Data Base. Chromosome 19 Workshop; Horst, Netherlands; 24–26 January, 1992.
- 1991 Technical Challenges for a Genome Database. Eleventh International Workshop on Human Gene Mapping; London, England; 18–22 August 1991.
- 1991 Databases: A New Biological Literature. American Crystallographic Association Annual Meeting; Toledo, Ohio; 24 July 1991.
- 1990 Databases and Biology. American Plant Physiology Society Annual Meeting; Indianapolis, Indiana; 31 July 1990.
- 1990 The Computer Challenges of the Human Genome Project. SIGMOD Panel discussion; ACM SIGMOD Annual Meeting; Atlantic City, New Jersey; 25 May 1990.
- 1990 Computational Problems of the Human Genome Project. Computers and Medicine Symposium, New Jersey Institute of Technology, Newark, New Jersey; 5 May 1990
- 1990 Building Scientific Databases. Kellogg Biological Station, Hickory Corners, Michigan; 23 April 1990.
- 1989 Scientific Database Design Issues. 2nd BioMatrix Conference, New Hampshire, 19 August 1989.
- 1989 Databasing the Human Genome. Departmental Seminar, Computer Science Department, University of Virginia, Charlottesville, Virginia; 6 September 1989
- 1989 Building Internet Connections. LTER WAN Workshop; Urbana, Illinois; 26–28 April 1989.
- 1988 Issues in Database Design. Workshop on Databasing Genetic Stock Centers; Genetics Society of America workshop; XVIth International Genetics Congress; Toronto, Ontario; 25 August 1988.

#### **Papers Presented:**

- 1984 Small mammals and nesting birds: Report of the second year of research on the effects of extremely low frequency radiation on free-living warm-blooded animals in the upper peninsula of Michigan. Second ELF Technical Symposium. Houghton Lake, Michigan: March 1984. (second author, with D. L. Beaver, J. H. Asher, Jr., & R. W. Hill, co-authors)
- 1982 Small mammals and nesting birds: Report of the first year's research on the effects of extremely low frequency radiation on free-living warm-blooded animals in the upper peninsula of Michigan. First ELF Technical Symposium. Clam Lake, Wisconsin: November 1982. (second author, with D. L. Beaver, J. H. Asher, Jr., & R. W. Hill, co-authors)
- 1981 LiCl and free dietary selection by rodents. Psychonomic Society Annual Meetings. Philadelphia, Pennsylvania: 12–14 November 1981.
- 1980 Considerations in the design of a test to measure bait shyness. Third ASTM Symposium on Test Methods for Vertebrate Pest Control and Management. Fresno, California: 7 March 1986.
- 1980 Taste-aversion learning and its implications for rodent control. Ninth Vertebrate Pest Control Conference. Fresno, California: 4–6 March 1980.
- 1979 Sex-related differences in taste-aversion learning in deermice. Psychonomic Society Annual Meetings. Phoenix, Arizona: 8–10 November 1979.

#### **Posters Presented:**

- 2012 Quantum biology and biological dark matter: Uprooting this view — and tree — of life. Gordon Research Conference: Microbial Ecology in the Era of OMICS. 2012 Jun 24–29; Lucca, Italy.
- 2005 When the Center Doesn't Hold: Security Issues in a Totally Decentralized, Federated Environment. Educause CAMP Med Workshop: Identity and Access Management for Medical Applications. 2005 Feb 9–11; Baltimore, Maryland.

- 1990 Variable white, a dominant mutation in *Peromyscus maniculatus*. American Society of Mammalogists. (First author with K. Cowling, G. R. Haigh, S. K. Teed, & W. D. Dawson, co-authors)

### Special Training:

- 1989 ACM Professional Development Workshop; The Relational Model, E. F. Codd; Washington, DC; 25 May 1989.
- 1988 3COM Network Administrators Training; 28–29 July 1988.
- 1987 NSF Program Officers Training; 19–22 October 1988

### Synergistic Activities

- BRIITE<sup>1</sup>: co-founder of the organization and lead organizer for several recent meetings emphasizing strategic planning for IT support of grant-funded research.
- caBIG<sup>2</sup>: member of the Strategic Planning Working Group, the Architectural Design Working Group, and the Vocabulary and Common Data Elements Working Group.

