

Richard H Lathrop

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Computer Science

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Education

Ph.D., Massachusetts Institute of Technology, Cambridge, MA 1990.

Major: Artificial Intelligence

Minor: Philosophy of Mind and Knowledge

Dissertation Title: Efficient Methods for Massively Parallel Symbolic Induction

Advisor: Winston, P.

E.E., Massachusetts Institute of Technology, Cambridge, MA, 1983.

Major: Electrical Engineer

Dissertation Title: Parallelism in Arms and Legs

Advisor: Minsky, M.

S.M., Massachusetts Institute of Technology, Cambridge, MA, 1983.

Major: Computer Science

Dissertation Title: Parallelism in Arms and Legs

Advisor: Minsky, M.

B.A., Reed College, Portland, OR, 1978.

Major: Mathematics

Dissertation Title: Markov Chains on Finite Groups

Advisor: Dudman, J.

Anchorage Community College, Anchorage, AK (January 1974 - May 1975).

New College, Sarasota, FL (September 1972 - May 1973).

Professional Positions

Professor, Computer Science, UC Irvine (2003-Present).

Professor, Biomedical Engineering, UC Irvine (2003-2015).

Associate Professor, Computer Science, UC Irvine (1997-2003).

Associate Professor, Biomedical Engineering, UC Irvine (2000-2003).

Assistant Professor, Computer Science, UC Irvine (1995-1997).

Research Scientist, Massachusetts Institute of Technology. (October 1993 - June 1995).

Post-doctoral Research Associate, Massachusetts Institute of Technology. (October 1990 - October 1993).

(Prof. Patrick Winston)

Senior Scientist, Arris Pharmaceutical Corp. (May 1989 - Dec. 1993, part-time)

Drug discovery by integrating artificial intelligence and machine learning with advanced biology and chemistry.

Summer Staff, Gould/A.M.I. VLSI CAD Research Laboratory (June 1984 - Aug. 1991)

Researched relation of structure to function in VLSI. Designed and implemented a mixed-mode functional simulator, a structural circuit optimizer, and a functional abstraction from structure prototype.

- Summer Staff, Hewlett-Packard Engineering Productivity Division. (June 1982 - September 1983).
Assisted the design and implementation of a silicon compiler (DPG, the Data-Path Generator).
- Business Software Consultant, Solid State Equipment Ltd. (January 1980 - May 1980).
Developed inventory control/job status monitoring package for small businesses.
- Data Telecommunications Programmer/Analyst, Progress Electronics. (August 1978 - April 1979).
Wrote entire assembler telecommunications sub-system for the master controller of a remote water-level telemetry system for the National Oceanic and Atmospheric Administration, and a remote air quality and meteorological sensor system for Oregon Department of Environmental Quality.
- Chief Programmer, NSF-SOS research project. (May 1977 - September 1977).
Designed and implemented complete system for gamma spectra analysis and statistical processing of data.
- Business Programmer/Analyst, Alaskan Data Systems. (May 1975 - October 1975, May 1976 - September 1976).
Designed and implemented all programs for each phase of internal bookkeeping system.
- Programmer and production control supervisor, U.S. Postal Service. (April 1974 - May 1975).
Wrote numerous programs pertaining to productivity analysis and manpower utilization.
Developed a computer-assisted training system later adopted by Western Region HQ.

Professional Memberships

- Life Member, American Association for Artificial Intelligence.
Life Member, International Society for Computational Biology. Member of Founding Board of Directors, and Founding Treasurer.

Awards and Honors

- Co-founding scientist and Chair of Scientific Advisory Board for Actavalon, Inc., a company dedicated to drug discovery for reactivation of p53 cancer mutants. The company is still privately held. (November 2013).
- UCI Chao Family Comprehensive Cancer Center "Friend of Research--Discover" Award. (April 2013).
- Elected to Board of Directors, International Society for Computational Biology. (July 2012).
- President's Award, MathCounts. (March 2011).
- Elected to Board of Directors, International Society for Computational Biology, ISCB. (July 2009).
- UCI Professor of the Year, Celebration of Teaching awards, University of California, Irvine. (May 2009).
- Dean's Award for Undergraduate Teaching, University of California, Irvine. (February 2009).
- Awarded black belt (sho-dan) in karate, Intl. Martial Arts Federation. (May 2007).
- Nominated for Orange County Excellence in Entrepreneurship Award, Orange County Business Journal. (February 2007).
- Appreciation Award, Equity Advisor, UCI Advance Program, University of California, Irvine. (January 2006).
- Innovation Award, University of California, Irvine. (November 2005).
- Co-founding Scientist and Chair of Scientific Advisory Board for CODA Genomics, Inc. Co-inventor of US Patent No. 7,262,031 (Method for producing a synthetic gene or other DNA sequence"). The company is now Verdezyne, Inc., still privately held. (April 2004).
- Finalist, U.S. National Science Foundation Distinguished Teaching Scholar award. (January 2004).
- UCI Chancellor's Award for Excellence in Fostering Undergraduate Research. (May 2003).
- Biography listed in Marquis Who's Who in the World'2002. (January 2002).

Best Paper Award, (first author), International Conference on Genome Informatics. (December 2001).

Scientific Advisory Board of GeneFormatics, a genomics bioinformatics company. (May 2001).

Biography listed in Marquis Who's Who in America'2001. (November 1999).

Cover article, *AI Magazine*, (first author). (April 1999).

Innovative Application Award, (first author), AAAI/IAAI Conference. (July 1998).

Estimated current and nearby HIV drug resistant mutants and recommended drug combination treatments to avoid both.

UCI Excellence in Teaching Award for undergraduate teaching. (June 1998).

Scientific Advisory Board of CombiChem, Inc., a computational analysis and combinatorial chemistry drug discovery company. The company went public with 78 full-time employees in May, 1998, and was bought by Dupont Co. for \$95 million in Dec., 1999. (July 1997).

UCI/ICS Departmental Outstanding Faculty Award for teaching and research. (February 1997).

CAREER grant award from National Science Foundation. (October 1996).

Cover article, *J. Molecular Biology*, (first author). (February 1996).

Found global optimum protein "threading" with speed-ups exceeding 1025 over best previously published result using the same formalism.

Published NP-completeness proof. (September 1994).

(sole author, *Protein Engineering*)

MIT EE&CS George M. Sprowl award for excellence in Ph.D. thesis (\$1,250). (May 1990).

My thesis was nominated by MIT for the ACM Distinguished Doctoral Dissertation award.

Co-founding scientist of Arris Pharmaceutical Corp. (September 1989).

A company dedicated to drug discovery by integrating machine learning with advanced biology and chemistry. I was a co-inventor of US Patent No. 5,526,281 ("Machine Learning Approach to Modeling Biological Activity for Molecular Design and to Modeling Other Characteristics"). Arris went public with 59 full-time employees and a valuation of approximately 60 million dollars in Nov., 1993. It merged with Sequana to form AxyS Pharmaceuticals in Jan., 1998, which was acquired by Celera Therapeutics in Nov., 2001.

Cover article, *Communications of the ACM*, (first author). (November 1987).

The program later was integrated into the commercial package PROTEAN for molecular biologists by DNASTAR under an NIH/SBIR grant.

Best Paper Award, (first author), ACM/IEEE International Design Automation Conference. (July 1987).

Elected to Sigma Xi (the national scientific research honor society). (June 1986).

First published $O(n)$ algorithm for sequential fully-constrained tree-structured robot forward. (April 1986).

First published $O(\log n)$ algorithm for parallel unconstrained single-chain robot inverse dynamics. (July 1, 1985 - September 30, 1985).

National Science Foundation Graduate Fellowship. (October 1, 1980 - December 31, 1980).

Elected to Phi Beta Kappa (the national academic honor society). (June 1978).

Licensed as a Nuclear Reactor Operator by the U.S. Nuclear Regulatory Commission. (April 1977).

RESEARCH

Publications

Abstracts Published

- A-1. Wei, S., Chan, P., Hung, S.-p., Lathrop, R. H., Da Silva, N. A., Wang, S.-W. (2008). Fabrication of Engineered Collagen-Like Biopolymers. (Abstract Conf. American Inst. of Chemical Engineers AIChE'2008).

