CURRICULUM VITAE
Robert F. Murphy
Ray and Stephanie Lane Professor of Computational Biology and
Professor of Biological Sciences, Biomedical Engineering and Machine Learning

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EDUCATION

Columbia University, New York, B.A., 1974, Biochemistry.
California Institute of Technology, Pasadena, CA, Ph.D., 1980, Biochemistry (Dr. James Bonner)

PROFESSIONAL EXPERIENCE

Ray and Stephanie Lane Professor of Computational Biology, Carnegie Mellon U., 2007-
Head, Computational Biology Department, Carnegie Mellon U., 2015-
Director (Department Head), Ray and Stephanie Lane Center for Computational Biology, Carnegie Mellon U. 2007-2014
Professor of Machine Learning, Carnegie Mellon U., 2006-
Professor of Biological Sciences and Biomedical Engineering, Carnegie Mellon U., 2003-
Honorary Professor of Biology, Albert Ludwig University of Freiburg, 2011-
External Senior Fellow, Freiburg Institute for Advanced Studies, Freiburg, Germany 2008-
Founder and Board Member, Quantitative Medicine LLC, 2012-
Founding Director, Joint CMU-Pitt Ph.D. Program in Computational Biology, 2005-2009
Founding Director, Center for Bioimage Informatics, Carnegie Mellon U., 2004-2008
Associate Professor of Biological Sciences, Carnegie Mellon University, 1989-2003
Associate Professor of Biomedical Engineering (by courtesy), 2002-2003
Voting Faculty Member, Center for Automated Learning and Discovery, 2002-2006
Director, Merck Computational Biology and Chemistry Program, 1999-2004
Director, Summer Undergraduate Research Program, Dept. Biological Sciences, 1996-2004
Member, University of Pittsburgh Cancer Institute, 1994-present.
Faculty of Biomedical Engineering**,** Carnegie Mellon University, 1998-2002
Faculty Member and Program Leader for Undergraduate and Graduate Education, Center for Light Microscope Imaging and Biotechnology, 1991-2002.
Undergraduate Research Advisor, Dept. of Biological Sciences, Carnegie Mellon, 1996-2000
Director, Beckman Scholars Program at Carnegie Mellon University, 1998-1999
Visiting Associate Professor of Biology, Johns Hopkins University, 1994.
Associate Member, Pittsburgh Cancer Institute, 1986-1993.
Founding Member, Center for Fluorescence Research in Biomedical Sciences, 1983-1991
Assistant Professor of Biological Sciences, Carnegie Mellon University, 1983-1989
Consultant, Becton Dickinson Immunocytometry Systems, 1982-1992.
Postdoctoral Research Associate, Columbia University, Dr. Charles Cantor, Departments of Chemistry and Human Genetics, 1979-1983.

HONORS

Earle C. Anthony Fellowship, Caltech, 1974
Damon Runyon-Walter Winchell Cancer Foundation Fellowship, 1979
Presidential Young Investigator Award, 1984
Fellow, American Institute of Medical and Biological Engineering, 2007
Senior Member, IEEE, 2007
Alexander von Humboldt Foundation Research Award, 2008
Honorary Professor of Biology, Albert Ludwig University of Freiburg, 2011
Distinguished Service Award, International Society for Advancement of Cytometry, 2015

PROFESSIONAL SERVICE
Editorial
Guest Editor (with Gaudenz Danuser and Erik Meijering), Special Issue on Molecular and Cellular Bioimaging, IEEE Transactions on Image Processing, September 2005
Guest Editor (with Jelena Kovacevic), Special Issue on Molecular and Cellular Bioimaging, IEEE Signal Processing Magazine, May 2006
Member, Editorial Advisory Board, *Journal of Proteome Research,* January 2006-December 2008
Member, Editorial Board, *Biology Direct:* Genomics, bioinformatics and systems biology section, March 2007-
Member, Editorial Board, *Cytometry Part A*, May 2007-
Member, Editorial Board, *Biology Direct:* Discovery notes section, October 2007-
Software Section Editor, *PLOS Computational Biology, March 2009-March 2015*
Associate Editor, *BMC Bioinformatics, May 2011-*
Associate Editor, *Bioinformatics, January 2014-*
Member, Editorial Board, *Scientific Data, January 2014-*
Guest Editor (with Thilo Figge), Special Issue on Image-Based Systems Biology, Cytometry Part A, June 2015

Committee and Society Positions
Member, Data Standards Committee, International Soc. Analytical Cytology, Jan. 1990-March 2003 (Chair, Jan. 1998-March 2003)
Member, Publications Committee, International Society for Computational Biology, January 2004-2014
Councillor, International Society for Analytical Cytology, May 2004-May 2006
Chair, Scientific Communications Committee, International Society for Analytical Cytology, May 2004-May 2006
Member, International Society for Analytical Cytology Management Task Force, March 2005-September 2006
President-elect, International Society for Advancement of Cytometry, May 2006-May 2008
President, International Society for Advancement of Cytometry, May 2008-May 2010
Immediate Past-President, International Society for Advancement of Cytometry, May 2010-2012
Member, Steering Committee, Bioimage Informatics Conferences, November 2011-2014

Advisory Panels
Member, American Heart Association Western Pa. Peer Review Committee, March 1987-1991
Member, National Science Foundation Cell Biology Review Panel B, October 1989-March 1992
NIH, Special Study Section A (Biomedical Instrumentation), September 1990, June 1991
NIH, Biological Sciences 2 Study Section (Special Reviewer), July 1991, November 1991
NIH, Reviewers Reserve, December 1991-June 1993

Member, NIH Biological Sciences 2 Study Section, July 1993-June 1997
Chair, Carnegie Mellon University Faculty Development Fund, July 1996-June 1997
Member, NSF Research Experience for Undergraduates Review Panel, November 1996-1998
Member, NIH, ZRG2 CBY-1, March 1997, June 1997
Member, NIH, ZRG2 CBY-2, July, Dec. 1998 (Chair), March, July, Nov. 1999, March, June 2000
Member, NSF Research Experience for Undergraduates Review Panel, November 2000
Member, NSF Graduate Research Fellowship Panel, February 2001, February 2002
Member, Visiting Review Committee, Biological and Medical Informatics Program, University of California, San Francisco, March 28-29, 2002
Member, Scientific Advisory Board, Sequel Genetics, 2002-2003
Member, NIH SSS-U (Instrumentation), August 2002
Member, NIH SSS-H (Computational Biology), June 2002, November 2002, February 2003, June 2003, November 2003
Member, Visiting Review Committee, Image Analysis Laboratory, National Cancer Institute, Frederick, MD, January 2004
Member, NIH BDMA Study Section, March 2004
Chair, NIH BDMA Study Section, June 2004-June 2006
Member, NIH ZGM1 BRT-9 (KR) Study Section, August 2006
Member, NIH ZRG1 CB-B (40) Study Section, November 2006
Member, NIH ZRG1 BST-R (30) Study Section, October 2007
Member, NIH NIGMS Advisory Council, January 2009-December 2012
Member, Advisory Board, Caribbean Computing Center for Excellence, September 2010-2014
Member, NIH Council of Councils, November 2011-October 2014
Member, Review Panel, NSF-NIH BIGDATA initiative, October-November, 2012
Member, X02 Review Working Group, NIGMS, February 2013
Member, Fellowship Selection Committee, Freiburg Institute for Advanced Studies, February 2015

