

Curriculum Vitae



Personal Information :

- Full Name : Agustinus Robert Uria
- Current Address : Ciputat, South Tangerang, Indonesia
- Email : agustinus.uria@gmail.com
- Research Areas : Microbial Biotechnology, Multi-Omics, Natural Product Biosynthesis & Biocatalysis, Marine Biodiversity, Microbial Genetic Engineering, and Synthetic Biology

Tertiary Education

1994 - 1999 *Sam Ratulangi University, Indonesia.*

Scholar degree in Marine Science - Marine Biotechnology.

Selected subjects: Chemistry I & II, General Biochemistry, Marine Biology, Marine Ecology, Marine Biochemistry, Marine Microbiology, Chemical Oceanography, Genetics, General Pharmacology, Genetic Engineering, Marine Invertebrates, Marine Organism Physiology, Marine Natural Product Chemistry, Marine Toxicology, and Methods for Marine Natural Product Analysis. Thesis at Laboratory of Fisheries Microbiology & Laboratory of Marine Biotechnology: "Biochemical characteristics of thermophilic bacteria from Likupang coastal waters" (advisors: Dr. Frans G. Ijong & Dr. Inneke F. M. Rumengan). *Graduation: July 17, 1999.*

2002 - 2004 *Wageningen University and Research (WUR), The Netherlands.*

Master's degree (M.Sc) in Biotechnology - Cellular & Molecular Biotechnology.

Subjects: Bioinformation Technology, Applied Molecular Genetics, Bioprocess Design, Genomics, Control of Cellular Processes & Cell Differentiation, Molecular & Evolutionary Ecology, Microbial Physiology, and Plant Biotechnology. Thesis at Bacterial Genetic Group, Lab Microbiology: "Purification & characterization of alcohol dehydrogenase from the marine archaeobacterium *Pyrococcus furiosus*, and its overexpression in deep-sea *P. abyssi*" (advisors: Dr. Ronnie Machielsen & Prof. Dr. John van der Oost). *Graduation: February 20, 2004*

2007 - 2012 *Rheinische Friedrich-Wilhelms-Universität (University of Bonn), Germany.*

Doctoral degree (Dr. rer. nat.) in Biology - Microbiology.

Dissertation at Kékule Institute of Organic Chemistry and Biochemistry, Univ. Bonn: "Investigating natural product biosynthesis in uncultivated symbiotic bacteria of the marine sponges *Theonella swinhoei*" (advisor: Prof. Dr. Joern Piel). *Graduation: Magna Cum Laude, December 5, 2012*

Research & Academic Experiences after Doctoral Period

2011 - 2013 *The University of Bonn, Germany*

Kékule Institute of Organic Chemistry and Biochemistry
wissenschaftlicher Mitarbeiter at Piel Lab

2013 - 2015 *Swiss Federal Institute of Technology Zurich (ETH Zürich), Switzerland*

Institute of Microbiology, Department of Biology
Postdoctoral Researcher in Natural Product Metagenomics & Biosynthesis

2015 - 2017 *Ministry of Marine Affairs and Fisheries, Republic of Indonesia*

Research Center for Marine and Fisheries Product Processing and Biotechnology in Jakarta
Research Scientist in Marine Biotechnology

2017 - 2019 *Hokkaido University, Japan*

Faculty of Pharmaceutical Sciences
Japan Society for the Promotion of Science (JSPS) Research Fellow

2020 - 2025 *Hokkaido University*, Japan

Faculty of Pharmaceutical Sciences, and GI-CoRE Global Station for Biosurfaces and Drug Discovery
Faculty Member / Assistant Professor

2026 - now *Yayasan Innovation Initiatives in Biosciences Biotechnology and Bioeconomy (In2Bio3)*, Indonesia
BioInnovation Research Institute (registration code at SeBaRis BRIN: C02604210)
In2Bio3 Director and Principal Scientist

International Patent:

J. Piel, C. Gurgui, M.F. Freeman, **A.R. Uria**, and M. Helf (2011). *Biosynthetic gene cluster for the production of peptide/protein analogs*. **International Patent App.** No. PCT/EP2012/067280, **US Patent** US2014/0234903A1.