Book Chapters, Other

- BC-8. Ringpis, G., Lathrop, R. H., Aphasizhev, R. (2011). iCODA: RNAi-based Inducible Knock-In System in *Trypanosoma brucei*. *Meth. Mol. Biol.*, Vol. 718, pp. 23-27. doi: 10.1007/978-1-61779-018-8_2
- BC-7. Bienkowska, J., Lathrop, R. H. Protein Threading. (2005) In M. Dunn, M. Jorde, L. Little, P. Subramaniam (Eds.), *Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics*. West Sussex, UK. John Wiley & Sons.
- BC-6. Lathrop, R. H., Rogers, R. G., Jr, Bienkowska, J., Bryant, B. K.M, Buturović, L. C., Gaitatzes, C., Nambudripad, R., White, J. V., Smith, T. F. (1998). Analysis and Algorithms for Protein Sequence-Structure Alignment. In S. Salzberg, D. Searls, S. Kasif (Eds.), *Computational Methods in Molecular Biology*. Amsterdam. Elsevier Science.
- BC-5. Stultz, C. M., Nambudripad, R., Lathrop, R. H., White, J. V. (1997). Predicting Protein Structure with Probabilistic Models. In N. Allewell, C. Woodward (Eds.), *Protein Structural Biology in Biomedical Research*. Vol. 22B of Advances in Molecular and Cell Biology. Greenwich, CT, USA. JAI Press. (series ed. Bittar).
- BC-4. Smith, T. F., Lathrop, R. H., Cohen, F. E. (1996). The Identification of Protein Functional Patterns. In J. Collado-Vides, B. Magasanik, T. F. Smith (Eds.), *Integrative Approaches to Molecular Biology*. Cambridge, MA: MIT Press.
- BC-3. Lathrop, R. H., Webster, T. A., Smith, T. F., Winston, P. H. (1993). Massively Parallel Symbolic Induction of Protein Structure / Function Relationships. In S. Hanson, W. Remmele, R. Rivest (Eds.), *Machine Learning: From Theory to Applications*. (pp. 157–173). Berlin: Springer-Verlag. (also appeared in Proc. 27th Hawaii Intl. Conf. on System Sciences, IEEE Computer Soc. Press, 1991).
- BC-2. Lathrop, R. H., Webster, T. A., Smith, R., Winston, P. H., Smith, T. F. (1993). Integrating AI With Sequence Analysis. In L. Hunter (Ed.), *Artificial Intelligence and Molecular Biology*. (pp. 210–258). Menlo Park: AAAI Press.
- BC-1. Lathrop, R. H., Webster, T. A., Smith, T. F., Winston, P. H. (1990). ARIEL: A Massively Parallel Symbolic Learning Assistant for Protein Structure / Function. In P. H. Winston, S. Shellard (Eds.), *Artificial Intelligence at MIT: Expanding Frontiers*. Cambridge, MA: MIT Press.

Conference/Workshop/Symposium Proceedings, Other

- CO-10. Baldi, P., Lathrop, R. H. (2001). DNA Structure, Protein-DNA Interactions, and DNA-Protein Expression. *Proc. Pacific Symposium on Biocomputing'01*, World Scientific Press.
- CO-9. Skolnick, J., Lathrop, R. H. (1999). Protein Structure Prediction in the Post Genomic Era. *Proc. Pacific Symposium on Biocomputing'99*, World Scientific Press.
- CO-8. Cimoch, P. J., See, D. M., Pazzani, M. J., Reiter, W. M., Lathrop, R. H., Fasone, W. A., Tilles, J. G. (1998). Application of a Genotypic Driven Rule-Based Expert Artificial Intelligence Computer System in Treatment Experienced HIV-Infected Patients. Immunologic and Virologic Response. (poster abstract for the Twelfth World AIDS Conf., Geneva, Switzerland).
- CO-7. Lathrop, R. H. (1998). Protein Structure Prediction. *Proc. Pacific Symposium on Biocomputing'98*, World Scientific Press.

- CO-6. Fischer, D., Godzik, A., Chung, S., Subbiah, S., Lathrop, R. H. (1997). Understanding and Predicting Protein Structure: Introduction to Session. *Proc. Pacific Symposium on Biocomputing'97*, World Scientific Press.
- CO-5. Dunker, A. K. (1996). Discovering, Learning, Analyzing and Predicting Protein Structure: Introduction to Session. In R. H. Lathrop (Ed.), *Proc. Pacific Symposium on Biocomputing'96*, World Scientific Press.
- CO-4. Lathrop, R. H., Dunker, A. K. (1995). Protein Structure Prediction: Introduction to Session. *Proc. 28th Hawaii Intl. Conf. on System Sciences*, IEEE Computer Soc. Press.
- CO-3. Dunker, A. K., Lathrop, R. H. (1994). Protein Structure Prediction: Introduction to Session. *Proc. 27th Hawaii Intl. Conf. on System Sciences*, IEEE Computer Soc. Press.
- CO-2. Lathrop, R. H. (1993). Protein Structure Prediction: Introduction to Session. *Proc. 26th Hawaii Intl. Conf. on System Sciences*, IEEE Computer Soc. Press.
- CO-1. Lathrop, R. H., Winston, P. H. (1987). Framework Report. In H. J. Morowitz, T. F. Smith (Eds.), *Report of the Matrix of Biological Knowledge Workshop*. (Santa Fe Institute, Santa Fe, NM).

Conference/Workshop/Symposium Proceedings, Peer-Reviewed

- C-23. Danziger SA, Zeng J, Wang Y, Brachmann RK, Lathrop RH. (2007) Choosing where to look next in a mutation sequence space: Active Learning of informative p53 cancer rescue mutants. *Proc. Intl. Conf. on Intelligent Systems for Molecular Biology 2007*. (Co-published as *Bioinformatics*, Jul 1;23(13), same as J-25).
- C-22. Steffen, N. R., Murphy, S. D., Lathrop, R. H., Opel, M. L., Toller, L., Hatfield, G. W. (2002). The Role of DNA Deformation Energy at Individual Base Steps for the Identification of DNA-Protein Binding Sites. In *Genome Informatics 2002 (Genome Informatics Series No. 13)*. *Proc. Intl. Conf. on Genome Informatics*, Universal Academy Press, Inc. (Tokyo, Dec. 16-18, 2002).
- C-21. Steffen, N. R., Murphy, S. D., Toller, L., Hatfield, G. W., Lathrop, R. H. (2002). DNA Sequence and Structure: Direct and Indirect Recognition in Protein-DNA Binding. In *Bioinformatics. Proc. Intl. Conf. on Intelligent Systems for Molecular Biology (ISMB'02)*, Vol. 18, Suppl 1 (pp. S22-S30). Edmonton, Canada. (Aug 3–7, 2002).
- C-20. Lathrop, R. H., Sazhin, A., Sun, Y., Steffen, N., Irani, S. (2001). Multi-Queue Branch-and-Bound Algorithm for Anytime Optimal Search with Biological Applications. In *Genome Informatics 2001 (Genome Informatics Series No. 12)*. *Proc. Intl. Conf. on Genome Informatics*, (pp. 73–82). Universal Academy Press, Inc. (Best Paper Award, Tokyo, Dec 17-19, 2001).
- C-19. Lathrop, R. H. (1999). An Anytime Algorithm for Gapped Block Protein Threading with Pair Interactions. *Proc. Intl. Conf. on Computational Molecular Biology (RECOMB'99)*, (pp. 238–249). (Lyon, France, April 11–14, 1999).
- C-18. Lathrop, R. H., Steffen, N. R., Raphael, M., Deeds-Rubin, S., Pazzani, M. J., Cimoch, P. J., See, D. M., Tilles, J. G. (1998). Knowledge-based Avoidance of Drug-Resistant HIV Mutants. *Proc. Innovative Applications of Artificial Intelligence Conf.*, (pp. 1071–1078). (Innovative Application Award winner, Madison, WI, USA, July 27–29, 1998).
- C-17. Lathrop, R. H., Casale, M., Tobias, D. J., Marsh, J. L., Thompson, L. M. (1998). Modeling Protein

