

Curriculum Vitae
Jeff B. Helms, Ph.D.
jbhelms@ilstu.edu

Education

Ph.D. Biology – Scholar-Educator option, Illinois State University.
B.Sc. Biology – GPA 4.0, graduated summa cum laude, Illinois State University.

Dissertation Research

Pharmacological inhibition of the Na⁺,K⁺-ATPase, Illinois State University, Normal, IL.

Teaching Experience

Illinois State University, Normal, IL August 2013- present
BSC 101 Fundamental Concepts in Biology - non-majors
BSC 160 Microbiology and Society – non-majors
BSC 197 Molecular and Cellular Basis of Life (co-instructor)
BSC 203 Cell Biology – Summer online (8 week intensive course)
BSC 220 Laboratory in Molecular Genetics & Cell Biology
BSC 145 Human Biology – non-majors course
BSC 182 Anatomy and Physiology II

Methodist College of Nursing, Peoria, IL July 2012-August 2013
BIO101 Anatomy & Physiology I
BIO102 Anatomy & Physiology II
BIO 201 Microbiology

Upper Iowa University, Fayette, IA. August 2010 – June 2012
BIO100 General Biology – non-majors course
BIO135 Principles of Biology
BIO251 Biotechnology
BIO268 Introduction to Human Anatomy & Physiology
BIO 270 Human Anatomy & Physiology I
BIO 275 Human Anatomy & Physiology II
BIO 397 Molecular Tools II (Protein)

Student Research and Leadership Mentoring

Jasmine Hatcher-Moorman - Characterizing Adaptations that Confer Increased Resistance to High Salinity in Brine Shrimp – Masters thesis committee member – 2020 – present.

Moe Khalil – Angleman’s Syndrome homolog in *C. elegans* - Senior Thesis committee member 2015-2016

Moe Khalil – ISULeads Leadership Certificate Program

Ashleigh Lengel – The effects of Δ⁹-Tetrahydrocannabinol (THC) on human alpha brain wave patterns.
Senior Thesis Project

Kirby Hovden – Muscle Tone and the Patellar Reflex. – Senior Thesis Project 2011-2012

Regina Elliot – Cloning and Overexpression of the ATP Binding Domain from Drs2; An Aminophospholipid Translocase. Senior Thesis Project 2010-2012

Whitney Stegman (co-advisor) – Nutritional Components of Cardiovascular Disease. Senior Thesis Project 2010-2011

Gail Virgin –The Extracellular Domain of the Na Pump β -subunit is Sufficient for α - β Assembly and Delivery to the Plasma Membrane. – Senior Thesis 2005-2006

Megan Prasse –Sequence of the Putative Na,K-ATPase Ouabain Binding Domain in *Mesocricetus auratus* (Syrian hamster): Does it Predict Pump Inhibition Kinetics? – Senior Thesis 2004-05

Professional Experience Summary

Pre-Health Professions Advisor - School of Biological Sciences / Director BSC 101 – Illinois State University, Normal, IL

August 2019 – present

- Advise over one hundred and ninety-five biology undergraduates working toward professional health programs following graduation
 - Provide mentorship and developmental opportunities for pre-health students
 - Develop relationships with local health care professionals to create shadowing opportunities for our students
 - Stay current with professional school (medical, dental, optometry, physical therapy etc.) application processes and systems along with admissions trends to best prepare our students
 - Work with other campus Pre-Health Professions advisors to ensure a quality advising and mentorship experience for all Illinois State University Pre-Professional students regardless of major.
 - Conduct mock interviews and write professional letters of reference.
 - Provide informational sessions during ISU open houses, transfer days and preview for students interested in health related careers.
 - Meet with students upon advising transition from University College and on Transfer and Orientation Days
 - Share programmatic information with high school seniors and junior college advisors regarding ISU's pathways to pre-health programs
- Responsible for all aspects of BSC 101 non-majors introductory biology course.
 - Supervise, support and provide growth opportunities for the course coordinator.
 - Provide leadership and guidance to instructional team serving over 1,000 students per semester
 - Develop curriculum for and improve existing classroom learning models.
 - Assess current learning outcomes and participate in the University's general education assessment initiatives.
 - Work with the assistant Provost on issues related to retention and success of underrepresented and first-generation college students