Ten Selected/Key Peer-Reviewed Publications: [†] contributed equally, * corresponding author

1. **A.R. Uria**, J. Piel, and T. Wakimoto* (2025). *Biosynthesis of non-ribosomal peptides in uncultivated bacterial symbionts of marine sponges*. **Advances in Marine Bioprocesses and Bioproducts**. Marine Sponge Biotechnology and Bioproducts. p 123-170. SpringerNature, Cham, Switzerland.
2. S. Leopold-Messer, C. Chepkirui, M.F.J. Mabesoone, J. Mayer, L. Paoli, S. Sunagawa, **A.R. Uria**, T. Wakimoto, J. Piel* (2023). *Animal-associated marine Acidobacteria with a rich natural product repertoire*. **Chem** (a sister journal to Cell) 9 (12), 3696-3713. Cell Press, Cambridge, MA, USA.
3. S.N. Ethica[†], D.S. Zilda[†], O. Oedjijono, M. Muhtadi, G. Patantis, S. Darmawati, S.S. Dewi, A. Sabdono, **A.R. Uria*** (2023). *Biotechnologically potential genes in a polysaccharide-degrading bacterial epibiont of the Indonesian brown algae *Hydroclathrus* sp.* **Journal of Genetic Engineering and Biotechnology** (Springer) 21(18):1-14. Elsevier Science Inc, New York, USA.
4. I.F.M. Rumengan*, V.I.Y. Roring, J.R. Haedar, M.S. Siby, A.H. Luntungan, B.J. Kolondam, **A.R. Uria**, T. Wakimoto* (2021). *Ascidian-associated photosymbionts originated from Manado, Indonesia: secondary metabolite, bioactivity simulation & biosynthetic insight*. **Symbiosis** 84, 71-82. Springer, Netherlands.
5. **A.R. Uria** and T. Wakimoto* (2020). *Polyketide biosynthesis in marine sponges of the family Theonellidae*. **Top. Heterocyclic Chemistry** 58: 389-413. Springer, Singapore.
6. **A.R. Uria***, J. Piel*, T. Wakimoto* (2018). *Biosynthetic insights of calyculin- and misakinolide-type compounds in "*Candidatus Enttheonella* sp."* **Methods in Enzymology**, vol. 604: 287-330. Editor: Bradley Moore (UC San Diego, USA). Elsevier, Academic Press Inc.
7. D.R.M. Smith, **A.R. Uria**, D. Milbredt, K-H. van Pee, J. Piel*, R.J.M. Goss* (2017). *Unusual flavin-dependent 5-hydroxytryptophan halogenase from the metagenome of the marine sponge *Theonella swinhoei**. **ACS Chemical Biology** 12 (5): 1281-1287. American Chemical Society (ACS), Washington, USA.
8. R. Ueoka[†], **A.R. Uria**[†], S. Reiter, T. Mori, P. Karbaum, E.E. Peters, E.J.N. Helfrich, B.I. Morinaka, M. Gugger, H. Takeyama, S. Matsunaga, J. Piel* (2015). *Metabolic and evolutionary origins of actin-binding polyketides from diverse organisms*. **Nature Chemical Biology** 11:705-712. Nature Portfolio, Berlin, Germany.
9. M.C. Wilson, T. Mori, Ch. Ruckert, **A.R. Uria**, M.J. Helf, K. Takada, Ch. Gernert, U.A. E. Steffens, N. Heycke, S. Schmitt, C. Rinke, E.J. N. Helfrich, A.O. Brachmann, C. Gurgui, T. Wakimoto, M. Kracht, M. Crüsemann, U. Hentschel, I. Abe, S. Matsunaga, J. Kalinowski, H. Takeyama, and J. Piel* (2014). *An environmental bacterial taxon with a large and distinct metabolic repertoire*. **NATURE** 506 (7486): 58-62. Nature Portfolio.
10. M.F. Freeman[†], C. Gurgui[†], M. Helf, B. Morinaka, **A.R. Uria**, N.J. Oldham, H-G. Sahl, S. Matsunaga, and J. Piel* (2012). *Metagenome mining reveals ribosomal peptide biosynthesis of unprecedented structural scope*. **SCIENCE** 338:387-390. American Association Advancement Science (AAAS), Washington, USA.

