
CURRICULUM VITAE
William Allen Sather

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EDUCATION

1981 B.S., Biophysics, University of Illinois, Urbana-Champaign, Illinois
1988 Ph.D., Physiology & Biophysics, University of Washington, Seattle, Washington
Dissertation: "Phototransduction in detached rod outer segments" (supervisor: P.B. Detwiler)

PROFESSIONAL EXPERIENCE

1988-1991 Postdoctoral Fellow, Laboratoire de Neurobiologie, Paris (supervisor: Professor P. Ascher)
1991-1994 Postdoctoral Fellow, Stanford University (supervisor: Professor R.W. Tsien)
1994-2000 Assistant Professor, Dept. of Pharmacology, Univ. of Colorado HSC
1997-2000 Assistant Professor (secondary), Dept. of Physiology & Biophysics, Univ. of Colorado HSC
2001-present Associate Professor, Dept. of Pharmacology, Univ. of Colorado HSC
2001-present Associate Professor (secondary), Dept. of Physiology & Biophysics, Univ. of Colorado HSC
2003-2006 Faculty Affiliate, Dept. of Biomedical Sciences, Colorado State University

SCHOLARSHIPS AND AWARDS

1987 ARCS Foundation Scholarship
1988 Fondation pour la Recherche Medicale, Fellowship
1989 National Science Foundation, Fellowship, Foreign Exchange Program
1990-1991 Individual National Research Service Award, National Institutes of Health
1991-1993 Dorothy Penrose Stout Fellowship, American Heart Association, California Affiliate
1999 Teaching Award, Dept. of Pharmacology, UCHSC
2001 Nominee, UCHSC Medical Student Council Teaching Award
2001, 2005 Excellence in Teaching Award, awarded by the Sophomore Medical Student class

PROFESSIONAL SERVICE

1995-97, 2001 Retreat Committee, Neuroscience Program (Chair, 1997 and 2001)
1996-2005 Graduate Training Committee, Dept. of Pharmacology
1996-1999 Admissions Committee, Neuroscience Program (Chair, 1997-98)
1997-2004 School of Medicine Faculty Senator, Dept. of Pharmacology
1997-2001 Admissions Committee, Biomedical Sciences Program
1997-1999 Seminar Committee, Dept. of Pharmacology
1997-1998 Ad hoc Curriculum Revision Committee, UCHSC Graduate School
1998 Ad hoc Curriculum Revision Committee, Dept. of Pharmacology
1998 Ad hoc Curriculum Revision Committee, Neuroscience Program
1998-2003 Faculty Search Committee, Dept. of Pharmacology
2000 UCHSC Focus Group, Laboratory Space and Equipment Design for Research Complex 1
2000-2003 Chair, Committee on Pharmacology Departmental Space Organization at Fitzsimmons
2001-2003 Chair, Graduate Training Committee, Neuroscience Program
2001-2003 Steering Committee, Neuroscience Program
2001-2002 Planning and Fiscal Policy Committee of the School of Medicine Faculty Senate
2002-2004 Seminar Committee, Neuroscience Program
1996-2008 Dean's Advisory Committee, School of Medicine
2001-present Curriculum Committee, Department of Pharmacology (Chair 2001-2004; Chair 2007-present)
2002-present Steering Committee, University of Colorado Denver Light Microscopy Facility

PEER REVIEW

1999-2003	American Heart Assoc., Great America Affiliates Peer Review Committee 5D, regular member
2000-2003	American Heart Assoc. (National), Molecular Genetics Committee, regular member
2002-2006	NIH Neurotransporters, Receptors & Calcium (NTRC) study section, regular member
2007	Chair, NIH Calcium Channels and Calcium Signaling (MDCN-G) special study section

Ad hoc reviewer for: *Neuron*, *Nature*, *Journal of Neuroscience*, *Journal of General Physiology*, *Journal of Physiology*, *Biophysical Journal*, *PNAS USA*, *Journal of Neurophysiology*

INVITED LECTURES

1995	Colorado State University, Dept. of Neurobiology
1997	Clinical Scholars Meeting, Aspen, Colorado
2001	Rush University Medical School, Dept. of Molecular Physiology & Biophysics
2001	University of Chicago, Committee on Cell Physiology
2001	Colorado State University, Dept. of Neurobiology
2002	Columbia University, Dept. of Pharmacology
2003	University of Connecticut, Dept. of Physiology & Neurobiology
2003	University of New Mexico, Dept. of Neuroscience
2008	NIH National Institute of Environmental Health Sciences, Laboratory of Neurobiology
2008	Thomas Jefferson University, Dept. of Physiology
2009	Winter Conference on Brain Research, Copper Mountain, Colorado

