

## Beenish Saba Ph.D.

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### EDUCATION

Aug 2013-May 2017 **PhD Biological Engineering**  
The Ohio State University, USA

Oct 2008-June 2010 **MS Environmental Engineering**  
National University of Sciences and Technology, Pakistan

Sep 2006-Dec 2008 **MSc Environmental Sciences**  
Fatima Jinnah Women University, Pakistan

Oct 2003-Mar 2005 **BSc Chemistry**  
University of the Punjab, Pakistan

### PROFESSIONAL EXPERIENCE

I have more than 19 years of academic experience; 8 years university teaching and research mentoring, 2 years college teaching and 1 year Montessori teaching, 4 years postdoc and 4 years research associate.

May 2024-Present **The Ohio State University, Columbus, Ohio USA**  
Research Scientist, Department of Food Agricultural and Biological Engineering

Aug 2022- April 2024 **The Ohio State University, Columbus, Ohio USA**  
LEGACY Postdoctoral Scholar, Department of Food Agricultural and Biological Engineering

Aug 2020-July 2022 Self-employed at home due to COVID19 - focused on manuscript and book chapters publications, student mentoring, zoom guest lecturing for Environmental Science courses at the University of Education Lahore, Jauharabad Campus, Pakistan and providing child-care and home schooling for my two children.

Aug 2020 **PMAS Arid Agriculture University, Rawalpindi, Pakistan**  
Assistant Professor, Department of Environmental Sciences (position declined due to travel restrictions in pandemic)

Dec 2018- Jul 2020 **The Ohio State University, Columbus, Ohio USA**  
Postdoctoral Scholar, Department of Food Agricultural and Biological Engineering

Jun 2017-Aug 2020 **PMAS Arid Agriculture University, Rawalpindi, Pakistan**  
Lecturer, Department of Environmental Sciences

Aug 2013-May 2017 **The Ohio State University, Columbus, Ohio USA**

Jun-Nov 2016	Graduate Research Assistant, Department of Food Agricultural and Biological Engineering <b>National Research Institute of Science and Technology for Environment and Agriculture, Paris, France</b>
Apr-May 2016	Visiting Scholar, Biotechnology Lab <b>University of California Santa Barbara, California, USA</b>
Jun 2010-Aug 2013	Visiting Scholar, Bren School of Environmental Science and Management <b>PMAS Arid Agriculture University Rawalpindi, Pakistan</b>
Aug 2006-May 2010	Lecturer, Department of Environmental Sciences <b>Community College Morgah, Rawalpindi, Pakistan</b>
Mar 2006-Mar 2010	Lecturer, Biology and Chemistry, afternoon session (2-5 pm) <b>Kahuta Girls Academy, Pakistan</b>
Aug 2000-Aug 2001	Tuition academy from kindergarten to 12 <sup>th</sup> grade, after school teaching (5 to 9 pm) <b>PN Montessori School, Maripur, Karachi, Pakistan</b>
	Montessori Directress

## RESEARCH INTERESTS AND EXPERIENCE

- Advancing bioelectrochemical water treatment technologies to protect ecosystem, and human health.
- Food waste characterization and valorization through conventional and electro-fermentation to produce biochemicals, biohydrogen and promote circularity.
- Process improvement of natural rubber extraction from non-tropical plants.
- Net-zero greenhouse emissions and life cycle assessment of biological waste treatment and valorization systems.

## LAB ESTABLISHMENT AND MANAGEMENT

I established a **Reclamation and Valorization (RAV)** lab, and my research approach is sustainable reuse of by-products. The main foci of the RAV are the development of sustainable bioelectrochemical wastewater reclamation, food waste valorization and improvement of latex extraction technologies. I utilized my recent Catalyst and CAPPS research funds to purchase equipment and supplies (2023-present).

During my tenure at the Department of Environmental Sciences at PMAS Arid Agriculture University Rawalpindi from 2011 to 2013, I was responsible for overseeing the **Environmental Science Laboratory**. My duties encompassed purchasing equipment and chemicals, as well as conducting training sessions, collaborating with central lab and labs of other institutes for specialized analysis.

