

Asad Prodhan

BSc Ag (Hons) MS BAU MSc Sydney PhD W. Australia

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Laboratory Scientist

DPIRD Diagnostic Laboratory Services
Department of Primary Industries and Regional
Development
3 Baron-Hay Court, South Perth WA 6151
&

Adjunct Research Fellow

UWA Centre for Applied Bioinformatics,
The University of Western Australia
35 Stirling Hwy, Perth, WA 6009

Key Competencies

- Seven years of post-PhD research experiences in molecular biology and bioinformatics in Australia and Japan
- Five years of experiences in developing bioinformatics teaching resources and conducting hands-on programming workshops
- Extensive experience of applying Oxford Nanopore Technology and Illumina sequencing for high throughput diagnosis
- Conducting hands-on Oxford Nanopore sequencing workshops in-house and outside
- Undergraduate teaching experiences (casual) at Sydney University and UWA
- Research student supervision experiences at DPIRD and UWA
- Principal Investigator and Manager of the High-Performance Computing projects
- Programming with Nextflow, Singularity, Bash, Python, and R
- Developing bespoke bioinformatics pipelines
- Genome assembly using short and long reads- bacteria, virus, viroid, fungus, and insect
- Transcriptome assembly- rice
- SNP marker identification and QTL mapping- rice
- Nutrient transporter genes- rice and Australian native plants
- Molecular Biology- DNA/RNA extraction, PCR/qPCR, library preparation
- Genetic transformation, tissue culture and plant regeneration
- Metabolomics- rice and Australian native plants
- Writing and publishing research papers in the relevant high impact journals
- [Deep passion for graduate teaching, supervising, and training](#)

Selected Publications

- Mitochondrial genomics, [Scientific Reports](#) 2023 (IF: 4.9)
- Rice transcriptomics, [Scientific Reports](#) 2022 (IF: 4.9)
- Plant nutrition, [Trends in Plant Science](#) 2018 (IF: 22.01)
- Plant nutrition, [New Phytologist](#) 2017 (IF: 10.32)
- Plant nutrition, [Plant, Cell and Environment](#) 2016 (IF: 7.95)

Education

PhD (Molecular Plant Physiology) 2017

[School of Biological Sciences](#), University of Western Australia

Dissertation: Tight control of nitrogen and sulfur assimilation is an adaptive mechanism for *Hakea prostrata*, a plant from a severely phosphorus-impooverished habitat.

Supervisors: [E/Prof Hans Lambers](#) and [Associate Professor Patrick Finnegan](#)

MSc (Molecular Biology) 2012

School of Biological Sciences, [University of Sydney](#), Australia

Dissertation: Genotypic variation in cotton root system architecture

MS (Genetics & Plant Breeding) 2006

Bangladesh Agricultural University, Bangladesh

Dissertation: Optimization of transformation protocol in *Brassica* spp. using *Agrobacterium*.

Result: Distinction (A+; GPA 4.0 out of 4.0)

BSc Agriculture (Honors) 2005

Bangladesh Agricultural University, Bangladesh

Result: First class

Employments

Laboratory Scientist (Assistant Professor as of the USA level)

2021- Present

Department of Primary Industries and Regional Development

Government of Western Australia

- Developing bespoke bioinformatics pipelines
- High Performance Computing
- Nextflow, Singularity, Bash, Python, and R
- Oxford Nanopore Technology and Illumina sequencing
- Genome assembly using short and long reads
- Genomics- bacteria, virus, viroid, fungus, and insect
- Molecular Biology- DNA/RNA extraction, PCR/qPCR, library preparation
- Bioinformatics workshop and hands-on training
- Supervision of research student
- Participating in national ring tests for bioinformatics pipelines

JSPS Postdoctoral Research Fellow

2019- 2021

Japan International Center for Agricultural Sciences

- RNA-seq analysis to determine transcriptional responses of rice (*Oryza sativa*) to phosphorus stress
- Identifying QTL for phosphorus-efficient root traits in rice

Molecular Biologist

2017 - 2019

Department of Primary Industries and Regional Development, Western Australia

- PCR and qPCR for gene expression profiling
- Library preparation for Illumina and Nanopore sequencing
- LAMP assay to detect targeted genes

