

## CURRICULUM VITAE

### Mark Q. Martindale, Ph.D.

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#### Professional Positions:

2012- Director and Professor, Whitney Laboratory for Marine Bioscience, Univ. of Florida  
2016- Graduate Faculty, Florida Genetics Institute  
2013- Graduate Faculty, Univ. Florida Genetics and Neuroscience IDP Program  
2012- 2016 Interim Director, Seahorse Key Marine Lab  
2007 – 2012 Director, Kewalo Marine Lab, University of Hawai'i at Manoa (UHM)  
2005 – 2013 Professor, Kewalo Marine Lab, UHM  
1999 – 2005 Associate Professor, Kewalo Marine Lab, UHM  
1998 – 1999 Assistant Researcher, Kewalo Marine Lab, UHM  
1997 Associate Professor, University of Chicago  
1990 – 1997 Assistant Professor, University of Chicago

#### Education:

1985 Ph.D. in Zoology, The University of Texas, Austin  
1981 B.A. in Natural Sciences, New College of the University of South Florida, Sarasota

#### Postgraduate Appointments:

1986 – 1990 Department of Anatomy and Cellular Biology, Harvard Medical School  
1985 – 1986 Department of Zoology, The University of Texas

#### Awards and Fellowships:

2009 Alexander Kowalevsky Medal for Comparative Embryology, St. Petersburg Society of Naturalists  
2004 University of Hawai'i Regents Medal for Excellence in Research Award  
1998 NASA Life Sciences Fellow, Marine Biological Lab, Woods Hole, MA  
1997 Faculty Teaching Award, Pritzker School of Medicine, University of Chicago  
1996 Evelyn and Melvin Spiegel Endowed Fellow and the Bernard Davis Fellow, Marine Biological Lab, Woods Hole, MA  
1994 – 1998 Independent lab at Marine Biological Lab, Woods Hole, MA  
1992 – 1994 Independent lab at Duke University Marine Lab, Beaufort, NC  
1987 – 1990 N.I.H. N.R.S.A. Postdoctoral Fellowship GM12481-01, Harvard Medical School  
1988 Young Investigator of the Year, Runner-Up, Society of Develop. Biologists  
1985 Young Investigator of the Year, Society of Developmental Biologists

#### Associations, Teaching, and Service:

2018 Scientific Advisory Board, Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan  
2018 Joan Marsden Lecture, McGill University, Montreal, Canada  
2016 Southeast Regional Society for Developmental Biology Meeting Organizer

- 2015-18 Graduate faculty University of North Carolina, Charlotte, appointed  
 2015 NIH Dev1 Study Section, Ad hoc  
 2015 NIH Systems Biology Study Section ad hoc  
 2014 Univ. Sao Paulo, Brasil, Marine Invertebrate Embryology, Instructor San Sebastiao  
 CEMIMar Marine Lab  
 2014 Soc. For Developmental Biology (SDB) Meeting Co-Organizer, Seattle, WA.  
 2014 NASA Astrobiology Study Section  
 2014 7th George D. Grice Jr. Lecture, College of Charleston, South Carolina  
 2014 NIH Dev1 Study Section ad hoc  
 2013-present Awarding Committee, Alexander Kowalevsky Medal for Comparative Embryology,  
 St. Petersburg Society of Naturalists  
 2013 NASA Exobiology Study Section  
 2012 NIH CHHD Fall Study Section  
 2012 Sao Paulo School of Advanced Science, Brasil, Instructor, Evolution Course  
 2012 NASA Exobiology Panel Chair  
 2012 NSF NESCent participant, *Cephalopod Genomics*  
 2012 NIH GVE Spring Study Section  
 2012 UHM Tenure and Promotion Review Committee (Convener and Chair)  
 2011 West Coast Regional Society for Developmental Biology Meeting Organizer  
 2010 – 2012 Chair (Elected) of the Division of Evolutionary Developmental Biology, SICB  
 2010 Konrad Lorenz Workshop Participant, "The Emergence of Form", Vienna,  
 Austria  
 2010 Distinguished Lecturer, Duke University Genetics and Genomics Program  
 2010 The Richard G. Kessel Lecturer in Embryology, Woods Hole, MA  
 2010 Sigma Xi, Full Member (Elected)  
 2009 – 2012 UH Cell, Molecular and Neurobiology Graduate Admission Committee  
 2009 NSF Genome Resource for Non-Model Systems Invited Workshop Member  
 2008 Fellow (Elected) of the American Association of the Advancement of Science  
 2006 NSF NESCent participant, *Myelin as a Model for Evolutionary Innovation*  
 2006 Chair, P.B.R.C. Departmental Personnel Committee (DPC)  
 2004 Basal Metazoan Genome Steering Committee, Joint Genome Institute (D.O.E)  
 2003 Hawaii's Center for Genomics, Proteomics, and Bioinformatics Research  
 Initiative  
 2003 – 2006 University Research Council (URC) member  
 2003 – 2004 Chair, P.B.R.C. Departmental Personnel Committee (DPC), Univ. Hawaii  
 2002 Cruickshank Endowed Lecturer, University of Rhode Island  
 2001 Co-instructor, Comparative Invertebrate Embryology, Friday Harbor, University of  
 Washington  
 1999 – 2002 Program Officer, Division of Evolutionary Development, Society for Integrative  
 and Comparative Biology  
 1999 – 2016 Instructor, Embryology Course, MBL, Woods Hole, MA  
 1996 Lecturer, Embryology, Course MBL, Woods Hole, MA  
 1996 – 1997 Lecturer, Develop. and Neurobiology of the Leech, MBL, Woods Hole, MA  
 1996 – 1999 Member-at-Large, Society for Integrative and Comparative Biology  
 1996 Organizer, Society for Integrative and Comparative Biology, "Evolution of  
 Development: Patterns and Process", Albuquerque, New Mexico  
 1994 Co-Organizer, Society for Integrative and Comparative Biology Symposium,  
 "Evolution of Animal Body Plans"

**Publishing:**

Co-Editor-in-Chief: *EvoDevo* (Open Access, BioMed Central)  
([www.evodevojournal.com](http://www.evodevojournal.com))

Editorial Boards: *Developmental Biology*  
*Development, Genes, and Evolution* (DGE)  
*Evolution and Development*  
*Zoology*  
*Evolutionary Cell Biology book series*, CRC Press Publishing Committee

Guest editor: *Proceedings of the National Academy of Sciences* (P.N.A.S.)  
*PLoS Genetics*

**Refereed Research Publications:**

1. Timothy Q DuBuc, Joseph F Ryan, Mark Q Martindale, “Dorsal–Ventral” Genes Are Part of an Ancient Axial Patterning System: Evidence from *Trichoplax adhaerens* (Placozoa), *Molecular Biology and Evolution*, , msz025, <https://doi.org/10.1093/molbev/msz025>
2. Salinas-Saavedra, M., Wikramanayake, A., and Martindale, M.Q.  $\beta$ -catenin has an ancestral role in cell fate specification but not cell adhesion. **bioRxiv** 520957; doi:<https://doi.org/10.1101/520957>.
3. Salinas-Saavedra, M., and Martindale, M.Q. 2018. Par-Cteno-Genesis or Cteno Par-Genesis. **bioRxiv**. <http://dx.doi.org/10.1101/431114>.
4. Nakanishi, N., and Martindale, M.Q. 2018. CRISPR knockouts reveal an endogenous role for ancient neuropeptides in regulating the timing of life cycle transition in a sea anemone **eLife**, [doi.org/10.7554/eLife.39742.001](https://doi.org/10.7554/eLife.39742.001)
5. Babonis, L.S., DeBiasse, M.B., Francis, W.R., Christianson, L.M., Haddock, S.H.D., Martindale, M.Q., and Ryan, J.F. 2018. Ontogeny corroborates phylogeny: uncovering determinants of a novel cell type. **Molecular Biology and Evolution**. [doi.org/10.1093/molbev/msy171](https://doi.org/10.1093/molbev/msy171).
6. Newkirk, C.R., Frazer, T.K., and Martindale, M.Q. 2018. Acquisition and proliferation of algal symbionts in polyps of the upside-down jellyfish, *Cassiopea xamachana*. **J. Exp. Marine Biol. and Ecology**. 508, 44-51.
7. Salinas-Saavedra, M., Rock, A.Q., and Martindale, M.Q. 2018. Germ layer specific regulation of cell adhesion: insight in to the evolution of mesoderm. **eLife** 7:e36740 doi: [10.7554/eLife.36740](https://doi.org/10.7554/eLife.36740).
8. Farrell, J., Thomas, R., Martindale, M. Q. and Duffy, D. J. 2018. Characterisation of fibropapillomatosis tumour growth profiles in green sea turtles (*Chelonia mydas*). **Testudo**, 8 (5).
9. Dubuc, T.Q., Bobkov, Y., Ryan, J., and Martindale, M.Q. 2018. The radial expression of dorsal-ventral patterning genes in placozoans, *Trichoplax adhaerens*, argues for an oral-aboral axis. **BioRx**, [BIORXIV/2018/345777](https://doi.org/10.1101/345777)