## INDUSTRIAL COLLABORATION AND RESEARCH EXPERIENCE

I am collaborating with **J M Smucker Ltd.**, **Niagara Bottling** industries and **Abbott Laboratories** on a research project "Industrial food processing waste characterization and

valorization” and “Electro-fermentation of food waste to produce platform chemicals”. The have provided \$120,000 funds through the Center for Advanced Processing and Packaging Studies (CAPPS) to support the research (2023-2025).

I completed an internship at the National Center for Cleaner Production (NCCP), located at **Attock Oil Refinery Limited in Pakistan**. During this internship, I participated in field visits for Environmental Impact Assessments (EIA) of oil pipelines from June to August 2007.

Currently I am collaborating with **Plus Circularity** a food waste management venture for precision feedstock sourcing platform to accelerate the growth of the bioeconomy.

<https://www.plusupcycling.com/>

For our research project, we contacted over 100, **Ohio-based food processing companies** to procure food waste samples and successfully collected samples from 46 companies. The article contains details about the samples and the respective companies.

<https://doi.org/10.1016/j.scitotenv.2023.161550>.

## RESEARCH TOWARDS COMMERCIALIZATION

I participated in a research project titled 'Polyamine flocculants and creaming agent enhance guayule latex processing' with Professor Katrina Cornish. This project resulted in the successful registration of a patent with her company, **EnergyEne**.

## TEACHING AND MENTORSHIP EXPERIENCE

1. FABE 7220 College Teaching in Engineering (Fall, 2023) (Co-taught)
2. ENGREDU 7900 Career Exploration and Professional Development (one guest Lecture)
3. FABENG 5540 Biomass Conversion to Bioenergy, Spring 2023 (Co-taught)
4. Co-mentoring of graduate student and Research Associate with Prof. Cornish at OSU (2023-2024)
5. Environmental Chemistry, Environmental Biotechnology, Wastewater Treatment (2010-2013) (Course Instructor) Department of Environmental Sciences, PMAS Arid Agriculture University Rawalpindi
6. Solid Waste and Hazardous Management, Environmental Biotechnology (2017-2018) (Course Instructor) Department of Environmental Sciences, PMAS Arid Agriculture University Rawalpindi
7. Supervised Graduate Research Thesis; Eight Master students and one M.Phil. student (2010-2013), two M.Phil. Students (2017-2018) at the Department of Environmental Sciences, PMAS Arid Agriculture University Rawalpindi. Five of my graduate students pursued PhD in China and serving in academia or doing postdoc.
8. Guided and co-mentored an MS student with Professor Ann Christy at the Department of Food, Agricultural, and Biological Engineering, The Ohio State University Columbus campus (2015-2016).
9. Co-supervised and guided Research Associate Sarah McNulty at the Food, Agricultural, and Biological Engineering, The Ohio State University Wooster campus (2023-present).

10. Guided and mentored Prof. Katrina's PhD student Nate King Smith for a grant submission to the Sustainability Institute and a poster competition. Food, Agricultural, and Biological Engineering, The Ohio State University in Wooster campus (2023-present).

## CURRICULUM DEVELOPMENT AND REVISION EXPERIENCE

1. FABE 7220 College Teaching in Engineering (Spring, 2024) course syllabus revisions and approval
2. As a team member, I contributed to the development and approval process of the undergraduate curriculum for Environmental Sciences in the Department of Environmental Sciences at PMAS Arid Agriculture University Rawalpindi, working with the Higher Education Commission of Pakistan (2017-2018).
3. Course development and approval ENV-724 Advance Processes for Wastewater Treatment, Credit Hours: 3, during my tenure as lecturer for graduate level students in Environmental Sciences at PMAS Arid Agriculture University Rawalpindi (2011-2013)

## ENTREPRENEUR EXPERIENCE

To provide after-school study assistance, my sister and I established an academy specifically for girls. We taught students from kindergarten through 12th grade in all subjects. The revenue generated from our academy was utilized to pay for our university fees. While my sister pursued a career as a high court lawyer in Pakistan, I became a research scientist at OSU. Through our efforts, we not only advanced our own careers but also helped many girls in our village build theirs. Some of our students have gone on to become doctors, lawyers, nurses, teachers, serving in the police department and airport security force.