Conference Organization and Program Committees
Chair, Cytometry Development Workshop, November 1998-October 2006
Scientific and Medical Advisory Board, Pittsburgh Bone Symposium, August 2003
Member, Program Committee, IEEE International Workshop on Neural Networks in Signal Processing, September 2003
Finance Chair, IEEE International Symposium on Biomedical Imaging, April 2006
Member, Organizing Committee, International Society for Analytical Cytology XXIII Congress, May 2006
Member, Program Committee, MICCAI Workshop on Microscopic Image Analysis with Applications in Biology, October 1, 2006
Member, Program Committee, International Conference on Bioinformatics Research and Development (BIRD), March 2007
Special Sessions Chair, IEEE International Symposium on Biomedical Imaging, April 2007
Member, Program Committee, Second International Workshop on Microscopic Image Analysis with Applications in Biology, September 21, 2007
Topic Chair, Bioengineering and Imaging Research Opportunities Workshop, January 2008
General Chair, International Society for Analytical Cytology XXIII Congress, May 2008
General Chair, International Conference on Bioinformatics Research and Development (BIRD), July 2008

Workshop Co-Organizer, "Automated Interpretation and Modeling of Cell Images," International Conference on Machine Learning (ICML), June 2009

Area Chair for Bioimaging (with Eugene Myers), Intelligent Systems for Molecular Biology, July 11-13, 2010

Member, Organizing Committee, Bioimage Informatics 2010, Carnegie Mellon University, September 17-19, 2010

Organizer (with Anne Carpenter), Special Session, International Symposium on Biomedical Imaging, Chicago, Illinois, April 1, 2011

Member, Steering Committee, Great Lakes Bioinformatics Conference 2011, May 2-4, 2011

Member, Organizing Committee, CYTO 2011, Baltimore, Maryland, May 21-25, 2011

Area Chair for Bioimaging and Visualization (with Eugene Myers and Sean O'Donoghue), Intelligent Systems for Molecular Biology, Vienna, Austria, July 15-19, 2011

Chair, "Image-based Models of Cell Organization and Function," International Conference on Systems Biology, Heidelberg, Germany, August 28-September 1, 2011

Member, Program Committee, Microscopic Image Analysis with Applications in Biology, Mannheim, Germany, September 2, 2011

Member, Program Committee, International Symposium on Biomedical Imaging, Barcelona, Spain, May 2-5, 2012

Honorary Conference Chair and member of Organizing Committee, GLBIO 2012, Ann Arbor, Michigan, May 15-17, 2012

Member, Organizing Committee, CYTO 2012, Leipzig, Germany, June 22-27, 2012

Area Chair for Bioimaging and Visualization (with Sean O'Donoghue), Intelligent Systems for Molecular Biology, Long Beach, California, July 15-17, 2012

Track Chair for Bioimage Analysis, ACM Conference on Bioinformatics, Computational Biology and Biomedicine, Orlando, Florida, October 7-10, 2012

Special Sessions Chair, IEEE International Symposium on Biomedical Imaging, San Francisco, California, April 7-11, 2013

Steering Committee, GLBIO 2013, Pittsburgh, Pennsylvania, May 13-15, 2013

Member, Organizing Committee, CYTO 2013, San Diego, California, May 19-22, 2013

Track Chair for Bioimage Analysis, ACM Conference on Bioinformatics, Computational Biology and Biomedicine, Washington, DC, 2013

Member, Program Committee, 2nd International Workshop on Pattern Recognition in Proteomics, Structural Biology and Bioinformatics, Naples, Italy, September 10-11, 2013

Member, Organizing Committee, CYTO 2014, Ft. Lauderdale, Florida, May 17-21, 2014

Area Chair for Bioimaging and Visualization, Intelligent Systems for Molecular Biology, Boston, Massachusetts, July 11-15, 2014

Member, Organizing Committee, CYTO 2015, Glasgow, Scotland, June 26-30, 2015

Session Organizer and Chair, Machine-Learning Advances in the Life Sciences, Society for Laboratory Automation and Screening Annual Meeting, Washington, DC, February 9, 2015

Area Chair for Bioimaging and Visualization, Intelligent Systems for Molecular Biology, Dublin Ireland, July 11-15, 2015

Program Chair, IEEE International Symposium on Biomedical Imaging, Melbourne, Australia, April 18-21, 2017

Member, Organizing Committee, CYTO 2016, Seattle, Washington, June 11-15, 2016

Courses and Tutorials

Invited Tutorial "Signal and Image Processing Issues in Molecular and Cellular Imaging," ICASSP 2005, Philadelphia, Pennsylvania, March 19, 2005

Invited Tutorial "Signal and Image Processing Issues in Molecular and Cellular Imaging" (with Christos Faloutsos), SIGMOD 2005, Baltimore, Maryland, June 14, 2005

Faculty Member, Tenth Annual Course on 3D Microscopy of Living Cells, University of British Columbia, Vancouver, BC, June 16-24, 2005

Invited Faculty Member, Short Course on High-Content Analysis, Society for Biomolecular Sciences Conference 2005, Geneva, Switzerland, September 11, 2005

Invited Tutorial "Image Analysis of Subcellular Patterns for High Throughput Screening and Systems Biology," International Society for Analytical Cytology XXIII Congress, Quebec City, Quebec, Canada, May 20, 2006

Invited Tutorial "Basics of Machine Learning for Image or Flow (Cytometry)," International Society for Analytical Cytology XXIII Congress, Quebec City, Quebec, Canada, May 20, 2006

Invited Faculty Member, Short Course on High-Content Analysis, Society for Biomolecular Sciences Conference 2006, Seattle, Washington, September 17, 2006

Faculty Member, Machine Learning Department Autumn Course on Data Mining from Text and Image, Pittsburgh, PA, September 27, 2006

Invited Tutorial "Machine Learning Approaches to Information Extraction from Text and Images in Biomedical Journal Articles," International Association of Science and Technology for Development Biomed 2007 and Signal Processing, Pattern Recognition, and Applications 2007, Innsbruck, Austria, February 15, 2007

Invited Faculty Member, IV Interactive Course in Cytometry, Modena, Italy, March 6-9, 2007

Faculty Member, Twelfth Annual Course on 3D Microscopy of Living Cells, University of British Columbia, Vancouver, BC, June 29-July 2, 2007

Invited Faculty Member, Short Course on High-Content Analysis, Society for Biomolecular Sciences Conference 2008, St. Louis, Missouri, April 6, 2008

Faculty Member, Thirteenth Annual Course on 3D Microscopy of Living Cells, University of British Columbia, Vancouver, BC, June 28-30, 2008

Short Course, "Machine Learning Approaches to Biological Research: Bioimage Informatics and Beyond", Freiburg Institute for Advanced Studies, Freiburg, Germany, September 29-October 1, 2008

Selected Tutorial "Automated Proteome-wide Determination and Modeling of Subcellular Location", Sixth Conference on Computational Methods in Systems Biology, Rostock, Germany, October 12, 2008

Invited Faculty Member, V Advanced Course in Cytometry, Modena, Italy, March 3-8, 2009

Invited Speaker, EMBO Practical Course on Light Microscopy of Living Cells, Oeiras, Portugal, May 29-June 5, 2009

Lecture on Advanced Image Analysis, Life Cell Imaging Workshop, Zentrum für Biosystems Analyse, Freiburg, Germany, July 14, 2009

Short Course, "Bioimage Informatics: Automated Image Analysis and Modeling", Biogem, Ariano Irpino, Italy, July 7-9, 2010

Invited Faculty Member, International Symposium in Applied Bioimaging, Porto, Portugal, September 20-21, 2012

Invited Faculty Member, EMBO Practical Course on "Intravital Microscopy, Flow Cytometry and Cell Sorting", Berlin, Germany, July 7-12, 2013

Instructor and Co-Organizer, MMBioS Workshop on "Computational Methods for Spatially Realistic Microphysiological Simulations", Pittsburgh, April 28-30, 2014

Instructor and Co-Organizer, MMBioS Workshop on "Computational Methods for Spatially Realistic Microphysiological Simulations", Pittsburgh, April 27-29, 2015

