

Curriculum vitae

- Personal information: Dr. Akbar Adjie Pratama

Current position: Joint-Postdoctoral researcher, Friedrich-Schiller-Universität Jena, and The Ohio State University

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My primary research focus lies in unraveling the diversity of microbes, with a special emphasis on viruses, and elucidating their profound influence on ecosystem functioning and services. I am also interested in exploring the intricate interactions and evolutionary patterns among microbes and viruses. In my career, I aim to employ innovative computational tools and microbial ecology experiments to deepen our understanding of viral genomic diversity and ecological impacts. My ultimate goal is to contribute significantly to our knowledge of the complexity and dynamics within microbial communities, particularly in the realm of viruses.

- Education and professional experiences:

2023 - now	Joint-postdoctoral researcher @ Friedrich-Schiller-Universität Jena and The Ohio State University PI: Prof. Kirsten Küsel and Prof. Matthew B. Sullivan
2019 - 2023	Postdoctoral researcher @ The Ohio State University, USA PI: Prof. Matthew B. Sullivan
2018 - 2019	Research fellow @ University of Groningen, The Netherlands PI: Prof. Jan Dirk van Elsas
2014 - 2018	Ph.D. @ University of Groningen, The Netherlands PI: Prof. Jan Dirk van Elsas
2011 - 2013	M.Sc. @ Asia University (亞洲大學), Taiwan PI: Prof. Tsung-Chi Chen
2005 - 2010	B. Sc. @ IPB University, Indonesia PI: Prof. Triadiati

- Grants and Scholarships:

2019 - 2022	US Department of Energy (DOE) - #248445 (Helped secured the grant; ~\$ 3M for three years)
2014 - 2018	The Indonesia Endowment Fund for Education for Doctoral study (all expenses for 4 years; >€70K - 100K)
2011 - 2013	Scholarship for a master's program, Taiwan (2 years full grant, all expenses covered)
2010	Scholarships for overseas aid from the Indonesian Ministry of Education (USD 900)

- Awards:

2019	Travel grant for viromics workshop, Ohio State University, USA (USD 1,200)
2018	Travel award for ISME17 Leipzig, 17th international symposium and microbial ecology, Germany (€ 300)
2018	The Indonesia Endowment Fund for Education for Doctoral study, publication awards (~USD 3,000)
2018	Accommodation award (six night) for European molecular of biology organization: Virus of Microbe conference in Wrocław, Poland
2017	Travel grant for viromics workshop, Ohio State University, USA (USD 1,000)

- Consortium-scale interdisciplinary science experiences:

2023 – now	<u>Balance of the MicroVerse cluster</u> funded by the German Research Foundation (DFG) This project aims to provide the scientific basis for understanding microbial balance from the molecular to the ecosystem level. We ultimately aim to develop technologies that allow for targeted interventions to maintain or restore microbial balance. This project involved >140 scientists. <i>Role:</i> Joint postdoctoral researcher <i>PIs:</i> Kirsten Küsel and Matthew B. Sullivan
2018 - 2023	<u>EMergent Ecosystem Responses to ChanGE (EMERGE)</u> Interdisciplinary project funded by the National Science Foundation (NSF). The project aims to understand ecosystem-climate feedback in Stordalen Mire, a thawing permafrost peatland in arctic Sweden. This project includes 14 institutions and a total of ~100 Scientists. <i>Role:</i> Postdoctoral researcher, coordinator of the Research Activity team (RA3) meetings <i>PIs:</i> Matthew B. Sullivan and Virginia Rich <i>Outcome:</i> see publication 11 and 12
2018 - 2023	<u>Virus Soil (VirSoil)</u> Department of Energy funded project The US Department of Energy funded the project with the main objective of developing paradigms and tools to better understand the role of viruses in soil ecology, focusing on a

specific permafrost thaw gradient, and providing foundational resources for future research in this field. This project includes scientists across the US (The Ohio State Uni, Uni Arizona, Case Western Uni, Ashland Uni), US national Lab (Lawrence Berkeley National Lab, Oak Ridge National Lab), Canada (Université Laval Canada), and England (University of Exeter).
Role: Postdoctoral researcher, helped secure the grant (#248445)

PI: Matthew B. Sullivan

Outcome: see publications [11](#), [12](#), and [16](#)

2020-2022

Tara Ocean Consortium

This project aims to advance knowledge about the Ocean and raise awareness of its vital importance among the general public, young people, and decision-makers. Further, it protects the Ocean and marine biodiversity to guarantee the habitability of planet Earth.

