
Amit Basu

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Education

B.A. (Chemistry), Reed College, 1992 (*Advisor: Patrick McDougal*)
Ph.D. (Chemistry), University of Illinois at Urbana-Champaign, 1996 (*Advisor: Peter Beak*)
Dissertation Title: *Enantioselective Lateral Lithiation-Substitution of O-Ethyl and O-Benzyl N-Pivaloyl Anilines: Studies of a Pathway of Stereoinformation Transfer*

Professional Appointments

Professor of Chemistry, Brown University, 2023-present
Associate Professor of Chemistry, Brown University, 2006-2023
Assistant Professor of Chemistry, Brown University, 1999-2006
Postdoctoral Research Associate, Princeton University, 1996-1999 (*Advisor: Daniel Kahne*)

Honors and Awards

Fudan University State Key Laboratory Senior Visiting Scholar, 2016-2017
Karen T Romer Prize for Undergraduate Advising & Mentoring, 2014
Mizutani Award in Glycoscience, 2005
NSF Faculty Early CAREER Award, 2002
Research Corporation Research Innovation Award, 2001
RC Fuson Research Award, 1995
Department of Education/Chevron Graduate Fellowship, 1994-1995

Professional Activities

Co-organizer, New England Glycoscience Meeting, Boston MA, 2018 – 2023
Trainer, Therapeutic Sciences Graduate Program 2018 – present
Editorial Board Member, *Journal of Carbohydrate Chemistry* 2018 – present
ad hoc Study Section Member, NIH Fellowship Application Review Study Section Mar, Jul, Nov 2017, Jul 2018, Nov 2019, Mar 2020, Jul 2020, Nov 2020, Mar 2021, Mar 2022, Mar 2023
Elected member-at-large, ACS CARB Division Executive Committee 2012-14, 2018-19
NSF CHE Panel Reviewer, 2008, 2016, 2023
Permanent member, NIH SBCA Study Section 2010-14
ad hoc Study Section Member, NIH SBCA Study Section, Oct 2009
ad hoc Study Section Member, NIH SBIR/STTR Special Emphasis Panel, Mar 2008, July 2009
Trainer, Molecular Physiology, Pharmacology, and Biotechnology Graduate Program, 2006-2012
Invited Participant, NSF Workshop in Materials Science, St. Louis, MO, Oct. 12-15, 2006
Invited Participant DARPA/NIH/Juvenile Diabetes Research Foundation Workshop on Diabetic Wound Healing, Sep 2003
ad hoc Study Section Member NIH Bioorganic and Natural Products Study Section, Feb 2003
Invited Participant, NSF Workshop in Physical Organic Chemistry, LaSalle, IL, June 2001

Publications

Independent Publications; (Brown University undergraduate students)

