

**Teresa M. Przytycka**  
Senior Investigator

Head  
**Algorithmic Methods in Computational and  
Systems Biology Section**

**NCBI, NLM, NIH**

**Curriculum Vitae**

October 2, 2012

NIH/NLM/NCBI  
8600 Rockville Pike  
Bethesda, MD 20894  
e-mail [przytyck@ncbi.nlm.nih.gov](mailto:przytyck@ncbi.nlm.nih.gov)  
web [www.ncbi.nlm.nih.gov/CBBresearch/Przytycka/index.html](http://www.ncbi.nlm.nih.gov/CBBresearch/Przytycka/index.html)  
phone (301) 402-1723

**Research interests:**

My research interests concentrate on computational modeling and analysis of biological processes, with emphases on hypothesis and theory-driven questions that are enabled by large-scale data analysis using (but not limited to) graph theoretical and algorithmic approaches. I frequently look at these processes through evolutionary lenses, focusing on evolutionary forces that shaped biomolecules on sequence, structure, and network levels.

I am particularly interested exploring how variations in sequence, structure, and cellular context impact gene expression and gene function on molecular, systems biology, and evolutionary levels. On molecular level, I focus on changes in RNA and DNA structure in result mutations (RNA) and supercoiling (DNA). However I am also looking at DNA structure and sequence in the context of chromatin structure and gene regulation.

Using systems biology approaches, my group strives to understand the emergence of complex disease phenotypes such as cancer, to identify molecular pathways dys-regulated in diseases, and to develop computational methods for detecting causal genetic mutations, and epistatic interactions.

**Employment and Education:**

2010 – current	Senior Investigator Computational Biology Branch, NIH/NLM/NCBI
----------------	---

2003 – 2010	Investigator, Computational Biology Branch, NIH/NLM/NCBI
2002 - 2003	Associate Research Scientist; Johns Hopkins University, Department of Biophysics
2000 - 2002	Research Associate Johns Hopkins Medical Institutes, Department of Biophysics and Biophysical Chemistry
1999 - 2000	Burroughs Wellcome Fellow in Computational Biology Johns Hopkins Medical Institutes, Department of Biophysics and Biophysical Chemistry
1997 - 1999	Sloan-DOE fellow in Computational Biology Johns Hopkins Medical Institutes, Department of Biophysics
1992 - 1996	Assistant Professor Department of Computer Science; Odense University, Denmark,
1990 – 1992	Assistant Professor (visiting) Department of Computer Science University of California, Riverside, Department of Computer Science,
1990	PhD in Computer Science, University of British Columbia Prof. David Kirkpatrick, advisor
1986 -1990	PhD student University of British Columbia, Department of Computer Science
1982 - 1986	Research and teaching assistant (pre-doctoral) Warsaw University, Dept. Mathematics, Mechanics and Informatics
1982 -	master in Computer Science, Prof. Antoni Kreczmar, advisor
1977 - 1982	undergraduate / master student Warsaw University, Depart. Mathematics, Mechanics and Informatics

### **Other current appointments**

2012 – present	Adjunct Professor, Bioinformatics Graduate Program at Boston Univ.
2011 – present	co-director of Boston University– NIH graduate partnership program
2002 – present	Johns Hopkins University, lecturer (Computational Biology)
2012-- present	Standing member of Modeling and Analysis of Biological Systems (MABS) study section NIH Center For Scientific Review
2011-- present	NIH Tenure Track Committee sitting member of the Computer Scientist Review Panel

## **Editorial responsibilities**

- **PloS Computational Biology**; associate editor
- **IEEE Transactions on Computational Biology and Bioinformatics**; associate editor
- **BMC Bioinformatics**; associate editor
- **Algorithms**; Editorial Board Member

