Gowthami Mahendran | Curriculum Vitae

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EDUCATION

University of Notre Dame **Notre Dame, IN, U.S**
Ph. D., Department of Chemistry and Biochemistry *May 2024*
Dissertation Title: *Unraveling Gene Expression Changes in Miller-Dieker Syndrome and Investigating the Potential Involvement of Human METTL16 in Disease Progression*
Advisor: Dr. Jessica A. Brown
Current GPA: **3.75**

University of Colombo **Colombo, Sri Lanka**
B. Sc. (Hons), Department of Chemistry *Dec 2017*
Dissertation Title: *Detection of phosphorylation of Setaria digitata novel protein SdNP*
Advisor: Dr. Gayathri N. Silva
Final GPA: **3.65 - "Top of the class"**

RESEARCH EXPERIENCE

Hydrocephalus Research Center, Indiana University **Indianapolis, IN**
Post-Doctoral Researcher, Department of Biology (Dr. Bonnie L. Blazer-Yost) *July 2024 - present*

- Identifying biomarker genes for the non-invasive treatment of Hydrocephalus
- Investigating the mechanistic regulation of an ion channel transporter protein called TRPV4 and the potential involvement in Hydrocephalus progression
- Utilizing mass spectrometry studies to understand phosphoprotein expression changes in Hydrocephalus

University of Notre Dame **Notre Dame, IN**
Graduate Research Assistant, Department of Chemistry and Biochemistry (Dr. J.A. Brown) *July 2021 – May 2024*

- Identifying target genes for treatment of Miller-Dieker syndrome (MDS), a rare genetic condition
- Utilizing RNA-seq and tandem mass spectrometry studies to understand the pathology of MDS at transcriptional and translational levels using an *in vitro* approach
- Determining the alternative splicing variants in MDS disease condition
- Analyzing METTL16 binding partners and the potential involvement in translational regulation
- Locked nucleic acid interaction to MALAT1 triple helix and its impact in cancer biology

Graduate Research Assistant, Department of Chemistry and Biochemistry (Dr. M. A. Schwarz) *Aug 2019 – Jun 2021*

- Determining the precise Methionine requirements necessary to buffer oxidative stress
- Study the role of 1C metabolism and Methionine availability in the context of premature lung development using an *in vivo* (mice models) and an *in vitro* approach
- Finding the correlation between AIMP-1 function in mitochondrial energetics and left ventricular non-compaction cardiomyopathy *in vivo*

University of Colombo **Colombo, Sri Lanka**
Undergraduate Research Assistant, Department of Chemistry *Jan 2018 - Jan 2019*

- Characterization of the Setaria digitata novel protein SdNP to identify and design effective clade-specific drugs against Elephantiasis
- *In vitro* structural and functional characterization of SdNP
- Structural determination of SdNP using crystallography studies

TEACHING EXPERIENCE

University of Notre Dame **Notre Dame, IN**

Graduate Teaching Assistant, Department of Chemistry and Biochemistry (Graduate level course) Aug 2023 – Dec 2023

- Attending lecture series, assist in course material and quizzes prep, and proctor quizzes
- Grading assignments, quizzes

Undergraduate Research Mentor, Department of Chemistry and Biochemistry Aug 2022- May 2024

- Training hands-on techniques in cell culture
- Assisting in determing the protein translation altertaion effects in Miller-Dieker condition

Graduate Teaching Assistant, Department of Chemistry (undergraduate level courses) Aug 2019 - May 2021

- Conducting practical sessions for *Inorganic* and *General Chemistry* labs
- Assisting in final examinations grading

University of Colombo **Colombo, Sri Lanka**

Assistant Professor, Department of Chemistry (undergraduate courses) Mar 2018 - Mar 2019

- Conducting *Biochemistry and Molecular Biology* lab sessions for juniors and master's degree students
- Conducting *Chemistry* lectures and tutorials for the freshman and sophomores

