Curriculum Vitae

JOSHUA J. MITTELDORF

Contact Information

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Academic appointments

2016-18	visiting scholar	National Institute of Biological Sciences Beijing, China 102206
2014-19	consultant	Department of Biology Washington University, St Louis, M0 63130
2013-15	visiting scholar	Department of Ocean and Atmospheric Sciences Massachusetts Inst of Technology, Cambridge MA 02139
2012	visiting scholar	Department of Biology University of Vermont, Burlington VT 05405
2011	adjunct faculty	Department of Statistics Temple University, Philadelphia PA
2005-10	visiting scholar	Department of Ecology and Evolutionary Biology University of Arizona, Tucson AZ 85720
2004-05	adjunct faculty	Department of Mathematics and Statistics Temple University, Philadelphia PA
2003-04	adjunct faculty	Department of Mathematics LaSalle University, Philadelphia PA
1997	adjunct faculty	Department of Physics Bryn Mawr College, Bryn Mawr, PA
1984-86	teaching fellow	Department of Astronomy University of Pennsylvania, Philadelphia PA
1980-81	teaching fellow	Department of Astronomy Harvard University, Cambridge, MA

Academic Publications

Mitteldorf, J. 2019. A Clinical Trial Using Methylation Age to Evaluate Current Antiaging Practices *Rejuv Res* In press. https://doi.org/10.1089/rej.2018.2083

Mitteldorf, J. 2018. An Incipient Revolution in the Testing of Anti-aging Strategies *Phenoptosis*. **83**(9):1054-1060.

Mitteldorf, J. and Fahy, G, 2018. Questioning the inevitability of aging. *PNAS*. **115**(4): E558

Mitteldorf, J. 2018.What is Antagonistic Pleiotropy? Submitted to *Aging Cell*. https://doi.org/10.1101/321588

Mitteldorf, J. 2017. Combining Life Extension Treatments: A Proposal for High-Throughput Testing in Rodents *Biochemistry* (*Moscow*) **82**(12):1456-1461

Mitteldorf, J. 2016. An Epigenetic Clock Controls Aging *Biogerontol.* **17**(1):257-265

Mitteldorf, J. 2015. Is programmed aging a cause for optimism? *Curr Aging Sci.* **8**(1):69-75

Mitteldorf, J. 2015. How does the body know how old it is? Introducing the epigenetic clock hypothesis. *Interdiscip Top Gerontol*. **40**:49-62.

Mitteldorf, J. and Martins, A. 2014. Programmed Life Span in the Context of Evolvability. *Am Nat*. **184**(3):289-302.

Mitteldorf, J. 2014. Evolutionary Orthodoxy: How and why the evolutionary theory of aging went astray. *Curr Aging Sci.* **7**(1):38-47

Mitteldorf, J. 2013a. Telomere Biology: Cancer Firewall or Aging Clock? *Phenoptosis*. **78**(9):1054-1060.

Mitteldorf, J. 2013b. How does the Body Know How Old it Is? *Phenoptosis*. 78(9):1048-1053.

Mitteldorf, J. and Goodnight, C. 2013. Post-Reproductive Life Span and Demographic Stability. *Phenoptosis.* 78(9):1013-1022.

Mitteldorf, J. and Goodnight, C. 2012 Post-Reproductive Life Span and Demographic Stability. *Oikos.* 121(9):1370-1378

Mitteldorf, J. 2012a. Adaptive Aging and the Future of Evolutionary Theory. *Phenoptosis*. 77(7):716-725

Mitteldorf, J. 2012b. Demographic Evidence for Adaptive Theories of Aging. *Phenoptosis*. 77(7):726-728

Mitteldorf, J. 2012c. Neo-Darwinism and the Group Selection Controversy, in Sagan, D. (ed) *Lynn Margulis: the life and legacy of a scientific rebel*. Chelsea Green.

Mitteldorf, J. 2010a. Evolutionary origins of aging. In Fahy, G.M., West, M.D., Coles, L.S., and Harris, S.B. (eds). *Approaches to the control of aging*: Building a pathway to human life extension. New York: Springer.

Mitteldorf, J. 2010b. Aging is not a process of wear-and-tear. *Rejuv Res.* 13:322-325

Mitteldorf, J. 2010c Programmed and non-programmed theories of aging, *Russ J Gen Chem* 80(7):1465-1475

Mitteldorf, J. and Pepper, J. 2009a. Senescence as an adaptation to limit the spread of disease. *J Theor Biol.* 260:186-195

Mitteldorf, J. 2009b. Human fertility and longevity: re-analysis of the Caerphilly database. *J Am. Aging Assoc*. 32:79-84

Mitteldorf, J. and Pepper, J. 2007a. How can evolutionary theory accommodate recent empirical results on organismal senescence? *Theory in Biosciences* 126:3-8.

