

**Education and Positions:**

- 2013 – Present University of San Diego: Professor, Chemistry and Biochemistry  
2011 – 2012 North Dakota State University Center for Biopharm Research & Production  
2005 – 2013 Minnesota State University Moorhead: Professor, Dept of Chemistry  
2001 – 2005 Minnesota State University Moorhead: Assoc. Professor, Dept of Chemistry & Dept Biology  
1997 – 2001 Minnesota State University Moorhead: Assistant Professor, Dept of Chemistry  
1994 - 1997 Howard Hughes Medical Inst. Dept. Molecular Physiology Vanderbilt University: Postdoc  
1988 - 1994 Department of Biochemistry and Molecular Biology University of North Dakota Medical School: Ph.D. Biochemistry and Molecular Biology  
1983- 1988 Bemidji State University: B. S. – Chemistry Minor – Biology and Military Science

**Professional Experience:**

- 2017 – Present Chair USD Chemistry and Biochemistry  
2014 – 2017 Associate Chair USD Chemistry and Biochemistry  
2006 – 2013 Chair MSUM Biochemistry & Biotechnology Program (On leave 2011-12)  
2011 – 2012 Senior Leadership Team Member NDSU Center for Biopharm Research and Production  
2016 – 2019 American Chemical Society Committee on Professional Training (CPT)  
2008 - 2017 CUR Councilor – Chemistry Division  
2002 – 2017 ASBMB Education and Professional Development Committee,  
2006 – 2010 Chair ASBMB UAN (undergrad student chapters) Committee  
2005 – Present Editorial Advisory Board – Chemical Biology and Drug Design  
2004 – Present Associate Editor – Biochemistry and Molecular Biology Education  
2009 – 2013 Editorial Board, The Minnesota Academy of Science Journal  
2009 – 2013 Editorial Board, J of Biotech Research  
2005 – 2009 BWP Ltd. Biotechnology Management - Scientific Advisor  
2004 – 2009 Fargo All City Youth Hockey Board of Directors- Secretary  
2003 – 2006 Minnesota Academy of Science Board of Directors  
2001 – 2009 DragonTech Biotechnology Partner/CEO  
2010 – 2012 Polar Biotechnology Solutions LLC COO  
2000 - 2006 Aldevron LLC Scientific Advisor  
1998 – 2013 Radiation Safety Officer – MSUM  
1983 - 2002 US ARMY, MN National Guard. Military Police, Infantry & Chemical Corps: Platoon Leader, Company Commander, Battalion Staff Officer, Last rank – Captain (Ret)

**Research Students Trained:** 153 Undergraduate, High School students & HS teachers trained.

**Partial List of Grants – \$ 3,210,500 Awarded. (Pending NIH R15 NCI – \$354,000)**

- 2017 – NSF DUE IUSE \$598,666 An Interdisciplinary Faculty Community Using a Protein-focused Course Based Undergraduate Research Experience (CURE) to Improve Student Learning with E Bell and J Bell  
2014 – ASBMB Outreach \$500– bringing modeling and biochemistry to middle school classrooms  
2014 – NSF MCB \$15,750 Efforts to support underserved students and faculty at national science meetings  
2011 – NSF MCB Supporting the Research of PUI Faculty and Undergrads at the ASBMB Mtgs. \$42,250  
2009 – Minnesota Department of Employment and Economic Development with Match from the City of Moorhead Economic Development Authority – Bioscience Business Infrastructure Grant - \$ 710,500  
2008 – NIH R15-CA-135616-01 AREA –NHE and MMP9 in tumor invasion and metastasis \$186,364  
2008 – NSF RUI MCB-0817784 – Phosphorylation of NHE by RhoA Kinase \$369,275  
2006 – NSF MCB Support ASBMB efforts for Undergraduate Research Education. \$67,500.  
2006 – NIH Undergraduate Research Supplement \$18,816  
2005 – NSF CCLI A&I Integration of Research-based Activities into Biochemistry Laboratories \$ 171,130  
2004 – Anheiser Bush Award for MSUM Science Culture and Microscopy Facilities. \$30,000.  
2004 – MnSCU Center for Teaching and Learning: Advancing the Incorporation of Research and Technology Into MSUM Biochemistry and Biotechnology Courses. \$15,000.  
2004 – NIH R15, Mark Wallert and Joe Provost. Regulation of NHE and MAPK Requires PLD. \$197,500.

**Teaching Description and Research Students Trained:** 152 Undergraduates, 18 High School students & 4 HS teachers trained. Total number of equivalent years of student research training = 331.

**Scientific Interests/Expertise:** Proteomics, protein structure, signal transduction, enzymology, membrane ion channels, purification of membrane and cytosolic proteins, protein interactions / regulation, G-proteins and protein kinase/phosphatases, conventional, chromatography, FPLC, HPLC, isolation of cellular organelles, tissue culture, recombinant protein expression and purification, baculovirus protein expression, transient transfection, lipid analysis and isolation, fluorescence microscopy, Western blotting, ELISA, immunoprecipitation, immunokinase assays, polyclonal antibody production. Molecular biology techniques in cloning, sequencing, subcloning, Gibson and PCR cloning, rt/Q PCR, mutation, shRNA and RNAi, CRISPR, fluorescence and confocal microscopy.

