

**BIOGRAPHICAL SKETCH**  
**Debashish Bhattacharya)**  
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### **Position Title and Organization**

Distinguished Professor, Department of Biochemistry and Microbiology, Rutgers, The State University of New Jersey, New Brunswick, NJ 08901; Tel: 848-932-6218

Email: [dbhattac@rutgers.edu](mailto:dbhattac@rutgers.edu), [debash.bhattacharya@gmail.com](mailto:debash.bhattacharya@gmail.com)

Websites: <https://bhattacharyalab.com>, <https://www.youtube.com/user/WebScienceLab>

### **Other Information**

H-index: 91, Total citations: 28,275 [November 24, 2025], Instagram: @bhattacharyalab, Twitter (X): @DebashB; Miescher-Ishida Prize for symbiosis research, International Society of Endocytobiology (ISE) and University of Tübingen, 2022; Oxford University Press 2023 Publisher's Award for Excellence in Systematic Research for the paper: Van Etten et al. (2023) *Syst Biol.* 2023, 72:1101-1118; 2017 Award of Excellence, Phycological Society of America; 2008 Darbaker Prize, Botanical Society of America; 2007 Fellow, American Association for the Advancement of Science.

### **Professional Preparation**

University of Cologne, Cologne, Germany, Humboldt Scholar, 1991-1994.

Marine Biological Laboratory, Woods Hole, Massachusetts, Sloan Fellow, 1988-1991

Simon Fraser University, Burnaby, British Columbia, Canada, Biology, Ph.D., 1989

Dalhousie University, Halifax, Nova Scotia, Canada, Environmental Studies, M.E.S., 1984

Dalhousie University, Halifax, Nova Scotia, Canada, Biology, B.Sc. (Hons.), 1981

### **Appointments and Positions**

Distinguished Professor: Biochemistry and Microbiology, Rutgers, 2012-present.

Professor: Biochemistry and Microbiology, Rutgers University, 2009-2012.

Professor: Biological Sciences, University of Iowa, Iowa City IA, USA, 2007-2009.

Associate: Professor, Biological Sciences, University of Iowa, Iowa City IA, USA, 2003-2007.

Assistant: Professor, Biological Sciences, University of Iowa, Iowa City IA, USA, 1997-2003.

### **Products**

**Patents (D. Bhattacharya, T. Stephens, E. Chille, S. Nandi): Rutgers University**

**Provisional:1)** Coral Rapid Strip Test: Patent No. Prov. 2023-097. UNITED STATES.

Application Date: 05/15/2023. 2) Protein Markers of Coral Stress: Patent No. Prov. 2023-098.

US. Application Date: 03/27/2023.

**Non-provisional:** Biomarkers of Marine Invertebrate Stress, U.S. Patent Application No.18/618,557, filed March 27, 2024.

### **Startup**

*OceanOmics*, Inc., D. Bhattacharya, Founder and President, Incorporated in Delaware 12/19/2023, <https://www.oceanomicsinc.com>

## Description of Scientific Interests

Bhattacharya's lab has a long history in symbiosis research, evolution of photosynthesis in eukaryotes, multi-omics methods and bioinformatics, algal and plant evolution, coral biology, and seaweed biotechnology. Current projects explore the use of *Sargassum* for bioproduct generation, analysis of stress pathways and sexual reproduction in corals with the goal of developing tools for monitoring coral health and reproductive status in the field, and the biology of extremophiles. All work done in the Bhattacharya lab integrates omics methods, ecology, cell biology, physiology, field work, conservation biology, and engineering.

