

## Pratik Kumar, PhD

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### EDUCATION & TRAINING

<b>Postdoc</b>	HHMI Janelia Research Campus, VA, USA	Luke Lavis/Martin Schnermann (NCI)	2019–
	Fluorescent dyes for chemigenetic labeling of proteins for localization microscopy, manipulation ( <i>e.g.</i> , degradation, affinity tagging), and receptor pharmacology		
<b>PhD</b>	Stony Brook University, NY, USA	Chemistry Scott Laughlin	2019
	Cyclopropene-neurotransmitters and caged-cyclopropenes for bioorthogonal labeling		
<b>MS/BS</b>	IISER-Kolkata, India	Chemistry Rituparna Roy	2013
	Synthesis and conformational studies of gramicidin inspired alternating LD peptides		
<b>Diploma</b>	JNCASR, Bangalore, India	Chemistry Jayanta Halder	2012
	Synthesis and aggregation properties of biodegradable, cationic gemini-surfactants		
	HHMI Janelia Research Campus, VA	Scientists Teaching Science	2020
	Marine Biological Laboratory, Woods Hole, MA	Microscopy (OMIBS)	2018
	Alan Alda center for Communicating Sciences, NY	Science Communication	2015–18

### HONORS & AWARDS

<b>ACS Science Coach</b>	2020
<b>Outstanding Doctoral Student</b> , Maria Tzamarioudaki Memorial Award, SBU	2019
<b>Outstanding Service</b> award, Department of Chemistry, SUNY-Stony Brook University	2019
<b>New York State Graduate Student Employee Union</b> Professional Development Award	2019
<b>The Histochemical Society</b> Travel Award	2018
<b>Marine Biological Laboratory</b> Scholarship	2018
<b>Distinguished Travel Award by Graduate Student Organization</b> , SBU	2018
Nominated by the Dept. of chemistry and then selected from the pool of all departmental nominations	
<b>ACS Biological Chemistry</b> Travel Award	2017
<b>ICB&amp;DD-Best poster Award</b> , Institute of Chemical Biology & Drug Discovery, SBU	2017
<b>SUNY Research Foundation</b> Professional Development Award	2017
<b>ACS Interdivisional Sci-Mix</b> , ACS-San Francisco	2017
One of the 18 posters (out of ~200) selected from the ACS Biological Chemistry division	
<b>3MT-People's Choice</b> Award (3-minute thesis), SUNY-Stony Brook University	2017
<b>Departmental Distinguished Research Award</b> , SUNY-Stony Brook University	2016
<b>German Research Foundation Travel Award</b> , Lindau Nobel Laureate Meeting, Germany	2013
<b>Dept. of Science &amp; Technology (India) Travel Award</b> , Asian Science Camp, South Korea	2011
<b>POCE Fellowship</b> , JNCASR, India	2009–11
<b>Department of Science &amp; Technology (India) INSPIRE Fellowship</b>	2008–13

### PATENT

Scott T. Laughlin, **Pratik Kumar**, Ting Jiang, Wei Huang. Compositions and methods for modular control of bioorthogonal ligation. WO2020113077. 2020.

### PUBLICATIONS ([Google Scholar](#) | [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.

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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](#): “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](#): “Scientist Invents Biodegradable Detergent”

### INVITED ORAL PRESENTATIONS

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

### POSTER PRESENTATIONS

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

### MENTORING EXPERIENCE (TOTAL = 13)

- |   |  |                    |
|---|--|--------------------|
| <b>3 PhD</b> (rotation and 1 <sup>st</sup> 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 |

## Pratik Kumar, PhD

Ting Jiang (Chemistry/Chemical Biology, co-authors on four manuscripts)	Nov 2016–Dec 2017
<b>3 PhD rotation students:</b> Lei Chen, Yilin Ma, Beilei Jiang	2016, 2017
<b>1 MS student:</b> Sining Li (Chemistry, co-authors on three manuscripts)	Jan 2016–Apr 2017
<b>5 Undergraduate students:</b>	
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
<b>1 High School student:</b> Pavit Suri (W.T. Clarke high School, co-author on one manuscript)	Summer 2017

### TEACHING EXPERIENCE

<b>Graduate assistant, NMR facilities, SBU</b>	2018, Spring 2019
Trained undergraduate, graduate, and postdoctoral trainees on setting up and analyzing $^1\text{H}$ , $^{13}\text{C}$ , COSY, and DEPT NMR on 400/500/700 MHz NMR instruments. Also, performed routine maintenance such liquid-nitrogen/helium refills.	
<b>Graduate assistant, Mass spectrometry facilities, SBU</b>	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.	
<b>Teaching assistant, Advanced organic chemistry lab, SBU</b>	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 $^1\text{H}$ & $^{13}\text{C}$ NMR data; report spectroscopic and experimental data; and follow proper lab-safety techniques.	
<b>Teaching assistant, Undergraduate organic chemistry lab, SBU</b>	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.	
<b>Volunteer, High-School Chemistry, India</b>	Fall 2012, Summer 2013
Taught chemistry to underprivileged, primarily Hindi-speaking high schoolers preparing for an exam in English	

### PROFESSIONAL SERVICE

<b>Reviewer</b> for Organic & Biomolecular Chemistry (2020–), ChemBioChem (2020–), and European Molecular Imaging Meeting (2021)	
<b>Co-Chair, Gordon Research Seminars-Bioorganic Chemistry</b>	2022
<b>Vice-Chair, Gordon Research Seminars-Bioorganic Chemistry</b>	2019
<b>President, Graduate Chemical Society, SBU</b>	Apr 2017–Apr 2019
<b>President, Student Invited Speaker Committee, Stony Brook Chemistry</b>	Spring 2017
<b>Moderator</b> (& organizer), Grad. Chemical Society career panel on non-academic careers	Spring 2016
<b>Moderator</b> (& organizer), Graduate Career Association career panel on entrepreneurship	Fall 2015
<b>Vice-President, Graduate Career Association, SBU</b>	Fall 2015–Spring 2016
<b>Senator</b> for Chemistry at Graduate Student Organization, SBU	2015–Spring 2018
<b>Public Relations officer, Graduate Chemical Society</b>	Spring 2015–Apr 2017

### OUTREACH

<b>Judge</b> Annual Biomedical Research Conference for Minority Students (ABRCMS)	2020
<b>Volunteer, Janelia RESET team</b>	2020
Teaching biology labs (~once/month) at nearby diverse and low-income elementary schools	
“Life as a scientist and career in scientific research”	
Interaction with undergraduates at Suffolk Community College, NY, USA	2018
<b>Science Fair Judge</b> for WAC Lighting Foundation Invitational science fair, NY	2017, 2018
<b>Science Competition Judge</b> for 5th Annual Nassau County science fair, NY	2017
<b>3MT (3-minute thesis) Judge, SBU</b>	2017
Graduate Chemical Society <b>research photo contest</b> winner, SBU	2016, 2017

## Pratik Kumar, PhD

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