PROFESSIONAL SOCIETIES

American Institute for Medical and Biological Engineering (Fellow), American Society for Cell Biology, Institute of Electrical and Electronic Engineers (IEEE, Senior Member), International Society for Advancement of Cytometry, International Society for Computational Biology

BOOKS

1. Applications of Fluorescence in the Biomedical Sciences (1986) D. L. Taylor, A. S. Waggoner, R. F. Murphy, F. Lanni, R. Birge (eds.), Alan R. Liss, Inc., New York.
2. Endosomes and Lysosomes: A Dynamic Relationship (1993) B. Storrie and R. F. Murphy (eds.), JAI Press.
3. Bioinformatics Research and Development: Second International Conference, BIRD 2008, Vienna, Austria, July 7-9, 2008 Proceedings (Communications in Computer and Information Science) (2008) M. Elloumi, J. Küng, R. Murphy, K. Schneider, C. Toma (eds.), Springer, Berlin.
4. New Trends in Image Analysis and Processing, ICIAP 2013 Workshops: Naples, Italy, September 2013, Proceedings (Lecture Notes in Computer Science) (2013) A. Petrosino, L. Maddalena, P. Pala, V. Cantoni, M. Ceccarelli, R. F. Murphy, A. Del Bimbo, M. Pantic, C. Grana, J. Ooomen, G. Serra, M. Leo, D. P. Mandic, G. Pirlo, M. Fairhurst, D. Impedovo (eds.), Springer, Heidelberg.

PATENTS AND PATENT APPLICATIONS

R.F. Murphy, A. Rao, E. Glory-Afshar, J.Y. Newberg, S. Bhavani, A. Kumar. Identifying Location Biomarkers. U.S. patent number 9,092,850 (WO 2012100190).

A.W. Naik, J.D. Kangas, C.J. Langmead, R.F. Murphy. Learning to predict effects of compounds on targets. U.S. patent application 20140052428 (WO 2012112534).

PUBLICATIONS

These papers have received over 7500 citations (average impact 38.6) and a Hirsch index (h-index) of 45.

1. R. F. Murphy and J. Bonner (1975). Alkaline Extraction of Non-Histone Proteins from Rat Liver Chromatin. *Biochim. Biophys. Acta 405*:62-66.
2. J. M. Gottesfeld, R. F. Murphy and J. Bonner (1975). Structure of Transcriptionally Active Chromatin. *Proc. Natl. Acad. Sci. USA 72*:4404-4408.
3. R. B. Wallace, T. D. Sargent, R. F. Murphy and J. Bonner (1977). Physical Properties of Chemically Acetylated Rat Liver Chromatin. *Proc. Natl. Acad. Sci. USA 74*:3244-3248.
4. J. Bonner, R. B. Wallace, T. D. Sargent, R. F. Murphy and S. K. Dube (1977). The Expressed Portion of Eukaryotic Chromatin. *Cold Spring Harbor Symp. Quant. Biol. 42*:851-857.
5. R. F. Murphy, R. B. Wallace and J. Bonner (1978). Altered Nucleosome Spacing in Newly Replicated Chromatin from Friend Leukemia Cells. *Proc. Natl. Acad. Sci. USA 75*:5903-5907.
6. R. B. Wallace, J. Schaeffer, R. F. Murphy, T. Hirosa, K. Itakura and J. Bonner (1979). Hybridization of Synthetic Oligodeoxyribonucleotides to ϕX174 DNA: The Effect of Single Base Pair Mismatch. *Nucleic Acids Res. 6*:3543-3557.

7. R. F. Murphy, W. R. Pearson and J. Bonner (1979). Computer Programs for Analysis of Nucleic Acid Hybridization, Thermal Denaturation and Gel Electrophoresis Data. *Nucleic Acids Res*. 6:3911-3921.

8. R. F. Murphy, R. B. Wallace and J. Bonner (1980). Isolation of Newly-Replicated Chromatin by Using Shallow Metrizamide Gradients. *Proc. Natl. Acad. Sci. USA 77*:3336-3340.

9. R. F. Murphy (1980). Chromosomal Protein-DNA Interactions. Doctoral Thesis. California Institute of Technology.

10. R. F. Murphy, J. R. Daban and C. R. Cantor (1981). Flow Cytofluorometric Analysis of the Nuclear Division Cycle of Physarum Polycephalum Plasmodia. *Cytometry 2*:26-30.

11. R. F. Murphy, E. D. Jorgensen and C. R. Cantor (1982). Kinetics of Histone Endocytosis in Chinese Hamster Ovary Cells: A Flow Cytofluorometric Analysis. *J. Biol. Chem. 257*:1695-1701.

12. R. F. Murphy, S. Powers, M. Verderame, C. R. Cantor and R. Pollack (1982). Flow Cytofluorometric Analysis of Insulin Binding and Internalization by Swiss 3T3 Cells. *Cytometry 2*:402-406.

13. R. Haas, R. F. Murphy and C. R. Cantor (1982). Testing Models of the Arrangement of DNA Inside Bacteriophage Lambda by Crosslinking the Packaged DNA. *J. Mol. Biol. 159*:71-92.

14. P. L. McNeil, R. F. Murphy, F. Lanni and D. L. Taylor (1984). A Method for Incorporating Macromolecules into Adherent Cells. *J. Cell Biol. 98*:1556-1564.

15. R. F. Murphy, S. Powers and C. R. Cantor (1984). Endosome pH Measured in Single Cells by Dual Fluorescence Flow Cytometry: Rapid Acidification of Insulin to pH 6. *J. Cell Biol. 98*:1757-1762.

16. R. F. Murphy, S. Powers, C. R. Cantor and R. Pollack (1984). Reduced Insulin Endocytosis in Serum Transformed Fibroblasts Demonstrated by Flow Cytometry. *Cytometry 5*:275-280.

17. W. Hiddemann, J. Schumann, M. Andreeff, B. Barlogie, C. J. Herman, R. C. Leif, B. H. Mayall, R. F. Murphy, A. A. Sandberg (1984). Convention on Nomenclature for DNA Cytometry. *Cytometry 5*:445-446.

18. R. F. Murphy and T. M. Chused (1984). A Proposal for a Flow Cytometric Data File Standard. *Cytometry 5*:553-555.

19. R. F. Murphy, D. B. Tse, C. R. Cantor and B. Pernis (1984). Acidification of Internalized Class I MHC Antigen by T Lymphoblasts. *Cell. Immunol. 88*:336-342.

20. R. F. Murphy, E. Bisaccia, C. R. Cantor, C. Berger and R. L. Edelson (1984). Internalization and Acidification of Insulin by Activated Human Lymphocytes. *J. Cell. Physiol. 121*:351-356.

21. P. L. Wollenzien, C. F. Hui, C. Kang, R. F. Murphy and C. R. Cantor (1984) RNA structure, Free and on the Ribosome, as Revealed by Chemical and Enzymatic Studies. In: **Mechanisms of Protein Synthesis**, Bermek, (ed.), Springer-Verlag, Berlin.

22. P. L. McNeil, A. L. Kennedy, A. S. Waggoner, D. L. Taylor and R. F. Murphy (1985). Light Scattering Changes During Chemotactic Stimulation of Human Neutrophils: Kinetics Followed by Flow Cytometry. *Cytometry 6*:7-12.

23. R. F. Murphy (1985). Automatic Identification of Subpopulations in Flow Cytometric List Mode Data Using Cluster Analysis. *Cytometry 6*:302-309.

