Indrajeet Sharma, Ph.D.

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Professional Appointments:

07/2020–present	**Associate Professor**, Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK
08/2014–06/2020	**Assistant Professor**, Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK
08/2014–present	**Full Member**, Institute of Natural Products Applications and Research Technologies (INPART), University of Oklahoma, Norman, OK
09/2015-2021	**Associated Faculty**, Cellular and Behavioral Neurobiology, University of Oklahoma, Norman, OK
07/2013-07/2014	**Lecturer**, Weill Cornell Graduate College, New York

Education and Training

02/2011–07/2014	**Lucille Castori Postdoctoral Fellow** with Prof. Derek S. Tan, Memorial Sloan–Kettering Cancer Center (MSKCC), New York "*Diversity-oriented synthesis of benzannulated spiroketals and Rational design of novel antibiotics*"
08/2006–01/2011	**Ph.D. in Chemistry** with Prof. David Crich at Wayne State University, MI and University of Illinois at Chicago, IL **"***Chemical synthesis of peptides and peptide thioesters* along with *mechanistic studies of glycosylation reactions*."
07/2004–06/2006	**M.Sc. in Chemistry** with Prof. Dipakranjan Mal at IIT Kharagpur, India "*[4 + 2] Hauser annulation for the synthesis of anticancer anthracyclines*."
07/2001–06/2004	**B.Sc. (Honors) in Chemistry**, University of Delhi, India

Fellowships and Awards

05/2022	Collaborative Research Faculty Fellowship (CRFF), Arts and Sciences
05/2021	Faculty Investment Program (FIP), Vice-President for Research, OU
04/2021	Senior Faculty Summer Fellowship (SFSF), College of Arts and Sciences
2019	Selected for the ACS, Division of Organic Chemistry Young Academic Investigator Symposium among top 14 Assistant Professors
07/2018–06/2023	NSF-CAREER Award
01/2018–08/2020	ACS-PRF Doctoral New Investigator Award
2016	Junior Faculty Fellowship (JFF) Award, Vice-President for Research
2015 & 2018	Junior Faculty Fellowship (JFF) Award, College of Arts and Sciences

2016 & 2017	Instructional Grant from Student Learning Center
07/2012–06/2014	The Lucilli Castori **Postdoctoral Fellowship**, MSKCC
08/ 2010	Selected for ACS, Division of Organic Chemistry sponsored Graduate Research Symposium among **top 50** chemistry 4th year PhD students
03/2010	Travel Award, Division of Organic Chemistry, American Chemical Society
07/2004–06/2006	Merit Scholarship, IIT-Kharagpur
10/2001	Meritorious Award, University of Delhi

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

Served in the NSF, NIH, DOD Panels, and Reviewer for the ACS-PRF grants.

Guest Editor: Molecules

Reviewer: Nature Communications, Organic Letters, The Journal of Organic Chemistry, The European Journal of Organic Chemistry, Chemistry: A European Journal, BMCL, Carbohydrate Research, Synlett, OBC, Dalton Transactions and Chemical Communications

Other Internal and External Affiliations:

1) Chair-Elect 2023: American Chemical Society, Oklahoma Section

2) Member of OU Faculty Senate

3) Member of the Dodge Family College of Arts and Sciences Student Awards Committee

4) Chair of the Faculty Awards Committee Department of Chemistry and Biochemistry

5) Member, American Chemical Society

6) Member, American Association for the Advancement of Science

7) Served in the Gold-water scholarship panel at OU,

8) Panel Judge at the Undergraduate Research Day

9) Member Blavatnik Awards Committee, OU

10) Chair Faculty Search Committee (2024), Chemistry and Biochemistry, OU

COURSES TAUGHT, CREDIT HOURS, AND ENROLLMENTS:

Appointment: 60% Research, 30% Teaching and 10% Service.

Number of New Courses = **7**; Total Number of Classes = **27**; Number of Students Taught in 8 years at OU = **1131**

Graduate Classes: CHEM-5400-001, CHEM-5430-001, CHEM-5460-001, CHEM-5491-001
Undergraduate Classes: CHEM-444-001**,** CHEM-3053-001, CHEM-3153-002

Development of New Courses: Course-Based Undergraduate Research Experience (CURE) program through CHEM-4444 and a new Graduate Course CHEM-5400.