## Recent Publications (of over 300 in NCBI)

- Obligate intracellular bacterial pathogens as major players in the metabolic integration of organelles. Ball S, Baurain D, Leleu M, Lafontaine I, Cenci U, Colleoni C, Vallon O, Greub G, Weber A, Bhattacharya D. *Comptes Rendus. Biologies*. 2025 June 11; 348. <https://doi.org/10.5802/crbio.176>
- Green fluorescent proteins show divergent patterns among species and strains of *Porites* from the Great Barrier Reef. Goyen S, Nandi S, Chille EE, Bay LK, Stephens TG, Bhattacharya D. *Coral Reefs*. 2025 Nov 9. <https://doi.org/10.1007/s00338-025-02781-z>.
- Gene expression and co-expression heterogeneity patterns and biodemography analyses during the cell cycle encourage aging studies in archaea. Dai Y, Gomez-Raya-Vilanova MV, Teulière J, Toucourou M, Corel E, Haraoui LP, Lopez P, Lapointe FJ, Franceschi C, Baudisch A, Bhattacharya D, Cvirkaite-Krupovic V, Krupovic M, Baptiste E. *Geroscience*. 2025 Jul 5. doi: 10.1007/s11357-025-01769-5.
- Transcriptional landscape of the cell cycle in a model thermoacidophilic archaeon reveals similarities to eukaryotes. Gomez-Raya-Vilanova MV, Teulière J, Medvedeva S, Dai Y, Corel E, Lopez P, Lapointe FJ, Bhattacharya D, Haraoui LP, Turc E, Monot M, Cvirkaite-Krupovic V, Baptiste E, Krupovic M. *Nat Commun*. 2025 Jul 1;16(1):5697. doi: 10.1038/s41467-025-60613-8.
- Gene transfer drives community cooperation in geothermal habitats. Bhattacharya D, Van Etten J, Panayotakis G, McDermott T, Stephens TG. *Trends Microbiol*. 2025 Jun 20:S0966-842X(25)00178-7. doi: 10.1016/j.tim.2025.06.004.
- Genome Evolution of Two Intertidal *Sargassum* Species (*S. fusiforme* and *S. thunbergii*) and Their Response to Abiotic Stressors. Kim H, Jo J, Yang JH, Ettahi K, Jeon Y, Yu J, Bhattacharya D, Kwak JH, Yoon HS. *Genome Biol Evol*. 2025 Apr 30;17(5):evaf084. doi: 10.1093/gbe/evaf084.
- Coral Restoration in the Omics Era: Development of Point-of-Care Tools for Monitoring Disease, Reproduction, and Thermal Stress. Chille EE, Stephens TG, Nandi S, Jiang H, Gerdes MJ, Williamson OM, Neufeld A, Montoya-Maya P, Bhattacharya D. *Bioessays*. 2025 Jun;47(6):e70007. doi: 10.1002/bies.70007.
- Genetic Transfer in Action: Uncovering DNA Flow in an Extremophilic Microbial Community. Van Etten J, Stephens TG, Bhattacharya D. *Environ Microbiol*. 2025 Feb;27(2):e70048. doi: 10.1111/1462-2920.70048.
- Temporal dynamics in a red alga dominated geothermal feature in Yellowstone National Park. Stephens TG, Van Etten J, McDermott T, Christian W, Chaverra M, Gurney J, Lee Y, Kim H, Cho CH, Chovancek E, Westhoff P, Otte A, Northen TR, Bowen BP, Louie KB, Barry K, Grigoriev IV, Mock T, Liu SL, Miyagishima SY, Yoshinaga M, Weber APM, Yoon HS, Bhattacharya D. *ISME Commun*. 2024 Dec 3;4(1):ycae151. doi: 10.1093/ismeco/ycae151.

