

## **Debashish Bhattacharya**

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

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

Websites: <http://dblab.rutgers.edu/>, [http://dblab.rutgers.edu/genome\\_cooperative/](http://dblab.rutgers.edu/genome_cooperative/)

Faculty of 1000 faculty member since 2004: Genetics and Genomics

H-index: 68; <https://scholar.google.com/citations?user=uvp7PcYAAAAJ&hl=en&oi=ao>

### **Positions and Employment**

1994-1997 Research Scientist, Max Planck Institute, Göttingen, Germany  
1997-2003 Assistant Professor, Dept. of Biological Sciences, University of Iowa  
1997-2009 Faculty, University of Iowa, Interdisciplinary PhD program in Genetics  
2003-2007 Associate Professor, Dept. of Biological Sciences, University of Iowa  
2004-2009 Faculty, University of Iowa, Interdisciplinary PhD program in Applied Mathematics and Computational Sciences  
2006-2010 Adjunct Scientist, Woods Hole Oceanographic Institution, Woods Hole, MA  
2007-2009 Professor, Dept. of Biological Sciences, University of Iowa  
2009-2012 Professor I, Dept. of Ecology, Evolution and Natural Resources, Rutgers University  
2012-2017 Distinguished Professor, Dept. of Ecology, Evolution and Natural Resources, Rutgers University  
2017- Full Member, Quantitative Biomedicine Graduate Program, Rutgers University  
2017- Distinguished Professor, Dept. of Biochemistry and Microbiology, Rutgers University

### **Other Experience and Professional Memberships**

1989-1991 Alfred P. Sloan Post-Doctoral Fellow, Marine Biological Laboratories, Woods Hole, MA  
1991 German Academic Exchange Service (DAAD) Postdoctoral Fellow  
1992-1994 Alexander-von-Humboldt Fellow, Department of Botany, University of Cologne, Germany  
2008 Brown & Williamson Distinguished Speaker, University of Louisville  
2008 Organizer, NSF workshop, Where to Next with the Tree of Life? Washington, DC  
2009 Cruikshank Lecture, University of Rhode Island  
2009 Panel Member, NIH-International Collaborative Biodiversity Groups (ICBG) Review  
2011 Executive Dean's Distinguished Lecture, Rutgers University  
2011- Review editor: Frontiers in Plant Genetics and Genomics  
2010- Founder, Rutgers Genome Cooperative  
2012 Panel Member, NIEHS-Review Meeting: Centers for Oceans and Human Health and Oceans, Great Lakes and Human Health (R01)  
2012- Co-editor: Journal of Phycology  
2012 Storer Lecture, University of California, Davis

- 2012 Wagner Lecture, University of Michigan  
 2013 Max and Fran Hommersand Distinguished Lecture in Biology, University of North Carolina  
 2011-2013 Academic Editor: PLoS ONE  
 2014- Associate Editor: Frontiers in Ecology and Evolution  
 2014 Panel Member, NASA Astrobiology: Exobiology and Evolutionary Biology Panel  
 2014 Panel Member, NSF Phylogenetic Systematics Program Panel  
 2016 Invited Participant, Workshop to Explore Enhancing Collaboration between US and Chinese Researchers in Systematic Biology (NSF and Chinese NSF funded), Guangzhou, China.  
 2017 Panel Member, NIH-NSF Centers for Oceans and Human Health Review Meeting (September 20-22), Baltimore, MD.

## Honors and Awards

- 2017 Award of Excellence, Phycological Society of America  
 2012 Research Excellence Award, Rutgers University  
 2008 Darbaker Prize, Botanical Society of America  
 2007 Fellow, American Association for the Advancement of Science  
 1992-1994 Alexander von Humboldt Fellow  
 1991-1992 Postdoctoral Research Fellow, German Academic Exchange Service (DAAD)  
 1989-1991 Alfred P. Sloan Fellow  
 1988-1989 Simon Fraser University Postdoctoral Fellowship  
 1981-1983 Dalhousie Graduate Fellowship, Dalhousie University, Canada

## Journal Publications

### 2017

1. Brodie J, Ball SG, Bouget F-Y, Chan CX, De Clerck O, Cock M, Gachon C, Grossman AR, Mock T, Raven J, Saha M, Smith AG, Vardi A, Yoon HS, **Bhattacharya D.\*** 2017. Biotic interactions as drivers of algal origin and evolution. *New Phytol.* (Invited Tansley Review) [accepted].
2. Brawley SH, Blouin NA, Ficko-Blean E, Wheeler GL, Lohr M, Goodson HV, Jenkins JW, Blaby-Haas CE, Helliwell KE, Xin Chan CI, Marriage TK, **Bhattacharya D**, Klein AS, Badis Y, Brodie , Cao Y, Collén J, Dittam SM, Gachon CMM, Green BR, Karpowicz SJ, Kim JW, Kudahl UJ, Lin S, Michel G, Mittag M, Olson BJSC, Pangilinan JL, Peng Y, Qiu H, Shuh S, Singer JT, Smith AG, Sprecher BN, Wagner V, Wang W, Wang Z-Y, Yan J, Yarish C, Zäuner-Rieka S, Zhuang Y, Zou Y, Lindquist EA, Grimwood J, Barry KW, Rokhsar DH, Schmutz J, Stiller JW, Grossman AR, Prochnik SE. 2017. Insights into the red algae and eukaryotic evolution from the genome of *Porphyra umbilicalis* (Bangiophyceae, Rhodophyta). *Proc Natl Acad Sci USA*. Early Edition, doi:10.1073/pnas.1703088114.
3. Kim JI, Moore CE, Archibald JM, **Bhattacharya D**, Yi G, Yoon HS, Shin W. 2017. Evolutionary dynamics of cryptophyte plastid genomes. *Genome Biol and Evol.* [accepted]
4. Qiu H, Zelzion E, Putnam HM, Gates RD, Wagner NE, Adams DK, **Bhattacharya D.\*** 2017. Discovery of SCORs: Anciently derived, highly conserved gene-associated repeats in stony corals. *Genomics*. Jun 17. doi:10.1016/j.ygeno.2017.06.003. [Epub ahead of print]

