

**CURRICULUM VITAE**  
**RACHEL D. CROUCH, Pharm.D., Ph.D.**  
**November 2017**

**PERSONAL**

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**Residence**

110 31st Avenue North, Unit 405  
Nashville, TN 37203

**University**

Lipscomb University  
College of Pharmacy and Health Sciences  
One University Park Drive  
Nashville, TN 37204

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**EDUCATION**

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Vanderbilt University School of Medicine  
Nashville, TN  
Doctor of Philosophy, Pharmacology  
Mentor: J. Scott Daniels, Ph.D.  
2012 – 2016

Dissertation Title: Aldehyde Oxidase Drug Metabolism: Evaluation of Drug Interaction Potential and Allometric Scaling Methods to Predict Human Pharmacokinetics

Lipscomb University College of Pharmacy  
Nashville, TN  
Doctor of Pharmacy  
2008 – 2012

Lipscomb University  
Nashville, TN  
Bachelor of Arts, Applied Biochemistry / Spanish  
2004 – 2008

**RESEARCH INTERESTS**

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Drug metabolism and disposition; aldehyde oxidase-mediated drug metabolism; drug discovery

## PROFESSIONAL EXPERIENCE

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- Nov 2017 – present      Assistant Professor of Pharmaceutical Sciences
- Lipscomb University College of Pharmacy and Health Sciences, Nashville, TN
  - Department Chair: W. Scott Akers, Pharm.D., Ph.D.
- Jan 2017-Oct 2017      Postdoctoral Research Fellow
- Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN
  - Supervisor: Craig Lindsley, Ph.D.
- July 2012 - Dec 2016      Graduate Research Assistant
- Dept. of Pharmacology, Vanderbilt University, Nashville, TN
  - Supervisor: J. Scott Daniels, Ph.D.
- July 2011- Sept 2011      Student Pharmacist Intern (Research)
- Dept. of Pharmacology, Vanderbilt University, Nashville, TN
  - Supervisor: J. Scott Daniels, Ph.D.
- Sept 2009 – April 2011      Student Pharmacist Intern (Community Pharmacy)
- Kroger Pharmacy, Nashville, TN,
  - Supervisor: Fred Rachide, R.Ph and Anupam Paul, Pharm.D.
- May 2010 – Aug 2010      Summer Research Assistant
- Dept. of Pharmacology, Vanderbilt University, Nashville, TN
  - Supervisor: Alan Brash, Ph.D.
- May 2009 – Aug 2009      Organic Chemistry Lab Instructor
- Dept. of Chemistry and Biochemistry, Lipscomb University, Nashville, TN
  - Supervisor: Kent Clinger, Ph.D.
- May 2009 – Aug 2009      Summer Research Assistant
- Dept. of Pharmaceutical Sciences, Lipscomb University College of Pharmacy Nashville, TN
  - Supervisor: Susan Mercer, Ph.D. and Michael Fowler, Ph.D.
- May 2008 – Aug 2008      Organic Chemistry Lab Instructor
- Dept. of Chemistry and Biochemistry, Lipscomb University, Nashville, TN
  - Supervisor: Kent Clinger, Ph.D.
- May 2008 – Aug 2008      Summer Research Assistant
- Dept. of Chemistry, Lipscomb University, Nashville, TN
  - Supervisor: Kent Clinger, Ph.D.
- May 2007-Aug 2007      Pharmacy Technician
- Outpatient Pharmacy, Vanderbilt Children's Hospital, Nashville, TN
  - Supervisor: Ron Eatherly, D.Ph.
- Aug 2006 – May 2007      Spanish Tutor
- Learning Enhancement Program, David Lipscomb High School, Nashville, TN
  - Supervisor: Mary Little

- May 2006 – Aug 2006      General Chemistry Tutor
- Dept. of Chemistry and Biochemistry, Lipscomb University, Nashville, TN
  - Supervisor: William Tallon, Ph.D.

## LICENSURES AND CERTIFICATIONS

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- 2012 - present      Pharmacist Licensure (#37017)
- Issued by the Tennessee Board of Pharmacy
- 2008      APhA Pharmacy-Based Immunization Certification
- Issued by the American Pharmacists Association

## RESEARCH FUNDING

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- 2014-2016      PhRMA Predoctoral Fellowship in Pharmacology/Toxicology
- PhRMA Foundation
- 2012-2014      NIH T32 GM07628, Training in Pharmacological Sciences
- Department of Pharmacology, Vanderbilt University

## HONORS AND AWARDS

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- 2015-2017      Pharmacy School Loan Repayment Award
- Program in Clinical Research, NIH Division of Loan Repayment
- 2015      Graduate Student Travel Award
- The Graduate School, Vanderbilt University
- 2014      Graduate Student Travel Award
- The Graduate School, Vanderbilt University
- 2013-present      Rho Chi Academic Honor Society in Pharmacy Member, Delta Pi Chapter
- Lipscomb University College of Pharmacy
- 2012      Graduated First in Class
- Lipscomb University College of Pharmacy
- 2012      Asklepios Key Award for Excellence in Scholarship and Outstanding Achievement
- Kappa Psi Pharmaceutical Fraternity, Epsilon Lambda Chapter, Lipscomb University College of Pharmacy
- 2012      Pharmaceutical Sciences Impact Award
- Lipscomb University College of Pharmacy

