

## Curriculum Vitae

## Mark Turlington

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### Education

- Ph.D. Chemistry, University of Virginia, Charlottesville, VA, August 2011.
- B.S. Chemistry, *summa cum laude*, Furman University, Greenville, SC, 2006.

### Positions

- **Assistant Professor of Chemistry**, Berry College, 2013-present.
- **Adjunct Chemistry Faculty**, Nashville State Community College, Fall 2012.
- **Postdoctoral Fellowship**, Vanderbilt University, 2011-2013.

### Courses Taught

- **CHM 221** (Organic Chemistry I)
- **CHM 221L** (Organic Chemistry I Laboratory)
- **CHM 222** (Organic Chemistry II)
- **CHM 222L** (Organic Chemistry II Laboratory)
- **CHM 341** (Biochemistry I)

### Research Experience

- **Postdoctoral Research Fellow**, 2011-2013.  
Vanderbilt University, Advisor: Dr. Craig Lindsley.
  - Synthesis of small molecules for positive allosteric modulation of the mGluR<sub>5</sub> receptor and small molecules for inhibition of coronavirus 3CL protease.
  - Natural product total synthesis.
- **Graduate Student Researcher**, 2007-2011.  
University of Virginia, Advisor: Dr. Lin Pu.
  - Design of novel BINOL based ligands for asymmetric transition metal catalysis.
  - Development of new methodologies for asymmetric metal-catalyzed alkyne additions to aldehydes and applications of the resulting chiral propargylic alcohols in diastereoselective transformations.
- **Undergraduate Researcher**, 2003-2005.  
Furman University, Advisor: Dr. Moses Lee.
  - Synthesis of distamycin related polyamides and determination of DNA minor groove binding properties.

### Current Research Interests

- My research group focuses on projects in synthetic organic chemistry and medicinal chemistry.

- Current synthetic organic chemistry work explores the development of new methodology for the synthesis of chiral amines and chiral aza-heterocycles which are important structural motifs in many drug-like molecules.
- Current medicinal chemistry work explores small molecule correctors of the phenylalanine 508-deletion Cystic Fibrosis Transmembrane Conductance Regulator (F508del-CFTR) in collaboration with Dr. Steve Aller of the University of Alabama-Birmingham. Mutated F508del-CFTR is the predominate cause of Cystic Fibrosis.

**Publications** (Berry College undergraduate students underlined.)

*Independent:*

1. Penk, D. N.; Robinson, N. A.; Hill, H. M.; **Turlington, M.** A flexible method for the synthesis of 2-substituted 1,2,5,6-tetrahydropyridines and piperidines from chloro-containing propargylamines. *Tetrahedron Lett.* **2017**, *58*, 470-473.
2. Jordan, S.; Starks, S. A.; Whatley, M. F.; **Turlington, M.** Highly Stereoselective Synthesis of Terminal Chloro-Substituted Propargylamines and Further Functionalization. *Org. Lett.* **2015**, *17*, 4842-4845.
3. Breton, G. W.; **Turlington, M.** Alternative synthetic routes to N-methyl-1,2,4-triazoline-3,5-dione (MeTAD) and other triazolinedione derivatives. *Tetrahedron Lett.* **2014**, *55*, 4661-4663.

