

Andrew G. Ewing

## Curriculum Vitae January, 2020

**Doctoral degree:** Defended April 1, 1983, Analytical and Biological Chemistry, Indiana University,  
Thesis title: Quantitative and Qualitative *In Vivo* Electrochemistry

Supervisor: Prof. R. Mark Wightman

**Postdoctoral work:** 1983/84, Modified Microelectrodes, University of North Carolina

Supervisor: Prof. Royce W. Murray

### Positions and periods of appointment:

1984-1992	Assistant/Associate Professor, Penn State University
1990-1995	Assistant Head of Department, Director of Graduate Education, Penn State
1992-2010	Professor of Chemistry, Penn State University
1995-2003	Adjunct Professor of Neuroscience and Anatomy, Penn State University
1996-2000	Co-Director, Neuroscience Option, Integrative Biosciences Graduate Program
1999-2010	J. Lloyd Huck Chair in Natural Sciences, Penn State University
1999-2004	Head, Department of Chemistry, Penn State University
2003-2010	Professor of Neural and Behavioral Sciences, Penn State University
2007-2010	Marie Curie Chair, Dept. of Chemistry, University of Gothenburg
2010-	Appointed Professor of Analytical Chemistry, University of Gothenburg
2010-2012	Adjunct Professor, Department of Chemistry, Penn State University
2011-2018	Chair (Professor), Analytical Chemistry, Chalmers University of Technology
2011-2016	Director, Joint Chalmers-GU Initiative for Bioanalytical Chemistry

### People awarded doctorates for whom the applicant has been the main supervisor (54):

Ross Wallingford (1988); Reginaldo Saraceno (1988); Jennifer Chien (1990); Charlotte Silverman (1990); Teresa Olefirowicz (1990); Paul Curry (1991); Timothy Strein (1992); Yau-Yi Lau (1992); Mark Hayes (1993); Sandra Ferris (Sloss) (1993); Ta-Kung Chen (1994); Samuel Gilman (1994); Jody Mesaros (1994); Guangyao Chen (1996); Franklin Swanek (1996); Peter Gavin (1997); Paula Beyer Hietpas (1997); Katherine (Bullard) Smith (1998); Brian Anderson (1998); Barbara Rhoden Bryant (1998); Christine MacTaylor (1998); Tom Colliver (2000); Steven Suljak (2000); Donald Cannon (2000); Drew Manica (2003); Elizabeth Smith (2003); Julie Lapos (2002); Thomas Roddy (2002); Lori Ann Woods (2003); Hongwei Xu (2003); Leslie Sombers (2004); Sara Ostrowski (2005); Tracy Paxon (2005); Paula Ream Powell (2005); Nate Wittenberg (2006); Marc Maxson (2007); Dan Eves (2007); Imee Arcibal (2009); Mike Kurczyk (2009); Mike Santillo (2009); Kelly Adams (2009); Paul Piehowski (2009); Monique Makos (2010), Donna Omiatek (2010); Nick Kuklinski (2010), Ingela Lanekoff (2011); Carina Berglund (2012); Lisa Mellander (2013); Neda Najafinobar (2016); Jelena Lovric (2016); Amir Mohammadi (2017); Johan Dunevall (2018); Sanna Samförs (2018); Masoumeh Dowlatshahi Pour (2018)

**Current PhD Students (9):** Mai Hoang (2019); Anna Larsson (2019), Chaoyi Gu (2020); Duc Khanh Tho Nguyen (2022); Stefani Rabasco (2023); Kim Long (2023); Cécile Becquart (2019-2024; coadvised); Alicia Lork (2019-2024; coadvised); Fei Ma (2019-2021; visiting PhD student from Fudan University)

**Past Postdoctoral Associates (26):** Danny Wong (1989-1991); Takayuki Abe (1990-1992); Rose A. Clark (1995-1997); Mark Sistare (1999-2000); Ksenia Krylova (1998-2001); Joan Esson (1999-2000); Bo Zhang (2006-2008); Yan Dong (2006-2009); Maja Puchades (2007-2009); Niklas Strömberg (2007-2010); Michael Heien (2007-2010); Sujin Yun (2008-2010); Johan Engelbrektsson (2009-2010); Yuqing Lin (2010-2012); Raphael Trouillon (2011-2013); Melissa Passarelli (2011-2013); Patrik Johansson (2012-2013); Jacqueline Keighron (2011-2014); Carina Berglund (2012-2014); Jörg Hanrieder (2011-2014); Jun Wang (2011-2015); Åsa Persson (2013-2015); Dimitri Brinet (co-supervisor) (2015-2017); Xianchan Li (2013-2018); Sara Taleat (2014-2018); Amir Mohammadi (2017-2018); Johan Dunevall (2018-2019); Lisa Mellander (2016-2018); Lin Ren (2014-2019); Masoumeh Dowlatshahi Pour (2018-2019)

**Current Postdoctoral Associates and Engineers (12):** Soodabeh Majdi (2012-); Elias Ranjbari (2017-); Mohaddeseh Aref (2017-); Pieter Oomen (2017-); Amir Hatami (2017 -); Yingning Zheng (2018-); Zhaoying Wang (2018-); Ying Wang (2018-); Xinwei Zhang (2018-); Xiulan He (2018-); Keke Hu (2019-); Alex da Silva Lima (2019-)

**Honors/Prizes:**

- NSF Presidential Young Investigator Award (1987)
- Alfred P. Sloan Research Fellowship (1989)
- Camille and Henry Dreyfus Teacher-Scholar Award (1989)
- The Penn State Faculty Scholar Medal in Physical Sciences and Engineering (1994)
- The Penn State Graduate Faculty Teaching Award (1997)
- The John Simon Guggenheim Memorial Foundation Fellowship (1999)
- Award for Outstanding Achievements in the Field of Capillary Electrophoresis (1999)
- A. A. Benedetti-Pichler Award, American Microchemical Society (2000)
- Distinguished Alumni Citation, Saint Lawrence University (2001)
- Special Creativity Extension, National Science Foundation (2001-02)
- Elected Fellow of American Association for Advancement of Science (2004)
- Eastern Analytical Symposium Award for Outstanding Achievements in the Fields of Analytical Chemistry (2006)
- American Chemical Society Analytical Division Award for Chemical Instrumentation (2006)
- European Union Marie Curie Chair (2007-2010), 691 470 Euro
- Fellow, Royal Society of Chemistry, FRSC (2009)
- European Research Council (ERC) Advanced Grant (2011), 25 000 000 SEK
- Appointed Wallenberg Scholar (2011), 15 000 000 SEK
- Elected to Swedish Academy of Sciences (Academician), Chemistry Class, (2012)
- Charles N Reilley Award in Electroanalytical Chemistry (2013)
- American Chemical Society Analytical Division Award in Electrochemistry (2013)
- Elected to the Gothenburg Academy of Arts and Sciences (2013)
- Honorary Professor, Nanjing University of Science and Technology (2014-2019)
- Norblad-Ekstrand Medal of the Swedish Chemical Society (2014)
- Honorary Professor, University of Science and Technology Beijing (2014)
- Society for Analytical Chemists of Pittsburgh Conf. Award in Analytical Chemistry (2015)
- International Association of Advanced Materials European Advanced Materials Award (2017)
- Appointed Wallenberg Scholar (2017), 15 000 000 SEK
- European Research Council (ERC) Advanced Grant (2018), 26 000 000 SEK

**Named and Endowed Lectures:**

- Arrhenius Lecture in Analytical Chemistry, University of Stockholm (1991)
- Plenary Lecture, 5th International Conference on In Vivo Methods, Netherlands (1991)
- Plenary Lecture, Amsterdam Summer Course on CZE (1992)
- The Keynote Lecturer at The Intercollegiate Student Chemists Conference, Juniata College, Huntingdon, PA (1993)
- Nalbanov Endowed Symposium on “Inside the Single Cell”, Champaign, IL (1993)
- Levich Lecture, 8th International Conference on Electroanalysis, Germany (2000)
- Centennial Distinguished Lecturer, University of Texas (2000)
- Sixty Second Frontiers in Chemistry Distinguished Lecturer, Case Western Reserve University (2003)