2012-present	Alpha Chi National Honor Society Member, Kappa Chapter <ul style="list-style-type: none"> <li>Lipscomb University College of Pharmacy</li> </ul>
2011	AACP Wal-Mart Annual Conference Scholarship Program Award, <ul style="list-style-type: none"> <li>American Association of Colleges of Pharmacy/Wal-Mart Stores, Inc.</li> </ul>
2011	Board of Visitors Scholarship, <ul style="list-style-type: none"> <li>Lipscomb University College of Pharmacy</li> </ul>
2010	Walgreen's Diversity Scholarship, Walgreen's Co. <ul style="list-style-type: none"> <li>Lipscomb University College of Pharmacy</li> </ul>
2008-2012	Academic Dean's List <ul style="list-style-type: none"> <li>Lipscomb University College of Pharmacy</li> </ul>
2008	B.A., Magna Cum Laude <ul style="list-style-type: none"> <li>Lipscomb University</li> </ul>
2008	1 <sup>st</sup> Place Award for Undergraduate Research Presentation in Chemistry/Physics <ul style="list-style-type: none"> <li>Tennessee Academy of Science Middle Division Meeting</li> </ul>
2008	Who's Who Among Students in American Universities and Colleges <ul style="list-style-type: none"> <li>Lipscomb University</li> </ul>
2006-2008	Academic Provost's List <ul style="list-style-type: none"> <li>Lipscomb University</li> </ul>
2004-2006	Academic Honor Roll <ul style="list-style-type: none"> <li>Lipscomb University</li> </ul>
2004-2008	Academic Scholarship <ul style="list-style-type: none"> <li>Lipscomb University</li> </ul>
2004-2008	Tennessee HOPE Scholarship <ul style="list-style-type: none"> <li>Tennessee Education Lottery Scholarship Program, Lipscomb University</li> </ul>

## **MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS**

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2012-present	American Association of Pharmaceutical Scientists
2011-2012	American Association of Colleges of Pharmacy
2010-2012	American Society for Pharmacology and Experimental Therapeutics
2009-2011	Sigma Xi, The Scientific Research Society
2008-2012	American Pharmacists Association, Academy of Student Pharmacists
2008-2012	Tennessee Pharmacists Association, Tennessee Society of Student Pharmacists

## SERVICE ACTIVITIES

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- 2017 Mock Qualifying Exam Volunteer
- Dept. of Pharmacology, Vanderbilt University
- 2016 Mock Qualifying Exam Volunteer
- Dept. of Pharmacology, Vanderbilt University
- 2015-2016 Student-Invited Pharmacology Forum Committee Member
- Department of Pharmacology, Vanderbilt University
- 2014 Mock Qualifying Exam Volunteer
- Dept. of Pharmacology, Vanderbilt University
- 2010-2011 Project Heart, Committee Member
- Lipscomb University College of Pharmacy
- 2010 Operation Heartburn Awareness Committee Member
- Lipscomb University College of Pharmacy
- 2009 Mobile Medical Disaster Relief Volunteer
- Nashville, TN
- 2009 Health Screening Services Volunteer
- Kroger Pharmacy/YMCA, Nashville, TN
- 2009 Influenza Vaccination Services Volunteer Immunizer
- Lipscomb University College of Pharmacy
- 2008 Siloam Family Health Center Volunteer
- Nashville, TN

## ATTENDED CONFERENCES

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- July 2015 Gordon Research Conference on Drug Metabolism, Holderness, NH
- May 2014 20<sup>th</sup> International Symposium on Microsomes and Drug Oxidations, Stuttgart, Germany
- October 2013 Academic Drug Discovery Conference, Nashville, TN
- July 2011 American Association of Colleges of Pharmacy, San Antonio, TX

## POSTER PRESENTATIONS

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**Crouch RD**, Hutzler JM, Daniels JS, "Predicting Human Clearance for Compounds Displaying Aldehyde Oxidase Metabolism Phenotypes." Vanderbilt Pharmacology Departmental Retreat, Nashville, TN. October 2015.

**Crouch RD**, Hutzler JM, Daniels JS, “Predicting Human Clearance for Compounds Displaying Aldehyde Oxidase Metabolism Phenotypes.” Gordon Research Conference on Drug Metabolism. Holderness, NH. July 2015.

**Crouch RD**, Morrison RD, Emmitte KA, Daniels JS, “Evaluating Compensatory Clearance Mechanisms for Novel Heterocyclic Compounds with Mixed Aldehyde Oxidase/P450 Metabolism Phenotypes.” 20<sup>th</sup> International Symposium on Microsomes and Drug Oxidations. Stuttgart, Germany. May 2014.