Semester	*Course Number (Credit hour)*	*Final Size*
Fall 2014	CHEM-3053: Organic Chem I: Biological (**3 credit hour**)	207
Spring 2015	No Formal Teaching: Teaching Relief for New Faculty	–
Fall 2015	CHEM-5400: Organic Chem I: Mechanism and Reactivity (**2**)	22
Spring 2016	CHEM-3053: Organic Chem I: Biological (**3**)	225
Spring 2016	CHEM-5460: Special Topic in Chemical Reactivity (**1**)	12
Fall 2016	CHEM-5400: Organic Chem I: Mechanism and Reactivity (**2**)	13
Spring 2017	CHEM-3053: Organic Chem I: Biological (3)	236
Spring 2017	CHEM-5460: Special Topic in Chemical Reactivity (**1**)	8
Spring 2017	CHEM-5491: Seminar in Organic Chemistry	22
Fall 2017	CHEM-5400: Organic Chem I: Mechanism and Reactivity (**2**)	11
Spring 2018	CHEM-5430: Organic Chem II: Reactions and Synthesis (**3**)	6
Spring 2018	CHEM-5460: Special Topic in Chemical Reactivity (**1**)	4
Spring 2018	CHEM-5491: Seminar in Organic Chemistry	23
Fall 2018	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	26
Fall 2018	CHEM-5491: Seminar in Organic Chemistry	20
Spring 2019	CHEM-5430: Organic Chem II: Reactions and Synthesis (**3**)	5
Fall 2019	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	17
Fall 2019	CHEM-5491: Seminar in Organic Chemistry	19
Spring 2020	CHEM-5430: Organic Chem II: Reactions and Synthesis (**3**)	4
Spring 2020	CHEM-5491: Seminar in Organic Chemistry	19
Fall 2020	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	19
Spring 2021	Sabbatical, No Formal Teaching	

Fall 2021	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	20
Fall 2021	CHEM-5491: Seminar in Organic Chemistry	9
Spring 2022	CHEM-3153: Organic Chem II: Biological (**3**)	119
Spring 2022	CHEM-5460: Special Topic in Chemical Reactivity (**1**)	4
Spring 2022	CHEM-5491: Seminar in Organic Chemistry	10
Fall 2022	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	16
Fall 2022	CHEM-5491: Seminar in Organic Chemistry	8
Spring 2023	CHEM-5430: Organic Chem II: Reactions and Synthesis (**3**)	5
Spring 2023	CHEM-5491: Seminar in Organic Chemistry	11
Fall 2023	CHEM-4444: Adv. Synthesis/Spectral Characterization (**4**)	11

Peer-Reviewed Publications (Independent Career, *Undergraduate Authors Underlined*)

35. Kafle, P.; Ghosh, B.; Hunter, A.; Mukherjee, R.; Nicholas, K. M.; **Sharma, I.** "Iron-carbene initiated O–H Insertion/Aldol Cascade for the Stereoselective Synthesis of Functionalized Tetrahydrofurans" *ACS Catal.* **2023** (in review).

34. Ghosh, B.; Alber, A.; Lander, C.; Shao, Y.; Nicholas, K. M.; **Sharma, I.** "Catalytic Stereoselective 1,2-cis Furanosylations Enabled by Enynal-Derived Copper Carbenes" *Nat. Commun.* **2023** (in review).

33. Singh, S. P.; Ghosh, B.; **Sharma, I.** "Catalytic Orthogonal Glycosylations Enabled by Enynal-Derived Copper Carbenes" *Adv. Synth. Catal.* **2023** (In Review).

32. Bain, A. I.; Massaro, N. P.; Chinthapally, K.; **Sharma, I.** "Vinyl Metal Carbene Initiated Cascade Reactions for the Synthesis of Carbo- and Hetero-cycles" **2023** (submitted).

31. OU, C.; Ghosh, B.; **Sharma, I.** "A Non-Diazo Approach to Functionalized (2-furyl)-2-pyrrolidines through a Cascade Reaction of Enynal-Derived Zinc Carbenoids with b-Aminoketones" *Org. Chem. Front.* **2023** (DOI: 10.1039/d3qo01354e.).

30. Bain, A. I.; Chinthapally, K.; Hunter, A. C.; (equal contributions AB, KC, AH) **Sharma, I.** "Dual Catalysis in Rhodium (II) Carbenoid Chemistry" *Eur. J. Org. Chem.* **2022**, DOI: 10.1002/ejoc.202101419, **Selected for the Front Cover Page**

29. Paymode, D.; Hunter, A. C.; **Sharma, I.** "Rh-Catalyzed [3+2]-Annulation of Diazoquinones and Enolethers: Total Synthesis of Aflatoxin B2" *Eur. J. Org. Chem*. **2021**, 2034–2040. DOI: 10.1002/ejoc.202100186

28. Schlitzer, S.; Arunprasath, D.; Stevens, K.; (UG) **Sharma, I.** "A Metal Free Aromative Cascade for the Synthesis of Diverse Heterocycles" *Org. Chem. Front.* **2020**, *7*, 913–918. **DOI**: 10.1039/c9qo01336a; **Selected for the Front Cover Page**

27. Hunter, A. C.; Chinthapally, K.; Bain, A.; Steven, J. C.; **Sharma, I.** "Rh/Au dual catalysis in Carbene sp2-CH Functionalization/Conia-ene Cascade to the Stereoselective Synthesis of Diverse Spirocarbocycles" *Adv. Synth. Catal*. **2019**, 361, 2951–2958. **DOI:** 10.1002/adsc.201900079

26. Massaro, N.; Chatterji, A.; **Sharma, I.** "A three Component Approach to *Pyridine Stabilized Keteneimines for the Synthesis of Diverse Heterocycles" J. Org. Chem.* **2019,** *84*, 13676–13685. DOI: 10.1021/acs.joc.9b01906