Selected Scholarship/Fellowship/Award/Research Grant

- *Netherlands Fellowship Programme (NFP)* for master study in Netherlands (2002-2004)
- *Deutscher Akademischer Austausch Dienst (DAAD)* Award for doctoral program in Germany (2007-2011)
- *Japan Society for the Promotion of Science (JSPS) International Fellowship for Research* in Japan (2017-2019)
- *Grants-in-Aid for Scientific Research (KAKENHI)* from JSPS (2021-2024). Principal Investigator (PI) for the Research Project (Area Number 21K06612) entitled *Investigating natural product biosynthetic pathways in the microbiomes associated with long-lived aquatic vertebrates*

Selected Talks that I delivered at Conferences, Symposiums, and Workshops:

- Microbial metagenomics and bioengineering for exploring marine bioproducts. Lightning Talk Session of *FIDI-ICOBAR 2025 Joint Scientific Forum*, 23-24 Aug 2025, at BINUS University Alam Sutera.
- Bacterial symbionts in coral reef ecosystems: biotechnological potential for drug discovery. Invited at *International Conference on Sustainable Coral Reefs: Science, Conservation, Resilience and Development*, December 13-15, 2024, Manado.
- Unique biocatalyst associated with icadamide biosynthetic pathway from a deep-sea sponge metagenome. Invited. A.R. Uria, T. Jomori, K. Matsuda, T. Wakimoto. *Joint Hokkaido-Melbourne Workshop*, November 06, 2024, at Faculty of Pharmaceutical Sciences, Hokkaido University
- Biochemical characterization of a novel enzyme from a deep-sea sponge metagenome. Invited at Piel Lab Reunion Symposium, July 07, 2023, ETH Zurich - Swiss Federal Institute of Technology.
- Potential of biosynthetic pathways and biocatalysts from marine metagenomes for the smart eco-bioproduction of highly valuable compounds. Invited at SemNasHas XIII, October 22, 2022, Faculty of Agriculture, Gadjah Mada University (UGM).
- Marine bacterial natural products from biosynthetic aspect. Invited at Scientific Talks - Current Trends in Marine Drugs Development (Part 2). September 5, 2022. Organized by Research Center for Vaccine and Drugs, National Research, and Innovation Agency Republic of Indonesia (BRIN).
- Sustainable use of biodiversity for drug discovery: accessing biosynthetic genes in microbial symbionts of marine sponges. Invited, *2nd Wallacea International Webinar for Biotechnology & Conservation* November 2021. Organizer: Sam Ratulangi University.
- Marine microbial natural products with unusual building blocks: discovery of their biosynthetic machineries as a basis for drug development. A.R. Uria, T. Wakimoto. Invited, *11th International Seminar of Indonesian Society for Microbiology: Microbiology contributions to humanity during and post Covid-19 pandemic*, November 16, 2021. Organizer: Bandung Institute of Technology (ITB).
- Understanding natural product biosynthesis in uncultivated marine bacteria towards the development of sustainable production systems. Invited at *Pharmacy National Webinar*, November 2020. Organizer: Malahayati University.
- When metagenomics meets synthetic biology: new opportunities and potential applications in the digital era. Invited at *International Webinar of Mathematics, Natural Sciences, and Learning in the New Normal Order (IWMANSELEN 2020)* on October 15, 2020. Organizer: Manado State University (UNIMA).
- Biosynthetic potential of rare marine bacteria isolated from Okinawan sponges. A.R. Uria, J.R. Haedar, T. Jomori, K. Matsuda, and T. Wakimoto. *Marine Biotechnology Conf.*, September 9-13, 2019 in Shizuoka, Japan.
- Investigating spongistatin biosynthesis in complex sponge-bacteria association. A.R. Uria, K. Matsuda, T. Wakimoto. Invited, *3rd International Symposium on Sponge Microbiology (ISSM)*, October 25-29, 2018, Shanghai, China.
- Investigating natural product biosynthesis in complex marine sponge-bacteria association. A.R. Uria, K.