Role: I helped in Tara Ocean RNA virus projects

PI: Matthew B. Sullivan

Outcome: see publications [13](#), and [14](#)

- *Publications:* 16 publications, 1455 citations, H-index: 12 according to Google Scholar

Peered-review

- 2023 [16] **Interrogating the viral dark matter of the rumen ecosystem with a global virome database**
Ming Yan†, Akbar Adjie Pratama, Sripoorna Somasundaram, Zongjun Li, Yu Jiang, Matthew Sullivan, and Zhongtang Yu. *Nat. Comm.* 14:5254. †former graduate student
Media coverage: [Center of Microbiome Science Ohio State University](#)
- 2023 [15] **MARVDv2: a machine learning enhanced means for archaeal virus identification from metagenomic data**
Dean Vik, Benjamin Bolduc, Simon Roux, Maria Consuelo Gazitúa, Christine Sun, Akbar Adjie Pratama, Mart Krupovic, Matthew B. Sullivan. *ISME Comm.* 3: 87
- 2022 [14] **Diversity and ecological footprint of Global Ocean RNA viruses**,
Guillermo Dominguez-Huerta*, Ahmed A. Zayed*, James M. Wainaina, Jiarong Guo, Funing Tian, Akbar Adjie Pratama, Benjamin Bolduc, Mohamed Mohssen, Olivier Zablocki, Eric Pelletier, Erwan Delage, Adriana Alberti, Jean-Marc Aury, Quentin Carradec, Corinne da Silva, Karine Labadie, Julie Poulain, Tara Oceans Coordinators, Chris Bowler, Damien Eveillard, Lionel Guidi, Eric Karsenti, Jens H. Kuhn, Hiroyuki Ogata, Patrick Wincker, Alexander Culley, Samuel Chaffron, and Matthew B. Sullivan. *Science* 6598 (376): 1202-1208; *contributed equally.
Media coverage: [The Ohio State News](#), [News medical](#), [Science daily](#)
- 2022 [13] **Cryptic and abundant marine viruses at the evolutionary origins of Earth's RNA virome**
Ahmed A. Zayed*, James M. Wainaina*, Guillermo Dominguez-Huerta*, Eric Pelletier, Jiarong Guo, Mohamed Mohssen, Funing Tian, Akbar Adjie Pratama, Benjamin Bolduc, Olivier Zablocki, Dylan Cronin, Lindsey Solden, Erwan Delage, Adriana Alberti, Jean-Marc Aury, Quentin Carradec, Corinne da Silva, Karine Labadie, Julie Poulain, Hans-Joachim Ruscheweyh, Guillem Salazar, Elan Shatoff, Tara Oceans Coordinators, Ralf Bundschuh, Kurt Fredrick, Laura S. Kubatko, Samuel Chaffron, Alexander I. Culley, Shinichi Sunagawa, Jens H. Kuhn, Patrick Wincker, Matthew B. Sullivan. *Science* 6589 (376): 156-162; *contributed equally.
Media coverages: [Science highlight](#), [The Conversation](#) and [The Scientist](#)
- 2021 [12] **Expanding standards in viromics: in silico evaluation of dsDNA viral genome identification, classification, and auxiliary metabolic gene curation**
Akbar Adjie Pratama, Benjamin Bolduc, Ahmed A. Zayed, Zhi-Ping Zhong, Jiarong Guo, Dean R. Vik, Maria Consuelo Gazitúa, James M. Wainaina, Simon Roux and Matthew B. Sullivan *PeerJ* 9: e11447
Top 5 most viewed Bioinformatics, Microbiology and Virology article published in 2021 in PeerJ journal
- 2021 [11] **VirSorter2: a multi-classifier, expert-guided approach to detect diverse DNA and RNA viruses**
Jiarong Guo, Ben Bolduc, Ahmed A Zayed, Arvind Varsani, Guillermo Dominguez-Huerta, Tom O Delmont, Akbar Adjie Pratama, M Consuelo Gazitúa, Dean Vik, Matthew B Sullivan, Simon Roux *Microbiome* 9 (1): 1-13
- 2020 [10] **The role of rhizosphere bacteriophages in plant health**

Akbar Adjie Pratama, Jurre Terpstra†, Andre Luiz Martinez de Oliveria, Joana Falcão Salles
Trends in Microbiology, 28 (9): 709-718; †former Master student

Media coverage: [Phys.org](#) and [EurekAlert! AAAS](#)