*Postdoctoral:*

4. Malosh, C.; **Turlington, M.**; Bridges, T. M.; Rook, J. M.; Noetzel, M. J.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Martínez-Vituro, C. M.; Piedrafita, M.; Sánchez-Casado, M. R.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Acyl dihydropyrazolo[1,5-a]pyrimidinones as metabotropic glutamate receptor 5 positive allosteric modulators. *Bioorg. Med. Chem. Lett.* **2015**, *25*, 5115-5120.
5. **Turlington, M.**; Noetzel, M. J.; Bridges, T. M.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Tong, H. M.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery and SAR of a novel series of metabotropic glutamate receptor 5 positive allosteric modulators with high ligand efficiency. *Bioorg. Med. Chem. Lett.* **2014**, *24*, 3641-3646.
6. **Turlington, M.**; Malosh, C.; Jacobs, J.; Manka, J. T.; Noetzel, M. J.; Vinson, P. N.; Jadhav, S.; Herman, E. J.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Martín-Martín, M. L.; Tong, H. M.; López, S.; MacDonald, G. J.; Steckler, T.; Daniels, J. S.; Weaver, C. D.; Niswender, C. M.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Tetrahydronaphthyridine and Dihydronaphthyridinone Ethers As Positive Allosteric Modulators of the Metabotropic Glutamate Receptor 5 (mGlu<sub>5</sub>). *J. Med. Chem.* **2014**, *57*, 5620-5637.
7. **Turlington, M.**; Noetzel, M. J.; Chun, A.; Zhou, Y.; Gogliottie, R. D.; Nguyen, E. D.; Gregory, K. J.; Vinson, P. N.; Rook, J. M.; Gogi, K. K.; Ziang, Z.; Bridges, T. M.; Daniels, J. S.; Jones, C.; Niswender, C. M.; Meiler, J.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Exploration of Allosteric Agonism Structure–Activity Relationships within an Acetylene Series of Metabotropic Glutamate Receptor 5 (mGlu<sub>5</sub>) Positive Allosteric Modulators (PAMs): Discovery of 5-((3-Fluorophenyl)ethynyl)-N-(3-methyloxetan-3-yl)picolinamide (ML254). *J. Med. Chem.* **2013**, *56*, 7976-7996.
8. **Turlington, M.**; Chun, A.; Tomar, S.; Egglar, A.; Grum-Tokars, V.; Jacobs, J.; Daniels, J. S.; Dawson, E.; Saldanha, A.; Chase, P.; Baez-Santos, Y. M.; Lindsley, C. W.; Hodder, P. Mesecar, A. D.; Stauffer, S. R. Discovery of N-(benzo[1,2,3]triazol-1-yl)-N-(benzyl)acetamido)phenyl) carboxamides as severe acute respiratory syndrome coronavirus (SARS-CoV) 3CLpro inhibitors:

Identification of ML300 and noncovalent nanomolar inhibitors with an induced-fit binding. *Bioorg. Med. Chem. Lett.* **2013**, *23*, 6172-6177.

9. Blobaum, A. L.; Bridges, T. M.; Byers, F. W.; **Turlington, M. L.**; Mattmann, M. E.; Morrison, R. D.; Mackie, C.; Lavreysen, H.; Bartolomé, J. M.; MacDonald, G. J.; Steckler, T.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Daneils, J. S. Heterotropic Activation of the Midazolam Hydroxylase Activity of CYP3A by a Positive Allosteric Modulator of mGlu<sub>5</sub>: In Vitro to In Vivo Translation and Potential Impact on Clinically Relevant Drug-Drug Interactions. *Drug Metabolism & Disposition.* **2013**, *41*, 2066-2075.
10. Schulte, M. L. †; **Turlington, M.** †; Phatak, S. S.; Harp, J. M.; Stauffer, S. R.; Lindsley, S. R. Total Synthesis of Stemaphylline N-Oxide and Related C9a-Epimeric Analogues. *Chem. Eur. J.* **2013**, *19*, 11847-11852.  
†*Contributed equally to this work.*
11. Jacobs, J.; Grum-Tokars, V.; Zhou, Y.; **Turlington, M.**; Saldanha, S. A.; Chase, P.; Eggler, A.; Dawson, E. S.; Baez-Santos, Y. M.; Tomar, S.; Mielech, A. M.; Baker, S. C.; Lindsley, C. W.; Hodder, P.; Mesecar, A.; Stauffer, S. R. Discovery, Synthesis, And Structure-Based Optimization of a Series of N-(tert-Butyl)-2-(N-arylamido)-2-(pyridin-3-yl) Acetamides (ML188) as Potent Noncovalent Small Molecule Inhibitors of the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) 3CL Protease. *J. Med. Chem.* **2013**, *56*, 534-546.
12. Tarr, J. C.; **Turlington, M.**; Reid, P. R.; Utley, T. J.; Sheffler, D. J.; Cho, H. P. Klar, R.; Pancani, T.; Klein, M. T.; Bridges, T. M.; Morrison, R. D.; Xiang, Z.; Daniels, J. S.; Niswender, C. M.; Conn, P. J.; Wood, M. R.; Lindsley, C.W. Targeting selective activation of M<sub>1</sub> for the treatment of Alzheimer's disease: further chemical optimization and pharmacological characterization of the M<sub>1</sub> positive allosteric modulator ML169. *ACS Chem. Neurosci.*, **2012**, *3*, 884-895.

