# Michael Pablo

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🌐 mikepab.github.io

*I use computational and experimental methods,*
*combined with systems biology principles, to understand and fight disease.*

## EDUCATION

**The J. David Gladstone Institutes** 2020 –
Postdoctoral Scholar, Center for Cell Circuitry, Institute for Virology
Advisor: Dr. Leor Weinberger

**The University of North Carolina at Chapel Hill** 2015 – 2020
PhD Chemistry, Certification in Biophysics
Dissertation: Spatiotemporal coordination of signaling at single molecule resolution
Advisors: Dr. Timothy Elston, Dr. Klaus Hahn

**Northeastern University** Boston, MA
BS Chemistry, Minor in Mathematics, *summa cum laude* 2011 – 2015

## RESEARCH EXPERIENCE

**The J. David Gladstone Institutes,** *Postdoctoral Scholar* 2020 –
- Multiscale modeling of SARS-CoV-2 to aid epidemiologic analysis and therapeutic development
- Investigating human cytomegalovirus latency establishment experimentally and computationally
- Molecular biology, tissue culture, RNA-seq, flow cytometry, and fluorescence microscopy

**University of North Carolina at Chapel Hill,** *Graduate Researcher* 2015 – 2020
- Biochemical and biophysical simulations to study how yeast survive in noisy environments
- Developed new computational tools to analyze microscopy and single-particle tracking data
- High-performance computing on compute clusters using LSF and SLURM scheduling

**Northeastern University,** *Undergraduate Researcher* 2012 – 2015
- Investigated post-translational modifications using bioorganic chemistry and mass spectrometry

**Amgen,** *Undergraduate Co-op* 2013 – 2014
- Conducted analytical chemistry to support medicinal chemistry and process chemistry teams.
- Guided kg-scale synthesis of a specific API polymorph with Raman spectroscopy and modeling

## AWARDS, HONORS, AND FELLOWSHIPS

2021 Poster Prize in Immunobiology & Infection, *Society for Mathematical Biology*
2020 Poster Prize in Mathematical Epidemiology, *Society for Mathematical Biology*
2020 Travel Award, *Biophysical Society*
2019 Graduate Student Transportation Grant, *UNC Chapel Hill*
2016 T32 Training Grant in Molecular & Cellular Biophysics, *National Institutes of Health*
2016 Honorable Mention, *NSF Graduate Research Fellowship Program*
2015 Matthew Stuart Morrison Summer Fellowship, *UNC Chapel Hill*
2014 Provost Undergraduate Research and Creative Endeavors Award, *Northeastern University*
2011 National Merit Scholarship, *National Merit Scholarship Corporation*

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## PUBLICATIONS

1. Chaturvedi S, Vasen G, **Pablo M**, Chen X, Beutler N, Kumar A, Tanner E, Illouz S, Rahgoshay D, Burnett J, Holguin L, Chen P-Y, Ndjamen B, Ott M, Rodick R, Rogers T, Smith D, Weinberger L. Identification of a Therapeutic Interfering Particle – a single-administration intervention for SARS-CoV-2 with a high barrier to resistance. *Cell*. 2021, forthcoming.

2. Liu B*, Stone OJ*, **Pablo M***, Herron JC, Nogueira AT, Dagliyan O, Grimm JB, Lavis LD, Elston TC, Hahn KM. Sensitive biosensor approach probes conformations of individual Src molecules in live cells. *Cell*. 2021, 184(22), 5670-85.

3. Ramirez SA, **Pablo M**, Burk S, Lew DJ, Elston TC. A novel stochastic simulation approach enables exploration of mechanisms to regulate polarity lateral dynamics. *PLoS Computational Biology.* 2021, e1008525.

4. Clark-Cotton MR, Henderson NT, **Pablo M**, Ghose D, Elston TC, Lew DJ. Exploratory polarization facilitates mating partner selection in *Saccharomyces cerevisiae*. *Molecular Biology of the Cell.* 2021, E21-02-0068

5. Elston RN*, **Pablo M***, Pimenta FM*, Hahn KM, Watanabe T. Optogenetic inhibition and activation of Rac and Rap1 using a modified iLID system. *BioRxiv*. 2020.12.11.421990

6. Henderson N, **Pablo M**, Ghose D, Clark-Cotton MR, Zyla TR, Nolen J, Elston TC, Lew DJ. Ratiometric GPCR output enables directional sensing in yeast. *Public Library of Science Biology.* 2019, e3000484