PUBLICATIONS

1. **Gowthami Mahendran**, Jessica A. Brown. Understanding the Molecular Basis of Miller-Dieker Syndrome. *International Journal of Molecular Sciences (Rare Diseases and Neuroscience special issue).* **2025**; *DOI: 10.3390/ijms26157375*
2. **Gowthami Mahendran**, Ann Dharshika Shangaradas, Ricardo Romero-Moreno, Nadeeshika Wickramarachchige Dona, S.H.G. Sumudu Sarasija, Sumeth Perera, Gayathri N. Silva. Unlocking the Epigenetic Code: New Insights into Triple-Negative Breast Cancer (TNBC) *Frontiers in Oncology.* **2024**; *DOI: 10.3389/fonc.2024.149995*
3. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Tulsi Bhandari, Balasubrahmanyam Addepalli, Jessica A. Brown. Multi-omics approach reveals genes and pathways affected in Miller-Dieker Syndrome. *Molecular Neurobiology*. **2024**; *DOI: 10.1007/s12035-024-04532-7*
4. Krishna M. Shivakumar, **Gowthami Mahendran**, Jessica A. Brown. Locked Nucleic Acid Oligonucleotides Facilitate RNA•LNA-RNA Triple Helix Formation and Reduce MALAT1 Levels. *International Journal of Molecular Sciences.* **2024**; *DOI: 10.3390/ijms2503163*
5. **Gowthami Mahendran**, Margaret A. Schwarz. Emerging Hallmarks of Mitochondrial Biochemistry in Cardiac Trabecular Morphogenesis and Left Ventricular Noncompaction (LVNC). *Intech Open - New Insights on Cardiomyopathy.* **2022**; *DOI: http://dx.doi.org/10.5772/intechopen.109098*
6. **Gowthami Mahendran**, Oshadhi T. Jayasinghe, Dhanushika Thavakumaran, Gayan Mirihana Arachchilage, Gayathri N. Silva. Key players in realm of regulatory RNA. *Biochem Biophys Rep.* **2022**; *DOI:* 30:101276
7. Dharshika Rajalingham, Sangaradas Ann Dharshika, **Gowthami Mahendran**, Gayathri. N. Silva, Ranil. S. Dassanayake. Conference paper: Functional analysis of SdNP; A protein of unknown function in Setaria Digitata. *12th International research conference KDU-IRC* **2019***,* Colombo, Sri Lanka. (http://ir.kdu.ac.lk/handle/345/2349)
8. **Gowthami Mahendran**, Bonnie Blazer-Yost. TRPV4 Activation Remodels Choroid Plexus Tight Junctions through AMPK-Dependent Phosphorylation Networks. (*Under preparation*)
9. David Audu, **Gowthami Mahendran**, Makenna Reed, Bonnie Blazer-Yost. Reactive oxygen species activities in the Choroid Plexus: When the helpers become the attackers. (*Under preparation*)