10. Dubuc, T.Q., \*, T.B. Stephenson, T.B.,\*, Rock, A.Q., and Martindale, M.Q. 2018. Hox and Wnt interact to pattern the primary body axis of an anthozoan cnidarian before gastrulation. **Nature Communications**, 9(1). 2007. doi:10.1038/s41467-018-04184-x
11. Duffy, D., Schnitzler, C., Karpinski, L., Thomas, R., Whilde, J., Eastman, C., Yang, C., Krstic, A., Rollinson, D., Burkhalter, B., and Martindale, M.Q., 2018. Precision medicine approaches applied to sea turtle fibropapilloma tumors reveal shared molecular mechanisms with human cancer types and responsiveness to human therapeutics. **Communications Biol.**, 1(63).
12. Wijesena, N., and Martindale, M.Q. 2018. Reengineering the primary body axis by ectopic embryonic cWnt signaling. **Current Biology**, 28 (5), R206-R207.
13. Davidson, P.L., Koch, B.J., Schnitzler, C.E., Henry, J.H., Martindale, M.Q., Baxevanis, A.D., Browne, W.E. 2017. The maternal-zygotic transition and zygotic activation of the *Mnemiopsis leidyi* genome occurs within the first three cleavage cycles. **Molecular Reproduction and Development**, 84:1218–1229.
14. Bading, K.T., Kaehlert, S., Chi, X., Jaspers, C., Martindale, M.Q., and Javidpour, J. 2017. Food availability drives plastic self-repair response in a basal metazoan: A case study on the invasive ctenophore *Mnemiopsis leidyi* A. Agassiz 1865. **Scientific Reports**, 7:16419 DOI:10.1038/s41598-017-16346-w
15. Babonis, L.S., Martindale M.Q. 2017. PaxA, but not PaxC, is required for cnidocyte development in the sea anemone *Nematostella vectensis*. **EvoDevo**, 8 (1), 14.
16. Amiel, A.R., Johnston, H., Chock, T., Dahlin, P., Iglesias, M., Layden, M.J., Rottinger, E., and Martindale, M.Q. 2017. A bipolar role of the transcription factor ERG for cnidarian germ layer formation and apical domain patterning. **Develop. Biol.**, 430, 346-361.
17. Servetnick, M., Steinworth, B., Babonis, L., Simmons, D., Salinas-Saavedra, M., and Martindale, M.Q. 2017. Cas9-mediated excision of *Nematostella brachyury* disrupts endomesoderm and oral-aboral patterning. **Development** 144, 2951-2960.
18. Wijesena, N., Simmons, D.K. and Martindale, M.Q., 2017. Antagonistic BMP–cWNT signaling in the cnidarian *Nematostella vectensis* reveals insight into the evolution of mesoderm. **Proceedings of the National Academy of Sciences**, p.201701607.
19. Martín-Durán, J.M., Passamanek, Y.J., Martindale, M.Q. and Hejnal, A., 2016. The developmental basis for the recurrent evolution of deuterostomy and protostomy. **Nature Ecology & Evolution**, 1, p.0005.
20. Babonis, L.S., Martindale M.Q. 2016. Phylogenetic evidence for the modular evolution of metazoan signalling pathways. **Phil. Trans. R. Soc. B** 372: 20150477. <http://dx.doi.org/10.1098/rstb.2015.0477>.
21. Reitzel, A., Pang, K., and Martindale, M.Q. 2016. Developmental expression of “germline” and “sex determination” related genes in the ctenophore *Mnemiopsis leidyi*. **EvoDevo**. 7:17 DOI: 10.1186/s13227-016-0051-9.

22. Layden, M.J., Johnston, H., Amiel, A., Steinworth, B., Havrilak, J., Chock, T., Röttinger, E., and Martindale, M.Q. 2016. MAPK signaling is necessary for neurogenesis in *Nematostella vectensis*. **BMC Biology**. 14:61 DOI: 10.1186/s12915-016-0282-1
23. Babonis, L., Martindale, M.Q., and Ryan, J. 2016. Do novel genes drive morphological novelty? An investigation of the nematosomes in the sea anemone *Nematostella vectensis*. **BMC Evolutionary Biology**, 16:114 DOI: 10.1186/s12862-016-0683-3.
24. Levin M, Anavy L, Cole AG, Winter E, Mostov N, Khair S, Senderovich N, Kovalev E, Silver DH, Feder M, Fernandez-Valverde SL, Nakanishi N, Simmons D, Simakov O, Larsson T, Liu SY, Jerafi-Vider A, Yaniv K, Ryan JF, Martindale MQ, Rink JC, Arendt D, Degnan SM, Degnan BM, Hashimshony T, & Yanai I. (2016) The mid-developmental transition and the evolution of animal body plans. **Nature**, 2016, doi:10.1038/nature16994.
25. Botman D., Jansson, F., Röttinger E., Martindale M.Q., de Jong J., Kaandorp J.A. 2015. Analysis of a spatial gene expression database for sea anemone *Nematostella vectensis* during early development. **BMC Systems Biology**. 9:63. doi: 10.1186/s12918-015-0209-4
26. Röttinger, E., DuBuc, T., Amiel A., and Martindale, M.Q. 2015. Nodal signaling is required for mesoderm formation and ventral fates in the indirect developing hemichordate, *Ptychodera flava*. **Biology Open**, 011809.
27. Zhang, S., Ross, K.D., Seidner, G.A., Gorman, M.R., Poon, T.H., Wang, X., Keithley, E.M., Lee, P.N., Martindale, M.Q., Joiner, W.J., and Bruce A. Hamilton, B.A. 2015. *Nmf9* encodes a highly conserved protein important to neurological function in mice and flies. **PLoS Genetics**. 11, [e1005344](https://doi.org/10.1371/journal.pgen.1005344).
28. Salinas-Saavedra, M., Stephenson, T.Q., Dunn, C.W., and Martindale, M.Q. 2015. Par system components are asymmetrically localized in ectodermal epithelia, but not during early development in the sea anemone *Nematostella vectensis*. **EvoDevo**. 6:20. DOI: 10.1186/s13227-015-0014-6.
29. YJ Passamaneck, A Hejzol, MQ Martindale Passamaneck, Y.J., Hejzol, A., Martindale, M.Q. 2015. Mesodermal gene expression during the embryonic and larval development of the articulate brachiopod *Terebratalia transversa*. **EvoDevo**, 6:10. DOI: 10.1186/s13227-015-0004-8
30. Li, X., Liu, H., Luo, J.C., Rhodes, S.A., Trigg, L.M., van Rossum, D.B., Anishkin, A., Diatta, F.H., Sassic, J.K., Simmons, D.K., Kamel, B., Medina, M., Martindale, M.Q., and Jegla T. 2015. A major diversification of voltage-gated K<sup>+</sup> channels occurred in ancestral parahoxozoans. **P.N.A.S.**, 112, E1010-1019.
31. DuBuc, T.Q., Dattoli, A.A., Babonis, L. Salinas-Saavedra, M., Roettinger, E., Martindale, M.Q., and Postma, M. 2015. *In vivo* visualisation of Lifeact-mTurquoise2 throughout *Nematostella vectensis* development reveals diverse cellular structures and unusual F-actin accumulation at the nuclear envelope during cleavage. **BMC Cell Biol**. 14, 44-59.
32. Li, X., Martinson, A. S., Layden, M.J., Diatta, F.H., Sberna, A. P., Simmons, D.K., Martindale, M.Q., and Jegla T. 2015. Ether-a-go-go family Voltage-Gated K<sup>+</sup> Channels evolved in an ancestral metazoan and functionally diversified in a Cnidarian/Bilaterian Ancestor. **J. Exp. Biol**. 218, 526-36.