25. Chinthapally, K.; Massaro, N.; Sabrina, T.; (UG), Gardner, E.; **Sharma, I. "**Trapping Rhodium Vinylcarbenoids with Aminochalcones for the Synthesis of Medium-Sized Azacycles" *Tetrahedron Letters* **2019,** *60,* 151253**. DOI:** https://doi.org/10.1016/j.tetlet.2019.151253

24. In collaboration with the NIH-NCATS Library Screening Program; *"Canvass: a Crowd-Sourced Natural Product Screening Library for Exploring Biological Space" ACS Cent. Sci.* **2018,** 4, 1727–1741. **DOI**: 10.1021/acscentsci.8b00747

23. Massaro, N. P.; Stevens, J. C.; Chatterji, A.; **Sharma, I.** *"Stereoselective Synthesis of Diverse Lactones through a Cascade Reaction of Rhodium Carbenoids with Ketoacids" Org. Lett.* **2018**, *20*, 7585–7589. **DOI**: 10.1021/acs.orglett.8b03327

22. Hunter, A. C.; Almutwalli, B.; Bain, A.; **Sharma, I.** *"Trapping Rhodium Carbenoids with Aminoalkynes for the Synthesis of Diverse N-Heterocycles" Tetrahedron* **2018**, *74*, 5451–5457 (Invited article in honor of Derek Barton on his centennial birthday).

21. Hunter, A.C.; Schlitzer, S.C.; Stevens, J.C.; Almutwalli, B.; **(UG) Sharma, I. "***A Convergent Approach to Diverse Spiroethers through Stereoselective Trapping of Rhodium Carbenoids with Gold Activated Alkynols" J. Org. Chem.* **2018**, *83*, 2744–2752. **DOI:** 10.1021/acs.joc.7b03196

20. Chinthapally, K.; Massaro, N.; Padgett, H.L.; **(UG) Sharma, I. "***A Serendipitous Cascade of Rhodium Vinylcarbenoids with Aminochalcones for the Synthesis of Functionalized Quinolines" Chem. Comm.* **2017**, *53*, 12205–12208. **DOI:** 10.1039/C7CC07181G

19. Chinthapally, K; Massaro, N. P.; **Sharma, I. "***Rhodium Carbenoid Initiated O–H Insertion/Aldol/Oxy-Cope Cascade for the Stereoselective Synthesis of Functionalized Oxacycles*" *Org. Lett.* **2016**, *18*, 6340–6343. **DOI:** 10.1021/acs.orglett.6b03229

18. Hunter, A. C.; Schlitzer, S. C.; **Sharma, I. "**Synergistic Diazo–OH Insertion/Conia-Ene Cascade Catalysis for the Stereoselective Synthesis of γ-Butyrolactones and tetrahydrofurans" *Chem. Eur. J*. **2016**, *22*, 16062–16065 **DOI:** 10.1002/chem.201603934.

17. In Collaboration with Professor Lakshmi Devi (Mount Sinai, New York) and Joseph Parello (Vanderbilt University); Gupta, A.; Gomes, I.; Bobeck, E. N.; Fakira, A. K.; **Massaro, N. P.; Sharma, I.;** Cave, A.; Hamm, H. E.; Parello, J.; Devi, L. A. "Collybolide is a Novel Biased Agonist of κ-Opioid Receptors with Potent Antipruritic Activity" *Proc. Natl. Acad. Sci.* **2016**, *113, 6041–6046.* **DOI:** 10.1073/pnas.1521825113

16. Hunter, A. C.; Chinthapally, K.; **Sharma, I. "**$Rh_2(esp)_2$: An Efficient Catalyst for O–H Insertion Reactions of Carboxylic Acids into Acceptor/Acceptor Diazo Compounds" *Eur. J. Org. Chem. **2016,*** 2260–2263**, selected for the front cover page**; **DOI:** 10.1002/ejoc.201600064

Publications (Prior to Independent Career)

15. **Sharma, I.**; Ji, C.; Hudson, L. L.; Guney, T.; Pesci, E. C.; Coleman, J. P.; Tan, D. S. **"***Comparative Structure–Activity Relationships between the P. aeruginosa Anthranilyl-CoA Synthetase PqsA and the M. tuberculosis Salicylate Adenylation Enzyme MbtA*" **2022** (manuscript in preparation).

14. Ji, C.; **Sharma, I.**; Pratihar, D.; Hudson, L. L.; Maura, D.; Guney, T.; Rahme, L. G.; Pesci, E. C.; Coleman, J. P.; Tan, D. S. **"**Designed small-molecule inhibitors of the anthranilyl-CoA synthetase PqsA block quinolone biosynthesis in *Pseudomonas aeruginosa*" *ACS Chem. Biol.* **2016**, *11*, 3061–3067.

13. Matarlo, J. S.; Evans, E. C.; **Sharma, I.**; Lavaud, L. J.; Ngo, S. C.; Shek, R.; Rajashankar, K. R.; French, J. B.; Tan, D. S.; Tonge, P. J. "Mechanism of MenE Inhibition by Acyl-Adenylate Analogues and Discovery of Novel Antibacterial Agents" *Biochemistry* **2015**, *54***,** 6514–6524.

