

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

- **2018 – Present** — Assistant Professor
Department of Biology, New York University, New York, NY
- **2017 – 2018** — Visiting Professor
Department of Microbiology, New York University, New York, NY
Host: Victor Torres
- **2011 – 2017** — 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. Oudah Y, **Rojas ER**, Riordan DP, Capostagno S, Kuo CS, Krasnow MA (2019) A subpopulation of pulmonary neuroendocrine cells are reserve stem cells regulated by the tumor suppressors Rb, p53, and Notch. *Cell*. In Press.
2. Masuda I, Matsubara R, Christian T, **Rojas ER**, Yadavalli SS, Zhang L, Goulian M, Foster LF, Huang KC, Hou Y-M (2019) TrmD-Mediated tRNA Methylation Controls Bacterial Multi-Drug Resistance. *Cell Systems*. 8(4):302-314.
3. **Rojas ER**, Billings G, Odermatt PD, Auer GK, Zhu L, Miguel A, Chang F, Weibel DB, Theriot JA, Huang KC (2018) The outer membrane is an essential load-bearing element in Gram-negative bacteria. *Nature*. 559:617-621
4. **Rojas ER**, Huang KC (2018) Regulation of microbial growth by turgor pressure. *Current Opinion in Microbiology*. 42:62-70
5. **Rojas ER**, Huang KC, Theriot JA (2017) Homeostatic cell growth is accomplished mechanically through membrane tension inhibition of cell-wall synthesis. *Cell Systems*. 5:578-590
6. van Hemelryck M, Bernal R, **Rojas ER**, Dumais J, Kroeger J (2017) A fresh look at growth oscillations in pollen tubes: kinematic and mechanistic descriptions. In *Pollen Tube Growth*. 369-389.
7. 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
8. **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
9. 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
10. 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
11. **Rojas ER**, Hottot S, Dumais J (2011) Chemically mediated mechanical expansion of the pollen tube cell wall. *Biophysical Journal*. 101(8):1844-1853

12. 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
13. 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

- **2019** — The Bacterial Cell Envelope: New Insights into Structure and Antimicrobial Targets, Keynote Lecture
- **2019** — New York Bacillus Interest Group (NYBIG), Keynote Lecture
- **2019** — University of Oslo, Department of Biosciences
- **2018** — University of Florida, College of Medicine
- **2018** — University of Massachusetts, Department of Microbiology
- **2018** — New York State Department of Health, Wadsworth Center
- **2018** — Brooklyn College, Department of Biology
- **2018** — Bacterial Cell Surfaces Gordon Research Conference
- **2018** — American Society for Microbiology Annual Meeting
- **2018** — American Physical Society March Meeting
- **2018** — University of Pennsylvania, Department of Physics
- **2017** — Massachusetts Institute of Technology, Department of Biology
- **2017** — University of California, San Francisco, Department of Microbiology & Immunology
- **2017** — Johns Hopkins University, Department of Biomolecular Engineering
- **2017** — Cornell University, Department of Biomedical Engineering
- **2017** — Dartmouth College, Department of Microbiology & Immunology
- **2017** — New York University, Department of Biology
- **2017** — McGill University, Department of Biology
- **2017** — Barnard College, Department of Biology
- **2017** — Hunter College, Department of Physics
- **2017** — Northeastern University, Department of Bioengineering
- **2017** — Max Planck Society
- **2017** — Institut Curie, Unité Physico-Chimie
- **2017** — École Polytechnique Fédérale de Lausanne, Department of Physics
- **2017** — University of Illinois, Chicago, Department of Microbiology & Immunology
- **2017** — Swarthmore College, Department of Biology
- **2016** — Swarthmore College, Department of Physics
- **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 Meeting, 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

- **2019** — Visiting Faculty for the Emory-Tibet Science Initiative, Karnataka, India
- **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 Outreach

- **2018 – Present** — Weekly Volunteer in the Petey Greene Program, New York, NY
Tutoring incarcerated men as they take college classes
- **2019** — Volunteer Faculty for the Emory-Tibet Science Initiative, Karnataka, India
Teaching Buddhist monastic students biology
- **2011 – 2017** — 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 an 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
Tutoring science students
- **2007** — Weekly volunteer at Lincoln High School, Lincoln, MA
Providing 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 elementary school children

(Last updated: June 29, 2019)