Adjunct Research Fellow

2018 - present

School of Biological Sciences, University of Western Australia

- Determining nitrate transporter genes in *Hakea prostrata*
- *Hakea prostrata* genome and transcriptome sequence analysis

Research Officer

2016-2018

School of Biological Sciences, University of Western Australia

- *Hakea prostrata* genome and transcriptome sequence analysis to identify nitrate transporter genes
- Supervising honors students

Demonstrator, Frontiers in Biology,

2016–2017

School of Biological Sciences, University of Western Australia, Australia

- Teaching and supervising undergraduate students in a first-year biology lab

Visiting Postgraduate Researcher

2014

Max Planck Institute of Molecular Plant Physiology, Potsdam, Germany

- Determining metabolic adaptation of plants to phosphorus-impoverished

Demonstrator, Molecular Biology,

2009

School of Biological Sciences, University of Sydney, Sydney, Australia

- Teaching and supervising undergraduate students in a first-year biology lab

Research Associate

2007-2008

Dept. of Genetics and Plant Breeding, Bangladesh Agricultural University, Mymensingh, Bangladesh

- Studying *Agrobacterium-mediated* genetics transformation in rapeseed crop to develop a salt tolerant variety

Research Assistant

2005-2007

Dept. of Genetics and Plant Breeding, Bangladesh Agricultural University, Mymensingh, Bangladesh

- Studying in vitro regeneration potentiality of different Brassica genotypes

Secured Fundings

2019	JPY 2 Million	Research	Japan Society for the Promotion of Science
2015	USD 500	Conference Travel	Penn State University, USA
2015	AUD 500	Conference Travel	University of Western Australia
2014	AUD 2500	Research Travel	University of Western Australia
2013	AUD 120,000	PhD Scholarship	Govt of Commonwealth of Australia at UWA
2010	AUD 450	Conference Travel	Australian Society of Plant Scientist (ASPS)
2010	AUD 1200	Conference Travel	School of Biological Sciences, Sydney Uni.
2008	AUD 94,000	Masters Scholarship	Govt. of Commonwealth of Australia at USyd

Peer-reviewed Publications

1. **Prodhan, M.A.**, Widmer, M., Kinene, T., Kehoe, M., 2023. Whole mitochondrial genomes reveal the relatedness of the browsing ant incursions in Australia. *Scientific Reports* 13, 10273. <https://doi.org/10.21203/rs.3.rs-2726670/v1>.
2. **Prodhan, M.A.**, Pariasca-Tanaka, J., Ueda, Y., Hayes, P.E., Wissuwa, M., 2022. Comparative transcriptome analysis reveals a rapid response to phosphorus deficiency in a phosphorus-efficient rice genotype. *Scientific Reports* 12, 9460. <https://doi.org/10.1038/s41598-022-13709-w>.
3. Heredia, M.C., Kant, J., **Prodhan, M.A.**, Dixit, S., Wissuwa, M., 2022. Breeding rice for a changing climate by improving adaptations to water saving technologies. *Theoretical and Applied Genetics*. 135, 17–33. <https://doi.org/10.1007/s00122-021-03899-8>.
4. Huda M, Nuruzzaman M, Ferdousi A, **Prodhan M.A.**, Hossain A. 2019. Characterization of salt tolerance in rice landraces (*Oryza sativa* L.) at seedling stage. *Indian Journal of Natural Sciences* 10(56): 17613-17629.

