

History of Science 343: The Darwinian Revolution, Fall 2017  
MWF 11:00 a.m., Humanities 2637

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Office Hours: M 1:30-2:45 pm (207 University Club)  
T 1:30-3 pm (5118 Humanities)  
and by appointment

What does it mean to talk about a “Darwinian revolution”? In this course we will situate Darwin’s achievement in a broader timeline of evolutionary thought before and after his lifetime, all the way down to the present. In doing so, we will follow two chief aspects of evolutionary thinking: its scientific twists and turns, and its broader cultural significance, as it appeared in religious and sociopolitical realms. Geographic coverage will focus primarily on Britain, Europe and America.

In addition to historical content, this course also has a specific historical skills component: learning various different ways to work between primary sources (those written “at the time”) and secondary sources (those written later, analyzing the past). Undergraduates will develop and practice a different reading and analytical skill set in each unit. Grad students will hone their ability to extract arguments from secondary source books throughout the course, while their research papers will blend primary and secondary source readings.

**Undergraduate requirements:**

30% Class participation: read the assigned readings; post a minimum of 15 questions/comments on the reading for class sessions (at least 1 per week, due by 7 pm the day before class in order to receive credit, to include 12/6 for all); active listening and intelligent discussing in class.

20% Part I essay (1200-1500 words), due **Monday 10/16**

20% Part II essay (1200-1500 words), due **Friday 11/17**

30% final cumulative essay, (1800-2400 words), due **Wednesday 12/20**.

**Undergraduate Honors requirements (in addition to regular undergraduate requirements):**

A research paper on an approved topic of your choice, 2700-3600 words (roughly 9-12 pages) long (not including notes and bibliography, which are required). Due dates: initial meeting by 9/20; proposal with preliminary bibliography by 10/20; check-in/progress report by 10/31; preliminary draft by 11/22; final draft by 12/13. Paper will contribute 20% to overall grade, with 5% being removed from each other portion of the grade. Additionally, if paper is graded below a “B” (3.0) student will not receive honors course credit.

Book for purchase (available at *A Room of One’s Own Books*):

Charles Darwin, *Evolutionary Writings*, edited by James A. Secord (New York: Oxford, 2008)

All other readings will be in the HS 343 course reader.

A copy of the readings will be available on 3-hour reserve at College Library.

### **Graduate student requirements:**

30% Class participation: read the assigned readings; post a minimum of 15 questions/comments on the reading for class sessions (at least 1 per week, due by 7 pm the day before class in order to receive credit); active listening and intelligent discussing in class.

20% Three 800-word book reviews and associated oral reports over the course of the semester

50%: A 20-25 page research paper on an approved topic of your choice. Due dates: initial meeting by 9/20; proposal with preliminary bibliography by 10/20; check-in/progress report by 11/13; preliminary draft by 11/27; final draft by 12/15.

### **COURSE SCHEDULE:**

#### **Introduction: Revolutions in Evolution**

9/6 W: Course Introduction: Thinking together about Darwinian evolution and scientific and cultural change

9/8 F: Darwinism and Scientific Revolutions in Evolution: Then and Now

*According to Michael Ruse, how revolutionary was Darwinian evolution, and why? On what grounds today are some biologists saying that Darwinian evolution is undergoing a new revolution? What is at stake in claims for the revolutionary nature of scientific ideas?*

Michael Ruse, "The Darwinian Revolution: Rethinking its Meaning and Significance," *PNAS* 106, Suppl. 1, June 16, 2009, 10040-10047.

Oliver Burkeman, "Why everything you've been told about evolution is wrong," *The Guardian*, 9 March 2010, online at: <https://www.theguardian.com/science/2010/mar/19/evolution-darwin-natural-selection-genes-wrong>

visit website: The Third Way of Evolution, [www.thethirdwayofevolution.com](http://www.thethirdwayofevolution.com). Read "Rationale," and take a look at "People" and "Books."

#### **Part I (Sept. 11-Oct. 11): From "Transformism" to Darwin's Evolution**

*Analytic skills focus: close reading of primary sources, using secondary sources to offer context, especially about the audiences for which the primary sources were written.*

9/11 M: The Discovery of Extinction

*How did the concept of extinction enter natural history? Why did people such as Jefferson resist it, and with what arguments did they do so? On what grounds did Cuvier argue that extinction was part of nature's order?*

Mark Barrow, *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology* (Chicago: University of Chicago Press, 2009), 15-46, 364-371.