Mitteldorf, J. 2006a. Chaotic population dynamics and the evolution of aging: Proposing a demographic theory of senescence. *Evol Ecol Res* 8:561-574.

Mitteldorf, J. 2006b. How evolutionary thinking affects people's ideas about aging interventions. *Rejuvenation Res* 9:346-350.

Longo, V, Mitteldorf, J and Skulachev, V. 2005. Programmed and altruistic aging. *Nature Rev Genet.* 6(11):866-872

Mitteldorf, J. 2005. Life history evolution in the context of K selection: Solution of the age-structured logistic equation. *ArXiv* http://arxiv.org/ftp/q-bio/papers/0511/0511018.pdf:1-12.

Mitteldorf, J. 2004a. Aging selected for its own sake. *Evol Ecol Res* 6:1-17.

Mitteldorf, J. 2004b. Chaotic population dynamics and the evolution of aging. In Pollack, J., Bedau, M.A., Husbands, P., Ikegami, T., and Watson, A. (eds). Ninth International Conference on Artificial Life. Boston: MIT Press: 346-351.

Mitteldorf, J. 2004c Biology of Death: Origins of Mortality. By André Klarsfeld and Frédéric Revah; translated by Lydia Brady. Book review *Q Rev Biol* 79:338

Mitteldorf, J. and Pepper, J. 2004. Selection in ecosystems. In Minai A.and Bar-Yam Y. (eds). Fifth International Conference on Complex Systems. Boston: NECSI.

Mitteldorf, J. 2002a. Demographic homeostasis and the evolution of senescence. In Minai A et al. (eds). Fourth International Conference on Complex Systems. Nashua, NH: NECSI.

Mitteldorf, J. 2002b. Demographic homeostasis and the evolution of senescence. ArXiv http://arxiv.org/ftp/q-bio/papers/0602/0602020.pdf:1-12.

Mitteldorf, J., Ravela, S.C., Bell, R., Boccelli, D.L., Croll, D.H., and Seetharam D. 2002a. Evolution of the prudent predator. In Minai A. et al. (eds). Fourth International Conference on Complex Systems. Nashua, NH: NECSI.

Mitteldorf, J., Ravela, S.R., Croll, D.H. 2002b. Multi-level selection and the evolution of predatory restraint. In Standish, R.K., Bedau, M.A., Abbass, H.A. (eds). Eighth International Conference on Artificial Life. UNSW, Sydney, Australia: MIT Press: 146-152.

Mitteldorf, J. 2002c. Whence cometh death? *The Humanist* 62:18-23.

Mitteldorf, J. 2001a. Can current evolutionary theory explain experimental data on aging? *Sci Aging Knowledge Environ* 2001: vp9.

Mitteldorf, J. 2001b. Can experiments on caloric restriction be reconciled with the disposable soma theory for the evolution of senescence? *Evolution* 55:1902-1905.

Mitteldorf, J. and Wilson, D.S. 2000a. Population viscosity and the evolution of altruism. *J Theor Biol* 204: 481-496.

Mitteldorf, J and Wilson, D.S. 2000b. Population viscosity and the evolution of altruism. In Maley, C.C. and Boudreau. E. (eds). Seventh International Conference on Artificial Life. Reed College, Portland OR: MIT Press: 96-99.

Mitteldorf, J. 1998. Declining fertility. *Science* 282:1419.

Books

Aging is an Adaptive Evolutionary Program. (2016) CRC Taylor & Francis

Cracking the Aging Code: A New Look at Growing Old. (coauthored with Dorion Sagan) (2016) Flatiron / MacMillan

Software Packages

Bondsheet (*Scheerer Resources*) (1988)

PerSense (*Timeslips Corp*)– Every Financial Calculation you can Imagine (1989, updated to present)