## **Awards/fellowships**

- NIH K01 award (1K01HG00031-01A1) award (2000-2003)
- Burroughs Wellcome Fellow in Computational Biology (1999 – 2000);
- Sloan Foundation and the U.S. Department of Energy Fellowship in Computational Biology (1997-1999 )
- Invited Member of Institute of the Discrete Mathematics and Computer Science (DIMACS) during the special program in Computational Biology (November 1995) ;
- Invited Member of Institute of the Discrete Mathematics and Computer Science (DIMACS) Institute during the special year on Massively Parallel Computation9 (November 1993);
- I.W. Killam Memorial Predoctoral Fellowship (1989-1990);
- British Columbia Advanced Systems Institute Graduate Student Scholarship (1987-1990);
- The University of British Columbia Graduate Fellowship (1987-1989);
- Warsaw University President's Award for teaching (1983);
- Warsaw University President's Award for top students (1977-1982).

## **Selected Invited / Keynote talks (selected from >50)**

- RECOMB 2012, invited speaker on the special session “Emerging Areas and Challenges in Computational Biology”
- NIH Director’s Seminar 2011
- Cold Spring Harbor Meeting, Network Biology 2011
- Keystone Symposium on Biomolecular interaction networks: function and disease; 2010
- 2011 EU-US Frontiers of Engineering Symposium
- Systems Biology: Integrative, Comparative, and Multi-Scale Modeling, University of Iowa, June 2009 –*plenary speaker*
- Brazilian Symposium in Bioinformatics 2009, *keynote speaker*
- 9<sup>th</sup> International Workshop on Data Mining in Bioinformatics, 2010, *keynote speaker*

- International Workshop on Bioinformatics Research and Applications, 2006, University of Reading, UK, *keynote speaker*.
- University of Maryland, Colloquium of Department of Mathematics 2005

### **Invited program committee member/chair (selected from >30)**

- Workshop on Algorithms for Bioinformatics WABI 2011 – invited program committee co-chair
- 16<sup>th</sup> International Conference on Research in Computational Biology, RECOMB, Program Committee member - 2010, 2011, 2012
- ISMB - Annual International Conference on Intelligent Systems for Molecular Biology co-chair of evolutionary and comparative genomics section – 2010, 2011, 2012
- SIAM Discrete Mathematics meeting 2012 – Invited Organizing Committee Member
- First IEEE international Conference on Computational Advances in Bio and medical Sciences (ICCABS2011) Program Committee co-chair
- Keystone Symposium “Biomolecular interaction networks: function and disease“ conference co-chair 2010
- RECOMB Satellite Workshop on Systems Biology/Regulatory Genomics Program Committee member - 2005, 2006, 2007, 2010, 2012
- RECOMB Satellite Workshop on Comparative Genomics – 2008, 2010, 2011, 2012
- ISBRA International Symposium on Bioinformatics Research and Applications program committee 2007, 2008, 2009, 2010 (program committee co-chair), 2011, 2012
- PSB –Pacific Symposium on Biocomputing, 2009, 2010 – co-chair of the session on Dynamic of Biomolecular networks ; 2013 – co-chair of the workshop on : “Modeling cell heterogeneity: from single-cell variations to mixed cells populations”

### **Member of grants review panels:**

- NIH sitting member MABS study section 2012 – present
- NIH MABS study section 2011
- NIH NHGRI Encode technology development)2011
- NIH MDMA study section)2011
- NSF panels 2010, 2012
- NIH NCCR Biomedical Technology Research Resource (site visit) 2010
- NIH MABS study section 2008
- NIH MABS study section 2005
- NIH MABS study section 2004

- Ad-hoc International Reviewer for grant proposals (European Union, Israel, Canada)

## **Journal Reviewer**

### **Computational Molecular, Evolutionary and Systems Biology:**

Science, PNAS; Nature Protocols, Nature Molecular Systems Biology; Genome Research, Genome Biology, PloS Computational Biology, PloS Genetics, PloS One, Proteins, Nucleic Acid Research, Bioinformatics, Journal of Computational Biology, Journal of Molecular Biology, Protein Science, Algorithms for Molecular Biology, BMC Bioinformatics, BMC Evolutionary Biology, BMC Genomics, Genome, Molecular Biology and Evolution

### **Mathematics and Computer Science:**

Algorithmica, SIAM Discrete Mathematics, Transactions on Algorithms, Theoretical Computer Science, Discrete Applied Mathematics.