- Allergan Distinguished Visiting Lecturer, California State University Long Beach (2005)
- Amy Mellon Lecture, Purdue University (2006)
- James and Jeanette Neckers Lecture in Chemistry, Hope College (2008)
- Plenary Lecture, 23rd Int. Symp. on Microscale Bioseparations, Boston, MA (2009)
- Plenary Lecture, 13th International Conference on Electroanalysis, Gijon, Spain (2010)
- Plenary Lecture, 61st International Society for Electrochemistry meeting, Nice, France (2010)
- Keynote Lecture, 13th Meeting on In Vivo Methods of Analysis: Monitoring Molecules in Neuroscience, Brussels, Belgium (2010)
- Plenary Lecture, 14th Meeting on Monitoring Molecules in Neuroscience, London, U.K. (2012)
- Plenary Speaker, BCEIA, 15<sup>th</sup> Beijing Conference and Exhibition on Instrumental Analysis (2013)
- Keynote Lecture, 14<sup>th</sup> International Society for Electrochemistry meeting, Life Science, Nanjing, China (2014)
- Plenary Lecture, Euroanalysis, Bordeaux, France (2015)
- Molec. Sciences Forum Lecture, Center for Molecular Science, ICCAS, Beijing, China (2015)
- Plenary Lecture, 6<sup>th</sup> Chinese Conference on Secondary Ion Mass Spectrometry, Dalian, China (2016)
- Keynote Lecture, 33<sup>rd</sup> International Symposium on Microscale Separations and Bioanalysis, Noordwijkerhout, The Netherlands (2017)
- Plenary Lecture, The Scientific International Symposium on SIMS and Related Techniques Based on Ion-Solid Interactions, Kyoto, Japan (2017)
- Plenary Lecture, 16<sup>th</sup> International Symposium on Electroanalytical Chemistry, Changchun, China (2017)
- Plenary Lecture, European Advanced Materials Congress, Stockholm-Helsinki Cruise (2017)
- Keynote Lecture, 17<sup>th</sup> Asia-Pacific International Symposium on Microscale Separation and Analysis, Shanghai, China (2017)
- Plenary Lecture, Symposium on Biosensing and Imaging in Neuroscience, Shanghai, China (2017)
- Plenary Lecture, Monitoring Molecules in Neuroscience meeting, Oxford, UK (2018)
- The Walter Harris Lectures (3), University of Alberta, Edmonton, Canada (2019)
- Plenary Lecture, 17<sup>th</sup> International Symposium on Electroanalytical Chemistry, Changchun, China (2019)

**Positions of Trust:**

- Editorial Advisory Board, Journal of Microcolumn Separations (1989-2001)
- Scientific Committee, Frederick Conference on Capillary Electrophoresis (1990-98)
- Scientific Committee, International Conference on In Vivo Methods of Analysis (1991-2012)
- Editorial Advisory Board, Analytical Methods and Instrumentation (1992-96)
- Board of Directors, Society of Electroanalytical Chemistry (1993-98)
- Editorial Advisory Board, Journal of Capillary Electrophoresis (1994-2004)
- Membership Chairperson, Society of Electroanalytical Chemistry (1994-98)
- National Academy of Sciences External Advisory Group for OBAS2 Publication of Careers in Science and Engineering (1995)
- Editorial Advisory Board, Electrophoresis (1995-99)
- Editorial Advisory Board, Analytical Chemistry (1997-2000)
- Scientific Committee, Latin American Conference on Biomedical, Biopharmaceutical, and Industrial Application of CE (1998-2008)
- Secretary, Society of Electroanalytical Chemistry (1998-2000)
- Editorial Advisory Board, Journal of Separation Science (2002- )
- President, Society for Electroanalytical Chemistry (2005-2007)

- International Advisory Board Member, Int'l. Journal of Electrochemical Science (2006-2011)
- Contributing Editor, Trends in Analytical Chemistry (2008-2011)
- University of Ireland, Maynooth, Chemistry Department Review, March 2009
- University of Antwerp, Belgium, Chemistry Department Review, May 2009
- University of Gothenburg Chemistry Department Board (2009- 2010)
- International Advisory Board, Nano Reviews (2010- )
- Board of the Analytical Section, Swedish Chemical Society (2010- )
- Editorial Advisory Board, Advanced Materials Letters (2010- )
- Principle Investigator (one of 10), Linné Center (SUPRA) on Supramolecular Chemistry (2011-2019)
- Profile Leader, Molecular and Chemical Biology, Chalmers Life Sci. Area of Advance (2011-2015)
- Associate Editor, Analytical Chemistry (2012- )
- Chalmers University Chemistry Tenure committee (2012-2016)
- European Research Council grants evaluation committee, PE4 (2012)
- Steering Group Member, Chalmers Nanoscience Area of Advance (2013-)
- Principle Investigator, Chalmers Nanoscience Initiative (2013-)
- Joint Univ. Gothenburg – Chalmers Univ. Life Sciences Coordination Group (2013)
- Scientific Committee of ESEAC (European Society for Electroanalyt. Chem. Mtg, (2014)
- Editorial Advisory Board, ChemPhysChem (2014-)
- Editorial Board, Quarterly Reviews in Biophysics, QRB Discovery (2015- )
- Editorial Advisory Board, ChemPlusChem (2015-2019)
- Meeting Chair, Monitoring Molecules in Neuroscience, Gothenburg, Sweden (2016)
- Board Member, Association for Monitoring Molecules in Neuroscience (2016-2020)
- International Scientific Committee, 22<sup>nd</sup> International Meeting on Secondary Ion Mass Spectrometry (SIMS-22), Kyoto, Japan (2018-2022)
- Member, International Academic Committee JiangSu Union Institute of Translational Medicine (JUITM) (2019-)

**Thesis oppositions/external examiner (10):** Gunnar Thorsen, Stockholm University, 2000; Kerstin Nolkrantz, University of Gothenburg, 2002; Bhavik Patel, Imperial College, London, 2005; Katrin Richter, University of Gothenburg, 2007; Helen Bridle, Chalmers University of Technology, 2008; Massimo Alberti, Technical University of Denmark, 2010; Jeremy Galineau, Dublin City University, 2011; Edward Jackson, University of Manchester, 2011; Laura Handebrink, Utrecht University, 2011; Sahana Sarkar, University of Twente, 2016.

### **Professional Affiliations**

Member American Chemical Society  
Lifetime Member Society for Electroanalytical Chemistry  
Member Society of Analytical Chemists of Pittsburgh  
Member Biophysical Society  
Member American Association for the Advancement of Science  
Member Royal Society of Chemistry  
Member Society for Neuroscience  
Member Swedish Chemical Society

### **Courses Taught**

General Chemistry (PSU Undergraduate Students)  
Instrumental Analysis (PSU Undergraduate Students)  
Electrochemistry (PSU Graduate Students)  
Separations (PSU Graduate Students)

Bioanalytical Chemistry (PSU Graduate Students)  
Neurochemistry (Ad-Hoc course taught in seminar format; PSU)  
Bioanalytical Electrochemistry (GU and Chalmers Graduate Students and Visitors)  
Analytical Spectroscopy and Mass Spectrometry (GU and Chalmers Graduate Students)  
Analytical Separations (GU and Chalmers Graduate Students)  
Analytical Chemistry 1 (GU Undergraduate Students)  
Analytical Chemistry for Pharmacy Students (GU)

### **University Service, Major Assignments, Penn State**

Student Advisor, Alfred P. Sloan Minority Scholars Program, 2003-2007  
Eberly College of Science EM Facility Advisory Committee, 1992-1995  
Eberly College of Science Promotion and Tenure Committee, 1992-1994, 1996-1998  
Eberly College of Science Planning Committee, Univ. 5-Year Plan, 1996-1997  
Life Sciences Building Design Committee, 1999-2001  
Nanocommission, 2003-2004  
Nanofabrication Advisory Committee, 2003-2004  
Penn State Neuroscience Institute Steering Committee, 2005-2007  
Penn State Neuroscience Institute Research Development Subcommittee, 2006-2007

### **External Funding Sources**

- American Chemical Society Petroleum Research Fund, 1985-87, \$15,000
- Pennsylvania Research Corporation, 1985-87, \$30,000
- National Science Foundation, 1985-87, \$88,000
- National Science Foundation, 1987-88, \$53,890
- National Institutes of Health, 1986-89, \$227,635
- National Science Foundation, 1987-90, \$200,000
- Hoechst-Roussel Pharmaceuticals, 1988-89, \$4,500
- Sterling Pharmaceuticals, 1988-89, \$20,000
- Lilly Research, 1988-89, \$7,500
- Beckman Instruments, 1988-91, \$75,000
- Monsanto Company, 1988-91, \$30,000
- Shell Development, 1989-90, \$72,500
- Smith-Kline Beecham, 1989-90, \$5,000
- Sloan Research Fellowship, 1989-91, \$25,000
- National Science Foundation, 1987-92, \$312,500
- Office of Naval Research, 1989-92, \$300,000
- Dreyfus Foundation, 1989-94, \$50,000
- National Science Foundation (REU), 1990-1992, \$117,600
- National Institutes of Health, 1990-94, \$567,824
- National Science Foundation, 1991-94, \$279,700
- Beckman Instruments, 1991-92, \$37,500
- Office of Naval Research, 1992-95, \$300,000
- National Institutes of Health, 1992-95, \$582,115 (Co-PI with N. Winograd)
- Beckman Instruments, 1992-93, \$40,000
- SmithKline Beecham, 1995-96, \$5,000
- Office of Naval Research, 1995-96, \$70,000
- National Science Foundation, 1994-97, \$404,365
- National Institutes of Health, 1995-98, \$490,517
- National Institutes of Health, 1995-98, \$389,746
- National Institutes of Health, 1996-99, \$1,100,649 (Co-PI with N. Winograd)