Coordinator, Biological Sciences – Illinois State University, Normal, IL

August 2014 – August 2019

- Teaching 12-18 credit hours per year primarily in non-majors biology courses for the School of Biological Sciences.
 - Microbiology and Society
 - Required course for Nursing, Medical Lab Science, Environmental Health and Nutrition /Dietetics sequence
 - Introductory Biology for non-majors
 - Cell Biology – 8 week intensive online summer session
 - Cellular and Molecular Introductory course for majors – co-instructor
- Worked with the teaching assistants throughout the School of Biological Sciences to enhance and improve the undergraduate classroom laboratory experience.
 - Determine classroom laboratory needs for changing and rejuvenating lab courses
 - Work with head teaching assistance on issues related to their role
 - teaching assistant supervision
 - classroom management
 - pedagogy
 - supply ordering and inventory

- Facilitate, coordinate and execute maintenance and repair of research and teaching laboratory equipment owned by the School of Biological Sciences.

Instructional Assistant Professor – Illinois State University, Normal, IL
May 2013 – June 2013 / August 2013 – June 2014

- Teaching multiple courses as needed for the School of Biological Sciences.
 - Human Biology for non-majors
 - Laboratory Molecular and Cellular Basis of Life
 - Introductory Biology for non-majors
 - Laboratory in Molecular Genetics and Cell Biology
- Responsible for all aspects of development, course design and teaching of a summer on-line version of the majors Cell Biology course.

Assistant Professor – Methodist College, Peoria, IL
July 2012-August 2013

- Teaching 24 credit hours per year in Anatomy and Physiology and Microbiology.
- Responsible for development of the biology program as the college transitioned from a two plus two college of nursing to a four year Bachelor of Science in Nursing program.
- Successfully developed and proposed a new 300 level elective for 2nd degree nursing students in Immunology.
- Conducted an extensive review of course articulations of biology courses.
- Successfully submitted (co-author) an IBHE Nursing Improvement Grant.

Assistant Professor / Pre-Professional Advisor – Upper Iowa University, Fayette, IA.
August 2010-June 2012

- Teaching 22-24 credit hours per year primarily in Anatomy and Physiology, Principle of Biology I (introductory major's course) and an upper level molecular tools course.
- Developing new programs for advising and support to pre-professional students in the Department of Biological Sciences, within the Division of Math and Science and across the Upper Iowa campus.
- Successfully developed and proposed two new course additions aimed at providing a more complete set of opportunities for our biology and pre-professional students.

Director of University Event Services – Southwest Minnesota State University, Marshall, MN.
2008-2009

- Provided guidance and support for student sponsored programs and events.
- Planned and implemented professional development opportunities for the students working within the Scheduling and Event Services Office.
- Directly represented the University while providing oversight, coordination and marketing support for a diverse array of campus and community events, conferences and athletic competitions.

Assistant Director Operations/Coordinator- Student Center Events – Illinois State University, Normal, IL.
2005-2008

- Overall responsibility for the oversight and management of four units (operations, scheduling and event services, facility management and guest services) within the 200,000+ square foot Bone Student Center / Braden Auditorium complex.
- Provided mentorship, guidance and support to the students within my units as they explored options for their future.
- Worked collaboratively with Colleges and Departments from across campus on a number of programs and initiatives.

Publications

Helms, J. , Saunders, L. , Meyer, J. , Costa, C. , Plowman, E. , Williford, N. , Corbitt, M. , Holden, J. and Gatto, C. (2015) Kinetic Characterization of Na,K-ATPase Inhibition by the Acetaminophen Metabolite N-

Helms, J.B.

Acetylbenzoquinoneimine. Open Journal of Molecular and Integrative Physiology, 5, 1-17. doi: 10.4236/ojmip.2015.51001.

Galva, C., Virgin, G.K., Helms, J.B., Gatto, C. (2013) ATP protects against FITC labeling of *Solanum lycopersicon* and *Arabidopsis thaliana* Ca²⁺ - ATPase ATP binding domains. Plant Physiol Biochem. Oct;71:261-7. 2013

Gatto, C., Helms, J.B., Prasse, M., Hauang, S.Y., Zou, X., Arnett, K.L., Milanick, M.A., (2006) Similarities and differences between organic cation inhibition of the Na,K-ATPase and PMCA. Biochemistry. 45(44), 13331-45. 2006

Gatto, C., Helms, J.B., Prasse, M.C., Arnett, K.L., and Milanick, M.A. Kinetic characterization of tetrapropylammonium inhibition reveals how ATP and Pi alter access to the Na⁺,K⁺-ATPase transport site. (2005) Am J Physiol Cell Physiol. Aug;289(2):C302-11.