#### Graduate:

13. **Turlington, M.**; Pu, L. Asymmetric Alkyne Addition to Aldehydes Catalyzed by BINOL and Its Derivatives. *Synlett.* **2012**, *23*, 649-684.
14. **Turlington, M.**; Pu, L. Reverse the Diastereoselectivity of the Rh(I)-Catalyzed Pauson-Khand Cycloaddition. *Org. Lett.* **2011**, *13*, 4332-4335.
15. **Turlington, M.**; Du, Y.; Ostrum, S. G.; Santosh, V.; Wren, K.; Lin, T.; Sabat, M.; Pu, L. From Highly Enantioselective Catalytic Reaction of 1,3-Diynes with Aldehydes to Facile Asymmetric Synthesis of Polycyclic Compounds. *J. Am. Chem. Soc.* **2011**, *133*, 11780-11794.
16. Yunge, Z.; **Turlington, M.** LaPar, D.J.; Jones, D.R.; Harris, D.A.; Kron, I.L.; Pu, L.; Lau, C.L. Characterization of Novel Synthesized Small Molecular Compounds Against Non-Small Cell Lung Cancer. *Ann. Thorac. Surg.* **2011**, *92*, 1031-1037.
17. Yu, S.; DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Study of the Fluorescent Properties of Partially Hydrogenated 1,1'-Bi-2-naphthol-amine Molecules and Their Use for Enantioselective Fluorescent Recognition. *J. Org. Chem.*, **2011**, *76*, 2814-2819.
18. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Activation of Vinyl Iodides for Highly Enantioselective Addition to Aldehydes. *Angew. Chem. Int. Ed.* **2011**, *50*, 2368-2370.
19. **Turlington, M.**; Yue, Y.; Yu, X.-Q., Pu, L. Catalytic Asymmetric Synthesis of Chiral Propargylic Alcohols for the Intramolecular Pauson-Khand Cycloaddition. *J. Org. Chem.* **2010**, *75*, 6941-6952.
20. Du, Y. H.; **Turlington, M.**; Zhou, X.; Pu, L. Highly Enantioselective Addition of Linear Alkyl Alkynes to Linear Aldehydes. *Tetrahedron Lett.* **2010**, *51*, 5024-5027.
21. DeBerardinis, A. M.; **Turlington, M.**; Ko, J.; Sole, L.; Pu, L. Facile Synthesis of a Family of H8BINOL-Amine Compounds and Catalytic Asymmetric Arylzinc Addition to Aldehydes. *J. Org. Chem.* **2010**, *75*, 2836-2850.
22. **Turlington, M.**; Pu, L. Preparation of (S)-3,3'-Bis-Morpholinomethyl-5,5',6,6',7,7',8,8'-Octahydro-1,1'-Bi-2-Naphthol. *Org. Synth.* **2010**, *87*, 59-67.

23. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Catalytic Asymmetric Addition of an in-situ Prepared Arylzinc to Cyclohexanecarboxaldehyde: (R)-(+)- $\alpha$ -Cyclohexyl-3-methoxybenzenemethanol. *Org. Synth.* **2010**, *87*, 68-76.
24. Yue, Y.; **Turlington, M.**; Yu, X.-Q.; Pu, L. 3,3'-Anisyl-Substituted BINOL, H4BINOL, and H8BINOL Ligands: Asymmetric Synthesis of Diverse Propargylic Alcohols and Their Ring-Closing Metathesis to Chiral Cycloalkenes. *J. Org. Chem.* **2009**, *74*, 8681-8689.
25. **Turlington, M.**; DeBerardinis, A. M.; Pu, L. Highly Enantioselective Catalytic Alkyl Propiolate Addition to Aliphatic Aldehydes. *Org. Lett.* **2009**, *11*, 2441-2444.
26. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Activation of Functional Arylzincs Prepared from Aryl Iodides and Highly Enantioselective Addition to Aldehydes. *Org. Lett.* **2008**, *10*, 2709-2712.

#### Undergraduate:

27. Brown, T.; Mackay, H.; **Turlington, M.**; Sutterfield, A.; Smith, T.; Sielaff, A.; Westrate, L.; Bruce, C.; Kluza, J.; O'Hare, C.; Nguyen, B.; Wilson, W.D.; Hartley, J.A.; Lee, M. Modifying the N-terminus of polyamides: PyImPyIm has improved sequence specificity over f-ImPyIm. *Bioorg. Med. Chem.* **2008**, *16*, 5266-5276.
28. Brown, T.; Taherbhai, Z.; Sexton, J.; Sutterfield, A.; **Turlington, M.**; Jones, J.; Stallings, L.; Stewart, M.; Buchmueller, K.; Mack, H.; O'Hare, C.; Kluza, J.; Nguyen, B.; Wilson, D.; Lee, M.; Hartley, J.A. Synthesis and biophysical evaluation of minor-groove binding C-terminus modified pyrrole and imidazole triamide analogs of distamycin. *Bioorg. Med. Chem.* **2007**, *15*, 474-483.
29. **Turlington, M.**; Mackay, H.; Rutledge, C.; Taherbhai, Z.; Nguyen, B.; Wilson, D.; Lee, M. Synthesis and biophysical testing of a novel pyrrole-containing polyamide-benzamidine hybrid. *Heterocycl. Commun.* **2006**, *12*, 89-92.
30. Uthe, P.B.; Staples, A.M.; **Turlington, M.**; Jones, J.B.; Blackmon, K.N.; Bailey, S.L.; Buchmueller, K.L.; Lee, M. Novel picolinic acid-containing pyrrole-imidazole polyamides: Synthesis and T-G mismatched base pair recognition. *Heterocycl. Commun.* **2005**, *11*, 163-166.

