

## Dennis L. Chao

Fred Hutchinson Cancer Research Center  
1100 Fairview Ave. N., LE-400  
Seattle, WA 98109

email: [dchao@fhcrc.org](mailto:dchao@fhcrc.org)  
web: <http://www.cs.unm.edu/~dlchao>

### EDUCATION

Ph.D. in Computer Science, 2004  
The University of New Mexico • Albuquerque, NM

B.S.E. in Computer Science, 1994  
Princeton University • Princeton, NJ

### RECENT EMPLOYMENT

Staff Scientist, July 2008–present  
Fred Hutchinson Cancer Research Center • Seattle, WA

*Simulating the transmission of infectious disease through large populations.*

Postdoctoral Fellow, 2004–June 2008  
Fred Hutchinson Cancer Research Center • Seattle, WA

*Epigenetic biomarker discovery and mathematical modeling of tumor growth.*

Research Assistant, 1999–2004  
Department of Computer Science of the University of New Mexico • Albuquerque, NM

*Published original research on immune system modeling, artificial intelligence, and human-computer interaction.*

Teaching Assistant, 1998–1999  
Department of Computer Science of the University of New Mexico • Albuquerque, NM

*Taught beginning and intermediate C++ programming.*

Technical Staff, 1994–1998  
EPSON Palo Alto Laboratory • Palo Alto, CA

*Developed image processing algorithms and end-user software.*

### PROFESSIONAL ACTIVITIES

Planning committee, FHRC Bioethics Colloquium, 2006–2007.

Co-manager, FHRC Interdisciplinary Club, 2005–2007.

The Pathobiology of Cancer: The Edward A. Smuckler Memorial Workshop, July 2005.

Santa Fe Institute Complex Systems Summer School, June 2000.

Founder, UNM Computer Science Graduate Student Association, 1999.

## SELECTED PUBLICATIONS AND PATENTS

**D. L. Chao**, J. T. Eck, D. E. Brash, C. C. Maley, and E. G. Luebeck. Pre-neoplastic lesion growth driven by the death of adjacent normal stem cells. *Proc Natl Acad Sci U S A*, 105(39):15034–15039, 2008.

*Developed a computer model of pre-cancerous lesion growth and calibrated it using mouse data.*

P. C. Galipeau, **D. L. Chao**, X. Li, J. D. Arnaudo, H. D. Kissel, C. A. Sanchez, and B. J. Reid. Barrett's esophagus and esophageal adenocarcinoma epigenetic biomarker discovery using Infinium methylation. iCommunity Newsletter, Illumina, Inc., San Diego, CA, 2008.

*Discovered new biomarkers for identifying different stages of Barrett's esophagus and esophageal cancer using a new array that measures the methylation levels of over 27,000 CpG sites. This is the first published application of the new platform.*

**D. L. Chao**, J. Balthrop, and S. Forrest. Adaptive Radio: Achieving consensus using negative preferences. In K. Schmidt, M. Pendergast, M. Ackerman, and G. Mark, editors, *GROUP '05: Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work*, pages 120–3. ACM Press, New York, 2005.

*Wrote software to select music to stream in shared environments. The algorithm considered the musical preferences of all occupants in a shared office.*

**D. L. Chao**, M. P. Davenport, S. Forrest, and A. S. Perelson. The effects of thymic selection on the range of T cell cross-reactivity. *European Journal of Immunology*, 35(12):3452–9, 2005.

*Developed a mathematical model to predict the impact of positive and negative thymic selection on T cell cross-reactivity. The Java source code is available on the web.*

M. P. Davenport, R. M. Ribeiro, **D. L. Chao**, and A. S. Perelson. Predicting the impact of a nonsterilizing vaccine against human immunodeficiency virus. *Journal of Virology*, 78(20):11340–51, 2004.

*Estimated the effect of an imperfect HIV vaccine on population-level disease prevalence.*

**D. L. Chao**, M. P. Davenport, S. Forrest, and A. S. Perelson. Modelling the impact of antigen kinetics on T-cell activation and response. *Immunology and Cell Biology*, 82(1):55–61, 2004.

*Predicted T cell response kinetics to vaccines and viruses using a computational model. The Java source code is available on the web.*

**D. L. Chao** and S. Forrest. Information immune systems. *Genetic Programming and Evolvable Machines*, 4(4):311–31, 2003.

*Developed a new class of computer algorithms based on immune system principles.*

**D. L. Chao**. Doom as an interface for process management. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 152–7. ACM Press, New York, 2001.

*Adapted a video game to be the interface for a system administration task. The work was featured in Wired magazine and included in a museum exhibit in Austria.*

C. Li, A. Pascovici, J. Shu, and **D. L. Chao**. On-line ink-duty reduction. U.S. Patent 5,799,136. Issued August 25, 1998.

*Created a computationally efficient algorithm to reduce the amount of ink used to print images. The algorithm is used by EPSON inkjet printers worldwide.*