

# Hannah M. Pennington

---

CONTACT      *Phone:* (859)802.4561  
INFORMATION      *E-mail:* [hpenni2@uic.edu](mailto:hpenni2@uic.edu)

EDUCATION      University of Illinois at Chicago, Chicago, IL      2015 – 2022 (expected)  
MD/PhD Candidate

- Medical Scientist Training Program
- Department of Biochemistry and Medical Genetics: [Lab of Brad Merrill](#)

Western Kentucky University, Bowling Green, KY      2013 – 2015  
B.S., Chemistry and Biology, Mathematics Minor

- *Senior Thesis:* Applications Of Latin Hypercube Sampling Scheme And Partial Rank Correlation Coefficient Analysis To Mathematical Models In Wound Healing.
- Cumulative GPA: 3.92

[Gatton Academy of Mathematics and Science](#), Bowling Green, KY      2011 – 2013  
H.S. Diploma

- Received a full scholarship to attend this selective, residential dual-enrollment academy for Kentucky's top math and science students. Completed last two years of high school as a full-time freshman and sophomore at Western Kentucky University.
- Graduated with *Honors with Distinction* (highest honor)
- Cumulative GPA: 3.96

RESEARCH      Western Kentucky University, Bowling Green, KY      Aug 2011 – May 2015  
EXPERIENCE      Department of Mathematics

- Advisors: Richard Schugart and Marisa Eisenberg
- *Senior Thesis:* [Applications Of Latin Hypercube Sampling Scheme And Partial Rank Correlation Coefficient Analysis To Mathematical Models In Wound Healing](#). Passed with Distinction, Capstone Experience/Thesis of the Year
- Developed and analyzed a four equation, twelve parameter ODE model describing the interactions of cells and proteins in a wound to quantitatively explain differences in individual patient healing progressions
- Further developed two additional models to alternatively describe the wound healing process through growth factor interactions or bacterial infections

Wood Hudson Cancer Research Laboratory, Newport, KY      June 2014 – Aug 2014  
[Undergraduate Research Education Program \(UREP\)](#)

- Advisor: Dr. Julia Carter
- Used molecular genetics and immunohistochemistry techniques to investigate the role of two germ-line mutations of Transforming Growth Factor Beta Receptor I (T $\beta$ RI) on susceptibility to colorectal cancer.

Cloudbridge Nature Reserve, San Gerardo de Rivas, Costa Rica      Jan 2013 – Feb 2013  
Department of Biology, Western Kentucky University

- Advisor: Dr. Keith Phillips
- Studied the invertebrate biodiversity of leaf litter on Mount Chirripo and analyzed the changes over elevational gradients with respect to the diverse environments

ACADEMIC SERVICE	Peer Education Program Tutor, University of Illinois College of Medicine May 2016 - Present <i>Subjects:</i> Neuroanatomy, Anatomy, Physiology
	Teaching Assistant, Western Kentucky University Spring 2014      PHYS 231: Physics/Biophysics I Spring 2015      PHYS 332: Physics/Biophysics II <i>Responsibilities:</i> Assisted during lecture time, graded homework and quizzes, held monthly review sessions and office hours.
	Tutor, Gatton Academy Jan 2014 - May 2015 <i>Subjects:</i> Computer Science, Mathematics, Physics
PUBLICATIONS	Krishna NA, <b>Pennington HM</b> , Coppola CD, Eisenberg MC, and Schugart RC (2015). Connecting Local and Global Sensitivities in a Mathematical Model for Wound Healing. <i>Bulletin of Mathematical Biology</i> 77(12): 2294–2324. doi: <a href="https://doi.org/10.1007/s11538-015-0123-3">10.1007/s11538-015-0123-3</a>
ARTICLES IN PREPARATION	<b>Pennington HM</b> , Coppola CD, Eisenberg MC, and Schugart RC. Modeling the interactions of TGF- $\beta$ and Matrix Metalloproteinase in chronic wound healing.
	Joyce, TT, <b>Pennington HM</b> , and Schugart RC. Analyzing a Mathematical Model of Bacteria-Neutrophil Interactions in a Chronic Wound
TALKS AND POSTERS	<p>Latin hypercube sampling and Partial Rank Correlation Coefficient procedure as applied to a mathematical model for wound healing</p> <ul style="list-style-type: none"> <li>★ WKU Student Research Conference, March 2015</li> <li>★ <a href="#">MAA-AMS Joint Mathematics Meetings</a>, January 2015</li> </ul> <p>A mathematical model for the interaction of the proteins MMP-1, TIMP-1, and ECM in a wound.</p> <ul style="list-style-type: none"> <li>◇ MAA-AMS Joint Mathematics Meetings, January 2015</li> <li>★ NIMBioS Undergraduate Research Conference, November 2014</li> <li>★ WKU Mathematics Symposium, October 2014</li> <li>◇ MBI Undergraduate Capstone Conference, August 2014</li> <li>◇ <a href="#">NSCU Workshop on Parameter Estimation for Biological Models</a>, August 2014</li> <li>◇ European Conference of Mathematical and Theoretical Biology, June 2014</li> <li>★ NIMBioS Undergraduate Research Conference, November 2013</li> <li>★ WKU Mathematics Symposium, November 2013</li> </ul> <p>Formulating Mathematical Models to Analyze the Treatment of Chronic Wounds</p> <ul style="list-style-type: none"> <li>◇ KY Posters-at-the-Capitol, February 2013</li> </ul> <p>Quantifying Parameters in a Mathematical Model on the Interaction of Matrix Metalloproteinases and Their Inhibitors in a Wound</p> <ul style="list-style-type: none"> <li>◇ WKU Student Research Conference, March 2013</li> <li>◇ NIMBioS Undergraduate Research Conference, November 2012</li> <li>★ WKU Student Research Conference, March 2012</li> </ul> <p>Two Germ-Line Mutations of Transforming Growth Factor Beta Receptor I in Association with Colorectal Cancer.</p> <ul style="list-style-type: none"> <li>★ Kentucky Academy of Science, November 2014</li> <li>★ Wood Hudson Science Symposium, November 2012</li> </ul>

★ Talk   ◇ Poster

HONORS	2015	Capstone Experience/Thesis of the Year
	2015	WKU Student Research Conference, Best in Session
	2015	MAA JMM Student Poster Session, Top Biomathematics Poster
	2014	Honors Development Grant
	2014	Research & Engaged Activities Scholar Support
	2013	FUSE Research Grant
	2013	NCWIT Aspirations in Computer Science Award
	2013	WKU Full-Ride Merit Scholarship
PROFESSIONAL	Illinois State Medical Society	
AFFILIATIONS	Chicago Medical Society	
	American Medical Women's Association	
TECHNICAL	Java, MATLAB, Mathematica, python, L <sup>A</sup> T <sub>E</sub> X, XCode, Swift	
PROJECTS	<p><a href="#">PocDoc</a> - A mobile healthcare app that lets patients carry and organize their own records without rely on a cumbersome external database. By giving patients ownership of their data, we reduce hospital inefficiency, improve patient outcomes, and help create more informed patients. This iOS app was developed in Swift.</p>	