

# PRAGYA SAXENA

# Curriculum Vitae

Doctoral Candidate, Department of Pharmacology and Toxicology

Michigan State University

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## EDUCATION

- **PhD: Pharmacology and Toxicology**

Aug 2019 – Present

Michigan State University, East Lansing, MI

*Main Courses: Introduction to Pharmacology, Cellular, Molecular and Integrated Systems Pharmacology, Integrative Toxicology*

- **Bachelor's in Pharmacy**

Jul 2015 – May 2019

University of Delhi, Delhi, India

*Main Courses: Pharmacology, Pharmaceutical analysis, Medicinal Chemistry, Pharmacognosy*

## KEY SKILLS AND COMPETENCIES

- Excellent teamwork and collaboration skills demonstrated by leading and managing a multifaceted life science research project leading to a successful proposal defense.
- Influencing and progressing the scientific community demonstrated by 3 peer-reviewed publications.
- Strong communication skills demonstrated by delivering 8 award winning presentations at regional, national, and international scientific meetings.
- Subject matter expert at bladder wall biomechanics and how its influences bladder dysfunction.
- Exceptional leadership skills demonstrated by training over 5 undergraduate and graduate students.
- Strong mentoring and time management skills demonstrated by developing the curriculum for and teaching a Pharmacology minor course to a class of 13 undergraduate students.

## RESEARCH EXPERIENCE

- **Doctoral Candidate**

Jan 2020 – Present

*Department of Pharmacology and Toxicology, MSU*

*Mentor: Dr. Nathan Tykocki*

- Using pharmacological assays to determine the relationship between bladder wall biomechanical properties and inflammatory lower urinary tract symptoms driven by activation of Mrgprb2/X2.
- Supported by NIH P20-DK127554 (SR&NRT) and NIH R01-DK119615 (NRT).
- Successfully defended dissertation proposal in October, 2021.

- **Molecular Pharmacology Intern**

May 2023- Aug 2023

*Zoetis inc.*

*Mentor: Dr. Amanda Davis*

- Contributed to franchise defense by using immunoassays to compare the efficacy and potency of small molecule inhibitors and protein degraders against the target of interest.

- **Research Rotations**

Oct 2019 – Dec 2019

*Department of Pharmacology and Toxicology, MSU*

*Mentor: Dr. Anne Dorrance*

- Tested the hypothesis that HDAC inhibitor, valproic acid would protect rat brains from white matter damage.

- **Research Intern, Delhi Institute of Pharmaceutical Sciences and Research**

Jun 2018 – Aug 2018

*University of Delhi, Delhi, India*

*Mentor: Dr. Rajani Mathur*

- Studied the effects of a fructose rich diet on markers of liver health using HepG2 cell line grown in fructose rich medium.
- Optimized an assay to estimate insulin sensitivity in fructose fed mice.
- Devised a UV assay for fructose estimation.
- **Research Intern, Shaheed Rajguru College of Applied Sciences for women** **Nov 2016 – Jan 2017**  
*University of Delhi* *Mentor: Dr. Sadhna Jain*
  - Estimated the anti-amylase and antioxidant activity in fresh extracts of pomegranate and kinnow peels.
  - Demonstrated excellent time management and collaboration skills by publishing the work done during the internship in a peer reviewed journal. DOI: [10.20959/wjpr20182-10673](https://doi.org/10.20959/wjpr20182-10673)
- **Research Intern, Sriram Institute of Industrial Research** **Jun 2017 – Aug 2017**  
*New Delhi*
  - Performed an acute dermal toxicity study for a new drug substance using rabbits affected by the kind of solvent used for dissolving the drug substance.
  - Optimized and validated solubility assays for the new drug substance in oil- or water-based solvents.
- **Research Intern, Shaheed Rajguru College of Applied Sciences for Women** **Jun 2016 – Sept 2016**  
*University of Delhi* *Mentor: Dr. Varsha Mehra*
  - Extracted crude *Justicia adathoda* in ethanol and hexane solvents
  - Cultured samples to test anti-tubercular properties of the extract and performed comparisons between different solvents

#### TEACHING EXPERIENCE

- **Course Coordinator: PHM 480** **March 2022 – May 2023**
  - Formulating and structuring a new PHM undergraduate minor course on ‘History of Pharmacology’, to be introduced in spring of 2023.
- **Teaching Assistant: PHM 819 (Principle of Drug-Tissue Interactions)** **January 2022 – May 2022**
  - Assisting Dr. Jamie Alan with grading assignments and exams.
  - Edited sections of the course materials and prepared exam questions.
- **Tutor: PHM 350 (Introduction to Pharmacology)** **August 2021 - Present**
  - Tutoring 4-5 students as a faculty assigned tutor.

