

CURRICULUM VITAE

SCOTT J. EMRICH

CURRENT ADDRESS

Department of Computer Science and Engineering
University of Notre Dame
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EDUCATION

2007	Ph.D.	Bioinformatics and Computational Biology	Iowa State University
2002	B.S.	Biology and Computer Science	Loyola College in Maryland

ACADEMIC EXPERIENCE

Academic Appointments

University of Notre Dame

8/2007–present Assistant Professor, Dept. of Computer Science and Engineering

International

Indian Institute of Technology (IIT), Bombay

Fall 2006 Visiting Scholar, Kanwal Rekhi School of Information Technology

HONORS AND AWARDS

2008	Iowa State University Zaffrano Prize for Graduate Research
2007	Iowa State University Research Excellence Award
2006	Electrical and Computer Engineering Research Excellence, Iowa State University
2006	<i>IEEE International Parallel and Distributed Processing Symposium (IPDPS)</i> best paper

AFFILIATIONS

2008-present Teaching and Research Faculty member
Eck Family Center for Global Health and Disease
University of Notre Dame

PUBLICATIONS

Journal

- 2007 Ohtsu, K., Smith, M., **Emrich, S.J.**, Borsuk, L.A., Zhou, R., Chen, T., Zhang, X., Timmermans, M., Beck, J., Buckner, B., Janick-Buckner, D., Nettleton, D., Scanlon, M.J., and P.S. Schnable. Expression of retrotransposons in the shoot apical meristem of maize (*Zea mays* L.). *Plant Journal*, **52**:391–404 (ISI: 1 citation; Google: 1 citation).
- 2007 Barbazuk, W.B.*, **Emrich, S.J.***, Chen, H.D., Li, L., and P.S. Schnable. SNP discovery in maize via 454 transcriptome sequencing. *Plant Journal*, **51**:910–918 (ISI: 2 citation; Google: 5 citations).
- 2007 Kalyanaraman, A.*, **Emrich, S.J.***, Schnable, P.S., and S. Aluru. Assembling genomes on large-scale parallel computers. *Journal of Parallel and Distributed Computing*, **67**:1240–1255.
- 2007 **Emrich, S.J.***, Barbazuk, W. B*, Li, L and P.S. Schnable. Gene discovery and annotation using LCM-454 transcriptome sequencing. *Genome Research*, **17**:69–73 (ISI: 15 citations; Google: 18 citations).
- 2007 **Emrich, S.J.***, Li, L.*, Wen, T.-J., Yandea-Nelson, M.D., Fu, Y., Guo, L., Chou, H.-H., Aluru, S., Ashlock, D.A., and P.S. Schnable. Nearly identical paralogs (NIPs): implications for maize (*Zea mays* L.) genome evolution. *Genetics*, **175**:429–439 (ISI: 7 citations; Google: 9 citations; featured in *Science*, Vol. 315, No. 5810, pp. 302 in Editor’s Choice: Highlights of recent literature).
- 2005 Fu, Y.*, **Emrich, S.J.***, Guo, L., Wen, T.-J., Aluru, S., Ashlock, D.A., and P.S. Schnable. Quality assessment of Maize Assembled Genomic Islands (MAGIs) and experimental validation of predicted novel genes, *Proceedings of the National Academy of Science, USA*, **102**:12282–12287 (ISI: 21 citations; Google: 22 citations).
- 2005 Yao, H., Guo, L., Fu, Y., Borsuk, L.A., Wen, T.-J., Skibbe, D.S., Cui, X., Scheffler, B.E., Cao, J., **Emrich, S.J.**, Ashlock, D.A., and P.S. Schnable. Evaluation of seven *ab initio* gene prediction programs for the discovery of maize genes, *Plant Molecular Biology*, **3**:445–460 (ISI: 9 citations; Google: 15 citations).
- 2004 **Emrich, S. J.**, Aluru, S., Fu, Y., Wen, T., Narayanan, M., Guo, L., Ashlock, D. A., and P. S. Schnable. A Strategy for Assembling the Maize (*Zea mays* L.) Genome, *Bioinformatics*, **20**:140–147. (ISI: 21 citations; Google: 25 citations)
- 2003 **Emrich, S. J.**, Lowe, M., and A. L. Delcher. PROBEmer: A Web-based Software Tool for Selecting Optimal DNA Oligos. *Nucleic Acids Res.*, **31**:3746–3750. (ISI: 24 citations; Google: 36 citations)
- 2002 Lowe, M., Madsen, E. L., Schindler, K., Smith, C., **Emrich, S.**, Robb, F., and R. U. Halden. Geochemistry and Microbial Diversity of a Trichloroethene-Contaminated Superfund Site Undergoing Intrinsic In Situ Reductive Dechlorination. *FEMS Microbiol. Ecol.*, **40**:123–134. (ISI: 21 citations; Google: 17 citations)

Peer-reviewed Conference

- 2007 **Emrich, S.J.**, Kalyanaraman, A. and S. Aluru. Massively Parallel EST Clustering. *ISCA 20th International Conference on Parallel and Distributed Computing Systems (ISCA-PDCS’07)*.

