

# Karl Andrew Johnson

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## Professional Experience

2007-present *Professor*, Department of Biology, Haverford College  
1999-2007 *Associate Professor*, Department of Biology, Haverford College  
2001-2004 *Chair*, Department of Biology, Haverford College  
1993-1999 *Assistant Professor*, Department of Biology, Haverford College  
1992 *Visiting Assistant Professor*, Yale College (Summer Programs)  
1992 *Visiting Assistant Professor*, Connecticut College (Spring Semester)  
1991 *Lecturer in Biology*, Yale University (Fall Semester)

## Education

1989-1993 *Postdoctoral Fellow*, Yale University  
Advisor: Joel Rosenbaum, Ph.D.  
1989 *Ph.D. in Biology*, Yale University  
Advisor: Ian Sussex, Ph.D.  
1987 *M.Phil. in Biology*, Yale University  
Advisor: Mary Helen Goldsmith, Ph.D.  
1983 *B.A. in Biology*, Swarthmore College  
Senior Research Advisor: Mark Jacobs, Ph.D.

## Grants (1999-present)

2000-2005 National Science Foundation RUI Research Grant  
“Tubulin Folding and Assembly in *Chlamydomonas*”  
\$247,000 (MCB-9982733 to K.A.J.)  
2000-2006 David and Lucille Packard Foundation Grant  
“Protein-Based Biomaterials for Nanotechnology”  
\$966,020 (co-PI)  
2000-2002 National Science Foundation Instrumentation Grant  
“RUI: Advanced Microscopy and Manipulation Cluster for Biological  
and Biophysical Studies.” \$169,271 (DBI-0070361, co-PI)  
2000-2002 National Science Foundation Instrumentation Grant  
“A Confocal Microscope for Research in the Biological Sciences”  
\$165,985 (DBI-0070046, co-PI)  
1999-2000 Zimmer Corporation Instrumentation Grant  
“Atomic Force Microscopy” \$100,000 (co-PI)  
1995-1999 National Science Foundation RUI Research Grant  
“Characterization of a Molecular Chaperone in the Eukaryotic  
Flagellum” \$240,000 (MCB-9506236 to K.A.J.)  
And participation in program grants to Haverford College from the Howard Hughes Medical  
Institute, the Merck Foundation, the Sherman Fairchild Foundation, and the Beckman Foundation

### **Awards, Honors and Fellowships (1999-present)**

2004-2005	Accrued Sabbatical leave (half-time)
2001-2002	Teaching with Technology Development Award, Haverford College
2000-2001	Post-Tenure Leave (full time)
1999	Faculty Innovation in Teaching Award, Haverford College

### **Courses Taught at Haverford (1999-present)**

HBiol 123	<i>Perspectives in Biology: Scientific Literacy</i> - a class for nonscientists
HBiol 200	<i>Cell Structure and Function</i> – a year long, team-taught gateway to the major
HBiol 300	<i>Laboratory in Biochemistry/Molecular Biology</i> – intensive co-taught junior laboratory
HBiol 302	<i>Cell Architecture</i> - a junior-level cell biology lecture course
HBiol 351	<i>Molecular Motors and Biological Nanomachines</i> - a literature-based senior seminar
HBiol 407	<i>Senior Research Tutorial</i> – senior research theses (required for the major)
HBiol 499	<i>Senior Departmental Studies</i> – a senior collective experience

