

Dat H. Nguyen

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Education

- 2002 Ph.D. in Theoretical Chemistry
University of California, Davis
- 2002 M.S. in Computer Science
University of California, Davis
- 1996 B.S. *summa cum laude* in Chemistry
University of California, Davis

Research Experience

- 2002-present *Alfred P. Sloan and U.S. Department of Energy Postdoctoral Fellow. Computational Systems Biology and Bioinformatics, Harvard Medical School, Boston. Advisor: Professor George M. Church*
- Development of mathematical methods for deciphering regulatory principles underlying *Saccharomyces cerevisiae* transcriptional networks; development of mathematical framework for deciphering operating principles in *E. coli* metabolic networks and examining their robustness; development of computational methods, data standards, and distributed software for analyzing proteomic mass spectrometry data.
- 1996-2002 *Doctoral Student. Theoretical Chemistry and Biophysics, University of California, Davis. Advisor: Professor William H. Fink*
- Study of principles underlying physical interactions between small molecules and RNA aptamer; study of the detailed mechanism of biological antifreezes in inhibiting the freezing of water; study of dynamical properties of water freezing process; development of efficient parallel algorithm for molecular simulation of large material and biological systems.
- 1999-2002 *Pre-doctoral Fellow. Computational Science, Lawrence Livermore National Laboratory. Advisor: Professor Michael E. Colvin*
- Development of the linear-scaling and massively parallel algorithm for molecular dynamics simulation; study of principles underlying anti-cancer nitrogen mustard drug-DNA crosslink.

Publications

- **Nguyen, D.H.** and P. D'haeseleer. 2006. Deciphering Principles of Transcription Regulation in Eukaryotic Genomes. *Nature/EMBO Molecular Systems Biology*. doi:10.1038/msb4100054 [review: doi:10.1038/msb4100055]
- Ahmad Q.R, **D.H. Nguyen**, M.A. Wingerd, G.M. Church, and M.A. Steffen. 2005. Molecular Weight Assessment of Proteins in Total Proteome Profiles Using 1D-PAGE and LC/MS/MS. *Proteome Science*. **3**:6.
- **Nguyen, D.H.**, K.C. Leptos, L.J. Andrews, and G.M. Church. 2005. Optimal and Extensible XML-Based File Format for Proteomic Mass Spectrometry Data. In revision.
- **Nguyen, D.H.**, M.E. Colvin, Y. Yeh, R.E. Feeney, and W.H. Fink. 2004. Intermolecular Interaction Studies of Winter Flounder Antifreeze Protein Revealing the Existence of the Thermally Accessible Binding State. *Biopolymers*. **75**:109-117.
- **Nguyen, D.H.**, T. Dieckmann, M. E. Colvin, and W.H. Fink. 2004. Dynamics Studies of a Malachite Green – RNA Complex Revealing the Origin of the Red-shift and Energetic Contributions of Stacking Interactions. *Journal of the Physical Chemistry B*. **108**:1279-1286.

Publications (cont')

- Segrè, D., J. Zucker, J. Katz, X. Lin, P. D'haeseleer, W.P. Rindone, P. Kharchenko, **D.H. Nguyen**, M. A. Wright, and G. M. Church. 2003. From Annotated Genomes to Metabolic Flux Models and Kinetic Parameter Fitting. *OMICS*. **7**:301-316.
- **Nguyen, D.H.**, S.C. DeFina, W.H. Fink, and T. Dieckmann. 2002. Binding to an RNA Aptamer changes the Electron Distribution of Malachite Green. *Journal of the American Chemical Society*. **124**:15081-15084.
- **Nguyen, D.H.**, M.E. Colvin, Y. Yeh, R.E. Feeney, and W.H. Fink. 2002. The Dynamics, Structure and Free Energy Profile of Proline-Containing Antifreeze Glycoprotein. *Biophysical Journal*. **82**:2892-2905.
- Yeh Y., W.H Fink, **D.H. Nguyen**, and R.E. Feeney. 1997. Simulation Studies of the Dynamic Interface between Ice and a Solution of Antifreeze Glycoprotein. *Proceedings of the International Symposium on Theoretical Biophysics and Biomathematics*. ISTB-97: 100-107.