POSTERS AND PRESENTATIONS

1. **Gowthami Mahendran,** Bonnie Blazer-Yost**,** "Phosphoproteomic Insights into Human Choroid Plexus Epithelial Cells: Towards Targeted Therapies for Hydrocephalus", *15th international symposium on proteomics in the life sciences*, Boston, MA, Aug 17th-21st, 2025 (Flash Talk & Poster)
2. **Gowthami Mahendran,** Bonnie Blazer-Yost**,** "Phosphoproteomic Insights into Human Choroid Plexus Epithelial Cells: Towards Targeted Therapies for Hydrocephalus", *Stark Summer Science Symposium,* Indianapolis, IN, July 21st-22nd, 2025 (Oral)
3. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Tulsi Bhandari, Balasubrahmanyam Addepalli, and Jessica A. Brown, "Multi-omics analyses uncover gene expression alterations and the contribution of human methyltransferase-like protein 16 in Miller-Dieker Syndrome", *27h Biochemistry & IBMS retreat,* Plymouth, IN, May 13th-14th, 2024 (Oral)
4. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Tulsi Bhandari, Balasubrahmanyam Addepalli, and Jessica A. Brown, "Transcriptomics and Proteomics Analyses Uncover Potential Candidates to Treat Miller-Dieker Syndrome", *ASBMB 2024,* San Antonio, TX, Mar 23rd-26th, 2024 (Poster)
5. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Tulsi Bhandari, Balasubrahmanyam Addepalli, and Jessica A. Brown, "Transcriptomics and Proteomics Analyses Uncover Potential Candidates to Treat Miller-Dieker Syndrome", *2023 College of Science (COSE) Research Horizons Symposium,* Notre Dame, IN, Dec 8th, 2023 (Poster)
6. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Tulsi Bhandari, Balasubrahmanyam Addepalli, and Jessica A. Brown, "Transcriptomics and Proteomics Analyses Uncover Potential Candidates to Treat Miller-Dieker Syndrome", *2nd annual meeting of the BIPH institute's Advisory Board Meeting,* Notre Dame, IN, Oct 30th, 2023 (Poster)
7. **Gowthami Mahendran**, Kurtis Breger, Philip J. McCown, Tulsi Bhandari, Balasubrahmanyam Addepalli, and Jessica A. Brown, "Transcriptomics and Proteomics Analyses Uncover Potential Candidates to Treat Miller-Dieker Syndrome", *Rustbelt RNA Meeting 2023,* Kellogg Center, East Lansing, MI, Oct 27-28th, 2023 (Poster)
8. Matthew Kerosky, **Gowthami Mahendran,** Jessica A. Brown, "Role of METTL16 in Miller-Dieker Syndrome", *Fall Undergraduate Research Fair (FURF) 2023,* Notre Dame, IN, Oct 26th, 2023 (Poster)
9. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *2023 Indiana CTSI Annual Meeting*, Indianapolis, IN, Sep 22nd, 2023 (Poster)
10. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *Greater Indiana Chapter Society for Neuroscience - 2023 Annual Meeting*, West Lafayette, IN, Sep 8th, 2023 (Poster)
11. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *Chemistry-Biology-Biochemistry Interface Symposium 2023*, University of Notre Dame, IN, May 15th, 2023 (Poster)
12. **Gowthami Mahendran,** Jessica A. Brown, " Unraveling the Gene Expression Changes in Miller-Dieker Syndrome and Investigating the Potential Involvement of Human METTL16 in Disease Progression", *Oral Candidacy Exam*, University of Notre Dame, IN, Mar 9th, 2023 (Oral)
13. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *CTSI Retreat*, University of Notre Dame, IN, Mar 8th, 2023 (Poster)
14. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *College of Science Joint Annual Meeting (COSE-JAM)*, University of Notre Dame, IN, Dec 9th, 2022 (Oral)
15. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *Biochemistry IBMS 2022 Retreat*, Century Center, South bend, Oct 16th-Oct17th, 2022 (Oral)
16. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Multi-omics approach to study novel genes and pathways affected in Miller-Dieker Syndrome", *Rustbelt RNA Meeting 2022*, InterContinental Cleveland, OH, Oct 14th-15th, 2022 (Poster)

17. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Elucidating the pathways affected in Miller-Dieker syndrome through gene expression analysis", *Chemistry-Biology-Biochemistry Interface Symposium 2022*, University of Notre Dame, IN, May 9th, 2022 (Poster)
18. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Unraveling the pathways affected in Miller-Dieker syndrome through gene expression analysis", *Indiana CTSI Retreat 2022: "Modern approaches to drug discovery"*, University of Notre Dame, IN, March 30th, 2022 (Oral)
19. **Gowthami Mahendran,** Kurtis Breger, Philip J. McCown, Jacob P. Hulewicz, Jessica A. Brown, "Analysis of gene expression changes in Miller-Dieker syndrome", *25th Annual John V. O'Connor Biochemistry & IBMS Research and Education Conference 2021*, University of Notre Dame, IN, October 19th, 2021 (Poster)
20. **Gowthami Mahendran,** Varmila Kulasekaram, Dharshika Rajalingham, Sangaradas Ann Dharshika, M.B.C.L. Somarathne, Gayathri N. Silva, Ranil. S. Dassanayake, "A novel parasitic nematode specific protein as potential therapeutics against Lymphatic filariasis", *GARI Multidisciplinary Research Symposium- 2019*, Sri Lanka, July 9th, 2019 (Oral)
21. **Gowthami Mahendran,** Varmila Kulasekaram, Gayathri N. Silva, Ranil. S. Dassanayake, "Functional and structural characterization of Setaria digitata novel protein SdNP", *3rd International Conference on Bioscience and Biotechnology- 2018*, Sri Lanka, March 8th, 2018 (Oral)