12. **Sharma, I.;** Wurst, J.; Tan, D. S. "Solvent-Dependent Divergent Functions of $Sc(OTf)_3$ in Stereoselective Epoxide-Opening Spiroketalizations" *Org. Lett.* **2014**, *16*, 2474–2477.

11. In collaboration with Dr. Susruta Majumdar (Pasternak Lab, MSKCC), Váradi, A.; Palmer, T. C.; Notis, P. R.; Redel-Traub, G. N.; Afonin, D.; Subrath, J. J.; Pasternak, G. W.; Hu, C.; **Sharma**, I.; Majumdar, S.; "Three-Component Coupling Approach for the Synthesis of Diverse Heterocycles Utilizing Reactive Nitrilium Trapping" Org. Lett. **2014**, *16*, 1668–1671.

10. **Sharma, I.**; Tan, D. S. News and Views "Drug Discovery Diversifying Complexity" *Nature Chemistry* **2013**, *5*, 157–158.

9. Lu, X.; Zhou, R.; **Sharma, I.**; Li, X.; Kumar, G.; Swaminathan, S.; Tonge, P. J.; Tan, D. S. "Stable Analogues of OSB-AMP: Potent Inhibitors of MenE, the *o*-Succinylbenzoate-CoA Synthetase from Bacterial Menaquinone Biosynthesis" *ChemBioChem.* **2012**, *13*, 129–136.

8. **Sharma, I.**; Bohe, L.; Crich D. "Influence of Protecting Groups on the Anomeric Equilibrium; Case of the 4,6-*O*-Benzylidene Acetal in the Mannopyranose Series" *Carbohydr. Res.* **2012**, *357*, 126–131.

7. **Sharma, I.**; Crich D. "Direct Fmoc-Chemistry-Based Solid Phase Synthesis of Peptidyl Thioesters" *J. Org. Chem.* **2011**, *76*, 6518–6524.

6. Aubry, S.; Sasaki, K.; **Sharma, I.**; Crich, D. "Influence of protecting groups on the reactivity and selectivity of glycosylation: Chemistry of the 4,6-*O*-benzylidene protected mannopyranosyl donors and related species" *Topics Curr. Chem*. **2011**, *301*, 141–188.

5. Crich, D.; **Sharma, I.** "Influence of the O3 Protecting Group on Stereoselectivity in the Preparation of *C*-Mannopyranosides with 4,6-*O*-Benzylidene Protected Donors" *J. Org. Chem.* **2010**, *75*, 8383–8391.

4. Crich, D.; **Sharma, I.** "Triblock Peptide and Peptide Thioester Synthesis with Reactivity-Differentiated Sulfonamides and Peptidyl Thioacids" *Angew. Chem. Int. Ed.* **2009,** *48***,** 7591–7594.

3. Crich, D.; **Sharma, I.** "Epimerization-Free Block Synthesis of Peptides from Thioacids and Amines with Sanger's and Mukaiyama's Reagents" *Angew. Chem. Int. Ed.* **2009,** *48*, 2355–2358.

2. Crich, D.; **Sharma, I.** "Is Donor-Acceptor Hydrogen Bonding Necessary for 4,6-*O*-Benzylidene Directed *β*-Mannopyranosylation. Stereoselective Synthesis of *β*-*C*-Mannopyranosides and *α*-*C*-Glucopyaronosides" *Org. Lett.* **2008**, *10*, 4731–4734.

1. Mal, D.; Ray, S.; **Sharma, I.** "Direct Access to 1,4-Dihydroxyanthraquinones: The Hauser Annulation Reexamined with *p*-Quinones*" J. Org. Chem.* **2007***, 72,* 4981–4984.

Book Chapters

Contributed **6 chapters** to the Electronic Encyclopedia of Reagents for Organic Synthesis Book

i) 3-Hydroxy-2-[(2,4,6-trimethoxyphenyl)methyl]thio]benzaldehyde, CAS: 901126-79-2.

ii) 3-Nitro-2-pyridinesulfenyl chloride, CAS: 68206-45-1.

iii) 5-Ethyl-2-methylpyridine borane, CAS: 1014979-56-6.

iv) Lithium trimethylsilanethiolate, CAS: 2006-10-4.

v) Tetrabutylammonium Difluorotriphenylstannate, CAS: 139353-88-1.

vi) 1-[3-(Diphenylphosphino)-propanoyl]-2,5-pyrrolidindione, CAS: 170278-50-9.

Selected Presentations at Scholarly Meetings (Undergraduates Authors are underlined)

11/2023: Sharma, I. "Harnessing Carbenes/Nitrenes for Drug Discovery" Oral Presentation, ACS Southwest Regional Meeting, Oklahoma City.

08/2023: Sharma, I. "Catalytic Stereoselective Synthesis of Glycosides using Metal Carbenes" Oral Presentation, ACS Fall National Meeting, San Francisco.