33. Layden, M.J., and Martindale, M.Q. 2014. Non-canonical Notch signaling represents an ancestral mechanism to regulate neural differentiation. **EvoDevo**, 5:30. doi:10.1186/2041-9139-5-30.
34. Peres, R., Reitzel, A.M., Passamaneck, Y., Afeche, S.C., Cipolla-Neto J., Marques, A.C., and Martindale, M.Q. 2014. Developmental and light-entrained expression of melatonin and its relationship to the circadian clock in the sea anemone *Nematostella vectensis*. **EvoDevo** 5 :26.
35. Botman D, Röttinger E, Martindale MQ, de Jong J, Kaandorp JA. 2014. A Computational Approach towards a Gene Regulatory Network for the Developing *Nematostella vectensis* Gut. **PLoS ONE** 9(7): e103341. doi:10.1371/journal.pone.0103341
36. Babonis L.S., and Martindale, M.Q. Old cell new trick? 2014. Cnidocytes as a model for the evolution of novelty. **Integrative and Comparative Biology**. ICU, 108. doi: 10.1093/icb/icu027.
37. Schnitzler, C.E., Simmons, D.K., Pang, K., Martindale, M.Q., and Baxeavanis, A.D. 2014. Expression of multiple Sox genes through embryonic development in the ctenophore *Mnemiopsis leidyi* is spatially restricted to zones of cell proliferation. **EvoDevo**, 5:15 DOI: 10.1186/2041-9139-5-15.
38. Martinsona, A.S., van Rossuma, D.B., Laydenb, M.J., Rhodesa, S.A., Martindale, M.Q., and Jegla, T., 2014. Functional evolution of Erg potassium channel gating reveals an ancient origin for IKr. **PNAS**. 111(15), 5712–5717. www.pnas.org/cgi/doi/10.1073/pnas.1321716111.
39. DuBuc T.Q., Traylor-Knowles N., Martindale M.Q. 2014. Initiating a regenerative response, cellular and molecular features of wound healing in the cnidarian *Nematostella vectensis*. **BMC Biology**, 12:24. DOI: 10.1186/1741-7007-12-24
40. Fischer, A., Pang, K., Henry, J.Q., and Martindale, M.Q. 2014. A cleavage clock regulates features of lineage-specific differentiation in the development in a basal branching metazoan, the ctenophore *Mnemiopsis leidyi*. 2014. **EvoDevo**.5:4 DOI: 10.1186/2041-9139-5-4.
41. Reitzel, A.M., Passamaneck, Y.J., Karchner, S.I., Franks, D.G., Martindale, M.Q., Tarrant, A.M., and Hahn, M.E. 2014. Aryl hydrocarbon receptor (AHR) in the cnidarian *Nematostella vectensis*: comparative expression, protein interactions, and ligand binding. **Dev. Genes, and Evol.** 224, 12-24.
42. Ryan, J.F., Pang, K., Schnitzler, C.E., Nguyen, A., Moreland, R.T., Simmons, D.K., Koch, B.J., Havlak, P., NISC Comparative Sequencing Program, Smith, S.A., Putnam, N., Dunn, C.W., Wolfsberg, T.G., J.E., Mullikin, J.C., Martindale, M.Q., and Baxeavanis, A.D. 2013. Total genome sequencing of the genome of the ctenophore *Mnemiopsis leidyi* using new generation approaches. **Science**. 342, 1336- DOI: 10.1126/science.1242592.
43. Marlow, H.Q., Matus, D.Q., and Martindale, M.Q. 2013. Ectopic activation of the canonical Wnt signaling pathway affects ectodermal patterning along the primary axis during larval development in the anthozoan *Nematostella vectensis*. **Dev Bio**. <http://dx.doi.org/10.1016/j.ydbio.2013.05.022>.

44. Passamaneck, Y.J., and Martindale, M.Q. 2013. Evidence for a phototransduction cascade in an early brachiopod embryo. **Integrative and Comparative Biology**. doi: 10.1093/icb/ict037.
45. Reitzel, A. M., Herrera, S., Layden, M. J., Martindale, M. Q. and Shank, T. M. 2013. Going where traditional markers have not gone before: utility of and promise for RAD sequencing in marine invertebrate phylogeography and population genomics. **Molecular Ecology**. doi: 10.1111/mec.12228  
†These authors contributed equally.
46. Röttinger, E., Dahlin, P., and Martindale, M.Q. 2012. A provisional cnidarian Gene Regulatory Network for “endomesoderm” specification: The inputs of Wnt/ $\beta$ -catenin signaling. **PLoS Genetics**. 2012. <http://www.plosgenetics.org/doi/pgen.1003164>.
47. Schnitzler, C., Pang, K., Powers, M., Reitzel, A.M., Ryan, J.F., Simmons, D., Park, M., Gupta, J., Brooks, S.Y., Blakesley, R.W., Haddock, S.H.D., J.C., Martindale, M.Q., and Baxevanis, A.D. 2012. Bioluminescence and the evolution of photoproteins: A ctenophore genome lights the way. **BMC Biology**, 10:107 doi:10.1186/1741-7007-10-107
48. Passamaneck, Y.J., and Martindale, M.Q. 2012. Cell proliferation is necessary for the regeneration of oral structures in the anthozoan cnidarian *Nematostella vectensis*. **BMC Dev. Biol.** 12:34
49. Jegla, T., Marlow, H.Q., Chen, B., Simmons, D.K., Jacobo, S.M., and Martindale, M.Q. Expanded Functional Diversity of Shaker K<sup>+</sup> Channels in Cnidarians Is Driven by Gene Expansion. 2012. **PLoS ONE** 7(12): e51366. doi:10.1371/journal.pone.0051366
50. Amy Apprill, Heather Q. Marlow, Mark Q. Martindale, and Michael S. Rappé. Specificity of Associations between Bacteria and the Coral *Pocillopora meandrina* during Early Development. **Appl. Environ. Microbiol.** 2012; 78 7467-7475.
51. DuBuc, T., Ryan, J., Shinzato, C., Satoh, N., and Martindale, M.Q. 2012. Coral Comparative Genomics Reveals an Extensive Hox Cluster in the Cnidarian-Bilaterian Ancestor. **Integrative and Comparative Biology**, pp. 1–7. doi:10.1093/icb/ics098
52. Weber, C., Martindale, M.Q., Tapscott, S.J., and Unguez, G.A. 2012. Regeneration of adult non-contractile myogenic tissues through the activation of Pax7-positive cell in the electric fish *S. macrurus*. **PLoS One**, Vol 7 Issue 5, e36819.
53. Santagata, S., Resh, C., Hejnal, A., Martindale, M.Q., and Passamaneck, Y.J. 2012. Development of the larval anterior neurogenic domains of *Terebratalia transversa* (Brachiopoda) provides insights into the diversification of larval apical organs and the spiralian nervous system. **EvoDevo** 3:3.
54. Simmons, D.K., Pang, K., and Martindale, M.Q. 2012. Lim Homeobox Genes in the Ctenophore *Mnemiopsis leidyi*: The Evolution of Neural Cell Type Specification. **EvoDevo**. 3:2.
55. Layden, M., Boukhout, M., and Martindale, M.Q. 2012. *Nematostella vectensis* achaete-scute homolog NvashA regulates embryonic ectodermal neurogenesis and represents an ancient component of the metazoan neural specification pathway. **Development** 139, 1013-1022.