- Homopolymeric Repeats: Possible Poly Glutamine Structural Motifs For Huntington's Disease. *Proc. Intl. Conf. on Intelligent Systems and Molecular Biology*, (pp. 105–114). (Montreal, Quebec, Canada, June 28–July 1, 1998).
- C-16. Smith, T. F., Lo Conte, L., Bienkowska, J., Rogers, B., Gaitatzes, C., Lathrop, R. H. (1997). The Threading Approach to the Inverse Protein Folding Problem. *Proc. Intl. Conf. on Computational Molecular Biology*, (pp. 287–292). (Santa Fe, NM, Jan. 20–23, 1997).
- C-15. Lathrop, R. H. (1996). On the Learnability of the Uncomputable. *Proc. Intl. Conf. on Machine Learning*, (pp. 302–309). (Bari, Italy, July 3–6, 1996).
- C-14. Baxter, K., Steeg, E., Lathrop, R. H., Glasgow, J., Fortier, S. (1996). From Electron Density and Sequence to Structure: Integrating Protein Image Analysis and Threading for Structure Determination. *Proc. Intl. Conf. on Intelligent Systems and Molecular Biology*, (pp. 25–33). (St. Louis, MO, USA, June 12–15, 1996).
- C-13. Dietterich, T. G., Jain, A. N., Lathrop, R. H., Lozano-Perez, T. (1994). A Comparison of Dynamic Reposing and Tangent Distance for Drug Activity Prediction. In J. D. Cowan, G. Tesauro, J. Alspector (Eds.), *Advances in Neural Information Processing Systems*. Vol. 6, (pp. 216–223). Morgan Kaufmann Press.
- C-12. Lathrop, R. H., Smith, T. F. (1994). A Branch-and-Bound Algorithm for Optimal Protein Threading with Pairwise (Contact Potential) Amino Acid Interactions. *Proc. 27th Hawaii Intl. Conf. on System Sciences*, IEEE Computer Soc. Press.
- C-11. Lathrop, R. H., Hall, R. J., Duffy, G., Alexander, K. M., Kirk, R. S. (1998). Advances in Functional Abstraction From Structure. *Proc. 25th IEEE/ACM Intl. Design Automation Conf. (DAC'88)*. (Anaheim, CA, Jun 13–15, 1988).
- C-10. Alexander, K. M., Kirk, R. S., Lathrop, R. H., Hall, R. J., Duffy, G. (1988). Automatic Generation of Behavioral Simulation Models Using Functional Abstraction. *Proc. Custom Integrated Circuits Conf. (CICC'88)*.
- C-9. Lathrop, R. H., Hall, R. J., Kirk, R. S. (1987). Functional Abstraction From Structure in VLSI Simulation Models. *Proc. 24th ACM / IEEE Intl. Design Automation Conf. (DAC'87)*, (pp. 822–828). (Best Paper Award. Miami Beach, FL).
- C-8. Hall, R. J., Lathrop, R. H., Kirk, R. S. (1987). A Multiple Representation Approach to Understanding the Time Behavior of Digital Circuits. *Proc. 6th Natl. Conf. on Artificial Intelligence (AAAI'87)*. (Seattle, WA, 13–17 July, 1987).
- C-7. Kirk, R. S., Lathrop, R. H., Hall, R. J. (1987). SCORE Cell Development Environment. *Proc. 1987 Custom Integrated Circuits Conf. (CICC'87)*. (May, 1987).
- C-6. Lathrop, R. H. (1986). Constrained (Closed-Loop) Robot Simulation by Local Constraint Propagation. *Proc. IEEE Intl. Conf. on Robotics and Automation*, (pp. 689–694). (San Francisco, CA, April 7–10, 1986).
- C-5. Lathrop, R. H., Kirk, R. S. (1986). A System Which Uses Examples to Learn VLSI Structure Manipulations. *Proc. 5th Natl. Conf. on Artificial Intelligence (AAAI'86)*, (pp. 1024-1028). (Philadelphia, August 11–15, 1986).
- C-4. Lathrop, R. H. (1986). Precedent-based Manipulation of VLSI Structures. *Proc. 23rd ACM / IEEE Intl.*

Design Automation Conf. (DAC'86), (pp. 667-670). (Las Vegas, June 29–July 2, 1986).

- C-3. Kirk, R. S., Lathrop, R. H. (1986). Circuit Improvement Using Precedent-based Reasoning. *Proc. 1986 Custom Integrated Circuits Conf. (CICC'86)*. (Rochester, NY, May 12–15, 1986).
- C-2. Lathrop, R. H., Kirk, R. S. (1985). An Extensible Object-Oriented Mixed-Mode Functional Simulation System. *Proc. 22nd ACM / IEEE Intl. Design Automation Conf. (DAC'85)*, (pp. 630-636). (paper 39.2, Las Vegas, Nev., 23–26 June, 1985).
- C-1. Barrett, W. A., Rogers, R. G., Lathrop, R. H., Kuchinsky, A. (1983). An Extensible Datapath Generator. *Proc. IEEE Intl. Conf. on Computer-Aided Design (ICCAD-83)*. (paper 1.1, Santa Clara, CA, Sept. 12–15, 1983).

Journal Articles, Other

- JO-4. Lathrop, R. H., Rost, B. (2011). ISCB Public Policy Statement on Open Access to Scientific and Technical Research Literature. *Plos Comput Biol.*, 7(2). (As Chair of the Committee on Public Affairs and Policies for the International Society for Computational Biology (ISCB), I was responsible for drafting this statement and shepherding it through unanimous approval by the ISCB Board of Directors.).
- JO-3. Lathrop, R. H., Rost, B. (2011). ISCB Public Policy Statement on Open Access to Scientific and Technical Research Literature. *Bioinformatics*, 27(3), 291-4. (As Chair of the Committee on Public Affairs and Policies for the International Society for Computational Biology (ISCB), I was responsible for drafting this statement and shepherding it through unanimous approval by the ISCB Board of Directors.).
- JO-2. Lathrop, R. H., Steffen, N. R., Raphael, M., Deeds-Rubin, S., Pazzani, M. J., Cimoch, P. J., See, D. M., Tilles, J. G. (1999). Knowledge-based Avoidance of Drug-Resistant HIV Mutants. *AI Magazine*, 20(1), 13–25. (Spring; cover illustration; invited article from IAAI Conference paper of same title, below).
- JO-1. Lathrop, R. H., Hall, R. J., Duffy, G., Alexander, K. M., Kirk, R. S. (1990). Functional Abstraction Anticipates Timing Glitches. *IEEE Spectrum*, 27(4), 41–42.

Journal Articles, Peer-Reviewed

- J-38. Que, R.A., Chan, S.W., Jabaiah, A.M., Lathrop, R.H., Da Silva, N.A., Wang, S.W. (2015) Tuning cellular response by modular design of bioactive domains in collagen. *Biomaterials*, 53:309-317. doi: 10.1016/j.biomaterials.2015.02.074.
- J-37. Salehi, F., Baronio, R., Idrogo-Lam, R., Vu, H., Hall, L.V., Kaiser, P., Lathrop, R.H. (2015). CHOPER filters enable rare mutation detection in complex mutagenesis populations by next-generation sequencing. *PLoS One*, 10(2). doi: 10.1371/journal.pone.0116877.
- J-36. Qi, X., Vargas, E., Larsen, L., Knapp, W., Hatfield, G., Lathrop, R. H., Sandmeyer, S. (2013). Directed DNA Shuffling of Retrovirus and Retrotransposon Integrase Protein Domains. *Plos One*, 8(5). doi: 10.1371/journal.pone.0063957
- J-35. Wassman, C., Baronio, R., Demir, O., Wallentine, B., Hall, L., Salehi, F., Lin, D., Chung, B., Hatfield, G., Chamberlin, R. A., Luecke, H., Lathrop, R. H., Kaiser, P., Amaro, R. (2013). Computational Identification of a Transiently Open L1/S3 Pocket for Reactivation of Mutant p53. *Nat Commun.*, 4, 1407. doi: 10.1038/ncomms2361