5. Brodie J, Chan CX, De Clerck O, Cock JM, Coelho SM, Gachon C, Grossman AR, Mock T, Raven JA, Smith AG, Yoon HS, **Bhattacharya D.\*** 2017. The algal revolution. Trends Plant Sci. Jun 10. doi:10.1016/j.tplants.2017.05.005. [Epub ahead of print]
6. Tripp EA, Zhang N, Schneider H, Huang Y, Mueller GM, Hu Z, Häggblom M, **Bhattacharya D.\*** 2017. Reshaping Darwin's tree: impact of the symbiome. Trends Ecol Evol. Jun 1. doi:10.1016/j.tree.2017.05.002. [Epub ahead of print]
7. Putnam HM, Adams DK, Zelzion E, Wagner NE, Qiu H, Mass T, Falkowski PG, Gates RD, **Bhattacharya D.\*** 2017. Divergent evolutionary histories of DNA markers in a Hawaiian population of the coral *Montipora capitata*. PeerJ. 5:e3319.
8. Price DC, **Bhattacharya D.\*** 2017. Robust Dinoflagellata phylogeny inferred from public transcriptome databases. J Phycol. 53:725-729.
9. Zhang R, Nowack EC, Price DC, **Bhattacharya D**, Grossman AR. 2017. Impact of light intensity and quality on chromatophore and nuclear gene expression in *Paulinella chromatophora*, an amoeba with nascent photosynthetic organelles. Plant J. 90:221-234.
10. Qiu H, Lee JM, Yoon HS, **Bhattacharya D.\*** 2017. Hypothesis: gene-rich plastid genomes in red algae may be an outcome of nuclear genome reduction. J Phycol. 53:715-719.
11. Cenci U, **Bhattacharya D**, Weber AP, Colleoni C, Subtil A, Ball SG. 2017. Biotic host-pathogen interactions as major drivers of plastid endosymbiosis. Trends Plant Sci. 22:316-328.
12. Pandey RS, Saxena G, **Bhattacharya D**, Qiu H, Azad RK. 2017. Using complementary approaches to identify trans-domain nuclear gene transfers in the extremophile *Galdieria sulphuraria* (Rhodophyta). J Phycol. 53:7-11.
13. Honig JA, Zelzion E, Wagner NE, Kubik C, Averello V, Vaiciunas J, **Bhattacharya D**, Bonos SA, Meyer WA. 2017. Microsatellite identification in perennial ryegrass using next-generation sequencing. Crop Sci. 57:1-10.

## **2016**

14. Qiu H, Yoon HS, **Bhattacharya D**. 2016. Red algal phylogenomics provides a robust framework for inferring evolution of key metabolic pathways. PLoS Curr. pii:ecurrents.tol.7b037376e6d84a1be34af756a4d90846.
15. Nowack EC, Price DC, **Bhattacharya D**, Singer A, Melkonian M, Grossman AR. 2016. Gene transfers from diverse bacteria compensate for reductive genome evolution in the chromatophore of *Paulinella chromatophora*. Proc Natl Acad Sci USA. 113:12214-12219.
16. **Bhattacharya D\***, Agrawal S, Aranda M, Baumgarten S, Belcaid M, Drake JL, Erwin D, Foret S, Gates RD, Gruber DF, et al. 2016. Comparative genomics explains the evolutionary success of reef-forming corals. eLife. 5:e13288.
17. Cheng DM, Roopchand DE, Poulev A, Kuhn P, Armas I, Johnson WD, Oren A, Ribnicky D, Zelzion E, **Bhattacharya D**, Raskin I. 2016. High phenolics Rutgers Scarlet Lettuce improves glucose metabolism in high fat diet-induced obese mice. Mol Nutr Food Res. 60:2367-2378.
18. Song HJ, Lee JM, Graf L, Rho M, Qiu H, **Bhattacharya D**, Yoon HS. 2016. A novice's guide to analyzing NGS-derived organelle and metagenome data. Algae 31:137-154.
19. Ball SG, **Bhattacharya D\***, Weber AP. 2016. EVOLUTION. Pathogen to powerhouse. Science. 351:659-660.
20. Ball SG, **Bhattacharya D\***, Weber APM. 2016. Infection and the first eukaryotes--Response. Science. 352:1065-1066.

21. Méheust R, Zelzion E, **Bhattacharya D**, Lopez P, Bapteste E. 2016. Protein networks identify novel symbiogenetic genes resulting from plastid endosymbiosis. *Proc Natl Acad Sci USA*. 113:3579-3584.
22. Mass T, Putnam HM, Drake JL, Zelzion E, Gates RD, **Bhattacharya D**, Falkowski PG. 2016. Temporal and spatial expression patterns of biomineralization proteins during early development in the stony coral *Pocillopora damicornis*. *Proc Biol Sci*. 283:20160322.
23. Stephens TG, **Bhattacharya D**, Ragan MA, Chan CX. 2016. PhySortR: a fast, flexible tool for sorting phylogenetic trees in R. *PeerJ*. 4:e2038.
24. Qiu H, Cai G, Luo J, **Bhattacharya D**, Zhang N. 2016. Extensive horizontal gene transfers between plant pathogenic fungi. *BMC Biol*. 14:41.
25. Leliaert F, Tronholm A, Lemieux C, Turmel M, DePriest MS, **Bhattacharya D**, Karol KG, Fredericq S, Zechman FW, Lopez-Bautista JM. 2016. Chloroplast phylogenomic analyses reveal the deepest-branching lineage of the Chlorophyta, Palmophyllophyceae class. nov. *Sci Rep*. 6:25367.
26. Ball SG, **Bhattacharya D**, Qiu H, Weber AP. 2016. Commentary: Plastid establishment did not require a chlamydial partner. *Front Cell Infect. Microbiol*. 6:43.
27. Foflonker F, Ananyev G, Qiu H, Morrison A, Palenik B, Dismukes GC, **Bhattacharya D\***. 2016. The unexpected extremophile: Tolerance to fluctuating salinity in the green alga *Picochlorum*. *Algal Res*. 16:465-472.
28. Lee J, Kim KM, Yang EC, Miller KA, Boo SM, **Bhattacharya D**, Yoon HS. 2016. Reconstructing the complex evolutionary history of mobile plasmids in red algal genomes. *Sci Rep*. 6:23744.
29. Yang EC, Boo SM, **Bhattacharya D**, Saunders GW, Knoll AH, Fredericq S, Graf L, Yoon HS. 2016. Divergence time estimates and the evolution of major lineages in the florideophyte red algae. *Sci Rep*. 6:21361.