56. Marlow, H.Q., Röttinger, E., Boukhout, M., and Martindale, M.Q. 2012. Functional Roles of Notch Signaling in the cnidarian *Nematostella vectensis*. **Dev. Biol.** 362, 295–308.
57. Pett, R., Ryan, J.F., Pang, K., NISC Comparative Sequencing Program, Mullikin, J.C., Martindale, M.Q., Baxeavanis, A.D., and Lavrov, D.V. 2011. Extreme mitochondrial evolution in the ctenophore *Mnemiopsis leidyi*: insights from mtDNA and the nuclear genome. **Mitochondrial DNA.** 22, 130-142.
58. Ormestad M., Martindale Q. M. and Röttinger E. 2011. A comparative gene expression database for marine invertebrates. **EvoDevo**, 2:17.
59. Pang K, Ryan JF, Baxeavanis AD, Martindale MQ. 2011. Evolution of the TGF- $\beta$  Signaling Pathway and Its Potential Role in the Ctenophore, *Mnemiopsis leidyi*. **PLoS ONE** 6(9): e24152. doi:10.1371/journal.pone.0024152
60. Fuchs, J., Martindale, M.Q., and Hejnol, A. 2011. Gene expression in bryozoan larvae supports a fundamental importance of blastemic cells in the bryozoan life-cycle. **EvoDevo.** 2:13.
61. Röttinger E. and Martindale M.Q. 2011. Ventralization of an indirect developing hemichordate by NiCl<sub>2</sub> suggests a conserved mechanism of dorso-ventral (D/V) patterning in Ambulacraria (Hemichordates & Echinoderms). **Dev Biol.** 354, 173-190.
62. Passamanek, Y., Furchheim, N., Hejnol, A., Martindale, M.Q., and Lüter, C. 2011. Ciliary photoreceptors facilitate directional vision in a protostome larva. **EvoDevo.** 2:6.
63. Reitzel, A. M., Pang, K., Ryan, J.F., Mullikin, J.C., Martindale, M.Q., Baxeavanis, A.D, Tarrant, A. 2011. Nuclear receptors from the ctenophore *Mnemiopsis leidyi* lack a zinc-finger DNA-binding domain: lineage-specific loss or ancestral condition in the emergence of the nuclear receptor superfamily? **EvoDevo.** 2:3.
64. Jackson, D. J., Meyer, N. P., Seaver, E. C., Pang K., McDougall, C., Moy, V. N., Gordon, K., Degnan, B. M., Martindale, M. Q., Robert Burke and Peterson, K. J. 2010. Developmental expression of COE across the Metazoa supports a conserved role in neuronal cell-type specification and mesodermal development. **Develop Genes and Evol** 220:221-234.
65. Layden, M., Meyer, N. M., Pang, K., Seaver, E.C, and Martindale, M.Q. 2010. Expression and phylogenetic analysis of the Zic gene family in the evolution and development of metazoans. **EvoDevo**, 1:12.
66. Pang, K., Ryan, J.F., Baxeavanis, A.D., and Martindale, M.Q. 2010. Genomic insights into Wnt signaling in an early diverging metazoan, the ctenophore *Mnemiopsis leidyi*. **EvoDevo**, 1:10.
67. Ryan, J.F., Pang, K., NIH Intramural Sequencing Center, Mullikin, J.C., Martindale, M.Q., and Baxeavanis, A.D. 2010. The homeodomain complement of the ctenophore *Mnemiopsis leidyi* suggests that Ctenophora and Porifera diverged prior to the ParaHoxozoa. **EvoDevo**, 1:9.
68. Meyer, N., Boyle, M., Martindale, M.Q., and Seaver, E.C. 2010. A comprehensive fate map by intracellular injection of identified blastomeres in the marine polychaete *Capitella teleta*. **EvoDevo**, 1:8.



69. Henry, J.Q., Perry, KJ, and Martindale, M. Q. 2010.  $\beta$ -catenin and early development in the gastropod, *Crepidula fornicata*. **Integrative and Comparative Biology** 50(5): 707-719.
70. Mazza, M.E., Pang, K., Reitzel, A. M., Martindale, M.Q., Finnerty, J. R. 2010. A conserved cluster of three Paired-class homeobox genes (homeobrain, orthopedia, and rx) in Cnidaria and Protostomia. **EvoDevo**, 1:3 doi:10.1186/2041-9139-1-3.
71. Yamada, A., Martindale, M.Q., Fukui, A., and Tochinai, S. 2010 Highly conserved functions of the Brachyury gene on morphogenetic movements: insight from the early-diverging phylum Ctenophora. **Dev. Biol.** 339, 212–222.
72. Traylor-Knowles, N., Hansen, U., Dubuc, T., Martindale, M.Q., Kaufman, L., and Finnerty, J.R. 2010. The evolutionary diversification of LSF and Grainyhead transcription factors preceded the radiation of basal animal lineages. **BMC Evolutionary Biology**. 10, 101.
73. Martindale, M.Q. and Hejnol, A. 2009. A Developmental Perspective: Changes in the Position of the Blastopore during Bilaterian Evolution, **Developmental Cell**, 17, 162-174. doi:10.1016/j.devcel.2009.07.024
74. Hejnol, A. and Martindale, M.Q. Coordinated spatial and temporal embryonic expression of Hox genes during development in the acoel *Convolutriloba longifissura*. 2009. **BMC Biology**, 7:65.
75. Hejnol, A., Obst, M., Stamatakis, A., Ott, M., Rouse, G., Edgecombe, G., Martínez, P., Baguñà, J., Bailly, X., Jondelius, U., Wiens, M., Muller, W.E.G., Seaver, E., Martindale M.Q., Giribet, G., and Dunn, C.W. 2009. Rooting the Bilaterian Tree with Scalable Phylogenomic and Supercomputing Tools". **Proc R Soc. B.** 276, 4261-4270. 10.1098/rspb.2009.0896
76. Nomaksteinsky, M., Roettinger, E., Dufour, H., Chettouh, Z., Lowe, C., Martindale, M.Q. and Brunet, JF. 2009. Centralization of the Deuterostome Nervous System Predates Chordates. **Current Biology**, 19, R640-642.
77. Apprill, A., Marlow, M.Q., Martindale, M.Q., Rappé, M.S. 2009. The onset of microbial associations in the coral *Pocillopora meandrina*. **ISME J**, 3: 685-699.
78. Marlow, H.Q., Srivastava, M., Matus, D.Q., Rohksar, D., and Martindale, M.Q. 2009. Anatomy and Development of the Nervous system of *Nematostella vectensis*, an Anthozoan Cnidarian. **Developmental Neurobiology**. 69, 235-254.
79. Hejnol, A. and Martindale, M.Q. 2008. Acoel development indicates the independent evolution of the bilaterian mouth and anus. **Nature**, 456, 382-386. doi:10.1038/nature07309
80. Pang, K. and Martindale, M.Q. 2008. Developmental expression of homeobox genes in the ctenophore, *Mnemiopsis leidyi*. **Develop. Genes Evol.** 218, 307-319. (cover image)
81. Henry J.Q., Perry, K.J., Wever, J., Seaver, E., and Martindale, M.Q. 2008.  $\beta$ -catenin is required for the establishment of vegetal embryonic fates in the nemertean, *Cerebratulus lacteus*. **Dev. Biol.** 317, 368-379. doi:10.1016/j.ydbio.2008.02.042

82. Magie, C.R. and Martindale, M.Q. 2008. Cell-cell adhesion in the Cnidaria: insights into the evolution of tissue morphogenesis. **Biol. Bull.** 214, 218-232.
83. Dunn, C.W., Hejnal, A., Matus, D.Q., Pang, K., Browne, W.E., Smith, S.A., Seaver, E., Rouse, G.W., Obst, M., Edgecombe, G.D., Sørensen, M.V., Haddock, S.H.D., G., Schmidt-Rhaesa, A., Okusu, A., Kristensen, R., Wheeler, W.C., Martindale, M.Q., and Giribet, G. Broad phylogenomic sampling improves resolution of the animal tree of life. 2008. **Nature**, 452, 745-749. doi:10.1038/nature06614 (cover image).
84. Hejnal, A. and Martindale, M.Q. 2008. Acoel development supports a simple planula-like Urbilaterian. **Phil. Trans. Royal Soc. B.** 363, 1493-1501. doi:10.1098/rstb.2007.2239
85. Matus, D.Q., Pang, K., Martindale, M.Q., and Thomsen, G.H. 2008. The Hedgehog gene family of the cnidarian *Nematostella vectensis* and implications for understanding metazoan hedgehog pathway evolution. **Dev. Biol.** 313, 501-518.
86. Browne, W.E., Haddock, S.H.D., and Martindale, M.Q. 2007. Examination of lineage relationships among Hyperiid amphipods as revealed by analysis of COI gene variation. **Int. and Comp. Biol.** 47, 815-830.
87. Henry, J.Q., Hejnal, A., Perry, K.J., and Martindale, M.Q. 2007. Homology of Ciliary Bands in Spiralian Trochophores and Other Larvae. **Int. and Comp. Biol.** 47, 865-871.
88. Matus, D.Q., Halanych, K., and Martindale, M.Q. 2007. The Hox Complement of a Pelagic Chaetognath, *Flaccisagitta enflata*: Insights into Metazoan Phylogeny. **Int. and Comp. Biol.** 47, 854-865.
- Putnum, N., , Srivastava, M., Hellsten, U., Dirks, B., Chapman, J., Salamov, A., Terry, A., Shapiro, H., Lindquist, E., Kapitonov, V.V., Jurka, J., Genikhovich, G., Grigoriev, I., JGI Sequencing Team, Steele, R., Finnerty, J.R., Technau, U., Martindale, M.Q., and Rokhsar, D. 2007. Sea Anemone Genome Reveals Ancestral Eumetazoan Gene Repertoire and Genomic Organization. 2007, **Science**, 317, 86-94. DOI: 10.1126/science.1139158..
89. Adamska, M., Matus, D.Q., Adamski, M., Green, K., Martindale, M.Q., and Degnan, B.M. 2007. Evolutionary origin of hedgehog proteins. **Current Biology**, 17, R836-37.
90. Lee, P.N., Kumburegama, S., Marlow, H., Martindale, M.Q. and Wikramanayake, A. H. 2007. Asymmetric developmental potential along the animal-vegetal axis in the anthozoan cnidarian, *Nematostella vectensis*, is mediated by Dishevelled. **Dev. Biol.** 310, 169-186. <http://dx.doi.org/10.1016/j.ydbio.2007.05.040>
91. Marlow, H.Q. and Martindale, M.Q. 2007. Embryonic development in two species of scleractinian coral embryos: zooxanthellae localization and gastrulation mechanism. **Evol. Dev.** 9, 355-367.

