# Pratik Kumar, PhD

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## EDUCATION & TRAINING

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| HHMI Janelia, VA | Postdoc | Luke Lavis/Martin Schnermann (NCI) | | 2019– |
| SUNY-Stony Brook University, NY | PhD | Chemistry | Scott Laughlin | 2019 |
| IISER, Kolkata, India | BS-MS | Chemistry | Rituparna Roy | 2013 |
| JNCASR, Bangalore, India | Diploma | Chemistry | Jayanta Haldar | 2012 |

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| HHMI Janelia, VA | Scientists Teaching Science | 2020 |
| Marine Biological Laboratory, Woods Hole, MA | Microscopy (OMIBS) | 2018 |
| Alda center for Communicating Sciences, NY | Science Communication | 2015–18 |

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| Cyclopropene-neurotransmitters and caged-cyclopropenes for bioorthogonal labeling | PhD | 2013–19 |
| Conformational studies of gramicidin inspired alternating LD peptides | MS | 2012–13 |
| Synthesis and aggregation properties of biodegradable, cationic gemini-surfactants | Diploma | 2009-12 |

## HONORS & AWARDS

**Outstanding Doctoral Student**, Maria Tzamarioudaki Memorial Award**,** SBU 2019
**Outstanding Service** award, Department of Chemistry, SBU 2019
**New York State Graduate Student Employee Union** Professional Development Award 2019
**The Histochemical Society** Travel Award 2018
**Marine Biological Laboratory** Scholarship 2018
**Distinguished Travel Award** by **Graduate Student Organization**, SBU 2018
Nominated by the Dept. of chemistry and then selected from the pool of all departmental nominations
**ACS Biological Chemistry** Travel Award 2017
**ICB&DD-Best poster** Award, Institute of Chemical Biology & Drug Discovery, SBU 2017
**SUNY Research Foundation** Professional Development Award 2017
**ACS Interdivisional Sci-Mix**, ACS-San Francisco 2017
One of the 18 posters (out of ~200) selected from the ACS Biological Chemistry division
**3MT-People's Choice** Award (3-minute thesis), SBU 2017
**Departmental Distinguished Research Award**, SBU 2016
**German Research Foundation Travel Award**, Lindau Nobel Laureate Meeting, Germany 2013
**Dept. of Science & Technology (India) Travel Award**, Asian Science Camp, South Korea 2011
**POCE Fellowship**, JNCASR, India 2009–11
**Dept. of Science & Technology (India) INSPIRE Fellowship** 2008–13

## PATENT

Scott T. Laughlin, **Pratik Kumar**, Ting Jiang, Wei Huang. Compositions and methods for modular control of bioorthogonal ligation. Patent application PCT/US2019/063714, Filed Nov 2019.

## PUBLICATIONS (ORCID: 0000-0002-9516-0212)

1. **Pratik Kumar**, David Shukhman, & Scott T. Laughlin. Stable cyclopropene-containing analog of the amino acid neurotransmitter glutamate. Tetrahedron Letters**,** 2019, 60, 1476–1480.
2. **Pratik Kumar**, Omar Zainul, Frank Camarda, Ting Jiang, John Mannone, & Scott T. Laughlin. Second generation caged cyclopropenes with improved kinetics for controlling bioorthogonal reactivity. Organic Letters, 2019, 21, 3721-3725.
3. Ting Jiang, **Pratik Kumar**, Wei Huang, Wei-Siang Kao & Scott T. Laughlin. Modular enzyme- and light-based activation of the cyclopropene-tetrazine ligation. ChemBioChem, 2019, 20(17), 2222–2226.
4. **Pratik Kumar** & Scott T. Laughlin (Invited Book chapter). Modular activatable bioorthogonal reagents. Methods in Enzymology, 2019, 622, 153–182.
5. **Pratik Kumar**, Ting Jiang, Omar Zainul, A. Preston, J. Farr, S. Li, Pavit Suri, & Scott T. Laughlin. Lipidated cyclopropenes via a stable 3-N spirocyclopropene scaffold. Tetrahedron Letters**,** 2018, 59, 3435–3438.