## **2015**

30. Karkar S, Facchinelli F, Price DC, Weber AP, **Bhattacharya D\***. 2015. Metabolic connectivity as a driver of host and endosymbiont integration. *Proc Natl Acad Sci USA*. 112:10208-10215.
31. Luo J, Qiu H, Cai G, Wagner NE, **Bhattacharya D\***, Zhang N. 2015. Phylogenomic analysis uncovers the evolutionary history of nutrition and infection mode in rice blast fungus and other Magnaporthales. *Sci Rep*. 5:9448.
32. Perrineau MM, Price DC, Mohr G, **Bhattacharya D\***. 2015. Recent mobility of plastid encoded group II introns and twintrons in five strains of the unicellular red alga *Porphyridium*. *PeerJ*. 3:e1017.
33. Foflonker F, Price DC, Qiu H, Palenik B, Wang S, **Bhattacharya D\***. 2015. Genome of the halotolerant green alga *Picochlorum* SENEW3 reveals strategies for thriving under fluctuating environmental conditions. *Environ Microbiol*. 17:412-426.
34. Harel A, Karkar S, Cheng S, Falkowski PG, **Bhattacharya D\***. 2015. Deciphering primordial cyanobacterial genome functions from protein network analysis. *Curr Biol*. 25:628-634.
35. **Bhattacharya D\***, Qiu H, Price DC, Yoon HS. 2015. Why we need more algal genomes. *J Phycol*. 51:1-5.
36. Levitan O, Dinamarca J, Zelzion E, Lun DS, Guerra LT, Kim MK, Kim J, Van Mooy BA, **Bhattacharya D**, Falkowski PG. 2015. Remodeling of intermediate metabolism in the

diatom *Phaeodactylum tricornerutum* under nitrogen stress. Proc Natl Acad Sci USA. 112:412-417.

37. Qiu H, Price DC, Yang EC, Yoon HS, **Bhattacharya D\***. 2015. Evidence of ancient genome reduction in red algae (Rhodophyta). J Phycol. 51:624-636.
38. Yang EC, Kim KM, Kim SY, Lee J, Boo GH, Lee JH, Nelson WA, Yi G, Schmidt WE, Fredericq S, Boo SM, **Bhattacharya D**, Yoon HS. 2015. Highly conserved mitochondrial genomes among multicellular red algae of the Florideophyceae. Genome Biol Evol. 7:2394-2406.

## **2014**

39. Rockwell NC, Lagarias JC, **Bhattacharya D\***. 2014. Primary endosymbiosis and the evolution of light and oxygen sensing in photosynthetic eukaryotes. Front Ecol Evol. 2:66.
40. Rockwell NC, Duanmu D, Martin SS, Bachy C, Price DC, **Bhattacharya D**, Worden AZ, Lagarias JC. 2014. Eukaryotic algal phytochromes span the visible spectrum. Proc Natl Acad Sci USA. 111:3871-3876.
41. Harel A, Bromberg Y, Falkowski PG, **Bhattacharya D\***. 2014. Evolutionary history of redox metal-binding domains across the tree of life. Proc Natl Acad Sci USA. 111:7042-7047.
42. Roy RS, Price DC, Schliep A, Cai G, Korobeynikov A, Yoon HS, Yang EC, **Bhattacharya D\***. 2014. Single cell genome analysis of an uncultured heterotrophic stramenopile. Sci Rep. 4:4780.
43. DePriest MS, **Bhattacharya D**, López-Bautista JM. 2014. The mitochondrial genome of *Grateloupia taiwanensis* (Halymeniaceae, Rhodophyta) and comparative mitochondrial genomics of red algae. Biol Bull. 227:191-200.
44. Perrineau MM, Zelzion E, Gross J, Price DC, Boyd J, **Bhattacharya D\***. 2014. Evolution of salt tolerance in a laboratory reared population of *Chlamydomonas reinhardtii*. Environ Microbiol. 16:1755-1766.
45. Perrineau MM, Gross J, Zelzion E, Price DC, Levitan O, Boyd J, **Bhattacharya D\***. 2014. Using natural selection to explore the adaptive potential of *Chlamydomonas reinhardtii*. PLoS One. 9:e92533.
46. Roy RS, **Bhattacharya D**, Schliep A. 2014. Turtle: Identifying frequent *k*-mers with cache-efficient algorithms. Bioinformatics. 30:1950-1957.
47. Kim KM, Park J-H, **Bhattacharya D**, Yoon HS. 2014. Applications of next-generation sequencing to unraveling the evolutionary history of algae. Int J Syst Evol Microbiol. 64:333-345.
48. Cheng S, Price DC, Karkar S, **Bhattacharya D\***. 2014. Exploring biotic interactions within protist cell populations using network methods. J Eukaryot Microbiol. 61:399-403.
49. Polashock J, Zelzion E, Fajardo D, Zalapa J, Georgi L, **Bhattacharya D**, Vorsa N. 2014. The American cranberry: first insights into the whole genome of a species adapted to bog habitat. BMC Plant Biol. 14:165.
50. Cheng S, Karkar S, Baptiste E, Yee N, Falkowski P, **Bhattacharya D\***. 2014. Sequence similarity network reveals the imprints of major diversification events in the evolution of microbial life. Front Ecol Evol. 2:72.
51. Levitan O, Dinamarca J, Zelzion E, Lun DS, Guerra LT, Kim MK, Kim J, Van Mooy BA, **Bhattacharya D**, Falkowski PG. 2014. Remodeling of intermediate metabolism in the

diatom *Phaeodactylum tricornerutum* under nitrogen stress. Proc Natl Acad Sci USA. 112:412-417.