08/2023: Ghosh, B.; Alber, A.; Singh, S. P.; and **Sharma, I.** "Carbene Initiated Catalytic Stereoselective Glycosylations" Poster Presentation, ACS Fall National Meeting, San Francisco.

06/2023: Ghosh, B.; Alber, A.; Singh, S. P.; and **Sharma, I.** "Carbene Initiated Catalytic Stereoselective Glycosylations" Poster Presentation, Carbohydrate Gordon Research Conference, Holderness School, NH.

06/2023: **Sharma, I.** "Carbene Initiated Catalytic Stereoselective Glycosylations" Oral Presentation, New England Glyco-Chemistry Meeting, Brandeis University, MA.

02/2020: **Sharma, I.** "Harnessing Carbene Chemistry to Drive Drug Discovery "Poster Presentation, 3rd International Symposium on Carbene and Nitrene Chemistry, San Antonio, TX

08/2019: **Sharma, I.** " Stereoselective Carbene Annulations for Assembling Complexity " Poster Presentation, Natural Products-Gordon Research Conference, Andover, NH

07/2019: **Sharma, I.** "Structure–Activity Relationships on Collybolide: Discovery of a Potent Kappa-Opioid Agonist with Enhanced Metabolic Stability" Poster Session, International Narcotics Research Conference, New York. **Travel Award** to Indrajeet Sharma

03/2019: Legg-Jack, I. (**UG**), Hunter, A. C.; Sharma, I. *Enantioselective Synthesis of Diverse Heterocycles through Cu(I) Catalyzed Conia-ene Cyclizations*. Research Day at the Capitol. Oklahoma City.

07/2018: **Sharma, I.** Poster Presentation, "Leveraging Metal Carbenes for Assembling Complexity" Poster Presentation, Organic Reactions and Processes-Gordon Research Conference, Stonehill College, MA

03/2018: Sharma, I. "Leveraging Metal Carbenes for Assembling Complexity" Oral Presentation, ACS National Conference, New Orleans.

07/2017: Massaro, N. M.; **Sharma**, I. "Design and Synthesis of Collybolide Probes for Kappa-Opioid Receptor" Poster Session, **International Narcotics Research Conference**, Chicago. **Travel Award** for Nicholas P. Massaro (Graduate Student)

09/2015: Hunter, A. C.; **Sharma**, I. "A Biomimetic Diversity-Oriented Approach to Azaspirene via Metal Carbenoid Chemistry" Poster Session, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Orlando, Florida
Best Poster *Award for Arianne C. Hunter (Graduate Student)*

07/2015: Hunter, A. C.; Abbott, S. P. (***UG***); Boucher, M. J. (***UG***); **Sharma**, I. "A Biomimetic Diversity-Oriented Approach to the Pseurotins" Poster Session, **American Society of Pharmacognosy**, Copper Mountain, Colorado

Selected Invited Talks:

11/2023 ACS Southwest Regional Meeting, Oklahoma City

08/2023 ACS Fall National Meeting, San Francisco

08/2023 Carbohydrate Gordon Research Conference, Holderness School, NH.

06/2023 New England Glyco-Chemistry Meeting, Brandeis University, MA

11/2021 Cellular and Behavioral Neurobiology, University of Oklahoma

10/2021 Department of Chemistry, Georgia State University

08/2021 ACS Fall 2021 National Meeting in Atlanta, Division of Carbohydrate Chemistry, Symposium on Catalytic Approaches to Selective Glycoside Synthesis

04/2021 KappaCon 2021, The 6th conference on the therapeutic potential of kappa opioid in pain and addiction

08/2020 International Webinar: Chemistry, A Motivation in Research, India

02/2020 3rd International Symposium on Carbene and Nitrene Chemistry, San Antonio, TX

08/2019 ACS Division of Organic Chemistry, Academic Young Investigator Symposium Fall 2019 National Meeting in San Diego

05/2019: Speaker at 2019 Tex-Syn Conference, Baylor University

03/2019 Department of Chemistry and Biochemistry, University of Texas at Arlington

03/2019 Department of Chemistry, Texas Christian University

03/2019: Department of Chemistry, UT Southwestern Medical Center

03/2019 Department of Chemistry, Mississippi State University

03/2019 Department of Chemistry, New York University

03/2019: Department of Chemical Biology, Memorial Sloan–Kettering Cancer Center

03/2019: Department of Chemistry, Hunter College,

02/2019 Department of Chemistry, Stony Brook University

06/2018: Heterocyclic Compounds Gordon Conference, Newport, RI

03/2018: Opioid Crisis, Southwest Oklahoma City Public Library

07/2017: International Narcotics Research Conference, Chicago, Illinois

11/2016: ACS-Southwest Regional Meeting, Galveston, TX

08/2016: Natural Products & Bioactive Compounds Gordon Conference, Proctor Academy, New Hampshire

02/2016: One-day course "Natural Products-Inspired Drug Discovery" to older adults (50+) at the Osher Lifelong Learning Institute at the University of Oklahoma

