

# Parag Mallick

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## Summary

Interdisciplinary quantitative scientist with diverse academic and industry experience in translational research, information technology, bioinformatics, genomics, proteomics and graphic design.

## Skills

**Molecular Biology, Protein Chemistry and Proteomics:** Yeast and Bacterial Cloning, Expression and Protein Purification, Northern & Western Blotting, HPLC, Protein Biophysical Characterization, Fluorimetry, Mammalian Cell Culture, Quantitative, liquid chromatographic tandem mass spectrometry. **Bioinformatics and Genomics:** Genome scale structure, function, interaction and regulatory network analysis, cDNA and Oligo Microarray Data Analysis, PSI-BLAST, Ensembl, RefSeq, Pattern Theory. **Computer Related:** Macintosh, Unix, Windows, C/C++, PERL, HTML, SQL, XML, JAVA, Macintosh Assembly, TCL/TK, Pascal, Scheme, PHP, Python, Design Patterns, OOP, CGI, Threads Programming, Socket Programming, Inter-process communication. **Design:** QuarkXpress, InDesign, Illustrator, Freehand, Photoshop.

## Experience

### Academic

**Director of Clinical Proteomics**      **Cedars-Sinai**      **Nov 2004 – Present**  
Developing systems biology research group in division of Haematology-Oncology and directing quantitative proteomics efforts of Clinical Outcomes Program.

**Assistant Professor of Biochemistry**      **UCLA**      **July 2005 – Present**  
Developing and teaching coursework within the Bioinformatics program.

### Bioinformatics and Genomics

**Consultant**      **Protein Pathways, Los Angeles, CA**      **Oct 1999 – Dec 2002**  
Implemented parallel and distributed algorithms and software tools for analysis and discovery of protein functional networks. Developed tools for microarray data analysis and database integration.

**Bioinformatics Liaison**      **TB Structural Genomics Consortium**      **Oct 2000 – Dec 2002**  
Coordinated a distributed team to develop a structural proteomics lab information management system for 70 labs in 12 countries. Developed bayesian target selection framework, reporting algorithms, XML languages for distributing lab protocols.

### Selected Web & Software Development

**Production & Copy Editor**      **ACM Crossroads Magazine**      **Jan 1995 – Present**  
Layout, design, and edit of online and print versions of *Crossroads*.

**Developer and Owner**      **Midnight Media**      **July 1995 – Present**  
Software design and backbone development for web utility software tools Framework, Gradient Page Designer and Connect 4 game. Contracted website development. Developed products include secure online ordering and inventory control systems, sequencing analysis, secure toolkit licensing and distribution, online betting for horse racing, and product display.

### Graphic Design

**Production Manager**      **Student Life Newspaper**      **Aug 1994 – Aug 1997**  
Coordinated team of designers and editors for semi-weekly creation and manipulation of articles, graphics, images, page designs and issue layouts.

**Business Manager & Designer**      **Campus Graphics**      **Aug 1994 – Aug 1997**  
Managed payroll and solicited clients. Worked with clients to designed advertisements, posters, leaflets, stickers, etc.

## Teaching Experience

Introductory Biochemistry, Biochemistry Laboratory, Bioinformatics Brainstorm Seminar, Statistical Methods in Bioinformatics, Assisted Development of UCLA Bioinformatics Program.

## Education

- Postdoctoral Fellow**                      **Institute for Systems Biology, Seattle, WA**                      **Dec 2002 – Nov 2004**  
Mentor: Ruedi Aebersold  
Research Area: Medical and quantitative mass spectrometry based proteomics
- Doctor of Philosophy**                      **University of California, Los Angeles, CA**                      **Oct 1997 – Dec 2002**  
*Department of Chemistry and Biochemistry*  
Mentor: David Eisenberg  
Thesis Topic: **Genome Scale Fold Assignment: Exploring Fold, Function and the Twilight Zone**
- Bachelor of Science**                      **Washington University, St. Louis, MO**                      **Aug 1994 – May 1997**  
*Departments of Computer Science and Chemistry*  
Undergraduate Honours Thesis Research in Biochemistry and Molecular Biophysics,  
Mentor: Jay Ponder  
Thesis Topic: **Novel Methods for Protein Threading and Fold Recognition**
- Undergraduate Honours Thesis Research in Computer Science,  
Mentor: Keith Bennett  
Thesis Topic: **Handling the International Space Station Communication Barrier Through the Incorporation of a Virtual Time Machine**