## 2013

52. **Bhattacharya D\***, Price DC, Chan CX, Qiu H, Rose N, Ball S, Weber AP, Arias MC, Henrissat B, Coutinho PM, Krishnan A, Zäuner S, Morath S, Hilliou F, Egizi A, Perrineau MM, Yoon HS. 2013. Genome of the red alga *Porphyridium purpureum*. Nat Commun. 4:1941.
53. **Bhattacharya D\***, Pelletreau KN, Price DC, Sarver KE, Rumpho ME. 2013. Genome analysis of *Elysia chlorotica* Egg DNA provides no evidence for horizontal gene transfer into the germ line of this keeptoplastic mollusc. Mol Biol Evol. 30:1843-1852.
54. Ball SG, Subtil A, **Bhattacharya D**, Moustafa A, Weber AP, Gehre L, Colleoni C, Arias MC, Cenci U, Dauvillée D. 2013. Metabolic effectors secreted by bacterial pathogens: essential facilitators of plastid endosymbiosis? Plant Cell. 25:7-21.
55. Chan CX, **Bhattacharya D\***. 2013. Analysis of horizontal genetic transfer in red algae in the post-genomics age. Mob Genet Elements. 3:e27669.
56. Chan CX, Baglivi FL, Jenkins CE, **Bhattacharya D\***. 2013. Foreign gene recruitment to the fatty acid biosynthesis pathway in diatoms. Mob Genet Elements. 3:e27313.
57. Facchinelli F, Pribil M, Oster U, Ebert NJ, **Bhattacharya D**, Leister D, Weber AP. 2013. Proteomic analysis of the *Cyanophora paradoxa* muroplast provides clues on early events in plastid endosymbiosis. Planta. 237:637-651.
58. Mass T, Drake JL, Haramaty L, Kim JD, Zelzion E, **Bhattacharya D**, Falkowski PG. 2013. Cloning and characterization of four novel coral acid-rich proteins that precipitate carbonates in vitro. Curr Biol. 23:1126-1131.
59. Drake JL, Massa T, Haramaty L, Zelzion E, **Bhattacharya D**, Falkowski PG. 2013. Reply to Ramos-Silva et al.: Regarding coral skeletal proteome. Proc Natl Acad Sci USA. 110:E2147-2148.
60. Drake JL, Mass T, Haramaty L, Zelzion E, **Bhattacharya D**, Falkowski PG. 2013. Proteomic analysis of skeletal organic matrix from the stony coral *Stylophora pistillata*. Proc Natl Acad Sci USA. 110:3788-3793.
61. Qiu H, Price DC, Weber AP, Reeb V, Yang EC, Lee JM, Kim SY, Yoon HS, **Bhattacharya D\***. 2013. Adaptation through horizontal gene transfer in the cryptoendolithic red alga *Galdieria phlegrea*. Curr Biol. 23:R865-866.
62. Gross J, Wajid S, Price DC, Zelzion E, Li J, Chan CX, **Bhattacharya D\***. 2013. Evidence for widespread exonic small RNAs in the glaucophyte alga *Cyanophora paradoxa*. PLoS One. 8:e67669.
63. Qiu H, Price DC, Weber AP, Facchinelli F, Yoon HS, **Bhattacharya D\***. 2013. Assessing the bacterial contribution to the plastid proteome. Trends Plant Sci. 18:680-687.
64. Qiu H, Yoon HS, **Bhattacharya D\***. 2013. Algal endosymbionts as vectors of horizontal gene transfer in photosynthetic eukaryotes. Front Plant Sci. 4:366.
65. Georgi L, Johnson-Cicalese J, Honig J, Das SP, Rajah VD, **Bhattacharya D**, Bassil N, Rowland LJ, Polashock J, Vorsa N. 2012. The first genetic map of the American cranberry: exploration of synteny conservation and quantitative trait loci. Theor Appl Genet. 126:673-692.

66. **Bhattacharya D\***, Price DC, Bicep C, Bapteste E, Sarwade M, Rajah VD, Yoon HS. 2013. Identification of a marine cyanophage in a protist single-cell metagenome assembly. *J Phycol.* 49:207-212.1

