

Ian A. Lewis, Ph.D. – Curriculum Vitae 2013

Contact Information

Ian A. Lewis
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Education

Postdoctoral	2013 – Present	Lewis-Sigler Institute for Integrative Genomics, Princeton University, Princeton, NJ. Advisor: Joshua D. Rabinowitz
	2010 – 2013	Lewis-Sigler Institute for Integrative Genomics, Princeton University, Princeton, NJ. Advisor: Manuel Llinás
Graduate	2003 – 2010	Ph.D., Department of Biochemistry, University of Wisconsin-Madison, Madison, WI. Advisor: John L. Markley
	2009 – 2009	Biology of Parasitism (summer course), Marine Biology Laboratory, Woods Hole, MA.
Undergraduate	1997 – 2003	B.S. (Summa Cum Laude), Department of Biology, Fort Lewis College, Durango, CO.

Research Experience

Postdoctoral research associate, Princeton University (2010-present)
Graduate student, University of Wisconsin-Madison (2003-2010)
Epidemiology Intern, Colorado Department of Public Health, Denver CO (2001-2002)
Laboratory Technician, Center for Limnology, Colorado University, Boulder CO (2000)

Teaching Experience

Lecturer, Sophomore Integrated Science (Organic and Biochemistry), Princeton University (2013)
Mentor for sixteen undergraduate research projects (2005-2013)
Completed a graduate-level teaching development course (2007)
Teaching Assistant, Biochemistry Laboratory (2005 and 2006)
Instructor, Jazz Combo, Fort Lewis College, Durango CO (2001-2003)

Awards and Honors

Weintraub Award, Department of Biochemistry Nominee (2009)
Graduate Mentoring Award (2007)
Graduated Summa Cum Laude (2003)
Member of Sigma Xi, Phi Kappa Phi, and All American Scholar (2002)
Outstanding Freshman (1999), Outstanding Sophomore (2000), Outstanding Senior (2001, 2003)

Funding

Research funding from software licensing agreement with Bio-Rad (2007-2009)
Genomics Sciences Training Grant Fellowship NHGRI 1T32HG002760 (2004-2006)
Vilas Travel Grant (multiple awards 2005-2007)
Academic Excellence and Continuing Student Scholarships (1999-2003)

Publications

- Ian A. Lewis, Mark Wacker, Kellen L. Olszewski, Simon A. Cobbold, Katelynn S. Baska, Asako Tan, Michael T. Ferdig, and Manuel Llinás. Metabolic QTL analysis links chloroquine resistance in *Plasmodium falciparum* to impaired hemoglobin catabolism. *PLOS Genetics*, 10 (1), (2014)
- Simon A. Cobbold, Ashley M. Vaughan, Ian A. Lewis, Heather J. Painter, Nelly Camargo, David Perlman, Matthew Fishbaugher, Julie Healer, Alan Cowman, Stefan H. Kappe, and Manuel Llinás. Kinetic flux profiling elucidates two independent acetyl-CoA metabolic pathways in *Plasmodium falciparum*. *Journal of Biological Chemistry*, 288 (51), (2013)
- Klein Y. Eili, Ian A. Lewis, Christina Jung, Manuel Llinás, and Simon A. Levin. Relationship between treatment-seeking behaviour and artemisinin drug quality in Ghana. *Malaria Journal*, 11 (110), (2012)
- Ian A. Lewis, Michael R. Shortreed, Adrian D. Hegeman, and John L. Markley. Novel NMR and MS approaches to metabolomics. *The Handbook of Metabolomics. Methods in Pharmacology and Toxicology*, Vol. 17. Humana Press (2012)
- James J. Ellinger, Daniel C. Miller, Ian A. Lewis, and John L. Markley. Semi-automated device for batch extraction of metabolites from tissue samples. *Analytical Chemistry*, 84 (4), 1809-1812 (2012)
- James J. Ellinger, Ian A. Lewis, and John L. Markley. Role of aminotransferases in glutamate metabolism of human erythrocytes. *Journal of Biomolecular NMR*, 49, 221-229 (2011)
- Ian A. Lewis, Ryan H. Karsten, Mark E. Norton, Marco Tonelli, William M. Westler and John L. Markley. NMR Method for Measuring Carbon-13 Isotopic Enrichment of Metabolites in Complex Solutions. *Analytical Chemistry*, 82 (11), 4558-4563 (2010)
- Ian A. Lewis, Seth C. Schommer, and John L. Markley. rNMR: open source software for identifying and quantifying metabolites in NMR spectra. *Magnetic Resonance in Chemistry*, 47, S123-S126 (2009)
- Ian A. Lewis, M. Estela Campanella, John L. Markley and Philip S. Low. Role of Band 3 in regulating metabolic flux of red blood cells. *Proceedings of the National Academy of Sciences USA*, 106 (44), 18515-20 (2009)
- Qiu Cui, Ian A. Lewis, Adrian D. Hegeman, Mark E. Anderson, Jing Li, Christopher F. Schulte, William M. Westler, Hamid R. Eghbalnia, Michael R. Sussman, and John L. Markley. Tools for identifying metabolites from NMR and MS spectral data: the Madison Metabolomics Consortium Database (MMCD). *Nature Biotechnology* 26, 162-164 (2008)
- Ian A. Lewis, Seth C. Schommer, Brendan Hodis, Kate A. Robb, Marco Tonelli, William M. Westler, Michael R. Sussman and John L. Markley. Method for Determining Molar Concentrations of Metabolites in Complex Solutions from Two-Dimensional ^1H - ^{13}C NMR Spectra. *Analytical Chemistry*, 79 (24), 9385 -9390 (2007)
- Adrian D. Hegeman, Christopher F. Schulte, Qiu Cui, Ian A. Lewis, Edward L. Huttlin, Hamid Eghbalnia, Amy C. Harms, Eldon L. Ulrich, John L. Markley, and Michael R. Sussman. Stable Isotope Assisted Assignment of Elemental Compositions for Metabolomics. *Analytical Chemistry*, 79 (18), 6912 -6921 (2007)
- John L. Markley, Mark E. Anderson, Qiu Cui, Hamid R. Eghbalnia, Ian A. Lewis, Adrian D. Hegeman, Jing Li, Christopher F. Schulte, Michael R. Sussman, William M. Westler, Eldon L. Ulrich and Zsolt Zolnai. New bioinformatics resources for metabolomics. *Pacific Symposium on Biocomputing* 12:157-168 (2007)