92. Hejnol, A., Martindale, M.Q., and Henry, J.J.Q. 2007. High-resolution fate map of the gastropod snail *Crepidula fornicata*: the origins of ciliary bands, nervous and muscular elements. **Dev. Biol.** 305, 63-76. <http://dx.doi.org/10.1016/j.ydbio.2007.01.044>
93. Magie, C., Daly, M., and Martindale, M.Q. 2007. Gastrulation in the cnidarian *Nematostella vectensis* occurs via invagination not ingression. **Dev. Biol.**, 305, 483-497. doi:10.1016/j.ydbio.2007.02.044
94. Yamada, A., Pang, K., Martindale, M.Q., and Tochinai, S. 2007. Surprisingly complex T-box gene complement in diploblastic metazoans. **Evol. Dev.** 9, 220-230.
95. Ryan JF, Mazza ME, Pang K, Matus DQ, Baxeavanis AD, Martindale, M.Q., and Finnerty, J.R. 2007. Pre-Bilaterian Origins of the Hox Cluster and the Hox Code: Evidence from the Sea Anemone, *Nematostella vectensis*. **PLoS ONE** 2(1): e153. doi:10.1371/journal.pone.0000153
96. Mazza, M.E., Pang, K., Martindale, M.Q., Finnerty, J. R. 2007. Genomic organization, gene structure, and developmental expression of three clustered otx genes in the sea anemone *Nematostella vectensis*. **J. Exp. Zool. (Mol. Dev. Evol.)** 308B, 494-506: doi: 10.1002/jez.b.21158
97. Matus, D.Q., Thomsen, G.H., and Martindale, M.Q. 2007. FGF signaling in gastrulation and neural development of *Nematostella vectensis*, an anthozoan cnidarian. **Dev. Genes Evol.** 217, 137-148. doi: 10.1007/s00427-006-0122-3
98. Matus, D., Pang, K., Daly, M., and Martindale, M.Q. 2007. Expression of Pax gene family members in the anthozoan cnidarian, *Nematostella vectensis*. **Evol. Dev.** 9, 25-38.
99. Matus, D. Q., Pang, K., Marlow, H., Dunn, C., Thomsen, G.H., and Martindale, M. Q. 2006. Molecular evidence for deep evolutionary roots of bilaterality in animal development. **P.N.A.S.** 103, 11195–11200.
100. Matus, D. Q., Copley, R. R., Dunn, C., Eccleston, H., Hejnol, A., H., Halanych, K. M., Martindale, M. Q., and Telford, M.J. 2006. Phylogenetic analyses of 85 genes suggest chaetognaths are basal lophotrochozoans. **Current Biology.** 16, R575-576.
101. Henry, J.Q., Perry, K., and Martindale, M.Q. 2006. Cell specification and the role of the polar lobe in the gastropod mollusc, *Crepidula fornicata*. **Dev. Biol.** 297, 295-307.
102. Browne, W.E., Schmid, B.G.M., Wimmer, E.A., and Martindale, M.Q. 2006. Expression of otd orthologs in the amphipod crustacean, *Parhyale hawaiiensis*. **Dev. Genes Evol.** 216, 581-595.
103. Matus, D. Q., Thomsen, G.H., and Martindale, 2006. M.Q. “Dorso-ventral” genes are asymmetrically expressed and involved in germ layer demarcation during cnidarian gastrulation. **Current Biology**, 16, 499-505.
104. Magie, C.R., Pang, K., Martindale, M.Q. 2005. Genomic inventory and expression of Sox and Fox genes in the cnidarian *Nematostella vectensis*. **Dev. Genes Evol.** 215, 618-630.

105. Maxmen, A., Browne, W.E., Martindale, M.Q., and Gonzalo Giribet, G. 2005. Neuroanatomy of sea spiders: Implications for the evolution of the arthropod head. **Nature**, 437, 1144-1148.
106. Martindale, M.Q. 2005. The evolution of metazoan axial properties. **Nature Review Genetics** 6, 917-927.
107. Extavour, C. G., Pang, K., Matus, D.Q. and Martindale, M.Q. 2005. vasa and nanos expression Patterns in a Sea Anemone and the Evolution of Bilaterian Germ Cell Specification Mechanisms. **Evol. Dev.** 7, 201-215.
108. Kusserow, A., Pang, K., Sturm, C., Hrouda, M., Lentfer, J., Technau, U., Hobmayer, B., Martindale M.Q., and Holstein, T.W. 2005. Unexpected complexity of Wnt gene family in a sea anemone. **Nature**, 433, 156-160. (cover image).
109. Henry, J.Q., Okusu, A., and Martindale, M.Q. 2004. The cell lineage of the polyplochoran, *Chaetopleura apiculata*: variation in the spiralian program and implications for molluscan evolution. **Dev. Biol.** 272, 145-160.
110. Martindale, M.Q., Pang, K., and Finnerty, J.R. 2004. Investigating the origins of triploblasty: "Mesodermal" gene expression in a diploblastic animal, the sea anemone, *Nematostella vectensis* (phylum, Cnidaria; Class Anthozoa). **Development**, 131, 2463-2474.
111. Maslakova, S., Martindale, M.Q., and Norenberg, J.L. 2004. The vestigial prototroch in a basal nemertean *Carinoma tremaphoros* (Nemertea; Palaeonemertea). **Evol. Dev.**, 6, 219-226.
112. Finnerty, J.R., Pang, K., Burton, P., Paulson, D., and Martindale, M.Q. 2004. Deep Origins for Bilateral Symmetry: Hox and Dpp Expression in a sea anemone. **Science**, 304, 1335-1337.
113. Pang, K., Matus, D.Q., and Martindale, M.Q. 2004. The ancestral role of COE helix loop helix genes was in chemoreception: Evidence from the development of the sea anemone, *Nematostella vectensis* (phylum, Cnidaria; Class Anthozoa). **Dev. Genes Evol.** 214, 134-138.
114. Maslakova, S., Martindale, M.Q., and Norenberg, J.L. 2004. Fundamental properties of spiralian cleavage program are displayed by the basal nemertean *Carinoma tremaphoros* (Palaeonemertea; Nemertea). **Dev. Bio.** 267, 342-360.
115. Henry, J. Q. and Martindale, M.Q. 2004. Inductive Timing and Equivalence Groups in the Ctenophore *Mnemiopsis leidyi*. **Evol. Dev.**, 6, 17-24.
116. Wikramanayake, A.H., Hong, M., Lee, P.N., Pang, K., Byrum, C., Bince, J.M., Xu, R., and Martindale, M.Q. 2003. An ancient role for nuclear  $\beta$ -catenin in the evolution of axial polarity and germ layer segregation. **Nature**, 426, 446-450.
117. Lee, P.N., Callaerts, P., de Couet, H. G. and Martindale, M.Q. 2003. Cephalopod Hox genes and the origin of morphological novelties. **Nature**, 324, 1061-65.
118. Finnerty, J.R. Paulson, D., Burton, P., Pang, K., and Martindale, M.Q. 2003. Early Evolution of a Homeobox Gene: The ParaHox Gene *Gsx* in the Cnidaria and the Bilateria. **Evol. Dev.**, 5, 331-345.

