

Deena Emera, PhD

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Current Positions

Senior Scientist and Writer in Residence, The Buck Institute for Research on Aging, Center for Female Reproductive Longevity and Equality, 2019-

Adjunct Professor, Dominican University of California, Department of Natural Sciences and Mathematics, 2019-

Education and Training

Postdoctoral Scholar, University of California, Berkeley, Department of Molecular and Cell Biology, 2017- 2018 (advisor Craig Miller)

Postdoctoral Fellow, Yale University School of Medicine, Department of Genetics, 2012- 2017 (advisor James P. Noonan)

Ph.D., Yale University, Ecology and Evolutionary Biology, 2006-2012 (advisor Günter Wagner)

M.A., New York University, Physical Anthropology, 2004-2006 (advisors Susan C. Antón and Todd R. Disotell)

M.A., San Francisco State University, Secondary Education, 2002-2004

B.A., University of California, Berkeley, Integrative Biology and Middle Eastern Studies (High Distinction), 1995-2000

Honors and Awards

Ruth L. Kirschstein National Research Service Award (NRSA), National Institute of General Medical Sciences, NIH, 2013-2016

John Spangler Nicholas Prize for outstanding doctoral student in Biology, Yale University, 2012

Honorable Mention, NSF Graduate Research Fellowship Program, 2007

Distinguished Achievement Award for Academic Excellence, San Francisco State University, College of Education, 2004

Department Recognition Award, University of California, Berkeley, Middle Eastern Studies, 1999

Research Interests

Gene regulatory evolution; evolution of pregnancy; brain development and evolution; transposable elements; functional and comparative genomics

Publications

Sarro, R., Kocher, A.A., **Emera, D.**, Uebbing, S., Dutrow, E.V., Weatherbee, S.D., Nottoli, T., Noonan, J.P., 2018. Disrupting the three-dimensional regulatory topology of the Pitx1 locus results in overtly normal limb development. *Development* 145: dev158550.

Kin, K., Maziarz, J., Chavan, A.R., Kamat, M., Vasudevan, S., Birt, A., **Emera, D.**, Lynch, V.J., Ott, T.L., Pavlicev, M., Wagner, G.P., 2016. The transcriptomic evolution of mammalian pregnancy: gene expression innovations in endometrial stromal fibroblasts. *Genome Biology and Evolution* 8(8): 2459-2473.

Emera, D., Yin, J., Reilly, S., Gockley, J., Noonan, J.P., 2016. Origin and evolution of developmental enhancers in the mammalian neocortex. *Proceedings of the National Academy of Sciences U.S.A.* 113 (19) E2617-E2626.

Reilly, S.K., Yin, J., Ayoub, A.E., **Emera, D.**, Leng, J., Cotney, J., Sarro, R., Rakic, P., Noonan, J.P., 2015. Evolutionary changes in promoter and enhancer activity during human corticogenesis. *Science* 347 (6226): 1155-1159.

Lynch, V.J., Nnamani, M.C., Kapusta, A., Brayer, K., Plaza, S.L., Mazur, E.C., **Emera, D.**, Sheikh, S.Z., Grützner, F., Bauersachs, S., Graf, A., Young, S.L., Lieb, J.D., DeMayo, F.J., Feschotte, C., Wagner, G.P., 2015. Ancient Transposable Elements Transformed the Uterine Regulatory Landscape and Transcriptome during the Evolution of Mammalian Pregnancy. *Cell Reports* 10: 551–561.

Cotney, J., Leng, J., Yin, J., Reilly, S., DeMare, L., **Emera, D.**, Ayoub, A., Rakic, P., Noonan, J., 2013. The evolution of lineage-specific regulatory activities in the human embryonic limb. *Cell* 154: 185-196.

Emera, D., Wagner, G., 2012. Transformation of a transposon into a derived prolactin promoter with function during human pregnancy. *Proceedings of the National Academy of Sciences U.S.A* 109: 11246-11251.

Emera, D., Wagner, G., 2012. Transposable element recruitments in the mammalian placenta: impacts and mechanisms. *Briefings in Functional Genomics* 11: 267-276.

Wagner, G., Tong, Y., **Emera, D.**, Romero, R., 2012. An Evolutionary Test of the Isoform Switching Hypothesis of Functional Progesterone Withdrawal: humans have a weaker trans-repressive effect of PR-A than mice. *Journal of Perinatal Medicine* 40: 345-351.

Emera, D., Romero, R., Wagner, G., 2012. The evolution of menstruation: a new model for genetic assimilation: explaining molecular origins of maternal responses to fetal invasiveness. *Bioessays* 34: 26-35. *Faculty of 1000 Biology Evaluated Article.

Emera, D., Casola, C., Lynch, V.L., Wildman, D., Agnew, D., Wagner, G., 2012. Convergent evolution of endometrial prolactin expression in primates, mice, and elephants through the independent recruitment of transposable elements. *Molecular Biology and Evolution* 29: 239-247.

Dalla Valle, L., Nardi, A., Bonazza, G., Zuccal, C., **Emera, D.**, Alibardi, L., 2010. Forty keratin-associated b-Proteins (b-keratins) form the hard layers of scales, claws, and adhesive pads in the green anole lizard, *Anolis carolinensis*. *Journal Of Experimental Zoology (Mol. Dev. Evol.)* 314B: 11-32.

Dalla Valle, L., Nardi, A., Toni, M., **Emera, D.**, Alibardi, L., 2009. Beta-keratins of turtle shell are glycine-proline-tyrosine rich proteins similar to those of crocodylians and birds. *Journal of Anatomy* 214: 284-300.