24. P. L. Wollenzien, R. F. Murphy, C. R. Cantor, A. Expert-Bezancon and D. H. Hayes (1985). Structure of the E. coli 16S rRNA. Psoralen Crosslinks and N-Acetyl-N'-(p-Glyoxylylbenzoyl) Cystamine Crosslinks Detected by Electron Microscopy. *J. Mol. Biol. 184*:67-80.

25. C. R. Cantor, D. B. Tse, J. McDowell, R. Murphy, and B. Pernis (1985). Internalization of Histocompatibility Antigens Studied by Flow Cytometry. In: **Cell Biology of the Major**

Histocompatibility Complex, B. Pernis & H. J. Vogel (eds.), Academic Press, New York, pp. 165-172.

26. R. F. Murphy (1985). Analysis and Isolation of Endocytic Vesicles by Flow Cytometry and Sorting: Demonstration of Three Kinetically Distinct Compartments Involved in Fluid-Phase Endocytosis. *Proc. Natl. Acad. Sci. USA 82*:8523-8526.

27. M. Fechheimer, C. Denny, R. F. Murphy, and D. L. Taylor (1986).Measurement of cytoplasmic pH in Dictyostelium discoideum by using a new method for introducing macromolecules into living cells. *Eur. J. Cell Biol. 40*:242-247.

28. R. F. Murphy (1986). Flow Cytometry in Cell Biology. In: **Applications of Fluorescence in the Biomedical Sciences**, D. L. Taylor, A. S. Waggoner, R. F. Murphy, F. Lanni, R. Birge (eds.), Alan R. Liss, Inc., New York, pp. 525-530.

29. R. F. Murphy and M. Roederer (1986). Flow Cytometric Analysis of Endocytic Pathways. In: **Applications of Fluorescence in the Biomedical Sciences**, D. L. Taylor, A. S. Waggoner, R. F. Murphy, F. Lanni, R. Birge (eds.), Alan R. Liss, Inc., New York, pp. 545-566.

30. C. C. Cain and R. F. Murphy (1986). Growth Inhibition of 3T3 Fibroblasts by Lysosomotropic Amines: Correlation with Effects on Intravesicular pH but Not Vacuolation. *J. Cell. Physiol. 129*:65-70.

31. M. Roederer and R. F. Murphy (1986). Cell-By-Cell Autofluorescence Correction for Low Signal-to-Noise Systems: Application to EGF Endocytosis by 3T3 Fibroblasts. *Cytometry 7*:558-565.

32. M. Roederer, R. Bowser, and R. F. Murphy (1987). Kinetics and Temperature Dependence of Exposure of Endocytosed Material to Proteolytic Enzymes and Low pH: Evidence for a Maturation Model for the Formation of Lysosomes. *J. Cell. Physiol. 131*:200-209.

33. S. Taylor, M. Roederer, and R. F. Murphy (1987). Flow Cytometric DNA Analysis of Adrenocortical Tumors in Children. *Cancer 59*:2059-2063.

34. D. M. Sipe and R. F. Murphy (1987). High resolution kinetics of transferrin acidification in Balb/c 3T3 cells: Exposure to pH 6 followed by temperature-sensitive alkalinization during recycling. *Proc. Natl. Acad. Sci. USA 84*:7119-7123.

35. R. A. Preston, R. F. Murphy, and E. W. Jones (1987). Apparent Endocytosis of FITC-Dextran by Saccharomyces cerevisiae Reflects Uptake of Low Molecular Weight Impurities, not Dextran. *J. Cell Biol. 105*:1981-1987.

36. C. C. Cain and R. F. Murphy (1988). A Chloroquine-resistant Swiss 3T3 Cell Line with a Defect in Late Endocytic Acidification. *J. Cell Biol. 106*:269-277.

37. S. Taylor, J. Blatt, J. Costantino, M. Roederer, and R. F. Murphy (1988). Flow Cytometric DNA Analysis of Neuroblastoma and Ganglioneuroma: a 10-year Retrospective Study. *Cancer 62*:749-754.

38. R. F. Murphy (1988). Processing of Endocytosed Material. **Adv. Cell Biol. 2:**159-180.

39. C. C. Cain, D. M. Sipe and R. F. Murphy (1989). Regulation of Endocytic pH by the Na^+/K^+-ATPase in Living Cells. *Proc. Natl. Acad. Sci. USA 86*:544-548.

40. M. Roederer, R. W. Mays and R. F. Murphy (1989). Effect of Confluence on Endocytosis by 3T3 Fibroblasts: Increased Rate of Pinocytosis and Accumulation of Residual Bodies. *Eur. J. Cell Biol. 48*:37-44.

41. C. R. Abramowsky, S. R. Taylor, A. H. Anton, A. Berk, M. Roederer and R. F. Murphy (1989). Flow Cytometry DNA Ploidy Analysis and Catecholamine Secretion Profiles in Neuroblastoma. *Cancer 63*:1752-1756.

42. R. B. Wilson and R. F. Murphy (1989). Flow Cytometric Analysis of Endocytic Compartments. **Methods Cell Biol. 31:**293-317.

43. R. F. Murphy (1989). Flow Cytometric Analysis of Ligand Binding and Endocytosis. In: **Microspectrofluorometry of Single Cells**, E. Kohen and J. G. Hirschberg (eds.), Academic Press, New York, pp. 363-376.

44. R. F. Murphy, M. Roederer, D. M. Sipe, C. Cain, and R. Bowser (1989). Determination of the Biochemical Characteristics of Endocytic Compartments by Flow Cytometric and Fluorometric Analysis of Cells and Organelles. In: **Flow Cytometry: Advanced Research and Clinical Applications**, Volume II, A. Yen (ed.), CRC Press, Boca Raton, FL, pp. 221-254.

45. R. A. Preston, R. F. Murphy and E. W. Jones (1989). Assay of Vacuolar pH in Yeast and Identification of Acidification-defective Mutants. *Proc. Natl. Acad. Sci. USA 86:*7027-7031.

46. R. F. Murphy (1990). Ligand Binding, Endocytosis, and Processing. In: **Flow Cytometry and Sorting, Second Edition**, M. R. Melamed, T. Lindmo, M. L. Mendelsohn (eds.), Wiley-Liss, Inc., New York, pp. 355-366.

47. R. Bowser and R. F. Murphy (1990). Kinetics of Hydrolysis of Endocytosed Substrates by Mammalian Cultured Cells: Early Introduction of Lysosomal Enzymes into the Endocytic Pathway. *J. Cell. Physiol. 143:*110-117.

48. M. Roederer, J. Barry, R. B. Wilson and R. F. Murphy (1990). Endosomes Can Undergo an ATP-dependent Density Increase in the Absence of Dense Lysosomes. *Eur. J. Cell Biol. 51:*229-234.

49. P. N. Dean, C. B. Bagwell, T. Lindmo, R. F. Murphy, and G. C. Salzman (1990). Data File Standard for Flow Cytometry. *Cytometry 11:*323-332.

50. D. M. Sipe, A. Jesurum and R. F. Murphy (1991). Absence of Na^+,K^+-ATPase Regulation of Endosomal pH in K562 Erythroleukemia Cells: Analysis via Inhibition of Transferrin Recycling by Low Temperatures. *J. Biol. Chem. 266:*3469-3474.

51. D. M. Sipe and R. F. Murphy (1991). Binding to Cellular Receptors Results in Increased Iron Release from Transferrin at Mildly Acidic pH. *J. Biol. Chem. 266:*8002-8007.

52. C. C. Cain, R. B. Wilson and R. F. Murphy (1991). Isolation by Fluorescence-Activated Cell Sorting of Chinese Hamster Ovary Cell Lines with Pleiotropic, Temperature-Conditional Defects in Receptor Recycling. *J. Biol. Chem. 266:*11746-11752.