## Publications (current and forthcoming)

- Prakash A, Mallick P, Whiteaker J, Zhang H, Paulovich A, Flory M, Lee H, Aebersold R, Schwikowski  
**Algorithms for Constructing Signal Maps between Mass Spectrometry Experiments.** *Submitted Molecular and Cellular Proteomics*
- Desiere F...**The PeptideAtlas Project.** *In Press Nucleic Acids Research*
- Katz JE, Mallick P, Agus DB. **A perspective on protein profiling of blood.** *BJU Int.* 2005 Sep;96(4):477-82.
- Kuester B, Shirle M, Mallick P Aebersold R. **Innovation: Scoring Proteomes with Proteotypic Peptide Probes.** *Nature Reviews Molecular Cellular Biology* 2005, 6 : 577-583,
- Zhang H, Yi E, Li X, Mallick P, Aebersold R: **High throughput quantitative analysis of serum proteins using glycopeptide capture and liquid chromatography mass spectrometry.** *Mol Cell Proteomics.* 2005 Feb;4(2):144-55
- Desiere F\*..Mallick P\*, ... , Aebersold R: **Annotation of the Human Genome with Peptide Sequences obtained by High-Throughput Mass Spectrometry.**, *Genome Biology.*2004,6:R9
- Kleiger G, Panina EM, Mallick P, Eisenberg D: **PFIT and PFRIT: bioinformatic algorithms for detecting glycosidase function from structure and sequence.** *Protein Sci* 2004, 13:221-229.
- Strong M, Mallick P, Pellegrini M, Thompson MJ, Eisenberg D: **Inference of protein function and protein linkages in Mycobacterium tuberculosis based on prokaryotic genome organization: a combined computational approach.** *Genome Biol* 2003, 4:R59.
- Mallick P, Marcotte E: **Making sense of proteomics: Using bioinformatics to discover a protein's structure, functions and interactions.** *Proteins and Proteomics: A Laboratory Manual*, Dec. 2002, Cold Spring Harbor Laboratory Press
- Mallick P, Boutz DR, Eisenberg D, Yeates TO: **Genomic evidence that the intracellular proteins of archaeal microbes contain disulfide bonds.** *Proc Natl Acad Sci U S A* 2002, 99:9679-9684.
- Mallick P, Weiss R, Eisenberg D: **The directional atomic solvation energy: an atom-based potential**

**for the assignment of protein sequences to known folds.** *Proc Natl Acad Sci U S A* 2002, **99**:16041-16046.

Kleiger G, Grothe R, Mallick P, Eisenberg D: **GXXXG and AXXXA: common alpha-helical interaction motifs in proteins, particularly in extremophiles.** *Biochemistry* 2002, **41**:5990-5997.

French SW, Shen RR, Koh PJ, Malone CS, Mallick P, Teitell MA: **A modeled hydrophobic domain on the TCL1 oncoprotein mediates association with AKT at the cytoplasmic membrane.** *Biochemistry* 2002, **41**:6376-6382.

Mallick P: **The accidental bioinformaticist.** *J Cell Biochem* 2000, **80**:208-209.

Kleiger G, Beamer LJ, Grothe R, Mallick P, Eisenberg D: **The 1.7 Å crystal structure of BPI: a study of how two dissimilar amino acid sequences can adopt the same fold.** *J Mol Biol* 2000, **299**:1019-1034.

Mallick P, Goodwill KE, Fitz-Gibbon S, Miller JH, Eisenberg D: **Selecting protein targets for structural genomics of *Pyrobaculum aerophilum*: validating automated fold assignment methods by using binary hypothesis testing.** *Proc Natl Acad Sci U S A* 2000, **97**:2450-2455.

### Selected Invited Talks

**Gifts and Dreams.** Keynote Speaker, *Washington University Engineering Honours Banquet*, Dec 1997  
**From Genome To Function,** *3rd Critical Assessment of Structure Prediction*, Dec 1998

**Computational Analysis of Genome Sequences,** *Department of Energy Computational Structural Biology Research Meeting*, Dec 1998

**Whole Genome Structure Prediction,** *Assessing Resources for Genomics, Proteomics...*, May 1999

**Protein Structure Prediction,** *Bioinformatics Seminar Series, CSU Northridge*, Nov 1999

**Interfacing with the TB Structural Genomics Consortium,** *Keystone Symposium*, January 2001

**Bioinformatics of the TB SGC,** *NIH Meeting on Structural Genomics Bottlenecks*, November 2001.

**Bioinformatics of the TB SGC,** *Structural Genomics of Pathogenic Protozoa Meeting*, Apr 2002.

**Using Bioinformatics to Discover Cell Biology,** *Syddansk University Seminar*, May 2002.

**Developing Empirical Energy Functions For Structure Prediction,** *SAC-CASP*, Dec 2002.

**Approaches to Serum Marker Discovery,** *NSF-IPAM Proteomics*, Apr 2004

## **Professional Organizations**

American Association for the Advancement of Science, American Chemical Society, Association for Computing Machinery, American Society for Mass Spectrometry, Golden Key National Honorary Society, Human Proteome Organization, The Institute of Electrical and Electronics Engineers, International Society for Computational Biology, Mars Society, National Space Society, Protein Society.

## **Honours, Awards and Fellowships**

Dean's List, College Honours, Class of 1983 Scholarship, 1996 Leadershape Institute Scholarship, 1998 UCLA Chemistry Graduate Teaching Excellence Award, 1999 Upjohn Fellowship, 1999 NIH-NIGMS Biotechnology Fellowship, 2000-2002 NSF IGERT Fellowship

## **Personal Interests**

Volunteering (principally Habitat for Humanity and Aids Research Alliance), Juggling (Member of Los Angeles Troupes, Cirque Berzerk, The MUMs), Magic (Member, Magic Castle, Hollywood), Performance Art, Triathlons (Olympic Distance), Rock climbing, Volleyball, Tennis, Fiction Writing, Poetry, Piano, Graphic arts, Paper Collage Art, Cooking, Woodworking.