119. Pasquinelli, A.E., McCoy, A.M., Jimenez, E., Salo, E., Ruvkun, G., Martindale, M.Q. and Baguña, J. 2003. Expression of the 22 nucleotide let-7 heterochronic RNA throughout the Metazoa: A role in life history evolution? **Evol. Dev.**, 5, 372-378.
120. Schneider, S.Q. Finnerty, J.R., and Martindale, M.Q. 2003. Unraveling the evolutionary history of the beta-catenin gene: A phylogenetic approach to structure and function. **J. Exp. Zool/ Mol. and Dev. Evol.** 295B, 25-44.
121. Freeman, G. and Martindale, M.Q. 2002. Intracellular fate mapping and the origin of mesoderm in Phoronids. **Dev. Biol.** 252, 301-311. (cover image)
122. Martindale, M.Q., Finnerty, J.R., and Henry, J.Q. 2002. The Radiata and the evolutionary origins of the bilaterian body plan. **Mol. Phylogen. Evol.**, 24, 358-365.
123. Yamada, A. and Martindale, M.Q. 2002. The ctenophore Brain Factor-1 forkhead gene ortholog (ctenoBF-1) is expressed in the presumptive oral region and feeding apparatus: implications for axial organization in the Metazoa. **Dev. Genes Evol.** 212, 338-348. (cover image)
124. Henry, J.Q., Tagawa, K., and Martindale, M.Q. 2001. Deuterostome evolution: Early development in the enteropneust hemichordate *Ptychodera flava*. **Evol. Dev.** 3, 375-390. (cover image)
125. Henry, J.Q. and Martindale, M.Q. 2001. Multiple inductive signals are involved in the development of the ctenophore *Mnemiopsis leidyi*. **Dev. Biol.** 238, 40-46.
126. Seaver, E.C., Paulson, D., Irvine, S.Q., and Martindale, M.Q. 2001. The spatial and temporal expression of Ch-en, the engrailed gene in the polychaete *Chaetopterus* does not support a role in body axis segmentation. **Dev. Biol.** 236, 195-209.
127. Kourakis, M. and Martindale, M.Q. 2001. Hox Gene duplication and deployment in the annelid leech *Helobdella*. **Evol. Dev.** 3, 145-153.
128. Pasquinelli, A.E. Reinhart, B., Slack, F., Martindale, M.Q., Kuroda, M.I., Maller, B., Hayward, D., Ball, E., Degnan, B., Mueller, P., Spring, J., Srinivasan, A., Fishman, M., Finnerty, J., Corbo, J., Levine, M., Leahy, P., Davidson, E., Ruvkun, G., 2000. Conservation across animal phylogeny of the sequence and temporal regulation of the 21 nucleotide *C. elegans* let-7 heterochronic regulatory RNA. **Nature**, 408, 86-89.
129. Henry, J.Q. and Martindale, M.Q. 2000. Regulation and regeneration in the ctenophore *Mnemiopsis*. **Dev. Biol.** 227, 720-733.
130. Kourakis, M., and Martindale, M.Q. 2000. A combined-method phylogenetic analysis of hox and parahox genes of the Metazoa. **J. Exp. Zool/ Mol. and Dev Evol.** 288, 175-191. (cover image)
131. Henry, J.Q., Martindale, M.Q., and Boyer, B.C. 2000 The unique developmental program of the acoel flatworm, *Neochildia fusca*. **Dev. Biol.** 220, 285-295.

132. Irvine, S.Q. and Martindale, M.Q. 2000. Expression patterns of anterior hox genes in the polychaete *Chaetopterus*: Correlation with morphological boundaries. **Dev. Biol.** 217, 333-351.
133. Martindale, M.Q. and Henry, J.Q. 1999. Intracellular fate mapping in a basal metazoan, the ctenophore *Mnemiopsis leidyi*, reveals the origins of mesoderm and the existence of indeterminate cell lineages. **Dev. Biol.** 214, 243-257.
134. Irvine, S.Q. Chaga, O., and Martindale, M.Q. 1999. Larval ontogenetic stages of *Chaetopterus*: Developmental heterochrony in the evolution of Chaetopterid polychaetes. **Biol. Bull.** 197, 319-331. (cover image)
135. Irvine, S.Q. and Martindale, M.Q. 1999. Laboratory culture of spioniform polychaete larvae. **Biol. Bul. Mar. Mod. Elec. Rec.** (online). Available: <http://hermes.mbl.edu/BiologicalBulletin/MMER/IRV/IrvTit.html>
136. Finnerty, J.R. and Martindale, M.Q. 1999. Ancient origins of axial patterning genes: Hox genes and ParaHox genes in the Cnidaria. **Evol. Dev.** 1, 16-23.
137. Henry, J.J. and Martindale, M. Q. 1999. Conservation and innovation in the Spiralian Developmental Program. **Hydrobiologia** 402: 255-265. also to be reprinted in *Developments in Hydrobiology*.
138. Henry, J.Q., and Martindale, M.Q. 1998. The evolution of cleavage programs in relationship to axial specification and body plan evolution. **Biol. Bull.** 195, 363-366.
139. Boyer, B.C., Henry, J.Q., and Martindale, M.Q. 1998. The cell lineage of a polyclad turbellarian embryo reveals close similarity to coelomate spiralian. **Dev Biol.** 204, 111-123.
140. Henry, J.Q., and Martindale, M.Q. 1998. Conservation of the Spiralian Developmental Program: Cell Lineage of the Nemertean, *Cerebratulus lacteus* **Dev. Biol.** 201, 253-269.
141. Martindale, M. Q. and Henry, J.Q. 1997. Experimental analysis of tentacle formation in the ctenophore *Mnemiopsis leidyi*. **Biol. Bull.** 193, 245-247.
142. Kourakis, M., Master, V., Wedeen, C., Nardelli-Haeffliger, D., Martindale, M.Q. and Shankland, M., 1997. Conserved anterior boundaries of Hox gene expression in the central nervous system of the leech *Helobdella*. **Dev. Biol.** 190, 284-300.
143. Finnerty, J. R. and Martindale, M.Q. 1997. Homeoboxes in sea anemones (Cnidaria: Anthozoa): Evidence for at least 12 classes of mutually paralogous homeobox genes in the phylum Cnidaria. **Biol. Bull.** 193, 62-76.
144. Henry, J.Q. and Martindale, M.Q. 1997. Regulation and the modification of axial properties in partial embryos of the nemertean *Cerebratulus lacteus*. **Dev. Genes Evol.** 207, 42-50.
145. Panganiban G., Irvine S.M., Lowe, C., Roehl, H., Corley, L.S., Sherbon. B., Grenier, J.K., Fallon, J.F., Kimble, J., Walker, M., Wray, G.A., Swalla, B.J., Martindale, M.Q., Carroll, S.B. 1997. The origin and evolution of animal appendages. **P.N.A.S.**, 94, 5162-5166. (SMI is co-first author)

146. Irvine S.Q., Warriner S., Hunter J., Martindale M.Q. 1997. A survey of homeobox genes in *Chaetopterus variopedatus* and analysis of polychaete homeodomains. **Mol. Phylogen. Evol.** 7, 331-345.
147. Martindale, M.Q. and Henry, J.Q. 1997. Reassessing embryogenesis in the Ctenophora: The inductive role of e1 micromeres in organizing ctene row formation in the "mosaic" embryo, *Mnemiopsis leidyi*. **Development** 124, 1999-2006.
148. Henry, J.Q. and Martindale, M.Q. 1996. The establishment of embryonic axial properties in the nemertean, *Cerebratulus lacteus*. **Dev. Bio.** 180, 713-721.
149. Finnerty J.R., Master V.A., Irvine S.M., Kourakis M., Warriner S., Martindale M.Q. 1996. Homeobox genes in the Ctenophora: Identification of paired-type and Hox homologs in the aequipectenid ctenophore, *Beroë ovata*. **Mol. Mar. Biol. Biotech.** 5, 249-258.
150. Boyer, B.C., Henry, J.Q., and Martindale, M.Q. 1996. Modified Spiral Cleavage: The Duet Cleavage Pattern and Early Blastomere Fates in the Acoel Turbellarian *Neochildia fusca*. **Biol. Bull.** 191, 285-286.
151. Henry, J.Q., and Martindale, M.Q. 1996. The origins of mesoderm in the equal-cleaving nemertean worm *Cerebratulus lacteus*. **Biol. Bull.** 191, 286-288.
152. Boyer, B.C., Henry, J.Q., and Martindale, M.Q. 1996. Dual origins of mesoderm in a basal member of the spiralian clade: cell lineage studies in the polyclad turbellarian *Hoploplana inquilina*. **Dev. Biol.** 179, 329-338.
153. Martindale, M.Q., and Henry, J.Q. 1996. Development and regeneration of comb plates in the ctenophore *Mnemiopsis leidyi*. **Biol. Bull.** 191, 290-292.
154. Master, V.A., Kourakis, M. J., and Martindale, M.Q. 1996. Isolation, characterization, and expression of *Le-msx*, a member of the *msx* gene family from the glossiphoniid leech, *Helobdella*. **Dev. Dynamics** 207, 404-419.
155. Henry, J.Q., and Martindale, M.Q. 1995. The experimental alteration of cell lineages in the nemertean, *Cerebratulus lacteus*: implications for the precocious establishment of embryonic axial properties. **Biol. Bull.** 189, 192-193.
156. Martindale, M.Q., and Henry, J.Q. 1995. Diagonal development: establishment of the anal axis in the ctenophore *Mnemiopsis leidyi*. **Biol. Bull.** 189, 190-192.
157. Henry, J.Q., Martindale, M.Q., and Boyer, B.C. 1995. Axial specification in a basal member of the spiralian clade: lineage relationships of the first four cells to the larval body plan in the polyclad turbellarian *Hoploplana inquilina*. **Biol. Bull.** 189, 194-195.
158. Martindale, M.Q., and Henry, J.Q. 1995. Modifications of cell fate specification in equal-cleaving nemertean embryos: Alternate patterns of spiralian development. **Development**, 121, 3175-3185.