6. **Pratik Kumar***, Ting Jiang*, Sining Li, Omar Zainul, & Scott T. Laughlin. Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity. Organic & Biomolecular Chemistry, 2018, 16(22), 4081-4085. **Featured on RSC blog** (rsc.li/2LAHrOW): "Reactivity Caging Strategy for Controlling Bioorthogonal Reactivity"
7. **Pratik Kumar**, Omar Zainul, & Scott T. Laughlin. Inexpensive multigram-scale synthesis of cyclic enamines and 3-N spirocyclopropyl systems. Organic & Biomolecular Chemistry, 2018, 16(4), 652–656.
8. **Pratik Kumar**, David Shukhman, & Scott T. Laughlin. A light-activatable, cyclopropene-containing analog of the amino acid neurotransmitter glutamate. Tetrahedron Letters, 2016, 57, 5750–5752.
9. Jiaul Hoque, **Pratik Kumar**, Vinod K. Aswal, & Jayanta Haldar. Aggregation properties of amide bearing cleavable gemini surfactants by small angle neutron scattering and conductivity studies. Journal of Physical Chemistry B, 2012, 116(32), 9718-9726.
10. Jiaul Hoque, Padma Akkapeddi, Venkateswarlu Y., Divakara SSM Uppu, **Pratik Kumar**, & Jayanta Haldar. Cleavable cationic antibacterial amphiphiles: synthesis, mechanism of action, and cytotoxicities. Langmuir, 2012, 28(33), 12225-12234. **Indian news** (bit.ly/2t5yzJT): "Scientist Invents Biodegradable Detergent"

## INVITED ORAL PRESENTATIONS

1. **New York Academy of Sciences—Chemical Biology Symposium**, NY, USA 2018
   Activatable cyclopropenes for spatiotemporal control of bioorthogonal reactivity
2. **HHMI-Janelia Research Campus** |1 min-1 slide talk 2018
   Modular activatable cyclopropenes for spatiotemporal control of bioorthogonal reactivity
3. **SUNY-Suffolk community college**, Department of Natural Sciences, NY, USA 2018
   Activatable bioorthogonal reactions for biology

## POSTER PRESENTATIONS

1. **HHMI-Janelia Research Campus**, ProbeFest, VA, USA 2018
   Light- and enzyme-activatable cyclopropenes
2. **Rockefeller University**, Tri-Institutional Chemical Biology Symposium, NY, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
3. **Gordon Research Seminars** & **Gordon Research Conference**, Bioorganic Chemistry, NH, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
4. **NERCBI and Yale Chemical Biology Symposium**, CT, USA 2018
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
5. **Icahn School of Medicine-Mount Sinai** & **ICB&DD-Stony Brook University**, Joint symposium on Frontiers in Chemical Biology and Drug Discovery, NY, USA | **Best poster award** 2017
   3*N* spirocyclopropenes provide spatiotemporal control of bioorthogonal reactivity
6. **New York Academy of Sciences**, Chemical Biology Symposium, NY, USA 2017
   Cyclopropene neurotransmitters for biorthogonal imaging of neural circuits
7. **Gordon Research Seminars** & **Gordon Research Conference**, High-Throughput Chemistry and Chemical Biology, NH, USA 2017
   Caged cyclopropenes for spatiotemporal control of bioorthogonal reactivity
8. At both **ACS National Meeting** & **ACS interdivisional Sci-Mixer presentation**, CA, USA 2017
   Cyclopropene neurotransmitters for biorthogonal imaging of neural circuits
9. **Stony Brook University**, Chemistry Research Day, NY, USA 2015
   Cyclopropene analogs of neurotransmitters for illuminating neural circuits
10. **Stony Brook University**, Chemistry Research Day, NY, USA 2014
    Fluorescent boronic acid probe as transsynaptic tracer of neural circuitry

## MENTORING EXPERIENCE (TOTAL = 13)

**3 PhD** (rotation and 1st year of their PhD):

Wei Huang (Chemistry/Chemical Biology, co-authors on two manuscripts) Nov 2017–Dec 2018
Wei-Siang Kao (Chemistry/Chemical Biology, co-authors on two manuscripts) Nov 2017– Dec 2018
Ting Jiang (Chemistry/Chemical Biology, co-authors on four manuscripts) Nov 2016–Dec 2017