10/2015: "Natural Products Based Pharmaceuticals: The Gold Standard in Drug Discovery" at the G.E.T.F.I.T. Conference (Gaining Excellence in Teaching through Focused Instructional Tools), Norman North High School, Norman, OK

Research Projects and Funding

1) Stereoselective Carbene Annulations for Assembling Molecular Complexity (Long term Project, **Role PI**), Collaborators: Dr. Peng Liu (University of Pittsburgh), Dr. Yihan Shao (OU), Dr. Kenneth Nicholas (OU) and Prof. Lakshmi Devi (Mount Sinai). **Funding:** i) NSF-CAREER Award (**Role PI**, 05/01/2018–04/30/2023), Total Award Amount **$650,000**; ii) OCAST-Health Award (**Role PI**, 10/01/2020–09/30/2023), Total Award Amount **$135,000**; iii) ACS-PRF Doctoral Young Investigator Award (**Role PI**, 01/01/2018–08/31/2020), Total Award Amount **$110,000**.

2) Design and Synthesis of Collybolide Probes for Kappa Opioid Receptor (Long term Project, **Role PI**) Collaborators: Prof. Lakshmi Devi (Mount Sinai), Dr. Vsevolod Katritch

(University of Southern California), Dr. Joseph Parello (Vanderbilt University), and Dr. Adrien Cave (ICSN, France). **Funding:** i) NIH-NIDA R21/R33 Chemical Discovery Award (**Role PI**, 04/01/2019–03/31/2025), Total Award Amount **$1,047,395**; ii) OCAST-Health Award (**Role PI**, 08/01/2016–07/31/2019), Total Award Amount **$135,000**.

3) Developing Potent and Selective Inhibitors for Bax/Bak
Collaborators: Dr. Yihan Shao (OU) and Dr. Jialing Lin (OUHSC) **Funding:** i) OCAST-Health Award (PI: Yihan Shao, 07/01/2018–06/30/2021), Total Award **$135,000**. NIGMS-COBRE Pilot Award (**Role PI**, 06/15/2018–05/31/2019), Total Award Amount **$77,500**.

4) Catalytic Functionalization of Hydrocarbons with Nitrous Oxide
Collaborators: Dr. Kenneth Nicholas (OU), Dr. Steven Crossley (Chemical Engineering), Dr. Wei Qin (Microbiology) and Dr. Tim Filley (Geoscience);

Funding: i) OU Faculty Investment Program; Total Award Amount **$12,800**, ii) Collaborative Research Faculty Fellowship, DFCAS OU (**Role PI**, 06/01/2022–05/31/2024), Total Award Amount **$50,000**.

FELLOWSHIPS/AWARDS TO STUDENTS:

Total Amount: $180,000 to graduate students and **$51,000** to Undergraduate Students

1) Arianne C. Hunter (PhD Student)

i) SMART (Science, Mathematics, and Research for Transformation) Fellowship, Sponsored by Department of Defense,

Total Award amount: $120,000 (July 1, 2016 – June 30, 2019)

ii) Nancy L Mergler Dissertation Fellowship Sponsored by the University of Oklahoma, only given to top 7 students at OU

Total Award Amount: $15,000 (April 2018 – May 2019)

iii) Three Minute Thesis Competition Sponsored by the University of Oklahoma

Total Award Amount: $2,500 (Runner-Up and People's choice in Feb. 2019)

iv) CAS Future Leaders Program by American Chemical Society

Selected among top 30 PhD and postdoctoral researchers around the world

Award Amount: $1,000 **https://www.cas.org/about/futureleaders/2019-gallery**

v) Carl Storm Underrepresented Minority Fellowship to attend Gordon Research Conference, Award Amount $600 (May 2018).

vi) NOBCCHE Travel Award to attend Gordon Research Conference, Amount $600 (May 2018)

vii) Oklahoma 30 Under 30: Honoring innovative, creative and inspiring Oklahomans under the age of 30 Award Amount $1,000 (Oct. 2018)

viii) Robberson Research and Creative Endeavors Grant sponsored by the Graduate College, University of Oklahoma, Award Amount: $1,500 (April 2018)

ix) Chemistry and Biochemistry Belle W. Goodman Scholarship (top research award)

Award Amount: $1,500 (April 2019).

x) Chemistry and Biochemistry Sheryl D. Christian Scholarship Award, Award Amount: $1,000 (April 2018).

xi) Chemistry and Biochemistry Jerry J. Zuckerman Scholarship, Award Amount: **$ 500** (April 2017).

xii) Chemistry and Biochemistry Ronal E. Lehr Scholarship, Award Amount: $**400** (April 2016).

