

Varsha S. Pathare, Ph.D.

Fellow at Institute of Genomic Biology,
University of Illinois, Urbana-Champaign, IL, USA

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Education

- 2014-2018** **Ph.D. Biological Sciences**, Hawkesbury Institute for the Environment, Western Sydney University, NSW, Australia. (People's choice award for best Ph.D. work presentation)
- 2007-2009** **Master of Science** (Botany), Department of Botany, Savitribai Phule Pune University, Pune, MS, India. (First Class)
- 2004-2007** **Bachelor of Science** (Botany), Sir Parshurambhau College, Savitribai Phule Pune University, Pune, MS, India. (3rd rank in the University)

Research Experience

- 01/2023-ongoing** **Fellow at Institute for Genomic Biology and Post-doctoral Researcher under RIFE project**, University of Illinois, Urbana-Champaign, IL, USA
Project: Molecular, physiological, and agronomic consequences of leaf anatomical modifications on CO₂-uptake and water-use in legumes
Mentor: Prof. Andrew Leakey
- 2021-ongoing** **Member of C₄ photosynthesis working group** aimed at incorporating C₄ grasses in Earth System Models (USGS Powell Center)
- 07/2017-12/2022[#]** **Post-doctoral Research Associate I**, School of Biological Sciences, Washington State University, Pullman, WA, USA
Project: Anatomical and biochemical determinants of CO₂ diffusion and water-use inside leaves of diverse C₄ grasses and crops
Mentor: Prof. Asaph B. Cousins
(**#Note:** The Post doc period involves career disruptions of ~ 15 months listed below)
- 07/2019 - 11/2019** **Career break 1 (Maternity leave-4 months)**
- 05/2020- 09/2020** **Covid Impacts on Career (5 months):** Daycare closure during Covid 19 lockdown and the responsibility of a 1.5 year old substantially reduced my ability to work from home delaying the communication of three major research publications.
- 01/2021 - 05/2021** **Career break 2 (Maternity leave-4 months)**
- 03/2014-07/2018[#]** **Ph.D. Research Scholar**, Hawkesbury Institute for the Environment, Western Sydney University, Sydney, Australia
Thesis title: Grass and herb photosynthesis and productivity in a resource-limited *Eucalyptus* woodland under elevated atmospheric CO₂
Supervisors: Prof. David Ellsworth and Prof. Oula Ghannoum
(**#Note:** Thesis was submitted in July 2017 and finally approved in April 2018. Degree was awarded during the September 2018 convocation ceremony)
- 07/2013-02/2014** **Senior Research Fellow**, Bhabha Atomic Research Centre, Mumbai, MS, India
Title: Responses of mycorrhiza colonized *Oryza sativa* to arsenic stress.
Supervisors: Prof. P. Suprasanna and Dr. Sudhakar Srivastava

- 08/2010- 07/2013 Junior Research Fellow**, Bhabha Atomic Research Centre, Mumbai, India
Title: Evaluation of Carbon, Nitrogen and Sulphur metabolism responses to arsenic stress in *Brassica juncea*
Supervisors: Prof. P. Suprasanna and Dr. Sudhakar Srivastava
- 04/2008-07/2008 Master of Science Project 1**, National Chemical Laboratory, Pune, MS, India.
Title: Molecular analysis of *Cicer arietinum* genome using SSR markers
Supervisor: Dr. Vidya Gupta
- 12/2008-03/2009 Master of Science Project 2**, Department of Botany, Savitribai Phule Pune University, Pune, MS, India
Title: *In vitro* responses of *Gmelina arborea*
Supervisor: Prof. Sujata S. Bhargava

Awards and Grants (~ USD 370,000)