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- National Science Foundation, 1997-98, \$49,829
- National Science Foundation, 1997-00, \$400,000
- National Institutes of Health, 1998-01, \$464,220
- National Institutes of Health, 1998-01, \$571,402
- National Institutes of Health, 2000-04, \$1,509,091 (Co-PI with N. Winograd)
- National Science Foundation, 2001-03, \$345,000 (Creativity Extension)
- National Institutes of Health, 2001-05, \$1,218,094
- National Science Foundation, 2003-2007, \$662,000
- National Institutes of Health, 2004-2008, \$1,971,601 (Co-PI with N. Winograd)
- National Institutes of Health, 2006-2010, \$1,151,145
- National Institutes of Health, 2006-2010, \$ 1,262,062
- National Institutes of Health, 2006-2010, \$786,026
- European Union Marie Curie Chair, 2007-2010, 691,470 Euro (\$987,651; 6,339,606 SEK)
- VR (Swedish Science Foundation), 2008-2010, 1,400,000 SEK (\$230,000)
- VR (Swedish Science Foundation), 2010-2012, 4,500,000 SEK (\$643,000)
- National Institutes of Health, 2010-2013 (subcontract), \$300,000
- European Research Council Advanced Grant, 2011-2015, 2,500,000 Euro (22,500,000 SEK)
- Swedish Research Council (VR), SUPRA, Linneus, 2012-2018, co-PI, co-share is 6,400,000 SEK
- Knut and Alice Wallenberg Foundation Grant, 2011-2015, 10,000,000 SEK (Co-PI with A. Enejder)
- Wallenberg Scholar Grant, 2012-2016, 15,000,000 SEK
- VR (Swedish Science Foundation), 2013-2016, 4,800,000 SEK
- VR (Swedish Science Foundation), 2013-2018, 6,000,000 SEK
- National Institutes of Health, 2014-2018, co-PI, 4 400 000 SEK
- Knut and Alice Wallenberg Foundation Infrastructure Grant, 2014-2019, 37,109,000 SEK
- Knut and Alice Wallenberg Foundation, Infrastructure salary support, NanoSIMS Director 2016-2020, 3 000 000 (plus 3 000 000 match) SEK
- Wallenberg Scholar Grant, 2017-2022, 15,000,000 SEK
- VR (Swedish Science Foundation), 2018-2022, 3,456,000 SEK
- EU Joint Programme - Neurodegenerative Disease Research, co-PI, 2018-2020, 300,000 Euro (3,000,000 SEK)
- European Research Council Advanced Grant, 2018-2024, 2,500,000 Euro (26,00,000 SEK)

**Service on Scientific Review Panels**

National Institutes of Health, Metallobiochemistry Study Section, Washington, DC, October 11, 1989.

U.S. Department of Energy, Review Panel, Human Genome Initiative, Washington, DC, February 21-23, 1990.

National Institutes of Health, Metallobiochemistry Study Section, Washington, DC, February 27-29, 1992.

National Institutes of Health, Metallobiochemistry Study Section, Washington, DC, June 22-24, 1995.

National Science Foundation, Mars-Rock: Special Research Opportunity Proposal Review Panel, Arlington, VA, May 9, 1997.

National Cancer Institute, Site Visit, PO1 Review, Johns Hopkins University, Oct. 7, 1997.

- National Cancer Institute, Scientific Review Group, Basic and Preclinical Sciences, Rockville, MD, December 9-10, 1997.
- National Cancer Institute, Review Panel, Novel Technologies for Evaluation of Molecular Alterations in Tissues, Bethesda, MD, March 23-25, 1998.
- National Institutes of Health, Site Visit, PO1 Review, Univ. of Michigan, Nov. 5-6, 1998.
- U.S. Department of Energy, Review Panel, Genome Instrumentation Review, Gaithersburg, MD, December 7-8, 1998.
- National Institutes of Health, Special Emphasis Panel, National Human Genome Research Institute, Washington, DC, April 13, 1999.
- National Institutes of Health, GNM Study Section, Bethesda, MD, June 27, 1999.
- National Institutes of Health, Bioanalytical Study Section, Washington, DC, June 22-23, 2000.
- National Institutes of Health, Human Genome Program, Chair of Site Visit Review Panel, Spectrumedix Corporation Proposal, July 7, 2000.
- National Institutes of Health, Bioanalytical Study Section, Washington, DC, October 11, 2001.
- National Institutes of Health Study Section ad hoc member, SS: Small Business: Genetics, Genomics, and Nucleic Acid Technologies, Washington, DC, November 13-15, 2002.
- National Institutes of Health, Center for Scientific Review Special Emphasis Panel, Bethesda, MD, December 13, 2004.
- National Human Genome Special Emphasis Panel, Bethesda, MD March 31 - April 1, 2005.
- National Institutes of Health Panel on Brain Disorders and Clinical Neurosciences, Teleconf. Review, March 28, 2006.
- National Institutes of Health Panel on Brain Disorders and Clinical Neurosciences, Teleconf. Review, December 13, 2006.
- NIH Support for Conferences and Scientific Meetings (R13/U13), Teleconf. Review, November 25, 2008.
- NIH Challenge Grants, Enabling Bioanalytical & Biophysical Technologies Study Section, June 2009.
- NIH Challenge Grants, Brain Disorders and Clinical Neuroscience IRG, Teleconf. Review, Aug. 6, 2009.
- NIH Special Emphasis Panel/Scientific Review Group, January 28-29, 2010.
- European Research Council Starter Grant Review Panel (PE4), stage 1 only, January 15-16, 2013.

### **Symposia organized at international meetings**

1. "Electroanalytical Chemistry", 13th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, St. Louis, MO, September 29 - October 3, 1986.
2. "Capillary Zone Electrophoresis", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, February 22-26, 1988.
3. "Ultramicroelectrodes -- Theory and Practice", 173rd Meeting of the Electrochemical Society, Atlanta, GA, May 15-20, 1988.
4. "Applications of Microelectrodes to Chemistry", National Meeting of the American Chemical Society, Dallas, TX, April 9-14, 1989.
5. "Capillary Electrophoresis", National Meeting of the American Chemical Society, Boston, MA, April 22-27, 1990.
6. "Capillary Electrophoresis -- Advances and Applications", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, March 4-8, 1991.
7. "Electrochemical Detectors and Sensors", 18th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Anaheim, CA, October 9, 1991.

8. "Analytical Chemistry at the Level of a Single Nerve Cell", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 9-13, 1992.
9. "Frontiers in Chemical Instrumentation", Symposium in Honor of R. Mark Wightman, Recipient of the Division of Analytical Chemistry Award in Chemical Instrumentation, ACS National Meeting, Washington, DC, August 21-25, 1994.
10. "Chemical Dynamics at Single Cells", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 4-9, 1995.
11. "The Eastern Analytical Symposium Award for Outstanding Achievements in the Fields of Analytical Chemistry - Honoring Royce Murray", Eastern Analytical Symposium, Somerset, NJ, November 12-17, 1995.
12. "Charles N. Reiley Award and the Young Investigator Award of the Society of Electroanalytical Chemistry", Symposium in Honor of R. Mark Wightman, Recipient of the Charles N. Reiley Award, and Louis A. Coury, Recipient of the Young Investigator Award, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, March 3-8, 1996.
13. "New Technology for DNA Genotyping in Forensic Analysis", Pittsburgh Conference on Analytical Chemistry and Spectroscopy Societies, Atlanta, GA, March 15-20, 1997.
14. "Dynamic Separations by Capillary Electrophoresis", Frederick Conference on Capillary Electrophoresis, Frederick, MD, October 20-22, 1997.
15. "Electrophoretic Separations with a Chip Format", Eastern Analytical Symposium, Somerset, NJ, November 17-20, 1997.
16. "Chemical Analysis in Nanoenvironments: Pushing the Frontiers", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 1-6, 1998.
17. "Separation Based Biosensors Based on Capillary Electrophoresis", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 12-17, 2000. (Co-organizer with S. M. Lunte, University of Kansas).
18. "Liposomes in Analytical Chemistry: Their Study and Application", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 17-22, 2002.
19. "Nanofluids: Dynamic Analytical Chemistry with Nanoscale Fluids", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 13, 2003.
20. "Analytical Techniques to Tease out the Properties of Nanometer Neurotransmitter Vesicles", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 12-17, 2006.
21. "Chemical Sensors for Cellular Messengers Come of Age.", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 2-6, 2008.
22. "ACS Award in Analytical Chemistry: Symposium in Honor of Robert Mark Wightman," ACS Annual Meeting, Philadelphia, PA, August 18, 2008.
23. "Ultrasensitive and Ultrasensitive Chemical Imaging of Cells and Cell Networks", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, February 28 - March 5, 2010.
24. "Charles N Reiley and SEAC Young Investigator Awards", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA, March 13 - March 18, 2011.
25. "Ultrasensitive Measurements of Exocytosis from Unique Cell Systems," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 11 - March 15, 2012.
26. "Biosensors and Single Cells: Speed, Sensitivity, Spatial Resolution," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, March 2 - March 6, 2014.