PROFESSIONAL SOCIETIES

The Society for Neuroscience
The Biophysical Society

RESEARCH SUPPORT**Active**

Title: Reciprocal Control of Ca²⁺ Channels by Anchored Protein Kinase A and Calcineurin
Principal investigator: William A. Sather
Grant number: NIH R01 HL088548-01
Award period: 8/1/2007 – 7/31/2011
Person-months effort: 6.0 calendar months per year
Annual direct: \$225,000
Total costs: \$1,371,097 (direct + indirect, 4 years)

Title: AKAP Anchored PKA and Calcineurin Regulation of Neuronal L-type Ca²⁺ Channels
Principal Investigator: Mark L. Dell'Acqua
Grant number: NIH R01 MH080291
Award period: 12/15/2007 – 11/30/2012
Person-months effort: 3.0 calendar months per year
Annual direct: \$225,000
Total costs: \$1,715,730 (direct + indirect, 5 years)

Past Support (including fellowships and grants to trainees)

- American Federation for Aging Res. A96079 (William A. Sather, P.I.)
- NIH grant P01 AG04418, Project 2 (William A. Sather, Project 2 Director)
- NIH NRSA F31 MH11717, predoctoral fellowship (Susan M. Cibulsky, trainee)
- American Heart Association, postdoctoral fellowship (Anna V. Williamson, fellow)
- American Heart Association, postdoctoral fellowship (Robin K. Cloues, fellow)
- NIH K01 MH01485 Mentored RCDA (Kaisa H. Hellevar, P.I and mentoree)
- National Science Foundation, predoctoral fellowship (Joyce G. Rohan, trainee)
- American Heart Association, predoctoral fellowship (Joyce G. Rohan, trainee)
- Howard Hughes/University of Colorado School of Medicine HUI Award
- NIH grant R01 NS35245 (6/1/1996 – 3/31/2007, William A. Sather, P.I.)
- NIH NRSA F30 NS051963, predoctoral fellowship (Seth F. Oliveria, trainee)

TEACHING EXPERIENCE***Current Teaching***

- Phase I Medical School Curriculum: Cardiovascular/Pulmonary/Renal (IDPT 5005), 160 1st-year medical students
2 lecture hours on molecular origins of arrhythmias and antiarrhythmic drugs
- Phase II Medical School Curriculum: Nervous System (IDPT 6001), 160 2nd-year medical students
3 lecture hours on local anesthetics and general anesthetics
- Principles of Pharmacology (PHCL 7620), 5 graduate students
14 contact hours (ion channels, excitability, local anesthetics, cardiovascular pharmacology, grant writing)
- Cellular & Molecular Neurobiology (NRSC 7600), 7 graduate students
2 contact hours on ion channel gating and modulation by neurotransmitter receptors
- Advanced Topics in Cell Signaling (PHSL 7840), 4 graduate students
8 contact hours on electrophysiology and ion channel permeation
- Frontiers in Pharmacology (PHCL 7600), 12 students
1 contact hour with graduate students

Previous Teaching

- 1995-2006 Medical School Pharmacology (PHCL 6000), 130 second-year medical students
8 lecture hours on cardiac function, antiarrhythmic drugs, local and general anesthetics
- 1995, 1996 SEEK Course (IDPT 5050), program for 20 disadvantaged Medical School candidates
14 lecture hours in basic neurobiology
- 1995-97 Molecular Pharmacology (PHCL 7618), 4-8 graduate students
2 lecture hours on the molecular bases of cardiac arrhythmias
- 1995, 1996 Laboratory Methods in Neurosciences (IDPT 7656), 5-6 graduate students
one 2-day session on the biophysical characterization of ion channels
- 1995-97 Neuropharmacology (IDPT 7621), 5-8 graduate students
2 lecture hours on Ca²⁺ signaling in presynaptic function
- 1995-97 Cellular Neurobiology (IDPT 7613), 5 graduate students
5 lecture hours on modern methods of study of currents through single ion channels
- 1996, 1997 Advanced Topics in Membrane Biophysics, 8 graduate students
2 lecture hours on mechanisms of selective permeability in ion channels
- 1998 Biomedical Sciences Core Course I (IDPT 7800), 60 graduate students
2 lectures hours on signaling by voltage-gated ion channels in excitable cells
- 1998 Ethics in Research (PHCL 7605), 12 graduate students
6 discussion sessions on diverse ethical dilemmas that arise in professional research settings
- 1999-2004 Neuroscience Graduate Core Course (NRSC 7600), 8 graduate students
5 lecture hours on pharmacology of neurotransmitter release
- 1999-2004 Dental School Pharmacology (DSBS 6600), 30 dental students
2 lecture hours on local anesthetics
- 2007-08 Advanced Topics in Cell Signaling (PHSL 7840), 2 graduate students
6 contact hours on the selective permeability of ion channels