Manuscripts in Preparation

- **Nguyen, D.H.** and G.M. Church. FLUXOR: An Open-Source Software Environment for Flux Balance Analysis.
- **Nguyen, D.H.**, M.E. Colvin, and W.H. Fink. The Complete Folding Landscape of a RNA Aptamer upon Packing Malachite Green Molecule in Aqueous Solution in 1 Microsecond.

Fellowships and Honors

- Postdoctoral Fellowship, Alfred P. Sloan Foundation and US Department of Energy (2002-2004)
- Institutional Pre-doctoral Fellowship, Lawrence Livermore National Laboratory (1999-2002)
- Outstanding Graduate Student Award, University of California and Clorox Chemical (1999)
- Citation for the Most Meritorious Undergraduate Achievement in Chemistry, UC-Davis (1996)
- Undergraduate Summer Research Fellowship in Nuclear Chemistry, American Chemical Society (1996)
- Willis Martin Vansell Scholarship, UC-Davis (1995)
- Vivian Bryan Nelson Scholarship, UC-Davis (1995)
- Travel Awards to:
 - "Summer School: Intelligent Extraction of Information from Graphs and High Dimensional Data," Institute for Pure and Applied Mathematics, University of California, Los Angeles (7/2005)
 - "Workshop on Proteomics: Sequence, Structure, Function," Institute for Pure and Applied Mathematics, University of California, Los Angeles (3/2004 - 4/2004)
 - "NEC Lectures on Biophysics: Biological Networks," NEC Research Institute, Princeton (6/2002)
 - "Workshop on Linear Scaling Electronic Structure Methods," Institute for Pure and Applied Mathematics, University of California, Los Angeles (4/2002)
 - "International Workshop on Methods for Macromolecular Modeling," Courant Institute of Mathematical Sciences, New York University, New York (12/2000)
 - "American Conference on Theoretical Chemistry," University of Colorado, Boulder (7/1999)

Invited Seminars

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| 2005 | Decipherable Principles of Transcription Regulation are Decipherable with Minimal Knowledge. The Bauer Center for Genomics Research, Harvard University, Cambridge, Massachusetts |
| | Deciphering Principles of Transcription Regulation in Eukaryotic Genomes. Center for Computational Biology, University of California, Merced, California |
| 2004 | Malachite Green – RNA Aptamer Complex: the Origin of Red-Shift, the Binding Affinity, and the Free Energy Landscape. American Chemical Society 227th National Meeting, Anaheim, California. |
| 2003 | Biological Antifreezes: A Hypothesis for the Mechanism of Function. Symposium on Stress Proteins: From Antifreeze to Heat Shock, Bodega Marine Laboratory, California |
| 2001 | Simulation Studies of Molecular Interactions and Dynamics of Antifreeze Proteins. West Coast Theoretical Chemistry Conference, Davis, California |
| 2000 | Roles of Intermolecular Interactions to the Mechanism of Function of Antifreeze Protein. West Coast Theoretical Chemistry Conference, Salt Lake City, Utah |

Teaching/Mentoring

- 2003-2004 *Research Advisor, Department of Genetics, Harvard Medical School*
Supervised a master student in developing an XML-based file format for proteomic mass spectrometry data standards.
- 2001 *Teaching Assistant, Department of Computer Science, University of California-Davis*
Taught computer architecture and computer algorithm courses.
- 1996-1999 *Teaching Assistant, Department of Chemistry, University of California-Davis*
2001 Taught general chemistry, organic chemistry, physical chemistry, biophysical chemistry, and graduate level in theoretical and computational chemistry courses.

Professional Activities and Affiliations

- Founder and Founding Editor, Vietnamese Public Library of Knowledge Journal (2006)
- Elected member of the Board of Directors, Vietnamese-American Association for Computing, Engineering Technology, and Science (2005)
- Referee, OMICS A Journal of Integrative Biology (2004)
- Member of Organizing Committee, West Coast Theoretical Chemistry Conference, Davis (6/2001)
- Member, Society for Industrial and Applied Mathematics (2001)
- Member, Biophysical Society (2001)
- Member, Sigma Xi-The Scientific Research Society (1996)
- Member, American Chemical Society (1996)

Personal Information

- Citizenship: USA

References

Professor William H. Fink

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Professor Yin Yeh

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Professor Michael E. Colvin

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