27. "Chemical Analysis in Super-Small Living Systems," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 8 - 12, 2015.
28. "In Vivo Neurochemistry: Faster, Smaller, More Sensitive Methods for Real-Time Neuroanalysis," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, March 5-9, 2017.
29. "Electroanalytical Chemistry: Lo Gorton Honorary session," Euroanalysis, Stockholm, Sweden, August 28-September 1, 2017.

**Invited Presentations**

1. Bloomington Chapter, Society for Neuroscience Colloquium, Bloomington, IN, 1981
2. 165th Meeting of the Electrochemical Society, Cincinnati, OH, 1984
3. UpJohn Company Analytical Chemistry Division, Kalamazoo, MI, 1984
4. Ultramicroelectrodes Workshop, Logan, Utah, 1986
5. A.C.S. National Meeting, Symposium on Microelectrodes in Analytical Chemistry, New York, N.Y., 1986
6. 10th International Symposium on Column Liquid Chromatography, San Francisco, CA, 1986
7. 18th Central Regional Meeting of the A.C.S., Symposium on Electrochemistry in Biological Analysis, Bowling Green, OH, 1986
8. 13th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Young Analytical Faculty Symposium, St. Louis, MO, 1986
9. 13th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Electroanalytical Chemistry, St. Louis, MO, 1986
10. Purdue University, Analytical Chemistry Division, W. Lafayette, IN, 1987
11. 19th Central Regional Meeting of the A.C.S., Symposium on Electrochemistry and Surface Chemistry, Columbus, OH, 1987
12. University of Delaware, Analytical/Physical Chemistry, Newark, DE, 1987
13. University of Pittsburgh, Analytical Chemistry, Pittsburgh, PA, 1987
14. 14th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Micro-Column Separation Techniques, Detroit, MI, 1987
15. 14th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Detection in Capillary LC and Electrophoresis, Detroit, MI, 1987
16. 172nd Meeting of the Electrochemical Society, Symposium on Spectroelectrochemistry and Electroanalytical Science, Honolulu, Hawaii, 1987
17. 172nd Meeting of the Electrochemical Society, Third International Symposium on Redox Mechanisms and Interfacial Properties of Molecules of Biological Importance, Honolulu, Hawaii, 1987
18. Brigham Young University, Departmental Seminar, Provo, UT, 1987
19. Gordon Conference on Electrochemistry, Ventura, CA, 1988
20. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Future Potential of Microcolumn Separation Techniques, New Orleans, LA, 1988
21. Hoechst-Roussel Pharmaceuticals, Somerville, NJ, 1988
22. Eastman Pharmaceuticals, Great Valley, PA, 1988
23. Waters Associates, Milford, MA, 1988
24. E.I. DuPont de Nemours Analytical Seminar Program, Wilmington, DE, 1988
25. 173rd Meeting of the Electrochemical Society, Symposium on Ultramicroelectrodes -- Theory and Practice, Atlanta, GA, 1988
26. 12th International Symposium on Column Liquid Chromatography, Washington, DC, 1988
27. Monsanto Chemical Company Seminar Program, St. Louis, MO, 1988
28. Smith Kline and French Laboratories, King of Prussia, PA, 1988
29. 39th Annual Meeting of the International Society of Electrochemistry, Symposium on Microelectrodes, Glasgow, Scotland, 1988
30. A.C.S. National Meeting, Symposium on Separations in Analytical Biotechnology, Los Angeles, CA, 1988
31. University of Houston, Analytical Chemistry, Houston, TX, 1988
32. Texas A&M University, Department Colloquium, College Station, TX, 1988
33. University of Texas, Chemistry Seminar, Austin, TX, 1988
34. 1st International Conference on Microcolumn Separation Methods, Bloomington, IN, 1988

35. Shell Development, Houston, TX, 1988
36. Indiana University, Analytical Chemistry, Bloomington, IN, 1988
37. AT&T Research Laboratories, Murray Hill, NJ, 1988
38. 15th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Bioelectrochemistry, Boston, MA, 1988
39. ICI Pharmaceuticals, Wilmington, DE, 1988
40. Lilly Research, Indianapolis, IN, 1989
41. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Bioanalysis -- The Neurosciences, Atlanta, GA, 1989
42. University of Minnesota and Minnesota Chromatography Forum Combined Seminar, Minneapolis, MN, 1989
43. 1st International Symposium on High Performance Capillary Electrophoresis, Boston, MA, 1989
44. A.C.S. National Meeting, Symposium on Applications of Microelectrodes to Chemistry, Dallas, TX, 1989
45. 1st International Symposium on Microdialysis and Allied Analytical Techniques, Indianapolis, IN, 1989
46. 10th International Symposium on Capillary Chromatography, Riva del Garda, Italy, 1989
47. Gordon Conference on Drug Metabolism, Plymouth, NH, 1989
48. Beckman Instruments, Palo Alto, CA, 1989
49. Gordon Conference on Analytical Chemistry, New Hampton, NH, 1989
50. A.C.S. National Meeting, Award in Electrochemistry Symposium Honoring Ralph N. Adams, Miami, FL, 1989
51. Meeting on Electrochemical Detection, HPLC and In Vivo Monitoring in the Biosciences, Nottingham University, United Kingdom, 1989
52. Royal Institute of Technology, Analytical Chemistry, Stockholm, Sweden, 1989
53. Eastern Analytical Symposium, Symposium on Biochemical Applications of CZE, New York, NY, 1989
54. 176th Meeting of the Electrochemical Society, Symposium on Fundamental Processes in Electrochemical Sensors, Hollywood, FL, 1989
55. Glaxo Pharmaceuticals, Research Triangle Park, NC, 1989
56. University of North Carolina, Analytical Division, Chapel Hill, NC, 1989
57. Penn State University, Chemistry Department Colloquium, Univ. Park, PA, 1990
58. 2nd International Symposium on High Performance Capillary Electrophoresis, San Francisco, CA, 1990
59. Stanford University, Chemistry Department, Palo Alto, CA, 1990
60. Washington State University, Chemical Engineering Department, Pullman, WA, 1990
61. Union Carbide, Charlottesville, WV, 1990
62. West Virginia University, Analytical Division, Morgantown, WV, 1990
63. Society of Analytical Chemists of Pittsburgh Symposium on Capillary Electrophoresis, Pittsburgh, PA, 1990
64. A.C.S. National Meeting, Symposium on Analytical, Preparative and Large-Scale Electrophoresis, Boston, MA, 1990
65. 177th Meeting of the Electrochemical Society, Symposium on In Vivo Electroanalytical Chemistry and Biosensors, Montreal, Canada, 1990
66. Penn State University College of Science Summer Seminar Series, University Park, PA, 1990
67. 30th Conference on Pharmaceutical Analysis, Merrimac, WI, 1990
68. Amsterdam Summer course on CZE (5 lectures/seminars), Amsterdam, Netherlands, 1990
69. 2nd International Symposium on Microcolumn Separation Methods, Baltsa, Sweden, 1990