### National or International Committee Activities:

- 2016-now Science Advisory Board, EcoBiomics Research Project, Canadian Genomics Research and Development Initiative. Ottawa, CA.
- 2009-2010 NSF/LTER (Long –Term Ecological Research) 30-year Review Committee 2004-2010 Directorate for Biological Sciences Advisory Committee, National Science Foundation
- 2006-2007 NSF Advisory Committee for Cyberinfrastructure, National Science Foundation
- 1998-2008 National Advisory Board (NAB) for the LTER Network and Network Office
- 1998-2000 Steering Committee for the Human Genome Epidemiology Network (HuGE Net), Office of Genetics and Disease Prevention, Center for Disease Control
- 1996-1998 Advisory Board, *Arabidopsis* Genome Database
- 1995-2001 External Advisory Board of the USC Brain Project
- 1993-1995 Advisory Board, Brain Map Database.
- 1993-1994 Committee on the Formation of the National Biological Survey, National Research Council
- 1991-1992 Human Genome Organization (HUGO)
- 1991-1995 Informatics Committee, HUGO
- 1991-1993 DOE Human Genome Coordinating Committee
- 1991-1993 DOE Informatics Review Committee
- 1991-1993 NCHGR/NIH Special Informatics Review Committee
- 1990-1991 NSF/LTER GIS Advisory Committee
- 1990-1991 NSF/LTER Connectivity Assessment and Networking Committee
- 1990-1991 NCHGR/NIH Special Genome Centers Review Committee
- 1990-1991 liaison member (DOE/NSF); Joint Informatics Task Force for the Human Genome
- 1990-1991 USDA Plant Genome Informatics Subcommittee
- 1989-1990 Technical Advisors Group for Genome Data Base
- 1988-1990 Long-Term Ecological Research Working Group on Geographic Information Systems

<sup>1</sup> Biomedical Research Institutions Information Technology Exchange – an organization dedicated to facilitating the effective use of information technology in support of biomedical research; see <http://www.briite.org>

<sup>2</sup> Cancer Biomedical Informatics Grid – an NCI supported effort to develop a cancer-based biomedical informatics network that will connect cancer research related elements of data, tools, individuals, and organizations that will leverage their strengths and expertise globally; see <http://cabig.nci.nih.gov/caBIG>

- 1988-1991 Computer Advisory Committee, Flora North of North America Project, Missouri Botanical Gardens  
 1988-1991 Advisory Committee of the Coli Genetic Stock Center at Yale University

**Committee Activities at The Johns Hopkins University:**

- 1991-1993 member, Medical Archives Advisory Committee  
 1991-1993 member, Computing and Network Committee of School of Medicine

**Committee Activities at the National Science Foundation:**

- 1991-1992 BBS representative; task force to select new network operating system for the NSF  
 1988-1990 chair; security standards subcommittee of the Network Administrator Users Group (NAUG)  
 1988-1990 chair; software standards subcommittee of the NAUG  
 1988-1991 member; BBS Network Administrator's Group  
 1987-1991 member; Network Administrator Users Group (NAUG)

**Committee Activities at Michigan State University:**

- 1985-1987 chair; All University Committee for Animal Use and Care (Chair, 1986-1987)  
 1984-1987 College of Natural Science Computer Committee  
 1984-1987 College of Natural Science Curriculum Committee  
 1979-1981 College of Natural Science Affirmative Action Committee  
 1985-1987 Department of Zoology Graduate Affairs Committee (Chair, 1986-1987)  
 1984-1986 Department of Zoology Bylaws Revision Committee (Chair, 1984-1986)  
 1980-1983 Department of Zoology Undergraduate Committee (Chair, 1982-1983)  
 1979-1980 Department of Zoology Seminar Committee

**Research Funding:**

- 1999-2003 Population-based Genetics Risk Information via the Web. NIH/NCI: \$3,000,000.  
 1997-2000 Electronic Scholarly Publishing: Foundations of Genetics. DOE Genome Program: \$400,000.  
 1997-1999 co-PI with Steve Henikoff, Connecting Protein Family Resources. DOE Genome Program: \$250,000.  
 1994-1995 Program officer at the Department of Energy, not personally involved in research.  
 1991-1993 Co-PI for Informatics Core, Genome Data Base. DOE & NIH: \$12,000,000.  
 1987-1991 Program officer at the National Science Foundation, not personally involved in research.  
 1986-1987 College of Natural Science Computer Research Award (with L. Clemens, D. Erwin, D. Straney, & R. Taggart). AT&T: \$30,000 (in donated equipment and software).  
 1983-1985 Small Vertebrates: The Michigan Study Site. Renewal response to original RFP:IITRI E06516-82-R-00015. Continued study of the effects of ELF radiation on small birds and mammals in the upper peninsula of Michigan. (co-PI with D. Beaver, R. Hill, & J. Asher)  
     DOD, subcontracted through IITRI: \$439,999.  
 1982-1983 Small Vertebrates: The Michigan Study Site. Response to RFP:IITRI E06516-82-R-00015. Study of the effects of ELF radiation on small birds and mammals in the upper peninsula of Michigan. (co-PI with D. Beaver, R. Hill, & J. Asher)  
     DOD, subcontracted through IITRI: \$278,195.  
 1981-1982 Poison-based aversion learning and rodent control. MSU AURIG: \$6905.80.  
 1978-1979 National Needs in Science Postdoctoral Fellowship. National Science Foundation: \$13,955.