

Jonathan A. Collins, Ph.D.

Department of Chemistry
Whitman College
345 Boyer Ave
Walla Walla, WA 99362

Phone: (509)527-5181
Fax: (509)527-5904
Email: collinja@whitman.edu
Website: <http://people.whitman.edu/~collinja>

Academic Positions

Whitman College – Walla Walla, Washington 2015-present
Assistant Professor of Chemistry

Amherst College – Amherst, Massachusetts 2012-2015
Visiting Assistant Professor of Chemistry

Technische Universität Dortmund – Dortmund, Germany 2010-2012
Postdoctoral Research Fellow
Laboratory of Chemical Biotechnology, Faculty of Biochemical and Chemical Engineering
Chair: Prof. Dr. Andreas Schmid, Group Leader: PD Dr. Bruno Bühler

Education

Brock University – St. Catharines, Canada 2005-2010
Ph.D. in Chemistry, Organic
Advisor: Prof. Tomas Hudlicky
Dissertation Title: Chemoenzymatic Synthesis of Amaryllidaceae Alkaloids and Their C-1 Analogues. Symmetry Based Approach to Total Synthesis of Thebaine

Allegheny College – Meadville, Pennsylvania 2001-2005
B.Sc., Chemistry; minor in History
Advisor: P. J. Persichini III
Thesis Title: Carbon-Carbon Bond Formation via Boron-Mediated 1,2-Transfer

Teaching

Whitman College Department of Chemistry
Instructor Chem 245 (Organic I) Fall 2015
Instructor Chem 251 (Organic Lab Techniques I) Fall 2015

Amherst College Department of Chemistry
Instructor Chem 231 (Organic II) with Prof. Nick Ball Spring 2015
Instructor Chem 418 (Advanced Organic Chemistry) Fall 2014
Instructor Chem 221 (Organic I) with Prof. Anthony Bishop Fall 2014
Instructor Chem 231 (Organic II) with Prof. Nick Ball Spring 2014
Instructor Chem 221 (Organic I) with Prof. Anthony Bishop Fall 2013
Instructor Chem 231 (Organic II) with Prof. Cindy Kan Spring 2013
Instructor Chem 221 (Organic I) with Prof. Cindy Kan Fall 2012

Technische Universität Dortmund Department of Biotechnology
Teaching Assistant for Microbiology Practical 2010-2012

Brock University Department of Chemistry
Lectured in Introductory Organic Chemistry 2008-2010
Organic Chemistry Tutorial Instructor 2007-2010
Teaching Assistant for Organic Chemistry 2005-2008

Allegheny College Department of Chemistry
Teaching Assistant for Advanced Organic Chemistry 2003-2005

Students Mentored
Rashid Kosber (Undergraduate Researcher, Amherst College) 2015-2015
Enkhnasan Enkbold (Undergraduate Researcher, Amherst College) 2014-2015
Austin Govero (Undergraduate Researcher, Amherst College) 2013-2015

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Christopher Gerry (B.Sc. thesis, Amherst College, granted <i>summa cum laude</i> for thesis work)	2013-2014
Shamira Shariffudin (HHMI Summer Research Fellow, Amherst College)	2013
Jannick Gorden (B.Sc. thesis with A. Schmid, TU Dortmund)	2011-2012
Emrah Altuntepe (B.Sc. thesis with A. Schmid, TU Dortmund)	2011
Christian Blesken (Diploma thesis with A. Schmid, TU Dortmund)	2010-2011
Hollich Ho (Undergraduate Research with T. Hudlicky, Brock University)	2009-2010
Jon Scattolon (Undergraduate Research with T. Hudlicky, Brock University)	2009-2010
Melissa Drouin (B.Sc. Honors Thesis with T. Hudlicky, Brock University)	2007-2009
Leon Sun (Undergraduate Research with T. Hudlicky, Brock University)	2006-2007

Work Experience

TDC Research Inc., Blacksburg, Virginia

Synthetic Chemist / Consultant 2005-2010

- Worked to produce and purify multi-gram quantities of metabolites from whole-cell biotransformations for sale to various vendors
- Performed contract synthesis of active pharmaceutical ingredients, route development/optimization, and analytical protocol development