- J-34. Demir, O., Baronio, R., Salehi, F., Wassman, C., Hall, L., Hatfield, G., Chamberlin, R., Kaiser, P., Lathrop, R. H., Amaro, R. (2011). Ensemble-based Computational Approach Discriminates Functional Activity of p53 Cancer and Rescue Mutants. *Plos Comput Biol.*, 7(10), e1002238. doi: 10.1371/journal.pcbi.1002238 (Epub).
- J-33. Akers, J., HoDac, H., Lathrop, R. H., Tan, M. (2011). Identification and functional analysis of CT069 as a Novel Transcriptional Regulator in *Chlamydia*. *J Bacteriol.*, 193(22), 6123-31. doi: 10.1128/JB.05976-11 (Epub).
- J-32. Baronio, R., Danziger, S. A., Hall, L. V., Salmon, K., Hatfield, G. W., Lathrop, R. H., Kaiser, P. (2010). All-codon scanning identifies p53 cancer rescue mutations. *Nucleic Acids Res.* (2010 Jun 25. [Epub ahead of print] PMID: 20581117).
- J-31. Ringpis, G. E., Aphasizheva, I., Wang, X., Huang, L., Lathrop, R. H., Hatfield, G. W., Aphasizhev, R. J. (2010). Mechanism of U insertion RNA editing in trypanosome mitochondria: the bimodal TUTase activity of the core complex. *J Mol Biol.*, 399(5), 680-95. (Epub 2010 Apr 1. PMID: 20362585).
- J-30. Chan, S. W., Hung, S. P., Raman, S. K., Hatfield, G. W., Lathrop, R. H., Da Silva, N. A., Wang, S. W. (2010). Recombinant human collagen and biomimetic variants using a de novo gene optimized for modular assembly. *Biomacromolecules*, 11(6), 1460-9. (PMID: 20481478).
- J-29. Aphasizheva, I., Ringpis, G. E., Weng, J., Gershon, P. D., Lathrop, R. H., Aphasizhev, R. (2009). Novel TUTase associates with an editosome-like complex in mitochondria of *Trypanosoma brucei*. *RNA*, 15(7), 1322-37. (Epub 2009 May 22. PMID: 19465686).
- J-28. Danziger, S. A., Baronio, R., Ho, L., Hall, L., Salmon, K., Hatfield, G. W., Kaiser, P., Lathrop, R. H. (2009). Predicting positive p53 cancer rescue regions using Most Informative Positive (MIP) active learning. *PLoS Comput Biol.*, 5(9), e1000498. (Epub 2008 Sep 4. PMID: 19756158).
- J-27. Larsen, L. S., Wassman, C. D., Hatfield, G. W., Lathrop, R. H. (2008). Computationally Optimised DNA Assembly of synthetic genes. *Int J Bioinform Res Appl.*, 4(3), 324-36. (PMID: 18640907).
- J-26. Zheng, J., Yan, J., Wang, T., Mosbrook-Davis, D., Dolan, K., Christensen, R., Stormo, G., Haussler, D., Lathrop, R. H., Brachmann, R., Burgess, S. (2008). Genome wide screens in yeast to identify potential binding sites and target genes of DNA binding proteins. *Nucleic Acids Research*, 36(1), e8.
- J-25. Danziger, S. A., Zeng, J., Wang, Y., Brachmann, R. K., Lathrop, R. H. (2007). Choosing where to look next in a mutation sequence space: Active Learning of informative p53 cancer rescue mutants. *Bioinformatics*, 23(13), i104-i114. (co-published in 2007 Proc. Intl. Conf. on Intelligent Systems for Molecular Biology).
- J-24. Wallace, R. G., HoDac, H., Lathrop, R. H., Fitch, W. M. (2007). A statistical phylogeography of influenza A H5N1. *Proc. Natl. Acad. Sci.*, 104(11), 4473-8.
- J-23. Aeling, K., Steffen, N. R., Johnson, M., Hatfield, G. W., Lathrop, R. H., Senear, D. F. (2007). DNA Deformation Energy as an Indirect Recognition Mechanism in Protein-DNA Interactions. *IEEE Trans. on Computational Biology and Bioinformatics*, 4(1), 117-25.
- J-22. Doskaya, M., Kalantari-Dehaghi, M., Walsh, C. M., Hiszczynska-Sawicka, E., Davies, D. H., Felgner, P. L., Larsen, L. S., Lathrop, R. H., Hatfield, G. W., Schulz, J. R., Guruz, Y., Jurnak, F. (2007). GRA1 protein vaccine confers better immune response compared to codon-optimized GRA1 DNA vaccine. *Vaccine*, 25(10), 1824-37. (Epub Nov. 20, 2006).

- J-21. Danziger, S. A., Swamidass, S. J., Zeng, J., Dearth, L. R., Lu, Q., Chen, J. H., Cheng, J., Hoang, V. P., Saigo, H., Luo, R., Baldi, P., Brachmann, R. K., Lathrop, R. H. (2006). Functional census of mutation sequence spaces: The example of p53 cancer rescue mutants. *IEEE Transactions on Computational Biology and Bioinformatics*, 3(2), 114-25.
- J-20. Bichutskiy, V., Colman, R., Brachmann, R. K., Lathrop, R. H. (2006). Heterogeneous Biomedical Database Integration Using a Hybrid Strategy: A p53 Cancer Research Database. *Cancer Informatics*, 2, 277-287.
- J-19. Aeling, K. A., Opel, M. L., Steffen, N. R., Tretyachenko-Ladokhina, V., Hatfield, G. W., Lathrop, R. H., Senear, D. F. (2006). Indirect recognition in sequence-specific DNA binding by Escherichia coli integration host factor: the role of DNA deformation energy. *J. Biol. Chem.*, 281(51), 39236-48. (Epub 2006 Oct 11).
- J-18. Tagwerker, C., Zhang, H., Wang, X., Larsen, L. S., Lathrop, R. H., Hatfield, G. W., Auer, B., Huang, L., Kaiser, P. (2006). HB tag modules for PCR-based gene tagging and tandem affinity purification in Saccharomyces cerevisiae. *Yeast*, 23(8), 623-32.
- J-17. Wassman, C. D., Tam, P. Y., Lathrop, R. H., Weiss, G. A. (2004). Predicting Oligonucleotide-Directed Mutagenesis Failures in Protein Engineering. *Nucleic Acids Research*, 32(21), 6407-6413.
- J-16. Cline, M. S., Karplus, K., Lathrop, R. H., Smith, T. F., Rogers, R. G., Jr, Haussler, D. (2002). Information-Theoretic Dissection of Pairwise Contact Potentials. *Proteins: Structure, Function, Genetics*, 49(1), 7-14.
- J-15. Lathrop, R. H. (1999). An Anytime Local-to-Global Optimization Algorithm for Protein Threading in Theta (m2n2) Space. *J. Computational Biology*, 6(3-4), 405-18. (Fall-Winter).
- J-14. Lathrop, R. H., Pazzani, M. J. (1999). Combinatorial Optimization in Rapidly Mutating Drug-Resistant Viruses. *J. Combinatorial Optimization*, 3, 301-320.
- J-13. Lathrop, R. H., Rogers, R. G., Jr, Smith, T. F., White, J. V. (1998). A Bayes-Optimal Probability Theory that Unifies Protein Sequence-Structure Recognition and Alignment. *Bull. Math. Biol.*, 60, 1039-1071.
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- J-10. Lathrop, R. H., Smith, T. F. (1996). Global Optimum Protein Threading with Gapped Alignment and Empirical Pair Potentials. *J. Mol. Biol.*, 255, 641-665. (cover article).
- J-9. Jain, A. N., Dietterich, T. G., Lathrop, R. H., Chapman, D. E., Critchlow, R. E., Bauer, B. E., Webster, T. A., Lozano-Perez, T. (1994). Compass: A Shape-Based Machine Learning Tool for Drug Design. *Computer-Aided Molecular Design*, 8, 635-652.
- J-8. Lathrop, R. H. (1994). The Protein Threading Problem With Sequence Amino Acid Interaction Preferences Is NP-Complete. *Protein Engineering*, 7(9), 1059-1068.
- J-7. Zhu, Q. -L., Smith, T. F., Lathrop, R. H., Figge, J. (1990). Acid Helix-Turn Activator Motif. *Proteins:*

Structure, Function, and Genetics, 8, 156-163.

