Guillermina Ramírez-San Juan, Ph.D.

Education

2011–2017 **Ph.D. Biophysical Sciences**, *The University of Chicago*, Chicago, Illinois USA.
Dissertation: "Cell migration: A multi-scale integration problem"

2006–2011 **B.S. Physics**, *Universidad Nacional Autónoma de México*, Mexico city, Mexico.
Thesis: "Effects of electrical polarization on the opening rate constant of a voltage-gated ion channel"

Research Experience

2017–present **Postdoctoral Scholar**, *The University of California San Francisco-Stanford University*,
Supervisors: Wallace Marshall and Manu Prakash.
My research focuses in understanding how arrays of cilia coordinate across scales to produce directed flows. To address this question I use a combination classical approaches from cell and developmental biology, biophysical measurements and mathematical modeling.

2011–2017 **Graduate Student**, *The University of Chicago*,
Supervisor: Margaret Gardel.
My research focused on understanding how cells integrate cues from each other and the environment to undergo directed migration. To address this question I used a combination of cell biological tools and biophysical measurements.

Summer 2015 **MBL Physiology course**, *Marine Biological Laboratory*.
During this research course I was challenged every two weeks with a new research project in a different field. I worked on problems that ranged from understanding scaling of cell and organelle size to establishment of cell polarity.

2009–2011 **Undergraduate Researcher**, *Universidad Nacional Autónoma de México*,
Supervisor: Leon lslas Suarez.
My research focused in understanding the structure and gating kinetics of potassium ion channels. To address this question I used a combination of electrophysiology measurements and mathematical modeling.

Honors and Awards

2018 **Minority Affairs Committee Travel Award**, *American Society for Cell Biology*.
Received to attend the society's annual meeting in San Diego, CA, USA .

2017 **Minority Affairs Committee Travel Award**, *American Society for Cell Biology*.
Received to attend the society's annual meeting in Philadelphia, PA, USA .

2015 **MBL Physiology course scholarship**, *Marine Biological Laboratory*.

2012 **NSF Graduate Research Fellowship (GRFP)**, *National Science Foundation*.

2011 **Rackham Merit Fellowship**, *University of Michigan*, Declined.

2011 **Carlson Fellowship**, *Department of Biophysics, Johns Hopkins University*, Declined.

2009 **UNAM-University of California Education Abroad Program**, *University of California Berkeley*.

Shriram Center – 443 Via Ortega – Stanford, CA 94305-4125, USA
+1 (312) 420 6459 • *guille1@stanford.edu* • *guille-rochelle.github.io*

Publications

Oakes P.W., Bidone T.C., Beckham Y., Skeeters A.V., **Ramírez-San Juan G.R.**, Winter S.P., Voth G.A., and Gardel M.L. (2018) Lamellipodium is a myosin-independent mechanosensor. *Proceedings of the National Academy of Sciences*, 115(11):2646–2651.

Fessenden T.B., Beckham Y., Perez-Neut M., **Ramírez-San Juan G.R.**, Chourasia A.H., MacCleod K.F., Oakes P.W., and Gardel M.L. (2018) Dia1-dependent adhesions are required by epithelial tissues to initiate invasion. *The Journal of Cell Biology*, 217(4):1–18.

Ramírez-San Juan G.R., Oakes P.W., and Gardel M.L. (2017) Contact guidance requires spatial control of leading-edge protrusion. *Molecular Biology of the Cell*, 28(8):1043–1053. PMID: 28228548.

Hissa B., Oakes P.W., Pontes B., **Ramírez-San Juan G.R.**, and Gardel M.L. (2017) Cholesterol depletion impairs contractile machinery in neonatal rat cardiomyocytes. *Scientific Reports*, 7:43764.

Cetera* M., **Ramírez-San Juan* G.R.**, Oakes P.W., Lewellyn L., Fairchild M.J., Tanentzapf G., Gardel M.L., and Horne-Badovinac S. (2014) Epithelial rotation promotes the global alignment of contractile actin bundles during *Drosophila* egg chamber elongation. *Nature Communications*, 5:5511 (*co–first author).

Ramírez-San Juan G.R., Minzoni A.A., and Islas L.D. (2013) Effects of electrical polarization on the opening rate constant of a voltage-gated ion channel. *Phys. Rev. E*, 88:012720.

Teaching Experience

2015–2017 **Mentoring**, *The University of Chicago*, Department of Physics.
Co-mentoring of one graduate student (Erik Schaumann) to perform traction force microscopy measurements in micropatterned substrates.

2015 **Mentoring**, *The University of Chicago*, Department of Physics.
Co-mentoring of one graduate student (Akash Dixit) on a rotation project to study collective cell migration on micropatterned substrates.

