

**LENORE JENNIFER COWEN**  
**CURRICULUM VITAE**  
(1/08)

**Lenore Jennifer Cowen**

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**RESEARCH INTERESTS**

Algorithms; discrete mathematics; computational biology.

**EDUCATION**

**Massachusetts Institute of Technology (9/87–5/93)**

- Ph.D. in Applied Mathematics (5/93).
- Thesis title: *On Local Representations of Graphs and Networks*.
- Thesis Advisor: Daniel J. Kleitman.

**Yale University (9/83–6/87)**

- B.A. *Cum Laude* with honors in the Mathematics major (6/87).
- AT&T Bell Laboratories Summer Research Program (Summer, 1986).
- Budapest Semesters in Mathematics (Spring, 1986).

**Hampshire College Summer Studies in Mathematics (1982–1983)**

**PROFESSIONAL EXPERIENCE**

- Associate Professor, Dept. of CS, Tufts University (6/01–present)
- Joint Appointment, Tufts Dept. of Mathematics (1/04–present)
- Visiting Associate Professor, Dept. of EECS, Tufts University (9/00–12/00)
- Associate Professor, Dept. of Mathematical Sciences, Johns Hopkins University (5/00–6/01)
- Visiting Scientist, MIT Lab for Computer Science (Summer, 1998 and Year 1999–2000).

- Assistant Professor, Dept. of Mathematical Sciences, Johns Hopkins University (7/94–5/00). (Joint appointment in Computer Science 1/95–present). *On leave, academic year 1999–2000.*
- Postdoctoral Fellow, Dept. of Math. and DIMACS, Rutgers University (1/94–6/94), the Institute for Mathematics and Its Applications at the University of Minnesota (9/93 – 12/93).
- Consultant, Bell Laboratories, Murray Hill, New Jersey (Summer/Fall, 1992).

## HONORS AND AWARDS

- **Emmaline Bigelow Conland Fellowship, Radcliffe Institute**, (9/99–8/00).
- **ONR Young Investigator** (6/96–6/99).
- **Robert S. Pond Teaching Award**, Johns Hopkins School of Engineering (1996).
- **Young Faculty Research Fellow**, Johns Hopkins School of Engineering (9/95–6/96).
- **NSF Postdoctoral Fellow** (9/93–7/96).
- **deForest Prize** for best graduating senior in Mathematics, Yale University (1987).
- **Anthony D. Stanley Prize** for Excellence in Pure and Applied Mathematics, Yale University (1985 and 1986).

## TECHNICAL PUBLICATIONS

### Papers in Refereed Journals

1. L. Cowen, R. Cowen, and D. Woodall, “Defective Colorings of Planar Graphs in Surfaces: Partitions into Subgraphs of Bounded Valency,” *Journal of Graph Theory*, **10**(2), 1986: 187–195.  
-Introduced defective coloring and solved defective chromatic number for the plane.
2. R. Mathar and L. Cowen, “Concurrency Probabilities for a Locally Slotted Packet Radio Network by Combinatorial Methods,” *Performance Evaluation*, **17**(1), Jan. 1993: 43–51.  
-Expected collisions for broadcast in S-ALOHA.
3. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg, “Low Diameter Graph Decomposition is in NC,” *Random Structures and Algorithms*, **5**(3), 1994: 442–452.  
-The probabilistic method yields a deterministic parallel algorithm for graph decomposition.
4. B. Berger and L. Cowen, “Scheduling with Concurrency-based Constraints,” *Journal of Algorithms*, **18**(1), 1995: 98–123.  
-Scheduling unit tasks on a fixed number of machines with both pre- and co-requisites; also solves a scheduling problem on the Tera architecture.
5. D. Kleitman, F. Lasaga, and L. Cowen, “Asymptotic Enumeration of Full Graphs,” *Journal of Graph Theory*, **20**(1), 1995: 59–69.  
-Solved 10-year open conjecture of J. Lynch.