**Crouch RD**, Klein MT, Bridges TM, Conn JP, Daniels JS. “Biotransformation of M<sub>4</sub> Positive Allosteric Modulators to Pharmacologically Distinct Active Metabolites.” Vanderbilt Pharmacology Departmental Retreat, Nashville, TN. October 2013.

**Crouch RD**, Kulkarni K, Daniels JS. “Role of *in vitro* Transport Assays in Pharmacokinetic Studies and the Drug Discovery Process.” Lipscomb University College of Pharmacy Research Day, Lipscomb University College of Pharmacy, Nashville, TN. October 2011.

**Stephens RD\***, Boeglin WE, Brash AR. “Metabolism of Very Long-Chain Fatty Acids by Cytochrome P450 4F11.” Lipscomb University College of Pharmacy Research Day, Lipscomb University College of Pharmacy, Nashville, TN. October 2010

Nickel JP, **Stephens RD\***, Fowler MW, Mercer SL. “Determination of the Abuse Potential of Daytrana® Transdermal Patches.” Lipscomb University College of Pharmacy Research Day, Lipscomb University College of Pharmacy, Nashville, TN. January 2010

## ORAL PRESENTATIONS

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### Research Presentations:

“Aldehyde Oxidase Drug Metabolism: Evaluation of Drug Interaction Potential and Allometric Scaling Methods to Predict Human Pharmacokinetics.” Dissertation Defense, Department of Pharmacology, Vanderbilt University, Nashville, TN. November 2016.

“Predicting Human Clearance of Aldehyde Oxidase Substrates.” Pharmacology Internal Seminar of Works in Progress. Department of Pharmacology, Vanderbilt University, Nashville, TN. April 2015.

“Metabolic Shunting Induced *in vivo* by Inhibition of Metabolism of a Compound with a Mixed Aldehyde Oxidase/P450 Clearance Phenotype.” Lipscomb University College of Pharmacy Invited Presentation, Nashville, TN. November 2014.

“Metabolic Shunting Induced *in vivo* by Inhibition of Metabolism of a Compound with a Mixed Aldehyde Oxidase/P450 Clearance Phenotype.” Vanderbilt Pharmacology Departmental Retreat, Nashville, TN. October 2014.

“Inhibition of P450-Mediated Metabolism of VU0409106: Involvement of Metabolic Shunting Towards Aldehyde Oxidase-Mediated Metabolism” Vanderbilt Enzymology Club Meeting, Vanderbilt University, Nashville, TN. March 2014

“Role of Metabolism and Disposition in the Pharmacological Activity of M<sub>4</sub> Positive Allosteric Modulators.” Vanderbilt Center for Neuroscience Drug Discovery Annual Retreat. Nashville, TN October. 2013.

“Biotransformation of M<sub>4</sub> Positive Allosteric Modulators to Pharmacologically Distinct Active Metabolites.” Vanderbilt Pharmacology Departmental Retreat, Buchanan, TN. October 2012.

"Histidine Decarboxylase Assay by Capillary Electrophoresis" Tennessee Academy of Science Middle Division Meeting, Chemistry/Physics, Belmont University, Nashville, TN. April 2008

### **Journal Club Presentations:**

"Pharmacologic Stimulation of Cytochrome P450 46A1 and Cerebral Cholesterol Turnover in Mice."  
Vanderbilt Pharmacology Departmental Journal Club, Vanderbilt University, Nashville, TN March. 2014.

"Using Chimeric Mice with Humanized Livers to Predict Human Drug Metabolism and a Drug-Drug Interaction."  
Vanderbilt Pharmacology Departmental Journal Club, Vanderbilt University, Nashville, TN. April 2013.

### **PUBLICATIONS**

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#### **Refereed Articles:**

**Crouch RD**, Blobaum AL, Felts AS, Conn JP, Lindsley CW. "Species-Specific Involvement of Aldehyde Oxidase and Xanthine Oxidase in the Metabolism of the Pyrimidine-Containing mGlu5-Negative Allosteric Modulator VU0424238 (Auglurant)." *Drug Metabolism and Disposition*. 2017; 45(12):1245-59.

**Crouch RD**, Hutzler JM, and Daniels JS. "A novel In Vitro Allometric Scaling Methodology for Aldehyde Oxidase Substrates to Enable Selection of Appropriate Species for Traditional Allometry." *Xenobiotica*. 2017 Mar 10:1-13 [Epub ahead of print].

**Crouch RD**, Morrison RD, Byers FW, Lindsley CW, Emmitte KA and Daniels JS. "Evaluating the Disposition of a Mixed Aldehyde Oxidase/Cytochrome P450 Substrate in Rats with Attenuated P450 Activity." *Drug Metabolism and Disposition*. 2016; 44(8):1296-1303.

\*Former name is "Stephens"