

Margaret E. Johnson

Johns Hopkins University
School of Arts & Sciences
110 Jenkins Hall
Baltimore, MD 21218

margaret.johnson@jhu.edu
Work: (410) 516-2376
Cell: (646) 326-5132
Office: 121C Mergenthaler

Education:

University of California, Berkeley 2004-2009
Ph.D in Bioengineering, Thesis Adviser: Teresa Head-Gordon
Thesis title: *Understanding the interplay of structure and dynamics in liquids using coarse-grained models and experiment*

Columbia University 2000-2004
B.S. in Applied Math *Magna Cum Laude*
Minor in Bioengineering

Professional Experience:

Assistant Professor, Department of Biophysics, Johns Hopkins University. 2013-Present

National Institutes of Health (NIH) 2009-2013
Postdoctoral Researcher, Laboratory of Chemical Physics. Research Adviser: Dr. Gerhard Hummer

Research Support:

Current:
NIH R00 Pathway to Independence Award R00GM098371 *Modeling the nucleation of clathrin coated vesicles at the membrane.* \$249,000/year. 2013-2016

Prior:
NIH K99 Pathway to Independence Award: *Modeling the nucleation of clathrin coated vesicles at the membrane.* 2011-2013

Publications:

***Corresponding Author**

Yogurtcu, O.N. & **Johnson, M.E.*** Theory of bi-molecular association dynamics in 2D for accurate model and experimental parameterization of binding rates. *J. Chem. Phys.* **143**, 084117 (2015).

Johnson, M.E.* & Hummer, G. Free propagator reweighting integrator for single-particle dynamics in reaction-diffusion models of heterogeneous protein-protein interaction systems. *Phys. Rev. X* **4**, 031037 (2014). PMC4440698, PMID: 26005592.

Johnson, M.E. & Hummer, G. Evolutionary pressure on the topology of protein interface interaction networks. *J. Phys. Chem. B* **117**, 13098-13106 (2013). PMC3808520 PMID: 23701316

Johnson, M.E.* & Hummer, G. Interface resolved network of protein-protein interactions. *PLOS Comput Biol.* **9**, e1003065 (2013). PMC3656101 PMID: 23701316

Johnson, M.E. & Hummer, G. Characterization of a Dynamic string method for the construction of transition pathways in molecular systems. *J. Phys. Chem. B* **116**, 8573-8583 (2012). PMC3406241 PMID: 22616575

Johnson, M.E. & Hummer, G. Nonspecific binding limits the number of proteins in a cell and shapes their interaction networks. *Proc. Nat. Acad. Sci. USA.* **108**, 603-608 (2011). PMC3021073 PMID: 21187424

Ponder, J.W., Wu, C.J., Ren, P.Y., Pande, V.S., Chodera, J.D., Schnieders, M.J., Haque, I., Mobley, D.L., Lambrecht, D.S., DiStasio, R.A., Head-Gordon, M., Clark, G.N.I., **Johnson, M.E.**, Head-Gordon, T. Current status of the AMOEBA polarizable force field. *J. Phys. Chem. B.* **114**, 2549-2564 (2010). PMC2918242 PMID: 20136072

Johnson, M.E.*, Malardier-Jugroot, C. & Head-Gordon, T*. Effects of co-solvents on peptide hydration water structure and dynamics. *Phys. Chem. Chem. Phys.* **12**, 393-405 (2010).

Malardier-Jugroot, C., Bowron, D.T., Soper, A.K., **Johnson, M.E.**, & Head-Gordon, T. Structure and water dynamics of aqueous peptide solutions in the presence of co-solvents. *Phys. Chem. Chem. Phys.* **12**, 382-392 (2010).

Johnson, M.E. & Head-Gordon, T. Assessing thermodynamic-dynamic relationships for waterlike liquids. *J. Chem. Phys.* **130**, 214510 (2009).

Johnson, M.E., Malardier-Jugroot, C., Murarka, R.K. & Head-Gordon, T. Hydration water dynamics near biological interfaces. *J. Phys. Chem. B.* **113**, 4080-4092 (2009).

Malardier-Jugroot, C., **Johnson, M.E.**, Murarka, R.K. & Head-Gordon, T. Aqueous peptides as experimental models for hydration water dynamics near protein surfaces. *Phys. Chem. Chem. Phys.* **10**, 4903-4908 (2008).

Johnson, M.E., Head-Gordon, T. & Louis, A.A. Representability problems for coarse-grained water potentials. *J. Chem. Phys.* **126**, 144509 (2007).

Head-Gordon, T. & **Johnson, M.E.** Tetrahedral Structure or chains for liquid water. *Proc. Nat. Acad. Sci. USA* **103**, 7973-7977 (2006).