# Pratik Kumar, PhD

**3 PhD rotation** students: Lei Chen, Yilin Ma, Beilei Jiang — 2016, 2017
**1 MS** student: Sining Li (Chemistry, co-authors on three manuscripts) — Jan 2016–Apr 2017
**5 Undergraduate** students:
- Nayarit Tineo (Biology, worked with Omar Zainul through SBU-INSPIRE program) — Spring 2018
- John Mannone (Chemistry, awarded URECA summer research fellowship) — Nov 2017–Apr 2019
- Frank Camarda (Pharmacology, co-authors on two manuscript) — Nov 2017–Apr 2019
- Omar Zainul (Pharmacology, and co-authors on four manuscripts) — Sep 2016–Apr 2018
  Awarded URECA summer research fellowship and Sigma-Xi Undergraduate Research Award
- David Shukhman (Biochemistry, co-authors on one manuscript) — Aug 2014–Apr 2016

**1 High School** student: Pavit Suri (W.T. Clarke high School, co-author on one manuscript) — Summer 2017

## TEACHING EXPERIENCE

**Graduate assistant, NMR facilities**, SBU — 2018, Spring 2019
Trained undergraduate, graduate, and postdoctoral trainees on setting up and analyzing $^{1}H$, $^{13}C$, COSY, and DEPT NMR on 400/500/700 MHz NMR instruments. Also, performed routine maintenance such liquid-nitrogen/helium refills.

**Graduate assistant, Mass spectrometry facilities**, SBU — 2018, Spring 2019
Trained undergraduate-, graduate-, and postdoctoral-trainees on how to run and analyze liquid samples on ESI-mass spectrometer; run and obtain high-resolution mass-spectra of liquid samples; run solid samples on TLC-inject mass spectrometer; and properly maintain mass spectrometers.

**Teaching assistant, Advanced organic chemistry lab**, SBU — Spring 2015
Led ~4 lectures on NMR and weekly laboratory course for ~30 chemistry-majors on how to set up multistep organic reactions; monitor the progress of reactions; purify reaction intermediates; analyze GC data; acquire and analyze IR data; analyze $^{1}H$ & $^{13}C$ NMR data; report spectroscopic and experimental data; and follow proper lab-safety techniques.

**Teaching assistant, Undergraduate organic chemistry lab**, SBU — Fall 2013–Spring 2014
Led a weekly laboratory course for ~30 pre-med students on how to set up organic reactions; isolate and purify an reaction product; analyze GC data; analyze IR data; report experimental data; and follow proper lab-safety techniques.

**High-School Chemistry**, India — Fall 2012, Summer 2013
Taught chemistry, 8h/week, to primarily Hindi-speaking high schoolers preparing for an exam in English

## PROFESSIONAL SERVICE

**Reviewer** for Organic & Bimolecular Chemistry, RSC
**Co-Chair, Gordon Research Seminars**-Bioorganic Chemistry — 2021
**Vice-Chair, Gordon Research Seminars**-Bioorganic Chemistry — 2019
**President**, Graduate Chemical Society, SBU — Apr 2017–Apr 2019
**President**, Student Invited Speaker Committee, Stony Brook Chemistry — Spring 2017
**Moderator** (& organizer), Grad. Chemical Society career panel on non-academic careers — Spring 2016
**Moderator** (& organizer), Graduate Career Association career panel on entrepreneurship — Fall 2015
**Vice-President**, Graduate Career Association, SBU — Fall 2015–Spring 2016
**Senator** for Chemistry at Graduate Student Organization, SBU — 2015–Spring 2018
**Public Relations officer**, Graduate Chemical Society — Spring 2015–Apr 2017

## OUTREACH

**Volunteer**, Janelia RESET team — 2020–
Teaching biology labs (~once/month) at nearby diverse and low-income elementary schools

"Life as a scientist and career in scientific research" — 2018
Interaction with undergraduates at SUNY-Suffolk Community College, NY, USA

**Science Fair Judge** for WAC Lighting Foundation Invitational science fair, NY — 2017, 2018
**Science Competition Judge** for 5th Annual Nassau County science fair, NY — 2017
**3MT** (3-minute thesis) **Judge**, SBU — 2017
Graduate Chemical Society **research photo contest** winner, SBU — 2016, 2017
Graduate Chemical Society competition in conjunction with the department of chemistry on research day

Founder, ***BrainChem*** (currently with ~500 subscribers) — 2016
A page for non-scientists where we explain interesting tidbits about chemistry and ecology using simple graphics