

**Syllabus for PHIL 6740  
Philosophy of Biology  
Fall, 2009**

**Time & Place**

Tuesday, 7:00 pm- 10:00 pm  
Mack 304

**Instructors**

Stefan Linquist: linquist@uoguelph.ca  
Mack 358 (hours: Tues 5-6pm)  
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**Description**

This course will involve a critical exploration of central concepts, theories and methods in the biological sciences. Topics to be discussed include the units of selection debate, adaptationism, macroevolution, the prospects and limits of gene centrism, the relationship between evolution and development, the social reception of evolutionary ideas, and cultural evolution.

**Evaluation**

Weekly presentations: 40%  
Final paper: 60%

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**Outline**

**Sept 15: Philosophy and biology**

Discussion: Why should we think about philosophy of biology?

**Sept 22: What is the gene-centered view of evolution?**

*Background*

*Sex and Death*, Chapter 3, “The gene’s eye view of evolution” & Chapter 4, “The organism strikes back” (p 55-93).

*Selected Readings*

1. R. Trivers (1971), “The evolution of reciprocal altruism”, *Quarterly Review of Biology*, 46:35-57.
2. E. Sober & R. Lewontin (1982), “Artifact, cause and genic selection”, *Philosophy of Science*, 49: 157-180.
3. K. Sterelny and P. Kitcher (1988), “The return of the gene”, *Journal of Philosophy*, 85: 339-361.

**Sept 29: Does selection occur at multiple levels?**

*Background:*

*Sex and Death*, Chapter 8, “Organisms, groups and superorganisms” (p. 149-179)

*Selected readings*

1. E. Sober and D.S. Wilson (1998), *Unto Others*, Chapter 1, “Altruism as a biological concept”, (17-54).
2. S. Okasha (2004), “The ‘averaging fallacy’ and the levels of selection.” *Biology and Philosophy* 19(2): 167-184.

3. D.S. Wilson, (1989), "Levels of selection: An alternative to individualism in biology and the human sciences", *Social Networks*, 11:257-272.
4. R.A. Wilson, (2004) "Test cases, resolvability, and group selection: a critical examination of the myxoma case" *Phil Science* 71(3): 380.

**Oct 6: Is development under the control of a 'genetic program'?**

*Background*

Sex and Death, Chapter 5: The developmental systems alternative.

*Selected Readings*

1. Alex Rosenberg (1997), "Reductionism's redux: computing the embryo." *Biology and Philosophy* 12: 445-470.
2. Scott F. Gilbert, John M. Opitz and Rudolf A. Raff (1996), "Resynthesizing evolutionary and developmental biology. Reply to Rosenberg's Reductionism's redux", *Developmental Biology* 173: 357-372.
3. Paul E. Griffiths and Russell Gray (1994), "Developmental systems and evolutionary explanation." *Journal of Philosophy* 91: 277-304.
4. Kim Sterelny, Kelly C. Smith and Michael Dickison (1996), "The Extended Replicator", *Biology and Philosophy* 11: 377-403.

Oct 13: Visiting speaker: Paul Ewald.

**Oct 20: Adaptationism: Useful heuristic or Panglossian paradigm?**

*Background*

Sex and Death, Chapter 10, "Adaptation, perfection, function" (p. 215-252).

*Selected Readings*

1. Gould, S. J. and Lewontin, R. (1979): 'The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme' *Proceedings of the Royal Society of London*, 205, pp. 581-98.
2. E. Mayr, (1983), "How to carry out the adaptationist program?", *The American Naturalist*, 121:324-334.
3. D. Dennett (1996), *Darwin's Dangerous Idea*, Chapter 6, "Threads of actuality in design space" (p.124-148) and Chapter 9, "Searching for quality" (229-261).
4. J.C. Ahouse (1998), "The Tragedy of a Priori Selectionism: Dennett and Gould on *Adaptationism*." *Biology and Philosophy* 13 (3): 359-391.