Helms J.B., Arnett, K.L., Gatto, C., and Milanick, M.A. (2004) Bretylium, an Organic Quaternary Amine, Inhibits the Na,K-ATPase by Binding to the Extracellular K-site. Blood cells, Mol. Dis. 32(3), 394-400.

Helms J.B., Booth C.M., Rivera J., Siegler J.A., Wuellner S., & Whitman, D.W. (2003) Lubber grasshoppers orient to plant odors in a wind tunnel. Journal of Orthoptera Research. 12(2), 135-140.

Abstracts

Virgin, G.K., Helms, J.B., Costa, C.J., Gatto, C. Extracellular Domain of Na pump beta-subunit is sufficient for heterodimer Assembly and Delivery to PM. 2007 Biophysical Society Meeting Abstracts. *Biophysical Journal*, Supplement, 144a, Abstract, 666-Pos.

Helms, J.B., Meyer, J., Costa, C.J., Plowman, E., Holden, J.P., Gatto, C. Inhibition of the Na,K-ATPase by the acetaminophen metabolite N-acetylbenzoquinoneimine. 2007 Biophysical Society Meeting Abstracts. *Biophysical Journal*, Supplement, 145a, Abstract, 672-Pos.

Craig Gatto, Jeff B. Helms, Sheng-You Huang, Xiaoqin Zou, Krista L. Arnett, And Mark A. Milanick. Testing the Accuracy of Homology Modeling: Similar Inhibition Patterns by Cytosolically Acting Organic Cations on Na,K- and PM Ca-ATPase. J. Gen Physiol. 126: 17a, 2005.

Prasse, M., Gatto, C., and Helms, J.B., The effect of cardiac glycosides on the Na,K-ATPase from *Mesocricetus auratus* (Syrian Hamster). 2005 Biophysical Society Meeting Abstracts. *Biophysical Journal*, Supplement, Abstract, 2934-Pos.

Milanick, M., Arnett, K., Helms, J., Prasse, M., and Gatto, C. Differential size exclusion between the inside and outside facing cation sites of the Na,K-ATPase. 2004 Biophysical Society Meeting Abstracts. *Biophysical Journal*, Supplement, 495a, Abstract, 2568-Pos.

Gatto, C., Helms, J., Ogan, J., Martin, K., Weeks, P., Lippold, M., Kruse, H., Costa, C. Molecular and Pharmacological Investigations into the Mechanism of the Na,K-ATPase. National American Heart Association Meeting. Orlando, FL Nov, 7-12, 2003.

Helms, J.B., Gatto, C., Barkulis, T., Arnett, K.L. and Milanick, M.A. 2003. Bretylium, a quaternary amine, inhibits the Na Pump by Blocking K. 2003 Biophysical Society Meeting Abstracts. *Biophysical Journal*, Supplement, 256-6a, Abstract, 289-Pos.

Presentations

Helms, J.B., Gatto, C., Barkulis, T., Arnett, K.L. and Milanick, M.A. 2003. Bretylium, a quaternary amine, inhibits the Na Pump by Blocking K. – Presented at the 4th Annual Phi Sigma Biological Science Research Symposium. Illinois State University. – Oral

Helms, J.B. 2002. Recombinant DNA in the classroom, from plasmid to protein. Presented at the 1st Annual ISU PRISM project continuing professional development workshop. Illinois State Univeristy. - Oral

Helms, J.B., Hentzen, A.E. and Gatto, C. 2002. Cloning and overexpression of the ATP binding domain of LCA1, a tomato Ca-ATPase. Presented at the 3rd Annual Phi Sigma Biological Science Research Symposium. Illinois State University. - Poster

Helms, J.B., Davis, J. and Whitman, D. 2002. The Use of Olfactory Cues for Food Detection in Lubber Grasshopper (*Romelea microptera*). Presented at the 3rd Annual Phi Sigma Biological Science Research Symposium. Illinois State Univeristy. – Oral

Research Interests

Undergraduate non-majors biology education, cardiac physiology, membrane transport, cellular physiology, cellular ionic homeostasis, membrane lipid symmetry and the utilization of technology as a teaching tool within the undergraduate biology curriculum.

