# Comert Kural, Ph.D.

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## EDUCATION

***Doctor of Philosophy***, Biophysics and Computational Biology 2002-2007
University of Illinois at Urbana-Champaign, IL.
Dissertation Title: "Studying Processive Molecular Motors in Live Cells"

***Bachelor of Science***, Physics 1998-2002
Bilkent University, Ankara, Turkey.

## RESEARCH EXPERIENCE

**Assistant Professor**, Department of Physics, Ohio State University 2012

**Postdoctoral Fellow**, Immune Disease Institute, Harvard Medical School 2008-2012
Advisor: Tomas L. Kirchhausen
Identification of non-canonical clathrin coated vesicle formation in cultured cells and tissues.

**Postdoctoral Fellow**, Department of Physics, University of Illinois 2007-2008
Advisor: Paul R. Selvin
Microtubule dependent organelle transport in *C. elegans* sensory neurons.

**Graduate Research Assistant**, Biophysics and Computational Biology 2002-2007
University of Illinois at Urbana-Champaign
Advisor: Paul R. Selvin
Characterizing molecular motor processivity in live cells.

**Undergraduate Research Assistant**, Physics Department, Bilkent University 2001-2002
Advisors: Ekmel Ozbay - Mehmet Bayindir
Microcavity coupling in one dimensional photonic crystals.

## HONORS & AWARDS

NSF CAREER Award 2017

Helen Hay Whitney Foundation fellowship 2009-2012

Full ride scholarship, Osaka University Frontier Biosciences 2006

Center for Biophysics and Computational Biology fellowship, 2002-2003
University of Illinois at Urbana-Champaign

Full ride scholarship, Bilkent University, Turkey 1998-2002

**RESEARCH ARTICLES**

1. Nathan M. Willy, Joshua P. Ferguson, Scott D. Huber, Spencer P. Heidotting, Esra Aygun, Sarah A. Wurm, Ezekiel Johnston-Halperin, Michael G. Poirier, Comert Kural. "Membrane Mechanics Govern Spatiotemporal Heterogeneity of Endocytic Clathrin Coat Dynamics". ***Molecular Biology of the Cell*** 28(24), 3480-88 (2017).

2. Joshua P. Ferguson, Scott D. Huber, Nathan M. Willy, Esra Aygun, Sevde Goker, Tugba Atabey, Comert Kural. "Mechanoregulation of clathrin-mediated endocytosis". ***Journal of Cell Science*** 130(21), 3631-36 (2017).

3. Joshua P. Ferguson, Nathan M. Willy, Spencer P. Heidotting, Scott D. Huber, Matthew J. Webber, Comert Kural "Deciphering dynamics of clathrin-mediated endocytosis in a living organism" ***Journal of Cell Biology*** 214(3), 347-58 (2016).

4. Patrick D. Halley, Christopher R. Lucas, Emily M. McWilliams, Matthew J. Webber, Randy A. Patton, Comert Kural, David M. Lucas, John C. Byrd, Carlos E. Castro "Daunorubicin-Loaded DNA Origami Nanostructures Circumvent Drug-Resistance Mechanisms in a Leukemia Model" ***Small*** 12(3), 308-20 (2016).

5. Dipu Mohan Kumar, Mingqun Lin, Qingming Xiong, Mathew James Webber, Comert Kural, Yasuko Rikihisa "EtpE Binding to DNase X Induces Ehrlichial Entry via CD147 and hnRNP-K Recruitment, Followed by Mobilization of N-WASP and Actin" ***mBio*** 6(6), e01541-15 (2015).

6. Comert Kural*, Ahmet Ata Akatay, Raphael Gaudin, Bi-Chang Chen, Wesley R. Legant, Eric Betzig, and Tom Kirchhausen* "Asymmetric formation of coated pits on dorsal and ventral surfaces at the leading edges of motile cells and on protrusions of immobile cells" ***Molecular Biology of the Cell*** 26(11), 2044-53 (2015) **(* corresponding authors)**.

7. Steeve Boulant, Megan Stanifer, Comert Kural, David Cureton, Ramiro Massol, Sean Whelan, Max Nibert, Tom Kirchhausen. "Similar uptake but different trafficking and escape routes of reovirus virions and ISVPs imaged in polarized MDCK cells." ***Molecular Biology of the Cell*** 24(8), 1196-207 (2013).

8. Comert Kural, Silvia K. Tacheva-Grigorova, Steeve Boulant, Emanuele Cocucci, Thorsten Baust, Delfim Duarte, Tom Kirchhausen. "Dynamics of Intracellular Clathrin/AP1- and Clathrin/AP3- containing carriers." ***Cell Reports*** 2(5), 1111-9 (2012).

9. Steeve Boulant*, Comert Kural*, Jean-Christophe Zeeh, Florent Ubelmann, Tomas Kirchhausen. "Actin dynamics counteract membrane tension during clathrin-mediated endocytosis." ***Nature Cell Biology*** 13(9), 1124-31 (2011) **(* equally contributed)**.

10. Comert Kural, Michael Nonet, Paul R. Selvin. "FIONA on *C. elegans*." ***Biochemistry*****,** 48(22), 4663-5 (2009).

11. Igor M. Kulic, Andre E.X. Brown, Hwajin Kim, Comert Kural, Benjamin Blehm, Paul R. Selvin, Philip C. Nelson, Vladimir I. Gelfand. "The role of microtubule movement in bidirectional organelle transport." ***PNAS*** 105(29), 10011–16 (2008).

12. Comert Kural, Anna S. Serpinskaya, Ying-Hao Chou, Robert D. Goldman, Vladimir Gelfand, Paul R. Selvin. "Tracking melanosomes inside a cell to study molecular motors and their interaction." ***PNAS*** 104(13), 5378-82 (2007).