Dalla Valle, L., Nardi, A., Gelmi, C., Toni, M., **Emera, D.**, Alibardi, L., 2009. Beta-keratins of the crocodylian epidermis: composition, structure, and phylogenetic relationships. *Journal of Experimental Zoology (Mol. Dev. Evol.)* 312B: 42-57.

Lynch, V.J., Tanzer, A., Wang, Y., Leung, F., Gellersen, B., **Emera, D.**, Wagner, G.P., 2008. Adaptive changes in the transcription factor HoxA-11 are essential for the evolution of pregnancy in mammals. *Proceedings of the National Academy of Sciences U.S.A.* 105: 14928-14933. *Faculty of 1000 Biology Evaluated Article.

Book Reviews

Emera, D., 2014. YW Loke, Life's Vital Link: The Astonishing Role of the Placenta. *Evolution, medicine, and public health* 2014: 30-31.

Presentations and abstracts

Emera, D., 2020. The evolution of menopause. Reproductive Longevity and Human Potential Zoom Summit.

Emera, D., 2019. Molecular mechanisms driving the evolution of pregnancy. Center for Female Reproductive Longevity and Equality, The Buck Institute for Research on Aging, Novato, CA.

Emera, D., 2018. Origin and evolution of developmental enhancers. Department of Molecular and Cell Biology, UC Berkeley, presentation to faculty.

Emera, D., Yin, J., Reilly, S., Gockley, J., Noonan, J.P., 2017. Origin and evolution of developmental enhancers in the mammalian neocortex. Global Biodiversity Genomics Conference, Smithsonian National Museum of Natural History, Washington, D.C.

Emera, D., Yin, J., Reilly, S., Noonan, J.P., 2015. Evolutionary origins of developmental enhancers in the mammalian neocortex. Society for Molecular Biology and Evolution, Vienna, Austria.

Reilly, S., Yin, J., Ayoub, A., **Emera, D.**, Rakic, P., Noonan, J.P., 2015. Evolutionary changes in promoter and enhancer activity during human corticogenesis. Society for Molecular Biology and Evolution, Vienna, Austria.

Emera, D., Yin, J., Reilly, S., Noonan, J.P., 2014. Regulatory innovations contributing to neocortical evolution. Society for Molecular Biology and Evolution, San Juan, Puerto Rico.

Wagner, G., **Emera, D.**, Lynch, V., 2012. Transposable element mediated gene regulatory network innovation: the evolution of placental mammals. Society for Molecular Biology and Evolution, Dublin, Ireland.

Emera, D., Casola, C., Lynch, V.J., Wildman, D., Agnew, D., Wagner, G.P., 2011. Convergent evolution of endometrial prolactin expression in the human and elephant lineage through independent recruitment of transposable elements. Society for Integrative and Comparative Biology, Salt Lake City, UT.

Emera, D. 2010. Evolution of decidual prolactin expression and its consequences. Graduate Student Seminar, Department of Ecology and Evolutionary Biology, Yale University.

Emera, D. 2009. Mechanisms of primate parturition and menstruation. Graduate Student Seminar, Department of Ecology and Evolutionary Biology, Yale University.

Emera, D. 2008. Transposable Elements. Guest Lecture in Human Genetic Variation, Yale University.

Emera, D., Wagner, G.P., 2008. Molecular evolution of MER-39 and consequences on the evolution of menstruation in primates. Society for Integrative and Comparative Biology, Boston, MA.

Emera, D., 2008. Evolution of transcriptional regulation by transposable elements: the case of MER-39, prolactin, and primate menstruation. Graduate Student Seminar, Department of Ecology and Evolutionary Biology, Yale University.

Antón, S.C., Quinn, R.L., Pobiner, B., **Emera, D.**, Solomon, I., Disotell, T.R., Steadman, D.W., 2007. New evidence for ritual activity, relatedness, and diet in the precontact Cook Islands. American Association of Physical Anthropologists, Philadelphia, PA.

Professional Service

Peer Reviewer for (number of manuscripts): *Nature* (1); *Nature Neuroscience* (1); *Nature Reviews Genetics* (2); *Genome Research* (1); *Journal of Experimental Zoology B* (3); *BioEssays* (1); *Journal of Human Evolution* (1); *BMC Evolutionary Biology* (1); *Frontiers Cell and Developmental Biology* (1)

Membership in Professional Societies

Society for Molecular Biology and Evolution; Society for Integrative and Comparative Biology; American Association of Physical Anthropologists

Teaching Experience

Adjunct Professor, Dominican University, Graduate Research Methodology, Fall 2019

Adjunct Professor, Sacred Heart University, Concepts in Biology Lab, Fall 2014 & Spring 2015

Teaching Fellow, Yale University, Human Genetic Variation and Evolution (Professor Kenneth Kidd), Fall 2008

Guest Lecturer, Yale University, Human Genetic Variation and Evolution, Topic: "Transposons," Fall 2008

Teaching Fellow, Yale University, Principles of Evolution, Ecology, and Behavior, (Professor Stephen Stearns), Spring 2008

Teaching Fellow, Yale University, Conservation Biology (Professors Jeffrey Powell and Marta Wells), Fall 2007

Biology Teacher, Salesian High School, Richmond, California, 2000-2004

Other Positions

Editorial Associate, *Journal of Human Evolution* with Dr. Susan Antón, 2005-2006

Laboratory Assistant, Chiron Corporation, Emeryville, CA, 1995-1997

References

James Noonan, PhD

Associate Professor of Genetics and of Ecology and Evolutionary Biology

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Susan Antón, PhD

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