## AWARDS

2012	<b>Young Scientist Award</b> Best Young Scientist Oral Presentation Award in International Conference on Challenges in Environmental Sciences and Engineering September 9-13, 2012, Melbourne, Australia
2013-2017	<b>Fulbright Scholarship</b> PhD Scholarship at The Ohio State University
2022-2024	<b>Leading Engineering as Agents of Change Equity (LEGACY)</b> postdoctoral fellowship from College of Engineering, The Ohio State University
2023	<b>Industry Professional Advisory Group (IPAG) Outstanding Service Award (Research)</b> from Department of Food Agricultural and Biological Engineering, The Ohio State University

## PUBLICATIONS

H index 14, i10 index 18, citations 600+, book chapters 5.

## BOOK CHAPTERS

- B.1.** **Saba. B.**, Christy, A.D., Abrar, K., Mahmood, T., (2019). Bio-based products in fuel cells. In: Singh L and Mahapatra, M. D. (Ed.) *Waste to sustainable energy: MFC's – Prospects through prognosis*. CRC Press, Taylor & Francis. ISBN: 13: 978-1-138-32821-1.
- B.2.** **Saba. B.**, Christy, A.D., (2020). Bioelectricity generation in algal microbial fuel cells. In: Konur, O., (Ed.) *Handbook of Algal Science, Technology and Medicine*, 377-384. Academic Press, London. ISBN: 9780128183052.
- B.3.** **Saba. B.**, Christy, A.D., (2020). Cover crops effects on soil erosion and water quality. In: Islam R. Sherman B. (Ed) *Cover crops and sustainable agriculture*. Science Publishers (An imprint of CRC press/ Taylor and Francis. ISBN: 9781003187301 <https://doi.org/10.1201/9781003187301>.
- B.4.** **Saba. B.**, (2022). No plastic, No pollution: Replacement of plastics in the equipments of personal protection. Chapter 8. Innamuddin, Altalhi, T., (Ed). *Biodegradable Materials and their applications*. Wiley Scrivener publishing LLC, MA, USA. pp 229-242. ISBN: 9781119904908.
- B.5.** **Saba. B.**, (2022). Graphene based membranes for proton exchange membrane fuel cells. Chapter 2. Innamuddin (Ed). *Proton Exchange Membrane Fuel Cells: Electrochemical Methods and Computational Fluid Dynamics*. Wiley Scrivener publishing LLC, MA, USA. pp. 17-31. ISBN: 9781119829331.

## REFEREED JOURNAL ARTICLES

- Saba, B.**, Christy, A.D., Shah, A., (2024). *Hydrochar for pollution remediation: Effect of process parameters, adsorption modeling, life cycle assessment and techno-economic evaluation*. Journal of Resources, Conservation and Recycling. 107359. <https://doi.org/10.1016/j.resconrec.2023.107359>
- Saba, B.**, Barrera, C.S., Barker, D.J., Cornish, K., (2023). *Base-dependent flocculant treatment improves the extraction of latex from guayule*. Journal of Environmental Technology and Innovation. 32, 103388. <https://doi.org/10.1016/j.eti.2023.103388>.
- Saba, B.**, Bharathidasan, A.K., Ezeji, T.C., Cornish, K., (2023). *Characterization and potential valorization of industrial food processing wastes*. Science of The Total Environment. 161550. <https://doi.org/10.1016/j.scitotenv.2023.161550>.
- Saba, B.**, Cornish, K., (2022). *Polyamine flocculants and creaming agent enhance guayule latex processing*. Industrial Crops and Products. 184, 115062. <https://doi.org/10.1016/j.indcrop.2022.115062>.
- Saba, B.**, Shadi, W.H., Kjellerup, B.V., Christy, A.D., (2021). *Capacity of existing wastewater treatment plants to treat SARS-CoV-2. A review*. Bioresource Technology Reports. 15, 100737. <https://doi.org/10.1016/j.biteb.2021.100737>.
- Saba, B.**, Kjellerup, B.V., Christy, A.D., (2021). *Eco-friendly bio-electro-degradation of textile dyes wastewater*. Bioresource Technology Reports. 100734. <https://doi.org/10.1016/j.biteb.2021.100734>.
- Saba, B.**, Khan, M., Christy, A.D., Kjellerup, B.V., (2019) *Microbial phyto-power-systems- A sustainable integration of phytoremediation and microbial fuel cells*. Bioelectrochemistry. 127, 1-11. <https://doi.org/10.1016/j.bioelechem.2018.12.005>.