6. L. Cowen, D. Kleitman, F. Lasaga, and D. Sussman, "Enumeration of Full Graphs: Onset of the Asymptotic Region," *Studies in Applied Mathematics*, **96**(3), 1996: 339–350.  
-Interpretation and refinements of paper #5.
7. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg, "Fast Distributed Network Decomposition," *Journal of Parallel and Distributed Computing*, **39**(2), 1996: 105–114.  
-The construction of network decompositions in the distributed computation model.
8. J. Houlihan, L. Cowen, and G. Masson, "Hypercube Sandwich Approach to Conferencing," *Journal of Supercomputing*, **10**(3), 1996: 271–283.  
-Presents a novel cascaded conferencing network structure; chosen for special issue: best papers in PDPTA conference (see Conference paper #7).
9. L. Cowen and R. Mathar, "The Offset Problem," *Combinatorics, Probability, and Computing*, **6**(2), 1997: 159–164.  
-Gave an optimal strategy for a placement of locally synchronized stations in packet radio networks; solved an open problem of paper #2.
10. L. Cowen, W. Goddard, and E. Jesurum, "Defected Coloring Revisited," *Journal of Graph Theory*, **24**(3), 1997: 205–219.  
-Every toroidal graph is (3,2) and (5,1) colorable; defective chromatic number is within a constant of the number of colors needed for the maximum clique on the surface, NP-completeness results and approximation algorithms.
11. L. Cowen and C. Priebe, "Randomized Non-Linear Projections Uncover High-Dimensional Structure," *Advances in Applied Mathematics*, **19**(3), 1997: 319–331.  
-Introduced the ADC method for randomized dimension reduction.
12. L. Cowen, J. Feigenbaum, and S. Kannan, "A Formal Framework for Evaluating Heuristic Programs," *Annals of Mathematics and Artificial Intelligence*, **22**(3-4), 1998: 193–206.  
-An attempt to address the question of how one evaluates the usefulness of a heuristic program on a particular input; introduces the notion of a timer for a heuristic.
13. C. Cheng and L. Cowen, "On the Local Distinguishing Number of Cycles," *Discrete Mathematics*, **196**(1-3), 1999: 97–108.  
-A local version of the Albertson-Collins distinguishing number.
14. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg, "Near Linear Cost Construction of Neighborhood Covers and their Applications," *SIAM Journal of Computing*, **28**(1), 2000: 263–277.  
-The first approximation scheme for the k-pairs shortest paths problem.
15. L. Cowen, "Compact Routing with Minimum Stretch," *Journal of Algorithms*, (2001): **38**, 2001: 170–183. *Special Issue: Best Papers in SODA 1999*.  
-The first universal compact routing scheme for weighted undirected networks that achieves maximum stretch 3, with sublinear space at every node.
16. S. Stitzel, L. Cowen, K. Albert, and D. Walt, "Array-to-Array Transfer of an Artificial Nose Classifier," *Analytical Chemistry*, **73**(21), 2001: 5266–5271.  
-Bead sensor technology allows one to replicate artificial nose arrays without retraining; application of the Priebe and Cowen GWMW classifier.
17. P. Bradley, L. Cowen, M. Menke, J. King and B. Berger, "BETAWRAP: Successful prediction of parallel  $\beta$ -helices from primary sequence reveals an association with many microbial pathogens" *Proceedings of the National Academy of Sciences*, **98**(26), 2001: 14819–14824.  
-Through computational methods, we predict a previously unsuspected role for the beta-helix fold in human infectious disease; the bacterial and fungal proteins identified include toxins, virulence factors, adhesins, and surface proteins of Chlamydia, Helicobacteria, Bordetella, Rickettsia and Neisseria.
18. L. Cowen, P. Bradley, M. Menke, J. King and B. Berger, "Predicting the Beta-Helix Fold From Protein Sequence Data," *Journal of Computational Biology*, **9**(2), 2002: 261–276.

-A spacial generalization of methods to predict protein fold superfamilies based on pairwise statistical dependencies yields the first successful prediction of a beta-structural fold.

