

CURRICULUM VITAE

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ABSTRACT

Professor of Neurosciences and Bioengineering
Director of the Center for Research in Biological Systems at UCSD

Ph.D., University of Colorado, Boulder, 1976 in Molecular, Cellular and Developmental Biology. In addition to being a Founding Fellow of the American Institute of Biomedical Engineering, Dr. Ellisman has received numerous awards including a Jacob Javits award from the National Institutes of Health (NIH) and the Creativity Award from the National Science Foundation. His UCSD teaching and lecturing awards include the Department of Neurosciences Award for Outstanding Teaching in 1987 and 1992, and he was selected by UCSD as the University Lecturer in BioMedicine in 2001. He is also the interdisciplinary coordinator for the National Partnership for Advanced Computing Infrastructure (NPACI) and leads the Neuroscience thrust for the NPACI, which involves integration of brain research and advanced computing and communications technologies.

Research Interests: *Development and application of advanced imaging technologies to obtain new information about cell structure and function – particularly in the nervous system.* Dr. Ellisman directs the National Center for Microscopy and Imaging Research (NCMIR), an internationally acclaimed technology development center and research resource established by the NIH. His scientific contributions include work on basic molecular and cellular mechanisms of the nervous system and development of advanced technologies in microscopy and computational biology. He is a pioneer in the development of three dimensional light and electron microscopy and combined application of these image acquisition tools and computational technologies to achieve greater understanding of the structure and function of the nervous system. His group was the first to introduce the idea of "Telemicroscopy" by demonstrating the network-enabled remote use and sharing of a high energy electron microscope in 1992, later developing practical systems now in use by researchers in the US and abroad. In 2001, he began a new role leading for the NIH the development of a Biomedical Informatics Research Network (BIRN) to provide a framework for multiscale imaging infrastructure linking the major neuroimaging centers around the world.

EDUCATION AND TRAINING

- 1970 **A.B.** (w/Honors), College of Letters and Sciences, University of California, Berkeley (Advisor: S. Glickman)
- 1974 **M.A. in Physiological Psychology (Neurophysiology/Neuroscience)**, Department of Psychology, University of Colorado, Boulder (Advisor: S.K. Sharpless)
- 1976 **Ph.D. in Biology**, Department of Molecular, Cellular and Developmental Biology, University of Colorado, Boulder (Advisor: K.R. Porter)
- 1976-77 **Post Doctoral Training**, Laboratory for High Voltage Electron Microscopy, Muscular Dystrophy Association of America Postdoctoral Fellow (with K.R. Porter), University of Colorado, Boulder

NON-ACADEMIC APPOINTMENTS

- 1969-71 **Research Fellow**, Animal Behavior Field Station, UC Berkeley with Professors Frank Beach and Steven Glickman
- 1971-72 **Teaching Fellow**, Neurobiology, University of Colorado, Boulder
- 1972-73 **Research Fellow**, Spinal Neurophysiology (intracellular recording), University of Colorado, Boulder with S.K. Sharpless and P.M. Groves
- 1973-76 **Research Fellow**, Plasticity of Excitable Membrane Systems (Electron Microscopy), University of Colorado, Boulder, with K.R. Porter and L.A. Staehelin
- 1975 **Lab Coordinator**, Summer Research Program, Marine Biological Laboratory, Woods Hole, Massachusetts

ACADEMIC APPOINTMENTS

- 1977-1982 *Assistant Professor of Neurosciences*, Department of Neurosciences, UCSD
1982-1987 *Associate Professor of Neurosciences*, Department of Neurosciences, UCSD
1977-present *Faculty Member*, Graduate Program in Neurosciences, UCSD
1978-present *Director*, Neurosciences Laboratory for Neurocytology, UCSD
1987-present *Professor of Neurosciences*, Department of Neurosciences, UCSD
1988-present *Faculty Member*, Biomedical Sciences Graduate Program, UCSD
1988-present *Founding Director*, National Center for Microscopy and Imaging Research (NCMIR), UCSD
1993-present *Senior Fellow*, San Diego Supercomputer Center
1994-present *Professor of Bioengineering*, UCSD
1996-present *Founding Director*, Center for Research in Biological Systems (CRBS), UCSD
1997-2002 *Chief Neuroscientist*, San Diego Supercomputer Center (SDSC)
1997-2004 *Thrust Leader for Neuroscience & Cross-Disciplinary Coordinator*, National Partnership for Advanced Computational Infrastructure (NPACI)
2001-present *Founding Director*, for NIH - The Biomedical Informatics Research Network (BIRN) and the BIRN Coordinating Center at UCSD