53. R. F. Murphy (1991). Maturation Models for Endosome and Lysosome Biogenesis. *Trends Cell Biol. 1:*77-82.

54. R. F. Murphy, M. Roederer, D. M. Sipe, C. C. Cain and R. B. Wilson (1992). Endosomal pH Regulation and the Maturation Model for Lysosome Biogenesis. In: **Endocytosis: From Cell Biology to Health, Disease and Therapy** (Proceedings of the NATO Advanced Research Workshop on Endocytosis), P. J. Courtoy (ed.), NATO ASI Series H, Vol. 62, Springer Verlag, pp. 91-95.

55. R. E. Valdes-Perez, H. A. Simon, and R. F. Murphy (1992) Discovery of pathways in science. Proceedings of the ML92 Workshop on Machine Discovery, J. Zytkow (ed.), Aberdeen, Scotland, pp. 51-57.

56. R. F. Murphy (1992) Scatchard analysis by flow cytometry. In: **Flow Cytometry and Cell Sorting**, A. Radbruch (ed.), Springer Verlag, Berlin, pp. 59-62.

57. R. F. Murphy (1992) Ligand acidification by non-adherent cells. In: **Flow Cytometry and Cell Sorting**, A. Radbruch (ed.), Springer Verlag, Berlin, pp. 124-129.

58. S. A. Brockman and R. F. Murphy (1993) Endosomal and Lysosomal Hydrolases. In: **Biological Barriers to Protein Delivery** (Pharmaceutical Biotechnology, Vol. 4), K. L. Audus and T. J. Raub (eds.), Plenum Press, New York, pp. 51-70.

59. R. F. Murphy (1993) Models of Endosome and Lysosome Traffic. **Adv. Cell Mol. Biol. Memb. 1:**1-17.

60. R. F. Murphy, J. Schmid and R. Fuchs (1993) Endosome maturation: Insights from somatic cell genetics and cell-free analysis. *Biochem. Soc. Trans. 21:*716-720.
61. R. B. Wilson, C. C. Mastick and R. F. Murphy (1993). A Chinese Hamster Ovary Cell Line with a Temperature-Conditional Defect in Receptor Recycling is Pleiotropically Defective in Lysosome Biogenesis. *J. Biol. Chem. 268:*25357-25363.
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189. J. Li, A. Shariff, M. Wiking, E. Lundberg, G.K. Rohde and R.F. Murphy (2012) Estimating microtubule distributions from 2D immunofluorescence microscopy images reveals differences among human cultured cell lines. *PLoS ONE 7:*e0050292.

190. J. Li, J.Y. Newberg, M. Uhlén, E. Lundberg, and R.F. Murphy (2012) Automated Analysis and Reannotation of Subcellular Locations in Confocal Images from the Human Protein Atlas. *PLoS ONE 7:*e0050514.

191. S. Weber, M.L. Fernández-Cachón, J. M. Nascimento, S. Knauer, B. Offermann, R.F. Murphy, M. Boerries, and H. Busch (2013) Label-free detection of neuronal differentiation in cell populations Using High-Throughput Live-Cell Imaging of PC12 Cells. *PLoS ONE 8:* e56690.

192. C. Stadler, E. Rexhepaj, V.R. Singan, R.F. Murphy, R. Pepperkok, M. Uhlén, J.C. Simpson, and E. Lundberg (2013) Immunofluorescence and fluorescent protein-tagging are complementary techniques with high correlation for subcellular investigation of the human proteome in mammalian cells. *Nature Methods 10:* 315-323.

193. L. P. Coelho, J. D. Kangas, A. Naik, E. Osuna-Highley, E. Glory-Afshar, M. Fuhrman, R. Simha, P. B. Berget, J. W. Jarvik, and R. F. Murphy (2013) Determining the subcellular location of new proteins from microscope images using local features. *Bioinformatics 29*: 2343-2349.

194. K.T. Roybal, P. Sinai, P. Verkade, R. F. Murphy, and Christoph Wülfing (2013) The actin-driven spatiotemporal organization of signaling in T cells activated by antigen presenting cells. *Immunological Reviews* 256: 133-147.

195. A. W. Naik, J. D. Kangas, C. J. Langmead and R. F. Murphy (2013) Efficient Modeling and

Active Learning Discovery of Biological Responses. *PLoS ONE 8*: e83996. doi:10.1371/journal.pone.0083996.

196. A. Gough, T. Lezon, J. Faeder, C. Chennubhotla, R. F. Murphy, R. Critchley-Thorne and D. L. Taylor (2014) High-Content Analysis with Cellular and Tissue Systems Biology: A Bridge between Cancel Cell Biology and Tissue-Based Diagnostics. **In: The Molecular Basis of Cancer, 4th edition** (J. Mendelsohn, J. W. Gray, P. M. Howley, M. A. Israel, and C. B. Thompson, eds.), pp. 369-392.

197. R. F. Murphy (2014) A new era in bioimage informatics. *Bioinformatics 30:*1353.

198. J.D. Kangas, A.W. Naik, and R.F. Murphy (2014) Prediction of Biological Responses Using Protein and Compound Features and their Discovery using Active Learning. *BMC Bioinformatics 15*:143.

199. A. Kumar, A. Rao, S. Bhavani, J.Y. Newberg, R. F. Murphy (2014) Automated Analysis of Immunohistochemical Images Identifies Candidate Location Biomarkers for Cancers. *Proc. Natl. Acad. Sci. U.S.A. 111*:18249-18254.

200. M. Temerinac-Ott, A. W. Naik, and R. F. Murphy (2015) Deciding when to stop: Efficient experimentation to learn to predict drug-target interactions. *BMC Bioinformatics 16*:213 *(also selected for oral presentation in the Proceedings track of RECOMB 2015; only 20% of submitted papers accepted).*

201. G. R. Johnson, T. E. Buck, D. P. Sullivan, G. K. Rohde and R. F. Murphy (2015) Joint Modeling of Cell and Nuclear Shape Variation. *Mol. Biol. Cell 26*:4046-4056.

202. R. F. Murphy (2015) Building Cell Models and Simulations from Microscope Images. *Methods, in press.* doi:10.1016/j.ymeth.2015.10.011

203. R. M. Donovan, J.-J. Tapia, D. P. Sullivan, J. R. Faeder , R. F. Murphy , M. Dittrich, D. M. Zuckerman (2015) Rare Event Sampling and Time-scale Extrapolation in Spatial Stochastic Systems Biology Models Using A Weighted Ensemble Of Trajectories. *PLoS Computational Biology, in press.*

204. G. R. Johnson, J. Li, A. Shariff, G.K.Rohde, and R.F. Murphy (2015) Automated Learning of Subcellular Pattern Variation among Punctate Proteins and of a Generative Model of their Distributions in Relation to Microtubules. *PLoS Computational Biology, in press.*

PAPER AWARDS

Paper 142 was recognized in 2010 as one of the top twelve papers published in the first thirty years of *Cytometry Part A*.

Papers 165 and 170 were recognized by *Nature Biotechnology* (29:45, 2011) as one of four computational biology breakthroughs in 2010.

Paper 174 received the 2013 JBS Authors Choice Award from the Society for Laboratory Automation and Screening.