8. **Saba, B.**, Christy, A.D., Park, T., Yu, Z., Li, K., Tuovinen, O.H., (2018). *Decolorization of reactive black 5 and reactive blue 4 dyes in microbial fuel cells*. Applied Biochemistry and Biotechnology. 186, 1017-1033. <https://doi.org/10.1007/s12010-018-2774-7>.
9. **Saba, B.**, and Christy, A.D., (2017). *Sustainable power generation from bacterio-algal microbial fuel cells (MFCs): An overview*. Renewable and Sustainable Energy Reviews. 73, 75-84. <https://doi.org/10.1016/j.rser.2017.01.115>.
10. **Saba, B.**, B. Zaman., T. Mahmood., Jamal Khan, S., (2017). *Treatment of wastewater with a high C/N ratio in sequencing batch bioreactor (SBBR) containing biocarrier*. Environmental Engineering and Management Journal. 16, 1173 -1177.
11. **Saba, B.**, Christy, A.D., Yu. Z., Co. A.C., Tuovinen, O.H., Islam. R., (2017). *Characterization and performance of anodic mixed culture biofilms in submersed microbial fuel cells*. Bioelectrochemistry. 113, 79-84. <https://doi.org/10.1016/j.bioelechem.2016.10.003>.
12. **Saba, B.**, Christy, A.D., (2017). *Simultaneous power generation and desalination of microbial desalination cells using *Nanochloropsis salina* (marine algae) vs potassium ferricyanide as catholytes*. Environmental Engineering Science. 34, 185-196. <https://doi.org/10.1089/ees.2016.0291>.
13. **Saba, B.**, Christy, A.D., Jabeen, M., (2016). *Kinetic and enzymatic decolorization of industrial dyes utilizing plant-based biosorbents: A review*. Environmental Engineering Science. 33, 601-614. <https://doi.org/10.1089/ees.2016.0038>.
14. **Saba, B.**, Jabeen. M., Aziz. I., Khalid, A., Christy, A.D., (2015). *Effectiveness of rice agricultural waste, microbes, and wetland plants in the removal of reactive black-5 azo dye in microcosm constructed wetlands*. International Journal of phytoremediation. 17, 1060–1067. <https://doi.org/10.1080/15226514.2014.1003787>.
15. **Saba, B.**, (2014). *Potential treatment options for hydro fracking return fluids*. Journal of Chem Bio Eng Reviews. 1, 273-279. <https://doi.org/10.1002/cben.201400003>.
16. Rashid, A., Mahmood, T., Mehmood, F., Khalid, A., **Saba, B.**, Batool, A., Riaz, A., (2014). *Phytoaccumulation, competitive adsorption and evaluation of chelators-metal interaction in Lettuce plant*. Environmental Engineering and Management Journal. 13, 2583-2592. <http://omicron.ch.tuiasi.ro/EEMJ/>.
17. **Saba, B.**, Khalid, A., Nazir, A., Kanwal, H., Mahmood., T., (2013). *Reactive black-5 azo dye treatment in suspended and attach growth sequencing batch bioreactor using different co-substrates*. International Journal of Biodeterioration and Biodegradation. 85,556-562. <http://dx.doi.org/10.1016/j.ibiod.2013.05.007>.
18. Khalid, A., **Saba, B.**, Kanwal, H., Nazir, A., Arshad., M., (2013). *Responses of pea and wheat to textile wastewater reclaimed by suspended sequencing batch bioreactors*. International Journal of Biodeterioration and Biodegradation. 85, 550-555. [10.1016/j.ibiod.2013.05.005](https://doi.org/10.1016/j.ibiod.2013.05.005).
19. Khaliq, S., Khalid, A., **Saba, B.**, Mahmood, S., Siddique, M.T., (2013). *Effect of ACC deaminase bacteria on tomato plants containing azo dye wastewater*. Pakistan Journal of Botany, 45(S1) 529-534.
20. **Saba, B.**, Hashmi, I., Awan, M.A., Nasir, H., Khan, S. J., (2012). *Distribution, toxicity level, and concentration of polycyclic aromatic hydrocarbons (PAHs) in surface soil and groundwater of Rawalpindi, Pakistan*. Desalination and water treatment 49(1-3) 240-247. 10.1080/19443994.2012.719329 <http://www.deswater.com/press.php>.
21. **Saba, B.**, Hashmi, I., Nasir, H., Khalid, A., (2012). *Comparison of soxhlet and direct ultrasonic techniques for determination of polycyclic aromatic hydrocarbons in*

