

Josh Brown, Ph.D.

Associate Professor

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Education

- August 2005 – May 2010 **PhD in Medicinal Chemistry**
University of Tennessee Health Science Center
Memphis, TN
Dissertation Title: "The Design and Synthesis of Novel Antibiotics for Use in the Battle Against Bacterial Resistance"
Advisor: Richard Lee, PhD
- August 2001 – May 2005 **BS in Chemistry, *cum laude*** (Honors Interdisciplinary Studies minor)
University of Central Arkansas
Conway, AR
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Teaching Experience

- July 2016 – Present **Associate Professor, Pharmaceutical Sciences**
Harding University College of Pharmacy
Searcy, AR
- July 2010 – July 2016 **Assistant Professor, Pharmaceutical Sciences**
Harding University College of Pharmacy
Searcy, AR
- 2005 – 2010 **Teaching Assistant**
University of Tennessee Health Science Center
Memphis, TN
Medicinal Chemistry I
Medicinal Chemistry II
Pharmacy Technology Laboratory
- 2003 – 2005 **Laboratory Assistant**
University of Central Arkansas
Conway, AR
Organic Chemistry I
Organic Chemistry II
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Certifications

2020

Certificate in Effective Instruction

Association of College and University Educators

This certificate signifies my completion of a 25-module course in effective teaching practices requiring the implementation of evidence-based instructional approaches. The credential is co-issued by the American Council on Education and distinguishes faculty for their commitment to educational excellence and student success.

Didactic Responsibilities

PHA 5210 – Foundations of Pharmaceutical Sciences*

Description: This course orients the entering Doctor of Pharmacy student to the pharmaceutical sciences by providing the basic knowledge necessary to allow the student to begin to integrate fundamental physical, chemical, and biological sciences as it pertains to the development of safe and effective therapeutics. The basic principles for drug structure, delivery, disposition, and action will be discussed. The student will also be introduced to immunology, pharmacogenomics and cancer pathophysiology.

Content Taught: Physicochemical properties of drug molecules, structure–activity relationship, functional groups, general drug metabolism

PHA 5240 – Biochemical Principles of Drug Action*

Description: This course provides an integrated foundation of key areas in the pharmaceutical sciences. An accelerated biochemistry sequence will focus on druggable pathways; medicinal chemistry will include recognizing common functional groups within drug molecules, ADMET, and drug design; pharmacology will explore pharmacokinetics/pharmacodynamics, and cell drug transporters.

Content Taught: Physicochemical properties of drug molecules, structure–activity relationship, functional groups, general drug metabolism, biochemistry

PHA 5250 – Introduction to Pharmaceutical Science

Description: Orients the entering Doctor of Pharmacy student to the interrelationships of the pharmaceutical sciences by providing the basic knowledge necessary to allow the student to begin to integrate fundamental physical, chemical, and biological sciences as they pertain to the development of safe and effective therapeutics. Also included are mathematical principles and quantitative methods utilized in the contemporary practice of pharmacy.

Content Taught: Overview of drug targets, ionization and acid/base chemistry, solubility and lipophilicity, buffers and buffer solutions

PHA 5260 – Pharmaceutics

Description: Intended to give the student a basic knowledge of the pharmaceutical principles involved in formulation, design, compounding, and evaluation of dosage forms and drug delivery systems; and will also familiarize the student with the concepts of drug standards, good manufacturing practice, and quality control. The student will gain background knowledge and skills necessary to apply biopharmaceutic principles to the selection

and evaluation of drug products for use in patients. Emphasis will be placed on the various formulation and physiologic factors that affect drug response and absorption.

Content Taught: Suspensions and emulsions

PHA 5280 – Pathophysiology I

Description: This course covers the fundamental mechanisms of human disease process, including causes, manifestations, diagnosis and treatment of immunological, oncological, endocrine, hematological, renal, and metabolic diseases.

Content Taught: Endocrine

PHA 6310 – Pharmacology and Medicinal Chemistry I*

Description: Integrating pharmacology and medicinal chemistry of cardiovascular, pulmonary and renal agents. Emphasis on chemical structure of these agents; drug structure-activity relationships and mechanisms of action; chemical reactions involved in the metabolism of these agents; drug mechanisms related to the occurrence of adverse effects; generic and trade names of these agents; and pharmacological effects produced by these agents and their relationship to the blood, heart, circulatory system, lungs and renal system.