33. *Chemical Biology Reveals Involvement of N-acetylglucosaminidase LytG In Cell Elongation and Division* J Hernandez, J Duval, T Rauff, E Hall, M Gallati, B Haubrich, M Thoma, E Aponte, A Basu, JA DeGiorgis, C Reid *ChemRxiv Preprint* - [10.26434/chemrxiv-2023-5bp52](https://doi.org/10.26434/chemrxiv-2023-5bp52)
32. *A Functionalizable Analog of the Yariv Reagent for AGP Imaging using Fluorescence Microscopy* S Rueda, TJ McCubbin, M Shieh, R Hoshing, DM Braun, A Basu *Bioconjugate Chem.* **2023**, *34*, 1398–1406 <https://doi.org/10.1021/acs.bioconjchem.3c00184>; *Selected as ACS Editor's Choice Article*
31. *Inhibition of Streptococcus pneumoniae autolysins highlight distinct differences between chemical and genetic inactivation* BA Haubrich, S Nayyab, M Gallati, J Hernandez, C Williams, A Whitman, T Zimmerman, Q Li, Y Chen, C-Z Zhou, A Basu, & CW Reid *Microbiology* **2022**, *168*:001182 doi.org/10.1099/mic.0.001182
30. *The Chirality of Aggregated Yariv Reagents Correlates with Their AGP-Binding Ability* R Hoshing, BW Leeber, H Kuhn, D Caianiello, B Dale, M Saladino, R Lusi, N Palaychuk, S Weingarten, & A Basu *ChemBioChem* **2022**, *23*, e202100532 doi.org/10.1002/cbic.202100532
Selected as cover feature artwork - doi.org/10.1002/cbic.202100613
29. *Detection of Ligand Binding to Glycopolymers Using Saturation Transfer Difference NMR* J Muzulu, A Basu *Physical Chemistry Chemical Physics* **2021**, *23*, 21934–40. doi.org/10.1039/D1CP03410C
28. *An Improved Protocol for the Synthesis and Purification of Yariv Reagents* R Hoshing, M Saladino, H Kuhn, D Caianiello, RF Lusi, A Basu *J. Org. Chem.* **2020**, *85*, 16236–42. <https://doi.org/10.1021/acs.joc.0c01812>
27. *Diamide inhibitors of the Bacillus subtilis N-acetylglucosaminidase LytG that exhibit anti-bacterial activity* S Nayyab, M O'Connor, J Brewster, J Gravier, M Jamieson, E Magno, R Miller, D Phelan, K Roohani, P Williard, A Basu, CW Reid *ACS Infect. Dis.* **2017**, *3* 421–427. doi.org/10.1021/acsinfecdis.7b00005
26. *Glycopolymers Prepared by Ring-Opening Metathesis Polymerization Followed by Glycoconjugation Using a Triazole-Forming "Click" Reaction* R Okoth, A Basu *Methods in molecular biology.* **2016** *1367* 29-37.
25. *Galactan synthesis in a single step via oligomerization of monosaccharides* M Dräger, A Basu *Beilstein J. Org. Chem.* **2014**, *10*, 2658–2663. doi.org/10.3762/bjoc.10.279
24. *Anti-bacterial glycosyl triazoles – Identification of an N-acetyl glucosamine derivative with bacteriostatic activity against Bacillus* H Kuhn, D Gutelius, E Black, C Nadolny, A Basu, C Reid *Med. Chem. Comm.* **2014**, *5*, 1213-1217. doi.org/10.1039/C4MD00127C
23. *A rapid, inexpensive, and semi-quantitative method for determining pollen tube extension using fluorescence* E Hartman, C Levy, DM Kern, M Johnson, A Basu *Plant Methods* **2014**, *10*:3; doi.org/10.1186/1746-4811-10-3
22. *End-Labeled Amino Terminated Monotelechelic Glycopolymers Generated by ROMP and Cu(I)-Catalyzed Azide – Alkyne Cycloaddition* R Okoth, A Basu *Beilstein J. Org. Chem.* **2013**, *9*, 608-612. doi.org/10.3762/bjoc.9.66
21. *Carbohydrate-coated fluorescent silica nanoparticles as probes for the galactose/3-sulfogalactose carbohydrate-carbohydrate interaction using model systems and cellular binding studies.* J Zhao, Y Liu, H-J Park, JM Boggs, A Basu *Bioconjugate Chem.* **2012**, *23*, 1166-1173. doi.org/10.1021/bc2006169
20. *Photo- and Biophysical Studies of Lectin-Conjugated Fluorescent Nanoparticles: Reduced Sensitivity in High Density Assays* Y Wang, JC Gildersleeve, A Basu, MB Zimmt *J. Phys. Chem. B*, **2010**, *114*, 14487-14494. doi.org/10.1021/jp101854m
19. *Participation of Myelin Glycosphingolipids, Galactosylceramide and Sulfatide, in Glycosynapses between Oligodendrocyte or Myelin Membranes* JM Boggs, W Gao, J Zhao, H Park, Y Liu, A Basu *FEBS Letters* **2010**, *584*, 1771-1778. doi.org/10.1016/j.febslet.2009.11.074