- Fpa (YlaN) is an iron(II) binding protein that functions to relieve Fur-mediated repression of gene expression in *Staphylococcus aureus*. Boyd JM, Ryan Kaler K, Esquilín-Lebrón K, Pall A, Campbell CJ, Foley ME, Rios-Delgado G, Mustor EM, Stephens TG, Bovermann H, Greco TM, Cristea IM, Carabetta VJ, Beavers WN, Bhattacharya D, Skaar EP, Shaw LN, Stemmler TL. *mBio*. 2024 Nov 13;15(11):e0231024. doi: 10.1128/mbio.02310-24.
- Gene expression response under thermal stress in two Hawaiian corals is dominated by ploidy and genotype. Chille EE, Stephens TG, Misri D, Strand EL, Putnam HM, Bhattacharya D. *Ecol Evol*. 2024 Jul 24;14(7):e70037. doi: 10.1002/ece3.70037.
- Whole-genome duplication in an algal symbiont bolsters coral heat tolerance. Dougan KE, Bellantuono AJ, Kahlke T, Abbriano RM, Chen Y, Shah S, Granados-Cifuentes C, van Oppen MJH, Bhattacharya D, Suggett DJ, Rodriguez-Lanetty M, Chan CX. *Sci Adv*. 2024 Jul 19;10(29):eadn2218. doi: 10.1126/sciadv.adn2218.
- From dusk till dawn: cell cycle progression in the red seaweed *Gracilariopsis chorda* (Rhodophyta). Lee J, Miyagishima SY, Bhattacharya D, Yoon HS. *iScience*. 2024 Jun 6;27(7):110190. doi: 10.1016/j.isci.2024.110190.
- Evidence of a putative CO<sub>2</sub> delivery system to the chromatophore in the photosynthetic amoeba *Paulinella*. Gabr A, Stephens TG, Reinfelder JR, Liao P, Calatrava V, Grossman AR, Bhattacharya D. *Environ Microbiol Rep*. 2024 Jun;16(3):e13304. doi: 10.1111/1758-2229.13304.
- Diverse fates of ancient horizontal gene transfers in extremophilic red algae. Van Etten J, Stephens TG, Chille E, Lipzen A, Peterson D, Barry K, Grigoriev IV, Bhattacharya D. *Environ Microbiol*. 2024 May;26(5):e16629. doi: 10.1111/1462-2920.16629.
- Massive genome reduction predates the divergence of Symbiodiniaceae dinoflagellates. Shah S, Dougan KE, Chen Y, Lo R, Laird G, Fortuin MDA, Rai SK, Murigneux V, Bellantuono AJ, Rodriguez-Lanetty M, Bhattacharya D, Chan CX. *ISME J*. 2024 Jan 8;18(1):wrae059. doi: 10.1093/ismej/wrae059.
- Hot springs viruses at Yellowstone National Park have ancient origins and are adapted to thermophilic hosts. Felipe Benites L, Stephens TG, Van Etten J, James T, Christian WC, Barry K, Grigoriev IV, McDermott TR, Bhattacharya D. *Commun Biol*. 2024 Apr 9;7(1):312. doi: 10.1038/s42003-024-05931-1.
- Genome-wide transcriptome analysis reveals the diversity and function of long non-coding RNAs in dinoflagellates. Chen Y, Dougan KE, Nguyen Q, Bhattacharya D, Chan CX. *NAR Genom Bioinform*. 2024 Feb 10;6(1):lqae016. doi: 10.1093/nargab/lqae016.
- Exceptional Quantum Efficiency Powers Biomass Production in Halotolerant Algae *Picochlorum* sp. Gates C, Ananyev G, Foflonker F, Bhattacharya D, Dismukes GC. *Photosynth Res*. 2024 Dec;162(2-3):439-457. doi: 10.1007/s11120-024-01075-9.
- Diurnal Rhythms in the Red Seaweed *Gracilariopsis chorda* are Characterized by Unique Regulatory Networks of Carbon Metabolism. Lee J, Yang JH, Weber APM, Bhattacharya D, Kim WY, Yoon HS. *Mol Biol Evol*. 2024 Feb 1;41(2):msae012. doi: 10.1093/molbev/msae012.
- Multi-omics analysis reveals the molecular response to heat stress in a "red tide" dinoflagellate. Dougan KE, Deng ZL, Wöhlbrand L, Reuse C, Bunk B, Chen Y, Hartlich J, Hiller K, John U, Kalvelage J, Mansky J, Neumann-Schaal M, Overmann J, Petersen J, Sanchez-Garcia S, Schmidt-Hohagen K, Shah S, Spröer C, Sztajer H, Wang H, Bhattacharya D, Rabus R, Jahn D, Chan CX, Wagner-Döbler I. *Genome Biol*. 2023 Nov 23;24(1):265. doi: 10.1186/s13059-023-03107-4.

- Facultative lifestyle drives diversity of coral algal symbionts. Bhattacharya D, Stephens TG, Chille EE, Benites LF, Chan CX. *Trends Ecol Evol.* 2024 Mar;39(3):239-247. doi: 10.1016/j.tree.2023.10.005.
- Gene duplication is the primary driver of intraspecific genomic divergence in coral algal symbionts. Shah S, Dougan KE, Chen Y, Bhattacharya D, Chan CX. *Open Biol.* 2023 Sep;13(9):230182. doi: 10.1098/rsob.230182.
- Peeling back the layers of coral holobiont multi-omics data. Williams A, Stephens TG, Shumaker A, Bhattacharya D. *iScience.* 2023 Aug 14;26(9):107623. doi: 10.1016/j.isci.2023.107623. eCollection 2023 Sep 15.
- Developing model systems for dinoflagellates in the post-genomic era. Ishida H, John U, Murray SA, Bhattacharya D, Chan CX. *J Phycol.* 2023 Oct;59(5):799-808. doi: 10.1111/jpy.13386.
- Ploidy Variation and Its Implications for Reproduction and Population Dynamics in Two Sympatric Hawaiian Coral Species. Stephens TG, Strand EL, Putnam HM, Bhattacharya D. *Genome Biol Evol.* 2023 Aug 1;15(8):evad149. doi: 10.1093/gbe/evad149.