Patents and Biotechnology Contributions

Developed FMQ by NMR, a method for measuring metabolite concentrations in biological extracts. A patent was awarded (US 7,847,547 B2) on 12/07/2010.

Developed the “extraction contraption”, an integrated sample homogenization, extraction, filtration and lyophilization device. An invention disclosure report was submitted to WARF 06/08/2009.

Developed rNMR, an open-source software package for identifying and quantifying metabolite signals in multidimensional NMR spectra. rNMR was released on 05/31/2009.

Developed AFNS, a multivariate analysis tool for NMR-based biomarker discovery. AFNS was licensed by BioRad for use in their KnowItAll® software package. 11/2006.

Helped develop the BMRB standard metabolomics library. www.bmrb.wisc.edu. 2005-2007

Invited Presentations

COSMOS nmrML Hackathon, IPB-Halle, Germany, 09/2013

Gordon Research Conference: Red Cells, Andover, NH, 07/2013

Gordon Research Seminar: Computational Aspects of NMR, West Dover, VT, 05/2013

Metabolomics Workshop at Montana State University, Bozeman, MT, 10/2010

Metabolomics Workshop at the University of Florida, Gainesville, FL, 07/2010

Metabolomics Society, Amsterdam, Netherlands, 06/2010

Red Cell Club, Boston, MA, 10/2007

International Foundation for Process Analytical Chemistry, Baltimore, MD, 02/2007

Other Presentations

Talk, Red Cell Club, New York Blood Center, NY, 10/2013

Talk, Molecular Parasitology Meeting, Woods Hole, MA, 09/2013

Poster, American Society of Mass Spectrometry, Minneapolis, MN, 06/2013

Poster, Molecular Parasitology Meeting, Woods Hole, MA, 09/2012 & 09/2011 & 09/2010

Talk, Gordon Conference: Host-Parasite Interactions, Newport, RI, 06/2012

Talk, Red Cell Club, Philadelphia, PA, 10/2011

Poster, Steenbock Symposium, Madison, WI, 05/2011

Poster, Experimental NMR Conference, Daytona Beach, FL, 04/2007

Talk, Chicago Area NMR Discussion Group, Madison, WI, 11/2006

Poster, Metabolomics Society, Boston, MA, 06/2006

Poster, Biology of Genomes, Cold Spring Harbor, NY, 05/2006 & 05/2005

Talk, Keystone Symposium: Frontiers of NMR in Molecular Biology, Banff, Canada, 01/2005

Academic Service

Reviewer

Nature Protocols, 2013 – present

FEBS Letters, 2013 – present

Chemical Physics and Physical Chemistry, 2012 – present

Analytical Chemistry, 2010 – present

Plant & Cell Physiology, 2010 – present

Analytical and Bioanalytical Chemistry, 2009 – present

Guest Reviews

Malaria Journal, *Molecular and Biochemical Parasitology*, and *BMC Bioinformatics*

Contributor to the Coordination of Standards in Metabolomics (COSMOS) consortium

Student Mentees

Princeton University

Ben Kotopka, 2010-2013, Honors Thesis

Shivani Sud, 2011-2012, Honors Thesis

Dasha Agoulnik, 2011, MIRTHE high school intern

University of Wisconsin-Madison

Yuet Tse "Gordon" Fai

Nick Gallagher

In Kyu Han

Seung Pyo "Danny" Han

Michael Ho

Brendan Hodis

Ryan Karsten

Dan Miller

Kate Robb

Sam Schmidt

Seth Schommer

Fjodor "Yody" Meinikov

Eric Swanson

Zhaoyu "Michael" Wang