Course Administration

- 1997-98, 2005 Organizer and Co-director, Frontiers in Pharmacology (PHCL 7600)
- 1999-2001 Co-director, Medical School Pharmacology (PHCL 6000)
- 2006-present Director, Principles of Pharmacology (PHCL 7620)

Training ExperienceTrainees Mentored:

			<u>Current position</u>
Susan M. Cibulsky	predoctoral (Ph.D., 2000)	1995-2000	postdoctoral fellow, Harvard University
Joyce G. Rohan	predoctoral (Ph.D., 2003)	1998-2003	Instructor, U. Colorado-Colorado Spgs.
Anna V. Williamson	postdoctoral fellow	1996-2000	Patent Office, UCSF
Xin Sheng Wu	postdoctoral fellow	1998-2000	postdoctoral fellow, NIH/NINDS
Robin K. Cloues	postdoctoral fellow	1996-2002	Instructor, Regis University, Denver
Kaisa H. Hellevuo	Instructor	1998-1999	Lecturer, Donau University, Austria
Liam Breeze	predoctoral (Ph.D., 2007)	2001-2007	Consultant, DxNA Corporation, Utah
Seth F. Oliveria	predoctoral student	2004-2008	currently in Sather lab

Jeffery T. Juergens	predoctoral student	2008-present	currently in Sather lab
Jun-gang Wang	postdoctoral fellow	2008-present	currently in Sather labi

Rotation Supervision:

Megan J. Williams	Neuroscience Training Program, 1995
Susan M. Cibulsky	Pharmacology Training Program, 1995
Lisa Siconolfi	Neuroscience Training Program, 1996
Liam Breeze	Neuroscience Training Program, 1998
Joyce G. Rohan	Neuroscience Training Program, 1999
Lisa Nolen	Pharmacology Training Program, 1999
Chris Dulla	Neuroscience Training Program, 2000
Andriy Maruschenko	Biomedical Sciences Program, 2001
Davin Korstjens	Pharmacology Training Program, 2003
Seth Oliveria	Medical Scientist Training Program, 2003
Zach Wanarka	Pharmacology Training Program, 2004
Tom Barry	Neuroscience Training Program, 2007
Heather O'Leary	Pharmacology Training Program, 2007
Jeffery T. Juergens	Pharmacology Training Program, 2008

Examination and Thesis Advisory Committees:

Jason Frazier	Neuroscience Training Program, 1995-1998
Kent Fagan	Neuroscience Training Program, 1995-1998
Gail Perez	Neuroscience Training Program, 1996
Corey Smith	Neuroscience Training Program, 1996-1997
Teri Whisenand	Neuroscience Training Program, 1996-2000
Meleik Hebert	Neuroscience Training Program, 1996-1999
Karen Miller	Pharmacology Training Program, 1996-1998
Karen Eccles	Pharmacology Training Program, 1996-1999
James Brundege	Pharmacology Training Program, 1996-1998
T. K. Booker	Pharmacology Training Program, 1996
Amber Buhler	Pharmacology Training Program, 1996
Judy Brittan	Physiology & Biophysics/MSTP, 1996-2000
Christina Backman	Neuroscience Training Program, 1997-1998
Leonard Kish	Neuroscience Training Program, 1997-1999
Alicia Linares	Neuroscience Training Program, 1997-2002
Elizabeth Godden	Pharmacology Training Program, 1998-2001
Janet He	Physiology & Biophysics, 1998-2000
Randy Taylor	Cell & Developmental Biol. Program/MSTP, 1998-2000
Larry Martinez	Pharmacology Training Program, 1999
Chen Gu	Neuroscience Training Program, 2000-2001
Lone Veng	Neuroscience Training Program, 2000-2002
Dan Sdrulla	Neuroscience Training Program, 2001-2005
Davin Korstjens	Pharmacology Training Program, 2004-2005
Autumn Weeks	Biomedical Sciences, Colorado State Univ., 2002-2006
Katherine Barlow	Neuroscience Training Program, 2004-present
Yuan Li	Immunology Training Program, 2007-present
Joshua Ohrtman	Neuroscience Training Program, 2007-present
Zhandi Liao	Physiology & Biophysics, 2008-present