2) Nicholas P. Massaro (PhD Student)

i) Chemistry and Biochemistry Roland Lehr Scholarship, Amount = $500.00 (April 2019)

ii) ACS, Division of Organic Chemistry sponsored Graduate Research Symposium among **top 50** chemistry 4th year graduate students, Amount: $425 (Travel Award)

iii) Robberson Research and Creative Endeavors Grant, Amount = $1,500 (May 2018)

iv) Robberson Research Travel Award, Amount = $850.00 (October 2017)

v) International Narcotics Research Conference Travel Award, Amount = $750.00(May 2017)

vi) Michael R. Abraham Graduate Teaching Assistant Award, Amount = $750.00 (May 2015)

3) Bilal Almutwalli (MS student)

Michael R. Abraham Graduate Teaching Assistant Award, Amount = $750.00 (April 2017)

4) Steven Schlitzer (PhD Student)

i) Graduate Teaching Assistant Award, Amount = $500.00;

ii) Chemistry and Biochemistry Ronal E. Lehr Scholarship Award: $400 (April 2020).

5) Eric Gardner (MS student); Graduate Teaching Assistant Award, Amount = $500.00

6) Anae Bain (PhD Student)

i) Jerry J. Zuckerman Scholarship Award Amount: $1,000 (April 2020 and 2021)

ii) Three Minute Thesis Competition Sponsored by the University of Oklahoma

Total Award Amount: $2,000 (First Prize 2022)

7) Adam Alber (PhD Student)

Graduate Teaching Assistant Award, Amount = $500.00 (April 2020)

Chemistry and Biochemistry Ronal E. Lehr Scholarship Award: $400 (May 2023)

8) Randall Welles (PhD Student)

Graduate Teaching Assistant Award, Amount = $500.00 (May 2023)

9) Surya Pratap Singh (PhD Student)

DFCAS Dissertation Research Fellowship Award, Amount = $2,500.00 (May 2023)

Graduate Teaching Assistant Award, Amount = $500.00 (May 2023)

10) Chemistry and Biochemistry Nicholas Fellowship to Jacob Solomon; Amount: **$5,000**

11) Tekenari Tienabeso (Undergraduate)

i) ACS, Division of Organic Chemistry Summer Undergraduate Research Fellowship Gran; Selected **among 9 students** all over the country)

Total Award Amount: **$5,000**; Total Award Period: 05/16/2016–08/15/2016

12) Henry Unterschuetz (Undergraduate)

OK-NSF-EPSCoR, Research Experience for Undergraduate grant

Total Award Amount: **$5,000**; Total Award Period: 05/16/2016–08/15/2016

13) Sean P. Abbott (Undergraduate)

Summer Undergraduate Research Program 2016," Sponsored by Memorial Sloan-Kettering Cancer Center; Total Award Amount: **$4,000**

14) Sabrina Ton (Undergraduate)

Summer Research Fellowship," Sponsored by American Society of Pharmacognosy, Award Amount: $2,500

15) Haylee Padgett (Undergraduate)

Summer Research Fellowship," Sponsored by American Society of Pharmacognosy, Award Amount: $2,500

16) NSF-Oklahoma-LSAMP Scholars Program

Recipients: 1) Ibikari Legg-Jack (2019); 2) Taylor Calvert (2017) Tekenari Tienabeso (2016)

Total Award Amount: **$7,500**

17) OU-McNair Scholars Program

Recipients: 1) Sean P. Abbott (2016); 2) Julia Ceniceros (2019)

Total Award Amount: **$5,600**

18) Undergraduate Research Opportunities Program (UROP) Grant Honors College, University of Oklahoma, Amount: $1,000

Recipients: 1) Monica Ness (2019), Sabrina Ton (2018); 2) 3) Ibikari Legg-Jack (2018); 4) Haylee Padgett (2017); 5) Henry Unterschuetz (2016), 6) Tekenari Tienabeso (2016); Sean Abbott (2015)

Total Award Amount: **$7,000**

19) Honors Research Assistant Program (HRAP), Sponsored by Honors College, The University of Oklahoma; Amount $900/semester

Recipients: Haylee Padgett (2016/2017) and Sean Abbott (2015/2016)

Total Award Amount: **$3,600**

20) Dick Van der Helm Scholarship Fund for Summer Research, Sponsored by the Department of Chemistry and Biochemistry, The University of Oklahoma.

Recipient: Bilal Almutwalli (2016); Total Award Amount: **$5,000**

21) Chemistry and Biochemistry Freshman Chemistry Award; Amount: **$400**

Receipts: Emily Thomas (2018); 2) Juliana Scwabb (2019)

22) Chemistry and Biochemistry Nicholas Fellowship to Monica Ness; Amount: **$3,000**

Mentoring Activities:

The Sharma group has generated total funding of **~$180,000 (graduate students) and $51,000 (undergraduates) in fellowships and awards.** Some notable mentions include the SMART scholarship from the DOD, the ACS-DOC-SURF award, the American Society of Pharmacognosy Summer Fellowship, and the 3-minute thesis prize.

