

# MICKEY KOSLOFF

<http://www.duke.edu/~mk81>

Duke University Medical Center • 2351 Erwin Rd., Box 3802 • Durham, NC 27710, USA

+1-919-684 2767 (Work) • +1-919-684 3826 (Fax)

mickey 'dot' kosloff 'at' duke 'dot' edu

## Education:

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	<b>Duke University Medical Center</b>	Durham, NC, USA
2006-present	Post-doctoral training (computational and experimental biology) with Dr. Vadim Arshavsky.	
	<b>Columbia University, Department of Biochemistry and Molecular Biophysics</b>	New York, NY, USA
2003-2006	Post-doctoral training (computational biology) with Dr. Barry Honig.	
	<b>The Hebrew University, Department of Biological Chemistry</b>	Jerusalem, Israel
2003	Post-doctoral training (computational biology) with Prof. Shy Arkin.	
2003 (april)	PhD Structural and Molecular Biochemistry ( <i>summa cum laude</i> ). Thesis title: "modulation of G-protein function as molecular switches".	
1996-2002	PhD studies with the late Prof. Zvi Selinger.	
1996	MSc Biochemistry.	
	<b>The Hebrew University</b>	Jerusalem, Israel
1994	BSc Chemistry in the Amirim interdisciplinary honor program ( <i>summa cum laude</i> ). Graduated first in class, with a 98.0 point average (out of 100).	

## Professional Experience:

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2006-present	Research associate with Dr. Vadim Arshavsky (Duke University). <ul style="list-style-type: none"> <li>• Combine computational and experimental methods to decipher the structural basis for the function and specificity of RGS proteins.</li> <li>• Analyze the structural basis for protein translocation and binding to membranes in the vertebrate visual system.</li> <li>• Investigate the functional roles of membrane anchorage in selected RGS family members.</li> </ul>
2003-2006	Research scientist with Dr. Barry Honig (Columbia University). <ul style="list-style-type: none"> <li>• Developed computational approaches to understand the function and specificity of signal transduction proteins using structure comparison, structure prediction and energetic/electrostatic calculations.</li> <li>• Quantified structure dissimilarity and searched for sequence-similar structure-dissimilar proteins in the PDB.</li> <li>• Analyzed the structural basis for substrate specificity in the GST family using homology modeling and structure comparison.</li> <li>• Predicted numerous structures successfully in the Critical Assessment of Techniques for Protein Structure Prediction (CASP6) in 2004 and assisted with CASP7 signal transduction targets in 2006.</li> </ul>
2003	Post-doctoral scientist with Prof. Shy Arkin (Hebrew University). <ul style="list-style-type: none"> <li>• Searched for structural membrane-targeting motifs.</li> <li>• Modeled novel SARS membrane proteins.</li> </ul>
2001-2003	Co-founder of Promethium Drug Development (with Prof. Zvi Selinger), a biotechnology startup company developing novel anti-cancer drugs.
2000 (fall)	Visiting researcher with Prof. Arieh Warshel (USC, Los Angeles). <ul style="list-style-type: none"> <li>• Used molecular simulation (QM/MM) to study enzymatic catalysis in the G-protein Ras.</li> </ul>

- 1996-2002 Researcher with Prof. Zvi Selinger (Hebrew University).
- Investigated the membrane anchorage of G-proteins and the regulation of G<sub>q</sub> translocation in the *Drosophila* fly visual transduction cascade.
  - Studied the structural basis for catalysis by G-proteins.
  - Developed small molecules to restore catalytic activity to mutant, inactive G-proteins.
- 1994-1996 Researcher with Prof. Zvi Selinger (Hebrew University).
- Developed new experimental methods to study the regulated covalent modifications of G-proteins in the *Drosophila* phototransduction cascade.
- 1993-1994 Research assistant - Amirim honor program research project (Hebrew University).
- Developed a combined chemical and biological approach to synthesize the second messenger cyclic-ADP ribose.
- 1986-1991 System analyst – IDF intelligence corps (last rank - captain).
- Initiated, defined and developed specialized computerized systems, directing several teams of software/hardware engineers.
  - Commanded the three month professional segment of an officer training course.
  - Invited lecturer on system analysis and specialized computer systems to many technical courses.

