Abhishek Sharma, PhD
Assistant Professor
Department of Chemistry and Chemical Biology
Stevens Institute of Technology

314 McLean Hall
507 River Street
Hoboken, NJ, 07030, USA
abhishek.sharma@stevens.edu
Tel: 201-216-3539

Professional/Research Experience

- Postdoctoral Research Associate, Department of Chemistry, University of Illinois at Urbana-Champaign (with Professors John A. Katzenellenbogen and Douglas A. Mitchell) **2012 – 2016**
- Postdoctoral Fellow, Department of Chemistry, University of Leuven, Belgium (with Professor Erik Van der Eycken) **2011 - 2012**

Education

- **PhD** (Organic Chemistry), Advisor: Dr. Arun K. Sinha **2005 – 2010**
  CSIR-Institute of Himalayan Bioresource Technology (I.H.B.T), India

Awards and Honors

- Breakthrough Award, DoD Breast Cancer Research Program **2018**
- Susan G. Komen Fellowship **2016**
- Marie Curie Intra-European Postdoctoral Fellowship by European Union (Not availed) **2012**
- Postdoctoral Fellowship by the Research Foundation–Flanders (FWO), Belgium **2010**
- Junior/Senior Research Fellowship (JRF/SRF), Council of Scientific and Industrial Research (CSIR), India **2006**

Research Grants

- Susan G. Komen Grant in Breast Cancer Drug Discovery (Awarded: 2016), Role: PI
- Department of Defense (DoD) Breakthrough Grant, Breast Cancer Research Program (Awarded: 2019), Role: PI
- NIH/NIGMS, R15, (Awarded: 2020), Role: PI
- NIH/NIGMS, R35, (Awarded: 2021), Role: PI

Publications

(* = corresponding author)

35) Acrylic boronate: a multifunctional C3 building block for catalytic synthesis of rare organoborons and chemoselective heterobifunctional ligations; S. Lin, L. Wang, **A. Sharma**,* *Chemical Science*, **2021**, *12*, 7924-7929.
34) α-Hydroxy boron-enabled regioselective access to bifunctional halo-boryl alicyclic ethers and α-halo borons; L. Wang, S. Lin, Y. Zhu, D. Ferrante, T. Ishak, Y. Baba, **A. Sharma**,* *Chem. Commun*. **2021**, *57*, 4564-4567.
33) The quest for orally available selective estrogen receptor degraders (SERDs); L. Wang, **A. Sharma**,* *ChemMedChem*, **2020**, *15*, 2072-2097. (*Selected as a Very Important Paper (VIP) by the reviewers)*
32) A modular and concise approach to MIDA acylboronates via chemoselective oxidation of unsymmetrical geminal diborylalkanes: Unlocking access to a novel class of acylborons; S. Lin, L. Wang, N. Aminoleslami, Y. Lao, C. Yagel, **A. Sharma***, *Chemical Science*, **2019**, *10*, 4684-4691.
31) Antagonists for constitutively active mutant estrogen receptors: insights into the roles of antiestrogen-core and sde-chain **A. Sharma**,* W. Toy, V. S. Guillen, N. Sharma, J. Min, K. E. Carlson, C. G. Mayne, S. Lin, M. Sabio, G. Greene, B. S. Katzenellenbogen, S. Chandarlapaty, J. A. Katzenellenbogen, *ACS Chem. Biol.* **2018**, *13*, 3374-3384.