Awards and Honors:

NIH K99/R00 Pathway to Independence Award: <i>Modeling the nucleation of clathrin coated vesicles at the membrane</i>	2011
Mini Statistical Mechanics Meeting, Berkeley, CA: Grand Prize Poster Award	2011
NIH Fellows Award for Research Excellence (FARE)	2010
American Chemical Society Conference San Francisco, CA: Physical Chemistry Outstanding Poster Award	2006
Nominated by Columbia Dept. of Applied Math and Physics for George Vincent Wendell Memorial Award	2004

Teaching Experience:

Johns Hopkins University

Undergraduate teaching: Models and Algorithms in Biophysics. AS 250.302, Spring semester.	2015-Present
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Graduate teaching: Biophysics Graduate Program Introductory Computer Bootcamp. Organizer and instructor, Fall semester.	2014
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Previous teaching experience

Creator and co-leader of Biophysics journal club for summer undergraduate researchers, Bethesda, NIH.	2012
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Graduate Student Instructor, UC Berkeley, Computational Methods in Biophysics BE243/143	2007
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Graduate Student Instructor, UC Berkeley, Freshman Physics 7A 2005

Leadership and Service:

NIMBioS Working Group, “Improving Tools for Spatially-Realistic Cell Simulations”. PIs: Robert F Murphy, CMU and James Faeder, Univ. Pittsburgh 2015-2017

Faculty mentor, STEM Achievement for Baltimore Elementary Schools (SABES). Johns Hopkins NSF Funded program. 2014-2015

Workshop Chair, Artificial Cells: Understanding and Engineering, Biophysical Society Meeting, Baltimore. 2015

Graduate Board Oral exam committee, Program in Molecular Biophysics 2014, 2016

Thesis Committee member, Biology Department, Chemical and Biological Engineering Department. 2014-2015

Judge for NIH-NIDDK Fellows retreat 2011-2013

Judge for NIH Graduate student research symposium 2012

Invited Seminars:

Center for Cell Analysis and Modeling, University of Connecticut Health Center, Farmington, CT. May 2016

NIMBioS Working Group on “Improving Tools for Spatially Realistic Cell Simulations”, Knoxville, TN. Mar. 2016 & Dec. 2015

CECAM Workshop on Molecular and Chemical Kinetics, Free University, Berlin, Germany. (Declined-Maternity) Sept. 2015

Telluride Science Research Center, Workshop on Macromolecular Crowding, Telluride, CO. June 2015

Department of Computational and Systems Biology, Univ. of Pittsburgh, Pittsburgh, PA. March 2015

Krasnow Institute for Advanced Study, George Mason University, VA. Feb. 2015

Banff International Research Station workshop on Single Particle Reaction Diffusion Methods, Banff, Canada.	Nov. 2014
IBR Retreat, Johns Hopkins University, Baltimore, MD.	Sept. 2013
School of Public Health, Johns Hopkins Univ. Baltimore, MD.	March 2013
NIDDK Fellows Retreat, NIH, Bethesda, MD.	March 2013
Laboratory of Chemical Physics, NIH, Bethesda, MD.	Nov 2012
NIDDK Fellows Retreat, NIH, Bethesda, MD.	April 2012
Laboratory of Chemical Physics, NIH, Bethesda, MD.	Feb. 2012
Biophysical Society Meeting platform presentation, San Diego, CA.	Feb. 2012
Biophysics Department, Johns Hopkins University, Baltimore, MD.	Jan. 2012
Chemistry Department, University of Chicago, Chicago, IL.	Jan. 2012
Stadtman Seminar, NIH, Bethesda, MD.	Dec. 2011
NHLBI Systems Biology research seminar, NIH, Bethesda, MD.	Oct. 2011
Gordon Research Conference: Cellular Systems Biology. Davidson, NC	July 2011
NIDDK Fellows Retreat, NIH, Bethesda, MD.	April 2011
Biophysical Society Meeting platform presentation, Baltimore, MD.	March 2011
Laboratory of Chemical Physics, NIH, Bethesda, MD.	2010
Prof. Ken Dill Research Group, UCSF, San Francisco, CA.	2008
Prof. Jih-Wei Chu Research Group, UC Berkeley, Berkeley, CA.	2008

Recent Contributed Talks/Posters:

Biophysical Society Meeting, Los Angeles, CA	Feb 2016
Biophysical Society Meeting, Baltimore, MD	Feb 2015
GRC on Stochastic Physics in Biology, Ventura, CA	Jan 2015

Berkeley Mini Statistical Mechanics Meeting, Berkeley, CA	2007-2015
Biophysical Society Thematic Meeting, Modeling of Biomolecular Systems Interactions, Istanbul, Turkey	Nov 2014
GRC on Lysosomes and Endocytosis, Andover, NH	June 2014
Biophysical Society Meeting, San Francisco, CA	Feb 2014

Advisees:

David Holland: Graduate student in Biomedical Engineering, Johns Hopkins University. October 2013-Present.

Osman Yogurtcu, PhD: Post-doctoral fellow. December 2013-Present.

Benjamin Shapiro: Master's student in Applied Math, Johns Hopkins University. 2014-Present.

Raza Ul-Haq, PhD: Post-doctoral fellow, March 2015-Feb 2016.

Undergraduate Researchers:

Rohan Tilva: Undergraduate student, Johns Hopkins University, 2015-Present.

Chris Chia: Undergraduate student in Biophysics and Mathematics, Johns Hopkins University, 2015-Present.

Pei Xue: Undergraduate student in Biophysics, Johns Hopkins University, 2014-2015.