### Teaching Experience (partial):

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- 2003 Developed and taught an advanced EMBO workshop for high school science teachers from Israel and Europe (Belmonte Science Center): “Structural Bioinformatics”.
- 2003 Developed and taught a new course for graduate students (Hebrew University): “Using Protein Structure Analysis in experimental research”.
- 2002 Invited lecturer in a seminar series for high school science teachers (Belmonte Science Center).
- 2002 Invited lecturer in a popular science lecture series (part of the Jerusalem Science Festival): “Biological Switches, Cancer and Future Anti-Cancer Drugs”.
- 2001, 2002 Instructor in TA teaching skills workshops (Hebrew University).
- 1999-2003 Invited lecturer in five undergraduate/graduate courses and workshops (Hebrew University, Tel-Aviv University, Weizmann Institute).
- 1994-2002 Teaching assistant (Hebrew University, lectures) in the courses: “Advanced Biochemistry lab”, “Advanced Biochemistry”, “Advanced Biochemistry lab for the Etgar Biology honor program”, “General and Organic Chemistry for Biology Students”, “Structural Biology and Modeling”.

### Grants, Awards and Honors

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#### *Competitive Funding and Grants:*

- 2008-2009 Teragrid computational resources grant.
- 2004-2007 The Human Frontier Science Program (HSFP) long term fellowship.
- 2000-2001 The Landau scholarship for outstanding PhD students.

#### *Awards and Honors:*

- 2003 The Teva prize for a young scientist - awarded by the Israeli Society of Biochemistry and Molecular Biology.
- 2003 The Kaye prize for innovative research by a young scientist.
- 2003 PhD thesis (Hebrew University) - *summa cum laude*.
- 1996 The Dean-Intel award for MSc students.
- 1994-1996 Hebrew University Rector’s MSc scholarship.
- 1993, 1994 Hebrew University Dean’s end-of-year list of excellence.
- 1993, 1994 Hebrew University Rector’s prize for excellence.
- 1992-1994 The Amirim merit-based undergraduate scholarship.

#### *Best Poster Prizes:*

- 2008 Experimental Biology 2008 - best poster presentation contest winner (awarded by SciVee).

- 2005 Biology and Chemistry of Vision FASEB conference.  
 2001 Annual Israeli Bioinformatics symposium.  
 2000, 2002 Hebrew University's Faculty of Sciences open day.  
*Travel Awards:*  
 2008 3<sup>rd</sup> RGS Protein Colloquium.  
 2006 The Yeshaya Horowitz and the Center for Complexity Science travel fellowship to ECCB06.  
 2001 Sequence, structure and function in membrane protein systems conference.  
 2001 Protein Society annual symposium.  
 2001 Katzir award.  
 2000 ISMB conference.

### Peer Reviewed Publications

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1. **Kosloff M.**, Arshavsky V.Y. "Engineering the specificity of RGS interactions with G proteins". *In preparation*.
2. **Kosloff M.**, Arshavsky V.Y. "Identifying specificity-determining residues in RGS-G protein interactions by combing computations with experiments". *In preparation*.
3. **Kosloff M.**, Alexov E., Arshavsky V.Y., Honig B. "Electrostatic and lipid-anchor contributions to the interactions of transducin with membranes: mechanistic implications for activation and translocation". *Journal of Biological Chemistry*, 2008, 283 (45): 31197-31207.
4. **Kosloff M.**, Kolodny R. "Sequence-Similar, Structure-Dissimilar Protein Pairs in the PDB". *Proteins: Structure, Function and Bioinformatics*, 2008, 71 (2): 891-902.
5. **Kosloff M.** et al. (co-authors are all 52 JCSG consortium personnel) "Comparative structural analysis of a novel glutathione S-transferase (Atu5508) from *Agrobacterium tumefaciens* at 2.0 angstrom resolution". *Proteins: Structure, Function and Bioinformatics*, 2006, 65 (3): 527-537.
6. **Kosloff M.** "Modulation of G-protein function as molecular switches". 2003, PhD Thesis (peer reviewed and published by the Hebrew University).
7. **Kosloff M.**, Selinger Z. "GTPase catalysis by Ras and other G-proteins: insights from Substrate Directed SuperImposition". *Journal of Molecular Biology*, 2003, 331 (5):1157-1170.
8. **Kosloff M.**, Elia N., Joel-Almagor T., Timberg R., Zars T.D., Hyde D.R., Minke B., Selinger Z. "Regulation of light-dependent Gq-alpha translocation and morphological changes in fly photoreceptors". *EMBO Journal*, 2003, 22 (3): 459-468.
9. **Kosloff M.**, Elia N., Selinger Z. "Structural homology discloses a bi-functional motif at the N-termini of G-alpha proteins". *Biochemistry*, 2002, 41 (49): 14518-14523.
10. **Kosloff M.**, Selinger Z. "Substrate assisted catalysis - application to G proteins". *Trends in Biochemical Sciences*, 2001, 26 (3): 161-166.
11. **Kosloff M.**, Zor T., Selinger Z. "Substrate-assisted catalysis: Implications for biotechnology and drug design". *Drug Development Research*, 2000, 50 (3-4): 250-257.

