

October 21, 2021

Nik Kovinich, PhD

Curriculum Vitae
Department of Biology
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Summary

As an Assistant Professor in Systems Biology, I lead a team of students that study the gene regulatory networks that control the biosynthesis of medicinal and agriculturally important chemicals in plants. I have authored over 20 publications – several of them in top journals in the field, including *The Plant Cell* and *Plant Physiology* – and delivered 7 invited seminars at national and international conferences and workshops. I led or co-led 17 successful funding awards, collectively worth over \$1.72 million CAD, including a prestigious NIH AREA R15 award (worth ~\$500,000 over 4 years). I have won or have been nominated for 11 awards during my career, including a Faculty Award for Distinction in Mentoring of Undergraduates in Research (2018). Eleven (11) of my undergraduate and 3 of my graduate students have (co)authored research papers in reputable peer-reviewed scientific journals, including *BMC Genomics* and *Plant Physiology*. Our discoveries on the regulation of anticancer and antipathogenic metabolites produced by plants has resulted in two (2) provisional patents with the USPTO. I am a member of several professional societies, including the *American Society of Plant Biologists* and the *Phytochemical Society of North America*. Finally, I am active at disseminating research at the national and international levels by hosting seminars, chairing and organizing conferences, and providing presentations to the public.

Funding: \$1.72 Million PhD students: 3 MSc students: 1 Undergraduates trained: 31 Undergraduate trainees with publications: 11 Courses taught: 5	Awards and Nominations: 12 Publications: 25 Provisional Patents: 2 Invited presentations & seminars: 7 Accepted conference presentations: 6
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A. PERSONAL

Employment History

Assistant Professor of Systems Biology, York University
Faculty of Science, Biology Department
2019 September – Present

Assistant Professor of Genetics, West Virginia University, Division of Plant
and Soil Sciences, Davis College of Agriculture, Natural Resources and
Design
2015 July – 2019 August

Postdoctoral Fellow
The Ohio State University, Department of Molecular Genetics
2011 October – 2015 June

Research Affiliate
Agriculture and Agri-Food Canada (Supervisor: Brian Miki)
2010 April - 2011 September

Plant Biology Research Assistant
Agriculture and Agri-Food Canada (Supervisor: Harvey Voldeng)
May – September, 2003-2007

Degrees

Ph.D. Biology
Carleton University / Agriculture and Agri-Food Canada
2007 September – 2011 September

B.Sc. Honors Biology (Biotechnology)
University of Ottawa
2003 September - 2007 April

Diploma - Horticulture and Greenhouse Management
Kemptville College
2001 September – 2003 April

B. SCHOLARLY AND PROFESSIONAL CONTRIBUTIONS

Research Support

Summary

- *Awarded over \$1.72 million CAD in funding*

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- *Diverse funding portfolio for carrying out pure and applied research*

Funding

- 17) York University Faculty Association (YUFA) Minor Research Grant
Developing a Cannabis Strain for Pharmaceutical Production
Role: Principal Investigator
\$3000, January 2021
- 16) York University Junior Faculty Fund
Sinapine Transporter Regulates Flavonoid Biosynthesis
Role: Principal Investigator
\$2000, January 2021
- 15) CFI John R. Evans Leaders Fund Project number 40371
Infrastructure to Research and Engineer Specialized Metabolism in Plants
Role: Principal Investigator
\$150,000, June 16, 2021
- 14) NSERC Discovery Grant (RGPIN-2020-06111)
Phytoalexin Gene Regulatory Networks
Role: Principal Investigator
\$165,000, May 2020 - April 2025
- 13) NSERC Discovery Launch Supplement (DGEGR-2020-00131)
Phytoalexin Gene Regulatory Networks
Role: Principal Investigator
\$12,500, May 2020
- 12) USDA-NIFA
Characterization of the terpene-cannabinoid metabolic network and its genetic regulation in industrial hemp.
Role: Co-investigator
\$199,603 USD, Subaward \$25,920 USD/\$35,506 CAD, June 1, 2020 – May 31, 2022
- 11) York University Faculty Association (YUFA) Minor Research Grant
Developing Gene Knock-out Technology for Cannabis
Role: Principal Investigator
\$2000, March 2020
- 10) York University Junior Faculty Fund
Characterizing Glyceollin Transcription Factor Recognition Elements
Role: Principal Investigator
\$1100, March 2020
- 9) NIH (AREA R15 PAR-18-714)
Unlocking the Regulation of Phytoalexin Biosynthesis
Role: Principal Investigator
\$450,000/\$579,350 CAD, September 2019 – August 2022
**Award could not be transferred to a Canadian Institution
- 8) York University (Lab Start-up Funds)
Role: Principal Investigator
September 1, 2019 – Present
- 7) West Virginia University (SRF Deans' InSPIRe Award)

Glyceollin I Reduces Hypoxia Induced Chemoresistance in Lung and Breast Cancer Cell Lines

Role: Principal Investigator

\$5700 USD/\$7,330 CAD June 1 2019 – August 16, 2019

6) West Virginia University (Research and Scholarship Advancement)

Metabolite Transport in Plants.