5. Alam MA, Syazwanie NF, Mahmud NH, Badaluddin NA, Mustafa KA, Alias N, Aslani F, **Prodhan MA**. 2018. Evaluation of antioxidant compounds, antioxidant activities and capsaicinoid compounds of Chili (*Capsicum* sp.) germplasms available in Malaysia. **Journal of Applied Research on Medicinal and Aromatic Plants** 9: 46-54.
6. **Prodhan M.A.**, Finnegan P.M. & Lambers H. 2018. How does evolution in a severely phosphorus-impooverished landscape impact the control of plant nitrogen and sulfur assimilation? **Trends in Plant Science** 24(1):69-82.
7. **Prodhan M.A.**, Jost R., Watanabe M., Hoefgen R., Lambers H. & Finnegan P.M. 2017. Tight control of sulfur assimilation: an adaptive mechanism for a plant from a severely phosphorus-impooverished habitat. **New Phytologist** 215, 1068-1079.
8. **Prodhan M.A.**, Jost R., Watanabe M., Hoefgen R., Lambers H. & Finnegan P.M. 2016. Tight control of nitrate acquisition in a plant species that evolved in an extremely phosphorus-impooverished environment. **Plant, Cell and Environment** 39: 2754-2761.
9. **Prodhan M.A.**, Hassan L. & Talukder S.K. 2008. Study of *in vitro* regeneration potentiality of ten Brassica genotypes (from *Brassica campestris*, *Brassica napus* and *Brassica juncea*). **Bangladesh Journal of Progressive Science & Technology** 6(1): 9-12.
10. Ghosal, S.; Hassan L., Biswas P. L. & **Prodhan M.A.** 2008. *In vitro* regeneration of Brassica species (Rapeseed, Mustard and Cole Crops). **Bangladesh Journal of Agricultural Science** 35(1).
11. Kamal A.H.M., Alam M.A., Pervin N., **Prodhan M.A.**, & Patwary A.K. 2008. Varietal responses in different concentration of plant growth regulators for callus induction and regeneration of wheat. **International Journal of BioResearch** 4(3):26-32.
12. Alam M.A., Kamal A.H.M., Pervin N., Khatun S. & **Prodhan M.A.** 2008. *In vitro* plantlet regeneration through anther and filament culture in oilseed Brassica. **International Journal of BioResearch** 4(4):12-18.
13. Basak S., Alam M.A., Sultana S., **Prodhan M.A.**, Dey R.C. & Hassan L. 2008. Studies on callus induction and plant regeneration potentialities of indica rice varieties. **International Journal of BioResearch** 4(4):128-134.
14. **Prodhan M.A.**, Hassan L. & Talukder S. K. 2007. Optimization of *Agrobacterium* mediated genetic transformation protocol in two important Brassica varieties (Safal and Tori-7) of Bangladesh. **Bangladesh Journal of Crop Science** 18 (2): 265-272.
15. Mondal S.R., Hassan L., Sarker P.K. & **Prodhan M.A.** 2007. *In vitro* regeneration of chickpea (*Cicer arietinum* L.) genotypes using seed and seedling explants. **Bangladesh Journal of Agricultural Science** 34(2): 169-176.

Conference Presentations

1. **Prodhan, M.A. 2023.** Why do we bring genomics to biosecurity? Bently Agricultural and Biological Seminar Series (BABSS). 07 July 2023, Centre for Crop Disease Management, **Curtin University, Perth, Australia.**
2. **Prodhan, M.A.**, Widmer, M., Kinene, T., Kehoe, M. **2023.** Application of nanopore sequencing in Biosecurity surveillance. London Calling 2023. 17-19 May 2023, Virtual, **London, UK.**
3. **Prodhan, M.A.**, Widmer, M., Kinene, T., Kehoe, M. **2022.** Why bring genomics into biosecurity? 22 AMSI BioInfoSummer, A Symposium in Bioinformatics. 21-24 November 2022, Virtual, **University of Melbourne, Melbourne, Australia.**
4. **Prodhan, M.A.**, Webster, C., Wright, D., Wang, C., Bwye, A., Kehoe, M. **2022.** Improving MALDI-TOF bacterial species identification by nanopore whole genome sequencing. The 2022 Annual Diagnostics and Surveillance Workshop (ADSW). 30 August - 1 September 2022, Virtual, AgriBio at **La Trobe University, Melbourne, Australia.**