18. *Core Functionalization of Hollow Polymer Nanocapsules* X Liu, A Basu. *J. Am. Chem. Soc.* **2009**, *131*, 5718-5719. doi.org/10.1021/ja809619w
17. *Probing the lactose•GM3 carbohydrate-carbohydrate interaction with glycodendrimers* N Seah, PV Santacroce, A Basu *Org. Lett.* **2009**, *11*, 559-562. doi.org/10.1021/ol802613r
16. *Cross-linked polynorbornene-coated gold nanoparticles – Dependence of particle stability on cross-linking position and cross-linker structure* X Liu, A Basu *Langmuir*, **2008**, *24*, 11169-11174. doi.org/10.1021/la8017985
15. *Colorimetric Sensing and Biosensing using Functionalized Conjugated Polymers* A Basu *Molecular Recognition Using Polymers*. John Wiley & Sons. **2008** Ed. V Rotello & S Thayumanavan
14. *Carbohydrate-carbohydrate interactions* N Seah, A Basu *Encyclopedia of Chemical Biology*, John Wiley & Sons. **2008** Ed. T. Begley.
13. *Reagentless functionalization of gold nanoparticles via a 3 + 2 Huisgen cycloaddition* W Limapichat, A Basu *J. Coll. Interfac. Sci.* **2008**, *318*, 140-144. doi.org/10.1016/j.jcis.2007.09.054
12. *Model Systems* A Basu, J Schneider *Curr. Opin. Chem. Biol.* **2006**, *10*, 527–528.
11. *Olefin Metathesis on Nanostructures* X Liu, A Basu *J. Organomet. Chem.* **2006**, *691*, 5148-5154. (Invited Submission, Special Issue on Alkene Metathesis) doi.org/10.1016/j.jorgchem.2006.08.077
10. *Two Polymerizable Derivatives of 2,2'-Azino-bis(3-ethylbenzthiazoline-6-sulfonic acid)* J Fei, A Basu, F Xue, GTR *Palmore Org. Lett.* **2006**; *8*, 3-6. doi.org/10.1021/ol0513443
9. *Glycosidase Inhibition by 1-Glycosyl-4-Phenyl Triazoles* LL Rossi, A. Basu *Bioorg. Med. Chem. Lett.* **2005**, *15*, 3596-3599. doi.org/10.1016/j.bmcl.2005.05.081
8. *Synthesis of the glycosphingolipid β -galactosyl ceramide and analogs via olefin cross metathesis* AN Rai, A Basu *J. Org. Chem.* **2005**, *70*, 8228-8230. doi.org/10.1021/jo051069y
7. *Studies of the Carbohydrate-Carbohydrate Interaction Between Lactose and GM3 using Langmuir Monolayers and Glycolipid Micelles* PV Santacroce, A. Basu *Glycoconjugate J.* **2004**. *21*, 89-95. (Invited Submission, Special Issue on Carbohydrate-Carbohydrate Interactions) doi.org/10.1023/B:GLYC.0000044841.12706.12
6. *Sphingolipid synthesis via olefin cross metathesis: Preparation of a differentially protected building block and application to the synthesis of D-erythro-ceramide* AN Rai, A Basu *Org Lett.* **2004**, *6*, 2861-2863. doi.org/10.1021/ol049183a
5. *Lipopolysaccharide identification with functionalized polydiacetylene liposome sensors* M Rangin, A Basu. *J. Am. Chem. Soc.* **2004**, *126*, 5038-5039. doi.org/10.1021/ja039822x
4. *3-Methoxycarbonyl-5-nitrophenyl boronic acid: High affinity diol recognition at neutral pH* HR Mulla, NJ Agard, A Basu *Bioorg. Med. Chem. Lett.* **2004**, *14*, 25-27. doi.org/10.1016/j.bmcl.2003.10.017
3. *A Rapid and Efficient Method for para-Methoxybenzyl Ether Formation with Lanthanum Triflate* AN Rai, A Basu *Tetrahedron. Lett.* **2003**, *44*, 2267-2269. [doi.org/10.1016/S0040-4039\(03\)00282-X](https://doi.org/10.1016/S0040-4039(03)00282-X)
2. *Probing Specificity in Carbohydrate-Carbohydrate Interactions with Micelles and Langmuir Monolayers* PV Santacroce, A Basu *Angew. Chem. Int. Ed. Engl.* **2003**, *42*, 95-98. doi.org/10.1002/anie.200390063
1. *Configurational Stability and Stereoinformation Transfer in the Reactions of Enantioenriched Organolithium Reagents* A Basu, S Thayumanavan *Angew. Chem. Int. Ed. Engl.* **2002**, *41*, 716-738. [doi.org/10.1002/1521-3773\(20020301\)41:5<716::AID-ANIE716>3.0.CO;2-Z](https://doi.org/10.1002/1521-3773(20020301)41:5<716::AID-ANIE716>3.0.CO;2-Z)

Publications as Trainee

5. *Overcoming Degeneracy in Carbohydrate Recognition* A Basu, D Kahne. *Angew. Chem. Int. Ed. Engl.* **2003**, *42*, 2504-2506.

4. *Two Different Pathways of Stereoinformation Transfer: Asymmetric Substitutions in the (-)-Sparteine Mediated Reactions of Laterally Lithiated N,N-Diisopropyl-o-ethyl benzamide and N-Pivaloyl-o-ethyl aniline* S Thayumanavan, A Basu, P Beak *J. Am. Chem. Soc.* **1997**, 119, 8209-8216.
3. *Synthetic and Mechanistic Studies of Organolithium Complexes: Regioselective, Diastereoselective and Enantioselective Lithiation-Substitution Reactions* P Beak, A Basu, DJ Gallagher, YS Park, S Thayumanavan *Acc. Chem. Res.* **1996**, 29, 552-560.
2. *Pathways for Stereoinformation Transfer: Enhanced Enantioselectivity via Diastereomeric Recycling of Organolithium/(-)-Sparteine Complexes* A Basu, DJ Gallagher, P Beak *J. Org. Chem.* **1996**, 61, 5718-5719. Correction: *J. Org. Chem.* **1997**, 62, 1908.
1. *Control of the Enantiochemistry of Electrophilic Substitutions of N-Pivaloyl- α -lithio-o-ethyl aniline: Stereoinformation Transfer Based on the Method of Organolithium Formation* A Basu, P Beak *J. Am. Chem. Soc.* **1996**, 118, 1575-1576.