Caroline Albertin

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Marine Biological Laboratory
Eugene Bell Center for Regenerative Biology and Tissue Engineering
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EDUCATION

Ph.D.	**University of Chicago,** Organismal Biology and Anatomy (2016)
M.S.	**University of Chicago,** Organismal Biology and Anatomy (2012)
Masters	**Université Pierre et Marie Curie/École Normale Supérieure,** Paris, France (2009)
B.A.	**Mount Holyoke College**, *cum laude* (2005)

RESEARCH EXPERIENCE

2023 -	**Assistant Scientist,** Marine Biological Laboratory
2018 – 2023	**Hibbitt Early Career Fellow**, Marine Biological Laboratory
2016 – 2018	**Postdoctoral Researcher**, University of Chicago, Ragsdale Laboratory
2009 – 2016	**Graduate Researcher,** University of Chicago, Ragsdale Laboratory Doctoral Dissertation: The molecular embryology of a cephalopod mollusc, *Octopus bimaculoides*

CURRENT GRANT SUPPORT

2022-2027 **NIH – NIGMS R35 MIRA**
"*A new animal model to elucidate mechanisms of gene regulation and embryonic patterning"*
PI: Caroline Albertin

2022-2026 **NSF – EDGE FGT**
"Creation of a genetically tractable cephalopod model using the hummingbird bobtail squid"
PI: Caroline Albertin; Co-PI: Joshua Rosenthal

2022-2026 **Air Force Office of Scientific Research**
"Revealing the design principles of combined pigmentary and structural coloration in a dynamic color patterning system"
PI: Roger Hanlon; Co-PIs: Caroline Albertin; Leila Deravi

AWARDS AND FELLOWSHIPS

2018-2023	Hibbitt Early Career Fellowship, Marine Biological Laboratory
2015-2017	MBL-UChicago Graduate Student Research Award
2016	Cephalopod International Advisory Council, Best Paper Award
2015	Cephalopod International Advisory Council, Best Student Talk (2nd)
2011-2013	Developmental Biology Training Grant, University of Chicago
2008	Rachel Brown Fellowship for Graduate Study, Mount Holyoke College

2005 Mary Lyon Scholar for High Honors Thesis, Mount Holyoke College
2005 Abby Howe Turner Award for Biology, Mount Holyoke College
2004 NSF Research Experience for Undergraduates, Shoals Marine Lab
2003 Sylvia Shrek Hubble Memorial Grant, Mount Holyoke College
2003 Cascade Mentoring Summer Research, Mount Holyoke College
2002 Howard Hughes Medical Institute Fellowship, Mount Holyoke College
2001 President's Community Service Award

SELECTED PUBLICATIONS

21. Ahuja N, Hwaun E, Pungor JR, Rafiq R, Nemes S, Sakmar T, Vogt MA, Grasse B, Diaz Quiroz J, Montague TG, Null RW, Dallis DN, Gavriouchkina D, Marletaz F, Abbo L, Rokhsar DS, Niell CM, Soltesz I, **Albertin CB***, Rosenthal JJC*. 2023. Creation of an albino squid line by CRISPR-Cas9 and its application for in vivo recording of neural activity. Current Biology. 33(13)2774-2783. *communicating authors.

20. **Albertin CB***, Mitros T, Medina S, Schmidbaur H, Sanchez G, Schmutz J, Rosenthal JJ, Ragsdale CW*, Simakov O*, Rokhsar DS*. 2022. Genome and transcriptome mechanisms driving cephalopod evolution. Nature Communications.13(1):2427 *communicating authors.

19. Schmidbaur H, Kawaguchi A, Gerguri T, Fu X, Hoang OP, Zimmerman B, Ritschard E, Weissenbacher A, Foster J, Nyholm S, Bates P, **Albertin CB***, Tanaka E*, Simakov O*. 2022. Emergence of novel cephalopod gene regulation and expression through large-scale genome reorganization. Nature Communications. 13(1):2127 *communicating authors.