5. **Prodhan, M.A.**, Widmer, M., Kinene, T., Kehoe, M. **2021**. Browsing ant diagnostic using the high-throughput sequencing. 23rd Biennial Australasian Plant Pathology Society Conference. 23-26 November 2021, **Virtual, Australia**.
6. **Prodhan M.A.**, Jost, R., Lambers, H. & Finnegan, P.M. **2015**. Cross-talk between phosphate and nitrate metabolism in *Hakea prostrata*. 20th Penn State Plant Biology Symposium. 13-16 May 2015, **Penn State University, PA, USA**.
7. **Prodhan, M.A.**, Finnegan, P.M., Lambers, H. & Jost, R. **2014**. Phosphorus Use Efficiency in *Hakea prostrata*: Role of other Nutrients. Phosphorus in Soils and Plants 5. 26-29 August 2014, **Montpellier, France**.
8. **Prodhan, M.A.**, Finnegan, P.M., Lambers, H. & Jost, R. **2013**. Molecular Responses of *Hakea prostrata* to Changes in Mineral Nutrition. International Conference, ComBio 2013. 29 September – 3 October 2013, **Perth, Australia**.
9. **Prodhan, M.A.**, McGee, P.A. & Saleeba, J.A. **2010**. Genetics of Primary Root Branching in Cotton. International Conference on “Molecules of life: from discovery to biotechnology”. 26 September - 1 October 2010 in **Melbourne, Australia**.
10. **Prodhan, M.A.**, McGee, P.A. & Saleeba, J.A. **2010**. Candidate Genes for Root System Architecture in Cotton. Annual Conference of Genetics Society of AustralAsia. 4 - 8 July 2010 in **CSIRO, Canberra, Australia**.
11. **Prodhan, M.A.**, Alomari, O.K., Ly, P.K.C., McGee, P.A. & Saleeba, J.A. **2009**. Root System Architecture in Cotton. International Plant Phenomics Symposium: from Gene to Form and Function. 21 - 24 April 2009 in **CSIRO, Canberra, Australia**.

Teaching Experiences

- 2023 **Instructor**, [Workshop for Nanopore Sequencing for Biosecurity](#). Centre for Crop Disease Management, Curtin University, **Perth, Australia**.
- 2023 **Supervisor, Honours Research Student**, Research School of Biology, Australian National University, Canberra, Australia
Thesis: High-throughput identification and quantification of the air-borne fungal pathogen *Austropuccinia psidii*.
- 2017 **Supervisor, Honours Students of Molecular Plant Physiology**
 School of Biological Sciences, University of Western Australia, Australia
- 2016 – 2017 **Demonstrator, Frontiers in Biology**,
 School of Biological Sciences, University of Western Australia, Australia
- 2016 **Supervisor, Field Laboratory, Plant Physiological Ecology**
 School of Biological Sciences, University of Western Australia, Australia
- 2009 **Demonstrator, Molecular Biology**,
School of Biological Sciences, University of Sydney, Sydney, Australia

Scholarships and Awards

- 2019-2021 JSPS (Japan Society for the Promotion of Science) Postdoctoral Fellowship,
Awarded by the Australian Academy of Science and the Government of Japan
- 2016 PhD Completion Scholarship, **Awarded by the University of Western Australia**
- 2015 Conference Travel Award, **Awarded by the Penn State University, USA**
- 2015 Postgraduate Travel Award, **Awarded by the University of Western Australia**
- 2014 Convocation Research Travel Award, **Awarded by the University of Western Australia**
- 2013- 2016 Safety Net Top-Up Scholarship, **Awarded by the University of Western Australia**
- 2013- 2016 Australian Postgraduate Award, **Awarded by the Commonwealth of Australia**

- 2013- 2016 International Postgraduate Research Scholarship, **Awarded by the University of Western Australia**
- 2010 Conference Travel Award, **Awarded by the Australian Society of Plant Scientist (ASPS)**
- 2010 Postgraduate Conference Travel Grant, **Awarded by the School of Biological Sciences, the University of Sydney**
- 2008-2012 International Postgraduate Award, **Awarded by the University of Sydney**
- 2008-2012 Endeavour International Postgraduate Research Scholarship, **Awarded by the Commonwealth of Australia**
- 2006 **Gold Medal** for achieving distinction at the degree of Master of Science in Genetics and Plant Breeding, Bangladesh Agricultural University, Bangladesh
Thesis: Optimization of transformation protocol in *Brassica* spp. using *Agrobacterium*. GPA 4.0 out of 4.0.

Professional Memberships

- Australian Society of Plant Scientist (ASPS)
- European Federation of Biotechnology (EFB)

Editorials

- Review editor of Frontiers in Plant Science
- Reviewer of many journals including Plant and Soil, Frontier in Plant Science, PLOS One

Personal Information

Nationality: Australian and Bangladeshi

Referees

PhD Supervisor **Emeritus Professor Hans Lambers**
School of Biological Sciences (M084)
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The University of Western Australia
Crawley, WA 6009, Australia
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E-mail: hans.lambers@uwaedu.au

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