#### Patents

1. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Zhou, Y.; Bartolome-Nebreda, J. M.; MacDonald, G. J. Gogliotti, R. D.; **Turlington, M.** Substituted 5-(prop-1-yn-1-yl)picolinamide analogs as allosteric modulators of metabotropic glutamate receptor subtype 5. *PCT Int. Appl.* **2013**, WO 2013049255.

#### Presentations

1. Oral Presentation: "Progress Toward Development of an in situ Click Chemistry Approach for Discovery of Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) Modulators." Presented at 68th Southeastern Regional Meeting of the American Chemical Society, Columbia, SC, October, 2016.
2. Invited Seminar: "Methodology and Medicinal Chemistry: Stereoselective Synthesis of Functionalized Propargylamines and Development of Small Molecule Correctors for Cystic Fibrosis." Presented at Furman University, Greenville, SC, March, 2016.
3. Oral Presentation: "Highly Stereoselective Synthesis of Terminal Chloro-Substituted Propargylamines and Further Functionalization." Presented at 71<sup>st</sup> Southeast Joint Regional Meeting of the American Chemical Society, Memphis, TN, November, 2015.
4. Invited Seminar: "Catalytic Asymmetric Alkyne Additions to Aldehydes." Presented at Shenzhen Graduate School Peking University, China, November 2010.

5. Departmental Seminar (*award based, from 1<sup>st</sup> place in Departmental Poster Session*): “Catalytic Asymmetric Alkyne Additions to Aldehydes: Progress Toward Versatile Synthetic Intermediates.” Presented at University of Virginia, April 2009.
6. Poster Presentation: “Synthesis and Biophysical Testing of a Novel Polyamide-Benzamidine Conjugate.” Presented at 57th Southeast Joint Regional Meeting of the American Chemical Society, Memphis, TN, November, 2005.

### **Fellowships, Honors, and Awards**

- Drew Residential School on Medicinal Chemistry Full Tuition Scholarship, 2012.
- 1<sup>st</sup> Place, University of Virginia Departmental 3<sup>rd</sup> Year Poster Session, 2009.
- Merit-Based Departmental Fellowship, University of Virginia, 2006-2009.
- Phi Beta Kappa, 2006.
- Barry M. Goldwater Scholar, 2004-2006.
- James B. Duke Full Tuition Scholarship, Furman University, 2002-2006.

### **Service**

#### *College Service:*

- National and International Fellowships and Scholarships Committee, 2014-present.
  - Barry M. Goldwater Scholarship Faculty Representative.
- School of Math and Natural Sciences Safety Committee, 2014-present.
- Council for Student Scholarship Committee, 2017-present.
- Faculty Development Committee, 2014-2017.
  - Committee Chair, 2015-2016.
- Endowed Lectureship Committee, 2014-2016.
- Center for Integrity in Leadership Planning Committee, 2014-2015.

#### *Professional Service:*

- Reviewer for *Chemical Papers*, 2016.
- Reviewer for textbook chapters for Oxford University Press, 2016.
- Reviewer for manuscript submitted to the *Journal of Organic Chemistry*, 2015.
- Reviewer for grant submitted to ACS Petroleum Research Fund, 2015.

#### *Community Service:*

- “First Friend,” Nashville, TN 2011-2013.
  - Vanderbilt International Student Friendship Partner.
- International Student Friendship Partner, Charlottesville, VA, 2010-2011.
- Abundant Life 5/8 Volunteer, Charlottesville, VA, 2006-2009.
  - Mentoring program for underprivileged 5<sup>th</sup>-8<sup>th</sup> grade boys.
  - Lesson leader.
  - Assistant basketball coach.
- Clubhouse Volunteer, Greenville, SC, 2003-2006.
  - Tutoring and mentoring program for underprivileged elementary school children.