Role: Principal Investigator

\$10,000/\$12,870 CAD, July 1, 2019 – June 30, 2020

5) NIH / WV INBRE (Idea Network for Biomedical Research Excellence)

Glyceollin I a novel chemosensitizer acting through HIF-1-alpha.

Role: Principal Investigator

\$45,000/\$57,900 CAD, August 1, 2017 – July 31, 2018

4) West Virginia University (Research and Scholarship Advancement)

Identifying the transcription factor gene that activates the biosynthesis of antimicrobial defense metabolites in soybean to provide broad spectrum resistance to *Phytophthora sojae*.

Role: Principal Investigator

\$14,915 USD/\$19,200 CAD, July 1, 2017 – June 30, 2018

3) USDA-NIFA WVA00687 (HATCH Capacity Act)

Understanding Metabolic Responses of Plants to Stress for Crop Improvement and Human Health.

Role: Principal Investigator

\$5,700//\$7,330 CAD, August 1, 2016 – July 31, 2019

1) West Virginia University (Lab Start-up Funds)

Role: Principal Investigator

July 16, 2015 – August 16, 2019

Ohio State University Comprehensive Cancer Center (Postdoctoral Pelotonia Fellowship)

Combining Semi-Synthesis with Plant and Microbial Synthetic Biology: New Frontiers in the Chemical Arsenal Against Cancer

\$80,000 USD/\$102,900 CAD, November 1, 2012 – November 1, 2014

Peer Reviewed Publications

Summary

- *Several papers in high impact journals including The Plant Cell (IF: 9.618) and Plant Physiology (IF: 6.902)*
- *First-author or Principle Investigator for 21 of 25 papers, cited 650 times*
- *H-index = 12 within standard for promotion to tenured Associate Professor*
- *14 students mentored by Kovinich (co)authored 13 papers*

Notes:

*Denotes students supervised at foreign institutions.

**Denotes students supervised at York University

25) Yousefi-Taemeh M, Lin J**, Ifa DR, Parrott W, **Kovinich N** (2021). Metabolomics Differences of *Glycine max* QTLs Resistant to Soybean Looper. *Metabolites*, 11, 710.

- 24) Lin J**, Liu D, Wang X, Ahmed S**, Li M, **Kovinich N**, Sui S (2021) Transgene CpNAC68 from wintersweet (*Chimonanthus praecox*) improves *Arabidopsis* survival of multiple abiotic stresses. *Plants*, 10 (7), 1403.
- 23) Ahmed S**, Gao X, Jahan Md A*, Adams M*, Wu N, **Kovinich N** (2021). Nanoparticle-Based Genetic Transformation of *Cannabis sativa*. *Journal of Biotechnology*, 326(1), pp. 48-51.
- 22) Ahmed S**, **Kovinich N** (2020). Regulation of Phytoalexin Biosynthesis for Agriculture and Human Health. *Phytochemistry Reviews*. DOI: 10.1007/s11101-020-09691-8
- 21) Jahan Md A*, Harris B*, Lowery M*, Infante AM, Percifield RJ, Ammer AG, **Kovinich N** (2020). Glyceollin Transcription Factor GmMYB29A2 Regulates Soybean Resistance to *Phytophthora sojae*. *Plant Physiology*, 183(2), pp.530-546.
- 20) Dabeek WM, **Kovinich N**, Walsh C, Marra VM (2019). Characterization and Quantification of Major Flavonol Glycosides in Ramps (*Allium tricoccum*). *Molecules* 24(18), 3281.
- 19) **Kovinich N** (2019). Combining Biocatalysts and Semi-Synthesis to (Bio)Synthesize Recalcitrant Pharmaceuticals. *Archives in Biomedical Engineering & Biotechnology*. Accepted May 2019.
- 18) Jahan Md A*, Harris B*, Lowery M*, Coburn K*, Infante AM, Percifield RJ, Ammer AG, **Kovinich N** (2019). The NAC Transcription Factor GmNAC42-1 Regulates Glyceollin Phytoalexin Biosynthesis in Soybean. *BMC Genomics* 20:149.
- 17) Jahan Md A*, **Kovinich N** (2019). Acidity stress for the systemic elicitation of glyceollin phytoalexins in soybean plants. *Plant Signaling & Behavior*. <https://doi.org/10.1080/15592324.2019.1604018>.
- 16) Hohenstein J, Studham ME, Klein A, **Kovinich N**, Barry K, Lee Y-J, MacIntosh GC (2018). Transcriptional and chemical changes in soybean leaves in response to long-term aphid colonization. *Frontiers in Plant Science* 10, 310.
- 15) **Kovinich N**, Durkin P* (2018). Hormone deficient mutants have distinct flavonoid proportion fingerprints in response to abiotic stress. *Plant Signaling & Behavior*. DOI: 10.1080/15592324.2018.1542241.
- 14) **Kovinich N**, Wang Y*, Adegboye J*, Chanoca A, Otegui M, Durkin P* and Grotewold E (2018). *Arabidopsis* MATE45 Antagonizes Local Abscisic Acid Signaling to Mediate Development and Abiotic Stress Responses. *Plant Direct* 2018: 1-17.
- 12) Gary S*, Adegboye J*, Popp B, Cocuron JC, Woodrum B*, **Kovinich N** (2018). Combining semi-synthesis with plant and microbial biocatalysis: new frontiers in producing a chemical arsenal against cancer. *RSC Advances* 8: 21332-21339.
- 11) Farrell KC*, Jahan Md A*, **Kovinich N** (2017). Distinct Mechanisms of