**Academic Interests/Experience:** Pedagogy of engagement, creating, building and sustaining STEM programs, assessment of teaching and research, industry & entrepreneurship and academic partnerships, workforce training, integrating research into undergraduate curriculum, academic leadership.

### Courses Taught:

Biochemistry I & II	Biotechniques I & II	Biotechnology Seminar
Biochemistry Laboratory I & II	Medical Observations I & II	Health Profession Chemistry Lab
Basic Principles of Chemistry	Molecular Biology Techniques	Chemistry in Everyday Life
Health Professional Chemistry	Science of Cooking	Organic Chemistry Laboratory I
General Chemistry Laboratory	Biochemistry of Cancer	Human Physiology Laboratory
Undergraduate Research	Research Experience in Vaccinology	Methods in Research

### Partial List of Honors / Experiences

- Welcome and orientation for all undergraduates at Annual ASBMB meeting 2005-2018
- Co-Lead Undergraduate Poster Competition ASBMB 2004-2011
- Accreditation and Standardized Exam Committee ASBMB 2010-present
- Review member American Journal of Cell Physiology 2015
- 2105 Two students (Kiefer and Cottle) accepted into ASBMB Honor Society
- 2015 Student poster (Davis & Silva) recognized for best thematic poster in membrane transport section of Experimental Biology Annual Meeting
- Participant and mentor Beckman Scholars Program (2014-2017)
- Mentor/leader for PKAL leadership Institute (summers 2015 & 2017)
- Chaired sessions for ASBMB 2013, 2012, 2011, 2004 Annual Meetings
- Leadership and member of team which created Vaccinology Minor at NDSU
- Part of team to create and build Biochemistry and Biotechnology program at MSUM.
- Original member of ASBMB UAN committee and help to lead and build the Undergraduate Affiliate Network to support ASBMB's efforts for undergraduate faculty and students
- Building Committee – Faculty Representative MSUM Science Lab and Hagen Hall Renewal (five year commitment, involved in all phases from planning to occupying new space)
- Seventeen time review panel member – NSF Molec Cell Bio and Structural Bio
- Three time review panel member – TUES I and TUES I and II.
- Foundation and Ad Hoc reviewer - National Institutes of Health
- Organizer or Co-Organizer of over 15 regional and national meetings and events including Regional ACS/ASBMB annual meetings, National Poster ASBMB Competitions, MN Academy of Science Meetings, and Tri-Beta Regional Meetings
- Nominated MSUM CASE Professor of the Year 2003
- MnSCU Award for Excellence in Curriculum Programming – Biotech Oversight Group 2003
- Academic Affairs Excellent Award for Student Service –Biotech. Oversight Group MSUM 2001
- Academic Affairs Excellence Award for Research - MSU Moorhead 2000
- Outstanding Undergraduate Student Researcher – Bemidji State University 1988
- Coached 24 boys and girls hockey teams from ages 6 to 18, Fargo Board of Directors 6 yrs, ND-USA Hockey Selects Coach, Founded Adult Novice league in Fargo, ND (over 150 participants).

### Partial List of Publications (29 total) : Underlined names indicate undergraduates

1. Textbook: The Science of Cooking. Understanding the Biology and Chemistry Behind Food and Cooking. (2016) Wiley and Sons. Provost, JJ., Colabroy KL., Kelly BK., and Wallert MA. Wiley.
2. Wallert, MA, Hastle D., Wallert C.H., Cottle, W.T., and Provost J.J. You can never have too many kinases: The sodium hydrogen exchanger isoform I regulation by phosphorylation. 2016. J Cell Signaling 1:3.

3. Bell, J.K., Eckdahl T.T., Hecht D.A., Killion P.J., Latzer J., Mans T.L. Provost J.J., Rakus J.F., Siebrasse E.A., Bell E.J. CUREs in biochemistry-where we are and where we should go. 2016. BAMBED June 30 Epub
4. Wallert, M.A., Haames D., Nguyen T., Kiefer, L., Berthelson N., Kern A., Anderson-Tiege K., Shabb J.B., Muhonen W.W., Grove B.D., and Provost, J.J. RhoA Kinase (Rock) and p90 Ribosomal S6 Kinase (p90Rsk) phosphorylation of the sodium hydrogen exchanger (NHE1) is required for lysophosphatidic acid-induced transport, cytoskeletal organization and migration. *Cell Signal*. 2015 Jan 8
5. Wallert M.A. and Provost J.J. Integrating standard operating procedures and industry notebook standards to evaluate students in laboratory courses. *Biochemistry and Molecular Biology Education* 2014. 42(1): 41 – 49.
6. Provost, J.J. and Wallert M.A. Inside Out: Targeting NHE1 as an intracellular and extracellular regulator of cancer progression. Review. *Chem Biology and Drug Design*, 2013 18: 85-101.
7. Provost, J.J. Rastedt, D., Canine, J., Nguyen T., Haak, A., Kutz, C., Berthelsen N., Slusser A., Anderson K., Dorsam G, and Wallert M.A. Urokinase plasminogen activator receptor induced non-small cell lung cancer invasion and metastasis requires NHE1 transporter expression and transport activity. *Cellular Oncology*. 2012 Vol 35: 95-11.
8. Knutson K., Smith J., Wallert M A. and Provost J J. Bringing the Excitement and Motivation of Research to Students; Using Inquiry and Research – Based Learning in a Year-Long Biochemistry Laboratory. *Part I–Guided Inquiry – Purification and Characterization of a fusion protein: Histidine tag, malate dehydrogenase, and green fluorescent protein*. BAMBED 2010 Vol 38 pp.317-323.