### Published Conference Proceedings

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1. **Kosloff M.**, Elia N., Timberg R., Selinger Z. "Activity-dependent translocation of the G-protein in *Drosophila* photoreceptors". *Neural Plasticity*, 2002, 9 (2): 94-94.
2. Litvak Y., **Kosloff M.**, Selinger Z. "Assay of GTP hydrolysis by Ras". *Neural Plasticity*, 2002, 9 (2): 98-98.
3. **Kosloff M.**, Ayalon E., Selinger Z. "Activity dependent translocation of DGq in *Drosophila* photoreceptors". *Neuroscience Letters*, 1998, Suppl. 51, S23-S23.

### Invited Presentations (partial):

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- 2008 Department of Biochemistry, UCSD.  
 2008 Duke Eye Center, Duke University Medical School.  
 2007 Department of Biology, Ben-Gurion University.  
 2007 HSFP annual meeting, Brisbane.  
 2006 Department of Biological Chemistry, Hebrew University.

2006	Department of Pharmacology, Mount Sinai School of Medicine.
2006	Duke Eye Center, Duke University Medical School.
2005	Faculty of Chemistry, Technion.
2005	BigRoc seminar series, Weizmann Institute.
2005	Department of Physiology, Hebrew University.
2005	Department of Biochemistry, Tel Aviv University.
2004	Department of Biological Chemistry, Hebrew University.
2003	Advanced science lecture series for science teachers, Belmonte Science Center.
2003	Department of Structural Biology, Weizmann Institute.
2003	Israeli Society of Biochemistry and Molecular Biology Teva Prize lecture.
2003	Bioinformatics workshop, Weizmann Institute.
2002	Popular science lecture series, the Jerusalem Science Festival.
2002	Bloomsbury Biocomputing club, University College London.
2002	Department of Biochemistry, University of Cambridge.
2002	Department of Molecular Biophysics and Biochemistry, Yale University.
2002	Department of Biological Chemistry, Hebrew University.

### Selected Poster Presentations and Awards

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- “Deciphering RGS - G protein specificity and selectivity by combining computational and experimental methods”:
  - 3<sup>rd</sup> RGS Protein Colloquium / Experimental Biology 2008 (*travel award, winner of SciVee’s best poster presentation at the Experimental Biology 2008 conference*).
- “Characterizing transducin’s interactions with membranes: mechanistic implications for activation and translocation”:
  - FASEB conference on the Biology and Chemistry of Vision 2007.
- “Sequence-Similar, Structure-Dissimilar Protein Pairs in the PDB”:
  - ECCB 2006 (*travel award*).
- “Computational investigations of the reversible interactions of G-proteins with membranes surfaces”:
  - ECCB 2006 (*travel award*).
- “Computational investigation of the role of electrostatics in the interaction of transducin with membrane surfaces”:
  - FASEB conference on the Biology and Chemistry of Vision 2005 (*awarded best poster prize*).
- “Elucidating the mechanism of Ras GTPase using Substrate Directed Super-Imposition”:
  - Annual Israeli Bioinformatics symposium 2003.
- “A novel amphitropic motif in the N-terminal helix of heterotrimeric G-proteins”:
  - Annual Israeli Bioinformatics symposium 2002.
  - FASEB conference on Protein Lipidation, Signaling and Membrane Domains 2002.
- “Activity dependent translocation of the DGq protein in vivo”:
  - Sequence, Structure and Function in Membrane Protein Systems conference 2001.
  - The 3rd Federation of Israel Societies for Experimental Biology Congress 2002.
  - FASEB conference on Protein Lipidation, Signaling and Membrane Domains 2002.
  - Open day of the Hebrew U. Faculty of Sciences 2002 (*awarded best poster prize*).
- “Mechanism and benefits of catalytic inefficiency in G-proteins”:
  - Annual Israeli Bioinformatics symposium 2001 (*awarded best poster prize*).
  - Sequence, Structure and Function in Membrane Protein Systems conference 2001 (*travel award*).
  - Protein Society annual symposium 2001 (*travel award*).
- “How did evolution maximize catalytic inefficiency to regulate the GTPase super-family?”:
  - ISMB 2000 (*travel award*).
  - Open day of the Hebrew U. Faculty of Sciences 2001 (*awarded best poster prize*).

**Service**

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- 2008-present BioAbroad (Israeli scientists networking organization) NC regional manager.  
2008-present Duke University Postdoctoral Association – council member.  
2001-2002 Advisor for new teaching assistants, Hebrew University.

**Professional Societies**

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- The American Society for Pharmacology and Experimental Therapeutics.  
International Society for Computational Biology.  
Biophysical Society.  
Protein Society.