18. Crawford, K, Quiroz JFD, Koenig KM, Ahuja N, **Albertin CB**, Rosenthal JJR. 2020. Highly efficient knockout of a squid pigmentation gene. Current Biology. 30:3484-3490

17. **Albertin CB**, Simakov O. 2020. Cephalopod biology: at the intersection between genomic and organismal novelties. Annual Reviews of Animal Biosciences. 8:1.

16. **Albertin CB**, Simakov O, Mitros T, Wang YZ, Pungor JR, Edsinger-Gonzalez E, Brenner S, Ragsdale CW, Rokhsar DS. 2015. The octopus genome and the evolution of cephalopod neural and morphological novelties. Nature. 524(7564):220-4.

15. **Albertin CB**, Bonnaud L, Brown CT, Crookes-Goodson WJ, de Fonseca RR, Di Cristo C, Dilkes BP, Edsinger-Gonzales E, Freeman RM Jr., Hanlon RT, Koenig KM, Lindgren AR, Martindale MQ, Minx P, Moroz LL, Nödl MT, Nyholm SV, Ogura A, Pungor JR, Rosenthal JJ, Schwarz EM, Shigeno S, Strugnell JM, Wollesen T, Zhang G, Ragsdale CW. 2012. Cephalopod genomics: A plan of strategies and organization. Standards of Genomic Science. 7(1):175-88.

ADDITIONAL PUBLICATIONS

14. **Albertin CB*,** Katz PW*. Evolution of cephalopod nervous systems. Current biology. 33(20):R1087-R1091 *communicating authors

13. Baden T, Briseño J, Coffing G, Cohen-Bodénès S, Courtney A, Dickerson D, Dölen G, Fiorito G, Gestal C,Gustafson T, Heath-Heckman E, Hua Q, Imperadore P, Kimbara R, Król M, Lajbner Z, Lichilín N, Macchi F, McCoyMJ, Nishiguchi MK, Nyholm SV, Otjacques E, Pérez-Ferrer PA, Ponte G, Pungor JR, Rogers TF, Rosenthal JJC,Rouressol L, Rubas N, Sanchez G, Santos CP, Schultz DT, Seuntjens E, Songco-Casey JO, Stewart IE, Styfhals R, Tuanapaya S, Vijayan N, Weissenbacher A, Zifcakova L, Schulz NG, Weertman W, Simakov O, **Albertin CB***. 2023. Cephalopod-omics: Emerging Fields and Technologies in Cephalopod Biology, Integrative and Comparative Biology, icad087 *communicating authors

12. Vallecillo-Viejo IC, Voss G, **Albertin CB**, Liscovitch-Brauer N, Eisenberg E, Rosenthal JJC. 2023. Squid express conserved ADAR orthologs that possess novel features. Front Genome Ed. 5:1181713

11. Orvis J, **Albertin CB**, Shrestha P, Chen S, Zheng M, Rodriguez CJ, Tallon LJ, Mahurkar A, Zimin AV, Kim M, Liu K, Kandel ER, Fraser CM, Sossin W, Abrams TW. 2022. The evolution of synaptic and cognitive capacity: Insights from the nervous system transcriptome of *Aplysia.* PNAS. 119(28): e2122301119.

10. Petrosino G, Ponte G, Volpe M, Zarrella I, Ansaloni F, Langella C, Di Cristina G, Finaurini S, Russo MT, Basu S, Musacchia F, Ristoratore F, Pavlinic D, Benes V, Ferrante MI, **Albertin C**, Simakov O, Gustincich S, Fiorito G, Sanges R. 2022. Identification of LINE retrotransposons and long non-coding RNAs expressed in the octopus brain. BMC Biology 20(1):116

9. Mendoza A, Daniel Poppe D, Buckberry S, Pflueger J, **Albertin CB**, Daish T, Bertrand S, Mustienes EC, Gomez-Skarmeta JL, Nery JR, Ecker JR, Boris Baer B, Ragsdale CW, Grützner F, Escriva H, Venkatesh B, Bogdanovic O, Lister R. 2021. The emergence of the brain non-CpG methylation system in vertebrates. Nature Ecology and Evolution. 5(3):369-378