SEMINARS SINCE 2003

University of Pittsburgh Cancer Institute, Pathology Bioinformatics Group, February 5, 2003
BioMedware, Inc., March 10, 2003
Baylor College of Medicine, Computational Biology Program, March 26, 2003
University of Illinois at Chicago, Department of Chemistry, May 20, 2003
Cellomics, December 4, 2003
University of Pittsburgh, Department of Pathology, February 18, 2004

University of Virgin Islands, September 1-3, 2004
University of Texas Southwestern Medical Center, Center for Immunology, September 21, 2004
University of Texas at Austin, Department of Biomedical Engineering, October 21, 2004
University of Michigan at Ann Arbor, Bioinformatics Program, November 30, 2004
The Welcome Trust Sanger Institute, Cambridge, England, January 10, 2005
University of Cardiff, Cardiff, Wales, January 11, 2005
German Cancer Research Foundation, Heidelberg, Germany, September 2, 2005
University of Leipzig, Leipzig, Germany, September 2, 2005
Laboratory of Optical Microscopy, Faculty of Informatics, Masarykova University, Brno, Czech
    Republic, September 8, 2005
Genomics Institute of the Novartis Research Foundation, La Jolla, California, October 26, 2005
La Jolla Bioengineering Institute, La Jolla, California, October 26, 2005
Institute Pasteur, Paris, France, November 7, 2005
University of Martinsried, Martinsried, Germany, November 9, 2005
National Institutes of Health, Proteomics Interest Group, December 9, 2005
Scripps Research Institute, Cell Biology Affinity Group, La Jolla, California, March 13, 2006
University of Texas at Dallas, Dallas, Texas, March 17, 2006
Bioengineering and Bioinformatics Summer Institute, Pittsburgh, May 30, 2006
Biotechnology Division, National Institute of Standards and Technology, Gaithersburg, MD,
    August 23, 2006
Department of Biophysics and Cell Biology, University of Debrecen, Hungary, October 6, 2006
Bindley Bioscience Center, Purdue University, West Lafayette, Indiana, November 2, 2006
Stowers Institute for Biomedical Research, Kansas City, Missouri, November 8, 2006
Rensselaer Polytechnic Institute, Troy, New York, November 30, 2006
Albert-Ludwigs-Universität Freiburg, Germany, March 9, 2007
Karl-Franzens-Universitat Graz, Institute of Molecular Biosciences, March 12, 2007
University of Heidelberg, BioQuant Institute, Germany, July 27, 2007
Charité Medical Center, Center for Cardiac Studies, Berlin, Germany, July 30, 2007
Johannes Kepler University Linz, Linz, Austria, October 17, 2007
Institute for Molecular Biosciences, University of Queensland, Brisbane, Australia, December
    12, 2007
Department of Microbiology, Columbia University, New York, New York, February 6, 2008
Athersys, Inc., Cleveland, Ohio, April 28, 2008
German Arthritis Research Center, Berlin, Germany, June 4, 2008
University of Rostock, Germany, July 3, 2008
Oberseminar, Institut für Informatik, Albert-Ludwigs-Universität Freiburg, Germany, July 15,
    2008
European Molecular Biology Laboratory, Heidelberg, Germany, July 25, 2008
German Cancer Research Center, Heidelberg, Germany, July 28, 2008
Department of Biotechnology, AlbaNova University Center, Royal Institute of Technology,
    Stockholm, Sweden, September 8, 2008
Freiburg Institute for Advanced Studies, Albert-Ludwigs-Universität Freiburg, Germany,
    October 8, 2008
Case Western Reserve University, November 12, 2008
Fayetteville State University, April 13, 2009
Vanderbilt School of Medicine, April 20, 2009
CEINGE Biotechnology Consortium, Naples, Italy, May 27, 2009
Biogem Consortium, Ariano Irpino, Italy, May 28, 2009

Department of Biomedical Engineering, McMaster University, Hamilton, Ontario, October 23, 2009

Dahlem Colloquium in Molecular Genetics, Max Planck Institute for Molecular Genetics, Berlin, Germany, May 18, 2010

Freiburg Institute for Advanced Studies, Freiburg, Germany, June 7, 2010

Colloquium, Language Technologies Institute, Carnegie Mellon University, October 1, 2010

Center for Advanced Light Microscopy, Genentech, South San Francisco, California, October 18, 2010

Distinguished Seminar Series, Computer and Information Sciences, University of Delaware, Newark, Delaware, May 2, 2011

Freiburg Institute for Advanced Studies, Freiburg, Germany, July 7, 2011

Integrated Computational Materials and Manufacturing Science and Engineering Seminar, Wright-Patterson Air Force Base, Dayton, Ohio, September 29, 2011

Department of Biomedical Engineering, Tulane University, New Orleans, Louisiana, November 10, 2011

Department of Computer Science, University of Basel, Basel, Switzerland, December 6, 2011

Light Microscopy and Screening Centre, ETH (Swiss Federal Institute of Technology) Zurich, June 8, 2012

Department of Biomedical Informatics, University of Pittsburgh School of Medicine, October 12, 2012

University of Pittsburgh Drug Discovery Institute, January 14, 2013

Biomolecular Signaling and Control Group, ETH (Swiss Federal Institute of Technology) Zurich, February 26, 2013

Wolfson Bioimaging Colloquium, University of Bristol, England, June 12, 2013

Faculty of Biology, University of Freiburg, Germany, June 26, 2013

Novartis, Basel, Switzerland, September 27, 2013

Carnegie Mellon University-Qatar, Doha, Qatar, February 3, 2014

University of Toronto, Computer Science Department, March 25, 2014

Novartis Institutes for BioMedical Research, Cambridge, Massachusetts, July 16, 2014

German Rheumatism Research Center, Berlin, Germany, September 24, 2014

Electrical and Engineering Department and School of Biomedical Engineering, Drexel University, Philadelphia, Pennsylvania, December 5, 2014

Baker Center for Bioinformatics and Biological Statistics, Iowa State University, Ames, Iowa, April 8, 2015

Texas A&M University, November 18, 2015

MEETINGS SINCE 2003

ALADDIN Workshop on Graph Partitioning in Vision and Machine Learning, Speaker, January 9-10, 2003

6th Lake Tahoe Symposium on Integrating Genomics, Epigenomics, Proteomics, and Phenomics in Drug Discovery and Diagnosis, Lake Tahoe, California, Invited Speaker, March 18-20, 2003

Bioinformatics in the Undergraduate Curriculum, Dickinson College, Invited Speaker, March 21-22, 2003

12th International Bioinformatics conference, Cambridge Healthtech Institute, San Diego, California, Invited Speaker, June 16-17, 2003

Showcase for Biotechnology 2003 "Integrated Bio-Medical Informatics and Enabling Technologies," Johnstown, Pennsylvania, August 27, 2003

Cytometry Development Workshop, Asilomar, California, October 15-18, 2003, Workshop CoChair

Bioinformatics Symposium, Central Region of the American Chemical Society, October 21, 2003

Keynote Speaker, XIV Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, October 24-25, 2003

National Institutes of Health System Biology Special Interest Group 1st Annual Training Retreat, Airlie House, Virginia, November 8-9, 2003

Focus on Microscopy 2004, Philadelphia, Pennsylvania, April 4-7, 2004

2004 International Symposium on Biomedical Imaging, Special Session Co-Chair and Invited Speaker, Arlington, Virginia, April 15-18, 2004

XXII International Congress of the International Society for Analytical Cytology, Montpellier, France, Invited Speaker, May 22-27, 2004

Microscopy & Microanalysis 2004, Savannah, Georgie, Invited Speaker, August 1-5, 2004

XV Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, Invited Speaker and Panelist, October 1-2, 2004

Cytometry Development Workshop, Asilomar, California, October 15-18, 2004, Workshop CoChair

IASTED International Conference on Knowledge Sharing and Collaborative Engineering , St. Thomas, US Virgin Islands, Session Chair, November 22-24, 2004,

Systems Biology: Will it Work? University of Sheffield, UK, Invited Speaker, January 12-14, 2005

High Content Analysis, Cambridge Healthtech Institute, Invited Speaker, January 25-28, 2005

The Pittsburgh Conference, Orlando, Florida, Invited Speaker, February 27-March 4, 2005

ICASSP 2005, Philadelphia, Pennsylvania, Invited Tutorial Presenter, March 19, 2005