- agricultural and urban soils of Pakistan*. Journal of Chemical Society of Pakistan. 34, (5) 1312-1316. <http://icsp.org.pk/Volumelssues.aspx?IssueId=188>.
22. **Saba, B.**, Mahmood, T., Zaman, B., Hashmi., (2011). *Reuse of treated wastewater using sequencing batch bioreactor for the improvement of wheat growth*. Journal of Water Reuse and Desalination. 1(3)179-184. doi:10.2166/wrd.2011.056. <http://www.iwaponline.com/jwrd/001/jwrd0010179.htm>.
  23. **Saba, B.**, Rafique, U., Hashmi, I., (2011). *Adsorption kinetics of anthracene and phenanthrene in different soils of Attock Refinery Limited (ARL) Rawalpindi, Pakistan*. Desalination and Water treatment 30, 333-338. [DOI:10.5004/dwt.2010.2207](https://doi.org/10.5004/dwt.2010.2207).
  24. **Saba, B.**, Christy, A. D., (2015). *Comparison of biological catholyte to chemical catholyte in microbial desalination cells*. American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting. Proceedings of ASABE July, 26-29, 2015, New Orleans Louisiana, USA ([doi: 10.13031/aim.20152190931](https://doi.org/10.13031/aim.20152190931)) Paper number 152190931
  25. **Saba, B.**, Jabeen, M., Mahmood, M., and Aziz. I., (2014). *Treatment comparison efficiency of microbial amended agro-waste biochar constructed wetlands for reactive black textile dye*. IPCBEE 65 (3), 13-16.
  26. Rafique, U., **Saba, B.**, Bashir, A., (2012). *Identification, risk assessment and analysis of anionic surfactants in car wash effluents*. International Journal of Agriculture and Applied Sciences 4(1) 63-68.

## SUBMITTED/IN PREPARATION PAPERS.

1. **Saba, B.**, Christy, A. D., Shah, A., (2024). *Techno-economic analysis of hydrochar from sewage sludge as a potential energy source*. (In prep).
2. **Saba, B.**, Cornish, K., Christy, A. D., Shah, A., (2024). *Life cycle assessment and environmental impact analysis of food waste processing and valorization methods*. (In prep).
3. **Saba, B.**, McNulty, S., Ezeji, T.C., Christy, A. D., Cornish, K., (2024). *Characterization and electro-fermentative valorization of industrial food processing wastes*. (In Prep).
4. **Saba, B.**, Christy, A. D., Cornish, K., (2024). *Sustainable Approaches for Valorizing Food Waste into Value-Added Products - A review*. (In prep).
5. Cornish, K., **Saba, B.**, (2024). *Suppression of guayulin A and B in transgenic guayule overexpressing the genes for allylic pyrophosphate synthases*. (In prep).
6. Cornish, K., **Saba, B.**, (2024). *Rubber accumulation and rubber transferase activity during early development of roots of Russian dandelion*. (In prep).