8. da Fonseca RR, Couto A, Machado AM, Brejova B, **Albertin CB**, Silva F, Gardner P, Baril T, Hayward A, Campos A, Ribeiro ÂM, Barrio-Hernandez I, Hoving HJ, Tafur-Jimenez R, Chu C, Frazão B, Petersen B, Peñaloza F, Musacchia F, Alexander GC, Osório H, Winkelmann I, Simakov O, Rasmussen S, Rahman MZ, Pisani D, Vinther J, Jarvis E, Zhang G, Strugnell JM, Castro LFC, Fedrigo O, Patricio M, Li Q, Rocha S, Antunes A, Wu Y, Ma B, Sanges R, Vinar T, Blagoev B, Sicheritz-Ponten T, Nielsen R, Gilbert MTP. 2020. A draft genome sequence of the elusive giant squid, *Architeuthis dux*. GigaScience. 9(1):152

7. Ritschard E, Whitelaw B, **Albertin CB**, Cooke IR, Strugnell JM, Simakov O. 2019. Coupled genomic evolutionary histories as signatures of organismal innovations in cephalopods. Bioessays. 41:1900073

6. Briscoe SD, **Albertin CB**, Rowell JJ, Ragsdale CW. 2018. Neocortical association cell types in the forebrain of birds and alligators. Current Biology. 28(5)686-696

5. Sanchez G, Setiamarga DHE, Tuanapaya S, Tongtherm K, Winkelmann IE, Schmidbaur H, Umino T, **Albertin C**, Allcock L, Perales-Raya C, Gleadall I, Strugnell JM, Simakov O, Nabhitabhata J. 2018. Genus-level phylogeny of cephalopod using molecular markers: current status and problematic areas. PeerJ. 6, e4331

4. **Albertin CB**, Ragsdale CW. 2018. More than one way to a central nervous system. Nature. 533(7686):34-36

3. Shigeno S, Parnaik R, **Albertin CB**, Ragsdale CW. 2015. Evidence for a cordal, not ganglionic, pattern of cephalopod brain neurogenesis. Zoological letters. 1(26)

2. Vidal EA, Villanueva R, Andrade JP, Gleadall IG, Iglesias J, Koueta N, Rosas C, Segawa S, Grasse B, Franco-Santos RM, **Albertin CB**, Caamal-Monsreal C, Chimal ME, Edsinger-Gonzales E, Gallardo P, Le Pabic C, Pascual C, Roumbedakis K, Wood J. 2014. Cephalopod culture: current status of main biological models and research priorities. Adv Mar Biol. 67:1-98

1. Hentschel DM, Mengel M, Boehme L, Liebsch F, **Albertin C**, Bonventre JV, Haller H, Schiffer M. Rapid screening of glomerular slit diaphragm integrity in larval zebrafish. 2007. Am J Renal Physiol. 293(5):F1746-F1750.

PRESENTATIONS AND LECTURES

Invited Lectures

2023 University of Massachusetts *(Amherst, MA)*
2023 Developmental Biology of the Sea Urchin Conference *(Woods Hole, MA)*
2023 Eugene Bell Center Symposium (*Woods Hole, MA*)
2023 University of Miami *(Miami, FL)*
2023 Society for Integrative and Comparative Biology Annual Meeting *(Austin, TX)*
2022 Mount Holyoke College *(South Hadley, MA)*
2022 Aquatic Models of Human Disease Conference *(Woods Hole, MA)*
2022 World Congress of Malacology, *Keynote speaker (Munich, Germany)*
2022 Biology and Biological Engineering, Caltech *(Pasadena, CA)*
2022 Sydney Brenner Memorial Meeting *(Cold Spring Harbor, NY)*
2022 Stowers Institute for Medial Research *(Kansas City, MO)*
2020 Life Science Across the Globe *(Janelia, VA - virtual)*
2020 Society for Developmental Biology Annual Meeting *(Chicago, IL- virtual)*
2019 NSF-sponsored Spiralian Meeting *(Whitney Labs, FL)*
2019 Royal Society Meeting: Pearls of Wisdom *(Chicheley Hall, UK)*
2019 World Congress of Malacology *(Monterey, CA)*
2018 University of Washington *(Seattle, WA)*
2018 Biology Seminar, University of Massachusetts *(Boston, MA)*
2017 Society for Integrative and Comparative Biology Annual Meeting *(New Orleans, LA)*
2015 Marine Biological Laboratory Embryology Course *(Woods Hole, MA)*
2012 Paths to Cephalopod Genomics, NESCent *(Durham, NC)*