Biotic and Chemical Elicitors enable Additive Elicitation of the Anticancer Phytoalexin Glyceollin I. *Molecules* 22: 1261-1247.

- 10) Chanoca A, Burkel B, **Kovinich N**, Grotewold E, Eliceiri K, Otegui M (2016). Using Fluorescence Lifetime Microscopy to Study Subcellular Localization. *Plant Journal* doi: 10.1111/tbj.13297.
- 9) Chanoca A, **Kovinich N**, Grotewold E, Otegui M. (2015). Anthocyanin Vacuolar Inclusions Form by a Microautophagy Mechanism. *The Plant Cell*. DOI: tpc.15.00589. (Cover article for *The Plant Cell*, and highlighted in *Nature*).
- 8) **Kovinich N**, Kayanja G*, Chanoca A, Otegui M, Grotewold E (2015). Abiotic stresses induce different localizations of anthocyanins in *Arabidopsis*. *Plant Signaling & Behavior* DOI 10.1080/15592324.2015.1027850.
- 7) **Kovinich N**, Kayanja G*, Chanoca A, Riedl K, Otegui M, Grotewold E (2014). Not all anthocyanins are born equal: Distinct patterns induced by stress in *Arabidopsis*. *Planta* DOI 10.1007/s00425-014-2079-1.
- 6) **Kovinich N**, Saleem A, Arnason JT, and Miki B. (2012a). Coloring genetically modified soybean grains with anthocyanins by suppression of the proanthocyanidin genes ANR1 and ANR2. *Transgenic research* DOI: 10.1007/s11248-011-9566-y.
- 5) **Kovinich N**, Saleem A, Arnason JT, Miki B. (2012b). Identification of two anthocyanidin reductase genes and three red-brown soybean accessions with reduced anthocyanidin reductase 1 mRNA, activity, and seed coat proanthocyanidin amounts. *Journal of agricultural and food chemistry* 60: 574-84.
- 4) Schnell S, Labbé H, **Kovinich N**, Manabe Y, Miki B. (2012c). *Comparability of imazapyr-resistant Arabidopsis created by transgenesis and mutagenesis*. *Transgenic research* DOI: 10.1007/s11248-012-9597-z.
- 3) **Kovinich N**, Saleem A, Arnason JT, Miki B (2011a) Combined analysis of transcriptome and metabolite data reveals extensive differences between black and brown nearly-isogenic soybean (*Glycine max*) seed coats enabling the identification of pigment isogenes. *BMC Genomics* 12: 381.
- 2) **Kovinich N**, Arnason JT, DeLuca V, Miki B (2011b) Coloring Soybeans with Anthocyanins? *In* DR Gang, ed, *Recent Advances in Phytochemistry*, Vol 41. Springer, pp 47-57. ISBN: 978-1-4419-6961-3.
- 1) **Kovinich N**, Saleem A, Arnason JT, Miki B (2010) Functional characterization of a UDP-glucose:flavonoid 3-O-glucosyltransferase from the seed coat of black soybean (*Glycine max* (L.) Merr.). *Phytochemistry* 71: 1253-1263.

Patents

Summary

- 2 provisional patents with the United States Patent & Trademark Office
- Focus: technologies that enhance the biosynthesis of anticancer and antipathogen metabolites in soybean

Provisional Patents

2) 02-MAR-2018

Transcription factors that positively regulate the biosynthesis of glyceollins
(Provisional - EFS ID: 31943042)

1) 15-FEB-2018

Abiotic Stresses for the Elicitation of Glyceollin Phytoalexins in Soybean Plants
(Provisional - EFS ID: 31799871).