1. Carl Woese Institute for Genomic Biology (University of Illinois, USA) independent postdoctoral fellowship and research grant (USD 131000 for 2 years + USD 65000 with 1 year extension)
2. Planting Science Digging Deeper Fellowship 2023 (F2 Fellows) for attending professional learning workshop focused on exploring the effects of student-teacher-scientist partnership program on student outcomes (~USD 5000 as stipend, travel, accommodation conference attendance).
3. ASPB Plant Biology Conference Attendance grant 2021 (USD 600).
4. Western Photosynthesis Congress travel grant 2019 (USD 300).
5. Ecological Society of Australia's Student grant 2014 (AUD 1500) for a PhD project entitled 'Differences in phenotypic plasticity between native- invasive species under elevated CO₂, water availability and competition: Jack -and- Master Trait responses?' (<https://www.ecolsoc.org.au/2014-student-research-award-winners>).
6. Ecological Society of Australia's travel grant for oral presentation at ESA conference 2015, 29th Nov-3rd Dec 2015, Adelaide, Australia (AUD 250), (<https://www.ecolsoc.org.au/news/2016/08/2015-student-travel-grant-recipients>).
7. Hawkesbury Institute for the Environment Postgraduate research award, Sydney, Australia, 2016 (AUD 100).
8. Discovery Postgraduate Research scholarship for 3 years from 2014-2017 (AUD 108,176).
9. Discovery Postgraduate Research Fee Waiver for 3 years from 2014-2017 (AUD 90000).
10. University of Technology Sydney's International Research Scholarship (IRS), 2014 (AUD 30,000) for my proposal on coral reefs and climate change. (I declined it to accept Discovery Postgraduate Research scholarship).
11. University of Technology Sydney's President's Scholarship (UTSP), 2014 (AUD 76,176) for my proposal on coral reefs and climate change. (I declined it to accept Discovery Postgraduate Research scholarship).
12. Bhabha Atomic Research Center- Savitribai Phule Pune University collaborative research fellowship (2010-2014) to work on crop responses to heavy metal stress (arsenic) and mycorrhizal colonization.
13. Achieved 3rd rank in Bachelor of Science (Botany) final examination in the order of merit among all the successful candidates of Savitribai Phule Pune University.

Peer-reviewed publications

(#Undergraduate co-author; *Corresponding author; IF: Impact factor)