Publications

Articles in peer-reviewed journals

1. **Collins, J.**; Brandenbusch, C.; Sadowski, G.; Schmid, A.; Bühler, B. "The Dynamic Influence of Cells on the Formation of Stable Emulsions in Organic-Aqueous Biotransformations" *Journal of Industrial Microbiology & Biotechnology* **2014**, *42*, 1011.
2. Brandenbusch, C.; Glonke, S.; **Collins, J.**; Hoffrogge, R.; Grunwald, K.; Bühler, B.; Schmid A.; Sadowski, G. "Process boundaries of irreversible scCO₂-assisted phase separation in biphasic whole-cell biocatalysis." *Biotechnology and Bioengineering* **2015**
3. Ütkür, F. Ö.; Tran, T.-T.; **Collins, J.**; Brandenbusch, C.; Sadowski, G.; Schmid, A.; Bühler, B. "Integrating organic-aqueous biocatalysis and product recovery using quinaldine 4-oxidase in living *P. putida* KT2440 (pKP1)." *Journal of Industrial Microbiology & Biotechnology* **2012**, *39*, 7, 1049.
4. Ma, D.; **Collins, J.**; Hudlicky, T.; Pandey, S., "Enhancement of apoptotic and autophagic induction by a novel synthetic C-1 analogue of 7-deoxypancratistatin in human breast adenocarcinoma and neuroblastoma cells with tamoxifen." *Journal of Visualized Experiments* **2012**, *63*, 3586.
5. Ma, D.; Kevineet T.; Mahngar, K.; Akbari-Asl, P.; **Collins, J.**; Hudlicky, T.; McNulty, J.; Pandey, S. "A novel synthetic C-1 analogue of 7-deoxypancratistatin induces apoptosis in p53 positive and negative human colorectal cancer cells by targeting the mitochondria: enhancement of activity by tamoxifen." *Investigational New Drugs* **2011**, *30*, 1012.
6. Adams, D.; Aichinger, C.; **Collins, J.**; Rinner, U.; Hudlicky, T. "Chemoenzymatic Synthesis of Idesolide from Benzoic Acid." *Synlett* **2011**, *5*, 725.
7. Ma, D.; Tremblay, P.; Mahngar, K.; **Collins, J.**; Hudlicky, T.; Pandey, S., "Selective cytotoxicity against human osteosarcoma cells by a novel synthetic C-1 analogue of 7-deoxypancratistatin is potentiated by curcumin." *PLoS One* **2011**, *6*, e28780.
8. Ma, D.; Tremblay, P.; Mahngar, K.; Akbari-Asl, P.; **Collins, J.**; Hudlicky, T.; Pandey, S., "Induction of apoptosis and autophagy in human pancreatic cancer cells by a novel synthetic C-1 analogue of 7-deoxypancratistatin." *American Journal of Biomedical Science* **2011**, *3*, 278.
9. **Collins, J.**; Rinner, U.; Moser, M.; Hudlicky, T. "Chemoenzymatic Synthesis of Amaryllidaceae Constituents and Biological Evaluation of their C-1 Analogues. The Next Generation Synthesis of 7-Deoxypancratistatin and trans-Dihydrolycoricidine." *Journal of Organic Chemistry* **2010**, *76*, 9, 3069.
10. Fabris, F.; **Collins, J.**; Sullivan B.; Leisch, H.; Hudlicky T. "Investigation of Steric and Functionality Limits in the Enzymatic Dihydroxylation of Benzoate Esters. Versatile Intermediates for the synthesis of pseudo-sugars and bicyclic ring systems." *Organic and Biomolecular Chemistry* **2009**, *7*, 2619.
11. **Collins, J.**; Drouin, M.; Sun, X.; Rinner, U.; Hudlicky, T. "Synthesis of 7-Deoxypancratistatin-1-carboxaldehyde and Carboxylic Acid via Solvent-Free Intramolecular Aziridine Opening: Phenanthrene to Phenanthridone Cyclization Strategy." *Organic Letters* **2008**, *10*, 361.
12. Finn, K. J.; **Collins, J.**; Hudlicky, T. "Toluene dioxygenase-mediated oxidation of dibromobenzenes. Absolute stereochemistry of new metabolites and synthesis of (L)-conduritol E." *Tetrahedron* **2006**, *62*, 7471.