SIGMOD 2005, Baltimore, Maryland, Invited Tutorial Presenter, June 14, 2005

HUPO 2005, Munich, Germany, Selected Speaker, August 29, 2005

SBS 2005, Geneva, Switzerland, Invited Workshop Faculty, September 11, 2005

XVI Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, Invited Speaker, September 16, 2005

Great Lakes International Imaging and Flow Cytometry Association, Milwaukee, Wisconsin, Invited Speaker, October 2, 2005

Science 2005, University of Pittsburgh, Invited Speaker, October 6, 2005

Cytometry Development Workshop, Asilomar, California, October 27-29, 2005, Workshop CoChair

International Imaging Symposium "From static spots to dynamic proteome visualization and beyond", Freiburg, Germany, November 4-5, 2005

American Society for Cell Biology meeting, invited speaker in Special Interest Group meeting on Quantitative Microscopy & Image Informatics, San Francisco, California, December 10, 2005

High Content Analysis, Cambridge Healthtech Institute, Invited Speaker, January 31-February 3, 2006

NIH Roadmap Workshop, Technology Centers for Networks and Pathways, Johns Hopkins University, Baltimore, Maryland, February 14, 2006

2006 IEEE International Symposium on Biomedical Imaging, Finance Chair, Arlington, Virginia, April 6-9, 2006

Frontiers in Live Cell Imaging, Bethesda, Maryland, April 19, 2006

International Society for Analytical Cytology XXIII Congress, Invited Frontiers Lecturer, Quebec City, Quebec, Canada, May 21, 2006

NIH Roadmap National Centers for Biomedical Computing 2006 All Hands Meeting, Invited Presenter, Bethesda, Maryland, July 19, 2006

2006 Society for Biomolecular Sciences Conference, Seattle, Washington, Invited Plenary Speaker, September 20, 2006

Compound Management, Philadelphia, Pennsylvania, Invited Plenary Speaker, September 26, 2006

Workshop on Bioimaging and Engineered Biosystems, Lehigh University, Invited Speaker, September 28-29, 2006

Great Lakes International Imaging and Flow Cytometry Association, Pittsburgh, Pennsylvania, Invited Speaker, September 29, 2006

Assays and Cellular Targets 2006, Las Vegas, Nevada, Invited Speaker, November 1, 2006

Nanomedicine Symposium, Dallas, Texas, Invited Speaker, December 11, 2006

IASTED Biomedical Engineering 2007 and Signal Processing, Pattern Recognition, and Applications 2007, Innsbruck, Austria, Invited Speaker and Invited Tutorial Presenter, February 14-16, 2007

NIH Roadmap Technology Centers for Networks and Pathways All Hands Meeting, National Institutes of Health, Bethesda, Maryland, Speaker, March 2, 2007

Bioinformatics Research and Development 2007, Berlin, Germany, Selected Speaker, March 12-14, 2007

National Institute of General Medical Sciences Strategic Planning Conference, Bethesda, Maryland, Invited Participant, April 12-13, 2007

2007 IEEE International Symposium on Biomedical Imaging, Special Sessions Chair and Invited Speaker, Arlington, Virginia, April 12-16, 2007

Interoperability Week, National Institute of Standards and Technology, Workshop on 3D and 2D Content Representation, Analysis and Retrieval, Invited Speaker, April 23, 2007

San Diego Consortium for Systems Biology, High Throughput Analysis Workshop, Invited Speaker, La Jolla, California, June 27, 2007

Workshop on the Mitochondrial Proteome, National Heart, Lung and Blood Institute, Invited Speaker, Bethesda, Maryland, July 12, 2007

Bioinformatics Gordon Conference, Andover, New Hampshire, Invited Speaker, July 16, 2007

Deutsche Gesellschaft für Zytometrie (German Society for Cytometry) 17th Annual Congress, Regensburg, Germany, Invited Speaker, October 10-13, 2007

3rd World Congress on Regenerative Medicine, Leipzig, Germany, Invited Speaker, October 18, 2007

Cold Spring Harbor Laboratory Genome Informatics meeting, Invited Speaker, November 1-4, 2007

International Symposium on Computational Models for Life Sciences, Gold Coast, Australia, Invited Keynote Speaker, December 17-19, 2007

Center for Cell Analysis and Modeling Annual Retreat, Westbrook, Connecticut, Invited Keynote Speaker, January 7, 2008

Bioengineering and Imaging Research Opportunities Workshop V, Bethesda, Maryland, Invited Speaker, January 18-19, 2008

High Throughput Systems Biology: Drug Discovery and Applications for Personalized Medicine, Dan L. Duncan Cancer Center, Baylor College of Medicine, Invited Speaker, January 28, 2008

Image Analysis Challenges in Molecular Microscopy, Institute for Pure and Applied Mathematics, University of California, Los Angeles, Invited Speaker, January 30, 2008

2008 Northwest Regional Cytometry Meeting, Portland, Oregon, Invited Speaker, March 13-15, 2008

US HUPO Fourth Annual Conference, Bethesda, Maryland, Invited Speaker, March 16-19, 2008

NIH Roadmap Technology Centers for Networks and Pathways All Hands Meeting, National Institutes of Health, Bethesda, Maryland, Speaker, March 20-21, 2008

iPlant Collaborative Kickoff meeting "Bringing Plant and Computing Scientists Together to Solve Plant Biology's Grand Challenges," Cold Spring Harbor Laboratory, April 7-9, 2008

National Institute of Standards and Technology, Second Annual Workshop on 3D and 2D Content Representation, Analysis and Retrieval, Invited Speaker, May 2, 2008

2008 IEEE International Symposium on Biomedical Imaging, Invited Speaker, Paris, France, May 14-17, 2008

International Society for Analytical Cytology XXIV Congress, General Chair, Budapest, Hungary, May 16-22, 2008

Bioinformatics Research and Development, General Co-Chair, Vienna, Austria, July 5-7, 2008

Intelligent Systems for Molecular Biology, Special Session Organizer, Invited Speaker, Toronto, Canada, July 19-23, 2008

Computational Systems Biology, Invited Speaker, Stanford, California, August 27-30, 2008

Deutsche Gesellschaft für Zytometrie (German Society for Cytometry) 18th Annual Congress, Bremen, Germany, Invited Speaker, September 17, 2008

iPlant Computational Morphodynamics Workshop, Tucson, Arizona, Invited Speaker, December 16-19, 2008

High Content Analysis, San Francisco, California, Invited Speaker, January 5-9, 2009

Bioimage Informatics 2009, Janelia Farm, Invited Speaker, April 5-7, 2009

Cell Behavior Ontology Workshop, Bethesda, Maryland, Invited Participant, May 4-5, 2009

New Frontiers in Characterizing Biological Systems Workshop, Bethesda, Maryland, Invited Participant, May 13-14, 2009

2009 IEEE International Workshop on Medical Measurements and Applications, Cetraro, Italy, Keynote Speaker, May 29-30, 2009

Intelligent Systems for Molecular Biology, Special Interest Group Meeting Organizer, Invited Speaker, Stockholm, Sweden, June 27-July 2, 2009

Life Cell Imaging Workshop, Zentrum für Biosystems Analyse, Freiburg, Germany, July 14, 2009

Interdisciplinary Symposium on 3D Microscopy 2009, Interlaken, Switzerland, Invited Speaker, July 12-16, 2009

High Content Analysis East, Boston, Massachusetts, Invited Speaker, September 21-23, 2009

MathBio 2: IMAGE Interdisciplinary BioImage Informatics, Invited Keynote Speaker, Madison, Wisconsin, November 19-20, 2009

High Content Analysis, San Francisco, California, Invited Speaker, January 12-15, 2010