Presentations

Summary

- 7 invited presentations including at Tokyo University of Science, Japan
- Total of 13 seminar presentations
- 2 invited public lectures

Invited Presentations

7) 2019 – Bioinformatics Workshop – Medical Section. Tokyo University of Science, Japan. Title: *Unlocking the regulation of phytoalexin biosynthesis for human health.*

6) 2019 – Bioinformatics Workshop – Agriculture Section. Tokyo University of Science, Japan. Title: *Glyceollin transcription factor GmMYB2 is a regulator of soybean resistance to Phytophthora sojae.*

5) 2019 - York University Biology Department. Toronto, Canada. Title: *Unlocking the Regulation of Phytoalexin Biosynthesis for Human Health and Agriculture.*

4) 2018 – The 6th Edition of International Conference on Pharmacognosy and Medicinal Plants. Amsterdam, Netherlands. Title: *Enhancing the regulation of phytoalexin biosynthesis in plants.*

3) 2015 - Department of Horticulture and Crop Science Seminar Series, The Ohio State University. Ohio, USA. Title: *Metabolite Transporters as Central Mediators of Stress Responses.*

2) 2014 – Center for Applied Plant Sciences Seminar Series. Ohio, USA. Title: *MATE45 Functions at the Convergence of ABA and Auxin Hormone Signaling Pathways to Arrest Development during Stress.*

1) 2013 – Pelotonia Fellowship Symposium. Ohio, USA. Title: *New Frontiers in the Chemical Arsenal Against Cancer: Combining Modules of Semi-Synthesis and Synthetic Biology.*

Accepted Presentations

- 6) 2019 – 10th Annual Nano Ontario Conference. Toronto, Canada. Title: *Genetic Transformation of the Pharmaceutical Plant Cannabis sativa using Cationic Polymer-modified Silica Coated Gold Nanoparticles.*
- 5) 2019 – Phytochemical Society of North America. Tennessee, USA. Title: *Glyceollin Transcription Factor GmMYB2 is a Regulator of Soybean Resistance to Phytophthora sojae.*
- 4) 2019 – Q-Bio. Hawaii, USA. Title: *Contrasting Abiotic Stresses Reveals a Conserved Regulator of Phytoalexin Biosynthesis.*
- 3) 2012 – Banff Conference on Plant Metabolism. Alberta, Canada. Title: *Phytochemical transport: anthocyanins in Arabidopsis.*
- 2) 2010 - 12th International Association for Plant Biotechnology (IAPB) Congress. St Louis, USA. Title: *Engineering Colored Soybeans to Enable Monitoring of Transgenic Grains.*
- 1) 2009 - Phytochemical Society of North America. Maryland, USA. Title: *Identification of a UDP-glucose:flavonoid glycosyltransferase for anthocyanin biosynthesis from the seed coat of black soybean.*

Invited Course Lectures

2020 - Current Topics in Biological Research (BIOL 3100)
Course Director: Sandra Rehan

2019 - Current Topics in Biological Research (BIOL 3100)
Course Director: Tamara Kelly

2017, 2018 - Orientation to Biochemistry (AGBI 199, West Virginia University)
Course Director: Kimberly Barnes

Invited Public Lectures

2) 2019 – Master Gardeners Association Annual Meeting. West Virginia, USA. Title: *Biostimulants.*

1) 2016 – Master Gardeners Association Annual Meeting. West Virginia, USA. Title: *Plant Transformation and Genetic Engineering.*

Training and Mentorship

Summary

- *Mentored 31 undergraduate students for one or more semesters*
- *14 students mentored by Kovinich (co)authored 15 papers*
- *Graduated my first PhD student in 2019*

**Mentoring
Mechanisms****York University**

York Science Scholars Award (YSSA) Summer Placement
Volunteering

West Virginia University

Honors Investigation and Thesis – BIOL 486 (Biology)
 Independent Research – AGBI 386 (Biochemistry)
 Independent Research – BIOL 386 (Biology)
 Teaching Practicum – GEN 790 (Genetics)
 Teaching Practicum – GEN 490 (Genetics)
 Research – AGBI 497 (Biochemistry)
 Research – GEN 497 (Genetics)

Supervision of Students

Notes:

*Denotes student authored one or more publications

York University

PhD

- 3) Jie Lin* (January 2020 – present)
- 2) Sajjad Ahmed* (October 2019 – present)

MSc

- 1) Israt Jahan (September 2021 – present)

West Virginia University

PhD

- 1) Md. Asraful Jahan* (2015- graduated 2019, currently Assistant Professor at University of Rajshahi, Bangladesh)