19. A. Cannon and L. Cowen, "Approximation Algorithms for the Class Cover Problem," *Annals of Mathematics and Artificial Intelligence*, **40**(3-4), 2004: 215-224.

-Special Issue: Best Papers in AMAI 2000.

20. L. Cowen and C. Wagner, "Compact Roundtrip Routing in Directed Networks," *Journal of Algorithms*, **50**(1), 2004: 79-95.

-The first algorithm for compact routing in directed graphs is achieved by considering roundtrip distances.

21. B. Bogstad and L. Cowen, "The Distinguishing Number of the Hypercube," *Discrete Mathematics*, **283**(1-3), 2004: 29-35.

-The distinguishing number of a graph  $G$  is the minimum number of colors for which there exists an assignment of colors to the vertices of  $G$  so that the group of color-preserving automorphisms of  $G$  consists only of the identity. We solve the distinguishing number exactly for hypercubic graphs and their squares.

22. M. Menke, J. King, B. Berger and L. Cowen, "Wrap-and-Pack: A New Paradigm for Beta Structural Motif Recognition with Application to Recognizing Beta Trefoils," *Journal of Computational Biology*, **12**(6), 2005: 777-795.

23. A. McDonnell, M. Menke, N. Palmer, L. Cowen and B. Berger, "Fold Recognition and Accurate Alignment of Sequences Directing Beta Sheet Folding by Profile Wrapping," *Proteins: Structure, Function, & Bioinformatics*, **63**, 2006: 976-985.

-This work was co-awarded the PDB Best Poster Award recognizing insight and innovation in structural computational biology at RECOMB 2005.

24. M. Arias, L. Cowen, K. Laing, R. Rajaraman, and O. Taka, "Compact Routing with Name Independence," *SIAM Journal on Discrete Mathematics*, **20**(3), 2006: 705-726.

-Achieves name-independent compact routing with stretch 5 (down from 1000+). Generalizes to different ranges of stretch/space tradeoffs.

25. A. Brady and L. Cowen, "Exact Distance Labelings Yield Additive-Stretch Compact Routing Schemes" Distributed Computing, Invited.

-Invited to Special Issue: Best Papers in DISC 2006.

26. M. Menke, B. Berger and L. Cowen, "Matt: Multiple Structure Alignment with Translations and Twists" PLOS Computational Biology, Vol 4, No. 1, 2008.

-Local flexibility improves protein multiple structure alignment for more structurally divergent proteins. Editor's pick of the week.

27. M. Arias, L. Cowen and K. Laing, "Compact Roundtrip Routing with Topology-Independent Node Names," *Journal of Computer and Systems Sciences*, in press.

-First paper to achieve name-independent compact (roundtrip) routing in directed graphs

### Papers in Reviewed Conference Proceedings

Note: Papers which also have appeared in journal versions above are marked with a (\*).

1. M. Bellare, L. Cowen, and S. Goldwasser, "On the Structure of Secret Key Exchange Protocols," *Distributed Computing and Cryptography (Princeton, NJ, 1989)*. DIMACS series in Discrete Mathematics and Theoretical Computer Science, **2**, (Providence: American Mathematical Society, 1991), 79-92.

-Showed the existence of a SKE protocol suffices to imply the existence of a 1 way function.