13. Hwajin Kim, Shuo-Chien Ling, Gregory C. Rogers, Comert Kural, Paul R. Selvin, Stephen L. Rogers, Vladimir I. Gelfand. "Microtubule binding by dynactin is required for microtubule organization but not cargo transport." ***Journal of Cell Biology*** 176(5), 641-51 (2007).

14. Comert Kural, Hwajin Kim, Gohta Goshima, Vladimir I. Gelfand, Paul R. Selvin. "Kinesin & dynein move a peroxisome *in vivo*: A Tug-of-War or Coordinated Movement?" ***Science*** 308(5727), 1469-72 (2005).

15. Mehmet Bayindir, Comert Kural, Ekmel Ozbay. "Coupled optical microcavities in one-dimensional photonic bandgap structures." ***Journal of Optics A: Pure and Applied Optics*** 3, 184-9 (2001).

**REVIEWS**

1. Comert Kural, Tomas Kirchhausen. "Live cell imaging of clathrin coats." ***Methods in Enzymology*** 505, 59-80 (2012).
2. Erdal Toprak, Comert Kural, Paul R. Selvin. "Super-accuracy and super-resolution: Getting around the diffraction limit." ***Methods in Enzymology*** 475, 1-26 (2010).
3. Comert Kural, Hamza Balci, Paul R. Selvin. "Molecular motors one at a time: FIONA to the rescue." ***Journal of Physics Condensed Matter: Special issue on Molecular Motors*** 17, S3979-95 (2005).

**NEWS**

"Highlight: Asymmetric formation of coated pits on dorsal and ventral surfaces at the leading edges of motile cells and on protrusions of immobile cells", ***ASCB Newsletter*** (2015).

"Walk like a molecular motor", Paul R. Selvin, ***The Scientist*** 19 (2005).

"Coordinated movement", Rachel Smallridge, ***Nature Reviews: Molecular Cell Biology*** 6 (2005).

"Motors take turns", ***Journal of Cell Biology*** 169 (2005).

"No tug-of-war within the cell", Hank Hogan, ***Biophotonics***, (2005).

**RESEARCH SUPPORT**

● R01GM127526 Kural (PI) 08/01/2018 – 04/30/2022
NIH/NIGMS
*Utilizing Endocytic Dynamics to Obtain Comprehensive Spatiotemporal Tension Maps of Live Tissues* Role: Principal Investigator

● CAREER 1751113 Kural (PI) 01/01/2018 – 12/31/2023
NSF
*Spatiotemporal Regulation of Clathrin-mediated Endocytosis* Role: Principal Investigator

● R01AI121124 Rikihisa (PI) 11/05/2016 - 10/31/2021
NIH/NIAID
*Infectious entry mechanisms of obligatory intracellular pathogen* Role: Co-Investigator

## INVITED TALKS

### Conferences:

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|---|---|
| APS March Meeting | 2017 |
| Midwest Membrane Trafficking & Signaling Symposium | 2015 |
| Biophysical Society Meeting, Exocytosis & Endocytosis Subgroup | 2014 |
| International Symposium on Drug Research and Development<br>Antalya, Turkey **(Keynote Speaker)** | 2011 |
| 6th Nanoscience and Nanotechnology Conference,<br>Izmir Institute of Technology, Turkey | 2010 |
| Nabitek Conference, Fatih University, Istanbul, Turkey | 2010 |
| Midwest Microscopy and Microanalysis Society Annual Meeting,<br>Northwestern University, IL **(Keynote Speaker)** | 2010 |
| Center for Nanoscale Science and Technology, Mechanobiology workshop<br>University of Illinois at Urbana-Champaign, IL | 2006 |

### Seminars:

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|---|---|
| University of Miami (Florida), Department of Physics | 2018 |
| University of California Los Angeles, Electrical & Computer Engineering | 2018 |
| Santa Clara University, Department of Bioengineering | 2018 |
| University of California Berkeley, Molecular and Cellular Biology | 2018 |
| UT Southwestern, Green Center for Systems Biology | 2017 |
| Ohio University, Biomedical Engineering | 2017 |
| Ohio State University, Helix Tri-Beta | 2017 |
| University of Utah, Department of Physics | 2016 |
| Ball State University, Department of Physics | 2016 |
| Kent State University, Department of Physics | 2014 |
| University of Illinois at Urbana-Champaign, Center for the Physics of Living Cells | 2014 |
| Indiana University-Purdue University Indianapolis, Department of Physics | 2014 |
| Georgia Institute of Technology, School of Physics | 2012 |
| Yale University, Biodesign Institute | 2012 |
| Baylor College of Medicine, Department of Biochemistry and<br>Molecular Biology | 2012 |
| Arizona State University, Department of Physics | 2012 |

Ohio State University, Department of Physics 2012

Bogazici University, Department of Physics 2012

Bilkent University, National Nanotechnology Research Center 2012

Sabanci University, Biological Sciences and Bioengineering Institute 2011

Koc University, Physics Department, Istanbul, Turkey 2010

Bilkent University, Physics Department, Ankara, Turkey 2005

**SERVICE & PROFESSIONAL AFFILIATIONS**

Co-chair, Biophysical Society Meeting, Exocytosis & Endocytosis session 2017

Symposium organizer, "Affordable Diagnostics for All: High-Resolution Medical Imaging for Saving Lives", AAAS Annual Meeting 2015

External reviewer, Medical Research Council (MRC), Israel Science Foundation (ISF)

Ad hoc reviewer, Scientific Reports, ASC Nano, Nature Methods, Applied Physics Letters, Biophysical Journal, Anti-Cancer Agents in Medicinal Chemistry, Journal of Visualized Experiments

American Society for Cell Biology Member

American Physical Society Member

Biophysical Society Member