## **Intramural NIH professional service**

- 2012- Chair, Earl Stadtman investigator search committee, Systems Biology
- 2011- Earl Stadtman investigator search committee, Systems Biology
- 2010- Earl Stadtman investigator search committee, Computer Science
- 2009- Earl Stadtman investigator search committee, Systems Biology
- 2009 Search Committee member Eye Institute
- 2006- 2009 Trans-NIH Research Initiative in Systems Biology, Steering Committee
- 2009 NIH Research Festival, session co-chair
- 2008-trans NIH Systems Biology Workshop – co-organizer
- NIH Structural Biology Special interest group:
  - 2006/7 chairman
  - 2005/6 vice-chairman,
  - 2004/5 Steering Committee member
- 2003-2009 chair of the CBB seminar series
- 2004-2006, 2008 co-organizer of the CBB/NCBI Journal Club

## Mentoring

### Current mentoring (students/postdoctoral fellows)

- Yang Huang, PhD, postdoctoral fellow, started August 2007.
- Damian Wojtowicz, PhD, postdoctoral fellow, started July 2008.
- Yoo-Ah Kim, PhD, research fellow, started December 2008
- DongYeon Cho, PhD, postdoctoral fellow, started September 2009
- Jan Hoinka, Master Degree, Postbac fellow, started July 2011
- Xiangjun Du, postdoctoral fellow, started September 2011

### Mentoring of junior faculty

- Susan T. Harbison, Ph.D. E Earl Stadtman Tenure-Track Investigator, NHLBI
- Eric Batchelor, PhD Earl Stadtman Tenure-Track Investigator, NCI

### Past mentoring (reversely chronological order)

- Raheleh Salari, PhD, Postdoctoral Research Fellow, 2010-2011. Next position: fellow at Stanford University.
- Yang Huang, PhD, postdoctoral fellow, August 2007-October 2012, Next position:Enrich Consulting, San Jose, CA.
- Jie Zhang; postdocotral fellow 2006-2010. Next position: assistant professor at Nanyang Technological University, Singapore
- Raja Jothi, PhD., postdoctoral fellow 2004-2007. Currently Tenure Track Investigator at NIEHS, NIH, Research Triangle Park, NC.
- Katia Guimaraes PhD., research fellow 2005-2007. Currently associate professor at Universidade Federal de Pernambuco, Brazil.
- Elena Zotenko, graduate student 2004-2007 (supervised jointly with Dianne O'Leary, University of Maryland). Currently a bioinformatics researcher (officer) at Garvan Institute, Sidney, Australia.

### Awards and honors to postdoctoral fellows 2009-2012:

2012 FARE <sup>1</sup>	Xiangjun Du
2012 FARE	Yang Huang
2012 JMM <sup>2</sup>	Yang Huang, invited session speaker
2012 AMS <sup>3</sup> meeting	Yang Huang, invited session speaker
2011 FARE	Damian Wojtowicz
2011 INOFRMS <sup>4</sup>	Yoo-Ah Kim, invited session speaker
2011 RECOMB	Raheleh Salari, best poster award
2010 FARE	Yoo-Ah Kim
2009 FARE	Yang Huang
2009 RECOMB Sys Bio	Damian Wojtowicz, poster selected for oral presentation

<sup>1</sup> NIH Fellows Award for Research Excellence

<sup>2</sup> SIAM Joint Mathematics Meetings

<sup>3</sup> American Mathematical Society

<sup>4</sup> The Institute for Operations Research and the Management Sciences