70. A.C.S. National Meeting, Award in Electrochemistry Symposium Honoring Royce W. Murray, Washington, DC, 1990
71. Beckman - The Discovery Seminar/Workshop Series (6 seminars along the East Coast), 1990
72. Frederick Conference on Capillary Electrophoresis, Frederick, MD, 1990
73. University of Wisconsin, Analytical Division, Madison, WI, 1990
74. Eastern Analytical Symposium, Symposium on Innovations in Electrokinetic Chromatography and CZE, Somerset, NJ, 1990
75. Biotech U.S.A., Symposium on Capillary Electrophoresis, Washington, D.C., 1990
76. University of Lund, Department of Medical Cell Research, Lund, Sweden, 1991
77. 3rd International Symposium on High Performance Capillary Electrophoresis, San Diego, CA, 1991
78. University of California at Riverside, Analytical Division, Riverside, CA, 1991
79. University of Lund Medical Center, Department of Clinical Chemistry, Lund, Sweden, 1991
80. University of Lund, Department of Technical Analytical Chemistry, Lund, Sweden, 1991
81. University of Lund, Department of Biomedical Chemistry, Lund Sweden, 1991
82. Iowa State University, Department of Chemistry Colloquium, Ames, IA, 1991
83. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Capillary Electrophoresis: Advances and Applications, Chicago, IL, 1991
84. Beckman - The Discovery Seminar/Workshop Series, Bethesda, MD, 1991
85. Danish Society of Analytical Chemistry, Copenhagen, Denmark, 1991
86. Ferring Pharmaceutical, AB, Malmö, Sweden, 1991
87. University of Michigan, Analytical Division, Ann Arbor, MI, 1991
88. Miami University of Ohio, Department of Chemistry Seminar, Oxford, Ohio, 1991
89. Swedish Chemical Society Meeting, Symposium on Trends in Miniaturization of Analytical Methods, Stockholm, Sweden, 1991
90. University of Uppsala, Department of Biochemistry, Biomedical Center, Sweden, 1991
91. Ciba Geigy, Basel, Switzerland, 1991
92. 3rd Congress of the Scandinavian Electrophoresis Society, Helsingör, Denmark, 1991
93. University of Stockholm, Department of Analytical Chemistry, Arrhenius Lecture in Analytical Chemistry, Stockholm, Sweden, 1991
94. 5th International Conference on In Vivo Methods, Keynote Lecture, Gröningen, The Netherlands, 1991
95. 18th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Electrochemical Detectors and Sensors, Anaheim, CA, 1991
96. 18th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Capillary Electrophoresis, Anaheim, CA, 1991
97. China Pharmaceutical University, Department of Analytical Chemistry, Nanjing, China, 1991
98. Beijing Second Optical Instrument Company, Beijing, China, 1991
99. The Seminar on Chromatography, Beijing Technical Center, Beijing, China, 1991
100. Analytical Instrument Society Seminar, Shanghai, China, 1991
101. Beckman - The Discovery Seminar/Workshop Series, San Francisco, CA, 1991
102. Society for Neuroscience Shortcourse on Measuring the Chemical Microenvironment, New Orleans, LA, 1991
103. Eastern Analytical Symposium, Benedetti-Pichler Award Symposium Honoring Nicholas Winograd, Somerset, NJ, 1991
104. American Association of Pharmaceutical Scientists Workshop, Washington, DC, 1991
105. Lehigh University, Department of Chemistry Colloquium, Bethlehem, PA, 1992
106. Chicago Chromatography Discussion Group, Chicago, IL, 1992

107. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Analytical Chemistry at the Level of a Single Nerve Cell, New Orleans, LA, 1992
108. University of Maryland, Department of Chemistry and Biochemistry, College Park, MD, 1992
109. Sterling Winthrop Pharmaceuticals Research Division Analytical Science Department Workshop on Capillary Electrophoresis, Introduction Lecture, Malvern, PA, 1992
110. Sterling Winthrop Pharmaceuticals Research Division Analytical Science Department Workshop on Capillary Electrophoresis, Lecture on Analysis of Single Cells, Malvern, PA, 1992
111. 25th Great Lakes Regional Meeting of the ACS Symposium on Capillary Electrophoresis Separations, Milwaukee, WI, 1992
112. Columbia University, Center for Neurobiology, New York, NY, 1992
113. Dupont-Merck Company Science Commitment Conference, College Park, MD, 1992
114. 16th International Symposium on Column Liquid Chromatography (HPLC 92), Baltimore, MD, 1992
115. Amsterdam Summer Course on CZE (3 lectures/seminars), Amsterdam, Netherlands, 1992
116. Proctor and Gamble Company, Cincinnati, OH, 1992
117. Frederick Conference on Capillary Electrophoresis, Frederick, MD, 1992
118. Swedish Pulp and Paper Research Institute (STFI), Stockholm, Sweden, 1992
119. University of Uppsala, Department of Analytical Chemistry, Uppsala, Sweden, 1992
120. Denison University, Symposium on Frontiers in Neuroscience, Granville, Ohio, 1992
121. University of Puerto Rico, Department of Chemistry, San Juan, Puerto Rico, 1992
122. Villanova University, Department of Chemistry, Villanova, PA, 1992
123. University of Chicago, Department of Pharmacology and Physiology, Chicago, IL, 1992
124. University of Tennessee, Department of Chemistry, Knoxville, TN, 1992
125. Gordon Conference on Electrochemistry, Ventura, CA, 1993
126. 5th International Symposium on High Performance Capillary Electrophoresis, Orlando, FL 1993
127. University of Illinois, Department of Chemistry, Champaign, IL, 1993
128. Nalbanov Symposium on Inside the Single Cell, Champaign, IL, 1993
129. Cornell University, Department of Chemistry, Ithaca, NY, 1993
130. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Inside the Single Cell, Atlanta, GA, 1993
131. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium Honoring Egil Hellum for the Keene Dimick Award, 1993
132. University of Maryland, Baltimore County, Department of Chemistry, Baltimore, MD, 1993
133. Wyeth-Ayerst Pharmaceuticals, Rouses Point, NY, 1993
134. Intercollegiate Student Chemists Conference, Keynote Speaker, Juniata College, Huntingdon, PA, 1993
135. Ohio State University, Department of Chemistry, Columbus, OH, 1993
136. Sterling Pharmaceuticals Worldwide Analytical Conference, Great Valley, PA, 1993
137. National Nanofabrication Biology User's Workshop, Ithaca, NY, 1993
138. Seton Hall University, Department of Chemistry, East Orange, NJ, 1993
139. Analytical Days Symposium, Lund, Sweden, 1993
140. University of Uppsala, Department of Clinical Chemistry, Uppsala, Sweden, 1993
141. 184th Meeting of the Electrochemical Society, Symposium on Microelectrodes and Microenvironments, New Orleans, LA, 1993
142. Northwestern University, Fall Symposium, Department of Chemistry, Evanston, IL, 1993
143. SmithKline Beecham Pharmaceuticals, King of Prussia, PA, 1993

144. 6th International Symposium on High Performance Capillary Electrophoresis, San Diego, CA, 1994
145. Youngstown State University, Chemistry Department, Youngstown, Ohio, 1994
146. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on On-Line Process Analysis on the Micron Scale, Chicago, IL, 1994
147. Nanofabrication and Biosystems: Frontiers and Challenges, Kona, Hawaii, 1994
148. 18th International Symposium on Column Liquid Chromatography, Symposium on Electrochemical Detection for Liquid Chromatography, Minneapolis, Minnesota, 1994
149. PharmAnalysis Conference, Symposium on Capillary Electrophoresis, Atlantic City, NJ, 1994
150. 4th International Workshop on BioAnalysis, Lawrence KS, 1994
151. A.C.S. National Meeting, Symposium Honoring Fred Anson for the 1994 Analytical Chemistry Award in Electrochemistry, Washington, DC, 1994
152. A.C.S. National Meeting, Symposium Honoring R. Mark Wightman for the 1994 Analytical Chemistry Award in Chemical Instrumentation, Washington, DC, 1994
153. 6th International Conference on *in vivo* Methods, Seignosse, France, 1994
154. 25th Meeting of the Royal Spanish Chemical Society, Vitoria-Gasteiz, Spain, 1994
155. 21st Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Analytical Methods in Neuroscience, St. Louis, MO, 1994
156. 21st Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Bioanalytical Separations, St. Louis, MO, 1994
157. 21st Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Electrochemical Sensors: Solutions to "Real World" Problems, St. Louis, MO, 1994
158. Frederick Conference on Capillary Electrophoresis, Frederick, MD, 1994
159. Washington Chromatography Discussion Group, Rockville, MD, 1994
160. University of South Dakota, Chemistry Department, Vermillion, SD, 1994
161. Eastern Analytical Symposium, Symposium on Advances in Capillary Electrophoresis Applications, Somerset, NJ, 1994
162. BioRad Diagnostics and Life Sciences Group, Hercules, CA 1995
163. 7th International Symposium on High Performance Capillary Electrophoresis, Würzburg, Germany, 1995
164. University of Göteborg, Neuroscience Colloquium, Göteborg, Sweden, 1995
165. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Chemical Dynamics at Single Cells, New Orleans, LA, 1995
166. Swedish Academy of Pharmaceutical Sciences, Stockholm, Sweden, 1995 (2 talks)
167. State University of New York - Buffalo, Department of Chemistry, Buffalo, NY, 1995
168. 17th International Symposium on Capillary Chromatography and Electrophoresis, Wintergreen, VA, 1995
169. University of Cincinnati, Department of Chemistry Colloquium, Cincinnati, OH, 1995
170. Penn State University, Department of Biology Seminar, University Park, PA, 1995
171. University of Massachusetts, Chemistry Department Colloquium, Amherst, MA, 1995
172. University of North Carolina - Chapel Hill, Department of Chemistry, Chapel Hill, NC, 1995
173. 22nd Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Instrumental Advances and Novel Approaches in Capillary Electrokinetic Separations, Cincinnati, OH, 1995
174. Eastern Analytical Symposium, Symposium in Honor of Royce Murray - EAS Analytical Award, Somerset, NJ, 1995
175. Penn State University, Hershey Medical Center, Neuroscience Seminar, Hershey, PA, 1995