INVITED TALKS

1. **Podcast Guest,** *Preparing for Future Faculty and Professionals (PFFP)* Program, Graduate School of Indiana University, Indianapolis.
   Topic: Career Development and Academic Preparation, June 2025
   (https://www.youtube.com/watch?v=PUrxpAo8bAo&ab_channel=IUGraduateSchoolIndianapolis)
2. **Guest Lecturer,** *Nucleic Acids in Medicine & Biotechnology (Graduate Course*), University of Notre Dame.
   Topic: Ribozymes and Riboswitches: Therapeutic Applications, March 2022.

AWARDS AND RECONGNITIONS

- Shaheen 3-Minute Thesis Finalist (3-MT), College of Science (2024), University of Notre Dame
- Teaching Commendation for the Molecular Biology graduate level course, General Chemistry I and General Chemistry II by the University of Notre Dame, Indiana (2024)
- Best platform presentation award for "Functional analysis of SdNP: A protein of unknown function in Setaria digitata" presented at KDU-IRC-2019 held in Sri Lanka (2019)
- Professor Stanley Wijesundera Memorial Gold Medal for Biochemistry and Molecular Biology, awarded for academic excellence by University of Colombo, Sri Lanka (2018)
- The Gulamhussein A.J. Noorbhai Gold Medal for Biochemistry and Molecular biology, awarded for the academic excellence by University of Colombo, Sri Lanka (2018)
- Studentship in Biological Sciences, awarded for the outstanding student of the B.Sc. Degree, awarded by University of Colombo, Sri Lanka (2014 to 2017)

TECHNICAL SKILLS

Biochemistry skills:
Southern/Northern/Western blot
Clinical biochemistry and cell biology techniques
Molecular cloning and extraction techniques
In vitro human and bacterial cell culture techniques
Neuronal cell culturing (growing iPSCs)
Animal handling techniques (mouse and rat tissue harvest, blood drawing)
Flow cytometry

Chemistry skills:
Potentiometry
Molecular modeling
Chromatographic techniques
Mass spectrometry
Ussing style electrophysiology
Multi-omics

Enzyme kinetic assays, cell-based assays
Protein expression & Purification (Akta) and characterization
Bacterial transformation, Gene transfection, Plasmid transfection
Mammalian cell Transfection (plasmid & siRNA)
Immunofluorescence (IF)
Immunohistochemistry (IHC), Immunocytochemistry (ICC), Histology
Immunoprecipitation (IP)
ELISA
RNA extraction, Primer designing, cDNA synthesis
RNA sequencing (RNA-seq)/ transcriptomics
Quantitative Real-time PCR (qPCR) and RT-qPCR
Meso Scale Discovery (MSD)
Gene expression analysis and cell-based assays
Training and experience with BSL-2 techniques

Computer skills:
R-studio
Molecular cloning tools
Proficiency in Microsoft Office and GraphPad Prism
Basic knowledge in computer-aided drug designing and use of Mega 6, Rasmol, Abalone, Hyperchem, Winmopac, and Hex software.
Extensive knowledge of bioinformatics-related software: BioEdit, ClustalX
Analyzing complex scientific data with computer softwares