Matsuda, T. Wakimoto. Invited, *Young Researchers Symposium on Redesigning Biosynthetic Machineries*, May 24-26, 2018, Otaki, Japan.

- Metagenomics strategies to harness uncultured marine bacteria for the biosynthesis of metal-based nanomedicine. Invited, *Mineprocet'17 Mineral Processing and Technology Conference*, "ideas and innovations for sub-economic mineral resources: optimality and sustainability". Jakarta. The 50th anniversary of LIPI (currently BRIN) on January 23-24, 2017.
- Marine Invertebrate-derived bioactive natural products: studies on their biosynthesis from ecological, metagenomic, and synthetic biology perspectives. Invited at *International seminar on Biotechnology and Its Applications* at Tentena Christian University (UNKRIT). October 20, 2017.
- Metagenomics techniques for bioactive compounds exploration. Invited in Workshop of Biodiscovery of Marine Bioactive Compounds & Environmental Safety at RC Marine and Fisheries Product Processing and Biotechnology, Indonesian Ministry of Marine Affairs and Fisheries in Jakarta, Oct. 25-26 2017.
- Internship on Recombinant DNA technology. Instructor/speaker at RC Marine and Fisheries Product Processing and Biotechnology, Indonesian Ministry of Marine Affairs and Fisheries. Oct. 20-27 2016.
- Investigating the biosynthetic pathways of defensive compounds in uncultured microbiome of marine sponges. A.R. Uria and J. Piel. Invited, *6th Indonesian Biotechnology Conference (IBC IV)*: "Enhancing industrial competitiveness through biotechnology innovation", in Solo, Surakarta. Organizer: Indonesian Biotechnology Consortium. September 6-8, 2016.
- Investigating natural product biosynthetic pathways in highly complex symbiotic bacterial assemblages of marine sponges. A.R. Uria and J. Piel. Invited, *2nd International Microbial Biotechnology (IMBC2)* at Atma Jaya Catholic University of Indonesia, Jakarta. November 15-16, 2016.
- Phylogeny-guided identification of type I polyketide synthase in uncultured microbiome of a marine sponge from Kapoposang Island. N.M. Kurnia, Y. Kusnadi, L. Dinawati, D.S. Zilda, Tri A. Hadi, S. Setyahadi, F. Felix, A.R. Uria. *ASEAN Microbial Biotechnology Conference*, Bali. August 3-4, 2016.
- Metagenomic insights into the biosynthesis of marine natural products. A.R. Uria, S. Reiter, S. Matsunaga, J. Piel. Invited at *Seminar & Workshop on Marine and Fisheries Biotechnology II*, Sam Ratulangi University. September 16-17, 2013.
- Revealing the biosynthetic capacity of uncultured symbiotic bacteria. A.R. Uria, C. Ruckert, J. Kalinowski, S. Matsunaga, J. Piel. *International VAAM Workshop*, Bonn, Germany. Sept. 28-30, 2011.
- Analyzing the drug potential of uncultivated symbionts of the sponge *Theonella swinhoei*. A.R. Uria, J. Piel, *et al.* Invited, *BMBF GenBioCom cluster-meeting* in Freudenstadt-Lauterbad, Schwarzwald, Germany. October 21-22, 2010.
- Insights into the secondary metabolism of an unusual uncultured symbiont of marine sponges. A.R. Uria, J. Piel, *et al.* *Die 39. Doktorandenworkshop, Naturstoffe: Chemie, Biologie und Okologie*, April 16, 2010, Jena, Germany.
- Biosynthesis of the antitumor polyketide misakinolide A by an uncultivated symbiont of the marine sponge *Theonella swinhoei*. A.R. Uria, S. Matsunaga, J. Piel. *VAAM symposium on symbiotic interaction*, October 7-8, 2010, Wurzburg University, Germany.
- Insight into the secondary metabolism of *Entotheonella* sp., an uncultivated symbiont of marine sponges. A.R. Uria, S. Matsunaga, and J. Piel. *Die 22. Irseer Naturstofftage, Aktuelle Entwicklungen in der Naturstoff-Forschung*, February 22-24, 2010, Irsee, Germany.
- Targeting gene sequences encoding the biosynthesis of bioactive metabolites from the metagenomes of marine sponges. A.R. Uria, J. Piel, *et al.* *World Ocean Conference*, May 11-15, 2009, Manado.