Summary: citations > 600, h-index = 10, mean IF > 10

1. Jiang, M*, Medlyn BE., Warlind D., Knauer J., Fleischer K., Goll DS., Olin S., Yang X., Yu L., Zaehle S., Zhang H., Lv H., (with 12 other coauthors in alphabetical order)., **Pathare, VS.**, (with 8 other coauthors in alphabetical order) *et al.*, (2024) Carbon-phosphorus cycle models over-estimate CO₂ enrichment response in a mature *Eucalyptus* forest (*Accepted, In press, Science Advances*, IF 13.6).
2. Jiang, M*, Crous, KY*, Macdonald, CA., Carrillo, Y., Anderson, IC., Boer, MM., (with 7 other coauthors in alphabetical order)., **Pathare, VS.**, (with 10 other coauthors in alphabetical order) *et al.*, (2024) Microbial competition for phosphorus limits CO₂ response of a mature forest (*In press, Nature*, IF 69.5).
3. Koteyeva, N., Voznesenskaya, EV., **Pathare, VS.**, Borisenko, TA., Zhurbenko, PM., Morozov, GA., Edwards, GE. (2023) Biochemical and structural diversification of C₄ photosynthesis in tribe Zoysieae (Poaceae) (*Accepted, Plants*, IF 3.5)
4. **Pathare, VS***, Panahabadi, R., Sonawane, BV., Apalla, AJA*, Koteyeva, N., Bartley, LE., and Cousins, AB. (2024) Altered cell wall hydroxycinnamate composition increases mesophyll conductance and photosynthesis, but not leaf hydraulic conductance in *Oryza sativa*. doi:10.1093/plphys/kiad428. *Plant Physiology*. (IF 8.34).
5. Armstrong EM*, Larson E., (with 15 coauthors in alphabetical order)., **Pathare VS.**, *et al.*, (2023) One hundred important questions facing plant science research: Revisited (*New Phytologist*, IF 10.3).
6. Muir, CD*, Conesa, MA., Galmes, J., **Pathare, VS.**, Rivera, P., Rodriguez, RL., Terrazas, T., Xiong, D. (2022) How important are functional and developmental constraints on phenotypic evolution? An empirical test with the stomatal anatomy of flowering plants. *American Naturalist*. (IF 4.2).
7. **Pathare, VS***, DiMario, R. J., Koteyeva, N., & Cousins, A. B. (2022). Mesophyll conductance response to short-term changes in pCO₂ is related to leaf anatomy and biochemistry in diverse C₄ grasses. *New Phytologist* (IF 10.3).
8. Pineiro, J*, **Pathare, VS.**, Carrillo, Y and Power, SA. (2021) No CO₂ fertilization effect on plant growth despite enhanced enzyme activity: a glasshouse experiment using native, P-limited soil *Plant and Soil*. (IF 4.2).
9. DiMario, RJ., Kophs, AN*, **Pathare, VS.**, & Cousins, AB*. (2021). Kinetic variation in grass phosphoenolpyruvate carboxylases provides an opportunity to enhance C₄ photosynthetic efficiency. *The Plant Journal*. (IF 6.42).
10. **Pathare, VS.**, Sonawane BV. Koteyeva, N. & Cousins, AB*. (2020). C₄ grasses adapted to low mean annual precipitation show traits associated with greater mesophyll conductance and lower leaf hydraulic conductance. *Plant, Cell & Environment*, 43: 1897-1910. (IF 7.23).
11. Jiang, M*, Medlyn, BE*, Drake, JE., Duursma RA, Anderson IC, (with 19 authors in alphabetical order) ..., **Pathare, VS**, (with 20 other authors in alphabetical order) *et al.*, (2020). The fate of carbon in a mature forest under carbon dioxide enrichment. *Nature*, 580 (7802): 227-231. (IF 69.5).
12. **Pathare, VS.**, Koteyeva, N. & Cousins, AB*. (2020). Increased adaxial stomatal density is associated with greater mesophyll surface area exposed to intercellular air spaces and mesophyll conductance in diverse C₄ grasses. *New Phytologist*, 225: 169-182 (IF 10.3).

13. Srivastava, S*, **Pathare, VS***, Sounderajan, S. & Suprasanna, P. (2019). Nitrogen supply influences arsenic accumulation and stress responses of rice (*Oryza sativa* L.) seedlings. ***Journal of Hazardous Materials***, 367: 599-606. (*Authorship with equal contribution) (IF 14.22).
14. **Pathare, VS.**, Crous, KY., Cooke, J., Creek, D., Ghannoum, O., & Ellsworth, DS. (2017). Water availability affects seasonal CO₂-induced photosynthetic enhancement in herbaceous species in a periodically dry woodland. ***Global Change Biology***, 23: 5164– 5178 (IF 13.2).
15. Poonam#, Srivastava, S., **Pathare, V.**, & Suprasanna, P*. (2017). Physiological and molecular insights into rice-arbuscular mycorrhizal interactions under arsenic stress. ***Plant Gene***, 11: 232-237 (IF 2.57).
16. Srivastava, S*, **Pathare, V.** (2017). Role of microRNAs in arsenic stress tolerance of plants. ***International Journal of Plant and Environment***, 03, 02.
17. **Pathare, V.**, Shukla, A#, Srivastava, S., & Suprasanna, P*. (2017). Response of rice-mycorrhizal association to arsenate exposure. ***Bulletin of Environmental and Scientific Research***, 6 (2).
18. **Pathare, V.**, Srivastava, S., Sonawane, BV., & Suprasanna, P*. (2016) Arsenic stress affects the expression profile of genes of 14-3-3 proteins in the shoot of mycorrhiza colonized rice. ***Physiol Mol Biol Plants***, 22(4): 515-522 (IF 2.4).
19. **Pathare V**, Srivastava S., & Suprasanna P. (2013). Evaluation of effects of arsenic on carbon, nitrogen, and sulfur metabolism in two contrasting varieties of *Brassica juncea*. ***Acta Physiologiae Plantarum***, 35(12):3377-3389 (IF 2.35).