- 2020 [9] [Delineation of a subgroup of the Genus *Paraburkholderia*, including *P. terrae* DSM 17804T, *P. hospita* DSM 17164T, and four soil-isolated fungiphiles, reveals remarkable genomic and ecological features - proposal for the definition of a *P. hospita* species cluster](#)
 Akbar Adjie Pratama, Diego Javier Jiménez, Qian Chen, Boyke Bunk, Cathrin Spröer, Jörg Overmann, Jan Dirk van Elsas *Genome Biology and Evolution*, 12 (4): 325–344
- 2019 [8] [Gene mobility in microbiomes of the mycosphere and mycorrhizosphere—role of plasmids and bacteriophages](#)
 Akbar Adjie Pratama and Jan Dirk van Elsas. *FEMS microbiology ecology* (2019) 95 (5): fiz053
- 2019 [7] [The viruses in soil-potential roles, activities, and impacts](#)
 Akbar Adjie Pratama and Jan Dirk van Elsas. Modern soil microbiology (third edition). Tylor&Francis: New York
- 2019 [6] [Microbial interactions in soil](#)
 Jan Dirk van Elsas, Akbar Adjie Pratama, Welington Luiz de Araujo and Jack T. Trevors. Modern soil microbiology (third edition). Tylor&Francis: New York
- 2018 [5] [The ‘neglected’ soil virome—potential role and impact](#)
 Akbar Adjie Pratama, Jan Dirk van Elsas *Trends in Microbiology* 26 (8): 649-662
 Most tweeted article in Trends in Microbiology journal in January 2018
- 2018 [4] [Evolutionary history of bacteriophages in the genus *Paraburkholderia*](#)
 Akbar Adjie Pratama, Maryam Chaib De Mares, Jan Dirk Van Elsas *Frontiers in microbiology* 9: 835
- 2017 [3] [Draft genome sequences of three fungal-interactive *Paraburkholderia terrae* strains, BS007, BS110 and BS437](#)
 Akbar Adjie Pratama, Irshad Ul Haq, Rashid Nazir, Maryam Chaib De Mares, Jan Dirk van Elsas *Standards in genomic sciences* 12 (1): 1-14
- 2017 [2] [A novel inducible prophage from the mycosphere inhabitant *Paraburkholderia terrae* BS437](#)
 Akbar Adjie Pratama, Jan Dirk van Elsas *Scientific reports* 7 (1): 1-14
- 2016 [1] [The significance of mutualistic phages for bacterial ecology and evolution](#)
 Nancy Obeng†, Akbar Adjie Pratama, Jan Dirk van Elsas *Trends in microbiology* 24 (6): 440-449.
 †former Master student

Under review and in preparation:

- a) **Virus ecology and 7-year temporal dynamics across a permafrost thaw gradient.** Christine L. Sun*, Akbar Adjie Pratama*, Maria Consuelo Gazitúa, Ahmed A. Zayed, Dylan Cronin, Benjamin Bolduc, Dean R. Vik, Lindsey Solden, the IsoGenie Project Field Teams 2010-2017, the IsoGenie Project Coordinators, Virginia Rich, Matthew B. Sullivan. *Submitted to PlosBiology*, 20 Nov 2023 *contributed equally
- b) **RNA virus ecogenomics along the Arctic permafrost thawing gradient.** Akbar Adjie Pratama*, Guillermo Dominguez-Huerta*, Ahmed A. Zayed, Benjamin Bolduc, Funing Tian, James M. Wainaina, Jiarong Guo, Lindsey Solden and Matthew B. Sullivan. *In prep* *contributed equally
- c) **Assessment and optimization of methods for aquatic RNA viromes from iron-chloride flocculated viral particles.** Guillermo Dominguez-Huerta, Natalie Solonenko, Doris Juarez, Adriana Alberti, Yueh-Fen Li, Benjamin Bolduc, Marie Burris, Corinne Da Silva, Akbar Adjie Pratama, Jiarong Guo, Alexander I. Culley, Dana E. Hunt, Matthew B. Sullivan. *In prep*

• *Presentations (selections):*

- 2023 Co-chairing one session, Virus bioinformatics workshop, Jena, Germany
- 2023 Selected talk, US Department of Energy, 2023 Biological Systems Science Division Genomic Science Program (GSP) Annual Principal Investigator (PI) meeting
- 2022 Invited Talk, Viromics workshop, The Ohio State University
- 2018 Invited Talk, Netherlands Institute of Ecology (NIOO-KNAW)
- 2018 Invited Talk, University of Groningen, Department of Genetics, and Groningen Institute for Evolutionary Life Science (GELIFES)