- \*2. B. Berger and L. Cowen, "Complexity Results and Algorithms for  $\{<, \leq, =\}$ -Constrained Scheduling," In *Proceedings of the Second Annual ACM-SIAM Symposium on Discrete Algorithms*, San Francisco, CA, Jan. 1991 (NY: ACM Press, 1991), 137–147.
- \*3. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg. "Low Diameter Graph Decomposition is in NC," In *Proceedings of the Third Scandinavian Workshop on Algorithm Theory*, Helsinki, Finland, July 1992 (Berlin: Springer-Verlag, 1992), 83–93.
- \*4. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg, "Fast Distributed Network Decomposition," In *Proceedings of the 11th Annual ACM Symposium on Principles of Distributed Computing*, Vancouver, B.C., Canada, Aug. 1992 (NY: ACM Press, 1992), 169–177.
- \*5. B. Awerbuch, B. Berger, L. Cowen, and D. Peleg, "Near-Linear Cost Constructions of Neighborhood Covers in Sequential and Distributed Environments," In *Proceedings of the 34th IEEE Symposium on Foundations of Computer Science*, Palo Alto, California, Nov. 1993 (Los Alamitos, CA: IEEE Computer Science Press, 1993), 638–47.
6. B. Awerbuch, L. Cowen, and M. Smith, "Efficient Asynchronous Distributed Symmetry-Breaking," In *Proceedings of the 26th ACM Symposium on the Theory of Computing*, Montréal, Québec, Canada, May 1994 (NY: ACM Press, 1994), 214–223.  
-An optimal randomized algorithm for MIS and Dining Philosophers in general asynchronous networks.
- \*7. J. Houlahan, L. Cowen, and G. Masson, "Hypercube Sandwich Approach to Conferencing," In *Proceedings of the 1995 International Conference on Parallel and Distributed Processing Techniques and Applications*, Atlanta, Georgia, Nov. 1995 (Atlanta, GA: C.S.R.E.A. Press, 1995), 481–490.
- \*8. L. Cowen, J. Feigenbaum, and S. Kannan, "A Formal Framework for Evaluating Heuristic Programs," In *Proceedings of the 23rd International Colloquium on Automata, Languages and Programming*, Paderborn, Germany, July 1996 (Berlin: Springer-Verlag, 1992), 634–645.
- \*9. L. Cowen, W. Goddard, and E. Jesurum, "Coloring With Defect," In *Proceedings of the Eighth Annual ACM/SIAM symposium on Discrete Algorithms*, New Orleans, Louisiana, Jan. 1997 (NY: ACM Press, 1997), 548–557.  
-Although there is some overlap with Journal paper #10, contains additional material on algorithmic aspects.
10. C. Priebe and L. Cowen, "Approximate Distance Clustering," *Computing Science and Statistics*, **29**(1), 1998: 337–346.  
-The methods of Journal paper #11 as applied to clustering and classification of high-dimensional PET-scan data.
11. C. Priebe and L. Cowen, "Mine Detection Via Generalized Wilcoxon–Mann–Whitney Classification," In *Proceedings of the 1998 SPIE Symposium for Detection and Remediation Technologies for Mine and Mine-Like Targets*, **3392**(2), San Diego, California, July, 1998: 906–917.  
-The GMWM method of Priebe and Cowen applied to mine and minefield detection.
12. L. Cowen, "Defective Chromatic Polynomials," *Congressus Numerum*, **133**(1), 1998: 57–61.  
-Defines the defective chromatic polynomial and the vector defective chromatic polynomial; generalizes the ordinary chromatic recurrence to the vector defective chromatic polynomial with 0-1 weights.
13. A. Cannon, L. Cowen and C. Priebe, "Approximate Distance Classification," *Computing Science and Statistics*, **30**(1), 1999: 544–549.  
-An experimental paper in which it is shown that the 1-D version of the ADC dimension reduction method yields a classifier that competitive on benchmark data sets.