- J-6. Webster, T. A., Patarca, R., Lathrop, R. H., Smith, T. F. (1989). Potential Structural Motifs for Reverse Transcriptases. *Molecular Biology and Evolution*, 6(3), 317–320.
- J-5. Webster, T. A., Lathrop, R. H., Smith, T. F. (1988). Pattern Descriptors and the Unidentified Reading Frame 6 Human mtDNA Dinucleotide-Binding Site. *Proteins: Structure, Function, and Genetics*, 3, 97–101.
- J-4. Lathrop, R. H., Webster, T. A., Smith, T. F. (1987). ARIADNE: Pattern-Directed Inference and Hierarchical Abstraction in Protein Structure Recognition. *Communications of the ACM*, 30(11), 909–921. (cover article).
- J-3. Webster, T. A., Lathrop, R. H., Smith, T. F. (1987). Prediction of a Common Structural Domain in Aminoacyl-tRNA Synthetases through Use of a New Pattern-Directed Inference System. *Biochemistry*, 26(22), 6950–6957.
- J-2. Bradley, M. K., Smith, T. F., Lathrop, R. H., Livingston, D. M., Webster, T. A. (1987). Consensus Topography in the ATP Binding Site of the Simian Virus 40 and Polyomavirus Large Tumor Antigens. *Proc. National Academy of Science (PNAS)*, 84, 4026–4030.
- J-1. Lathrop, R. H. (1985). Parallelism in Manipulator Dynamics. *Intl. J. of Robotics Research*, 80–102. (Summer; also appeared in Proc. IEEE Intl. Conf. on Robotics and Automation, pp. 772–778, St. Louis, MO, March 25–28, 1985).

Research Reports

- O-1. Karp, P., Chiu, W., Davidson, S., Ellisman, M., Gaasterland, T., Jacobs, G., Kikinis, R., Klein, T., Lathrop, R. H., Schulten, K., Stormo, G. *Report of the Bioinformatics Working Group of the National Advisory Research Resources Council*. National Institutes of Health.

Special Issues

- E-5. (2002). In R. H. Lathrop, K. Nakai, S. Miyano, T. Takagi, M. Kanehisa (Eds.), *Proceedings, Genome Informatics 2002*. Tokyo: Universal Academy Press.
- E-4. (2002). Intelligent Systems in Biology II. R. H. Lathrop (Ed.), *IEEE Intelligent Systems*, 17(2) (Guest Editor of Special Issue of Journal).
- E-3. (2001). Intelligent Systems in Biology. R. H. Lathrop (Ed.), *IEEE Intelligent Systems*, 16(6) (Guest Editor of Special Issue of Journal).
- E-2. (1998). In J. Glasgow, R. H. Lathrop, T. Littlejohn, F. Major, M. Peitsch, D. Sankoff, D. Sensen (Eds.), *Proceedings, Sixth Intl. Conf. on Intelligent Systems for Molecular Biology*. Menlo Park: AAAI Press.
- E-1. (1994). In R. Altman, D. Brutlag, P. Karp, R. H. Lathrop, D. Searls (Eds.), *Proceedings, Second Intl. Conf. on Intelligent Systems for Molecular Biology*. Menlo Park: AAAI Press.

Invited Presentations Given (excludes paper presentations)

- Lathrop, R. H., invited by Rost, B., Invited Highlights Track, 21st Annual Conf. on Intelligence Systems for Molecular Biology (ISMB'2013), co-located with 12th European Conf. on Computational Biology (ECCB'2013), Berlin, Germany. (July 2013).
- Lathrop, R. H., invited by Cole, C., Invited Industry Seminar, Synthetic Genomics, Panel: "CODA: The Algorithm. Computationally Optimised DNA Assembly of Synthetic Genes," La Jolla, California. (November 2012).
- Lathrop, R. H., invited by Rost, B., Keynote Speech, 20th Annual Intl. Conf. on Intelligent Systems for Molecular Biology (ISMB'2013), Long Beach, California. (July 2012).
- Lathrop, R. H., invited by Rost, B., Invited Highlights Track, 2010 International Conference on Intelligent Systems for Molecular Biology (ISMB' 2010), Boston, MA. (July 2010).
- Lathrop, R. H., invited by Walsh, M., UCI Chao Family Comprehensive Cancer Center Retreat. (November 2009).
- Lathrop, R. H., invited by Kasif, S., Frontiers in Biomolecular Engineering, Boston University, Boston, MA. (September 2009).
- Lathrop, R. H., invited by Hunter, L., Rocky Mountain Bioinformatics Conf., Snowmass, CO. Keynote address. (December 2007).
- Lathrop, R. H., invited by Schetter, D., UCI Entrepreneurs Forum. (February 2007).
- Lathrop, R. H., invited by Washio, T., Inter-Nano-Science, 21st Center of Excellence Japanese Government Project Symposium, Awaji, Japan. (December 2006).
- Lathrop, R. H., invited by Lilly, C., Human Proteome Organization Conf., Long Beach, CA. (November 2006).
- Lathrop, R. H., invited by Akutsu, T., World Congress on Biomedical Engineering and Medical Physics, Seoul, Korea. (August 2006).
- Lathrop, R. H., invited by Watanabe, M., Research Seminar, University of California, Merced. (May 2006).
- Lathrop, R. H., invited by Nielsen, D., UCI CAL-IT2, Knobbe Martens Olsen & Bear program series, "Synthetic biology/bioinformatics and the CODA Genomics story." (April 2006).
- Lathrop, R. H., invited by UCI CAL-IT2. Invited presentation to David Crane, Gov. Schwarzenegger's special advisor for jobs and economic growth; and Mindy Fletcher, deputy chief of staff for internal affairs in the governor's office (invited by Albert Yee). (February 2006).
- Lathrop, R. H., invited by Benos, T., Research Seminar, University of Pittsburgh, PA. (May 2005).
- Lathrop, R. H., invited by Guesgen, H., 8th Pacific Rim International Conference on Artificial Intelligence. Conference Keynote Speech. (August 2004).
- Lathrop, R. H., invited by Ellis, L., Bioinformatics Symposium, "Bioinformatics: Building Bridges," University of Minnesota, Minneapolis, MN. (March 2003).

- Lathrop, R. H., invited by Miyano, S., Conference on Genome Informatics, Tokyo. Conference Opening Address. (December 2002).
- Lathrop, R. H., invited by Greenberg, H., SIAM Conf. on Optimization, Toronto, Ontario, Canada. (May 2002).
- Lathrop, R. H., invited by Wong, L., Workshop on Post-Genomic Knowledge Discovery, National University of Singapore. (May 2002).
- Lathrop, R. H., invited by Qu, K., Research Seminar, Rigel Pharmaceuticals. (June 2001).
- Lathrop, R. H., invited by Mittal, S., Research Seminar, Oncotech. (December 2000).
- Lathrop, R. H., invited by Wu, S.-C., Panelist, Intelligent Systems and Molecular Biology Conf., "Lisp in Bioinformatics," San Diego, CA. (August 2000).
- Lathrop, R. H., invited by Page, D., Cook, D., Panelist, ICML-2000 Workshop on Machine Learning of Spatial Knowledge, Stanford, CA. (July 2000).
- Lathrop, R. H., invited by Berwick, B., Kasif, S., Panelist, DARPA Computation, Biology, and Language Workshop, Arlington, VA. (June 2000).
- Lathrop, R. H., invited by Glasgow, J., Panelist, Pacific Symposium on Biocomputing, "Data Mining in Biological Databases," Oahu, HI. (January 2000).
- Lathrop, R. H., invited by Craven, M., Page, D., Distinguished Lecture Series in Biomedical Informatics, University of Wisconsin, Madison, WI. (December 1999).
- Lathrop, R. H., invited by Scott, R., Research Seminar, University of Chicago, Chicago, IL. (November 1999).
- Lathrop, R. H., invited by McClure, M., Research Seminar, "Montana State University, Bozeman, MT." (October 1999).
- Lathrop, R. H., invited by Fortier, S., Lecturer, Conf. on Data Mining in Crystallography, Erice, Sicily, Italy. (May 1999).
- Lathrop, R. H., invited by Fleck, M., Research Seminar, Harvey Mudd College, Claremont, CA. (October 1998).
- Lathrop, R. H., invited by Knight, K., Research Seminar, Information Sciences Institute, Marina del Rey, CA. (May 1998).
- Lathrop, R. H., invited by Xu, Y., Panelist, Pacific Symposium on Biocomputing, "Challenges in Annotating Genomes," Kapalua, HI. (January 1998).
- Lathrop, R. H., invited by States, D., Research Seminar, Washington University at St. Louis, MO. (November 1997).
- Lathrop, R. H., invited by Valencia, A., Keynote Speaker, Intelligent Systems and Molecular Biology Conf., Halkidiki, Greece. (June 1997).
- Lathrop, R. H., invited by Subramaniam, S., Symposium on Bioinformatics, Structure, and Function, Urbana, IL. (May 1997).