## **2012**

67. Price DC, Chan CX, Yoon HS, Yang EC, Qiu H, Weber AP, Schwacke R, Gross J, Blouin NA, Lane C, Reyes-Prieto A, Durnford DG, Neilson JA, Lang BF, Burger G, Steiner JM, Löffelhardt W, Meuser JE, Posewitz MC, Ball S, Arias MC, Henrissat B, Coutinho PM, Rensing SA, Symeonidi A, Doddapaneni H, Green BR, Rajah VD, Boore J, **Bhattacharya D\***. 2012. *Cyanophora paradoxa* genome elucidates origin of photosynthesis in algae and plants. *Science.* 335:843-847.
68. Qiu H, Yang EC, **Bhattacharya D**, Yoon HS. 2012. Ancient gene paralogy may mislead inference of plastid phylogeny. *Mol Biol Evol.* 29:3333-3343.
69. Chan CX, Soares MB, Bonaldo MF, Wisecaver JH, Hackett JD, Anderson DM, Erdner DL, **Bhattacharya D\***. 2012. Analysis of *Alexandrium tamarense* (Dinophyceae) genes reveals the complex evolutionary history of a microbial eukaryote. *J Phycol.* 48:1130-1142.
70. Chan CX, **Bhattacharya D\***, Reyes-Prieto A. 2012. Endosymbiotic and horizontal gene transfer in microbial eukaryotes: Impacts on cell evolution and the tree of life. *Mob Genet Elements.* 2:101-105.
71. Chan CX, Zäuner S, Wheeler G, Grossman AR, Prochnik SE, Blouin NA, Zhuang Y, Benning C, Berg GM, Yarish C, Eriksen RL, Klein AS, Lin S, Levine I, Brawley SH, **Bhattacharya D\***. 2012. Analysis of *Porphyra* membrane transporters demonstrates gene transfer among photosynthetic eukaryotes and numerous sodium-coupled transport systems. *Plant Physiol.* 158:2001-2012.
72. Steiner JM, **Bhattacharya D**, Löffelhardt W. 2012. Conservative sorting in the muroplasts of *Cyanophora paradoxa*: a reevaluation based on the completed genome sequence. *Symbiosis.* 57:127-133.
73. Chan CX, Blouin NA, Zhuang Y, Zäuner S, Prochnik SE, Lindquist E, Lin S, Benning C, Lohr M, Yarish C, Gantt E, Grossman AR, Lu S, Müller K, Stiller J, Brawley SH, **Bhattacharya D.\*** 2012. *Porphyra* (Bangiophyceae) transcriptomes provide insights into red algal development and metabolism. *J Phycol.* 48:1328-1342.
74. **Bhattacharya D,\*** Price DC, Yoon HS, Yang EC, Poulton NJ, Andersen RA, Das SP. 2012. Single cell genome analysis supports a link between phagotrophy and primary plastid endosymbiosis. *Sci Rep.* 2:356.
75. Salcedo T, Upadhyay RJ, Nagasaki K, **Bhattacharya D.\*** 2012. Dozens of toxin-related genes are expressed in a nontoxic strain of the dinoflagellate *Heterocapsa circularisquama*. *Mol Biol Evol.* 29:1503-1506.

## **2011**

76. Yoon HS, Price DC, Stepanauskas R, Rajah VD, Sieracki ME, Wilson WH, Yang EC, Duffy S, **Bhattacharya D.\*** 2011. Single-cell genomics reveals organismal interactions in uncultivated marine protists. *Science.* 332:714-717.
77. Chan CX, Yang EC, Banerjee T, Yoon HS, Martone PT, Estevez JM0, **Bhattacharya D.\*** 2011. Red and green algal monophyly and extensive gene sharing found in a rich repertoire of red algal genes. *Curr Biol.* 21:328-333.

78. Rumpho ME, Pelletreau KN, Moustafa A, **Bhattacharya D.** 2011. The making of a photosynthetic animal. *J Exp Biol.* 214:303-311.
79. Pelletreau KN, **Bhattacharya D,** Price DC, Worful JM, Moustafa A, Rumpho ME. 2011. Sea slug kleptoplasty and plastid maintenance in a metazoan. *Plant Physiol.* 155:1561-1565.
80. Chan CX, Gross J, Yoon HS, **Bhattacharya D.\*** 2011. Plastid origin and evolution: new models provide insights into old problems. *Plant Physiol.* 155:1552-1560.
81. Chan CX, Reyes-Prieto A, **Bhattacharya, D.\*** 2011. Red and green algal origin of diatom membrane transporters: insights into environmental adaptation and cell evolution. *PLoS One.* 6:e29138.
82. Gross J, **Bhattacharya D.\*** 2011. Endosymbiont or host: who drove mitochondrial and plastid evolution? *Biol Dir.* 6:12.
83. Reeb V, Kolel A, McDermott TR, **Bhattacharya D.\*** 2011. Good to the bone: microbial community thrives within bone cavities of a bison carcass at Yellowstone National Park. *Environ Microbiol.* 13:2403-2415.
84. Chan CX, **Bhattacharya D.\*** 2011 Non-random sharing of Plantae genes. *Commun Integr. Biol.* 4:361-363.

## **2010**

85. Vis ML, Yoon HS, **Bhattacharya D,** Lopez-Bautista JM. 2010. RedTol - The Red Algal Tree of Life. In: *Why Study the Tree of Life? - Scientists Speak,* (Edited by Mikkelsen P). *Am Paleontol.* 18(3): Fall 2010
86. Boo SM, Kim HS, Shin W, Boo GH, Cho SM, Jo BY, Kim JH, Kim JH, Yang EC, Siver PA, Wolfe AP, **Bhattacharya D,** Andersen RA, Yoon HS. 2010. Complex phylogeographic patterns in the freshwater alga *Synura* provide new insights into ubiquity vs. endemism in microbial eukaryotes. *Mol Ecol.* 19: 4328-4338.
87. Chan CX, **Bhattacharya D.\*** 2010. The origin of plastids. *Nat Educ.* 3:84.
88. Gross J, **Bhattacharya D.\*** 2010. Uniting sex and eukaryote origins in an emerging oxygenic world. *Biol Dir.* 5: 53.
89. Knudsen K, Reeb V, Westberg M, Srikantha R, **Bhattacharya D.\*** 2010. *Acarospora rosulata* in Europe, North America and Asia. *Lichenol.* 42:291-296.
90. Reyes-Prieto A, Yoon HS, Moustafa A, Yang EC, Andersen RA, Boo SM, Nakayama T, Ishida K, **Bhattacharya D.\*** 2010. Differential gene retention in plastids of common recent origin. *Mol Biol Evol.* 27:1530-1537.
91. Moustafa A, Evans AN, Kulis DM, Hackett JD, Erdner DL, Anderson DM, **Bhattacharya D.\*** 2010. Transcriptome profiling of a toxic dinoflagellate reveals a gene-rich protist and a potential impact on gene expression due to bacterial presence. *PLoS One* 5:e9688.