- \*14. L. Cowen, "Compact Routing with Minimum Stretch," In *Proceedings of the Tenth Annual ACM/SIAM Symposium on Discrete Algorithms*, Baltimore, Maryland, Jan. 1999 (NY: ACM Press, 1999), 255–260.
15. L. Cowen and C. Wagner, "Compact Roundtrip Routing for Digraphs," In *Proceedings of the Tenth Annual ACM/SIAM Symposium on Discrete Algorithms*, Baltimore, Maryland, Jan. 1999 (NY: ACM Press, 1999), S885–886.  
-The first algorithm for compact routing in directed graphs is achieved by considering roundtrip distances.
- \*16. L. Cowen and C. Wagner, "Compact Roundtrip Routing in Directed Networks," In *Proceedings of the Nineteenth Annual ACM Symposium on Principles of Distributed Computing*, Portland, Oregon, Aug. 2000 (NY: ACM Press, 2000), 51–59.
- \*17. P. Bradley, L. Cowen, M. Menke, J. King and B. Berger, "Predicting the Beta Helix Fold from Protein Sequence Data," *Proceedings of the Fifth International Conference on Computational Molecular Biology (RECOMB 2001)*, 58–66, 2001.  
-First secondary structural motif recognition method to work on a beta structural motif.
- \*18. M. Arias, L. Cowen, A. K. Laing, R. Rajaraman, O. Taka, "Compact Routing with Name Independence," *Proceedings of the Fifteenth Annual ACM Symposium on Parallelism in Algorithms and Architectures (SPAA 2003)*, 184–192, 2003.  
-Universal compact routing schemes with node identifiers decoupled from network topology.
- \*19. M. Arias, L. Cowen, A. K. Laing, "Compact Roundtrip Routing with Topology Independent Node Names," *Proceedings of the Twenty-Second ACM Symposium on Principles of Distributed Computing (PODC 2003)*, 43–52, 2003.
20. F. Crimins, R. Dimitri, T. Klein, N. Palmer, L. Cowen, "Higher-Dimensional Approach to Classification of Lung-Cancer Microarray Data," Appeared in the *Proceedings of the 4th Annual Conference on Critical Assessment of Microarray Data (CAMDA)*, 2003.  
-Journal versions of this paper, and also #21 will appear in the volume "Methods in Microarray Data Analysis IV" published by Kluwer academic press.
21. W. Zhou, W. Wu, N. Palmer, E. Mower, N. Daniels, L. Cowen, A. Blumer, "Microarray Data Analysis of Survival Times of Patients with Lung Adenocarcinomas Using ADC and K-Medians Clustering," Appeared in the *Proceedings of the 4th Annual Conference of Critical Assessment of Microarray Data (CAMDA)*, 2003.
- \*22. M. Menke, E. Scanlon, J. King, B. Berger and L. Cowen, "Wrap-and-Pack: A New Paradigm for Beta Structural Motif Recognition with Application to Recognizing Beta Trefoils," *Proceedings of the Eighth International Conference on Computational Molecular Biology (RECOMB 2004)*, 298–307, 2004.  
-A method to recognize the Beta Trefoil fold, based both on a statistical template, and on a backbone dependent rotamer library is presented that achieves 92% specificity and 92.3% sensitivity in cross-validation. The computational method used here may generalize to other beta structures for which strand topology and profiles of residue accessibility are well conserved.
23. A. Brady and L. Cowen, "Compact Routing on Power Law Graphs with Additive Stretch," *Proceedings of the Eighth Workshop on Algorithm Engineering and Experiments (ALENEX06)*, 119-128, 2006.  
-Experimentally validated compact routing schemes that perform nearly optimally on Internet-like graphs.
24. A. Brady and L. Cowen, "Exact Distance Labelings Yield Additive Stretch Compact Routing Schemes," *Proceedings of the 20th International Symposium on Distributed Computing (DISC06)*, 2006.  
-Won the best student paper award at DISC 2006.

## Technical Reports

1. B. Berger and L. Cowen “Fast Deterministic Constructions of Low-Diameter Network Decompositions,” MIT-LCS TM #460, April 1991.  
-Preliminary version of Journal papers #3 and #7.
2. L. Cowen, “On Local Representations of Graphs and Networks,” MIT Lab. for Computer Science Technical Report MIT/LCS/TR #562, May 1993. (Doctoral Thesis.)  
-Doctoral Thesis.
3. L. Cowen “A Linear Time Algorithm for Network Decomposition,” DIMACS Technical Report #94-56, Dec. 1994.  
-Gives the fastest sequential algorithm for constructing low-diameter graph decompositions.
4. L. Cowen and E. Jesurum, “Coloring with Defects,” DIMACS Technical Report #95-25, July 1995.  
-NP-Completeness results and approximations algorithms for defective coloring.
5. L. Cowen and W. Goddard, “Defective coloring on the Torus and Higher Genera,” DIMACS Technical Report #95-26, July 1995.  
-Every toroidal graph is  $(3,2)$  and  $(5,1)$  colorable; defective chromatic number is within a constant of the number of colors needed for the maximum clique on the surface.
6. C. Priebe and L. Cowen, “Nonparametric Discriminant Analysis in High Dimensions via Generalized Interpoint Distances: A Generalized Wilcoxon-Mann-Whitney Test,” JHU Technical Report #570, 1997.  
-Introduces a natural statistic based on point-to-set distances and proves its generating function satisfies a recurrence relation that allows its calculation.