York University

Undergraduate Students

- 31) Hetal Patil (Honors Thesis, Fall 2021 – Biology)
- 30) Ivan Monsalvo (Honors Thesis & DURA recipient, Fall 2021 – Present, Biology - Biotechnology)
- 29) Eric Thomson (Undergraduate Volunteer, Winter 2020 – Biomedical Sciences)
- 28) Amanda Gorgees (Research Practicum, Winter 2020 – Biology)
- 27) Hooriya Sher (Research Practicum, Winter 2020 – Biomedical Sciences)
- 26) Dylan Martinez (YSSA Student, Summer 2020 – Biomedical Sciences)

West Virginia University (2015-2019)

Undergraduate Students

- 25) Brianna Harris* (Undergraduate – Biochemistry)
- 24) Maxwell Adams* (Undergraduate – Biochemistry)
- 23) Kiersten Jacobs (Undergraduate – Biology)
- 22) Najela Vallarta (Undergraduate – Biology)
- 21) Matthew Lowery* (Undergraduate – Biochemistry)
- 20) Samuel Gary* (Honors Thesis – Biochemistry, subsequently at Kentucky University School of Medicinal Chemistry, USA)

- 19) Angela Mancini (Undergraduate – Biology)
- 18) Molly Raque (Undergraduate – Animal Sciences, subsequently PhD student at OSU Veterinary Medicine)
- 17) Kelli Farrell* (Undergraduate - Biology, subsequently Physician's Assistant School in PA)
- 16) Paige Durkin* (Honors Thesis, Capstone – Biology, subsequently at WVU Dental School, USA)
- 15) Holland Matlock (Undergraduate – Biochemistry, subsequently at WVSOM Medical School)
- 14) Paige Palumbo (Undergraduate – Biology, subsequently at WVU Medical School, USA)
- 13) Maisha Huq (Undergraduate – Biochemistry)
- 12) Kaitlyn Williams (Capstone – Biochemistry)
- 11) Brooklyn Woodrum* (Undergraduate – Biochemistry)
- 10) Katie Coburn* (Undergraduate – Biochemistry)
- 9) Hannah Hypes (Undergraduate – Biochemistry)
- 8) Caroline Cavender (Undergraduate – Animal Sciences)
- 7) Mariana Shank (Undergraduate – Biology)

The Ohio State University (as Postdoctoral Fellow, 2011-2015)

- 6) Janet A. Adegboye* (Undergraduate, subsequently at Case Western Reserve University Medical School)
- 5) Gilbert Kayanja* (Pre-Graduate Student, subsequently PhD student at Purdue)
- 4) Daniela Carolina Pinto e Lício (Visiting Scholar from Brazil)
- 3) Yiqun Wang* (Undergraduate, subsequently PhD student at Harvard University)
- 2) Donald Thomas (Undergraduate, subsequently at Ohio State University Medical School)
- 1) Anna Zakas (Undergraduate, subsequently Oncology Genetic Counselor at University of Wisconsin Hospital and Clinics)

Nominations and Awards

Summary

- *2 nominations for outstanding undergraduate research mentor*
- *12 awards or nominations in total as Faculty, Postdoc, and Student*

Nominations

12) Arthur C. Neish Young Investigator Award
Phytochemical Society of North America
2021 October (Nominated September 23, 2021)

11) Faculty Award for Distinction in Mentoring of Undergraduates in Research
West Virginia University
2018 March (Nominated)

Awards

10) Outstanding Undergraduate Research Mentor
Undergraduate Research Office and URO's Student Advisory Committee,
The Ohio State University

Awards as a Student

- 2014 February (Nominated, Declined Award - Not Faculty)
- 9) Visiting Fellowships in Canadian Government Laboratories NSERC Postdoctoral Fellowship
2013 June (Declined Award - Pelotonia did not Permit Simultaneously Holding two Fellowships)
- 8) Postdoctoral Pelotonia Fellowship
2012 November – 2014 November
- 7) Ontario Graduate Scholarship
2011 September, Declined (moved to U.S. to begin Postdoc)
- 6) Dean Grad. Stud. Acad. Excellence
2010 September - 2011 August
- 5) International Association for Plant Biotechnology – Canadian Scholarship
December 2009
- 4) Dean Grad. Stud. Acad. Excellence
2009 September - 2010 August
- 3) Phytochemical Society of North America – Best Presentation
August 2009
- 2) Carleton University Graduate Scholarship
2008 September - 2008 December
- 1) University of Ottawa – Dean's Honor
2006-2007

Advisor for Supervisory Committees & Thesis Defense Committees:

Summary

- *Advisor for 17 students in total*
- *8 PhD, 5 MSc, and 4 Undergraduate honors thesis students*
- *Research areas include Biology, Chemistry, and Engineering*