WORKSHOPS AND VOLUNTARY ACTIVITIES

- Volunteer for Jaguar 5K Run 2025, Indianapolis, Sep 6th, 2025
- Judge in Stark Summer Science Symposium 2025, July 21st-22nd, 2025
- Million Meals Movement Volunteer for ND Global Day of Service 2025, Apr 26th, 2025
- Senior section Judge in Hoosier Science and Engineering Fair (HSEF), Apr 5th, 2025
- Hydrocephalus Research Workshop: idiopathic Normal Pressure Hydrocephalus, Oct 15-16th, 2024
- Poster session Judge in College of Science Joint Annual Meeting (COSE JAM), 2024
- Graduate Recruitment Host, University of Notre Dame, 2024
- Research project Judge at Marian High School, 2024
- Volunteer for Fighting Irish Science Olympiad, 2024
- Walk the Walk Week Service Project Volunteer, 2024
- Poster session Judge in College of Science Joint Annual Meeting (COSE JAM), 2023
- Volunteer for Brain Awareness Fair, University of Notre Dame, 2023
- Graduate Recruitment Host, University of Notre Dame, 2023
- Research project Judge at Marian High School, 2023
- Volunteer for 30th Annual Science Alive, 2022
- Poster session Judge in College of Science Joint Annual Meeting (COSE JAM), 2022
- Volunteer for ND Pi-Day-5K, 2022
- Junior section Judge in Northern Indiana Regional Science & Engineering Fair (NIRSEF), 2022
- Annual North American Mass Spectrometry Summer School, 2021
- Senior section Judge in Northern Indiana Regional Science & Engineering Fair (NIRSEF), 2020

PROFESSIONAL AFFILIATIONS AND ACADEMIC SERVICES

- Post-Doctoral Member of American Physiological Society (APS) *Oct 2025- present*
- Participant of Faculty and Staff Mentoring Dialogues (NRMN) *Sep 2025- present*
- Peer-reviewer for MDPI and TJEM journals *Mar 2025- present*
- CTSI (Clinical and Translational Science Institute) Grant reviewer *Feb 2025- present*

- Member of Notre Dame Club of Indianapolis (iNDy) *Dec 2024- present*
- Member of Hydrocephalus Association Network for Discovery Science (HANDS) *Aug 2024- present*
- Secretary of Berthiaume Institute for Precision Health (BIPH), University of Notre Dame *Aug 2023- May 2024*
- Departmental Representative of Association for Women in Science (AWIS), University of Notre Dame *April 2023 – May 2024*
- Point-of-Use platform Student Chair of Berthiaume Institute for Precision Health (BIPH), University of Notre Dame *Aug 2022 – June 2023*
- Outreach Representative of Chemistry Graduate Student Organization (CGSO), University of Notre Dame *May 2022- May 2023*
- Resource Fair Coordinator of Graduate Orientation Team, University of Notre Dame *May 2022- Aug 2022*
- Student member of American Indian Science and Engineering Society (AISES) *Apr 2020- present*
- Student member of SLAAS, Section- D (Life and Earth Sciences) *Jan 2018- Jan 2019*
- Committee Member of AIESAC, Faculty of Science, University of Colombo *Jan 2016- Jan 2019*
- Committee Member of Rotaract Club, Faculty of Science, University of Colombo *Jan 2016- Jan 2019*
- Member of Chemical Society (Chemsoc), University of Colombo *Jan 2016- Jan 2019*

CERTIFICATES OBTAINED

- Preparing for Future Faculty and Professionals (PFFP) certificate offered by Graduate School of Indiana University, Indianapolis (2025)
- Advanced Teaching Scholar Teaching certificate offered by Kaneb Center, University of Notre Dame (2024)
- Striving for Excellence Teaching Certificate offered by Kaneb Center, University of Notre Dame (2023)

REFERENCES

1. Dr. Bonnie L. Blazer-Yost
Director of Hydrocephalus Research Center & Professor,
Department of Biology
Indiana University, Indianapolis
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317-278-1145

2. Dr. Jessica A. Brown
Associate Professor,
Department of Chemistry and Biochemistry,
University of Notre Dame
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3. Dr. Gayathri N. Silva
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Department of Chemistry,
University of Colombo,
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