Patents and patent applications

1. Sadowsky, G.; Brandenbusch, C.; **Collins, J.**; Bühler, B. "Verfahren zur Aufarbeitung von stabilen Emulsionen aus Ganzzell-Biotransformationen mittels Phaseninversion" (Applied catastrophic phase

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inversion) European Patent: Application number EP 13005234.3 Filed November 6, 2013

2. **Collins, J.**; Hudlicky, T. "C-1 analogs of pancratistatin and 7-deoxypancratistatin and processes for their preparation." US: 2011/0306629 A1, Published Dec. 15, 2011; Canada: CA 2747565, PCT Filed Dec 17, 2009

Book Chapters

1. Ütkür F. Ö., **Collins J.**, Brandenbusch C., Sadowski G., Schmid A. and Bühler B. Regioselective Aromatic Hydroxylation of Quinaldine Using Living *Pseudomonas putida* Cells Containing Quinaldine 4-oxidase. In *Practical Methods in Biocatalysis and Biotransformations 2*; Whitthal, J.; Sutton, P., Ed.; John Wiley & Sons Ltd, Chichester, UK, 2012; pp. 153-157

Presentations

Invited Lectures

- May 2009: 92nd Canadian Chemistry Conference and Exhibition (CSC), Symposium on Strategies and Best Practices for Teaching Organic Chemistry. Hamilton, Canada, "On the practical limits of determination of isolated yields and isomeric ratios"
- Mar. 2009: Allegheny College Chemistry Lecture Series, Meadville, PA, USA, "Total Synthesis of Natural Products via Chemoenzymatic and/or Reagent-Based Strategies: The Story of Morphine, Pancratistatin, and Balanol"

Other Presentations

- March 2012 Oral Presentation: Dechema Jahrestreffen der Fachgruppe Hochdruckverfahrenstechnik (Dechema Annual Meeting of the Section for Heat and Mass Transfer), TU Hamburg-Harburg, Germany, "Stable Emulsions in Biphasic Whole-cell Biocatalysis: The Potential of scCO₂ for Industrial Scale DSP"
- May 2009 Oral Presentation: 92nd Canadian Chemistry Conference and Exhibition (CSC), Hamilton, Canada, "Total synthesis and biological evaluation of Amaryllidaceae alkaloids: trans-dihydrolycoricidine, 7-deoxypancratistatin, and C-1 analogs of 7-deoxypancratistatin"
- May 2007 Oral Presentation: 90th Canadian Chemistry Conference and Exhibition (CSC), Winnipeg, Canada, "Chemoenzymatic Synthesis of 7-deoxypancratistatin via Intramolecular Aziridine-Opening"
- Nov. 2006 Oral Presentation: Quebec-Ontario Minisymposium in Synthetic and Biological Chemistry (QOMSBQC), London, Canada, "Intramolecular Aziridine-Opening Approach Toward 7-Deoxypancratistatin"
- May 2006 Oral Presentation: 24th Annual Graduate Student Symposium, Buffalo, USA, "Recent Advances in Chemoenzymatic Synthesis"

Awards and Honors

Distinguished Graduate Student Award, Chemistry	2010
Dean of Graduate Studies Spring Fellowship	2009
Dean of Math and Science International Fellowship	2005-2008
Gordon R. Finlay scholarship for Outstanding Chemistry Graduate Student	2006
Allegheny College Trustee Scholarship	2001-2005

Scholarly and Professional Activities

Reviewer for the Journal of Organic Chemistry, Biotechnology and Bioengineering, Biotechnology Progress, Applied and Environmental Microbiology	2011-present
Member: DECHEMA German Society for Chemical Engineering and Biotechnology	2011-2014
Member: American Chemical Society	2002-present