### **Publications from Haverford (\* denotes undergraduate co-authors)**

- \*Shapiro J, \*Ingram J, **Johnson KA** (2005) Characterization of a molecular chaperone present in the eukaryotic flagellum. *Eukaryot Cell*. 4(9):1591-4. PMID: [16151252](#)
- \*Rigotti DJ, Kokona B, \*Horne T, \*Acton EK, \*Lederman CD, **Johnson KA**, Manning RS, Kane SA, Smith WF, Fairman R. (2005) Quantitative atomic force microscopy image analysis of unusual filaments formed by the *Acanthamoeba castellanii* myosin II rod domain. *Anal Biochem*. 346(2):189-200. PMID: [16213459](#)
- Fossella J, Samant SA, Silver LM, King SM, Vaughan KT, Olds-Clarke P, **Johnson KA**, Mikami A, Vallee RB, Pilder SH. (2000) An axonemal dynein at the Hybrid Sterility 6 locus: implications for t haplotype-specific male sterility and the evolution of species barriers. *Mamm Genome*. 11(1):8-15. PMID: [10602986](#)
- Johnson KA**. (1998) The axonemal microtubules of the *Chlamydomonas* flagellum differ in tubulin isoform content. *J Cell Sci*. 1998 111( Pt 3):313-20. PMID: [9427680](#)
- \*Bloch MA, **Johnson KA**. (1995) Identification of a molecular chaperone in the eukaryotic flagellum and its localization to the site of microtubule assembly. *J Cell Sci*. 108 ( Pt 11):3541-5. PMID: [8586665](#)
- Johnson, K.A. (1995) Keeping the beat: form meets function in the *Chlamydomonas* flagellum. *BioEssays* 17:847-854. DOI: [10.1002/bies.950171006](#)
- Johnson KA**. (1995) Immunoelectron microscopy. *Methods Cell Biol*. 1995;47:153-62. PMID: [7476481](#)
- Bernstein M, Beech PL, **Johnson KA**, Kozminski KG and Rosenbaum JL. (1995) New motilities and motors in the flagella of *Chlamydomonas*. In: 45th Colloquium Mosbach: The Cytoskeleton, ed. by B. Jockusch, E. Mandelkow and K. Weber. Springer-Verlag, Heidelberg, Germany, pp. 11-21.
- Johnson KA**, Haas MA, Rosenbaum JL. (1994) Localization of a kinesin-related protein to the central pair apparatus of the *Chlamydomonas reinhardtii* flagellum. *J Cell Sci*. 107 ( Pt 6):1551-6. PMID: [7962197](#)

## Publications prior to Haverford

- Kozminski KG, **Johnson KA**, Forscher P, Rosenbaum JL. (1993) A motility in the eukaryotic flagellum unrelated to flagellar beating. Proc Natl Acad Sci U S A. 90(12):5519-23. PMID: [8516294](#)
- Johnson KA**, Rosenbaum JL. (1993) Flagellar regeneration in *Chlamydomonas*: a model system for studying organelle assembly. Trends Cell Biol. 3(5):156-61. PMID: [14731610](#)
- Johnson KA**, Rosenbaum JL. (1992) Polarity of flagellar assembly in *Chlamydomonas*. J Cell Biol. 119(6):1605-11. PMID: [1281816](#)
- Johnson KA**, Rosenbaum JL. (1992) Replication of basal bodies and centrioles. Curr Opin Cell Biol. 4(1):80-5. Review. PMID: [1558756](#)
- Johnson KA**, Rosenbaum JL. (1991) Basal bodies and DNA. Trends Cell Biol. 1(6):145-9. PMID: [14731856](#)
- Diener DR, Curry AM, **Johnson KA**, Williams BD, Lefebvre PA, Kindle KL, Rosenbaum JL. Rescue of a paralyzed-flagella mutant of *Chlamydomonas* by transformation. Proc Natl Acad Sci U S A. 87(15):5739-43. PMID: [2377611](#)
- Johnson KA**, Rosenbaum JL. (1990) Basal bodies of *Chlamydomonas reinhardtii* do not contain immunologically detectable DNA. Cell. 62(4):615-9. PMID: [2386994](#)
- Johnson KA**, Sussex IM. (1990) Genomic amplification in the cotyledon parenchyma of common bean. Chromosoma. 99(3):223-30. PMID: [2397660](#)
- Johnson, KA**. (1989) The cytologic and molecular analysis of the developmentally controlled increase in nuclear DNA content in the cotyledon parenchyma of common bean, *Phaseolus vulgaris*. Ph.D. Dissertation, Yale University, New Haven, CT.