Georges Cuvier, “Living and Fossil Elephants,” and “The Megatherium from South America,” in *Georges Cuvier, Fossil Bones, and Geological Catastrophes*, edited and translated by Martin J. S. Rudwick (Chicago: University of Chicago Press, 1997), 13-32.

9/13 W: Avoiding Extinction: Lamarck

*What has been Lamarck’s reputation in the history of science? What were key features of Lamarck’s transformism? How did Lamarck seek to avoid extinction in his vision of the order of nature?*

Pietro Corsi, “Jean-Baptiste Lamarck: From Myth to History,” in *Transformations of Larmackism: From Subtle Fluids to Molecular Biology*, edited by Snait B. Gissis and Eva Jablonka (Cambridge: MIT Press, 2011), 9-18.

Jean Baptiste Pierre Antoine de Monet de Lamarck, *Zoological Philosophy*, trans. Hugh Elliot (New York: The Macmillan Company, 1914), Analytical Table of Contents (vii-xiv), 191-210.

9/15 F: The British Context: Natural Theology

*What is the burden of Paley’s argument in this selection from his famous book? How do the concerns expressed here about nature compare and contrast to those of Lamarck and Cuvier?*

William Paley, *Natural Theology* (12<sup>th</sup> ed., London 1809, digitized 1997), 1-19, 38-42.

9/18 M Voyage of the *Beagle* 1: Darwin Voyages Out

*What did Darwin include in his natural history writing? How did he react to encountering the very foreign peoples he met on the voyage? How does Beer’s essay help to contextualize Darwin’s writing?*

James A. Secord, “Introduction,” vii-xx, and Charles Darwin, *Journal of Researches* excerpts, 15-39, both in Darwin, *Evolutionary Writings* (Secord ed.) [book for purchase; not in reader]

Gillian Beer, “Traveling the Other Way,” in *Cultures of Natural History*, edited by N. Jardine, J. A. Secord, and E.C. Spary (Cambridge, England: Cambridge University Press, 1996), 322-337.

9/20 W Voyage of the *Beagle* 2: The Galapagos

*How does Darwin characterize the Galapagos Islands and life on them? How does this compare with his writing about other parts of South America? What does this tell us about what was scientifically important to him? About what he thought his readers would find interesting? Are these separate?*

Charles Darwin (in Secord, ed.), *Journal of Researches*, 39-63, 91-95 [in book for purchase]

9/22 F: *Vestiges* 1: Text

*Vestiges of the Natural History of Creation* is the most famous evolutionary work you never heard of. What was Chambers’ argument about the origin and nature of animal mind? Why might it have been shocking or sensational in 1844?

Robert Chambers, *Vestiges of the Natural History of Creation* [1844] (reprint ed. New York: Humanities Press, 1969), 191-205, 222-235, 324-360.

9/25 M: *Vestiges* 2: Context and Reception

*How does Yeo contextualize Chambers' Vestiges for us? What issues does he draw out for understanding its reception? What can you glean from this selection of Darwin's correspondence (from the spectacular Darwin Correspondence Project), especially with his good friend the botanist Joseph Hooker, about Darwin's own relationship to Vestiges?*

Richard Yeo, "Science and Intellectual Authority in mid-nineteenth-century Britain: Robert Chambers and *Vestiges of the Natural History of Creation*," *Victorian Studies* 28 (Autumn 1984): 5-31.

Letters from the Darwin Correspondence Project:

Darwin to Joseph D. Hooker, 11 January 1844: <https://www.darwinproject.ac.uk/letter/DCP-LETT-729.xml>

Hooker to Darwin, 30 December 1844 [note that there are lots of letters in between this one and the previous one; feel free to take a look at them on the Darwin Correspondence website!] <https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-804.xml;query=vestiges;brand=default>

Darwin to Hooker, 7 January 1845, <https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-814.xml;query=vestiges;brand=default>

Hooker to Darwin, 2-6 April 1845, <https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-850.xml;query=vestiges;brand=default>

Darwin to Charles Lyell, 8 October 1845  
<https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-919.xml;query=vestiges;brand=default>

Darwin to T. H. Huxley, 2 September 1854,  
<https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-1587.xml;query=vestiges;brand=default>

Darwin to Wallace, 1 May 1857, <https://www.darwinproject.ac.uk/letter/DCP-LETT-2086.xml>

9/27 W: *Origin*: Natural Selection

*In his first four chapters, Darwin sets up and introduces his theory of natural selection. How does he prepare the reader to be persuaded of its validity?*

Secord, Intro, xx-xxiii; Charles Darwin, *On the Origin of Species*, 106-126, 132-151, 157-173 (in Secord, ed.)