159. Henry, J.Q. and Martindale, M.Q. 1994. Inhibitory cell-cell interactions control development along the dorsoventral axis in the embryos of *Cerebratulus lacteus*. **Biol. Bull.** 187, 238-239.
160. Henry, J.Q. and Martindale, M.Q. 1994. Establishment of the dorsoventral axis in nemertean embryos: Evolutionary considerations of spiralian development. **Dev. Genetics** 15, 64-78.
161. Shankland, M., Martindale, M.Q., Nardelli Haefliger, D., Baxter, E., and Price, D.J. 1991. Origin of segmental identity in the development of the leech nervous system. **Development Sup.** p 29-38.
162. Martindale, M.Q. and Shankland, M. 1990. Segmental founder cells in the leech embryo have intrinsic segmental identity. **Nature**, 347, 672-674.
163. Blair, S.S., Martindale, M.Q., and Shankland, M. 1990. Interactions between adjacent ganglia bring about the bilaterally alternating differentiation of RAS and CAS neurons in the leech nerve cord. **J. Neurosci.** 10, 3183-3193.
164. Martindale, M.Q. and Shankland, M. 1990. Neuronal competition determines the spatial pattern of neuropeptide expression by identified neurons in the leech. **Dev. Biol.** 139, 210-226.
165. Shankland, M. and Martindale, M. Q. 1989. Segmental specificity and lateral asymmetry in the differentiation of developmentally homologous neurons during leech embryogenesis. **Dev Biol.** 135, 431-448.
166. Martindale, M.Q., and Shankland, M. 1988. Developmental origin of segmental differences in the leech ectoderm: survival and differentiation of the nephridial distal tubule cell is determined by the host segment. **Dev Biol.** 125, 290-300.
167. Henry, J.J., and Martindale, M.Q. 1987. The organizing role of the D quadrant as revealed by twinning in the polychaete, *Chaetopterus variapedatus* after the equalization of first cleavage. **Roux's Arch. Dev. Biol.** 499-510.
168. Martindale, M. Q., Meier, S., and Jacobson, A.G. 1987. Mesodermal metamerism in the teleost, *Oryzias*. **J. Morph.** 193, 241-252.
169. Martindale, M.Q. 1987. Larval reproduction in the ctenophore, *Mnemiopsis mccradyi* (order Lobata). **Marine Biol.** 94, 409-414.
170. Martindale, M.Q. 1986. The expression and maintenance of adult symmetry properties in the ctenophore, *Mnemiopsis mccradyi*. **Dev. Biol.** 118, 556-576.
171. Martindale, M.Q. 1986. The organizing role of the D quadrant in an equal-cleaving spiralian, *Lymnaea stagnalis*, as studied by UV laser deletion of macromeres at intervals between third and fourth quartet formation. **Int. J. Invert. Reprod. and Dev.** 9, 229-242.
172. Martindale, M.Q., Doe, C.Q., and Morrill, J.B. 1985. The role of animal-vegetal interaction with respect to the determination of dorsoventral polarity in the equal-cleaving spiralian, *Lymnaea palustris*. **Roux's Arch Dev Biol.** 194, 281-295.



173. Martindale, M.Q., and Brandhorst, B.P. 1984. Translational changes induced by 1-methyladenine in anucleate starfish oocytes. **Dev Bio.** 101, 512-515.

#### Articles Submitted:

1. Salinas-Saavedra, M., and Martindale, M.Q. 2019. Par protein localization during the early development of *Mnemiopsis leidyi* suggests different modes of epithelial organization in Metazoa. **Molecular Biology and Evolution.** Reubmitted.
2. Ramon, J.M., Martindale, M.Q. Scar-less whole-body regeneration in the absence of a blastema requires cell division in the ctenophore *Mnemiopsis leidyi*. **PlosBiology**
3. Michonneau, F., Pauley, G., and Martindale, M.Q. The state of knowledge for marine invertebrate biodiversity in the continental US. **Nature Ecology and Evolution.** Submitted.
4. Xu, X., Li, G., Li, C., Zhang, J., Simmons, D.K., Wijesena, N., Zhu, W., Jia, S., Wang, Z., Wang, Z., Bao, J., Lu, L., Ci, W., Yu, D., Wang, Q., Zhang, Y.E., Aluru, N., Oliveri, P., Wu, C-I., Martindale, M.Q., Liu, J. Comparative analysis of DNA methylation reprogramming during embryogenesis across Metazoa. **Genome Biology,** Submitted.
5. Wu, L., Hiebert, L.S., Klann, M., Bastin, B.R., Passamanack, Y., Maslakova, S.A., Seaver, E.C., Schneider, S.Q., Martindale, M.Q., Lambert, D. Ancient lineage-specific genes and the evolution of ciliary bands in spiralian. **PlosBiology.** In Revision.

#### Book Chapters and Invited Papers:

1. Duffy, D. J. and Martindale, M. Q. 2019. Perspectives on the expansion of human precision oncology and genomic approaches to sea turtle fibropapillomatosis. **Nature Communications Biology,** volume 2, Article number: 54
2. Salinas-Saavedra, M., Rock, A.Q., and Martindale, M.Q. 2018. Improved protocol for spawning and immunostaining embryos and juvenile stages of the ctenophore *Mnemiopsis leidyi*. **Nature Protocol Exchange** doi:10.1038/protex.2018.092.
3. Ohdera, A., Abrams, M., Ames, C.L., Baker, D.M., Bolivar, L.P.S., Collins, A., Gamero-Mora, E., Goulet, L.G., Hofmann, D.K., Jaimes-Becerra, A., Long, P., Marques, A.C., Miller, L., Mydlarz, L.D., Morandini, A.C., Newkirk, C., Putri, S., Samson, J., Stampar, S.N., Steinworth, B., Templeman, M., Thomé, P.E., Vlok, M., Woodley, C.M., Wong, J.C.Y., Martindale, M.Q., Fitt, W., Medina, M. 2018. Upside-down but headed in the right direction: Review of the highly versatile *Cassiopea xamachana* system. 2018. **Frontiers in Ecology and Evolution.** 6, 35.
4. Martindale, M.Q. The Onset of Regenerative Properties in Ctenophores. 2016. Eds. Tanaka, E., and Reddien, P., **Current Opinion in Genetics and Development.** 40, pp. 113-119 DOI: 10.1016/j.gde.2016.06.017.
5. Whilde, J., Martindale, M., Duffy, D., 2016. Precision Wildlife Medicine: Applications of the Human-centred Precision Medicine Revolution to Species Conservation. **Global Change Biology,** doi: 10.1111/gcb.13548.