## **2009**

92. Borchert GM, Gilmore BL, Spengler RM, Xing Y, Lanier W, **Bhattacharya D,** Davidson BL. 2009. Adenosine deamination in human transcripts generates novel microRNA binding sites. *Hum Mol Genet.* 18:4801-4807.
93. Rumpho ME, Pochareddy S, Worful JM, Summer EJ, **Bhattacharya D,** Pelletreau KN, Tyler MS, Lee J, Manhart JR, Soule KM. 2009. Molecular characterization of the Calvin cycle enzyme phosphoribulokinase in the stramenopile alga *Vaucheria litorea* and the plastid hosting mollusc *Elysia chlorotica*. *Mol Plant* 2:1384-1396.



94. Soares MB, de Fatima Bonaldo M, Hackett JD, **Bhattacharya D\***. 2009. Expressed sequence tags: normalization and subtraction of cDNA libraries expressed sequence tags\ normalization and subtraction of cDNA libraries. *Methods Mol Biol.* 533:109-122.
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## Book Chapters

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209. Loeffelhardt W, Yoon HS, Price DC, Bhattacharya D. 2016. GLAUCOPHYTA. Handbook of the Protists, (Eds.) J.M. Archibald, A.G.B. Simpson, C.H. Slamovits, Springer, Vienna.
210. Bhattacharya D, Price D, Chan CX, Gross J, Steiner JM, and Löffelhardt W. 2014. Analysis of the genome of *Cyanophora paradoxa*: an algal model for understanding primary endosymbiosis, Endosymbiosis, pp.135-148, Springer, Vienna.
211. Yoon HS, Yang EC, Qiu H, Bhattacharya D. 2014. Photosynthetic *Paulinella*: recapitulation of primary plastid establishment, Endosymbiosis, pp.151-166, Springer, Vienna.
212. Bhattacharya D, Roy RS, Price DC, Schliep A. 2014. Studying the single life of eukaryotic microbes: Single-cell genomics of marine plankton. Biochemist Magazine, February 16-22, pp. 16-22, Journal of the Biochemical Society.
213. Gross J, Bhattacharya D. 2013. Evolution: Eukaryotes, Brenner's Encyclopedia of Genetics, 2nd Edition, pp. 553-555, Elsevier, Oxford.
214. Chan, C.X., and D. Bhattacharya. 2011. Plastid origin and evolution. Encyclopedia of Life Sciences (ELS), John Wiley & Sons, Ltd., Chichester, DOI:10.1002/9780470015902.a0023639.
215. Gross, J., and D. Bhattacharya. 2012. Evolution: eukaryotes. In: Encyclopedia of Genetics, (Eds.) S. Maloy and K. Hughes, Elsevier, ISBN-9780123749840.
216. Gross, J., K.N. Pelletreau, A. Reyes-Prieto, M.E. Rumpho, and D. Bhattacharya. 2012. Secondary and tertiary endosymbiosis: plastid evolution and loss, plastid protein import, and photosynthesis in the sea slug *Elysia chlorotica*. In: Advances in Photosynthesis and respiration, (Eds.) R. Bock and V. Knoop, Springer, DOI 10.1007/978-94-007-2920-9\_2.
217. Gantt, E., G.M. Berg, D. Bhattacharya, N.A. Blouin, J.A. Brodie, C.X. Chan, J. Collén, F.X. Cunningham Jr., J. Gross, A.R. Grossman, S. Karpowicz, Y. Kitade, A.S. Klein, I.A. Levine, S. Lin, S. Lu, M. Lynch, S.C. Minocha, K. Müller, C.D. Neefus, M.C. De Oliveira, L. Rymarquis, A. Smith, J.W. Stiller, W.-K. Wu, C. Yarish, Y.Y. Zhuang, and S.H. Brawley. 2010. *Porphyra*: complex life histories in a harsh environment: *P. umbilicalis*, an intertidal red alga for genomic analysis. In: Red algae in the genomic age, (Eds.) J. Seckbach and D. Chapman, Springer, pp. 129-148.
218. Reeb, V., and D. Bhattacharya. 2010. The thermo-acidophilic Cyanidiophyceae (Cyanidiales). In: Red algae in the genomic age, (Eds.) J. Seckbach and D. Chapman, Springer, pp. 409-426.
219. Yoon, H.S., G.C. Zuccarello, and D. Bhattacharya. 2010. Evolutionary history and taxonomy of red algae. In: Red algae in the genomic age, (Eds.) J. Seckbach and D. Chapman, Springer, pp. 25-44.
220. Bhattacharya, D., H.S. Yoon, S.B. Hedges, and J.D. Hackett. 2009. Eukaryotes (Eukaryota). Timetree of Life, In: Timetree of life, (Eds.) S.B. Hedges and S. Kumar, Oxford University Press, pp. 116-120.
221. Yoon, H.S., R.A. Andersen, S.M. Boo, and D. Bhattacharya. 2009. Evolutionary history and diversity of Stramenopiles. Encyclopedia of Microbiology, Elsevier, pp. 721-731.
222. Moustafa, A., C.X. Chan, M. Danforth, D. Zear, H. Ahmed, N. Jadhav, T. Savage, and D. Bhattacharya. 2008. A phylogenomic approach for studying plastid endosymbiosis. Genome Inform. 21:165-176.