- 17) Kyra Dougherty. MSc Candidate. Supervisor: Katalin Hudak (Biology Department, York University).
- 16) Bakhtiyar Taghizada. PhD Candidate. Characterization of ubiquitinated H2A.Z and its interacting proteins. Supervisor: Peter Cheung (Biology Department, York University).
- 15) Kerrice Baily. Honors student. Effect of fast fashion industry on water quality. 2021. Supervisor: Sapna Sharma (Biology Department, York University).
- 14) Su Kyong Lee. PhD Candidate. *The role of a deubiquitination enzyme in regulating transcription globally and developing a transcription reinitiation assay.* 2021 – present. Supervisor: Emanuel Rosonina (Biology Department, York University).
- 13) Silvy Sidarous. Honors student. *Does pokeweed antiviral protein depurinate mRNAs?* 2021. Supervisor: Katalin Hudak (Biology Department, York University).

- 12) Vijaya Adatrao. PhD Candidate. *Regulation of primary modulators of gene expression in Bacillus subtilis in response to cell envelope stress*. 2020 – 2021. Supervisor: Dasantila Golemi-Kotra (Biology Department, York University).
- 11) Ariana Fathi. Honors student. *Are viruses alive?* 2020. Supervisor: Dawn Bazely (Biology Department, York University).
- 10) Brittney Picinic. PhD Candidate. *The effect of a blood meal in females and hormonal regulation on the abundance and localization of aquaporins*. 2020 – present. Jean-Paul Paluzzi (Biology Department, York University).
- 9) Kiana Rafiee Darmian. PhD Candidate. *Reinforced mycelium based biocomposites from wastes*. 2020 – present. Supervisor: Satinder Kaur Brar (Lassonde School of Engineering, York University).
- 8) Evan McCoy. PhD Candidate. *Quantitative resistance to defoliating insects in soybean*. 2016 – 2021. Supervisor: Wayne Parrott (Institute of Plant Breeding, Genetics and Genomics, University of Georgia).
- 7) Gur Sohal. Honors student. *Towards a Novel Rapid Bioassay for Determining the Toxicity of Small Quantities of Fungal Endophyte Infected Grasses - Phase 3*. 2020. Supervisor: Dawn Bazely (Biology Department, York University).
- 6) Consuelo Perez. PhD Candidate. *Chemical Profiling of Drugs and Metabolites from Complex Biological Matrices by Atmospheric Pressure and Ambient Ionization Mass Spectrometry Techniques*. 2020 – 2021. Supervisor: Demian Ifa (Department of Chemistry, York University).
- 5) Wijdan Dabeek. MSc student. *Characterization and Preliminary Quantification of Major Flavonols in Ramps (Allium tricoccum)*. 2018 – 2019. Supervisor: Melissa Ventura-Marra (Nutrition and Food Science, West Virginia University).
- 4) Steven Knowlden. PhD Candidate. *Synthesis of Allenes: Unlocking New Reactivity of Ruthenium Vinylidene Complexes*. 2019 – 2019. Supervisor: Brian Popp (Department of Chemistry, West Virginia University).
- 3) Matthew Maust. PhD Candidate. *Investigation of the role of catabolic products derived from nutrients as regulatory agents of secondary metabolite production in Penicillium camemberti*. 2017 – 2018. Supervisor: (Plant & Soil Sciences, West Virginia University).
- 2) Samantha Fabian. MSc Candidate. *Ergot alkaloid synthetic capacity of Penicillium camemberti*. 2016 – 2018. Supervisor: (Plant & Soil Sciences, West Virginia University).
- 1) Paige Bragg. MSc Candidate. *Expression of the Pharmaceutically Important Ergot Alkaloid Dihydrolysergic Acid in the fungus Neosartorya fumigata*. 2015 – 2016. Supervisor: (Plant & Soil Sciences, West Virginia University).

Student Training for International Competitions

Summary

- Advisor for Tokyo University of Science undergraduate student team competing in iGEM
- They achieved the silver medal in 2020

2018, 2019, 2020- International Genetically Engineered Machine (iGEM) worldwide synthetic biology competition. Boston MA, USA.
 Role: Student Advisor.
 Supervisor: Kengo Morohashi (currently at Michigan State University)

Reviewer for Journals

Summary

- *Reviewer for 21 journals, including PNAS twice*
- *Review Editor for 2 journals*

Review Editor

2019- Archives in Biomedical Engineering & Biotechnology
 2016- Frontiers of Plant Science