6. Martindale, M. Q. and Henry, J. Q. (2015). The Embryology of the Ctenophora. Chapter 1. In “Evolutionary Developmental Biology of Invertebrates”, (A. Wanninger, ed.), **Springer**, Germany.
7. Simmons, D.K. and Martindale, M.Q. Ctenophora. in: Schmidt-Rhaesa, A., Harzsch, S. and Purschke, G. (2015): Structure and evolution of invertebrate nervous systems. **Oxford University Press** pp. 48-55.
8. Lyons D.C., Srivastava, M., and Martindale M.Q. (2014). Introduction to the symposium: The Cell’s View of Animal Body Plan Evolution. **Int. Comp. Biol.** doi: 10.1093/icb/icu108.
9. Tarrant, A.M., Gilmore, T.D., Reitzel, A.M., Levy, O., Technau, U., Martindale, M.Q. 2014. [Current directions and future perspectives from the third \*Nematostella\* research conference](https://doi.org/10.1016/j.zool.2014.06.005). **Zoology**, doi:10.1016/j.zool.2014.06.005.
10. Martindale, M.Q. 2013. Evolution of Development: The details are in the entrails. **Current Biology**. 23. R25-28.
11. Layden, M.J., Wolenski, F.S., Gilmore, T.D., and Martindale, M.Q. . 2013. Microinjection techniques for reverse genetic analysis in the starlet sea anemone, *Nematostella vectensis*. **Nature Protocols**. 924–934. doi:10.1038/nprot.2013.009.
12. Wolenski, F.S., Layden, M.J., Martindale, M.Q., Gilmore, T.D., and Finnerty, J.R. 2013. Characterizing the spatiotemporal expression of RNAs and proteins in the starlet sea anemone, *Nematostella vectensis* (Stephenson 1935). **Nature Protocols**. 8, 900–915. doi:10.1038/nprot.2013.014.
13. GIGA Community of Scientists. The Global Invertebrate Genome Alliance (GIGA): Developing Community Resources to Study Diverse Invertebrates. **Journal of Heredity**. (2013). 105, 1-18.
14. Martindale, M.Q. and Lee, P.N. 2013. The development of form: causes and consequences of developmental reprogramming associated with rapid body plan evolution in the Bilaterian radiation. **Biological Theory**. (DOI) 10.1007/s13752-013-0117-z.
15. Albertin, C., Bonnaud, L., Brown, C., Crookes-Goodson, W., Da Fonseca, R., Di Cristo, C., Dilkes, B., Edsinger-Gonzales, E., Freeman, JR., R., Hanlon, R., Koenig, K., Lindgren, A., Martindale, M., Minx, P., Moroz, L., Nödl, M., Nyholm, S., Ogura, A., Pungor, J., Rosenthal, J., Schwarz, E., Shigeno, S., Strugnell, J., Wollesen, T., Zhang, G., Ragsdale, C.. Cephalopod Genomics: A Plan of Strategies and Organization. **Standards in Genomic Sciences**, North America, 7, oct. 2012. Available at: <<http://standardsingenomics.org/index.php/sigen/article/view/sigs.3136559>>.
16. Martindale M.Q. and Telford M.J. 2010. Welcome to open access publishing at EvoDevo: a macroevolutionary change in sharing data. **EvoDevo** 1:1.
17. Robinson, G.E., Banks, J. A., Padilla, D.K., Burggren, W.W., Cohen, C.S., Delwiche, C.F., Funk, V., Hoekstra, H.E., Jarvis, E.D., Johnson, L., Martindale, M.Q., del Rio, C.M., Medina, M., Salt, D.E.,

- Sinha, S., Specht, C., Strange, K., Strassmann, J.E., Swalla, B.J., Tomanek, L. 2010. Empowering 21<sup>st</sup> Century Biology, **BioScience**, 60: 923–930.
18. Hejnal, A. and Martindale, M.Q. (2009) The mouth, the anus and the blastopore - open questions about questionable openings. In: "*Animal Evolution: Genomes, Fossils and Trees*", eds. Littlewood D.T.J. & Telford, M.J., **Oxford University Press**, pp. 33-40.
  19. Giribet, G., Dunn, C.W., Hejnal, A., Edgecombe, G.D., Martindale, M.Q., Rouse, G.W.(2009) Assembling the Spiralian Tree of Life. In: "*Animal Evolution: Genomes, Fossils and Trees*", eds. Littlewood D.T.J. & Telford, M.J., **Oxford University Press**, pp. 52-64.
  20. Pang K, Martindale MQ. Comb jellies (Ctenophora): a model for basal metazoan evolution and development. In *Emerging Model Organisms*. Edited by: Crotty DA, Gann A. Cold Spring Harbor: **Cold Spring Harbor Laboratory Press**; 2009:1:167-195.
  21. Pang, K. and Martindale, M.Q. 2008. Ctenophores. Quick Guide, **Current Biol** 18, R1119-20.
  22. Lee, P.N., Pang, K., Matus, D.Q., and Martindale, M.Q. 2006. A WNT of things to come: Evolution of Wnt signaling and polarity in cnidarians. **Seminars in Cell and Develop. Biol** 17, 157-167.
  23. Martindale, M.Q., and Finnerty, J.R., 2005. "Response" to: "A Clue to the Origin of the Bilateria" by Rieger et al. **Science**, 307, 354-355.
  24. Byrum, C. and Martindale, M.Q. 2004. "Cnidarians and Ctenophores": In "Gastrulation: From Cells to Embryos", Cold Spring Harbor Press, ed. Claudio Stern, pp. 33-50.
  25. Martindale, M.Q. 2001. The Atlas of Marine Invertebrate Larvae. Chapter 4. Phylum Ctenophora. Pp. 109-122. Academic Press. eds C.M. Young, M.A. Sewell, and M.E. Rice. San Diego.
  26. Irvine, Q. and Martindale, M.Q. 2001. Comparative analysis of polychaete Hox gene expression: implications for the evolution of body plan regionalization. **Amer. Zool.** 41, 640-651.
  27. Henry, J. J. and Martindale, M. Q. 1999. Conservation and innovation in the Spiralian Developmental Program. In: "*Developments in Hydrobiology*" vol. 142, (A. W. C. Dorresteijn and W. Westheide, ed.), 328pp. (reprinted from *Hydrobiologia*)
  28. Martindale, M. Q. and Kourakis, M. J. 1999. Hox clusters: Size doesn't matter. News and Views. **Nature**, 399, 730-733.
  29. Finnerty, J.R. and Martindale, M.Q. 1999. "The Evolution of the Hox Cluster: Insights from Outgroups". **Current Opinions in Genetics and Development. Genomes and Evolution**. Dec. 1998, eds W.F. Doolittle and M. Akam vol. 8 681-687.
  30. Martindale, M. Q. and Henry, J.Q. 1998. The development of radial and biradial symmetry: The evolution of bilaterality. **Amer. Zool.**, 38, 672-684.
  31. Henry, J.Q., and Martindale, M.Q. 1997. The Nemertea. In: "Embryology, The Construction of Life." (S. Gilbert, and A. Raunio, eds.), Sinauer Press, pp 151-166.

32. Martindale, M.Q., and Henry, J.Q. 1997. The Ctenophora. In: "Embryology, The Construction of Life." (S. Gilbert, and A. Raunio, eds.) Sinauer Press, pp. 87-111.
33. Irvine, S., and Martindale, M.Q. 1996. Cellular and molecular mechanisms of segmentation in annelids, *Seminars in Cell and Dev. Biol.* 7, 593-604.
34. Shankland, M. and Martindale, M.Q. 1992. Regional differentiation of lineally homologous neurons in the central nervous system of the leech. In *Determinants of Neuronal Identity* (eds M. Shankland and E.R. Macagno). Academic Press: New York. p. 47-78.
35. Shankland, M., and Martindale, M. Q. 1987. Spatial patterns of cell commitment in the embryo of the leech. In: "Molecular Biology of Invertebrate Development," (D.O'Connor, Ed.) Alan R. Liss; New York.

### Research Funding

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| 2018-2018 | NSF. FSML: Single Cell Marine 'Omics at the Whitney Lab for Marine Bioscience P.I. (\$359,083)   |
| 2017-2020 | NASA. SC37607-01/P0153802 Evolution of a Multi-Functional Adhesion Module Necessary for Complex Multicellularity. CoPI (\$304, 904)  |
| 2018-2021 | NSF. IOS-1755364 A functional analysis of the evolution of metazoan cell polarity. (\$850,000)   |
| 2018-2021 | NASA. 80NSSC18K1067 The spatial redeployment of conserved developmental signaling pathways fueled radical body plan evolution during the Cambrian "explosion. PI (\$1,146,833) |

### Research Funding-Pending

NIH R01: Combinatorial interactions subfunctionalize epithelial cell fate prior to gastrulation.

NIH R01 Harnessing long-lived marine vertebrates as natural models of environmentally and virally driven tumor formation. P.I.