- 2006 Kalyanaraman, A.*, **Emrich, S.J.***, Schnable, P.S., and S. Aluru. Assembling genomes on large-scale parallel computers. *IEEE International Parallel and Distributed Processing Symposium (IPDPS'06* ; Acceptance Ratio: 23%; best paper award).
- 2004 Ashlock, D. A., **Emrich, S. J.**, Bryden, K. M., Corns, S. A., T.-J. Wen, and P. S. Schnable. A Comparison of Evolved Finite State Classifiers and Interpolated Markov Models for Improving PCR Primer Design, *IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology*, 190–197.
- * denotes equal contribution

Posters and Extended Abstracts

- 2008 Olson, M. and S.J. Emrich. Assembly-based comparative validation of related genome sequences. 16th Annual International Conference for Intelligent Systems for Molecular Biology (ISMB '08), Toronto, Canada July 19-23.
- 2008 Regier, A. Emrich, S.J. and N.J. Besansky. Computationally finding inversion breakpoints using mated pairs. 16th Annual International Conference for Intelligent Systems for Molecular Biology (ISMB '08), Toronto, Canada July 19-23.

BOOK CHAPTERS

- 2007 Barbazuk, W.B., **Emrich, S.J** and P.S. Schnable. SNP Mining from Maize 454 EST Sequences. *Cold Spring Harbor Protocols*
- 2005 **Emrich, S.J.**, Kalyanaraman, A and S. Aluru. Algorithms for Large-Scale Sequence Clustering and Assembly of Biological Sequence Data. *Handbook of Computational Molecular Biology*, CRC Press, Chapter 13.

INVITED PRESENTATIONS

- 3/26/07 Maize Genome Assembly on IBM BlueGene/L
Invited Seminar, Animal Breeding and Genetics
Iowa State University
- 10/18/06 Massively Parallel Plant Genomics
Invited Seminar, Interdepartmental Plant Physiology
Iowa State University
- 1/12/04 A Strategy for Assembling the Maize Genome
Plant & Animal Genome XII Bioinformatics Workshop, San Diego CA

CURRENT GRADUATE STUDENTS

- Michael Olson M.S. in progress; joined 2007
- Alison Regier M.S. in progress (2008) coadvised with Kevin Bowyer; joined 2006

CURRENT UNDERGRADUATE RESEARCH ASSISTANTS

Benjamin Drda 2007-present (ND honors student)

UNIVERSITY SERVICE

Departmental Committees

2007 Graduate Studies Committee

Student Committees

CSE: Scott Christley, Chris Moretti, Ryan Kennedy

Biology: Jenica Abrudan

Outside chair: 1 former student (AME), 1 global health PhD (Biology), 1 university request (Theology)

Service at Iowa State University

2006 BCB Graduate Curriculum Committee, which redesigned the PhD core curriculum

PROFESSIONAL MEMBERSHIPS

International Society for Computational Biology (ISCB)

Association for Computing Machinery (ACM)

Institute of Electrical and Electronics Engineers (IEEE)

Life Sciences Society (LSS)

EXTERNAL SERVICE ACTIVITIES

Program Committee Member

IEEE/ACM Supercomputing, 2008

HICOMB workshop, IEEE International Parallel and Distributed Processing Symposium, 2008

ACS/IEEE International Conference on Computer Systems and Applications (AICCSA), 2007

Parallel Bio-Computing Workshop, International Conference on Parallel Processing and Applied Mathematics (PPAM), 2007

Tutorials

2007 Computational Problems in Maize Genomics
International Conference on Computational Systems Bioinformatics (CSB)

2006

Exploring Computational Biology with a Massively Parallel
High Performance Computing Environment
International Conference on Intelligent Systems for Molecular Biology (ISMB)

Professional Committees

Education Committee
International Society for Computational Biology (ISCB)

External Reviewer

BMC Genomics

Bioinformatics

Nucleic Acids Research