**Oct 27: What are Species?**

*Background*

Sex and Death, Chapter 9, "Are species real?" (p. 180-214).

*Selected Readings*

1. D. Hull (1978), "A matter of individuality", *Philosophy of Science*, 45: 335-360.
2. D.B. Kitts & D. J. Kitts (1979), "Biological species as natural kinds", *Philosophy of Science* 46:613-622.

3. E. Sober, (1980), "Evolution, population thinking and essentialism", *Philosophy of Science*, 47: 350-383.
4. P. Griffiths (1999) "Squaring the circle: Natural kinds with historical essences", In *Species, New interdisciplinary essays*, edited by R. A. Wilson. (p. 209-228). Available at: <http://paul.representinggenes.org/webpdfs/Griff.99.SquaringCircle.pdf>

**Nov 3: Is macroevolution just microevolution writ large?**

*Background*

Erwin (2000), "Macroevolution is more than repeated rounds of microevolution", *Evolution and Development*, 2: 78-84.

*Selectd Readings*

1. S.J. Gould, (1985), "The paradox of the first tier: an agenda for paleobiology", *Paleobiology* 11: 1-12.
2. Charlesworth, B. et al. (1982), "A Neo-Darwinian commentary on macroevolution", *Evolution* 36: 474-498.
3. T. Grantham (2007), "Is macroevolution more than just successive rounds of macroevolution?" *Palaeontology*, 50(1): 75-85.
4. A.M. Simons (2002), "The continuity of microevolution and macroevolution", *J. of Evolutionary Biology*, 15: 688-701.

**Nov 10: Is there progress or directionality in evolution?**

*Background:*

Sex and Death, Chapter 12, "Life on earth: The big picture" (280-310).

*Selected Readings*

1. R. Dawkins (1992), "Progress", In Keller and Lloyd, *Keywords in Evolutionary Biology*.
2. S.J. Gould (1994), "The history of life on the earth", *Scientific American*, Oct: 85-91.
3. T. Shanahan (2000), "Evolutionary progress?", *Bioscience*, 50(5): 451-459.
4. D. McShea (1996), "Metazoan complexity and its evolution: is there a trend?", *Evolution*, 50(2): 477-492.

**Nov 17: Does Culture evolve?**

*Background*

J. Fracchia & R. Lewontin (1999), "Does culture evolve?", *History and Theory* 38(4): 187-210.

*Selected Readings*

1. S. Blackmore (2001), "Evolution and memes: The human brain as a selective imitation device", *Cybernetics and Systems*, 32: 225-255.
2. S. Atran (2001), "The trouble with memes: inference versus imitation in cultural creation", *Human Nature*, 12(4), 351-381.
3. Moore, John H. (1994), "Putting anthropology back together again: The ethnogenetic critique of cladistic theory", *American Anthropologist* 96(4): 925-948.
4. R. Gray; S. Greenhill and R. Ross (2007), "The pleasures and perils of Darwinizing culture (with phylogenies)", *Biological Theory*, 2(4): 360-375.

Nov 24: **Does evolutionary theory explain human morality?**

*Background*

E. Sober & D.S. Wilson (1998), *Unto Others*, Chapter 10: "The evolution of psychological altruism" (p.296-327).

*Selected Readings*

1. R. Boyd & P. Richerson, "culture and the evolution of human social instincts"  
<http://www.sscnet.ucla.edu/anthro/faculty/boyd/WennerGren0305.pdf>
2. R. Masters (1989), "Obligation and the new naturalism", *Biology & Philosophy* 4:17-32.
3. Robert Richards. 1986. A Defense of Evolutionary Ethics. *Biology and Philosophy* 1: 265-293.
4. Lemos, John. 1999. Bridging the Is/Ought Gap with Evolutionary Biology: Is This a Bridge Too Far? *The Southern Journal of Philosophy* 37: 559-577.

Dec 01: Visiting speaker Niles Elderedge