Preprints/Under communication

(#Undergraduate co-author; *Corresponding author)

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1. Crawford, J. D., III, R. J. T., **Pathare, V. S.**, Studer, A. J. & Cousins, A. B. Differences in stomatal sensitivity to CO₂ and light influences variation in water use efficiency and leaf carbon isotope composition in two genotypes of the C₄ plant *Zea mays*. *bioRxiv*, 2023.2012.2001.569655, doi:10.1101/2023.12.01.569655 (2023) (*under revision*, ***Journal of Experimental Botany***, IF 7.37).

Publications in preparation (#Undergraduate co-author; *Corresponding author)

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1. **Pathare, VS***, and Cousins, AB. (2023) Determinants of initial slope of photosynthetic CO₂ response curve in diverse C₄ grasses (*In preparation*).
 2. **Pathare, VS***, Panahabadi, R., Sonawane, BV., Apalla, AJA#, Koteyeva N., Bartley LE., and Cousins, AB. (2023) Impacts of cell wall structure-composition on mesophyll conductance, leaf hydraulic conductance, whole-plant water-use and biomass in Sorghum (*In preparation*).
 3. **Pathare, VS***, Pineiro, J., Ghannoum O., Power, SA., Ellsworth D.E. (2023) Coordinated responses of above and below ground traits to elevated [CO₂] and water availability in herbaceous species of a nutrient limited ecosystem (*In preparation*).
 4. **Pathare, VS*** and Cousins, AB. (2023) Stomatal size, speed, and responsiveness to light fluctuations: impact on photosynthesis and water-use efficiency in diverse C₄ grasses (*In preparation*).

Teaching

1. Guest lecturer (February 2023-ongoing) for Biochemistry Course at Institute of Environment & Sustainable Development, Banaras Hindu University, India. Topics: Taught Photosynthetic Biochemistry, Physiology and Ecology to master's students.
2. Certificate course in 'The Inclusive STEM Teaching Project' (June-July 2021) (<https://www.inclusivestemteaching.org/overview-of-the-course/>).
3. Botany Lecturer in Sir Parshurambhau College, Pune, India (2009): Conducted practical for courses related to plant physiology and anatomy for one semester for first year Bachelor students.
4. Taught laboratory on gas exchange and photosynthesis of C₃ and C₄ plants, Washington State University, Pullman, USA (2019)
5. Invited teaching seminar at Center of Ecological Sciences, Indian Institute of Science, Bangalore, India (2021). Topic: Effects of rising atmospheric [CO₂] on plants.