Contributed Presentations

2020 Society for Integrative and Comparative Biology Annual Meeting *(Austin, TX)*
2018 Cephalopod International Advisory Committee Meeting *(Tampa, FL)*
2017 Society for Developmental Biology Conference *(Minneapolis, MN)*
2015 Cephalopod International Advisory Committee Meeting *(Hakodate, Japan)*

TEACHING EXPERIENCE

Marine Biological Laboratory, Woods Hole, MA, USA

2018- *Embryology: Concepts and Techniques in Modern Developmental Biology*
Advanced Research Training Course
Faculty for Spiralian module: Course lecturer, designed module, assisted students in experimental design and data collection

2023- *CRISPR-Cas9 Genome Editing: a hands-on experience*
Lead Instructor, course for high school students

2022 *Embryology:* University of Chicago Graduate-level course at the MBL
Course lecturer, designed laboratory activities

2022 *Anatomy and Development of Marine Vertebrates and Invertebrates*
Co-Instructor, course for high school students

2018-2019 *Biodiversity and Genomics*
Undergraduate University of Chicago course at MBL. Course lecturer, designed and mentored students in a group project.

ADVISING AND MENTORING

Primary Advisor: University of Chicago Undergraduates

Rebecca Stewart (2023), Eden Ann Bauer (2023), Cassandra Manrique (2022), Bianca Campagnari (2020), Abigail Point (2010-2013), Shuqi Kang (2012-2014), Holly Gui (2014-2017)

Primary Advisor: NSF Research Experience for Undergraduates
Julia Lucey (2023, Wellesley College)

Primary Advisor: Masters
Ophélie McIntosh (Tropimundo/Erasmus, 2019)

PhD Committee
Astrid Deryckere (Katholieke Universiteit Leuven, 2020)

ACADEMIC SERVICE

Reviewer Nature, Science, Nature Genetics, Nature Ecology and Evolution, Nature Communications, Current Biology, Developmental Biology, Molecular Ecology, Molecular Ecology and Evolution, Molecular Phylogenetics and Evolution

Grant Panel National Science Foundation (2022)

Member Society for Integrative and Comparative Biology, Society for Developmental Biology

Board Cephalopod International Advisory Council (Alternate member)

Co-Chair Cephalopod Neuroscience Conference (2024)

SELECTED OUTREACH

2021, 2023 **Penikese Island Science and Nature Camps**
Designed and led hands-on lab activities exploring comparative genomics and cephalopod embryology for middle school-aged girls attending the Penikese Island Camps and discussed career paths in science (24-48 students, in groups of 6)

2019 **Science before Supper**
Lecture at the Falmouth Public Library for the public, geared for students

2018 **Science Friday's Cephalopod Movie Night at Boston City Space**
Panelist at a sold-out viewing of short films produced by Science Friday with a public audience

2016 **Science Friday and Atlas Obscura's Cephalopod Movie Night (Chicago)**
Panelist at a sold-out viewing of short films produced by Science Friday with the general public

SELECTED PRESS

2023 NPR, *How scientists engineered a see-through squid with its brain in plain view*
2022 New York Times, *The search for a model octopus*
2020 NPR: All Things Considered*, The 1st Gene-Altered Squid Has Thrilled Biologists*
2020 Chicago Tonight, WTTW (Chicago Public Television), *U of C Alum helps unlock giant squid's mysterious ways*
2020 Les années lumières (Radio-Canada), *L'ADN des calmars géants analysé*
2019 NPR: All Things Considered, *Why octopuses might be the next lab rats*
2019 NPR: Science Friday, *Closing out the Cephalo-party*
2019 NPR: Science Friday, *Eight (or more) reasons to be amazed by the octopus*
2019 UChicago Creative, *Octopus Intelligence and Genome Research*
2015 Washington Post, *Scientists just sequenced the octopus genome*
2015 The Economist, *Octopuses, genes and intelligence*