223. Hackett, J.D., H.S. Yoon, N.J. Butterfield, M.J. Sanderson, and D. Bhattacharya. 2007. Plastid endosymbiosis: origins and timing of events. In: Evolution of Aquatic Photoautotrophs, Eds. Falkowski, P., and A. Knoll, Elsevier, pp. 109-131.
224. Hackett, J.D., H.S. Yoon, and D. Bhattacharya. 2006. The genomes of dinoflagellates. In: Genome Evolution in Eukaryotic Microbes, (Eds.) L.A. Katz and D. Bhattacharya. Oxford University Press, pp. 48-63.
225. Baldauf, S., D. Bhattacharya, J. Cockrill, P. Hugenholtz, J. Pawlowski, and A.G. Simpson. 2003. The tree of life, an overview. Proc. of the Tree of Life Symposium, American Museum of Natural History, pp. 43-75.
226. Delwiche, C.F., R.A. Andersen, D. Bhattacharya, and R.M. McCourt. 2003. Algal evolution and the early radiation of green plants. Proc. of the Tree of Life Symposium, American Museum of Natural History, pp. 121-137.
227. Friedl, T., and D. Bhattacharya. 2001. Origin and evolution of eukaryotic lichen algae. In: Origin, evolution and versatility of microorganisms, (Ed.) J. Seckbach, Kluwer, Dordrecht, pp. 341-357.
228. Bhattacharya, D. 2000. A molecular phylogenetic perspective on the primary and secondary endosymbiotic origins of algal plastids. Proc. Ann. Meeting Korean Soc. Phycology.
229. Bhattacharya, D., H.A. Schmidt, and T. Friedl. 1999. The phylogeny of thermophiles and hyperthermophiles and the three domains of life. In: Origin, evolution and versatility of microorganisms (phylogeny, structure, physiology and extreme environments), (Ed.) J. Seckbach, Kluwer, Dordrecht, pp. 291-304.
230. Bhattacharya, D. 1997. An introduction to algal phylogeny and phylogenetic methods. In: Origins of algae and their plastids, (Ed.) D. Bhattacharya, Springer-Verlag, Wien, pp. 1-11.
231. Bhattacharya, D., and H. Schmidt. 1997. Division Glaucocystophyta. In: Origins of algae and their plastids, (Ed.) D. Bhattacharya, Springer-Verlag, Wien, pp. 139-147.
232. Bhattacharya, D., and L.D. Druehl. 1990. Restriction enzyme analysis of variation and taxonomy in the kelp genus *Laminaria*. Proc. Int. Seaweed Symp. 13:105-110.
233. Bhattacharya, D., and L.D. Druehl. 1987. Molecular genetic analysis of variation in *Costaria costata* (Turner) Saunders. Proc. Intl. Seaweed Symp. 12:63-67.

### **Some Papers Written About our Papers**

- Gould, S.B. 2016. Infection and the first eukaryotes. *Science*. 352:1065.
- Moreira, D., López-García, P. 2014. The rise and fall of Picobiliphytes: how assumed autotrophs turned out to be heterotrophs. *Bioessays*. 36:468-474.
- Spiegel, F.W. 2012. Evolution. Contemplating the first Plantae. *Science*. 335:809-810.
- Walker, A. 2011. Singled out. *Nat Rev Microbiol*. 9:485.
- Worden, A.Z., Dupont, C., Allen, A.E. 2011. Genomes of uncultured eukaryotes: sorting FACS from fiction. *Genome Biol*. 12:117.
- Archibald, J.M. 2008. Plastid evolution: remnant algal genes in ciliates. *Curr Biol*. 18:R663-R665.
- Archibald, J.M. 2006. Endosymbiosis: double-take on plastid origins. *Curr Biol*. 16:R690-R692.
- Archibald, J.M. 2006. Algal genomics: exploring the imprint of endosymbiosis. *Curr Biol*. 16:R1033-R1035.

## **Edited Books**

Katz LA, Bhattacharya D. 2006. Genome evolution in eukaryotic microbes. Oxford University Press, 243 pp.

Bhattacharya D. 1997. Origins of algae and their plastids. Springer-Verlag, Wien, 287 pp.

## **Electronic Publications (invited)**

### **“Virtual” Book**

Bhattacharya D. 2007. Origin and molecular evolution of the plastid. In: Understanding chloroplasts, Organizer J.K. Hooper. Henry Stewart Talks.

## **Other Publications**

Bhattacharya, D. 2011. As an evolutionary biologist. Debashish Bhattacharya. (Q & A) Curr Biol. 21: R676-R677. Invited.

## **Courses Taught at Rutgers**

Fall 2017: *Science Writing and Communication*; 16:712:561.

Spring 2017: *Fundamentals of Genomics*; 11:216:423:03, 16:215:599:03.

Fall 2016: *The Evolution of Eukaryotes*; 11:704:401.

Spring 2016: *Fundamentals of Genomics*; 11:216:423:03, 16:215:599:03.

Spring 2015: *Fundamentals of Genomics*; 11:216:423:03, 16:215:599:03.

Spring 2014: *Algal Genomics for Environmental and Algal Biofuel Research*; 16:335:505:01, 16:215:599:03.

Spring 2013: *Algal Genomics for Environmental and Algal Biofuel Research*; 16:335:505:01, 16:215:599:03.

Fall 2012: *The Evolution of Eukaryotes*; 11:704:401; co-instructors: Lena Struwe, Debashish Bhattacharya.

Spring 2012: *Algal Genomics for Environmental and Algal Biofuel Research*; 16:335:505:01, 16:215:599:03.

## **Example contributions to the advancement of the academic profession.**

Co-editor of the Journal of Phycology (start date Jan. 2012, extended to 2018), Associate Editor at Frontiers in Ecology and Evolution (December 2013-present), Review Editor at Frontiers in Plant Genetics and Genomics (January 2011-present), Member of Faculty 1000 (Genomics and Genetics), Academic Editor at PLoS ONE (January 2011-January 2014). Co-organizer (with Prof. Juliet Brodie), Scientific Meeting (June 8-9, 2016), The Royal Society, Into the genome: advances in the world of algal genomics. Kavli Royal Society Centre, Chicheley Hall, Newport Pagnell, Buckinghamshire, United Kingdom. <https://royalsociety.org/events/2016/06/into-the-genome/>. Organizer, Symposium (August 6-13, 2016), 17th International Congress on Photosynthesis Research: Evolution of photosynthesis. Maastricht, The Netherlands. <http://www.ps2016.com/>. Co-organizer (with Prof. Ning Zhang), Workshop (January 6-9, 2016), National Science Foundation funded international symposium and workshop: Comparative genomic approaches to understanding the evolution of Magnaporthales. Rutgers University, New Brunswick NJ.