Lathrop, R. H., invited by Bliss, T., Intl. Congress on Gene Function Determination, Washington, D.C. (February 1997).

Lathrop, R. H., invited by Schetter, D., UC Irvine Life Science Research and Technology Showcase, Irvine, CA. (September 1996).

Lathrop, R. H., invited by Shrobe, H., Innovative Applications of Artificial Intelligence Conf., Portland, OR. Conference Invited Survey Talk. (August 1996).

Lathrop, R. H., invited by Altman, R., Research Seminar, Stanford University, Stanford, CA. (August 1996).

Lathrop, R. H., invited by Eidhammer, I., "First Opponent of Inge Jonassen doctoral thesis defense," University of Bergen, Norway. (June 1996).

Lathrop, R. H., invited by States, D. Conference Banquet Afterdinner Speaker, Intelligent Systems and Molecular Biology Conf., St. Louis, MO. (June 1996).

Lathrop, R. H., invited by Vriend, G., Workshop on Prediction and Modelling of Protein Structures, EMBO/European Bioinformatics Institute, Hinxton, England. (March 1996).

Lathrop, R. H., invited by Dunker, K., Research Seminar, Washington State University, Pullman, WA. (September 1995).

Lathrop, R. H., invited by Fortiers, S., American Crystallographic Association Meeting, Montreal. (July 1995).

Lathrop, R. H., invited by Takagi, T., Symposium on Genome Project and Computer Science, Tokyo. (March 1995).

Lathrop, R. H., invited by Pardalos, P., Workshop on Global Minimization of Nonconvex Energy Functions, DIMACS, Rutgers University, Piscataway, NJ. (March 1995).

Lathrop, R. H., invited by Kauffman, S., Research Seminar, Santa Fe Institute, Santa Fe, NM. (January 1995).

Professional Articles About You

p53 and Cancer Research - UC Irvine - You Tube. Appeared In: YouTube. UC Irvine made a video about our cancer research.

http://www.youtube.com/watch?v=P9t_oqY8-Fw. (February 1, 2013).

Contracts, Grants and Sponsored Research

Grant

Lathrop, Richard H (Principal Investigator), "A Functional Census of p53 Cancer and Suppressor Mutants," NIH (BISTI) CA112560 (renewal), \$1,600,000.00. (August 2010 - May 2014).

Lathrop, Richard H (Co-Principal Investigator), Baldi, Pierre (Principal Investigator), "Biomedical Informatics Training (BIT) (course supplement)," NIH - National Institutes of Health LM07443 - 09S1, \$216,000.00. (July 2010 - June 2011).

Lathrop, Richard H (Principal Investigator of UCI Contract), "Maximizing Expression of Immunoglobulins in Plants," prime award to Planet Biotech, Inc., NIH GM080837, \$131,000.00. (April 2010 - March 2011).

Lathrop, Richard H (Co-Principal Investigator of UCI Contract), Hatfield (Principal Investigator of UCI Contract), "CODA Assembly of Mutants Genes," prime award to Verdezyne, Inc, NIH AI066758, \$744,000.00. (January 2010 - December 2010).

Lathrop, Richard H (Co-Principal Investigator), Baldi, Pierre (Principal Investigator), "Biomedical Informatics Training (BIT) (ARRA supplement)," NIH - National Institutes of Health LM07443-08S1, \$95,000.00. (January 2010 - December 2010).

Lathrop, Richard H (Principal Investigator), "Reactivation of p53 in Human Cancer by Small Drug-like Molecules," UCI Triumvirate Grant [UCI internal], \$15,000.00. (January 2010 - January 2011).

Lathrop, Richard H (Co-Principal Investigator), Baldi, Pierre (Principal Investigator), "Biomedical Informatics Training (BIT)," NIH - National Institutes of Health LM07443, \$5,600,000.00. (July 2007 - June 2012).

Lathrop, Richard H (Co-Principal Investigator), Hung, She-Pin (Principal Investigator), "Computationally Optimized Simultaneous Self-assembly of Multiple Genes from DNA chips," NIH, \$237,000.00 (December 2005 – November 2006).

Lathrop, Richard H (Principal Investigator), "A Functional Census of p53 Cancer and Suppressor Mutants," NIH (BISTI), \$1,800,000.00. (August 2005 - July 2010).

Lathrop, Richard H (Co-Principal Investigator), Hung, She-Pin (Principal Investigator), "CODA Assembly of Mutant Genes," NIH, \$582,000.00 (August 2005 – July 2006).

Lathrop, Richard H (Co-Principal Investigator), Hatfield, G. W. (Principal Investigator), "Regulatory Networks in Escherichia coli," NIH, \$1,500,000.00. (September 2003 – August 2007).

Lathrop, Richard H (Principal Investigator), "ITR: Information Technology for Self-Assembling Synthetic Genes," NSF (ITR) - National Science Foundation, \$1,500,000.00. (August 2003 – July 2006).

Lathrop, Richard H (Co-Principal Investigator), Baldi, Pierre (Principal Investigator), "Biomedical Informatics Training (BIT)," NIH - National Institutes of Health, \$4,300,000.00. (July 2002 - June 2007).

Lathrop, Richard H (Principal Investigator), "Arbitrarily Large Spatially Addressable Nanometer Scale Arrays," UC Biotechnology Research & Education Program, \$100,000.00. (July 2002 - June 2004).

Lathrop, Richard H (Co-Principal Investigator), Semler, Bert (Principal Investigator), "Structural Determinants of Viral Protein-Nucleic Acid Interactions," UC Biotechnology Research & Education Program, \$400,000.00. (July 2001 - June 2004).

- Lathrop, Richard H (Principal Investigator), "Arbitrarily Large Spatially Addressable Nanometer Scale Arrays," UCI CORCLR, \$14,773.00. (July 2001 - June 2002).
- Lathrop, Richard H (Principal Investigator), "Arbitrarily Large Spatially Addressable Nanometer Scale Arrays," UCI ICS Committee on Research, \$3,000.00. (October 2001 - October 2002).
- Lathrop, Richard H (Principal Investigator), "Arbitrarily Large Spatially Addressable Nanometer Scale Arrays," UCI Institute for Genomics and Bioinformatics, \$4,000.00. (October 2001 - October 2002).
- Lathrop, Richard H (Co-Principal Investigator), Sandmeyer, Suzanne (Principal Investigator), "Computational Analysis of the Genome," UC Biotechnology Research & Education Program, \$200,000.00. (July 1999 - June 2001).
- Lathrop, Richard H (Principal Investigator), "ISMB Conference Student Travel Support," Dept. of Energy, \$10,000.00. (March 1998 - March 2000).
- Lathrop, Richard H (Co-Principal Investigator), Bic, Lubomir (Principal Investigator), "Graduate Fellowships in Biomedical Computing," Dept. of Education, \$700,000.00. (September 1997 - August 2000).
- Lathrop, Richard H (Co-Principal Investigator), Kibler, Dennis (Principal Investigator), "Discovery of Regulatory Motifs for Gene Expression," UC Multi-Investigator, \$20,000.00. (July 1997 - June 1998).
- Lathrop, Richard H (Co-Principal Investigator), Bic, Lubomir (Principal Investigator), "A Distributed Biomedical Computing Laboratory," NSF Instrumentation Grant, \$70,000.00. (March 1997 - February 1998).
- Lathrop, Richard H (Principal Investigator), "Intelligent Systems and Advanced Computation in Molecular Biology," NSF CAREER Award, \$200,000.00. (September 1996 - August 2000).

Intellectual Property

- [NOTE: The UCI p53 patent series mentioned below is actively under review by the US Patent Office and undergoes frequent amendments, revisions, and resubmissions by UCI lawyers, so the snapshot below may represent only an approximate picture of the current status.]
- Amaro, R., Baronio, R., Demir, O., Kaiser, P., Lathrop, R. H., Salehi-Amiri, S. F., Wassman, C., Provisional patent application, "2,283 small molecules to enhance p53 activity." Provisional patent application filed by UC Irvine covering our research in p53 cancer mutant reactivation.
- Amaro, R., Baronio, R., Demir, O., Kaiser, P., Lathrop, R. H., Salehi-Amiri, S. F., Wassman, C., Patent application, "138 small molecules to enhance p53 Activity." Full US PCT patent application filed by UC Irvine covering our research in p53 cancer mutant reactivation.
- Amaro, R., Baronio, R., Demir, O., Kaiser, P., Lathrop, R. H., Salehi-Amiri, S. F., Wassman, C., Patent application, "Small molecules to enhance p53 Activity." Full US PCT patent application filed by UC Irvine covering our research in p53 cancer mutant reactivation.
- Lathrop, R. H., Hatfield, G. W., Issued US Patent No. 7,262,031 (2007). "Method for producing a synthetic gene or other DNA sequence."