176. 8<sup>th</sup> International Symposium on High Performance Capillary Electrophoresis, Orlando, FL, 1996
177. University of Wisconsin, Distinguished Speakers Lecture Series in Department of Biochemistry & Molecular Biology, Milwaukee, WI, 1996
178. ACS National Meeting, Award in Chromatography Symposium Honoring Stellan Hjerten, New Orleans, LA, 1996
179. Armed Forces Institute of Pathology, Rockville, MD, 1996
180. 20<sup>th</sup> International Symposium on High Performance Liquid Phase Separations, San Francisco, CA, 1996
181. Gordon Research Conference on Biomolecular Recognition and Immobilization, New London, NH, 1996
182. International Symposium on Advances Recientes En Electroforesis Capilar, Caracas, Venezuela, 1996
183. Conference on Chemistry of the Cell Nucleus Workshop, Göteborg, Sweden, 1996
184. Microfabrication Technology for Biomedical Applications, San Jose, CA, 1996
185. 2<sup>nd</sup> International Symposium on Micro Total Analysis Systems, Basel, Switzerland, 1996
186. La Salle University, Department of Chemistry, Philadelphia, PA, 1997
187. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on New Technology for DNA Genotyping in Forensic Analysis, Atlanta, GA, 1997
188. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium in Honor of R. Mark Wightman, Recipient of the 1997 Pittsburgh Analytical Chemistry Award, Atlanta, GA, 1997
189. 19<sup>th</sup> International Symposium on Capillary Chromatography and Electrophoresis, Wintergreen, VA, 1997
190. 2<sup>nd</sup> Miniaturization in Liquid Chromatography vs Capillary Electrophoresis Conference, Ghent, Belgium, 1997
191. Neuroscience Society Conference, University of Göteborg, Göteborg, Sweden, 1997
192. EUCHEM Conference on Mass Spectrometry in Biology, Hindås, Sweden, 1997
193. 10<sup>th</sup> International Symposium on High Performance Capillary Electrophoresis, Kyoto, Japan, 1997
194. Bucknell University, Department of Chemistry, Symposium honoring Hans Veening, Lewisburg, PA, 1997
195. Frederick Conference on Capillary Electrophoresis, Frederick, MD, 1997
196. Cambridge Healthtech Institute's Third Annual Microfabrication Technology for Biomedical Innovations Conference, San Jose, CA, 1997
197. Eastern Analytical Symposium on Separations on a Chip, Somerset, NJ, 1997
198. 3<sup>rd</sup> Latin-American Symposium on Biomedical, Biopharmaceutical, and Industrial Application of Capillary Electrophoresis, Buenos Aires, Argentina, 1997
199. Frontiers in Science Lectures, The Human Brain and the Human Mind Symposium, State College, PA, 1998
200. 11<sup>th</sup> International Symposium on High Performance Capillary Electrophoresis, Orlando, FL, 1998
201. Lehigh University, Chemistry Department Seminar, Bethlehem, PA, 1998
202. University of Pittsburgh, Department of Chemistry Colloquium, Pittsburgh, PA, 1998
203. The Pennsylvania Junior Science & Humanities Symposium, State College, PA, 1998
204. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on New Strategies for Electrochemical Detection in Liquid Streams, New Orleans, LA 1998
205. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Chemical Analysis in Nanoenvironments: Pushing the Frontiers, New Orleans, LA, 1998

206. University of Illinois, Department of Chemistry, Urbana, IL, 1998
207. Electrochemistry Chemical Society Symposium on SECM & Microscale Electrochemistry, San Diego, CA, 1998
208. Symposium on High Performance Liquid Phase Microseparations, Lund, Sweden, 1998
209. 14<sup>th</sup> Asilomar Conference on Mass Spectrometry, Pacific Grove, CA, 1998
210. 3<sup>rd</sup> International Symposium on Micro Total Analysis Systems, Alberta, Canada, 1998
211. BIOMEMS Meeting, San Francisco, CA, 1998
212. Eastern Analytical Symposium, Somerset, NJ, 1998
213. 4<sup>th</sup> Latin-American Symposium on Biomedical Biopharmaceutical, and Industrial Applications of Capillary Electrophoresis, Sao Paulo, Brazil, 1998
214. State College High School Chemistry Club, State College, PA, 1999
215. 12<sup>th</sup> International Symposium on High Performance Capillary Electrophoresis & Related Techniques, Palm Springs, CA, 1999
216. Sandia National Laboratories, Livermore, CA, 1999
217. Sequus Pharmaceuticals, Inc., Menlo Park, CA, 1999
218. University of Maryland, Department of Chemistry, College Park, MD, 1999
219. Case Western Reserve University, Department of Chemistry, Cleveland, OH, 1999
220. The Pennsylvania State University, Department of Bioengineering, University Park, PA, 1999
221. Biomedical Microfabrication Workshop, New York, NY, 1999
222. 3<sup>rd</sup> Miniaturization in Liquid Chromatography vs. Capillary Electrophoresis Conference, Ghent, Belgium, 1999
223. 8<sup>th</sup> International Conference on In Vivo Methods, Stony Brook, NY, 1999
224. University of Brussels, Department of Chemistry, Brussels, Belgium, 1999
225. 51<sup>st</sup> Southeastern Regional Meeting of the American Chemical Society, Knoxville, TN, 1999
226. 10<sup>th</sup> Annual Frederick Conference on Capillary Electrophoresis, Frederick, MD, 1999
227. Wayne State University, "Frontiers in Chemistry" Colloquium, Detroit, MI, 1999
228. The University of Tokushima, Department of Medicinal Chemistry, Tokushima, Japan, 1999
229. Himej Institute of Technology, Faculty of Science, Himej, Japan, 1999
230. 22<sup>nd</sup> International Symposium on Capillary Chromatography, Gifu, Japan, 1999
231. 38<sup>th</sup> Annual Eastern Analytical Symposium, Somerset, NJ, 1999 (2 talks)
232. 5<sup>th</sup> Latin-American Symposium on Biomedical Biopharmaceutical, and Industrial Applications of Capillary Electrophoresis, Acapulco, Mexico, 1999
233. DuPont Pharmaceuticals Analytical Seminar, 1999
234. Gordon Research Conference on Electrochemistry, Ventura, CA, 2000
235. University of Texas, Centennial Distinguished Lecturer, Austin, TX, 2000
236. 13<sup>th</sup> International Symposium on High Performance Capillary Electrophoresis & Related Microscale Techniques, Saarbrücken, Germany, 2000
237. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Separations Based Biosensors Based on Capillary Electrophoresis, New Orleans, LA, 2000
238. University of Virginia, Department of Chemistry, Charlottesville, VA, 2000
239. Association of Neuroscience Departments and Programs (ANDP), Georgetown, Washington DC, 2000
240. 8<sup>th</sup> International Conference on Electroanalysis, Levich Lecture, ESEAC-SEAC, Bonn, Germany, 2000
241. 24<sup>th</sup> International Symposium on High Performance Liquid Phase Separation & Related Techniques, Seattle, Washington, 2000
242. Boise State University, Department of Chemistry, Boise, ID, 2000
243. European Society for Electroanalytical Chemistry, Bonn, Germany, 2000
244. Indiana University, Department of Chemistry, Bloomington, IN, 2000