## PROFESSIONAL ACTIVITIES

- Program Committee Co-Chair, 2008 SIAM Annual Meeting
- Editorial Board member, SIAM Review, January 2008–present.
- Program Committee member, SODA 2008
- Program Committee member, ICALP 2008
- Chair, König prize committee, 2008.
- Vice Chair, SIAM Activity Group in Discrete Mathematics, January 2006 – 2008
- Editorial Board Member, *SIAM Journal on Discrete Mathematics*, March 2003–present.
- Organizing Committee Member, The 9th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2005).
- Program committee member, DISC 2005.
- Chair, Faculty Search Committee, Tufts Department of Computer Science, 2003-2004.
- Mentor for the CRA Distributed Mentor Project, Summer 2003.
- Program committee member, ACM-SIAM Symposium on Discrete Algorithms (SODA), New Orleans, Louisiana, January, 2004.

- Program Chair, 1st SIAM Workshop on Algorithms For Listing, Counting and Enumeration (ALICE), Baltimore, Maryland, January 2003.
- Program committee member, Latin American Theoretical Informatics Conference (LATIN), Cancun, Mexico, May, 2002.
- Member, NSF Site Visit Committee, Institutes in the Mathematical Sciences, 2001.
- Guest Editor, Special Issue of *Discrete Mathematics* in honor of Daniel J. Kleitman's 65th Birthday.
- Guest Editor, Special Issue of *Journal of Computer System Sciences: Best Papers in STOC 1999*.
- Steering committee member for the ACM–SIAM Symposium on Discrete Algorithms (1999–2008).
- Organizing Committee Member, *Kleitman and Combinatorics, a Celebration*, Conference in Honor of Daniel J. Kleitman's 65th Birthday, MIT, August, 1999.
- Member, Awards Committee, American Mathematical Society Epsilon Fund (To support Summer Math Camps for Talented High School Students)(1999–2004).
- Panelist, National Science Foundation DMS, 2001.
- Program committee member, ACM *Symposium on the Theory of Computing* conference (STOC), Atlanta, Georgia, May, 1999.
- Invited Minisymposium organizer, *Randomized Algorithms* at 9th SIAM Discrete Mathematics Conference, July, 1998.
- Dean's Search Committee, Johns Hopkins University Whiting School of Engineering, 1998.
- Program committee member, Eighth SIAM Discrete Math Conference, June, 1996.
- Reviewer for: *Discrete Mathematics, Journal of Algorithms, Journal of Graph Theory, Journal of the ACM, Algorithmica, Bioinformatics, Information and Computation, IJMMS Distributed Computing, Combinatorica, Random Structures and Algorithms, Discrete Applied Mathematics, Graphs and Combinatorics, Australasian Journal of Combinatorics, Journal of Computer and System Sciences, Proteins: Structure, Function and Bioinformatics*, as well as FOCS, STOC, SODA, SPAA, STACS, DISC, ICALP and PODC conferences.
- Over 25 Invited Talks at University Departments and Government Research Labs.

## COURSES TAUGHT AND EDUCATIONAL ACTIVITIES

**JHU** Discrete Mathematics, Combinatorics (Ugrad and Grad), Graph Theory (Ugrad and Grad), Cryptology and Coding, Probabilistic Method, Approximation Algorithms.

**Tufts** Data Structures in C++, Theory of Computation, Computational Biology, Cryptography, Algorithms, Advanced Algorithms, Graph Theory, Combinatorial Optimization.