Founder and Scientific Head of the Rutgers Genome Cooperative (November 2010 – present [[http://dblab.rutgers.edu/genome\\_cooperative/](http://dblab.rutgers.edu/genome_cooperative/)]) that provides a collaborative forum to accelerate genome research at Rutgers University. The Cooperative has hosted Genome Socials to spread the word of genomics and led a number of published genome projects including of cranberry/blueberry, coral, turf grass, lichen, different algae, seaweeds, bacteria, and endophytic fungi. The Cooperative operates two Illumina MiSeq instruments, and has extensive computational facilities to facilitate genome research.

Member of nine promotion (Full, Distinguished Professor at Rutgers, external) committees, both nationally and internationally since 2013, Associate Director for Research - Earth and Environmental Sciences (2014 – present), Rutgers Discovery Informatics Institute (RDI2), Mentor, Rutgers Connection Network, for young women faculty in the STEM fields and meet regularly with my mentee to offer advice and feedback on progress, and Bioinformatics Core Consultant and Mentor, Phase III Centers of Biomedical Research Excellence (COBRE) initiative in emerging infectious diseases, University of Hawaii at Manoa, Honolulu, HI.

Chair (2017-2018), Organizer and Member of Search Committee (funded), Henry Rutgers Chair in Systems Biology, 2014-2015: Search Committee Chair, Eveleigh-Fenton Chair in Applied Microbiology, SEBS, Rutgers University and Member of Admissions and Academic Standards Committee, Rutgers Microbial Biology PhD Program, 2015-present.

Chair (2012), Advisory Board, Culture Collection of Marine Phytoplankton (CCMP) – Provasoli-Guillard National Center for Culture of Marine Phytoplankton, Bigelow, ME.

Organizer, SEBS/NJAES Symposium on Applied and Environmental Genomics, December 9, 2011, Rutgers University, New Brunswick, NJ.

Co-organizer, International Symposium and Workshop on *Paulinella* Genomics, July 19-20, 2011, Portland, ME.

Organizer, Genomes and the environment: Illumina-sponsored genomics at Rutgers, May 19, 2011, Rutgers University, NJ.

Organizer, Symposium on Algal Genomics, August 5, 2010, Rutgers University, NJ.

External Member, Faculty Promotion Committee, October 5, 2009, University of Arkansas, Fayetteville, AR.

Panel Member, NIH-International Collaborative Biodiversity Groups (ICBG) Review, March 25-26, 2009, Washington, DC.

Organizer, NSF-funded workshop, Where to Next with the Tree of Life? April 3-6, 2008, Washington, DC.

Lead Organizer, Discussion session on genomics approaches in HAB research, The Fourth Symposium on Harmful Algae in the U.S., Oct. 29 – Nov. 1, 2007, Woods Hole, MA.

Co-Organizer, US-European Commission Workshop on Cyberinfrastructure Resources for Genome-Enabled Research on Microbial Life and the Marine Environment, Sept. 9-11, 2007, Washington, DC.

Co-Organizer, NSF-funded symposium, Borrowed Chloroplasts: Secondary Endosymbiosis and the Chromalveolates, July 7-11, 2007, Botanical Society of America Meeting, Chicago, IL.

Chair (2009), Advisory Board, Culture Collection of Marine Phytoplankton (CCMP – Provasoli-Guillard National Center for Culture of Marine Phytoplankton, Bigelow, ME.

Chair (2008), Advisory Board, Culture Collection of Marine Phytoplankton (CCMP – Provasoli-Guillard National Center for Culture of Marine Phytoplankton, Bigelow, ME.

Panel Member, NSF AToL Program, May 15-16, 2007, Arlington, Virginia.

Member, Advisory Board, Heterokont Tree of Life Research Group, 2006-2011.  
Participant, NESCent Working Group, Fossil and Molecular Estimates of Divergence Times for the Tree of Life: Database and Synthesis, Sept. 6-10, 2006.  
Member, Time Tree Consortium, <http://www.timetree.net/consortium.php> (2006-present)  
Advisory Board, CCMP Culture Collection, Bigelow, Maine (2005-2008).  
Chair, Nominating Committee, International Society of Protistologists (2005-2006).  
Co-Organizer, NSF-funded symposium - Genome Evolution in Microbial Eukaryotes, June 2-5, 2004 at the Annual Meeting of the Society of Protozoologists, Bryant College, RI.  
Organizer, NSF-funded workshop - Frontiers in genomics: insights into protist evolutionary biology, May 19-21, 2004, Iowa City, IA.  
Panel Member, NSF Microbial Genome Sequencing Project grant program, March 17-19, 2004, Arlington, Virginia.  
Chair, Darbaker Prize Committee, Botanical Society of America (2004).  
Editorial Board, *Botanica Marina*, August 2004 onwards.  
Panel Member, NSF Microbial Genome Sequencing Project grant program, May 27-30, 2003, Arlington, Virginia.  
Darbaker Prize Committee, Botanical Society of America (2003).  
Darbaker Prize Committee, Botanical Society of America (2002).  
Associate Editor, *Journal of Phycology*, March 1998-December 2003.  
Nominating Committee, Society of Protozoologists, January 1999 onwards (responsible for choosing society president).  
Advisory Board, *Plant Systematics and Evolution* (1993-1998, position ended on Dec. 31, 1998).