Mentorship

1. **Ms. Katie Garwacki (under-graduate researcher):** principles and techniques in plant physiology and molecular biology at University of Illinois, Urbana-Champaign, USA (May 2024-ongoing).
2. **Mr. Luke Illes (under-graduate researcher):** Mentoring for senior thesis at University of Illinois, Urbana-Champaign, USA (September 2023-May 2024).
3. **Ms. Destini Coleman (lab technician):** principles and techniques in plant physiology and molecular biology at University of Illinois, Urbana-Champaign, USA (August 2023-ongoing).
4. **PlantingScience F2 fellow: Scientist Mentor and liaison for K-12 children and teachers:** Promote plant-based learning at K12 levels, help formulate research questions, design, and run scientific experiments, develop critical thinking about plants (Feb 2023-ongoing).
Schools mentored so far: Campus High School, DeWitt Middle School, George Washington High School, Mendota High School, Wood River High School
5. **Mr. Ziad Khan (under-graduate researcher):** developing high throughput techniques to measure Soybean traits using imaging coupled to artificial intelligence models, University of Illinois, Urbana-Champaign, USA (February 2023-ongoing).
6. **Dr. Rahele Panahabadi (post-doctoral researcher):** measuring and analyzing photosynthetic processes (Feb-March 2022).
7. **Dr. Olivia Oung (post-doctoral researcher):** measuring and analyzing photosynthetic processes (Feb-March 2022).
8. **Mr. Jan Knoblauch (graduate student):** principles and techniques in plant-physiology, Washington State University, WA, USA (Feb 2022-April 2022).
9. **Mr. Anthony Apalla (undergraduate student):** principles and techniques in plant-physiology, Washington State University, WA, USA (July 2021-Nov 2021).
10. **Mr. Andrew Gonzalez (graduate student):** principles and techniques in plant-physiology as part of his rotation round as a PhD student at Washington State University, WA, USA (2021).
11. **Ms. Kuenzang Om (graduate student):** principles and techniques in plant-physiology and statistics, Washington State University, WA, USA (2018-2020).
12. **Mr. Bhaskar Sharma (under-graduate student):** techniques and principles in plant stress physiology and biochemistry, Bhabha Atomic Research Center, India (2011).

13. **Ms. Nisha Unnikrishnan (under-graduate student):** techniques and principles in plant stress physiology and biochemistry, Bhabha Atomic Research Center, India (2012).
14. **Ms. Sneha Pathak (under-graduate student):** techniques and principles in plant stress physiology and biochemistry, Bhabha Atomic Research Center, India (2012).
15. **Ms. Shivani Muthu (under-graduate student):** techniques and principles in plant stress physiology and biochemistry, Bhabha Atomic Research Center, India (2013).

Poster presentations (*Presenting author)

1. Robert J. DiMario*, Ashley N. Kophs, **Varsha S. Pathare**, Ryan L. Wessendorf, Asaph B. Cousins (2019) Variation in phosphoenolpyruvate carboxylase bicarbonate affinity and associated amino acid changes in C₄ grasses. SEB Annual Conference, 29th June-8th July 2021, USA.
2. Robert J. DiMario*, Ashley N. Kophs, **Varsha S. Pathare**, Ryan L. Wessendorf, Asaph B. Cousins (2019) Variation in phosphoenolpyruvate carboxylase bicarbonate affinity and associated amino acid changes in C₄ grasses. Gordon Research Conference-CO₂ Assimilation in Plants from Genome to Biome, 8th -9th June 2019, Newry, ME, USA.
3. Wessendorf R*, PZ Ellsworth, R DiMario, R Guiliani, NU Lopez, B Sonawane, **V Shankar Pathare**, T Sexton, J Crawford, E Serrano-Romero, K Om, AB Cousins (2019) Anatomical, biochemical, and physiological traits affecting water use efficiency and carbon assimilation in C₃ and C₄ plants. CEPLAS Transatlantic Summer School: Frontiers in Plant Science, 27th – 31st May 2019, Maria in der Aue, Germany.
4. **Varsha S. Pathare***, Nuria Koteyeva, Asaph B. Cousins (2019). Structural, anatomical and biochemical determinants of mesophyll conductance in diverse C₄ grasses. 28th Western Photosynthesis Congress, 3rd -6th January 2019, Friday Harbor, Washington State, USA.
5. Robert J. DiMario*, **Varsha S. Pathare**, Ashley N. Kophs, Asaph B. Cousins (2019). Variation in phosphoenolpyruvate carboxylase bicarbonate affinity among C₄ grasses. 28th Western Photosynthesis Congress, 3rd -6th January 2019, Friday Harbor, Washington State, USA.
6. Mingkai Jiang*, Belinda Medlyn, Remko Duursma, John Ellis Drake, Ian Anderson, ..., **Varsha Pathare et al.**, (2018). The fate of carbon in a mature eucalypt woodland under CO₂ enrichment and phosphorus limitation. American Geophysical Union Fall Meeting, 10th-14th December 2018, Washington D.C, USA.
7. Pu Huang *, James Schnable, Robert J. DiMario, **Varsha S. Pathare**, et al., (2018). C-4 Gene Discovery Using Cross Species Selection Scan and Validation Using *Setaria viridis* as a Model System. In IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY-ANIMAL, vol. 54, pp. S19-S19. 233 SPRING ST, NEW YORK, NY 10013 USA: SPRINGER, 2018. (<https://doi.org/10.1007/s11626-018-0256-4>).
8. **Varsha Pathare***, Kristine Crous, Julia Cooke, Oula Ghannoum, David Ellsworth (2016). Water availability affects seasonal CO₂-induced photosynthetic enhancement in herbaceous species in a periodically dry woodland. 17th Photosynthesis Congress, 7th Aug- 12th Aug 2016, Maastricht, The Netherlands.
9. **Varsha Pathare***, Kristine Crous, Oula Ghannoum, David Ellsworth (2016). Photosynthetic responses of the C₃ and C₄ plants of *Eucalyptus* Free Air CO₂ Enrichment Experiment. C₄ photosynthesis conference, 10th – 13th April 2016, Canberra, Australia.
10. **Varsha Pathare***, Sudhakar Srivastava, P. Suprasanna (2013). Evaluation of effects of arsenic on carbon, nitrogen and sulphur metabolism in two contrasting varieties of *Brassica juncea*.