PUBLICATIONS

1. **Sather WA**, Bodoia RD & Detwiler PB (1985) Does the plasma membrane of the rod outer segment contain more than one type of ion channel? *Neurosci Res*, suppl. 2:s89-s99.
2. **Sather WA**, & Detwiler PB (1987) Intracellular biochemical manipulation of phototransduction in detached rod outer segments. *Proc Natl Acad Sci* 84:9290-9294.
3. **Sather W**, Johnson JW, Henderson G & Ascher P (1990) Glycine insensitive desensitization of NMDA-responses in cultured mouse embryonic neurons. *Neuron* 4:725-731.

4. **Sather WA**, MacDonald JF & Ascher P (1991) Time-dependent changes in the N-methyl-D-aspartate receptor desensitization. In: *Transmitter amino acid receptors: structures, transduction and models for drug development*. Barnard EA & Costa E, eds. (Thieme Medical Publishers, NY), pp.493-502.
5. Ascher P & **Sather W** (1991) The NMDA receptor: analogies and differences with the non-NMDA glutamate receptors and with the nicotinic acetylcholine receptor. In: *Glutamate, Cell Death and Memory*. Ascher P, Choi D & Christen Y, eds. (Springer-Verlag, Berlin), pp.1-11.
6. Ascher P, Dieudonné S, MacDonald JF & **Sather W** (1992) Kinetics of activation, deactivation and desensitization of the NMDA glutamate receptor. *Comptes Rendus de l'Academie des Sciences. Serie III, Science de la Vie* 314 (9 suppl.):75-77.
7. Ascher P, Dieudonné S, Johnson J & **Sather W** (1992) Slow kinetic steps in the interaction of glycine and glutamate with the NMDA receptor. In: *Fidia Research Foundation Neuroscience Award Lectures, Volume 7* (Raven Press, New York).
8. **Sather W**, Dieudonné S, MacDonald J, & Ascher P (1992) Activation and desensitization of N-methyl-D-aspartate receptors in nucleated outside-out patches from mouse neurons. *J Physiol* 450:643-672.
9. Dorville A, McCort-Tranchepain I, Vichard D, **Sather W**, Maroun R, Ascher P & Roques BP (1992) Preferred antagonist binding state of the NMDA receptor: synthesis, pharmacology and computer modeling of (phosphonomethyl) phenylalanine derivatives. *J Med Chem* 35:2551-2561.
10. Rispoli G, **Sather WA** & Detwiler PB (1993) Visual transduction in dialysed detached rod outer segments from lizard retina. *J Physiol* 465:513-537.
11. **Sather WA**, Tanabe T, Zhang J-F, Mori Y, Adams ME & Tsien RW (1993) Distinctive biophysical and pharmacological properties of class A (BI) calcium channel α_1 subunits. *Neuron* 11:291-303.
12. Zhang J-F, Randall AD, Ellinor PT, Horne WA, **Sather WA**, Tanabe T, Schwarz TL & Tsien RW (1993) Distinctive pharmacology and kinetics of cloned neuronal Ca^{2+} channels and their possible counterparts in mammalian CNS neurons. *Neuropharmacology* 32:1075-1088.
13. Yang J, Ellinor PT, **Sather WA**, Zhang J-F & Tsien RW (1993) Molecular determinants of Ca^{2+} selectivity and ion permeation in L-type Ca^{2+} channels. *Nature* 336:158-161.
14. **Sather WA**, Tanabe T, Zhang J-F & Tsien RW (1994) Biophysical and pharmacological characterization of a class A calcium channel. *Annals NY Acad Sci* 747:294-301.
15. **Sather WA**, Yang J & Tsien RW (1994) Structural basis of ion channel permeation and selectivity. *Curr Op Neurobiol* 4:313-323.
16. Wheeler DB, **Sather WA**, Randall A & Tsien RW (1994) Distinctive properties of a neuronal calcium channel and its contribution to excitatory synaptic transmission in the CNS. *Adv Second Messenger Phosphoprotein Res* 29:155-171.
17. Wheeler DB, Randall A, **Sather WA** & Tsien RW (1995) Neuronal calcium channels encoded by the α_{1A} subunit and their contribution to excitatory synaptic transmission in the CNS. *Prog Brain Res* 105:65-78.
18. Ellinor PT, Yang J, **Sather WA**, Zhang J-F & Tsien RW (1995) Ca^{2+} channel selectivity at a single locus for high-affinity Ca^{2+} interactions. *Neuron* 15:1121-1132.
19. Cibulsky SM & **Sather WA** (1999) Block by ruthenium red of cloned neuronal voltage-gated calcium channels. *J Pharm Exper Ther* 289:1447-1453.
20. Williamson AV & **Sather WA** (1999) A role for non-glutamate pore residues in the ion selection and conduction behavior of voltage-gated calcium channels. *Biophys J* 77:2575-2589.
21. Snell LD, Ingersoll NC, Claffey DJ, Ruth JA, Valenzuela CF, Cardoso R, Wang ZJ, Levinson SR, **Sather WA**, Williamson AV, Ovchinnikova L, Bhave SV, Hoffman PL & Tabakoff B. (2000) Novel structure having antagonist actions at both the glycine site of the N-methyl-D-aspartate receptor and neuronal voltage-sensitive sodium channels: biochemical, electrophysiological and behavioral characterization. *J Pharm Exper Ther* 292:215-227.
22. Cloues RK & **Sather WA** (2000) Permeant ion binding affinity in subconductance states of an L-type Ca^{2+} channel expressed in *Xenopus laevis* oocytes. *J Physiol* 524:19-36.
23. Wu XS, Edwards HD & **Sather WA** (2000) Side chain orientation in the selectivity filter of a voltage-gated Ca^{2+} channel. *J Biol Chem* 275:31778-31785.
24. Cibulsky SM & **Sather WA** (2000) The EEEE locus is the sole high-affinity Ca^{2+} binding structure in the pore of a voltage-gated Ca^{2+} channel: block by Ca^{2+} entering from the intracellular pore entrance. *J Gen Physiol* 116:349-362.
25. Cloues RK, Cibulsky SM & **Sather WA**. (2000) Ion interactions in the high-affinity binding locus of a voltage-gated Ca^{2+} channel. *J Gen Physiol* 116:569-586.
26. Levinson SR & **Sather WA** (2001) Structure and mechanism of voltage-gated ion channels. In: *Cell Physiology Source Book - 3rd edition*, Sperelakis N, editor (Academic Press, San Diego), pp. 461-485.