Chapman, D., Critchlow, R., Jain, A. N., Lathrop, R. H., Perez, T. L., Dietterich, T., Issued US Patent No. 5,526,281 (1996). "Machine-learning approach to modeling biological activity for molecular design and to modeling other characteristics."

Professional Service

"Big Data to Knowledge: Research Education Curriculum Development", Chair, NIH Grant Review Panel, Appointed, National. (2017).

"NIH Director's Early Independence Award", Reviewer, Appointed, National. (2017).

"Big Data to Knowledge: Open Educational Resources for Skills Development in Biomedical Big Data Science", Chair, NIH Grant Review Panel, Appointed, National. (2016).

"Advisory Panel to Assess Bioengineering/Computational Biology Study Sections", Reviewer, NIH Advisory Panel, Appointed, National. (2015).

"Big Data to Knowledge: Targeted Software", Chair, NIH Grant Review Panel, Appointed, National. (2014).

"Macromolecular Structure/Function D (Computational Methods)", Reviewer, NIH Grant Review Panel, Appointed, National. (2014).

Board of Directors, Intl. Soc. for Computational Biology, Member. Elected. International. (July 2009 - December 2015).

Public Affairs and Policies Committee, Intl. Soc. for Computational Biology, Chair (December 2009 - July 2014), Member (December 2009 - Present). Appointed. International.

Awards Committee, International Society for Computational Biology, Member. (September 2009 - November 2012). Appointed. International.

Education Committee, International Society for Computational Biology, Member. (July 2009 - Present). Appointed. International.

International Journal of Molecular Sciences, Journal Article Reviewer, Appointed, Pro Bono, International. (2014).

PROTEINS: Structure, Function, and Bioinformatics, Journal Article Reviewer, Appointed, Pro Bono, International. (2014).

UCI Undergraduate Research Journal, Journal Article Reviewer, Appointed, Pro Bono, Local. (2014).

Bioinformatics, Reviewer, Appointed, Pro Bono, International. (2013 - 2014).

IEEE Intelligent Systems, Editorial Advisory Board Member, Appointed, Pro Bono, International. (October 2011 - September 2014).

"Biomedical Technology Research Center: A Biomedical-Informatics Research Network for Big Data", Ad Hoc Reviewer, Appointed, National. (2013).

PLoS Computational Biology, Reviewer, Appointed, Pro Bono, International. (2013).

BMC Bioinformatics, Reviewer, Appointed, Pro Bono, International. (2012).

PLoS Computational Biology, Reviewer, Appointed, Pro Bono, International. (2011).

NIH Study Section, Macromolecular Structure and Function D (MFD), Extramural Funding Reviewer, Appointed, National. (2008 - 2011).

Molecular and Cellular Proteomics, Editorial Review Board Member. (October 2008 - May 2010).

Grant proposal review, NSF CISE Computing Research Infrastructure (CRI) Program, Reviewer. (December 2009).

Intl. Conf. on Intelligent Systems for Molecular Biology, Senior Area Chair. (2007 - 2009).

Distinguished Editorial Panel member for second-level review of NIH Challenge Grants (ARRA), Reviewer. (July 2009).

Program Committee, European Conf. on Computational Biology. (April 2005).

Program Committee, Intl. Conf. on Machine Learning. (April 2005).

Program Committee, Intl. Conf. on Genome Informatics. (December 2004).

Grant proposal review panel, Bio-Data Management and Analysis (BDMA), National Institutes of Health, Extramural Funding Reviewer (2001-2004). (Chair, 2003-2004)., Extramural Funding Reviewer. (2001 - 2004).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 2004).

Scientific Advisory Board of CODA Genomics, Inc., Co-Founding Scientist. (April 2004).

Program Committee, Intl. Conf. on Genome Informatics. (December 2003).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 2003).

Program Committee, Intl. Conf. on Knowledge Discovery and Data Mining. (March 2003).

Grant proposal review panel, National Science Foundation, Extramural Funding Reviewer. (December 2002).

Program Committee, Intl. Conf. on Genome Informatics. (December 2002).

Program Committee, Intl. Conf. on Genome Informatics, Co-Chair. (December 2002).

Intl. Conf. on Intelligent Systems for Molecular Biology, Senior Area Chair. (2002).

Scientific Advisory Board of GeneFormatics, Inc., San Diego, CA. (July 2001 - December 2002).

Symposium Organizer, Structural Genomics at UCI. (September 2002).

Intl. Conf. on Intelligent Systems for Molecular Biology, Senior Area Chair. (August 2002).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 2002).

Organizing Committee, Workshop on Post-Genomic Knowledge Discovery, National University of Singapore. (May 2002).

Advisory Board, University of Colorado, Denver, Center for Computational Biology. (March 2002).

Program Committee, Intl. Conf. on Genome Informatics. (December 2001).

Intl. Conf. on Intelligent Systems for Molecular Biology, Site Selection Coordinator. (August 1999 - December 2001).

J. Molecular and Cellular Proteomics, Editorial Review Board Member. (October 2001).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 2001).

Advisory Board, University of Colorado, Denver, Center for Computational Biology. (July 2001).

Informatics and the New Biology, Pacific Division meeting of the AAAS, Session Co-Organizer. (June 2001).

Scientific Advisory Board of University of Colorado, Denver, Center for Computational Biology. (June 2001).

DNA Structure, Interactions, and Expression, at Pacific Symposium on Biocomputing, Co-Chair. (January 2001).

Program Committee, Intl. Conf. on Genome Informatics. (December 2000).

Symposium Organizer, Structural Genomics at UCI. (September 2000).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 2000).

Bioinformatics Working Group of the National Advisory Research Resources Council, National Institutes of Health, Member. (May 2000).

Grant proposal review panel, National Science Foundation, Extramural Funding Reviewer. (January 2000).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 1999).

Program Committee, Intl. Conf. on Computational Molecular Biology. (April 1999).

Protein Structure Prediction Session, at Pacific Symposium, Chair. (January 1999).

Tutorial, Computational Molecular Biology, at Natl. Conf. on Artificial Intelligence. (July 1998).

Organizing Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (June 1998).

Protein Structure Prediction Session, at Pacific Symposium, Chair. (January 1998).

Program Committee, Workshop on Genome Informatics. (December 1997).

Scientific Advisory Board of CombiChem, Inc. (July 1997).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (June 1997).

Protein Structure Prediction Session, at Pacific Symposium, Chair. (January 1997).

Founding Board of Directors, and Founding Treasurer, Intl. Society for Computational Biology, Member. (June 1996).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (June 1996).

Protein Structure Prediction Session, at Pacific Symposium, Chair. (January 1996).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (July 1995).

Protein Structure Prediction Session, at Hawaii Intl. Conf. on System Sciences, Chair. (January 1995).

Organizing Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 1994).

Protein Structure Prediction Session, at Hawaii Intl. Conf. on System Sciences, Chair. (January 1994).

Tutorial, Protein Structure Prediction, at Hawaii Intl. Conf. on System Sciences. (January 1994).

Organizing Committee, Macromolecules, Genes and Computers Conf. (August 1993).

Program Committee, AI and Genome Workshop, at Intl. Joint Conf. on Artificial Intelligence. (August 1993).

Program Committee, Intl. Conf. on Intelligent Systems for Molecular Biology. (August 1993).

Tutorial, Intro. to AI for Biologists, at Intl. Conf. on Intelligent Systems for Molecular Biology. (July 1993).

Protein Structure Prediction Session, at Hawaii Intl. Conf. on System Sciences, Chair. (January 1993).

Program Committee, Conf. on Bioinformatics, Integration of Organismic and Molecular Data Bases, and Use of Expert Systems in Biology; and Protein Sequence Functional Analysis, Chair. (July 1990).

Organizing Committee, Workshop on the Matrix of Biological Knowledge, Co-Chair. (July 1987 - August 1987).

Consulting

For Profit Organization, Actavalon, Inc. (2013 - 2015).

For Profit Organization, BP, San Diego. (2013 - 2014).