30) New class of selective estrogen receptor degraders (SERDs): Expanding the toolbox of PROTAC degrons; L. Wang, V.S. Guillen, N. Sharma, K. Flessa, J. Min, K. E. Carlson, W. Toy, S. Braqi, B. S. Katzenellenbogen, J. A. Katzenellenbogen, S. Chandarlapaty, **A. Sharma**,* *ACS Med. Chem. Lett.* **2018**, *9,* 803-808.
29) Recent advances in the synthesis and synthetic applications of 1,2,3-triazoles; S. Lin, **A. Sharma**,* *Chem. Heterocycl. Compd.* **2018**, *54*, 314-316.
28) Structurally novel antiestrogens elicit differential responses from constitutively active mutant estrogen receptors in breast cancer cells and tumors; Y. Zhao, M. J. Laws, V. S. Guillen, Y. Ziegler1, J. Min, **A. Sharma**, S. H. Kim, D. Chu, B. H. Park, S. Oesterreich, C. Mao, D. J. Shapiro, K. W. Nettles, J. A. Katzenellenbogen, B. S. Katzenellenbogen, *Cancer Research*, **2017**, 77, 5602-5613.
27) Adamantyl antiestrogens with novel side chains reveal a spectrum of activities in suppressing estrogen receptor mediated activities in breast cancer cells; Jian Min, Valeria Sanabria Guillen, **A. Sharma**, Yuechao Zhao, Yvonne Ziegler, Ping Gong, Christopher G. Mayne, Sathish Srinivasan, Sung Hoon Kim, Kathryn E. Carlson, Kendall W. Nettles, Benita S. Katzenellenbogen, John A. Katzenellenbogen, *J. Med. Chem.* **2017**, *60*, 6321–6336
26) Exploring the structural compliancy versus specificity of the estrogen receptor using isomeric three-dimensional ligands; N. Sharma, K. Carlson, J. Nwachukwu, S. Srinivasan, **A. Sharma**, K. Nettles, J. A. Katzenellenbogen, *ACS Chem. Biol.* **2017,** *12*, 494–503.
25) Insights into methyltransferase specificity and bioactivity of derivatives of the antibiotic plantazolicin; Y. Hao, P. M. Blair, **A. Sharma** S. K. Nair, D. A. Mitchell, *ACS Chem. Biol.* **2015**, *10*, 1209-1216.
24) Triaryl-substituted schiff bases are high-affinity subtype-selective ligands for the estrogen receptor; Z.-Q. Liao, C. Dong, K. E. Carlson, S. Srinivasan, J. C. Nwachukwu, R. W. Chesnut, **A. Sharma**, K. W. Nettles, J.A. Katzenellenbogen, H.-B. Zhou, *J. Med. Chem.* **2014**, *57*, 3532-3545.
23) Synthesis of plantazolicin analogues enables dissection of ligand binding interactions of a highly selective methyltransferase; **A. Sharma**. P. M. Blair, D. A. Mitchell, *Org. Lett.* **2013**, *15*, 5076-5079.
22) Copper-catalyzed direct secondary and tertiary C-H alkylation of azoles through a novel Heteroarene-Amine-Aldehyde/Ketone coupling; D. Vachhani, **A. Sharma**, E. Van der Eycken, *Angew. Chemie Int. Ed.* **2013**, *52*, 2547-2550.
21) Direct heteroarylation of tautomerizable heterocycles into unsymmetrical and symmetrical biheterocycles via Pd/Cu-catalyzed phosphonium coupling; **A. Sharma**, D. Vachhani, E. Van der Eycken, *Org. Lett.* **2012**, *14*, 1854-1857.
20) Developments in direct C-H arylation of (hetero)arenes under microwave irradiation; **A. Sharma**, D. Vachhani, E. Van der Eycken, *Chem. Eur. J.* **2013**, *19*, 1158-1168.
19) Pd/Cu-catalyzed C-H arylation of 1,3,4-thiadiazoles with (hetero)aryl iodides, bromides and triflates; D. Vachhani, **A. Sharma**, E. Van der Eycken, *J. Org. Chem.* **2012**, *77*, 8768–8774.
18) A facile diversity-oriented synthesis of imidazo[1,2-a]pyrazinones via gold-catalyzed regioselective heteroannulation of propynylaminopyrazinones; D. Vachhani, S. G. Modha, **A. Sharma**, E. Van der Eycken, *Tetrahedron*, **2013**, *69*, 359-365.
17) Microwave-assisted synthesis of medium-sized heterocycles; **A. Sharma**, P. Appukkuttan; *Chem. Commun.* **2012**, *48*, 1623-1637.
16) Direct olefination of benzaldehydes into hydroxy functionalized oligo-(*p*-phenylenevinylene)s via Pd-catalyzed heterodomino Knoevenagel-decarboxylation-Heck sequence and its application for fluoride sensing π-conjugated units; **A. Sharma**, N. Sharma, R. Kumar, A. Shard and A. K. Sinha, *Chem. Commun.* **2010**, *46*, 3283-3285.
15) Water promoted cascade rearrangement approach towards α-aryl aldehydes from arylalkenes using N-halosuccinimides: An avenue for asymmetric oxidation using phase transfer cinchona organocatalysis; **A. Sharma**, N. Sharma, R. Kumar, U. Sharma and A. K. Sinha, *Chem. Commun.* **2009**, 5299-5301.
14) Tandem allylic oxidation-condensation/esterification catalyzed by silica gel: An expeditious approach towards antimalarial diaryldienones and enones from natural methoxylated phenylpropenes; **A. Sharma**, N. Sharma, A. Shard, R. Kumar, D. Mohankrishnan, A. K. Sinha and D. Sahal, *Org. Biomol. Chem.* **2011**, *9*, 5211-5219.
13) Unique versatility of ionic liquids as clean decarboxylation catalyst cum solvent: A metal and quinoline-free paradigm towards synthesis of indoles, styrenes, stilbenes and arene derivatives under microwave irradiation in aqueous conditions; **A. Sharma**, R. Kumar, N. Sharma, V. Kumar and A. K. Sinha, *Adv. Synth. Catal.* **2008**, *350*, 2910-2920.
12) Hydroxylated di- and tri-styrylbenzenes, a new class of antiplasmodial agents: discovery and mechanism of action N. Sharma, D. Mohanakrishnan, A. Shard, **A. Sharma**, A. K. Sinha and D. Sahal, *RSC Adv.* **2016**, *6*, 49348-49357.
11) Stilbene−chalcone hybrids: design, synthesis, and evaluation as a new class of antimalarial scaffolds that trigger cell death through stage specific apoptosis; N. Sharma, D. Mohanakrishnan, A. Shard, **A. Sharma**, Saima, A. K. Sinha and D. Sahal, *J. Med. Chem.* **2012**, *55*, 297-311.