## PRESENTATIONS AT CONFERENCES

1. **Saba, B.**, Ezeji, T.C., Christy, A., Cornish, K., (2024). *Food waste to bio-butanol*. MIT Applied Energy Symposium. 12-15 Aug 2024. Abstract Submitted.
2. **Saba, B.**, Sarah, M., Ezeji, T.C., Christy, A., Cornish, K., (2024). *Characterization and electro-fermentative valorization of industrial food processing wastes*. Abstract Accepted for ASABE 28-31 July 2024.
3. **Saba, B.**, Ezeji, T.C., Cornish, K., (2024). *Industrial food processing waste characterization and valorization*. Center for Advanced Processing and Packaging

- (OSU) final report presentation. April 30, 2024 (upcoming). North Carolina State University.
4. **Saba, B.**, Ezeji, T.C., Cornish, K., (2024). Microbial electrosynthesis of industrial food processing waste. Center for Advanced Processing and Packaging (OSU) new proposal presentation. April 30, 2024 (upcoming). North Carolina State University.
  5. **Saba, B.**, Ezeji, T.C., Sarah, M., Cornish, K., (2023). Food waste valorization. Oral presentation. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). July 9-12, Omaha, Nebraska.
  6. **Saba, B.**, Ezeji, T.C., Cornish, K., (2023). Industrial food processing waste characterization and valorization. Center for Advance Processing and Packaging (OSU). Proposal presentation. May 03, 2023. The Ohio State University.
  7. King-Smith, N., **Saba, B.**, Cornish, K., (2023). Valorization of plant-based food processing waste. Plant sciences symposium, The Ohio State University. Poster presentation March 03, 2023.
  8. **Saba, B.**, (2023). Biological waste treatment and valorization technologies. Department of Food, Agricultural and Biological Engineering, Seminar presentation January 03, 2023.
  9. **Saba, B.**, (2018). Communication between new returnees and Fulbright alumni. Video Conference at United States Education Foundation Pakistan. May 11, 2018.
  10. **Saba, B.**, (2018). "Round Table on Higher Education" organized by US Education Foundation Pakistan. February 17, 2018.
  11. **Saba, B.**, (2017). Sustainable power generation in microbial fuel cells. Environmental and Energy Resource Management Summit. November 9-11, 2017. Washington DC USA.
  12. **Saba, B.**, (2016). Simultaneous power generation and wastewater treatment in microbial fuel cells. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). July 17-20, 2016. Orlando Florida, USA.
  13. **Saba, B.**, (2015). Comparison of biological catholyte to chemical catholyte in microbial desalination cells. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). July 26-29, 2015. New Orleans Louisiana, USA.
  14. **Saba, B.**, (2013). Reactive black-5 azo dye treatment in suspended and attach growth sequencing batch bioreactor using different co-substrates. Second International Conference on Environment, Chemistry and Biology (ICEB 2013). Dec 13-14, 2013. Stockholm Sweden.
  15. **Saba, B.**, (2012). Reuse of treated wastewater using sequencing batch bioreactor for the improvement of wheat growth. Fifth International Conference on Challenges in Environmental Sciences and Engineering. September 9-13, 2012. Melbourne Australia
  16. **Saba, B.**, (2012). Effect of ACC deaminase bacteria on tomato plants containing azo dye wastewater. 3<sup>rd</sup> International Conference on Botany at Quaid-e-Azam University Islamabad Pakistan September 1- 3, 2012.
  17. **Saba, B.**, (2010). Adsorption kinetics of anthracene and phenanthrene in different soils of Attock Refinery Limited (ARL) Rawalpindi, Pakistan. International Conference on "Challenges in Environmental Sciences and Engineering" CESE 2010, Cairns Australia, September 26 October 01, 2010.

## RESEARCH GRANTS

Active Grants 2; Pending grants 4; Completed grants 2; Unsuccessful submission or declined 6; in preparation 1.