• *Teaching experiences (selections):*

- 2022 Teaching assistant, Microbiome Science, The Ohio State University, USA

- As a teaching assistant, I mentor assiduously and engage in active learning to discuss cutting-edge scientific topics in microbiomes. For 1 semester, ~ 10-15 graduate-level student
- 2020 Teaching assistant, Microbiome informatics, The Ohio State University, USA
As a teaching assistant, I mentored and helped students with how to use bioinformatic tools to analyze meta-omics data, and for their final assignment, I helped them develop their research ideas. For 1 semester, ~10-15 graduate-level student
- 2016 Guest teacher, The University of Groningen, The Netherlands
Giving a lecture about my Ph.D. research to a graduate-level student (~10 students) and the general theory of halobionts

• Mentoring (selections):

I have had the privilege of mentoring and supervising both undergraduate and graduate students, guiding them through engaging research projects, fostering their academic growth, and nurturing their passion for scientific inquiry.

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| Graduate | <ul style="list-style-type: none"> - Carlos Owusu-Ansah @ Ohio State Uni Developing an approach to identify novel cyanophages Currently a PhD candidate at The Ohio State Uni. - John van Dusen @ Ohio State Uni Worked on Cyanophage project Currently a PhD candidate at The Ohio State Uni. - Jurre Terpstra @ Uni.Groningen Published together (see #10) Currently working in industry - Nancy Obeng (top master program) @ Uni. Groningen Published together (see #1) Currently a postdoctoral fellow in Christian-Albrechts-Universität zu Kiel, |
| Undergraduate | <ul style="list-style-type: none"> - Minh Pham from Kenyon College Summer research experience program, OHIO 5-OSU SURE Worked with cyanophages project Currently conducting clinical research at Nationwide Children's Hospital - Romik Ghosh @ Ohio State Uni. Worked with cyanophages project Currently working at Amazon Web Services (AWS) - Cole Bagozzi from Denison Uni. Ohio Worked with cyanophages project Currently a data engineering - Ties Ausman @ Uni. Groningen worked on soil phage project Currently a lecturer at Hanzehogeschool Groningen, The Netherlands - Luna M. van der Loos @ Uni. Groningen worked on soil phages project Currently a PhD candidate at Uni. Leuven, Belgium |

• Additional professional training

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| 2020, 2021,
2022, 2023 | <p>The National Science Foundation (NSF) - funded EMergent Ecosystem Responses to ChanGE (EMERGE).</p> <p>Through the NSF-funded EMERGE project, I've undergone multi-year workshops and trainings, including summer and winter courses, and engaged in career development while collaborating with scientists worldwide, exploring emergent ecosystem responses to environmental change</p> |
| 2020 | <p>VirSoil</p> <p>Through the DOE-funded VirSoil project, I've engaged in specialized training and collaborative research with scientists from the US, Canada, and England, focusing on soil viruses.</p> |
| 2017, 2019,
2022 | <p>Viromics workshop</p> <p>Having been engaged in Ohio State University's Viromics workshop for multiple years, I was honored to be invited as a speaker in 2022. This international event offers cutting-edge training in virus metagenomics and ecology analysis to participants worldwide</p> |

• Professional services and societies:

- a) Conference volunteer: [European Society of Evolutionary Biology Congress](#), Groningen, The Netherlands
- b) Manuscript review: *ISME J*, *mSystem*, *viruses*, *Nature Communication*

• Outreach activities:

As a scientist, I also committed my time to engaging the community with interactive activities and presentations that bring the wonders of science to the general public.

- a) [COSI - Center of Science and Industry](#), USA (2022). The largest STEM event in the nation. COSI is the #1 science museum in the United States (2020) by *USA Today*. At the COSI Science Festival, our lab had the

exciting opportunity to educate young minds about the fascinating world of viruses and their crucial roles in the ecosystem. We interactively engaged children by helping them build their own phage toys, fostering a deeper understanding of this tiny but mighty entity and its impact on Earth.

- b) URGE (Unlearning Racism in Geoscience) pod, The Ohio State University, USA. We're partnering with the Ohio State University's microbiology department and the Office of Diversity and Inclusion to implement an eight-session curriculum for geoscientists, focused on improving AJEDI (Accessibility, Justice, Equity, Diversity, and Inclusion) in both workplace and community settings.
- c) IPB University, Indonesia: Alumni sharing talk. In our Alumni Sharing Talk, I shared my journey from biology major to conducting cutting-edge research at a prestigious university abroad, inspiring current students with insights into academic careers and scientific exploration.
- d) Long Life Contribution Program, Indonesia: Community service to the underprivileged areas in the suburban area of Indonesia. In suburban Indonesia, I conducted surveys on demographics and health, offered donations, and helped build a vital water source and public toilet to support underprivileged communities.