7. **Pablo M**, Ramirez SA, Elston TC. Particle-based simulations of polarity establishment reveal stochastic promotion of Turing pattern formation. *Public Library of Science Computational Biology.* 2018, e1006016

8. Qu W, Catcott KC, Zhang K, Liu S, Guo JJ, Ma J, **Pablo M**, Glick J, Xiu Y, Kenton N, Ma X, Duclos RI Jr, Zhou ZS. Capturing unknown substrates via *in situ* formation of tightly bound bisubstrate adducts: *S*-adenosyl-vinthionine as a functional probe for AdoMet-dependent methyltransferases. *Journal of the American Chemical Society.* 2016, 138, 2877-2880

***Denotes equal contribution**

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## SERVICE AND PROFESSIONAL MEMBERSHIPS

| | | |
|---|---|---|
| Guest Speaker | *Curioscity* science podcast (Episode 55: Yeast) | 2020 |
| Member | Society for Mathematical Biology | 2020 – |
| Member | Biophysical Society | 2019 – |
| Executive Board | STEM Pride of the Triangle | 2019 – 2020 |
| Writer & Editor | NC DNA Day Blog | 2016 – 2020 |
| Science Ambassador | NC DNA Day | 2016 – 2017 |
| Member | American Chemical Society | 2013 – 2016 |
| Member | Northeastern University Civic Engagement Program | 2011 – 2015 |

## TEACHING AND MENTORING

| | | |
|---|---|---|
| **The University of North Carolina** | | San Francisco, CA |
| Mentor | Brendan Hall (PhD rotation) | 2021 |
| **The University of North Carolina** | | Chapel Hill, NC |
| Mentor | Kaiyun Guan (BS Honors Thesis; joined lab for PhD) | 2019 – 2020 |
| | John Cody Herron (PhD rotation, joined lab) | 2017 |
| Teaching Assistant | Summer Research Program in Biophysics | 2017 |
| Guest Lecturer | Essentials of Macromolecular Science | 2016 – 2017 |
| Teaching Assistant | Analytical Chemistry Lab | 2015 |
| **Northeastern University** | | Boston, MA |
| Tutor | Organic Chemistry I & II | 2012 – 2014 |
| Lead Mentor | Proactive Recruitment in Science and Mathematics | 2012 |

## SELECT PRESENTATIONS

1. **Pablo M**, Chaturvedi S, Vasen G, Du K, Kumar A, Illouz S, Rodick R, Weinberger LS. *Multiscale modeling of a self-renewing, self-deploying antiviral for SARS-CoV-2.* Society for Mathematical Biology 2021. Online. May 2021. Received SMB Poster Award for Immunobiology and Infection. (Poster)

2. **Pablo M**, Lewis DD, Chen X, Rodick R, Weinberger LS. *Early phase decoupling between population mobility and death rates*. Society for Mathematical Biology 2020. Online. Aug. 2020. Received SMB Poster Award for Mathematical Epidemiology. (Poster)

3. **Pablo M***, Liu B*, Stone OJ*, Dagliyan O, Elston TC, Hahn KM. *Binder/tag: A versatile approach to probe and control the conformational changes of individual molecules in living cells.* The 64th Annual Meeting of the Biophysical Society. San Diego, CA. Feb. 2020. (Oral)

4. **Pablo M***, Liu B*, Stone OJ*, Hahn KM, Elston TC. *Uncovering single-molecule kinetics and nanoscale architecture of Src activation.* The 7th Winter Q-Bio Conference. Oahu, HI. Feb. 2019. (Oral)

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5. **Pablo M***, Liu B*, Stone OJ*, Hahn KM, Elston TC. *Uncovering single-molecule kinetics and nanoscale architecture of Src activation.* The Biennial Carolina Biophysics Symposium. Chapel Hill, NC. Nov. 2018. (Poster)

6. **Pablo M**, Ramirez SA, Liu B, Watanabe T, Hahn KM, Elston TC. *Computational modeling of stochasticity in cell signaling and its effect on polarity establishment.* The Biennial Carolina Biophysics Symposium. Chapel Hill, NC. Nov. 2016. (Poster)

7. Cohen D, **Pablo M**. *Process Raman in early phase API process development at Amgen.* The North Eastern Raman Symposium. Cambridge, MA. May 2015. (Oral)

8. **Pablo M**, Zhou ZS. *Towards understanding aging: a new method to detect isoaspartic acid in biological samples.* Northeastern University Research, Innovation and Scholarship Expo **(RISE)**. Boston, MA. Apr. 2015. (Poster)

*Denotes equal contribution.