## Presentations, Posters and Talks (1999-present; \* denotes undergraduate co-authors)

- 2006 Annual Biomedical Research Conference for Minority Students (Anaheim CA) and
- 2006 Regional Microbiology Educators Student Research Symposium (Swarthmore College)  
Poster: "Using RNAi Silencing Vectors in *Chlamydomonas reinhardtii*"  
\*Dada, J, \*Naik, A and Johnson, K.
- 2006 HHMI Undergraduate Science Research Symposium at Dickinson College and
- 2006 Regional Microbiology Educators Student Research Symposium (Swarthmore College)  
Poster: "Nanoscale Assembly of Genetically and Chemically Modified M13 Viruses using Streptavidin" \*Holokawa, T and Johnson, K.
- 2006 Regional Microbiology Educators Student Research Symposium (Swarthmore College)  
Poster: "Synthesizing Photonic Structures from the M13 Bacteriophage"  
\*Hussein, M and Johnson, K.
- 2005 Regional Microbiology Educators Student Research Symposium (Swarthmore College)  
Poster: "Using RNAi Silencing Vectors in *Chlamydomonas reinhardtii*"  
\*Naik, A, \*Pratt, B and Johnson, K.
- 2005 Regional Microbiology Educators Student Research Symposium (Swarthmore College)  
Poster: "Synthesizing Photonic Structures from the M13 Bacteriophage"  
\*Hussein, M, \*Sweaney, C and Johnson, K.
- 2005 American Association of Immunologists/Experimental Biology Meeting  
Poster: "Immature CD4+CD8+ Thymocytes Fail to Polarize MTOCs in Response to TCR Stimulation" \*Chang, M, \*Locke, S, \*Nietrzeba, E, Johnson, K, and Punt J.
- 2004 Keystone Symposium on T-Cell Development (Alberta Canada)  
Poster: "Differences in Microtubule Organization between Immature and Mature T-cells" \*Nietrzeba, E, \*Locke, S, \*LaRussa, C, Johnson, K, and Punt J.
- 2002 American Chemical Society, 223<sup>rd</sup> Annual Meeting and
- 2002 Lise Meitner Symposium, Lund Sweden  
Poster: "Novel Designs of Porphyrin-Aggregates for Biomaterials Research"

- \*Sandstrom, C, \*Young, E, \*Baker, P, \*Dunetz, J, Fairman, R, **Johnson, K**, dePaula, J and Åkerfeldt, K.
- 2002 Faculty Research Co-Presentation, Haverford College  
Talk: “Good Things in Small Packages: an Interdisciplinary Approach to Biologically-Inspired Nanostructures” Åkerfeldt, K, Amador Kane, S, dePaula, J, Fairman, R, **Johnson, K**, Manning, R and Smith, W.
- 2000 Haverford Science Colloquium  
Talk: “A Tail of Many Kingdoms: Studies of Flagellar Biology”
- 2000 Mellon 3 Symposium, Swarthmore College  
Multimedia presentation: “Teaching with Technology”
- 1999 Integrated Learning Symposium Panel Presentation for Haverford Alumni

### **Synergistic Activities (1999-present)**

#### Ad Hoc Search Committees

- Physical Chemistry, 2007-2008
- Economics Search Chair, 2006-2007
- Biochemistry Search (at Bryn Mawr College) 2006-2007
- Physical Chemistry Search Chair, 2005-2006
- Molecular and Cellular Evolution Search, 2003-2004
- Ecology Search (at Bryn Mawr College) 2002-2003
- Biology/Chemistry Business Manager Search, 2002
- Molecular Neurobiology Search, 2001-2002
- Science Librarian Search, 2000
- Biology Search, 1998-1999
- Virtual field trips to the Galapagos, Welsh Valley Middle School, 2007
- Histology/microscopy workshop, Garnet Valley High School AP Biology Class, 2005
- Committee for Environmental Responsibility, Haverford College, 2005-present
- First Interdisciplinary Science Summer Journal Club, Haverford College, organizer, 2003
- Howard Hughes Program Coordinating Committee 2002-2004
- Institutional Review Board (Human Subjects), Haverford College, 2002-2004
- Koshland Integrated Natural Sciences Center Steering Committee, 2002-2003
- Radiation Safety Officer, Haverford College, 1999-2000
- Beckman Scholars Selection Committee, 1999-2000
- Distinguished Visitors Committee, 1997-2000 (Chair)

Faculty Advisor to First and Second Year Students, and Majors (annually)

Biology Department Internal Committees (Equipment, Building, Web Admin., etc.)

Ad Hoc Reviewer (Grant Applications): National Science Foundation, National Institutes of Health (Minority Biomedical Research Support Program)

Ad Hoc Reviewer (Manuscripts): Genomics, Trends in Cell Biology, Journal of Cell Science, Chromosoma

Ad Hoc Reviewer/Glossator, Personnel Cases: Haverford, Bryn Mawr, Swarthmore, Reed and Loyola Colleges

Invited contributor, Graduate Record Examination in Biochemistry, Cell and Molecular Biology

### **Professional Memberships**

American Association for the Advancement of Science

American Society for Cell Biology

American Society for Microbiology

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