HONORS, AWARDS & OTHER APPOINTMENTS

- 1970 A.B. (with Honors), University of California, Berkeley
1976 Fellow, Muscular Dystrophy Association of America
1980 Selected for Alfred P. Sloan Research Fellowship
1987 UCSD Department of Neurosciences Award for Outstanding Teaching
1989 Recipient of the Jacob Javits Neuroscience Investigator Award
1980 Appointed Associate Editor, Editorial Board, *The Journal of Neurocytology*
1988 Appointed as Commentator/Correspondent, *Comments on Developmental Neurobiology*
1990 Appointed to Editorial Board, *NeuroImage*
1990 Appointed to Editorial Board, *Synapse*
1991 Founding Fellow of the American Institute for Medical and Biological Engineering
1992 UCSD School of Medicine, Faculty Distinguished Lecturer
1993 Program Chair (two years), The Microscopy Society of America
1993 Computer World Smithsonian Award
1994 Appointed Member, NSF Metacenter Advisory Council on Computational Neuroscience
1994 Appointed to Editorial Board, *Journal of the Microscopy Society of America*
1995 Appointed to Editorial Board, *Journal of Biomedical Optics*
1996 Appointed to Editorial Board, *Journal of Histochemistry and Cytochemistry*
1997 Creativity Award from the National Science Foundation
1998 Appointed, National Research Council Group "On Being a Researcher in the Digital Age"
1998 Appointed to NPACI Executive Committee
1999 Appointed to Applications Strategy Council of Internet 2
1999 Appointed to Editorial Board, Journal of Computer Assisted Microscopy
1999 Appointed Chair, SDSC Executive Committee
1999 Executive Committee/Governing Board - Univ. of Calif. Life Science Informatics Program
2000 Appointed to the Scientific Advisory Board, National Foundation for Functional Brain Imaging
2000 Appointed member of the Committee on Frontiers at the Interface between Computing and Biology by the National Research Council/NAS, "Computer Science and Technology Board"
2001 Selected by UCSD Academic Senate to present the campus lecture in 2001-2002 as the outstanding UCSD Faculty Researcher in medical sciences
2001 Charter Member, UCSD Institute of Molecular Medicine
2001 Appointed Member, UCSD Committee on Academic Information Technology
2001 Appointed to Internet 2 Life Sciences Leadership Team
2001 Director, National Institute of Health Biomedical Informatics Research Network (BIRN)
2002 Appointed by the Secretary of Health to the National Institute of Health, National Center for Research Resources, National Advisory Research Resources Council (5-year appointment)
2002 Appointed to the Department of Energy, Los Alamos National Laboratory, and Physics Division Review Committee (5-year appointment)

HONORS, AWARDS & OTHER APPOINTMENTS (continued)

- 2003 Appointed to the External Advisory Committee of the National Research Resource for Advanced Biomedical Graphics and Simulation at the University of Utah
- 2003 Elected Chair of the NIH National Center for Research Resources (NCRR) and National Institute of Biomedical Imaging Bioengineering (NIBIB) Biotechnology Research Resources Principal Investigators Group and Chair of the National Meeting Program Committee
- 2004 Appointed to the Program Committee for the Biophysical Society 2004 National Meeting
- 2004 Series Advisor, Cambridge University Press

COMMITTEES/SERVICE

National/International Organizations / Editorial Boards of Peer-Reviewed Journals

Frequent consultant and reviewer for research programs of the National Institutes of Health, National Science Foundation, Department of Energy as well as for the e-Science program of the EPSRC in the UK.

Consultant to European and Asian funding agencies including European Science Foundation, Wellcome Trust, Swiss Science Foundation, NATO, Taiwan, Japanese Ministry of Science, and private foundations in Europe and Japan.

Editorial Activities associated with journals in Neuroscience, Cell Biology, Molecular Biology, Informatics, Microscopy, Imaging, Computer Science, Optics, Bioengineering.

UCSD School of Medicine/General Campus and UC Systemwide Service (recent examples)

Recent activities: (1) Chaired the committee to review the performance of the Dean and Vice Chancellor for Health Sciences at UCSD; (2) Chaired the committee to review the performance of the Director of UCSD's Comprehensive Cancer Center; and (3) Serve on the Executive Committee for the UC-Life Science Informatics University/Industry Cooperative Program.

Established the University of California's Systemwide Life Sciences Informatics Program and remain the program representative at UCSD.

Participated in establishing the California Institute for Telecommunications and Information Technology (Cal-IT²) at UCSD and UCI.

Led UCSD's successful effort to move the San Diego Supercomputer Center from General Atomics to UCSD and led the development for the University of California of the NSF-supported research program to establish the National Partnership for Advanced Computational Infrastructure (NPACI).