Grants

Illinois Board of Higher Education –Methodist College - Nursing School Grant Program FY2013 Improvement Grant -\$39,152

Upper Iowa University – Teaching with Technology Grant, March 2011 - \$20,448

American Heart Association – Pre-Doctoral Fellowship, July 2003 through June 2005 - \$50,000

Omar Rillett Travel Grant, 2003

Phi Sigma Research Grant, 2002

NSF GK-12 Fellowship, ISU PRISM Project, 2001-2002

Phi Sigma Research Grant, 2001

Awards

Phi Sigma Outstanding Ph.D. Student 2010

Biology 101 Outstanding Lecture Instructor, 2003-04

Illinois State University Level I Doctorate Graduate Student Teaching Award, 2003-04

Department of Biological Science Charter Award, 2003

Jack A. Ward Department of Biological Science Service Award, 2003

Continuing Education

QM Certified Peer Reviewer Course – Quality Matters Program hosted by Center for Teaching, Learning and Technology at Illinois State University. April 2015

Applying the QM Rubric Workshop, certificate – Quality Matters Program hosted by Center for Teaching, Learning and Technology at Illinois State University. March 2015.

DART (Design, Align, Refine and Teach Online) graduate. Center for Teaching, Learning and Technology, Illinois State University. May 2014.

Professional Memberships

National Association of Advisors for the Health Professions

Phi Sigma Biological Sciences Honor Society

American Institute of Biological Sciences

The Human Anatomy & Physiology Society

International Association of Assembly Managers

Association of College Unions International

Association of Collegiate Conference and Event Directors-International

Computer Skills

Proficient with a variety of software applications, operating systems, learning management systems various LAN configuration requirements and web design. Extensive working knowledge with software including, but not limited to, Microsoft Office Suite, Sakai, Jenzabar, Adobe Photoshop, Adobe Illustrator, SPSS, SigmaPlot, KaleidaGraph, EMS, RoomViewer, MeetingMatrix, Dreamweaver, FrontPage, Softchalk and Camtasia.

Middle & High School Curriculum Units Created – as part of the ISU PRISM Project

Biotechnology Unit

Cell & Molecular Research Poster Project

Plant Tropisms & Nastic Response Using Carnivorous Plants

Prairie Plant Adaptation

Prairie Biodiversity activity

Rock and Mineral Classification Lab Unit

Waves & Doppler Effect

Electric House Project

Deep Ocean Discovery – Web Quest

Introduction to Forensics – Web Quest

History of Biotechnology – Web Quest

Special Service

Committee member – Director School of Biological Sciences Search Committee –Illinois State University 2019

Mentor – DART (Design, Align, Refine and Teach Online) Program. Center for Teaching Learning and Technology. Illinois State University – 2014 - 2016

Committee member – Dean of Nursing Search Committee – Methodist College 2012

Committee member – Faculty Senate By-Laws Ad-hoc committee – Methodist College 2012

Committee member – Academic Success Coordinator Search Committee – Upper Iowa University 2011

Committee member – College of Arts and Sciences Dean Search Committee – Illinois State University 2003

Co-chair – 4th Annual Phi Sigma Biological Science Research Symposium. February 21, 2003.

Steering committee member – Illinois Academy of Science Annual Meeting 2003

Steering committee member – Invasive Species Symposium 2003

Co- moderator - Cell fusion: brainstorming a better undergraduate molecular biology curriculum. Dept. or Biological Sciences Panel Discussion – October 2, 2002

Steering committee chair/creator – First Annual ISU PRISM Project High School Student Research Symposium – May 2002

Service

Co-Chair – Illinois State University Pre-Health Letter of Recommendation Committee 2019 - present

Committee member – School of Biological Sciences Scheduling Committee – Illinois State University August 2019-present

Committee member – School of Biological Sciences General Education Assessment Committee – Illinois State University 2017-present

Committee member – School of Biological Sciences Space /Equipment Utilization Committee – Illinois State University 2015-2018

Committee member – Pre-Health Letter Committee – Illinois State University 2014-2015

Committee member – Scholarship and Research Committee – Methodist College 2012

Committee member – Educational Program and Policy Committee– Methodist College 2012

Committee member – Strategic Enrollment Management Group – Upper Iowa University – 2011-2012

Committee member – Sub-committee on Student Retention – Upper Iowa University – 2011-2012

Committee member – Honors Program Development Committee – Upper Iowa University – 2011-2012

Committee member – General Education Assessment Team – Upper Iowa University – 2010-2012

Graduate Representative – Department of Biological Sciences Faculty Meetings 2003-05

Beta Lambda Chapter of Phi Sigma Executive Board, 2001- 2003