15th Leipziger Cytometry Workshop, Leipzig, Germany, Keynote Speaker, April 23, 2010

CYTO 2010, Seattle, Washington, Invited Speaker, May 8-12, 2010

Integrative Network Biology and Cancer Symposium, Institute of Cancer Research, London, UK, Invited Speaker, May 14-15, 2010

2nd European Workshop on Tissue Imaging and Analysis, BIOQUANT Center for Systems Biology, Heidelberg, Germany, Invited Speaker, June 25, 2010

International Workshop "Towards Criteria of Evaluation of Research and Researchers", Euroscience Open Forum 2010, Turin, Italy, Invited Speaker, July 2, 2010

Intelligent Systems for Molecular Biology, Highlights Talk, Boston, Massachusetts, July 12, 2010

Spatio-Temporal Dynamics Challenges from Fluorescence Data, Warwick Mathematics Research Centre, Warwick, England, Invited Speaker, July 13-16, 2010

Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, Invited Speaker, September 10, 2010

Great Lakes International Imaging and Flow Cytometry Association, Detroit Michigan, Invited Speaker, September 24-25, 2010

Single Cell Analysis Summit, La Jolla, California, Invited Speaker, October 28-29, 2010

American Society for Cell Biology meeting, invited speaker in Special Interest Group meeting on Synergistic Advances to Study Gene Expression and Next-Gen Imaging, Philadelphia, Pennsylvania, December 11, 2010

High Content Analysis, San Francisco, California, Invited Speaker, January 14-17, 2011

First Workshop on Computer Vision Tracking of Cell Populations, Invited Speaker, Pittsburgh, Pennsylvania, March 22-23, 2011

Sixteenth Leipziger Workshop, Keynote Speaker, Leipzig, Germany, April 14-16, 2011

CYTO 2011, Baltimore, Maryland, Session Chair, May 21-25, 2011

PROSPECTS symposium "Putting Proteins Under the Microscope," Karolinska Institute, Stockholm, Germany, Invited Speaker, August 23, 2011

International Conference on Systems Biology, Mannheim, Germany, Invited Speaker and Session Chair, August 28-September 1, 2011

Microscopic Image Analysis with Applications in Biology, Heidelberg, Germany, Invited Speaker, September 2, 2011

Computational Modeling in Biology Network meeting, Heidelberg, Germany, September 5, 2011

Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, Invited Speaker, September 20, 2011

IEEE International Conference on Tools with Artificial Intelligence, Boca Raton, Florida, Invited Keynote Speaker, November 7, 2011

IASTED International Conference on Computational Intelligence and Bioinformatics, Pittsburgh, Pennsylvania, Invited Keynote Speaker, November 8, 2011

University of Uppsala Centre for Image Analysis, BioVis, and SciLifeLab Uppsala joint symposium: Quantifying and modeling cellular processes using image analysis, Uppsala, Sweden, Invited Featured Speaker, December 1, 2011

High Content Analysis, San Francisco, California, Invited Speaker, January 11-14, 2012

1st Annual Conference of the Society for Laboratory Automation and Screening, San Diego, California, Invited Speaker, February 5-8, 2012

ITT Vanguard Conference on "Hacking Life", San Jose, California, Invited Speaker, February 18-20, 2012

8th Annual Conference, US HUPO, San Francisco, California, Invited Speaker, March 4-6, 2012

Automated Imaging and High-Throughput Phenotyping, Cold Spring Harbor Laboratory, Invited Speaker, April 10-13, 2012

OME Users Meeting, Paris, France, Invited Speaker, June 18, 2012

CYTO 2012, Session Chair and Workshop Speaker, Leipzig, Germany, June 25-28, 2012

Bioimaging 2012, Invited Speaker, Porto, Portugal, September 20-21, 2012

MipTec 2012, Invited Speaker, Basel, Switzerland, September 24-27, 2012

IEEE BIBM 2012, Invited Keynote Speaker, Philadelphia, Pennsylvania, October 5, 2012

Mathematical and Computational Medicine Conference, Invited Speaker, Xcaret, Mexico, December 1-5, 2012

High Content Analysis, San Francisco, California, Invited Speaker, January 8-11, 2013

52nd Annual Meeting, Society for Toxicology, Invited Speaker, March 12, 2013

2013 Meeting on Computational Cell Biology, Cold Spring Harbor, New York, Invited Speaker and Session Chair, March 19-22, 2013

Advanced Models of Imaging-based Drug Screening, Houston, Texas, Invited Speaker and Session Chair, May 13-14, 2013

"Journées Thématiques du GDR" Bioimage Informatics, Institute Curie, Paris, France, Invited Keynote Speaker, July 8-9, 2013

International Conference on Systems Biology, Copenhagen, Denmark, Invited Speaker and Session Chair, August 30-September 3, 2013

17th International Conference on Image Analysis and Processing, 2nd International Workshop on Pattern Recognition in Proteomics, Structural Biology and Bioinformatics, Naples, Italy, Invited Speaker and Chair, September 10, 2013

The First International Aizu Conference onBiomedical Informatics and Technology, Aizu-Wakamatsu, Japan, Invited Keynote Speaker, September 16-17, 2013

Cybio Users Group Meeting, Freiburg, Germany, Invited Speaker, September 23-24, 2013

FRIAS LifeNet Discussion Meeting on Proteostasis, Breisach, Germany, Invited Speaker, September 29-October 1, 2013

Science 2013, University of Pittsburgh, Invited Speaker, October 4, 2013

University of the Virgin Islands BUILD Proposal Planning Workshop, Invited Participant, January 5-8, 2014

Mathematical Biosciences Institute Workshop on Visualizing and Modeling Cellular and Sub-cellular Phenomena, Ohio State University, Columbus, Ohio, Invited Speaker, January 13-17, 2014

Visualizing Biological Data (VIZBI 2014), European Molecular Biology Laboratory, Heidelberg, Germany, Invited Speaker, March 6, 2014

International Meeting of the German Society for Cell Biology, Regensburg, Germany, Invited Speaker, March 18, 2014

RECOMB Conference on Bioinformatics Education, Pittsburgh, Pennsylvania, Invited Speaker, April 1, 2014

Johns Hopkins University Workshop on the future of data intensive biological research, Baltimore, Maryland, Invited Speaker, May 29, 2014

Systems Developmental Biology Symposium, Lawrenceville, Pennsylvania, Invited Speaker, July 26, 2014

e:Bio Status Seminar, Berlin, Germany, Project Spokesman, September 22-23, 2014

Second International Workshop on Image-based Systems Biology, Jena, Germany, September 25-26, 2014

Technologies in Drug Discovery Summit (9th Cell Based Assay & Screening Technologies and 7th Imaging in Drug Disovery), Invited Keynote Speaker, Dublin, Ireland, October 6-7, 2014

14th IEEE International Conference on Bioinformatics and Bioengineering (BIBE-2014), Invited Keynote Speaker, Boca Raton, Florida, November 10-12, 2014

American Society for Cell Biology meeting, invited speaker in Special Interest Group meeting on Single Cell Analysis and Gene Regulation, Philadelphia, Pennsylvania, December 6, 2014

High Content Analysis, San Diego, California, Invited Speaker and Session Chair, January 26-27, 2015

Twentienth Leipziger Workshop, Keynote Speaker, Leipzig, Germany, March 4-5, 2015

AGMUS 2015 Research Symposium, Keynote Speaker, San Juan, Puerto Rico, August 29, 2015

American Society for Cell Biology meeting, invited speaker in Special Interest Group meeting on Quantitative Microscopy & Image Analysis: Measuring Cellular Organization & Dynamics, San Diego, California, December 12, 2015

6th International Conference on Information and Communication Technologies, Invited Speaker, Karachi, Pakistan, December 12-13, 2015