Organizer of weekly Tufts Computer Science Colloquium (2001–present, except for Fall 2003 and Spring 2007)

Co-organizer and co-founder of Tufts Bioinformatics and Computational Biology Colloquium (Fall 2006 – present)

Mentor, CRA Distributed Mentor Project, matched with Tufts Undergraduate Emily Mower for Summer 2003.

## GRADUATE STUDENT THESIS SUPERVISION

Arthur Brady (Ph.D. expected 2008, Tufts)

Dissertation topic: Functional prediction in Computational Biology

Christine Cheng (Ph.D., 1999, JHU)

Dissertation title: Three Problems in Graph Labelling

Christopher Wagner (joint with Mike Goodrich) (Ph.D., 1999, JHU)

Dissertation title: Drawing with Curves and Routing in Directed Networks

Adam Cannon (Ph.D., 2000, JHU)

Dissertation title: Approximate Distance Methods in Classification

Fredrick Crimins (Masters, 2002, Tufts)

Dissertation title: Sensor Registration for Vapor Classification with an Artificial Nose

Orjeta Taka (Masters, 2003, Tufts)

Dissertation title: Compact Routing with Name Independence

Andrew McDonnell (Masters, 2003, Tufts)

Dissertation title: Predicting the Structure of The Beta-Helix Protein Motif

Wenting Zhou (Masters, 2005, Tufts)

Dissertation topic: Methods in Microarray Data Analysis

Wenting will continue on for the Ph.D. with me at Tufts.

Patrick Schmid (Undergraduate Honors Thesis, 2005, Tufts)

Topic: FINDEL: Statistical Inference of Insertion/Deletion Errors in Protein Sequence.

Guangtao Ge (Phd in progress, expected 2009, Tufts)

Dissertation topic: Computational Prediction of solubility of proteins

Anoop Kumar (Phd in progress, expected 2009, Tufts)

Dissertation topic: Protein function prediction

Supervise 1-4 Masters project/thesis students and 1-3 Undergraduate Research students each year. Undergraduate research students have gone on to be NSF graduate fellowship winners (Emily Mower) and honorable mentions (Nathan Palmer).

## GRANTS AND CONTRACTS

*Markov Models for Speech Recognition* (with E. Brill), Whiting School of Engineering Young Faculty Research Initiative, \$12,110, (1995–1996).

*Approximate Distance, Dimension Reduction, and Discrete Classification*, Office of Naval Research, \$270,000 (1996–1999). Role: PI

*Advanced Data Analysis Methods for Analyte Recognition from Optical Sensor Arrays*, Air Force Office of Scientific Research and DARPA. \$398,965 (1999–2001). Role: coPI (with Carey Priebe, PI)

*Advanced Countermeasures for Minefield Path Planning Command and Control*, Office of Naval Research, Subcontract from JHU Applied Physics Laboratory, \$21,000 (2000-2001).

*Algorithms for Approximate Routing Problems*, National Science Foundation, \$226,000 (2003-2006). Role: PI

*Library Design Problems*, Pfizer, \$45,000 (2004-2005). Role: PI

*ITR-(ASE+NHS)-(dmc): Rational Genomic Annotation Systems: Integrating, Modeling and Mining Biological Data*, National Science Foundation, \$1,951,201 (2004-2007). Role: Tufts PI (with Simon Kasif (PI), Tommi Jaakola, Jill Mesirov, Bonnie Berger).

*Detecting Natural versus Unnatural DNA*, AFOSR/DARPA seedling grant, \$298,042. Role: co-PI (with Carla Brodley (PI), Donna Slonim, Jonathan Eisen).

*Improved Prediction of Protein Solubility in E. Coli and Other Expression Systems*, Dow Agrosiences, \$83,430 (2007-2008). Role: PI.

## **PERSONAL DATA**

Born April 10, 1967 in New York, New York. US Citizen. Married to William Bogstad. Children: Rebecca and Annika Bogstad.