Former students have gone to federal agencies, postdoctoral appointments, medical/dental schools, and industrial positions. Few are listed with their current jobs and notable awards:

Number of graduate students mentored, including rotation students **34**; Number of Ph.D. graduates = **4**, MS Graduates = **4**; Undergraduates = **24**

Current Ph.D. students = **7** and 1 postdoc and 4 undergraduates

Current PhD Students (7)

1) Adam Alber, Ph.D. Candidate (January 2019–Present) **Milestone:** Preliminary Exam and General Exam, Literature, and Research Colloquium Completed

2) Chenxin OU, Ph.D. Candidate (November 2020–Present) **Milestone:** Preliminary Exam and General Exam Completed, Expected Graduation: December 2023

3) Randall Welles (December 2020–Present); Preliminary Exam and General Exam completed

4) Prakash Kafle (December 2021-Present); Preliminary and General Exam completed

5) Surya Pratap Singh (December 2020–Present); Preliminary and General Exam completed

6) Rishav Mukharjee (October 2022–Present); Preliminary Exam completed

7) Deacon Herndon (October 2022 -Present); Preliminary Exam completed

Current Ph.D. Rotation Students (3)

1) Upasana Chatterjee
2) Mohammad Sani
3) Umesh Chaudhary

Former PhD Students (4)

1) Arianne C. Hunter, Ph.D. (January 2015–April 2019)

Thesis Title: Stereoselective Spirocyclizations Initiated by Metal Carbenes

Placement: *SMART fellow DOD, Best Ph.D. thesis, 3-minute thesis runner up, 2019 CAS future leader, NSF-Ascend postdoctoral fellow* with Prof. Sarah Reisman at CalTech after 3-year service commitment at DOD

2) Nicholas P. Massaro, Ph.D. (January 2015–June 2019)

Thesis Title: Rhodium Carbenoid Initiated Cascades for the Synthesis of Diverse Medium-Sized Heterocycles

Placement: Senior. Scientist at Cambrex after Postdoc at the NC State University

3) Steven C. Schlitzer, Ph.D. (January 2016–July 2020)

Thesis Title: Cascade Reactions to Access Bioactive Scaffolds

Placement: Research Scientist at the Eurofins, Colorado

4) Anae Bain (January 2018–June 2022)

Thesis Title: Harnessing Metal Carbenoids to Assemble Spirocycles and Glycans

Placement: Research Scientist at the LILLY (*first prize 3-minute Thesis across OU three campuses*)

M.S. Thesis Advisor (1)

1) Joseph Stevens, Ph.D. (January 2017–April 2019), Currently Research Scientist at the Cytovance in Oklahoma City

M.S. Non-Thesis: 3 students

Selected Undergraduate Students: Ibikari Legg-Jack (U Penn Medical School with full tuition waiver); Haylee Padgett (U Cincinnati Medical School); Sean Abbott (OU Med); Tekenari Tienabeso (OU Med); Mallory Boucher (Engineer at ExxonMobil); Katelyn Stevens (Ph.D. at U Minnesota); Monica Ness (Ph.D. at OU); Ginny Kim (Ph.D. at Notre Dame). In addition, the PI has trained several underrepresented students, including *4 NSF-LSAMP scholars, 3 McNair Scholars, 1 NSF-EPSCoR-REU* scholar, and 2 NIH-INBRE awardees.

Former Postdocs: Kiran Chinthapally (Staff Scientist at Notre Dame); Dinesh Paymode (Sr. Scientist at Mirati); Suneel Chepuri (Scientist at Syngene International).

Committee member for 16 Ph.D. and 6 M.S. candidates

1) William A. Powell (PhD, January 2023–Present, Singh Lab)
2) Anshi Pandey (PhD, January 2023–Present, Singh Lab)
3) Richard Van, PhD, (January 2019–Present, Shao Lab)
4) Carly Wickizer (August 2022–Present, Shao Lab)

5) Alan Ray (PhD, January 2019–Present, Hansmann Lab)
6) Dustin Dimas (PhD, January 2019–Present, Singh Lab)
7) Rob Fogle (PhD, January 2018–Present, Burgett Lab)
8) Quentin Avila (PhD, January 2017 – Present, Duerfeldt lab)
9) James W. Herndon (PhD, January 2016–Present, Richter-Addo Lab)
10) Stephen J. Wilson (January 2016–Present, PhD Glatzhofer Lab)
11) Xiaozheng Dou (January 2016 – Present, Duerfeldt lab)
12) Allison O Mates (PhD, January 2019–June 2019, Cichewicz Lab)
13) Adam Carter (PhD, January 2015 – Dec 2018, Cichewicz lab)
14) Nathan A Bernhardt (PhD, January 2015–July 2018 Hansmann Lab)
15) Hailee Rau (MS, January 2018–May 2019, Duerfeldt lab)
16) Jon Pope (MS, January 2018–May 2019, Yang Lab)
17) Tejaswi Bavineni (MS, January 2017–Dec 2018, Singh Lab)
18) Christopher S. Thrutchley (MS, January 2016 – May 2017, Glatzhofer Lab)
19) Gyan Ebenezer (MS, January 2016 –May 2017 Burgett Lab)
20) Julia Lee (PhD, January 2019–Dec 2020, Duerfeldt Lab)
21) Kaitlyn Stevens (PhD, January 2019–Dec 2020, Duerfeldt Lab)
22) Zachary Severance (PhD, June 2020, Burgett Lab)