27. Cloues RK & **Sather WA** (2003) The afterhyperpolarization regulates firing rate in neurons of the suprachiasmatic nucleus. *J Neurosci* 23:1593-1604.
28. Cibulsky SM & **Sather WA** (2003) Control of ion conduction in L-type Ca^{2+} channels by the concerted action of S5-6 regions. *Biophys J* 84:1709-1719.
29. McCleskey EW & **Sather WA** (2003) Selective ion permeability of voltage-gated Ca^{2+} channels. *Annu Rev Physiol* 65:133-159.
30. **Sather WA** (2005) Selective permeability of voltage-gated Ca^{2+} channels. In: *Voltage-Gated Calcium Channels*, Zamponi GW, editor (Landes Bioscience, Georgetown TX).
31. Lai M, Wang F, Rohan JG, Maeno-Hikichi Y, Chen Y, Zhou Y, Gao G, **Sather WA** & Zhang JF (2005) A tctex1- Ca^{2+} channel complex for selective surface expression of Ca^{2+} channels in neurons. *Nat Neurosci* 8:435-442.
32. Oliveria SF, Dell'Acqua ML & **Sather WA** (2007) AKAP79/150 anchoring of calcineurin controls neuronal L-type Ca^{2+} channel activity and nuclear signaling. *Neuron* 55:261-75.
33. Oliveria SF, Dell'Acqua ML & **Sather WA**. Localized calcineurin confers Ca^{2+} -dependent inactivation upon L-type Ca^{2+} channels. (*in revision*)