#### PROFESSIONAL ACTIVITIES AND SERVICE

- Student Advisor for **Faculty Advisory Committee**, Department of Pharmacology and Toxicology (**2023-Present**)
- Student Advisor for **Course and curriculum Committee**, Department of Pharmacology and Toxicology (**2022-2023**)
- President for **Graduate Student organization**, Department of Pharmacology and Toxicology (**2023-Present**)
- **Member:**
  - American Physiological Society (APS)
  - American Society for Pharmacology and Experimental Therapeutics
  - Association of Women in Science
  - Indian Pharmacy Graduates’ Association (IPGA)

## ACADEMIC AND PROFESSIONAL HONOURS

- 2024: ASPET Mentoring Network Travel award at ASPET Annual meeting, 2024, Arlington, VA
- 2023: Best Poster Award (Popular choice) at CAIRIBU Annual meeting 2023, Kansas City, MO
- 2022: Thespian Award (2<sup>nd</sup> place) at Speed Data organized by Department of Pharmacology and Toxicology, MSU
- 2022: CAIRIBU conference & data dissemination grant, Collaborating for the Advancement of Interdisciplinary Research in Benign Urology Annual Meeting 2022, Bethesda, MD.
- 2022: Best Overall (1<sup>st</sup> place) 3 minute-thesis presentation award, Graduate Academic Conference-2022, COGS, MSU
- 2021: Best Poster Award (1<sup>st</sup> place), AGEP Student success conference, 2021, MSU
- 2021: Popular Choice award (2<sup>nd</sup> place), AGEP Student success conference, 2021, MSU
- 2021: Poster award, 47<sup>th</sup> Annual Pharmacology Colloquium, University of Michigan
- 2021: Renal Section Predoctoral Excellence in Research Award Finalist, Experimental Biology 2021
- 2019: Poster award, 5<sup>th</sup> International Congress on Underactive Bladder (CURE-UAB 5.0)

## PUBLICATIONS AND PRESENTATIONS

### Papers

- Hennig G, **Saxena P**, Broemer E, Herrera GM, Roccabianca S, Tykocki NR (2023) Quantifying whole bladder biomechanics using the novel pentaplanar reflected image macroscopy system. *Biomech Model Mechanobiol*. PMID: 37249760
- **Saxena P**, Broemer E, Herrera GM, Mingin GC, Roccabianca S, Tykocki N (2023) Compound 48/80 increases murine bladder wall compliance independent of mast cells. *Scientific Reports*, 13(1):62, PMID: 36635439
- **Saxena P**, Jain S, (2018) *Estimation of phenolic content, flavonoid content, anti-amylase activity and antioxidant property of kinnow and pomegranate peels*, *World journal of Pharmaceutical research* Volume 7 Issue 2, DOI 10.20959/wjpr20182-10673

### Abstracts for Presentations

- **Saxena P**, Tykocki N, Roccabianca, (2023) ATP-mediated effects on bladder wall mechanics. Poster presented at CAIRIBU 2023 Annual meeting, Kansas City, MO.
- **Saxena P**, Tykocki N, Roccabianca, (2023) Compound 48/80 increases bladder wall mechanical compliance via activation of MMP-2. Poster presented at ASPET 2023 Annual meeting, St. Louis, MO.
- **Saxena P**, Tykocki N, Roccabianca, (2023) Effects of mast cell activator compound 48/80 persist in juvenile mouse bladders. Poster presented at APS 2023 Annual meeting, Long Beach, CA
- **Saxena P**, Tykocki N, Roccabianca S, (2022) *Mechanism of increased detrusor contractility induced by Mast cell activator Compound 48/80 in murine urinary bladder*. **Lightning talk** presented at NIDDK Neurourology meeting.
- **Saxena P**, Tykocki N, Roccabianca S, (2022) *Mechanism of increased detrusor contractility induced by Mast cell activator Compound 48/80 in murine urinary bladder*. **Oral talk and Poster** presented at CAIRIBU 2022 Annual Meeting, North Bethesda, Maryland.

- **Saxena P**, Tykocki N, Roccabianca S, (2022) *Mechanism of increased detrusor contractility induced by Mast cell activator Compound 48/80 in murine urinary bladder*. **Poster presented** at 52<sup>nd</sup> Annual Meeting of the International Continence Society, Vienna, Austria.
- **'How do we know when we need to go?'**– 3 minute-thesis **oral presentation** presented at Graduate Academic Conference conducted by the Council of Graduate Students, MSU, 2022
- **Saxena P**, Tykocki N, Roccabianca S (2022) Compound 48/80 increases bladder wall compliance independent of mast cells, **Poster presented** at Experimental Biology, 2022.
- **Saxena P**, Tykocki N, Roccabianca S, (2021) Analysis of bladder wall biomechanics: A methodical study, **Poster presented** at AGEP Student success conference, 2021
- **Saxena P**, Tykocki N, Roccabianca S, (2021) *Mast cell activator compound 48/80 increases bladder compliance through matrix metalloprotease release*, Poster presented at 47<sup>th</sup> Annual Pharmacology Colloquium, University of Michigan.
- **Saxena P**, Tykocki N, Roccabianca S, (2021) *Mast cell activator compound 48/80 increases bladder compliance through matrix metalloprotease release*, **Oral Presentation** at “Renal Section Posters and Professors”, Experimental Biology, 2021.
- **Saxena P**, Tykocki N, Roccabianca S, (2021) *Mast cell activator compound 48/80 increases bladder compliance through matrix metalloprotease release*, **Poster presented** at Experimental Biology, 2021.
- **Saxena P**, Tykocki N, Roccabianca S, (2019) *Smooth Muscle Tone Contributes to Bladder Wall Stiffness during Filling*, **Poster presented** at IPSTP 2020 Annual Retreat.
- **Saxena P**, Tykocki N, Roccabianca S, (2019) *Smooth Muscle Tone Contributes to Bladder Wall Stiffness during Filling*, **Poster presented** at CURE-UAB 2019, East Lansing, Michigan, USA.
- **Saxena P**, Jain S, (2018) *Estimation of phenolic content, flavonoid content, anti-amylase activity and antioxidant property of kinnow and pomegranate peels*, Poster presented at 5<sup>th</sup> International conference Drug Discovery India 2017 Sep 13-15<sup>th</sup>, Bangalore, India