Content Taught: Renal system, diuretics, fluid and electrolyte disorders, RAAS-active agents, agents used to treat blood coagulation disorders and stroke, agents used to treat lipid disorders, agents used to treat cardiac rhythm disorders, agents used to treat heart failure, vasodilating agents, agents used to treat pulmonary diseases, drug-drug interactions, agents used to treat urinary incontinence

PHA 6320 – Pharmacology and Medicinal Chemistry II*

Description: Integrating pharmacology and medicinal chemistry of endocrine, GI, musculoskeletal and integument agents. Emphasis on chemical structure of these agents; drug structure-activity relationships and mechanisms of action; chemical reactions involved in the metabolism of these agents; drug mechanisms related to the occurrence of adverse effects; generic and trade names of these agents; and pharmacological effects produced by these agents and their relationship to the endocrine, GI, musculoskeletal and integumentary systems.

Content Taught: Agents used to treat female- and male-specific disorders, agents used to treat thyroid disorders, agents used to treat HAP axis disease states, agents used to treat diabetes, agents used to treat osteoporosis, agents used to treat major skin conditions, agents used to treat nausea and vomiting, agents used to treat PUD, duodenal ulcers, and GERD, agents used to treat diarrhea, constipation, hemorrhoids, IBS, and IBD, agents used to treat ophthalmic disorders, agents used to treat gout and lupus, agents used to treat arthritis, skeletal muscle relaxants, neuromuscular blockers, and general anesthetics

PHA 6910 – Integrated Sequence I*

Description: This course will integrate the pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy of agents used in the treatment of select cardiovascular and renal diseases and disorders. Course content focuses on drug names and characteristics that contribute to the therapeutic use and rationale of drug choice in the treatments of these diseases and disorders: the chemical structure of these agents, drug structure-activity relationships and mechanisms of action, chemical reactions involved in the metabolism of these agents, drug mechanisms related to the occurrence of adverse effects, pharmacological effects produced by these agents and their relationship to associated body systems. Course content will also focus on the management of medication-related problems and decision-making processes including utilization of laboratory tests and patient

assessment data to monitor drug efficacy and toxicity. The use of complementary and alternative therapies as well as the social/behavioral/administrative aspects of cardiovascular and renal disorders will be addressed.

Content Taught: Renal physiology, pharmacology, and medicinal chemistry, RAAS medicinal chemistry, heart failure medicinal chemistry, pharmacology of angina, pathophysiology, pharmacology, and medicinal chemistry of lipid disorders, pharmacology of blood coagulation

PHA 6920 – Integrated Sequence II*

Description: This course will integrate the pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy of agents used in the treatment of select cardiovascular, pulmonary, endocrine, and integumentary diseases and disorders. Course content focuses on drug names and characteristics that contribute to the therapeutic use and rationale of drug choice in the treatments of these diseases and disorders: the chemical structure of these agents, drug structure-activity relationships and mechanisms of action, chemical reactions involved in the metabolism of these agents, drug mechanisms related to the occurrence of adverse effects, pharmacological effects produced by these agents and their relationship to associated body systems. Course content will also focus on the management of medication-related problems and decision-making processes including utilization of laboratory tests and patient assessment data to monitor drug efficacy and toxicity. The use of complementary and alternative therapies as well as the social/behavioral/administrative aspects of cardiovascular, pulmonary, endocrine, and integumentary disorders will be addressed.

Content Taught: Osteoporosis medicinal chemistry, osteoarthritis medicinal chemistry, gout and lupus medicinal chemistry, diseases of the HPA axis physiology, pharmacology, and medicinal chemistry, thyroid pharmacology and medicinal chemistry, integumentary physiology, pathophysiology, and medicinal chemistry, ophthalmic medicinal chemistry

PHA 7330 – Pharmacology and Medicinal Chemistry III

Description: Integrating pharmacology and medicinal chemistry of anti-infective, hematology and oncology agents. An emphasis on chemical structure of these agents; drug structure-activity relationships and mechanisms of action; chemical reactions involved in the metabolism of these agents; drug mechanisms related to the occurrence of adverse effects; generic and trade names of these agents; pharmacological effects produced by these agents and their relationship to infectious, hematologic and oncologic processes.

Content Taught: Overview of antibiotics, beta-lactam and other cell wall active agents, protein synthesis inhibitors, agents acting on nucleic acid synthesis, replication, and repair, agents acting on the folate pathway, antimycobacterial agents, antifungal agents, antiviral agents, antiparasitic agents, Overview of oncology, DNA repair inhibitors, cross-linking agents, antitumor antibiotics and intercalators, antimetabolites, anti-angiogenic agents and antimetotics, targeted agents inhibiting signaling pathways, agents acting on hormone receptors

PHA 7340 – Pharmacology and Medicinal Chemistry IV

Description: An integration of pharmacology and medicinal chemistry of nervous system agents. Emphasizing chemical structure of these agents; drug structure-activity relationships and mechanisms of action; chemical reactions involved in the metabolism of these agents; drug mechanisms related to the occurrence of adverse effects; generic and trade names of these agents; pharmacological effects produced by these agents and their relationship to nervous system disorders.