10) Pd-catalyzed orthogonal Knoevenagel/Perkin-decarboxylation-Heck/Suzuki sequences: Tandem transformation of benzaldehydes into hydroxy functionalized antidiabetic stilbene-cinnamoyl hybrids and unsymmetrical distyrylbenzenes; N. Sharma, **A. Sharma**, R. Kumar, A. Shard, Saima and A. K. Sinha, *Chem. Eur. J.* **2011***, 17*, 10350-10356.
9) One-pot two-step oxidative cleavage of 1,2-arylalkenes to aryl ketones instead of arylaldehydes in an aqueous medium: A complementary approach to ozonolysis; N. Sharma, **A. Sharma**, R. Kumar, A. Shard and A. K. Sinha, *Eur. J. Org. Chem.* **2010***,* 6025-6032.
8) Reinvestigation of structure–activity relationship of methoxylated chalcones as antimalarials: Synthesis and evaluation of 2,4,5-trimethoxy substituted patterns as lead candidates derived from abundantly available natural *β*-asarone; R. Kumar, D. Mohanakrishnan, **A. Sharma**, N. K. Kaushik, K. Kalia, A. K. Sinha and D. Sahal, *Eur. J. Med. Chem.* **2010,** *45,* 5292-5301.
7) Metal-free activation of H_2O_2 by synergic effect of ionic liquid and microwave: chemoselective oxidation of benzylic alcohols to carbonyls and unexpected formation of anthraquinone in aqueous condition ; R. Kumar, N. Sharma, N. Sharma, **A. Sharma**, and A. K. Sinha, *Mol. Divers*. **2011,** *15*, 687-695.
6) Green methodologies in synthesis and natural product chemistry of phenolic compounds, A. K. Sinha, N. Sharma, A. Shard, **A. Sharma**, R. Kumar and U. K. Sharma *Ind. J. Chem.: Sec. B*, **2009***,* 48, 1771-1779.
5) Neutral ionic liquid [hmim]Br as a green reagent and solvent for mild and efficient dehydration of benzyl alcohols into (*E*)-arylalkenes under microwave irradiation, R. Kumar, **A. Sharma**, N. Sharma, V. Kumar and A. K. Sinha, *Eur. J. Org. Chem.* **2008***,* 5577-5582.
4) Microwave assisted efficient extraction of different parts of *Hippophae rhamnoides* for the comparative evaluation of antioxidant activity and quantification of its phenolic constituents by RP-HPLC; U. Sharma, K. Sharma, N. Sharma, **A. Sharma**, H.P. Singh and A.K. Sinha, *J. Ag. Food Chem.* **2008**, *56*, 374-379.
3) An unusual, mild and convenient one pot two step access to (*E*)-Stilbenes from hydroxyl substituted benzaldehydes and phenyl acetic acids under microwave activation: Revelation of new facet on the classical perkin reaction; A. K. Sinha, V. Kumar, **A. Sharma**, and A. Sharma, *Tetrahedron*, **2007**, *63*, 11070–11077.
2) DDQ catalyzed benzylic acetoxylation of arylalkanes: A case of exquisitely controlled oxidation under sonochemical activation; V. Kumar, **A. Sharma**, M. Sharma, U. Sharma and A. K. Sinha, *Tetrahedron*, **2007**, *63*, 9718–9723.
1) Remarkable synergism in methylimidazole-promoted decarboxylation of substituted cinnamic acid derivatives in basic water medium under microwave irradiation: A clean synthesis of hydroxylated (*E*)-stilbenes; V. Kumar, **A. Sharma**, A. Sharma and A. K. Sinha, *Tetrahedron*, **2007**, *63*, 7640–7646.

Patents

4) Antiestrogen Compounds, **A. Sharma**, L. Wang, S. Lin, (WO 2019/241231)
3) One-pot multicomponent synthesis of some novel hydroxy stilbene derivatives with α, β-carbonyl conjugation under microwave irradiation***;*** **A. Sharma,** A. K. Sinha, R. Kumar, N. Sharma*,* (US patent 8716532)
2) Microwave induced single step green synthesis of some novel 2-aryl aldehydes and their analogues***;*** A. K. Sinha, **A. Sharma**, R. Kumar and N. Sharma, (US patent 8779200).
1) A process for the preparation of crystalline and non-hygroscopic phenolic rich colored fractions from plants; A. K. Sinha, U. Sharma, **A. Sharma**, N. Sharma, *Patent filed,* (WO/2010/109286, DE112010001347T5).

Book Chapters

1) "Synthesis of medium-sized heterocycles under microwave irradiation" **A. Sharma**, E. Van der Eycken; Book chapter in textbook "*Microwave Chemistry*" Editors: G. Cravotto, D. Carnaroglio; **2017**, Publisher: De Gruyter