### Completed grants:

**2011-2012:** Removal of emerging pollutants by constructed wetlands, PMAS Arid Agriculture University science project (Principal Investigator, Amount: \$105,000 (0.1 M) PKR, Project No. PMASArId/DRIC/282) (complete)

*My contributions include award opportunity identification, conceptualization of idea, organization of team meetings to refine the idea, proposal writing, budget planning, proposal submission, complete execution of project and report submission.*

**2015-2016:** Electricity generation with simultaneous biotreatment of textile wastewater using microbial fuel cell technology, Office of Energy and Environment, The Ohio State University (Principal Investigator, Amount: \$10,000 (complete)

*My contributions include award opportunity identification, conceptualization of idea, organization of team meetings to refine the idea, proposal writing, budget planning, proposal submission, complete execution of project and report submission.*

### Active Grants

**2023** Industrial food processing waste valorization using electro-fermentation. President's Research Excellence program: Catalyst grant. Ohio State university. (Co.PI) awarded (\$200,000)

*My contributions include award opportunity identification, Conceptualization of idea, organization of team meetings to refine the idea, proposal writing, budget planning, proposal submission. Execution of experiments in RAV lab and mentoring research associate, periodic progress report submissions.*

**2023** Industrial food processing waste characterization and valorization. Center for Advanced Processing and Packaging Studies (CAPPS) The Ohio State University and J M Smucker Ltd. industry (Co.PI) awarded (\$60,000)

**2024** Electro-fermentation of food waste to produce platform chemicals. Center for Advanced Processing and Packaging Studies (CAPPS) The Ohio State University and J M Smucker Ltd. industry (Co.PI) Budget: \$60,000

*My contributions include award opportunity identification, Conceptualization of idea, proposal writing, organization of team meetings to refine the idea, budget planning, industry partnership building with J M Smucker and Niagara Bottling, execution of experiments in RAV lab and mentoring research associate, and periodic progress report submissions.*

### In preparation grants

**2024** Microbial electro-fermentation for efficient biohydrogen generation from food industry processing waste. Ohio State University Sustainability Institute. (PI), Budget: \$35,000

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

1. Society of Chemical Industry (SCI) 222599 (2020-2024)
2. The Electrochemical Society 2024
3. American Society of Agricultural and Biological Engineering (ASABE) 2015-2018, 2024

4. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 2014-2015
5. International Society for Microbial Electrochemistry and Technology (ISMET) 2015-2018
6. American Society for Engineering Education (ASEE) 2014-2018

## COLLABORATIONS OUTSIDE OSU

1. **Dr. Birthe Veno Kjellerup**, Associate Professor, Department of Civil & Environmental Engineering, University of Maryland College Park, Maryland, US
2. **Prof. Arturo Keller**, Bren School of Environmental Science and Management, University of California Santa Barbara. California, US
3. **Prof. Syed Salman Ashraf**, Department of Biological Sciences, Khalifa University Abu Dhabi, UAE
4. **Jim Clavin**, Sr. Manager of Technical Training - Beverage I Niagara Bottling
5. **Glenn Dria**, Liquid Coffee Process Development. The J M Smucker Company

## INTERDISCIPLINARY COLLABORATIONS WITH OSU FACULTY

**Prof. Ann Christy**, FABE; **Prof. Thaddeus Ezeji**, Animal Sciences and FABE; **Prof. Lingying Zhao**, FABE; **Prof. Zhongtang Yu**, Animal Sciences; **Prof. Anne Co**, Department of Chemistry; **Prof. Olli Tuovinen**, Department of Microbiology; **Prof. Ajay Shah**, FABE; **Prof. Rafiq Islam** CFAES South Center; **Dr. Joel Paulson**, CBE; **Dr. Xiaoguang Wang**, CBE; **Dr. Osler Ortiz**, HCS, OSU Extension, **Prof. Katrina Cornish**, FABE and USDA, **Prof. Gonul Kaletunc**, FABE.

## PROFESSIONAL SERVICES

1. **Gene identified and submitted at NCBI**  
KT906191- KT906214  
<https://www.ncbi.nlm.nih.gov/nuccore>  
<https://www.ncbi.nlm.nih.gov/nuccore/KT906191>
2. **Served as reviewer/judge.**  
Reviewer:
  - a) Science of the Total Environment journal, Elsevier
  - b) Journal of Water Environment Research, Elsevier
  - c) Journal of Chemical Technology and Biotechnology, Wiley
  - d) Journal of Environmental Technology and innovation, Elsevier
  - e) Journal of Desalination and Water Treatment, Taylor and Francis Group
  - f) Journal of Environmental Engineering, the American Society of Civil Engineers
  - g) Journal of Plos-One
  - h) Journal of Biomass and Biorefinery
  - i) Post-doctoral travel awards, Post-doctoral Association of the OSU (2022)
  - j) SEEDS: The OARDC Research Enhancement Competitive Grants Program, Student Competitions (2016)