DAE-BRNS Life Science Symposium on Trends in Plant, Agriculture and Food Sciences, December 17-19, 2012 at Bhabha Atomic Research Centre, Mumbai, India.

Oral presentations

1. **Research talk** at Realizing Increased Photosynthetic Efficiency Annual Conference, Urbana, Illinois, USA (December 2023). Topic: Improving crop water-use efficiency through modification of stomata
2. **Invited research talk** at Center of Cellular and Molecular Biology, Hyderabad, India (June 2022). Topic: Understanding and predicting plant climate interactions.
3. **Invited research talk** at Center of Ecological Sciences, Indian Institute of Science, Bangalore, India (Feb 2021). Topic: Stomata: adjusting and responding to environmental changes.
4. **Research talk** at Hawkesbury Institute for the Environment HDR forum, Sydney, Australia (2016). Topic: Stomata control CO₂ induced photosynthetic enhancement in the grassy understory of the *Eucalyptus* Free Air CO₂ Enrichment Experiment
5. **Research talk** at Ecological Society of Australia Conference, 29th Nov-3rd Dec 2015, Adelaide, Australia. Topic: Resource-use strategies of native and invasive species in response to elevated CO₂ and water availability.
6. **Research talk** at Hawkesbury Institute for the Environment HDR forum, Sydney, Australia (2015). Topic: Which plant types will benefit the most in a high CO₂ world?

Media Release

1. Media release and video interview of my research article, "**Pathare, VS.**, Crous, KY., Cooke, J., Creek, D., Ghannoum, O., & Ellsworth, DS. (2017). Water availability affects seasonal CO₂-induced photosynthetic enhancement in herbaceous species in a periodically dry woodland. **Global Change Biology**, 23: 5164– 5178".
(https://www.westernsydney.edu.au/hie/stories/proposed_benefits_of_rising_carbon_dioxide_are_more_likely_driven_by_water)
2. Media release of the research article in *Nature* journal that I coauthored, "Jiang, M., Medlyn, BE., Drake, JE., Duursma RA, Anderson IC, ..., **Pathare, VS.**, *et al.* (2020). The fate of carbon in a mature forest under carbon dioxide enrichment. **Nature**, 580 (7802): 227-231".
www.sciencedaily.com/releases/2020/04/200408113300.htm
3. Media release of the research article "One hundred important questions facing plant science research: Revisited" (<https://www.eurekalert.org/news-releases/982655>)
4. Media release of the research article in *Nature* journal that I coauthored, "Jiang, M*, Crous, KY*, Macdonald, CA., Carrillo, Y., Anderson, IC., Boer, MM., (with 7 other coauthors in alphabetical order), **Pathare, VS.**, (with 10 other coauthors in alphabetical order) *et al.*, (2024) Microbial competition for phosphorus limits the CO₂ response of a mature forest".
<https://www.newscientist.com/article/2434129-forests-may-grow-more-slowly-than-expected-as-co2-levels-rise/>