For Profit Organization, Group IV Biosystems, Inc. (2012 - 2013).

For Profit Organization, CODA Genomics, Inc., Irvine, CA / Verdezyne, Inc., Carlsbad, CA. (April 2004 - April 2009).

For Profit Organization, CombiChem, Inc., San Diego, CA. (April 1997 - December 1999).

For Profit Organization, Arris Pharmaceutical Corp., South San Francisco, CA. (May 1989 - December 1993).

For Profit Organization, Gould/A.M.I. VLSI CAD Research Laboratory, Twain Harte, CA. (June 1984 - August 1991).

TEACHING

Special Pedagogical Activities

Organizer, ICS Faculty Panel on Improving your Graduate School Application, (2008 - Present).
for undergraduates to help improve their graduate school applications (every year)

Director, ICS Honors Program, (2008 - Present).
every year

Seminar, (2015).
Scientific area talk

Seminar, (2014).
Scientific area talk

Co-sponsor (with Jorge Busciglio and Pinar Coskun) of the undergraduate UROP/CALIT2 Multi-Disciplinary Project (MDP) titled "Nuclear-Encoded Mitochondrial Genes SNPs in Different Ethnic Background Relevant to Alzheimer Disease and Aging", (2013).

Team Member, Computer Science & Engineering (CSE) ABET accreditation effort, (2013).
Helped lead to successful ABET accreditation of the CSE Degree Program.

Seminar, (2013).
Scientific area talk

Seminar, (2011).
Scientific area talk

Spearhead for new Computer Science B.S. in Biomedical Computing (approved AY2009/2010),
(October 1, 2010).

Supervisor, (2009).
summer student (Carina Pryn) from St. Margaret's High School for summer internship under
auspices of the ICS Dean

Postdoctoral Research Supervision

2010, Chris Wassman
2003, Nick Steffen

Doctoral Committee

2014, Faezeh Salehi, Chair
2012, Matt Kayala, Member
2010, Chris Wassman, Chair
2010, Gene Ringpis, Member
2009, Sam Danziger, Chair
2009, Jonathan Chen, Member
2008, Mike Sweredoski, Member

2008, Arlo Randall, Member
2008, Joshua O'Madadhain, Member
2007, Josh Swamidass, Member
2003, Nick Steffen, Chair
2002, Pierre-Francois Baisnée, Member
2002, Igor Cadez, Member
2001, Kalev Kask, Member
1999, Yuh-Jyh Hu, Member
1998, Kent Martin, Member
1997, Daniel Frost, Member
1997, Piew Datta, Member
1996, Cliff Brunk, Member
1996, Irina Rish, Member
1996, Pedro Domingos, Member

Doctoral Candidacy Committee

November 2015, Yu Liu, Member
April 2014, Steven Jay Doubleday, Member
March 2014, Yi Li, Member
March 2013, Eric Trumbauer, HSSOE PhD Qualifying Exam, Committee Member
December 2012, Paul Rigor, Member
March 2012, Michael Zeller, Member

Master's Thesis Committee

2012, Edwin Vargas, Chair
2006, Scott Murphy, Chair
2006, Vadim Bitchutski, Chair
2006, Frank Lin, Chair

Undergraduate Research Supervision

[NOTE: Months shown are mid-quarter. Separate class categories are listed separately.]

May 2017, Khalid Samir Elassaad, Audrey Fu Lai
May 2017, Rimoun Soliman Selim Ghaly, Jeanelle Guardado-Mendez, Carolina Rojas, Minjae Wee
March 2017, Audrey Fu Lai
March 2017, Rimoun Soliman Selim Ghaly, Jeanelle Guardado-Mendez, Vincent Ho
March 2017, Steven Chow, Nathan Le, Andrew Gregory Sperry, Mansi Tyagi
November 2016, Juston Yeushine Lin, Carolina Rojas, Toluwanimi David Salako, Abdullah Issam Younis
November 2016, Steven Chow, Nathan Le, Andrew Gregory Sperry, Mansi Tyagi
July 2016, Abdullah Issam Younis
May 2016, Alissa Adriana Powers, Nikolai Samuel Vogler
May 2016, Rimoun Soliman Selim Ghaly, Vincent Ho, Toluwanimi David Salako, Minjae Wee
March 2016, Alissa Adriana Powers, Nikolai Samuel Vogler
March 2016, Rimoun Soliman Selim Ghaly, Zongheng Ma, Toluwanimi David Salako, Cyrus Dara Tabatabai-Yazdi, Tiancheng Xu
May 2015, Geoffrey G Tucker
May 2015, Sean Michael King
March 2015, Geoffrey G Tucker
May 2014, Edwin Alberto Solares, Tianhong Tim Tan
March 2014, Edwin Alberto Solares, Tianhong Tim Yan, Yan Zhao
March 2014, Kevin Tsz Hao Lee, Edwin Alberto Solares

November 2013, Edwin Alberto Solares
November 2013, Ryan Michael Idrogo Lam
May 2013, Kier Rainer Groulx, Samuel David Schrader, Edwin Alberto Solares, Huy Tran Bao Vu
May 2013, Ryan Michael Idrogo Lam, Tnuja Undevalli
March 2013, Kier Rainer Groulx, Samuel David Schrader, Edwin Alberto Solares, Huy Tran Bao Vu
March 2013, Thomas Edwards II Bennett, Nathaniel Wyson Chow, Quentin Florian Dietz, Ryan Michael Idrogo-Lam, Hasti Mojarrad, Alexander John Van Buskirk
November 2012, Nathaniel Wyson Chow, Quentin Florian Dietz, Idrogo-Lam Ryan Michael, Edwin Alberto Solares
November 2012, Samuel David Schrader, Huyen Tran Bao Vu
May 2012, Humza Taufic Bhakhrani
May 2012, Ryan Michael Idrogo-Lam, Khoa Anh Pham, Samuel David Schrader, Edwin Alberto Solares
March 2012, Humza Taufic Bhakhrani
March 2012, Samuel David Schrader, Edwin Alberto Solares
2011, Kaveh Vazirzadeh
2010, Galina Tucker, Shannon Stanton
2006, Ben Morris
2004, Vadim Bichutskiy
2003, Vinh Hoang, John Pau, Pei Ng
2000, Maximilian Ho
1999, Maximilian Ho, Thuan Truong

SERVICE

Department Service

Acting Computing Division Vice-Chair, signed Chair's CAP letter for Ihler and Mjolsness. (2016)

Chair and member, Computer Science & Engineering (CS&E) Degree Program Steering Committee. (2004 - 2016).

Chair, David Eppstein CAP case. (2015).

Chair, Xiaohui Xie CAP case. (2014).

Chair, Eric Mjolsness CAP case. (2013).

Member, Padhraic Smyth CAP case. (2013).

Member, Eric Mjolsness Step Adjustment CAP case. (2013).

Chair, Charless Fowlkes CAP case. (2012).

Member, Xiaohui Xie CAP case. (2012).

Chair, Xiaohui Xie CAP case. (2010).

Member, Eric Mjolsness CAP case. (2010).

Graduate Admissions Committee. (2009).

Member, Wayne Hayes CAP case. (2009).

Formal mentoring of Prof. Xiaohui Xie (with Prof. Ian Harris). (May 2009).

Formal mentoring of Prof. Natasa Przulj (with Prof. Max Welling). (May 2009).

Chair, Eric Mjolsness CAP case. (2008).

Chair, Eric Mjolsness CAP case. (2006).

School/College Service

Reviewer, CS&E Senior Design Review Day. (2011 - Present).

ICS External Relations Committee (focused on ICS 40th celebration). (2008 - 2011).

CS&E ABET workshop (Baltimore, MD). (April 2009).

University Service

Program Leader (2011 - 2015), Advisor (2016 - Present), UCI Institute for Genomics and Bioinformatics.

Member, University Research Opportunity Program (UROP) Faculty Advisory Board. (2011 - Present).

Committee member, Committee on Responsible Conduct of Research. (2011).

Volunteer Skipper for various events, UCI Sailing Association. (various).

Panel Member, Moderated Mentoring Panel for Junior Faculty sponsored by the UCI Office of Research, on how to write a successful grant proposal. (June 2010).

Certification, "Train the Trainers," Responsible Conduct of Research. (April 2010).

Public Service

Volunteer tournament judge, MathCounts. (1996 - 2013). President's Award.