245. University of Gothenburg, Department of Chemistry, Sweden, 2000
246. University of Stockholm, Department of Chemistry, 2000
247. Eastern Analytical Symposium, Atlantic City, NJ, 2000
248. Pacifichem 2000, Honolulu, HI, 2000
249. HPCE Symposium 2001, Boston, MA, 2001
250. Duquesne University, Department of Chemistry, Pittsburgh, PA, 2001
251. St. Louis University, Department of Chemistry, St. Louis MO, 2001
252. Pittsburgh Conference 2001, New Orleans, LA, 2001
253. Ohio State University, Department of Chemistry, Columbus, OH, 2001
254. University of Arizona, Department of Chemistry, Tuscon, AZ, 2001
255. Penn State University College of Medicine, Hershey, PA 2001
256. Symposium on Capillary Chromatography & Electrophoresis, Las Vegas, NV, 2001
257. 9<sup>th</sup> International Conference on In Vivo Methods, Dublin, Ireland, 2001
258. 222<sup>nd</sup> ACS National Meeting and Exposition, Chicago, IL, 2001.
259. University of Illinois at Chicago, Neuroscience Program, Chicago, IL, 2001
260. CUNY, Queens College, Department of Chemistry, NY, 2001
261. Latin American Capillary Electrophoresis Meeting, Santiago, Chile, 2001
262. Duke University, Department of Chemistry, Durham, NC, 2002
263. Gordon Research Conference on Bioanalytical Sensors, Ventura, CA, 2002
264. Pittsburgh Conference 2002, New Orleans, LA, 2002
265. Lincoln University, Department of Chemistry, Lincoln, PA, 2002
266. Intracellular Analysis Symposium, Munich, Germany, 2002
267. University of North Dakota, Department of Chemistry, Grand Forks, ND, 2002
268. North Dakota State University, Department of Chemistry, Fargo, ND, 2002
269. Uppsala Workshop, Uppsala, Sweden, 2002
270. Ecole Normale Superievre, Paris, France, 2002
271. Int'l Society for Electrochemistry Meeting, Dusseldorf, Germany, 2002
272. 24<sup>th</sup> International Symposium on Chromatography, Leipzig, Germany, 2002
273. National Institute of Standards and Technology, Gaithersburg, MD, 2002
274. Geneva College, Beaver Falls, PA, 2002
275. 8<sup>th</sup> Latin-American Symposium on Biotechnology, Biomedical, Biopharma, and Industrial Applications of Capillary Electrophoresis and Microchip Technology, Mar del Plata, Argentina, 2002
276. University of Minnesota, Department of Chemistry, Minneapolis, MN, 2003
277. Delaware Chromatography Forum, Philadelphia, PA, 2003
278. Dupont Chemical Company, Wilmington, DE, 2003
279. Energizer Battery Company, Cleveland, OH, 2003
280. Case Western Reserve Univ. Frontiers in Chemistry Series, Cleveland, OH, 2003
281. 26<sup>th</sup> Int'l. Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, NV, 2003
282. 10<sup>th</sup> International Conference on In Vivo Methods, Stockholm, Sweden, 2003
283. West Virginia University, Department of Chemistry, Morgantown, WV, 2003
284. 14<sup>th</sup> Annual Frederick Conference on Capillary Electrophoresis, Frederick, MD, 2003
285. Eastern Analytical Symposium, Somerset, NJ, 2003
286. Latin American Capillary Electrophoresis Conference, Mexico City, Mexico, 2003
287. Pittsburgh Conference 2004, Chicago, IL, 2004
288. Mercer College, Atlanta, GA, 2004
289. 15<sup>th</sup> Frederick Conference on Capillary Electrophoresis, Frederick, MD, 2004
290. Latin American Capillary Electrophoresis Conference, Madrid, Spain, 2004

291. Harvard Medical School, Massachusetts General Hospital, Charlestown, MA, 2004
292. Winter Brain Meeting, Breckenridge, CO, 2005
293. Santa Clara University Seminar, Santa Clara, CA, 2005
294. Northwestern University Nanoscience Seminar, Evanston, IL, 2005
295. 18<sup>th</sup> International Symposium on MicroScale Bioseparations, New Orleans, LA, 2005
296. University of Missouri - Kansas City Biological Sciences Seminar, Kansas City, MO, 2005
297. University of Washington seminar, Seattle, WA, 2005
298. University of Idaho seminar, Moscow, ID, 2005
299. Society for Analytical Chemists of Pittsburgh Symposium, Pittsburgh, PA, 2005
300. 28<sup>th</sup> Int'l Symp. on Capillary Chromatography & Electrophoresis, Las Vegas, NV, 2005
301. 15<sup>th</sup> Int'l Conference on Secondary Ion Mass Spectrometry, Manchester, England, 2005
302. Electrochem 2005, Newcastle upon Tyne, UK, 2005
303. University of London, Imperial College of Science, Technology and Medicine, London, England, 2005
304. University of Iowa, Department of Chemistry, Iowa City, IA, 2005
305. Cal State Long Beach, Department of Chemistry, Long Beach, CA, 2005
306. University of Fribourg, Geneva, Switzerland, 2005
307. Louisiana State University, Baton Rouge, LA, 2005
308. Hillsdale College, Hillsdale, MI, 2006
309. Pittsburgh Conference on Analytical Chemistry, Orlando, FL, 2006
310. University of Pittsburgh Analytical Seminar, Pittsburgh, PA, 2006
311. ACS Mid-Atlantic Regional Meeting, Hershey, PA, 2006
312. 26<sup>th</sup> International Symposium on Chromatography, Copenhagen, Denmark, 2006
313. ACS National Meeting, San Francisco, CA, 2006
314. Purdue University Amy Mellon Lecture, West Lafayette, IN, 2006.
315. Eastern Analytical Symposium, Somerset, NJ, 2006
316. Hershey College of Medicine, Hershey, PA, 2006.
317. Latin American Capillary Electrophoresis Conference, Mexico City, Mexico, 2006.
318. MSB 2007: 20<sup>th</sup> Int'l. Symposium on Microscale Bioseparations, Vancouver, Canada, 2007.
319. Pittsburgh Conference on Analytical Chemistry, Symposium on Single Cell Manipulation, Analysis and Use in Sensing, Chicago, IL, 2007.
320. Pittsburgh Conference on Analytical Chemistry, Symposium on Investigating Neuronal Chemistry, Chicago, IL, 2007.
321. Pittsburgh Conference on Analytical Chemistry, Symposium on Pittsburgh Analytical Chemistry Award, Chicago, IL, 2007.
322. Colorado State University Analytical Seminar, Fort Collins, CO, 2007.
323. American Chemical Society National Meeting, Symposium on Chemical Analysis Methods in Metabolomics, Boston, MA, 2007.
324. Gothenburg University, Department of Neurochemistry, Mölndal, Sweden, 2007.
325. Gothenburg University, Department of Chemistry Symposium, Göteborg, Sweden, 2007.
326. Latin American Capillary Electrophoresis Conference, Santiago, Chile, 2007.
327. University of Gothenburg Faculty of Science Research Day, Gothenburg, Sweden, 2008
328. Pittsburgh Conference on Analytical Chemistry, Symposium on Electrochemical Detection: Small is Beautiful, New Orleans, 2008.
329. Pittsburgh Conference on Analytical Chemistry, Symposium on Chemical Measurements for Cellular Measurements Come of Age, New Orleans, 2008.
330. Hope College, Neckers Lecture, Holland, MI, 2008.
331. 22<sup>nd</sup> International Symposium on Microscale Bioseparations (MSB 2008), Berlin, Germany, 2008.

332. ISAS, Institute for Analytical Sciences, Dortmund, Germany, 2008.
333. Monitoring Molecules in Neuroscience International Meeting, Vancouver, CA, 2008.
334. American Chemical Society National Meeting, Symposium Honoring Mark Wightman for the ACS Award in Analytical Chemistry, Philadelphia, PA, 2008.
335. American Chemical Society National Meeting, Symposium Honoring Daniel Chiu for the Fresenius Award, Philadelphia, PA, 2008.
336. Bioengineering2008, London, England, 2008.
337. First European NeuroBioAnalytical Workshop, London, England, 2008.
338. The Phabian Day, Pharmaceutical Chemistry Meeting, Uppsala University, Uppsala, Sweden, 2008.
339. Latin American Capillary Electrophoresis Conference, Puerto Vallarta, Mexico, 2008.
340. 23<sup>rd</sup> International Symposium on Microscale Bioseparations (MSB 2009), Boston, MA, 2009.
341. Pittsburgh Conference on Analytical Chemistry, Symposium on Biological Applications<sup>[17]</sup> of Capillary Electrophoresis, Chicago, IL, 2009.
342. Pittsburgh Conference on Analytical Chemistry, Symposium on Taking in vivo sampling to novel and smaller locations, Chicago, IL, 2009.
343. Swedish Society for Mass Spectrometry meeting, Stockholm, Sweden, 2009.
344. Faculty of Medicine, Universidad de La Laguna, Tenerife, Spain, 2009.
345. Frontiers in Chemistry Symposium, Stockholm, Sweden, 2009.
346. Spanish Neuroscience Society Meeting, Teragona, Spain, 2009.
347. Latin American Capillary Electrophoresis Conference, Sevilla, Spain, 2009.
348. Gothenburg University Department of Neurochemistry seminar, Mölndal, Sweden, 2010.
349. Pittsburgh Conference on Analytical Chemistry, Symposium on Ultrasmall and Ultrasensitive Chemical Imaging of Cells and Cell Networks, Orlando, FL, 2010.
350. Pittsburgh Conference on Analytical Chemistry, Symposium, ACS Division of Analytical Chemistry Microfluidic Systems with Electrochemical Detection for the Investigation of Biological Processes, Orlando, FL, 2010.
351. Chalmers “Fakultetslunch” seminar, Gothenburg, Sweden, 2010.
352. University of Jena Chemistry Seminar, Jena, Germany, 2010.
353. 13th International Conference on Electroanalysis (ESEAC) Meeting, Gijon, Spain, 2010.
354. Meeting of the Federation of European Biochemical Societies (FEBS), Gothenburg, Sweden, 2010.
355. Symposium Honoring Royce Murray at UNC for 50 Years, at the Fall ACS Meeting, Boston, USA, 2010.
356. Symposium at the Japanese Analytical Instrumentation Manufacturers Association (JAIMA) Meeting, Tokyo, Japan, 2010.
357. 13th Meeting on In Vivo Methods of Analysis: Monitoring Molecules in Neuroscience, Brussels, Belgium, 2010
358. 61st Meeting of the International Society for Electrochemistry, Nice, France, 2010.
359. Symposium on Recent Advances in Bioanalysis: Ultra-small volumes, global metabolite profiling and single cells, at Pacificchem, Honolulu, Hawaii, 2010.
360. University of Manchester, Surface Science Research Centre, Manchester, UK, 2011.
361. Biophysical Society Meeting, Workshop on Chemical Imaging, Baltimore, 2011.
362. Pittsburgh Conference on Analytical Chemistry, Symposium, Ralph N Adams Award Symposium Honoring James Jorgenson, Atlanta, GA, 2011.
363. ACS Meeting Student Organized Symposium, “Unleashing Electrochemistry's Potential: Resistance Is Futile,” Anaheim, CA, 2011.
364. Aarhus University iNANO Center Seminar, Aarhus, Denmark, 2011.
365. Matrafured Conference on Electrochemical Sensors, Dobogokö, Hungary, 2011.

