

CURRICULUM VITAE

CHRISTOPHER LOWE

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ACADEMIC HISTORY

Education

- 01/09/1993 – 31/08/1998 PhD. Student with Dr. Gregory Wray, Department of Ecology and Evolution, State University of New York at Stony Brook, NY.
- 01/09/1991 – 31/08/1993 Graduate Student with Dr. Frederick Cohan, Department of Biology, Wesleyan University, Middletown, CT.
- 01/10/1986 – 31/05/1991 B.Sc. Hons (Upper Second) in Biology with French, Sussex University, Falmer, Brighton, Sussex, UK.

Post-doctoral training:

- 01/09/1998 - 31/08/2001 Miller Post-doctoral Fellow UC Berkeley, Michael Levine, John Gerhart. University of California, Berkeley, and Marc Kirschner, Systems Biology, Harvard Medical School.
- 01/09/2001 - 31/11/2004 Post-doctoral fellow with John Gerhart, Cell and Developmental Biology, University of California, Berkeley, and Marc Kirschner, Systems Biology, Harvard Medical School.

EMPLOYMENT HISTORY.

- 07/01/2014 – present Associate Professor, Hopkins Marine Station, Department of Biology, Stanford University

01/04/2010 – 06/30/2014 Assistant Professor, Hopkins Marine Station, Department of Biology, Stanford University
01/03/2005 – 31/03/2010 Assistant Professor, Department of Organismal Biology and Anatomy, University of Chicago, Chicago IL 60650

SCHOLARSHIPS AND AWARDS.

2012 – 2015 Terman Fellowship, Stanford University.
2007 - 2010 Searle Kinship Scholar
2003, 2005 Arthur and Laura Colwin Fellowship, Marine Biological Laboratory, Woods Hole.
1998 - 2001 Miller Post Doctoral Fellowship, University of California, Berkeley.

PERSONAL STATEMENT.

My research uses developmental and cellular biology approaches to investigate how animal phyla evolved, with a particular focus on the early origins of our own phylum – chordates. I am particularly interested in investigating how conserved gene regulatory networks have been deployed in novel ways to pattern the extraordinary array of animal morphologies represented in animal phyla closely related to chordates. Our work involves the creation of new model species from the ground up; developing animal husbandry techniques, genomic resources and functional approaches including; gene knockdown, transgenics and genome editing. I have worked on a wide range of species in my career but have invested most of my independent research career on



developing representative hemichordates as developmental model systems. Hemichordates are a phylum closely related to chordates with a long history in zoology for their importance in understanding the evolution of the chordate body plan. We have demonstrated in our work that despite the major organizational differences in nervous system between hemichordates and vertebrates, they share remarkable patterning similarities during the specification their anteroposterior axis. The closest patterning similarities are between the anterior of the worm and the developing vertebrate brain offering a unique perspective on the early origins of the vertebrate CNS. Our work is beginning to take advantage of more advanced genomic approaches for more detailed neural comparisons with vertebrates at the level of single cell transcriptomics, which will offer powerful new insights that go beyond basic developmental biology comparisons between groups.

REPRESENTATIVE PUBLICATIONS:

2019 Fritzenwanker, H.J., Uhlinger, K.R, Gerhart, J.C, Casey, E., Lowe, C.J. Untangling posterior growth and segmentation by analyzing mechanisms of axis elongation in hemichordate. PNAS April 23, 2019 116 (17) 8403-8408.

- 2018 Darras S, Fritzenwanker, H.J., Farrelly, E., Pani, A.M, Hurley, I.A., Norris, R., Osovitz, M., Terasaki, M., Wu, M., Aronowicz, J., Kirschner, M., Gerhart, J.C, Lowe, C.J. Anteroposterior axis patterning by early canonical Wnt signaling during hemichordate development. *PLOS Biology* PMID: [29337984](#)
- 2017 Gonzalez, P., Uhlinger, K. R. and Lowe, C. J. The Adult Body Plan of Indirect Developing Hemichordates Develops by Adding a Hox-Patterned Trunk to an Anterior Larval Territory. *Current biology* : 27(1):87-95 PMID: [27939313](#)
- 2016 Yao, Y., P.J. Minor, Y.T. Zhao, Y. Jeong, A.M. Pani, A.N. King, O. Symmons, L. Gan, W.V. Cardoso, F. Spitz, C.J. Lowe, and D.J. Epstein, Cis-regulatory architecture of a brain signaling center predates the origin of chordates. *Nature Genetics*, 2016. 48(5): p. 575-80. PMID: [27064252](#)
- 2015 Lowe C.J., Clarke, D.N., Medeiros, D.M., Rokhsar, D.S., Gerhart, J. The deuterostome context of chordate origins. *Nature*, 520(7548):456-65. PMID: [25903627](#)
- 2015 Simakov, O., T. Kawashima, F. Marletaz, J. Jenkins, R. Koyanagi, T. Mitros, K. Hisata, J. Bredeson, E. Shoguchi, F. Gyoja, J.X. Yue, Y.C. Chen, R.M. Freeman, Jr., A. Sasaki, T. Hikosaka-Katayama, A. Sato, M. Fujie, K.W. Baughman, J. Levine, P. Gonzalez, C. Cameron, J.H. Fritzenwanker, A.M. Pani, H. Goto, M. Kanda, N. Arakaki, S. Yamasaki, J. Qu, A. Cree, Y. Ding, H.H. Dinh, S. Dugan, M. Holder, S.N. Jhangiani, C.L. Kovar, S.L. Lee, L.R. Lewis, D. Morton, L.V. Nazareth, G. Okwuonu, J. Santibanez, R. Chen, S. Richards, D.M. Muzny, A. Gillis, L. Peshkin, M. Wu, T. Humphreys, Y.H. Su, N.H. Putnam, J. Schmutz, A. Fujiyama, J.K. Yu, K. Tagawa, K.C. Worley, R.A. Gibbs, M.W. Kirschner, C.J. Lowe, N. Satoh, D.S. Rokhsar, and J. Gerhart. Hemichordate genomes and deuterostome origins. *Nature*, 2015. 527(7579): p. 459-65. PMID: [26580012](#)
- 2013 Green, S.A., Norris, R., Terasaki, M., and Lowe, C.J. FGF signaling induces mesoderm in the hemichordate *Saccoglossus kowalevskii*. *Development* 140(5):1024-33. PMID: [23344709](#)
- 2012 Pani, A.M., Mullarkey, E.E., Aronowicz, J., Assimacopoulos, S., Grove, E.A., and Lowe, C.J. Ancient deuterostome origins of vertebrate brain signalling centres. *Nature* 483, 289-294. PMID: [22422262](#)
- 2011 Gillis, J. A., Fritzenwanker, J. H., Lowe, C. J. A stem-deuterostome origin of the vertebrate pharyngeal transcriptional network. *Proceedings. Biological sciences / The Royal Society*. 279, 1727, 237-46 PMID: [21676974](#)
- 2006 Lowe C. J., Terasaki M., Wu, M., Freeman, R.M. Jr., Runft, L., Kwan, K., Haigo, S., Aronowicz, J., Lander E., Gruber, C., Smith, M., Kirschner, M., Gerhart, J. Dorsventral patterning in hemichordates: insights into early chordate evolution. *PLoS Biology*. Sep;4(9):e291 PMID:16933975
- 2003 Lowe C.J., Wu M, Salic, A., Evans, L., Lander E., Stange-Thomann, N., Gruber, C., Gerhart, J., Kirschner, M. Anteroposterior Patterning in Hemichordates and the Origins of the Chordate Nervous System. *Cell* 113, 853-865. PMID:12837244