Invited Talks

Undoing Aging, Berlin, Germany 3/19
Database for Epigenetic Evaluation of Treatments for Aging: Rationale for DATA-BETA project
International Symposium on Anti-aging Science, Stockholm, Sweden 1/19
Evaluating Combinations of Anti-aging Treatments with a Methylation Clock
RAADfest, San Diego, CA 8/17
"Natural anti-aging" is an oxymoron
National Institute of Biological Sciences, Beijing 7/17
What Evolution Tells us about Aging, and what Aging Tells us about Evolution
Current Approaches in Anti-Ageing Medicine, Geneva, Switzerland, 5/17
A proposal for high-throughput testing of combined treatments for life extension
Ethical Culture Society of New York, 11/16
What Science can Tell us about Death
National Institute of Biological Sciences, Beijing, 9/16
Group Selection and Aging as an Evolved Program
Washington University of St Louis Medical School, 7/16
Why do we age?
Pacific Grove Museum of Natural History, CA, 7/16
Why do we age?
Monterey Public Library, CA, 7/16
Why do we age?
Gilga-Mesh Working Group in Epigenetics of Aging, Santa Fe NM 5/16
Programmed aging: implications for gerontology
Monod Conference on Aging, Roscoff, France 10/15
Evolutionary Theory, a Shaky Foundation for our Understanding of Aging.
Science and Nonduality, Annual Conference San Jose, CA 10/15
Taking "Schroedinger's Cat" Seriously: Toward a Quantum Theory of Consciousness:
The Challenges of Research on Aging in the 21st century, University of Sherbrooke 10/14
An Epigenetic Aging Clock Controls Development and Senescence
Radical Life Extension, Conference Washington, DC 9/13
Suicide Genes and the Quest for Immortality
SENS-6 – Strategies for Engineering Negligible Senescence, Queens College, Cambridge, UK 9/13
Is aging governed by a biological clock?
Annual meeting of the American Aging Assoc, Baltimore, MD 6/13
How does the body know how old it is?
MIT, Guarente Lab, 10/12
Aging as a Darwinian Adaptation
Alcor Conference, Phoenix AZ 10/12
Prospects for Delay of Human Aging in an Evolutionary Context

Sierra Sciences, Reno NV 10/12
Implications of Telomere Research for Evolutionary Theory of Aging
University of São Paulo, Brazil 4/12:
Evolutionary theory and the future of medicine
University of Washington, Dept of Biology 8/11:
Aging as an evolved adaptation
Pacific Grove Museum of Natural History, California 1/11:
Suicide Genes: Why Nature has Arranged for us to Die,
and What We can Do About it
University of California Irvine, Dept of Biology 1/11:
Aging as an evolved adaptation
Stanford University, Dept of Biology 1/11:
Evolution of Post-reproductive Life Span
University of California San Francisco, Dept of Genetics 1/11:
Aging as an evolved adaptation
University of Moscow, *Homo sapiens liberatus*, biochemistry of aging 5/10:
Darwinian Evolution is a Highly Evolved Process
Buck Institute for Research in Aging, 2/07:
An Adaptive Origin of Senescence: Has Evolutionary Theory Misled Us?
University of Vermont, Dept of Biology, 9/06:
Radical Group Selection: Examples in Nature and Implications for Theory
Caloric Restriction Society, Annual Meeting (Tucson AZ), 4/06:
How Nature Has Arranged for Us to Get Die: Why 'Natural' Diets Can't Help Us Stay Young
University of Pennsylvania, Dept of Psychology, 4/06:
Radical Group Selection: Experimental Signature That Demands a Paradigm shift in Evolution
University of Vermont, Dept of Biology, 3/05:
Evidence that Aging Is an Adaptation in Its Own Right
University of Vermont, Dept of Biology, 3/05:
The Demographic Theory of Senescence
Yale University, Dept of Evolutionary Biology, 9/04:
Evolution of Aging: Why a New Theory Is Needed, and What That Theory Might Be
State University of New York, Binghamton, Dept of Ecology and Evolution, 5/04:
Evolution of Aging: Why a New Theory Is Needed, and What That Theory Might Be
State University of New York, Stonybrook, Dept of Ecology and Evolution, 4/04:
Evolution of Aging: Why a New Theory Is Needed, and What That Theory Might Be
University of Pennsylvania, Dept of Biology, 2/04:
Evolution of Aging: Why a New Theory Is Needed, and What That Theory Might Be
Caloric Restriction Society, Annual Meeting (Madison WI), 6/03:
What does Life Extension Science Have to Say to Evolutionary Theory,
and What Does Evolutionary Theory Have to Say to Life Extension Science?
University of California, San Francisco, Dept of Microbiology, 4/02:
Evidence that Aging Is an Adaptation in Its Own Right
State University of New York, Binghamton, Dept of Ecology and Evolution, 4/01:
Evidence that Aging Is an Adaptation in Its Own Right

Education

University of Pennsylvania	PhD	Physics (1987)
Harvard University	BA	Physics