

Chen-Shan Chin

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Education

- **Postdoctoral Fellow, Department of Biochemistry and Biophysics, University of California, San Francisco, CA (2002 – present)**
Current research topics: automated gene expression measurements using flow cytometry, *cis*-regulatory network analyses, comparative genomics, and protein interaction networks
- **Ph. D. in Physics, University of Washington, Seattle, WA (1996 – 2002)**
Adviser: Dr. Marcel den Nijs
Thesis: Stochastic fluctuations Far From Equilibrium – Statistical Mechanics of Surface Growth
- **B. S. in Physics, National Tsing-Hua University, Hsin-Chu, Taiwan. (1991–1994)**

Honors and Awards

- **Karrer Prize**, Department of Physics, University of Washington, Seattle, WA (May 1999)
This award is for excellence of scholastic record and professional promise for a second or third year graduate student.
- **The National Gifted Student Academic Scholarship of Mathematics and Natural Sciences**, Ministry of Education, Taiwan, eight semesters, (1991–1994)

Research Experience

- **Department of Biochemistry and Biophysics, University of California, San Francisco, CA (2002 – present)**
Designed and developed an automated system to study dynamics of gene expression using a flow cytometer.
Analyzed combinatorial *cis*-regulation using a mechanistic model based on physical principles.
Identified gene regulatory targets using biochemical characterization and computational genomic analysis.
Showed that the mutation rate is uniform genome-wide in yeast.
Estimated the amount of functional conserved non-coding sequence and identified highly-conserved non-coding regulatory sequences in each promoter in yeast.
Identified conserved gene expression across different species.
Analyzed the global topological features in the yeast protein interaction network.
- **Physics Department, University of Washington, Seattle, WA (1996-2002)**
Studied dynamics and phase transitions in non-equilibrium phenomena.
Determined the scaling exponent of non-equilibrium KPZ-type surfaces using large-scale computer simulations.
Used a passive random walker model to explore scaling properties of the fluctuations on growing surfaces.

Publications

- Genome-wide identification of the regulatory targets of a transcription factor using biochemical characterization and computational genomic analysis, Emmitt Jolly, **Chen-Shan Chin**, Ira Herskowitz and Hao Li, BMC Bioinformatics, accepted for publication.
- Genome-wide regulatory complexity in yeast promoters: Separation of functionally conserved and neutral sequence, **Chen-Shan Chin**, Jeffrey H. Chuang, and Hao Li, Genome Research, **15**, 205 (2005)
- Comparing genomic expression patterns across species identifies shared transcriptional profile in aging, Steven A. McCarroll, Coleen T. Murphy, Sige Zou, Scott D. Pletcher, **Chen-Shan Chin**, Yuh Nung Jan, Cynthia Kenyon, Cornelia I. Bargmann, Hao Li, Nature Genetics, **36**, 197 (2004)
- Global Snapshot of a Protein Interaction Network – A Percolation Based Approach, **Chen-Shan Chin**, Manoj P. Samanta, Bioinformatics, **19**, 2413 (2003)
- Passive Random Walkers and River-like Networks on Growing Surfaces, **Chen-Shan Chin**, Phys. Rev. E, **66**, 021104 (2002)
- Reconstructed Rough Growing Interfaces: Ridge-line Trapping of Domain Walls, **Chen-Shan Chin**, Marcel den Nijs, Phys. Rev. E, **64**, 031606 (2001)
- Stationary-state Skewness in Two-dimensional Kardar-Parisi-Zhang Type Growth, **Chen-Shan Chin**, Marcel den Nijs, Phys. Rev. E, **59**, 2633 (1999)
- Transfer Matrix Method in Sandpile Models, Darwin Chang, **Chen-Shan Chin**, S.-C. Lee, Chin. J. Phys., **32**, 405 (1994)

Professional Associations

- Member of the International Society for Computational Biology
- Member of the American Physical Society
- Member of the American Association for the Advancement of Science
- Reviewer for Proceedings of the National Academy of Sciences USA

Presentations

- “Inferring Combinatorial Regulation in Yeast Transcriptional Networks”
Talk, Research in Progress Series, University of California, San Francisco (Dec. 2004)
- “Genome-wide Regulatory Complexity in Yeast Promoters: Separation of Functionally Conserved and Neutral Sequence”
Poster, University of California, San Francisco, Tetrad Program Retreat (Sept. 2004)
Poster, 12th International Conference on Intelligent Systems for Molecular Biology (Jul. 2004)
- “Resolving Combinatorial Control of Gene Regulation from Microarray Data”
Poster, University of California, San Francisco, Biochemistry and Biophysics Retreat (Dec. 2003)
- “Passive Random Walkers and River-like Networks on Growing Surfaces”
Invited Talk, National Tsing-Hua University, Hsin-Chu, Taiwan (Aug. 2002)
Invited Talk, NEC Research Lab, Princeton, NJ (Jan. 2002)
- “Topological Fluctuations on Growing Surfaces”
Poster, 6th Asia Pacific Center for the Theoretical Physics Winter School, Pohang, South Korea (Feb. 2002)

- “Reconstructed Rough Growing Interfaces: Ridge-line Trapping of Domain Walls”
Poster, Boulder Summer School for Condensed Matter and Materials Physics: Nonequilibrium Statistical Physics: Glasses, Transport & Friction, Biological Systems, and Turbulence, Boulder, CO (Jul. 2001)
- “Stationary-state Skewness in Two-dimensional Kardar-Parisi-Zhang Type Growth”
Talk, American Physical Society March Meeting, Seattle, WA (Mar. 2001)

Work and Teaching Experience

- Research Assistant, Department of Physics, University of Washington, Seattle, WA. (1997–2002)
- Teaching Assistant, Department of Physics, University of Washington, Seattle, WA. (1996–2002)
Tutorial sessions and office hours for freshman and advanced undergraduate physics courses.
Lectures and guidance for freshman physics lab sessions.
- Military Service, Taiwan. (1994–1996)
- Teaching Assistant in the Department of Physics, National Tsing-Hua University, Taiwan. (1993–1994)
Physics lab sessions and lectures for both undergraduate students and gifted high school students.
- Summer Research Studentship with Prof. Darwin Chang, National Tsing-Hua University, Taiwan. (1994)
Researches on self-organized criticality of sandpile models.

References

- Professor Marcel den Nijs
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