Outreach and Services

1. **Organizing Committee Member**, World Genomics Day at Chicago Industry and Science Museum hosted by Institute for Genomic Biology, University of Illinois at Urbana-Champaign, 20th-22nd Oct 2024

2. **Ambassador and representative** for early career researchers at Realizing Increased Photosynthetic Efficiency group, University of Illinois, Urbana-Champaign.
3. **Past/Present Member** of Ecological Society of Australia, Australian Society of Plant Scientists, American Society of Plant Biologists, Botanical Society of America
4. **Review Editor** for Frontiers in Forests and Global Change Biology
5. **Reviewer of Science journals:** *New Phytologist*, *Photosynthesis research*, *Current genomics*, *Chemosphere*, *Acta physiologiae plantarum*, *Journal of Experimental Botany*, *Annals of Botany*, *Plants*, *Plant Cell and Environment*, *Biomass and Bioenergy*, *Annals of Botany Plants*
6. **Panelist** for identifying 100 important questions facing plant science research in coming decade, 2022, New Phytologist Foundation-University of Bristol initiative.
7. **Search Committee Member** for recruitment of stable isotope facility manager at Washington State University (2022)
8. **Search Committee Member** for recruitment of Research Scientist at University of Illinois Urbana-Champaign
9. **Scientist Mentor and liaison for K-12 children and teachers:** Promote plant-based learning at K12 levels, help formulate research questions, design, and run scientific experiments, develop critical thinking about plants (Feb 2023-ongoing). **Schools mentored so far:** Campus High School, DeWitt Middle School, George Washington High School, Mendota High School, Wood River High School
10. **Diversity, Equity, and Inclusion Committee Task Force member**, at University of Illinois Urbana-Champaign

Referees

1. **Prof David Ellsworth** (PhD supervisor), Hawkesbury Institute for the Environment, Western Sydney University, Locked Bag 1797, Penrith NSW 2751, Australia, Tel. (02) 4570 1365, email: d.ellsworth@westernsydney.edu.au
2. **A/Prof Oula Ghannoum** (PhD co-supervisor), Hawkesbury Institute for the Environment, Western Sydney University, Locked Bag 1797, Penrith NSW 2751, Australia, Tel. (02) 4570 158, email: o.ghannoum@westernsydney.edu.au
3. **Prof Asaph Cousins** (Post-doctoral mentor), School of Biological Sciences, Washington State University, Pullman, WA, USA-99164, Tel. +1 5093358243, Email: acousins@wsu.edu
4. **Prof. Andrew Leakey** (Post-doctoral mentor), Institute of Genomic Biology, University of Illinois Urbana-Champaign, IL, USA-61801, Tel. 2172440302, Email: leakey@illinois.edu
5. **A/Prof Sudhakar Srivastava (mentor during tenure as research fellow at BARC, Mumbai)**, Institute of Environment & Sustainable Development, Banaras Hindu University, Varanasi-221005, U.P., India. Email: sudhakar.srivastava@gmail.com; sudhakar.iesd@bhu.ac.in. **Previous Position:** Scientific Officer E, Nuclear, Agriculture and Biotechnology Division, Bhabha Atomic Research Center, Mumbai, India-400085