2014 **Mentoring**, *The University of Chicago*, Department of Physics.
Co-mentoring of two undergraduate students (Maria Benitez-Jones and Alexander David) as part of the NSF Research experiences for undergraduates program.

2010–2016 **Teaching assistant**, *The University of Chicago*.
- "Quantitative Analysis of Biological Dynamics", Department of Molecular Genetics and Cell Biology.
- "Extracellular Matrices: Chemistry and Biology", Department of Biological Sciences.

2009–2011 **Teaching assistant**, *Universidad Nacional Autonoma de Mexico*.
- "Electromagnetic Theory", Department of Physics.
- "Contemporary Physics", Department of Physics.
- "Statistical Mechanics", Department of Physics

Oral Presentations

2017 **NSF Center for cellular construction quarterly meeting**.
"Understanding the emergence of directed flows in multi ciliated epithelia"

2017 **NSF Center for systems and synthetic biology monthly seminar**.
"Cell migration: A Multi-scale integration problem"

2016 **Stanford Biology Department**.
"Cell migration: A Multi-scale integration problem"

2013 **Annual Meeting of the American Society for Cell Biology**.
"A two step mechanism for the tissue-level alignment of contractile actin bundles during collective cell migration"

Poster Presentations

2018 **Santa Cruz Developmental Biology meeting**.
"Biophysical interactions between cilia and mucus underlie directed fluid transport in the ventral epithelium of the planarian *S. mediterranea*"

2018 **EMBL Symposium: Tissue Self-Organization: Challenging the systems**.
"Biophysical interactions between cilia and mucus underlie directed fluid transport in the ventral epithelium of the planarian *S. mediterranea*"

2017 **Annual Meeting of the American Society for Cell Biology**.
"Biophysical interactions between cilia and mucus underlie directed fluid transport in the ventral epithelium of the planarian *S. mediterranea*"

2016 **Annual Meeting of the American Society for Cell Biology**.
"Contact guidance requires spatial control of leading-edge protrusion".

2015 **Annual Meeting of the American Society for Cell Biology**.
"ECM geometry promotes directed cell migration by β-pix mediated polarization of leading edge protrusions"

2014 **Annual Meeting of the American Society for Cell Biology**.
"ECM Geometry Promotes Directed Cell Migration by Regulating Leading Edge Dynamics"

2013 **Annual Meeting of the American Society for Cell Biology**.
"ECM Topography Regulates Collective Cell Migration and Cytoskeletal Polarization"

2012 **Annual Meeting of the American Society for Cell Biology**.
"Individual platelet contraction dynamics stimulated via two distinct signaling pathways"

Service Activities

Service to the community

2018 **Presenter at the exploratorium Latino Engineering day**, Presented my research in an interactive format in Spanish and English at the science museum in San Francisco.

2014–2016 **Team leader with the Science and Technology Outreach Mentorship Program**, Gave weekly science lessons to elementary school students at a charter school in Chicago.

2015 **Organizer of the first "Art of Science" show**, `http://chicagoartsdistrict.org/event_detail.asp?eventid=1485`, Coordinated with the Chicago art district to organize an open gallery night where graduate students presented their research.

2015 **Organizer of the Communication in Science Workshop for Graduate Students (ComSciCon) Chicago**, `http://comscicon.com/comscicon-chicago-2015`, Organized a two day workshop on science communication for graduate students..

Service to the university

2015–2016 **Founder and organizer of Pizza Science and Discussion (P|S|D)**, P|S|D is a series of talks by graduate students in the Physical Sciences Division aimed to promote collaborations across departments at the University of Chicago.

2014–2015 **Biophysical Sciences student representative in the Physical Sciences Division student dean's advisory council**.

2013–2015 **Member of the Biophysics Student Advisory Board (BSAB)**, BSAB is responsible for interfacing students with the program faculty and mentoring incoming graduate students.

References:

- Margaret Gardel
  Professor, Department of Physics.
  Gordon Center for Integrative Science, E233
  929 E. 57th St, Chicago, IL 60637
  ph: (773) 834-5871
  email: gardel@uchicago.edu

- Wallace Marshall
  Professor, Department of Biophysics and Biochemistry.
  Genentech Hall N376
  600 16th Street, San Francisco, CA 94158
  ph: (415) 514-4304
  email: wallace.marshall@ucsf.edu

- Manu Prakash
  Associate Professor, Department of Bioengineering.
  Shriram Center, Room 009
  443 Via Ortega Stanford, CA 94305
  ph: (650) 725-3731
  email: manup@stanford.edu