

Pratik Kumar, PhD

www.pratik-kumar.com | kumarp3@janelia.hhmi.org

EDUCATION & RESEARCH EXPERIENCE

HHMI-Postdoctoral Associate , Janelia Research Campus Joint position with Luke D. Lavis and Martin J. Schnermann (NCI/NIH)	2019–
PhD , Chemistry (Chemical Biology Training Program) Stony Brook University, NY (w/ Scott T. Laughlin) Cyclopropene-neurotransmitters and caged-cyclopropenes for bioorthogonal labeling	2013–19
Marine Biological Laboratory , Woods Hole, MA Optical Microscopy and Imaging in the Biomedical Sciences course	Aug 2018
MS & BS , Chemistry IISER-Kolkata, India (w/ Rituparna S. Roy) Conformational studies of gramicidin inspired alternating LD peptides	2008–13
Diploma , Chemistry JNCASR, Bangalore, India (w/ Jayanta Halder) Synthesis and aggregation properties of biodegradable, cationic gemini-surfactants	2009–12 (summers)
Scientists Teaching Science Online course on learning styles and effective instructional strategies for teaching STEM subjects	Apr–Jun 2020
Science Communication courses/training at Alan Alda center for Communicating Sciences, SBU Using digital media (2018), Improvisation for scientists (2016), Distilling your message (2015)	

ACADEMIC AWARDS & FELLOWSHIPS

Maria Tzamarioudaki Memorial Award for Outstanding Doctoral Student , SBU	2019
Outstanding Service award, Department of Chemistry, SBU	2019
New York State Graduate Student Employee Union (GSEU) Professional Development Award	2019
The Histochemical Society Travel Award	2018
Marine Biological Laboratory Scholarship	2018
Distinguished Travel Award by Graduate Student Organization , SBU Nominated by the Dept. of chemistry and then selected from the pool of all departmental nominations	2018
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 One of the 18 (out of ~200) posters selected from the ACS Biological Chemistry division	2017
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

1. 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 iD: 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.

Pratik Kumar, PhD

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 Halder. 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 Halder. 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"

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 bioorthogonal 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 bioorthogonal imaging of neural circuits | |

Pratik Kumar, PhD

9. At both **17th Chemistry Research Day & 9th ICB&DD symposium**, SBU, USA. 2015
Cyclopropene analogs of neurotransmitters for illuminating neural circuits
10. At both **16th Chemistry Research Day and 8th ICB&DD symposium**, SBU NY, USA. 2014
Fluorescent boronic acid probe as transsynaptic tracer of neural circuitry

MENTORING EXPERIENCE

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

3 PhD rotation students: Lei Chen, Yilin Ma, Beilei Jiang

2016, 2017

1 MS-thesis 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 ¹H, ¹³C, 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 ¹H & ¹³C 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 to ~35 high schoolers from low-to-moderate income background for 8 h/week

PROFESSIONAL SERVICE

Reviewer for Organic & Biomolecular 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 Spring 2020

Pratik Kumar, PhD

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—current
A page for non-scientists where we explain interesting tidbits about chemistry and ecology using simple graphics.	