

Curriculum Vitae

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Education

- **Ph.D. Physics**, 2010
Harvard University, Cambridge, MA
Ph.D. Thesis Advisor: Jacques Dumais
- **B.S. Physics and Mathematics**, 2004
University of Pennsylvania, Philadelphia, PA

Employment

- **2011 – present** — Postdoctoral Researcher
Departments of Bioengineering and Biochemistry, Stanford University, Stanford, CA
Advisors: Julie Theriot and K.C. Huang
- **2013 – 2014** — Visiting Scientist in the Molecular Genetics Laboratory at the Institute of Diarrheal Disease Research, Bangladesh
Host Advisor: Shah Faruque
- **2010 – 2011** — Faculty of Biomedical Physics the Patan Academy of Health Sciences, Patan, Nepal

Other Research Experience

- **2002 – 2004** — Research in the lab of A.T. Charlie Johnson, Department of Physics, University of Pennsylvania, studying functionalization of single-walled carbon nanotubes and biochemical sensing with nanotube field-effect transistors
- **2002** — Research in the lab of Eric Cornell, JILA (University of Colorado/National Institute of Standards), studying optimization of magneto-optical traps.
- **2001** — Research in the lab of John Falconer, Department of Chemical Engineering, University of Colorado, studying gas transport through zeolites.

Awards & Fellowships

- 2013 — NIH-Fogarty Global Health Equity Scholars Fellowship
- 2011 — NIH Simbios Distinguished Postdoctoral Fellowship
- 2006 — NSF-IGERT Biomechanics Training Fellowship
- 2003 — NSF-REU Fellowship, University of Pennsylvania
- 2002 — NSF-REU Fellowship, University of Pennsylvania
- 2001 — NSF-REU Fellowship, University of Colorado

Publications

1. **Rojas ER***, Billings G*, Auer G, Weibel D, Theriot JA, Huang KC (Submitted) The outer membrane is an essential load-bearing element in Gram-negative bacteria. *Nature*.
*Equal contributions
2. **Rojas ER**, Huang KC, Theriot JA (In Revision) Membrane tension and cell-wall mechanical stress compete to determine growth-rate equilibrium of Gram-positive bacteria. *Cell*.
3. Zhou X*, Halladin DK*, **Rojas ER***, Koslover EF, Lee TK, Huang KC, Theriot JA (2015) Mechanical crack propagation drives millisecond daughter cell separation in *Staphylococcus aureus*. *Science*. 348(6234):574-578
*Equal contributions
4. **Rojas ER**, Theriot JA, Huang KC (2014) Response of *Escherichia coli* growth rate to osmotic shock. *Proceedings of the National Academy of Sciences of the USA*. 111(21): 7807-7812
5. Misra G, **Rojas ER**, Gopinathan A, Huang KC (2013) Mechanical consequences of cell-wall turnover in the elongation of Gram-positive bacterium. *Biophysical Journal*. 104(11): 2342-2352
6. Campas O*, **Rojas ER***, Dumais J, Mahadevan L (2011) Strategies for cell shape control in tip-growing cells. *American Journal of Botany*. 99(9):1577-1582
*Equal contributions
7. **Rojas ER**, Hotton S, Dumais J (2011) Chemically mediated mechanical expansion of the pollen tube cell wall. *Biophysical Journal*. 101(8):1844-1853
8. Bernal R, **Rojas ER**, Dumais J (2007) The mechanics of tip growth morphogenesis: what we have learned from rubber balloons. *Journal of Mechanics of Materials and Structures*. 2: 1157-1168
9. Islam MF, **Rojas ER**, Bergey DM, Johnson AT, Yodh AG (2003) High weight fraction surfactant solubilization of single-wall carbon nanotubes. *Nano Letters*. 3: 269-273

Invited Seminars

- 2016 — Boston University, Department of Bioengineering
- 2016 — Vanderbilt University, Department of Biology
- 2015 — Consortium of Universities for Global Health, Boston, MA
- 2015 — Stanford University, Department of Microbiology and Immunology
- 2015 — Stanford University, Department of Biochemistry

- **2010** — Smith College, Department of Mathematics
- **2011** — Wellesley College, Departments of Biochemistry and Biology
- **2004** — University of Puerto Rico, Department of Physics

Contributions to Conferences and Schools

Contributed Talks

- **2016** — Molecular Genetics of Bacteria and Phages Meeting, Madison, WI
- **2015** — American Society for Cell Biology, San Diego, CA
- **2015** — Multiscale Modeling of Cell Wall Mechanics and Growth in Walled Cells, Banff, Canada
- **2015** — New Approaches and Concepts in Microbiology, Heidelberg, Germany
- **2010** — New Trends on Growth and Form: A Conference in Honor of Yves Couder, Agay, France
- **2010** — American Physical Society March Meeting, Portland, OR
- **2009** — Complex Motion in Fluids, Copenhagen, Denmark
- **2009** — Society for Mathematical Biology, Vancouver, Canada
- **2004** — American Physical Society March Meeting, Montreal, Canada

Contributed Posters

- **2015** — American Society for Microbiology Prokaryotic Cell Biology, Washington D.C.
- **2014** — American Society for Cell Biology, Philadelphia, PA
- **2014** — International Symposium on Microbial Ecology, Seoul, Korea
- **2013** — QBio Winter School, Honolulu, HI
- **2012** — American Society for Cell Biology, San Francisco, CA
- **2012** — American Society for Microbiology San Francisco, CA
- **2011** — Single Molecules Meet Systems Biology at Janelia Farm, Howard Hughes Medical Institute, Chevy Chase, VA
- **2008** — The Geometry and Mechanics of Growth in Biological Systems, Cargese, France

Teaching Experience

- **2011** — Teaching Assistant at the Woods Hole Physiology Course, Woods Hole, MA
- **2010 – 2011** — Faculty of Biomedical Physics the Patan Academy of Health Sciences, Patan, Nepal
- **2009** — Teaching Assistant for Mechanics, Elasticity, Fluids and Diffusion, Department of Physics, Harvard University
- **2008** — Teaching Assistant for Comparative Biomechanics, Department of Organismic and Evolutionary Biology, Harvard University
- **2007** — Teaching Assistant for Electricity and Magnetism, Department of Physics, Harvard University

Community Involvement

- **2011 – Present** — Weekly Volunteer at Project Open Hand, San Francisco, CA
Preparing food for the homebound critically ill
- **2012** — Regular Volunteer at East Palo Alto Charter School, East Palo Alto, CA
Providing mentorship to elementary school children at afterschool science program
- **2010 – 2011** — Visiting Faculty of Biomedical Physics the Patan Academy of Health Sciences, Patan, Nepal
Teaching science to underserved communities in Nepal
- **2008 – 2010** — Weekly volunteer at Harvard Square Homeless Shelter, Cambridge, MA
Preparing food for the homeless
- **2008** — Weekly volunteer at Kennedy-Longfellow Middle School , Cambridge, MA
Providing science mentorship to students
- **2007** — Weekly volunteer at Lincoln High School, Lincoln, MA
Providing science mentorship to a student during her science fair project
- **2000 – 2004** — Weekly volunteer at afterschool programs in Northeast Philadelphia, PA
Providing mentorship to elementary school children, coordinated by the League of United Latin American Citizens
- **2001** — Weekly volunteer with the West Philadelphia Tutoring Project, Philadelphia, PA
Providing reading mentorship to students

(Last updated: September 10, 2016)