Content Taught: Agents used to treat alcoholism, triptans and other agents used to treat migraine headaches, opioids, stimulants, antidepressants, anticonvulsants, sedative/hypnotic/anxiolytic agents, agents used to treat Parkinson's Disease, antipsychotic and bipolar mood disorder drugs, agents used to treat cognitive disorders, agents used to treat myasthenia gravis

PHA 7430 – Research Elective

Guided students in antibiotic discovery using synthetic organic chemistry
Guided students in helping to create and design an escape room active learning opportunity

***Denotes Roll as Course Coordinator**

Intellectual Contributions

Grant Review Panel

National Science Foundation, Grant Review Panelist (2021)

Refereed Articles

Brown, J. R., North, E. J., Hurdle, J. G., Morisseau, C., Scarborough, J. S., Dianqing Sun, Jana Korduláková, Michael S. Scherman, Victoria Jones, Anna Grzegorzewicz, Rebecca M. Crew, Mary Jackson, Michael R. McNeil, Richard E. Lee (2011). The structure–activity relationship of urea derivatives as anti-tuberculosis agents. *Bioorganic and Medicinal Chemistry*, 19 (18), 5585-5595.

Desrochers, P. J., Duong, D. S., & Brown, J. R. (2007). Nickel-Cysteine Binding Supported by Phosphine Chelates. *Inorganic Chemistry* (46), 9221-9233.

Presentations of Refereed Papers

National

Brown, J. (2005, April). *Selective Nickel-Cysteine Binding on a Heterogeneous Support*. National Conference on Undergraduate Research, Lexington, Virginia.

Regional

Brown, J. (2008, May). *The Design, Synthesis and Evaluation of Novel Urea Derivatives as Anti-Tuberculosis Agents*. MALTO Medicinal Chemistry Meeting, UAMS, Little Rock, Arkansas.

State

Brown, J. (2003, September). *Selective Nickel-Cysteine Binding on a Heterogeneous Support*. Arkansas Biomedical Research Infrastructure Network Symposium, Fayetteville, Arkansas.

Presentations of Non-Refereed Papers

National

Brown (2022). *Using Technology to Improve Comprehension in Basic Science Courses*. 2022 AACP Annual Meeting. (Not Accepted)

Local

Brown, J. (2018). *Research Findings about Local Drug Tack Back Programs*. Community Healthcare Conference, Unity Health, Searcy, Arkansas.

Huckabee, C. & Brown, J. (2014). *Antibacterial Drug Design and Synthesis from the Natural Product Ianthelliformisamine A*. 2014 Harding University Research Symposium, Searcy, Arkansas.

Brown, J. (2012). *Adventures in Drug Discovery: The Good, The Bad, and The Ugly*. Central Arkansas Section of The American Chemical Society Meeting, Searcy, Arkansas.

Grants

2021	AACP SoTL Grant, <i>Design and Implementation of an Escape Room Integrating Pharmacy Science and Practice</i> – Not Funded
2017	CelaCare Technologies, <i>Discovery Activities Associated with Drug Delivery Methodology and Antibiotic Synthesis</i> - \$15,900
2015	Arkansas INBRE, <i>Purchase of Biotage Initiator+ with Robot Eight</i> , Principal Investigator - Not Funded

Professional Memberships

2010 – Present	American Association of Colleges of Pharmacy
2005 – Present	American Chemical Society: Medicinal Chemistry Division

Service to the Institution

College Assignments

2022 – Present	HUCOP Department of Pharmaceutical Sciences Scholarship Committee <i>Chair</i>
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2022 – Present	HUCOP Department of Pharmaceutical Sciences Student Recruitment Committee <i>Member</i>
2022 – Present	HUCOP Department of Pharmaceutical Sciences Strategic Planning Committee <i>Member</i>
2020 – Present	HUCOP Assessment Committee <i>Member and Subcommittee Chair</i>
2019 – Present	HUCOP Progression and Readmission Committee <i>Member</i>
2018 – Present	HUCOP Honor, Awards, and Scholarship Committee <i>Member</i>
2016 – 2018	HUCOP Self-Study Committee Sub-Committee A <i>Chair</i>
2015 – 2019	HUCOP Curriculum Committee <i>Chair</i>
2011 – 2019	HUCOP Curriculum Committee <i>Member</i>
2011 – 2014	HUCOP Class of 2014 <i>Faculty Advisor</i>