Reviewer

2021, 2020- Plant Biotechnology
 2021, 2019, 2018, Frontiers of Plant Science
 2016-
 2021, 2018- Molecules
 2021- Scientific Reports
 2021- Planta
 2021, 2017, Plant and Cell Physiology
 2012-
 2021, 2020- Plants
 2020, 2019- International Journal of Molecular Sciences
 2020, 2018- Proceedings of the National Academy of Sciences
 2020- New Phytologist
 2020- Plant and Cell Physiology
 2020, 2019, 2017- Genes
 2019- Agronomy
 2018- Journal of Chemistry
 2016- Plant Cell Reports
 2015- Journal of Proteome Research
 2015- Plant Physiology and Biochemistry
 2015, 2014- PLOS ONE
 2014, 2012, 2011- Plant Science
 2013- Arabian Journal of Chemistry
 2013- International Journal 4 Molecular Sciences
 2013- Protoplasma
 2011- BMC Plant Biology

Invited Reviewer for Grants

Summary

- *Invited Reviewer for 2 federal grants*
- *1 Internal grant*

2019- National Science Foundation, Plant Genome
 Research Program (USA)
 2019-

2015- Genome Canada, 2018 Large-Scale Applied Research Project Competition: Genomics Solutions for Agriculture, Agri-food, Fisheries and Aquaculture
 USDA Hatch Proposal, internal reviewer for West Virginia University

Conference Organization & Assistance

Summary

- *Chair of 1 international conference*
- *Assisted in organizing an ASPB Midwest Section meeting*
- *Judge for 8 science competitions including Graduate, Undergraduate, and Aboriginal Elementary School Science competitions*

Conference Chair
 2018- 6th Edition of International Conference on Pharmacognosy and Medicinal Plants, Amsterdam, Netherlands. Organizer: Hari Shanker Sharma (Uppsala University Sweden).

Conference Organizer Assistant
 2019- 2019 Annual Meeting Midwestern Section American Society of Plant Biologists
 Chair: Kathrin Schrick (Kansas State University), Organizer Michael Gutensohn (West Virginia University)

Presentation Judge

2019- Graduate student oral and poster presentation competition - Tokyo University of Science, Japan.
 Chair: Kengo Morohashi (currently at Michigan State University)

2019- 2019 Annual Meeting Midwestern Section American Society of Plant Biologists
 Chair: Michael Gutensohn

2017,2018,2019- West Virginia University Undergraduate Spring Symposium
 Organizer: Kimberly Barnes (West Virginia University)

2018- Davis College Research Day
 Organizer: Gregory Dahle (West Virginia University)

2014- The Ohio State University Denman Forum (An Undergraduate Science Fair)

2011- The Annual Akwesasne Mohawk Science Fair (An Elementary School Science Fair)

Memberships in Professional Societies

Summary

- *Currently a member of 2 professional societies*
- *Was a member of 6 in total*

2011-Present	American Society of Plant Biologists
2009-Present	Phytochemical Society of North America
2015-2019	West Virginia Clinical and Translational Science Institute
2015-2019	West Virginia iDeA Network of Biomedical Research Excellence (WV-INBRE)
2009-2015	International Association for Plant Biotechnology
2009-2011	Canadian Society of Plant Physiologists

Faculty Development Activities

Summary

- *Participated in 12 development activities in total*

2020	Course Design Intensive Workshop
2020	Enhanced Unconscious Bias/Affirmative Action Workshop
2020	CRISPR Detection & Validation Webinar
2018	Faculty Evaluation, Promotion, and Tenure Seminar
2018	Polishing the NIH Biosketch Seminar
2018	Online Teaching - An Instructor's Perspective
2018	SBIR/STTR Grant Mechanisms and Panel Discussion
2015	NIH Grant Writing Workshop.
2015	Cancer Cell Biology (CCB) weekly journal club. Organizer: Michael Ruppert (West Virginia University Cancer Institute).
2015	Appreciative Advising Webinar. West Virginia University. Presenter: Jennifer Bloom (Florida Atlantic University).
2015	iClicker Workshop. West Virginia University.
2015	eCampus: Getting Started. West Virginia University.

C. TEACHING

Courses

Summary

- *Instructed 4 courses in total*
- *Developed 2 new courses and substantially revised 1*
- *Subjects: Genetics, Plant Biology, Biotechnology, Writing*

Courses

Notes: * Denotes new courses developed or substantially revised.
 **Denotes course developed but not taught.