### **Partial List of Invited Presentations/Workshops hosted (69 Total):**

1. Provost J.J. Can you survive without food or Oxygen? Cancer cells can. Undergraduate Research in the Molecular Sciences 14<sup>th</sup> Annual Meeting.
2. Molecules in the Kitchen. Some like it hot (peppers). Minnesota State University. Nov 2017
3. Provost J.J. From a Beaver to a Bullfighter – What you can do if you don't know what you can't. AKA Doing science with undergrads. Bemidji State University Nov 2017
4. ASBMB PUI Career Webinar – Cohost and Panelist. March 2017
5. Workshop – Mayo Medical Clinic Graduate and Professional Sciences. PUI Careers – teaching and Research. 2016
6. Provost J.J. and Colbroy K. Using Science of Cooking to broaden access of science. ACS Spring meeting. 2016
7. Kelly B. and Provost J.J. Science of Cooking – Teaching Biochemistry to non-science majors. 2016 Experimental Biology
8. Provost JJ. Role of CHP2 and NHE1 in Lung Cancer: A Novel Modality of Cancer Treatment. University of California Long Beach. Oct 2015.
9. Provost JJ, Transforming Undergraduate Education in Molecular Life Sciences 2015 - Assessing Undergraduate Research. St. Louis Mo.
10. Provost JJ, and Wallert MA. NHE and Non-Small Lung Cancer. Univ of North Dakota Medical School. January 2015
11. Provost JJ, Grahe JE, Fortner SK, Moore DK, and Childress H. CUR Task Force on Innovation Through Collaboration: Update of Survey and Report on Best Practices. CUR Annual Meeting 2014
12. NSF RCN UBE – Host, organizer and presenter Workshop on creating assessment and teaching tool kit. USD (Fall 2013) San Francisco State University (Spring 2014)
13. Provost J.J. An Annual Meeting workshop for undergraduates at ASBMB Annual Meeting. 2012-2015
14. Provost J.J. Growth of a community: ASBMB project to create resources to support the biochemistry and molecular biology community and education. ASBMB 2014 Annual Meeting
15. Mattos, C., and Provost J.J. From Proposal to Publication: Writing and Critical Thinking Skills – ASBMB Student-Centered Education in the Molecular Life Sciences Richmond VA 2011
16. Cotton, M. L, Decatur, S., Mehl, R, Parson, K., and Provost, J.J.: Career Envy: The Road to a Successful PUI Position. CUR/Research Corporation/ASBMB sponsored panel presentation 2010

### **Partial List of articles in professional magazines and blogsites (20)**

1. Beyond Survival. Becoming emotionally resilient in academia. Hull M., Barral J., Mertz P, and Provost J. Vol 6 No 7. Aug 2017 ASBMB Today
2. Mentoring Undergraduates at a National Meeting. The Substrate. ASBMB Student Chapter News 2017
3. Research for all: A CURE for undergraduates. ASBMB Today 2016
4. The NIH-R15, Part 1: Who's in the rink? Council on Undergraduate Research Wordpress. Oct 31, 2016

**Partial List of Professional Abstracts (124 total):** Underlined names indicate undergraduates

1. Cottle W.T., Wallert M., and Provost J.J. Calcineurin Homologous Protein Expression Regulates Na<sup>+</sup>/H<sup>+</sup> Exchanger 1 Dependent Tumor Survival. FASEB J April 2017
2. Bell I.B., Latzer J., Wallert M., and Provost JJ. Computational Analysis of CHP-NHE Protein-Protein Interaction FESEB J April 2017
3. Marshal C. Wallert. M.A. and Provost J.J. Multiple Approach to Determine Protein-Protein Binding Affinity of Calcineurin Homologous Protein Isoforms 1 and 1 and NHE1. FASEB J April 2017
4. Marshall, C., Wallert M.A. and Provost J.J. Calcineurin Homologous Protein Isoforms 1 and 2. Binding to the sodium Hydrogen Exchagner 1. FASEB J April 2016 30:600.1
5. Silva D., Latzer, J., Wallert MA, and Provost J.J. Frustrational Analysis of Na<sup>+</sup>/H<sup>+</sup> Exchanger 1 (NHE1) and Calcineurin B Homologous Protein 1 & 2. FASEB J April 2016 30:600.12
6. Provost J.J., Kelly B., Colabroy K., and Wallert M.A. Teaching a broad non-science major audience using the science fo food and cooking. FASAB J April 2016 30.882.2