Judge:

- a) CFAES Research Week (2023-2024)
- b) Denman Undergraduate Research Forum (2023-2024)
- c) Edward F. Hayes Research Forum at OSU (2023-2024)
- d) Fulbright Masters and PhD Applications evaluations and Interview, United States Education Foundation Pakistan (2018)
- e) Denman Undergraduate Research Forum at OSU (2016-2023)
- f) Edward F. Hayes Research Forum at OSU (2016-2023)
- g) Spellman High Voltage Electronics Clean Tech Competition of High school student scientific projects (2018-2020) organized by the Center for Science Teaching & Learning

## PROFESSIONAL DEVELOPMENT TRAININGS 2022-2024

1. Life cycle Assessment, Beginner Course from Ecochain 2024 (online Course).
2. Life cycle Assessment Fundamentals, Iowa State University 2024 (online Course).
3. Interdisciplinary Research and Team Science Workshop Series, National Postdoctoral Association (online) October 7, 14, 21 & 28, 2022
4. Careers in Water Science. Explore paths in water industry, Diversity Speaker series, City of Columbus, Public Health utilities. (Online) October 27, 2022
5. Proposal preparation, National Science Foundation. Nov 14, 2022
6. Merit review process, National Science Foundation. Nov 14, 2022
7. Report=Support! Identify and Responding to Sexual Misconduct [FY23, 204], The Ohio State University, Oct 26, 2022, 2024.
8. CITI Program Responsible Conduct of Research (RCR), The Ohio State University, Oct 2022.

## OUTREACH ACTIVITIES AND PRESS RELEASES

1. Co-planning and preparing the “Rubber Bandits” science exhibit at Big Science Celebration at COSI (May 4<sup>th</sup>, 2024). <https://cosi.org/>.
2. Innovative tech shows promise to boost rubber production in US (picked up by >175 media outlets) 2024. e.g. <https://news.osu.edu/innovative-tech-shows-promise-to-boost-rubber-production-in-us/>; <https://www.newswise.com/articles/innovative-tech-shows-promise-to-boost-rubber-production-in-us>; <https://scienceblog.com/541925/innovative-tech-shows-promise-to-boost-rubber-production-in-us/>; <https://www.sciencedaily.com/releases/2024/01/240123122304.htm>
3. Spinning food processing waste into “gold”. (picked up by >150 media outlets) 2023 <https://engineering.osu.edu/news/2023/02/spinning-food-processing-waste-gold?>
4. A Win-Win: Generating Profit from Food Waste While Reducing the Carbon Footprint. <https://byrd.osu.edu/news/win-win-generating-profit-food-waste-while-reducing-carbon-footprint.2023>.
5. Researchers dig deep into the huge potential value of industrial food waste <https://www.anthropocenemagazine.org/2023/02/researchers-dig-deep-into-the-huge-potential-value-of-industrial-food-waste/.2023>.

## LEADERSHIP AND VOLUNTEER ACTIVITIES

1. Participated as team member in setting up science booth for outreach activity at Center of Science and Industry (COSI) Science Festival 2024
2. Participated as scientist and OSU representative at “OSU Get to Know”, A Columbus Metro schools, outreach, educational research, and broader research event. April 18<sup>th</sup>, 2024.
3. Member conference and workshops organizing team at Department of Environmental Sciences, PMAS arid Agriculture University (2010-2013, 2017, and 2018)
4. Served as trainer in farmer’s training workshop. Sustainable water harvesting techniques, PMAS arid Agriculture University, Koont Agriculture Research Farm, Pakistan (2013, 2018)
5. Team leader of group in English Language Proficiency program, Office of international Affairs, the Ohio State University (2015-2017)
6. Participated in volunteer activities at Global Food Security seminar organized by Fulbright USA at North Carolina State University (2014).
7. Participated in volunteer activities in Fulbright Enrichment seminar 2014, organized by Fulbright USA in New Orleans Louisiana for Katrina hurricane affected people.