York University

2020- 4) Current Topics in Biological Research – SC/BIOL 3100
 2020, 2021- 3) Plant Biology – SC/BIOL 2010

WVU

2018- 2) *Genetic Engineering Technologies – GEN 440
 2015-2018- 1) *Principles in Genetics (Lecture and Lab) – GEN 371
 N/A- *, **Computational Genetics - GEN 290

Teaching Assistants

Summary

- 25 Teaching Assistants

BIOL 2010 (2021)	Sajjad Ahmed Shelby Gibson Anthony Ayers Jie Lin Aman Basu Jenna LeBlanc Stephanie Haas
BIOL 3100 (2020)	Laura Newburn Harpreet Saini Mostafa Sedky Cindy Tran Kyra Fine Jenna LeBlanc
BIOL 2010 (2019)	Tanushree Tiwari Sajjad Ahmed Chaminda Gunawardene Jesse Huisken Jenna LeBlanc
GEN 371 (2018)	Md. Asraful Jahan Erin Hartzell
GEN 371 (2017)	Md. Asraful Jahan Stanislav Tatsiy
GEN 371 (2016)	Md. Asraful Jahan Audrey Biega
GEN 371 (2015)	Md. Asraful Jahan

D. SERVICE**Faculty-level Committees**

Summary

- *5 Faculty-level committees*

York University

5) Committee on Evaluations and Academic Standards

Role: Advisor

Chair: Gerald Audette

July 2021 – Present

4) Strategic Plan Advisory Board

Role: Advisor

Lead Organizer: Rui Wang

Chair: Mary-Helen Armour

2020 – 2021

3) Faculty of Science Student Appeals Committee

Role: Advisor

Chair: Gerald Audette

April 2020 – Present

West Virginia University

2) Undergraduate Council and College Curriculum and Standards Committee

Role: Advisor

Chair: Todd Petty

2018 – August 2019

1) Davis Undergraduate Curriculum Council

Role: Advisor

Chair: Todd Petty

2016 – August 2019

Department/Division-level Committees

Summary

- *8 Department-level committees*

York University

8) Molecular Biology CLA Search Committee

Role: Advisor

Chair: Tamara Kelly

September 2021 – February 2022

7) Biology Seminar Series Committee

Role: Co-Chair

Chair: Ryan Schott

August 2021 – April 2022

6) Department of Biology Tenure & Promotion Committee

Role: Advisor

Chair: K. Andrew White (York University)

January 2020 – December 2020

West Virginia University

5) Graduate Student Compensation Committee

Role: Advisor

Chair: Matt Kasson (West Virginia University)

July 2018

4) Plant & Soil Sciences Seminar Committee

Role: Chair

Organizer: Matt Jenks (currently at Arizona State University)

2017 – 2019

3) Genetics & Developmental Biology (GDB) Program Advisory Committee

Role: Advisor

Chair: Matt Jenks (currently at Arizona State University)

2016 – 2017

2) Metabolomics Core Advisory Committee

Role: Advisor

Chair: Joseph McFadden (currently at Cornell University)

2016 – 2017

1) Plant & Soil Sciences Social Committee

Role: Chair

Contact: Matt Jenks (currently at Arizona State University)

2016 – 2017

The Ohio State University Center for Applied Plant Sciences (CAPS)

CAPS Plant Growth Facilities Committee

Role: Advisor

Chair: Gary Posey (The Ohio State University)

2013 – 2015

Faculty and Staff Recruitment Activities

Summary

- 5 hiring committees

West Virginia University

5) Shared Resource Manager Hiring Committee

Role: Advisor

Chair: Trina Waffle (West Virginia University)

2018

4) Teaching Assistant Professor Hiring Committee

Role: Advisor

Chair: Kimberly Barnes (West Virginia University)

2018

3) Greenhouse Facilities Manager Search Committee

Role: Advisor

Chair: Nicole Waterland (West Virginia University)

2017

2) Greenhouse Facilities Director Search Committee
Role: Advisor
Chair: Nicole Waterland (West Virginia University)
2016

1) Microbiology Search Committee
Role: Advisor
Chair: Daniel Panaccione (West Virginia University)
2015

Student Recruitment Activities

Summary

- *3 Undergraduate recruitment events*

York University

3) Biology Graduate Program Recruitment Event
Role: Participant
Chair: Robert Tsushima (York University)
2020

2) Biology Graduate Program Recruitment Event
Role: Participant
Chair: Robert Tsushima (York University)
2021

West Virginia University

1) Discover WVU Day
Role: Student Advisor
Organizer: Valerie Lastinger (West Virginia University)
2018

Other Service Activities

Summary

- *Student Advisor for Biochemistry Program*
- *Department event organizer*
- *YSSA event participant*

York University

3) York Science Scholars Event
Role: Participant
Organizer: Michael Scheid (York University)
2020

West Virginia University

2) Undergraduate Biochemistry Students
Role: Student Advisor for Biochemistry Program
Chair: Kimberly Barnes (West Virginia University)

July 2018 – August 2019

1) Division of Plant & Soil Sciences Annual Picnic

Role: Assistant organizer

Organizer: Sven Verlinden (West Virginia University)

July 2018