Selected Topics/Titles of Classroom Lectures that I delivered in Japan

- Concepts in the reconstitution of metagenome-derived biosynthetic pathways to produce pharmacologically valuable small molecules. *Advanced Natural Product Chemistry Lecture* on 20 May 2024 at Faculty of Pharmaceutical Sciences, Hokkaido University.
- Accessing biosynthetic genes and biocatalysts from marine metagenomes for generating pharmacologically valuable compounds. *Advanced Natural Product Chemistry*, 13 May 2024 at Faculty of Pharmaceutical Sciences.
- Cloning strategies to access natural product biosynthetic genes from marine metagenomes". *Advanced Natural Product Chemistry Lecture*, two classroom lectures each 1.5 hours on April 18 and May 1, 2023 at Hokkaido University, Faculty of Pharmaceutical Sciences.
- Cloning of biosynthetic genes from marine sponge metagenomes. *Natural Product Chemistry, Hokkaido Summer Institute (HSI)*, Hokkaido University, July 27, 2022.
- Sustainable production of natural products by heterologous expression. *Natural Product Chemistry*. Fac. Pharmaceutical Sciences, Hokkaido University. Oct. 26, 2020.
- Natural product biosynthesis in uncultivated bacterial symbionts of marine sponges. *Nat. Prod. Chem.*, Faculty of Pharmaceutical Sciences, Hokkaido University, October 19, 2020.
- Metagenomic approaches to investigate natural product biosynthesis in symbionts of marine sponges". *Nat. Prod. Chem.* two classes, Hokkaido Summer Institute (HSI), Faculty of Pharmaceutical Sciences, Hokkaido University, June 26, 2019.
- Biotechnological approaches to produce natural products in sustainable ways. *Nat. Prod. Chem.*, Hokkaido Summer Institute (HSI) and Faculty of Pharmaceutical Sciences, Hokkaido University. June 26, 2019.
- What inspired me to pursue a career in science. Sharing my experiences to motivate students to pursue career in science. Junior and senior high school (Akebi Secondary School) in Noboribetsu, Hokkaido, held on July 19, 2018. *Japan Society for the Promotion of Science (JSPS) Science Dialogue Program*.
- Marine natural products: functional studies and heterologous activation of a sponge-derived biosynthetic pathway. Hokkaido Summer Institute, Faculty of Pharmaceutical Sciences, Hokkaido University. June 27, 2017.
- Marine invertebrates-derived natural products: general overview on their biosynthesis from ecological and metagenomics perspectives. Hokkaido Summer Institute, Hokkaido University, June 26, 2017.

Selected Guest Lectures (*Kuliah Tamu*) that I delivered in Indonesia

Biotechnology-related subjects/topics, such as Microbial Bioprospecting, Marine Metagenomics, Genetic Engineering, Natural Product Biosynthesis, Biocatalysis, and Marine Pharmacognosy:

- Atma Jaya Catholic Univ. Indonesia (UNIKA Atma Jaya) - 18 April 2016, 1 July 2024, 16 June 2025
- University of Riau (UNRI), Pekanbaru - 22 August 2016
- Manado State University (UNIMA), Tondano - 3 January 2017
- Universitas Pelita Harapan (UPH), Tangerang - 24 March 2017, 4 March 2022, and 29 August 2025
- Sam Ratulangi University (UNSRAT), Manado - 16-17 October 2017 and 22 August 2020
- IPB University, Bogor - 27 October 2017 and 20 December 2024
- Indonesia Christian University (UKI) Tomohon - 1 February 2021
- Swiss German University (SGU), Tangerang - 12 December 2024
- Bandung Institute of Technology (ITB) - 3 August 2021 and 25 March 2025
- Bina Nusantara (BINUS) University at Alam Sutera Campus - 9 June 2025