University Assignments

2021 – Present	Harding University Faculty Rank and Promotion Committee <i>Member</i>
2019 – 2020	Harding University Faculty Welfare Committee <i>Member</i>
2014 – 2016	Harding University Academic Program Planning and Review Committee <i>Member</i>

Service to the Profession

Regional

2013	Central Arkansas Section of the American Chemical Society <i>Chair</i>
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2011 – 2014 Central Arkansas Section of the American Chemical Society
Executive Team Member

Invited Lectures

2019 “State of Pharmacy as a Career Opportunity”
Pre-Pharmacy Club
University of Central Arkansas
Conway, AR

2011 “Is Academia Right for You?”
Pre-Pharmacy Club
University of Central Arkansas
Conway, AR

Other Professional Service Activities

2022 External Promotion Review for Dr. Nicole Lounsbury
William Carey University College of Pharmacy

2019 – 2021 AACP Career Center Taskforce
Taskforce for national organization asked to look at need and feasibility of
hosting a career center at their national meetings

2019 Accreditation Council for Pharmacy Education Site-Team
Evaluator Training
Attended training to become a site-team evaluator for the national accrediting
body for pharmacy schools

2018 – 2019 AACP National Meeting
Faculty Delegate

2017 External Promotion Review for Dr. Srujana Rayalam
Philadelphia College of Osteopathic Medicine-School of Pharmacy, Georgia
Campus

2016 – Present *Currents in Pharmacy Teaching and Learning Journal*
Peer Reviewer

2014 – 2015 AACP National Meeting
Faculty Delegate

Service to the Community

- Assist with Harding University College of Pharmacy’s annual Drug Takeback Program
- Regularly participate in productions at Searcy’s Center on The Square Theater
- Assisted with multiple COVID vaccination clinics
- Serve on Board of Directors for the community organization *Hands and Feet Collective*

Service to the Church

- Active Member of First Baptist Church, Searcy, AR
 - Member of FBC Choir and Praise Team
 - Group leader to fourth grade students during Wednesday night AWANA activities
 - Member of Missions Committee
 - Member of Search Committee for new Children’s Director
 - May 2018 participated in mission trip to Leogane, Haiti
 - Help build medical facility
 - Evangelized in nearby villages
 - Helped with children in orphanage
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Honors and Awards

2021 – 2022	Teacher Achievement Award <i>Harding University</i>
2005	Capitola Edmonson Scholar <i>University of Tennessee Health Science Center</i>
2004	Undergraduate Research Grant for Education <i>University of Central Arkansas</i>
2004	Dean's List <i>University of Central Arkansas</i>
2003	Dean's List <i>University of Central Arkansas</i>
2003	Presidential Scholar <i>University of Central Arkansas</i>
2003	Most Outstanding Poster: Undergraduate Division <i>Arkansas Biomedical Research Infrastructure Network Symposium</i>
2002	Dean's List <i>University of Central Arkansas</i>

Professional Development

Research-Related Conference/Seminar

2021	Teaching Professor Conference <i>New Orleans, Louisiana</i>
2019	ASM Microbe <i>San Francisco, California</i>
2017	ASM Microbe <i>New Orleans, Louisiana</i>

2016	ASM Microbe <i>Boston, Massachusetts</i>
2015	ICAAC Annual Meeting and Workshop on Anti-Infectives <i>San Diego, California</i>
2014	ICAAC Annual Meeting and Workshop on Anti-Infectives <i>Washington D.C.</i>
2013	ICAAC Annual Meeting and Workshop on Anti-Infectives <i>Denver, Colorado</i>
2012	ICAAC Annual Meeting and Workshop on Anti-Infectives <i>San Francisco, California</i>
2012	American Chemical Society <i>San Diego, California</i>

Instructional-Related Conference

2022	AACP Annual Meeting <i>Virtual</i>
2019	AACP Annual Meeting <i>Chicago, Illinois</i>
2018	AACP Annual Meeting <i>Boston, Massachusetts</i>
2015	AACP Annual Meeting <i>National Harbor, Maryland</i>
2014	AACP Annual Meeting <i>Grapevine, Texas</i>
2014	AACP Institute <i>Atlanta, Georgia</i>
2013	AACP Annual Meeting <i>Chicago, Illinois</i>
2011	AACP Annual Meeting <i>San Antonio, Texas</i>

Other Professional Development

2017	AACP Interim Meeting <i>Rio Grande, Puerto Rico</i>
2016:	ACPE Institute <i>Chicago, Illinois</i>
2013	American Chemical Society Leadership Institute <i>Dallas, Texas</i>