366. IUPAC Conference on Chemistry, San Juan, Puerto Rico, 2011.
367. Gordon Research Conference on Catecholamines, Lewiston, Maine, USA, 2011.
368. Swedish Society for Biochemistry and Molecular Biology symposium on Molecular Perspectives on Biological Functions, Tällberg, Sweden, 2011.
369. Lab-on-a-chip workshop: Reaching new horizons with nanotechnology, Gothenburg, Sweden, 2012.
370. Chalmers Café-å-lär, Chalmers University, Gothenburg, Sweden.
371. Pittsburgh Conference on Analytical Chemistry, Symposium, Electrochemical Imaging in Neurochemistry with Microelectrodes and Nanoelectrodes, Orlando, FL, 2012.
372. Wayne State University Frontiers in Science Lecture, Detroit, MI, 2012
373. 1<sup>st</sup> International Course on Secretion, El Hierro, Spain, 2012
374. American Chemical Society National Meeting, Award Symposium, Philadelphia, PA, 2012
375. Analytical Chemistry Seminar, Penn State University, Univ. Park, PA, 2012
376. Monitoring Molecules in Neuroscience, Plenary Lecture, London, UK, 2012
377. Monitoring Molecules in Neuroscience, Invited Lecture, London, UK, 2012
378. Polish Academy of Sciences, Physical Chemistry, Talks on Research and management of science, 2012.
379. Chinese Academy of Sciences (Chemistry), Beijing, China, 2012.
380. Polish Academy of Sciences, Biophysical Chemistry, Warsaw, 2012.
381. Swedish Royal Academy of Sciences Lectures in Chemistry, Stockholm, 2012.
382. Chalmers Nanoscience Area Seminar, Gothenburg, 2012.
383. Pittsburgh Conference on Analytical Chemistry, Reilley Award Symposium, Philadelphia, 2013.
384. 17<sup>th</sup> International Symposium on Chromaffin Cell Biology, Rouen, France, 2013.
385. Symposium: Technology and Human Health: Advances in Systems Medicine, Chalmers University of Technology, 2012.
386. Frontiers of Single Cell Analysis, Stanford, CA, 2013.
387. American Chemical Society National Meeting, Award Symposium, Indianapolis, IN, 2013.
388. Peking University University, Institute for Molecular Medicine, Cellular Biophysics, Beijing, China, 2013.
389. International Symposium on In Vivo Voltammetry, Chinese Academy of Science, Beijing, China, 2013
390. 15<sup>th</sup> Beijing Conference and Exposition on Instrumental Analysis, Plenary Speaker, Beijing, China, 2013.
391. Eastern Analytical Symposium, Award Symposium, Somerset, NJ, 2013.
392. University of Minnesota Analytical Seminar, Minneapolis, MN, 2013.
393. Astra Zeneca Company, Mölndal, Sweden, 2014.
394. Pittsburgh Conference on Analytical Chemistry, Symposium, Biosensors and Single Cells: Speed, Sensitivity, Spatial Resolution, Chicago, IL, 2014.
395. 14<sup>th</sup> International Society for Electrochemistry meeting, Life Science, Nanjing, China, 2014.
396. Nanjing University of Science and Technology, Nanjing, China 2014.
397. Molecular Frontiers symposium, The Brain: Achievements and Challenges, Stockholm, 2014.
398. Gordon Research Conference on Bioanalytical Sensors, Newport, Rhode Island, USA, 2014.
399. Monitoring Molecules in Neuroscience meeting, Los Angeles, USA, 2014.
400. International Society for Electrochemistry, symposium on Electrochemical Methods in Brain Science, Lausanne, Switzerland, 2014.
401. Molecular Sciences Forum Lecture, Center for Molecular Science, ICCAS, Beijing, China, 2014.
402. University of Science and Technology Beijing, 2014.

403. Analytical Chemistry, Southwest University, Chongqing, China, 2014.
404. Analytical Chemistry, East China Normal University, Shanghai, China, 2014.
405. Analytical Chemistry, Fudan University, Shanghai, China, 2014.
406. Pittsburgh Conference on Analytical Chemistry, Symposium, Chemical Analysis in Super-Small Living Systems, New Orleans, LA, 2015.
407. Pittsburgh Conference on Analytical Chemistry, Symposium, Pittsburgh Conference Award in Analytical Chemistry, New Orleans, LA, 2015.
408. Analytical Chemistry, Southwest University, Chongqing, China, 2015.
409. Biomedical Engineering, Nanjing University, Nanjing, China, 2015.
410. Analytical Chemistry, East China Normal University, Shanghai, China, 2015.
411. Bioanalytical Chemistry, ICCAS, Beijing, China, 2015.
412. Analytical Chemistry, Beijing University of Science and Technology, 2015.
413. Pittsburgh Conference on Analytical Chemistry, Symposium, Pittsburgh Conference Award in Analytical Chemistry, Atlanta, GA, 2016.
414. Second Symposium of the Bridging Nordic Imaging, Gothenburg, Sweden, 2016.
415. East China Normal University, Shanghai, China, 2016.
416. Wuhan University, Wuhan, China, 2016.
417. Faraday Discussions Meeting on Nanoentity Electrochemistry, York, UK, 2016.
418. Institute for Chemistry Chinese Academy of Sciences (ICCAS), Beijing, China, 2016.
419. Renmin University, Beijing, China, 2016
420. Capitol Normal University, Beijing, China, 2016.
421. Southwest University, Chongqing, China, 2016.
422. Plenary Lecture, 6<sup>th</sup> Chinese Conference on Secondary Ion Mass Spectrometry, Dalian, China, 2016.
423. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, 2017.
424. Keynote Lecture, 33<sup>rd</sup> International Symposium on Microscale Separations and Bioanalysis, Noordwijkerhout, The Netherlands, 2017.
425. Plenary Lecture, The Scientific International Symposium on SIMS and Related Techniques Based on Ion-Solid Interactions, Kyoto, Japan, 2017.
426. The Sixteenth International Symposium on Electroanalytical Chemistry (16th ISEAC), Changchun, China, 2017.
427. Plenary Lecture, European Advanced Materials Congress, Stockholm-Helsinki Cruise, 2017.
428. Keynote Lecture, Euroanalysis, Stockholm, 2017.
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430. Plenary Lecture, Symposium on Biosensing and Imaging in Neuroscience, Shanghai, China, 2017.
431. Analytical Chemistry, Southwest University, Chongqing, China, 2017.
432. Plenary Lecture, Monitoring Molecules in Neuroscience meeting, Oxford, UK, 2018.
433. Chemistry, Institute for Chemistry Chinese Academy of Sciences, Beijing, China, 2018.
434. Analytical Chemistry, Wuhan University, Wuhan, China, 2018.
435. Analytical and Nano Chemistry, East China University of Science and Technology, Shanghai, China, 2018.
436. Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China, 2018.
437. Faraday Discussions Meeting on Electrochemistry at Nano-Interfaces, Univ of Bath, UK, 2018.
438. University of Göttingen Medical Center, Symposium on Advanced Microscopy + Biomedicine meets NanoSIMS, Göttingen, Germany, 2018.

439. Analytical Chemistry, Renmin University, Beijing, China, 2018.
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441. Analytical Chemistry, East China Normal University, Shanghai, China, 2018.
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443. Seminar, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany, 2018.
444. The Walter Harris Lectures (3), University of Alberta, Edmonton, Canada, 2019.
445. Institute for Chemistry Chinese Academy of Sciences (ICCAS), Beijing, China, 2019.
446. Minzu University, Beijing, China, 2019.
447. Southwest University, Chongqing, China, 2019.
448. Ho Chi Minh University, Department of Chemistry, Ho Chi Minh City, Vietnam, 2019.
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### Complete List of Publications

Citations H-index is 79, total citations 20803 (Google Scholar), i10 index is 265

Reviews, book chapters, and patents at end

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### **Opinions**

349. Opinion: Please Help Reviewers by Embedding Your Figures, The standard system of separating figures, tables, and legends from the text is unnecessary and laborious, R. Borges, A. G. Ewing, *The Scientist*, July 23, 2019.

### **Patents**

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