BIBLIOGRAPHY (PRIMARY PUBLISHED OR CREATIVE WORK)

1. Rash JE, Staehelin LA and Ellisman MH. 'Rectangular arrays of particles on freeze-cleaved plasma membranes are not gap junctions', *Exp Cell Res*, 86: 187-190, 1974.
2. Rash JE, Ellisman MH, Staehelin LA, and Porter KR. 'Specializations of excitable membranes in normal, chronically denervated, and dystrophic muscle fibers', In: *Exploratory Concepts in Muscle II Control Mechanisms in Development and Function of Muscle and Their Relationship to Muscular Dystrophy and Related Neuromuscular Diseases*, Muscular Dystrophy Association of America, New York, Excerpta Medica, Amsterdam, 271-289, 1974.
3. Rash JE and Ellisman MH. 'Studies of excitable membranes, I. Macromolecular specializations of the neuromuscular junction and the nonjunctional sarcolemma', *J Cell Biol*, 63: 567-586, 1974.
4. Ellisman MH. 'Ultrastructural Studies on the Plasticity of Excitable Membranes in the Mammalian Neuromuscular System', *Ph.D. Thesis, University of Colorado*, 1976.
5. Ellisman MH, Rash JE, Staehelin LA, and Porter KR. 'Studies of excitable membranes, II. A comparison of specializations at neuromuscular junctions and nonjunctional sarcolemmas of mammalian fast and slow twitch muscle fibers', *J Cell Biol*, 68: 752-774, 1976.

6. Ellisman MH and Rash JE. 'Studies of excitable membranes, III. Freeze-fracture examination of the membrane specializations at the neuromuscular junction and in the nonjunctional sarcolemma after denervation', *Brain Research*, 137: 197-206, 1977.
7. Ellisman MH, Brooke MH, Kaiser KK, and Rash JE. 'Appearance in slow muscle sarcolemma of specializations characteristic of fast muscle after reinnervation by a fast muscle nerve', *Exp Neurol*, 58: 59-67, 1978.
8. Rash JE, Hudson CS, and Ellisman MH. 'Ultrastructure of acetylcholine receptors at mammalian neuromuscular junction', In: *International Conference on Biological Membranes: Drugs, Hormones and Membranes*, edited by L Bolis, Raven Press, New York, 47-68, 1978.
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10. Ellisman MH, Friedman PA, and Hamilton W. 'Cytochemical localization of cations in myelinated nerve using TEM, HVEM, SEM, and electron probe microanalysis', In: *Scanning Electron Microscopy: An International Review of Advances in Biological Techniques and Applications of the Scanning Electron Microscope*, edited by RP Becker and O Johari, IITTI, Chicago, 793-800, 1979.
11. Hoi Sang U, Saier Jr, MH, and Ellisman MH. 'Tight junction formation is closely linked to the polar distribution of intramembranous particles in aggregating MDCK epithelia', *Exp Cell Res*, 122: 384-390, 1979.
12. Ellisman MH. 'Molecular specializations of the axon membrane at nodes of Ranvier are not dependent upon myelination', *J Neurocytol*, 8: 719-735, 1979.
13. Ellisman MH and Staehelin LA. 'An electronically interlocked electron gun shutter for preparing improved replicas of freeze-fracture specimens', In: *Preparation Dependent Changes in Freeze-Fractured*, edited by JE Rash and CS Hudson, Raven Press, New York, 123-125, 1979.
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17. Ellisman MH. 'The anatomy of the brain cell microenvironment', In: *The Dynamics of the Brain Cell Microenvironment Neurosci, Res Prog Workshop*, edited by C Nicholson, MIT Press, New York, 18: 187-192, 1980.
18. Ellisman MH, Friedman PF, and Hamilton WJ. 'The localization of sodium and calcium to Schwann cell paranodal loops at nodes of Ranvier and of calcium to compact myelin', *J Neurocytol*, 9: 185-205, 1980.
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21. Hoi Sang U, Saier Jr, MH, and Ellisman MH. 'Tight junction formation in the establishment of intramembranous particle polarity in aggregating MDCK cells - Effects of drug treatment', *Exp Cell Res*, 128: 223-235, 1980.

22. Lindstrom J, Gullick W, Conti-Tronconi B, and Ellisman MH. 'Proteolytic nicking of the acetylcholine receptor', *Biochemistry*, 19: 4791-4795, 1980.
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55. Fields RD and Ellisman MH. 'Axons regenerated through silicone tube splices: II. Functional morphology', *Exper Neurol*, 92: 61-74, 1986.

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59. Hatton JD, Cox GG, Miller AL, Nichol JA, and Ellisman MH. 'Identification of polypeptides associated with sarcolemmal orthogonal array', *Biochim Biophys Acta*, 904(2): 373-380, 1987.
60. Ellisman MH. 'Microtrabeculae, microtrabecular lattice', In: *Encyclopedia NeuroscienceII*: 663-664, 1987.
61. Ellisman MH. 'Transcellular filament system', In: *Encyclopedia NeuroscienceII*: 1232-1233, 1987.
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65. Wurtz CC and Ellisman MH. 'Activity associated ultrastructural changes in peripheral nodes of Ranvier are independent of fixation', *Exper Neurol*, 101(1): 87-106, 1987.
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69. Fields RD and Ellisman MH. 'Functionally significant plasticity of synaptic morphology: studies on the ribbon synapse of the ampullae of Lorenzini', *Neuroscience*, 25: 705-720, 1988.
70. Le Beau JM, Ellisman MH, and Powell HC. 'Ultrastructural and morphometric analysis of long-term peripheral nerve regeneration through silicone tubes', *J Neurocytol*, 17: 161-172, 1988.
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