9/29 F: *Origin* 2: Evolution

Darwin (in Secord, ed.) *Origin*, 178-211; reviews and responses, 212-230

10/2 M: Wallace on Race, Mental and Moral Faculties

*How did Wallace view the origin of human races in 1864? What sorts of reactions did his*

*argument engender? How did his views change by 1869?*

Alfred Russel Wallace, "The Origin of Human Races and the Antiquity of Man deduced from the theory of 'Natural Selection,'" plus discussion; *Journal of the Anthropological Society of London* 2 (1864): clviii-clxxxvii.

Alfred Russel Wallace, "Limits of Natural Selection in Human Evolution," in *The Alfred Russel Wallace Reader: A Selection of Writings from the Field*, ed. Jane R. Camerini (Baltimore: Johns Hopkins, 2002), 160-163. Originally from "Geological Climates and the Origin of Species," *Quarterly Review*, 1869, 126: 359-94, on 391-394.

10/4 W: Darwin's *Descent of Man*: Race

*How is Darwin's argument on "the descent of man" similar to earlier arguments we've seen?*

*What's new? How does he characterize the nature and origin of races?*

Darwin, *Descent of Man*, Part I (in Secord, ed.) 233-288.

10/6 F: *Descent of Man*: Sex

*What features of evolution does Darwin's theory of sexual selection explain? How is sexual selection tied to race, in his theory? How should we understand Darwin's attitudes toward race and gender? Did he do "bad" science? As represented by the "Reviews and Responses," what were the most important features of *Descent of Man* to his contemporaries?*

Darwin, *Descent of Man*, 300-333, and "Reviews and responses," 334-347 in Secord, ed.

### **Receive Unit 1 Essay Question**

10/9 M Unit 1 Catch-up/Review

View Sean Carroll/HHMI film *The Making of a Theory: Darwin, Wallace, and Natural Selection* at <https://www.youtube.com/watch?v=XOiUZ3ycZwU> (32 min.)

in class: discussion of film; bring questions/ideas about first essay assignment to class.

## **Unit 2 (Oct. 11- Nov. 8) "Darwinism" and the Human Place in Nature**

*Analytic focus: On how scientists managed the relationship between scientific theory and broader cultural questions (e.g. race, gender, class, religion), with special attention to human evolution.*

10/11 W: The German Reception of Darwin's Theory

*Ernst Haeckel was the most famous German Darwinian scientist of the late nineteenth century.*

*But as Nyhart shows, he was just one of many German life scientists to respond to Darwin.*

*How does knowing this context help us read Haeckel's own work?*

Lynn K. Nyhart, "Chapter 4: Descent and the Laws of Development," in idem: *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900* (Chicago: University of Chicago Press, 1995), 105-142.

Ernst Haeckel, *The History of Creation*, (orig. 1868), trans. E. Ray Lankester (New York: Appleton, 1874/1887), 1-23.

10/13 F: Evolution and Belief 1: German Evolutionary Monism

*What are the basic elements of Haeckel's monism? What sort of moral order might be derived from it?*

Ernst Haeckel, *Monism as Connecting Religion and Science: The Confession of Faith of a Man of Science* (tr. J. Gilchrist), (London: Adam and Charles Black, 1894, digitized by Lee Dawei, Thomas Berger and Distributed Proofreaders). All. Note: the text is 29 typescript double-columned pages; the lengthy endnotes beginning thereafter are often fascinating little mini-essays of their own, worth reading too!

10/16 M: **Essay 1 due**; view *Proteus* in class

10/18 W: Paleoanthropology at the American Museum of Natural History  
*How did H. F. Osborn's understanding of memory shape his ideas of both evolution and its public representation? What other features of his ideas about human evolution stand out to you from these readings?*

Marianne Sommer, *History Within: The Science, Culture, and Politics of Bones, Organisms, and Molecules* (Chicago: University of Chicago Press, 2016), "Part I: "History in Bones: Henry Fairfield Osborn at the American Museum of Natural History," 21-66, 386-94.  
Henry Fairfield Osborn, *Men of the Old Stone Age* (New York: Charles Scribner's Sons, 1915), Preface and 243-277.

10/20 F: Evolution and Belief 2: Creationism in Early 20<sup>th</sup>-century America

Ronald L. Numbers, "Creationism, Intelligent Design, and Modern Biology," in Denis R. Alexander and Ronald L. Numbers, eds., *Biology and Ideology from Descartes to Dawkins* (Chicago: University of Chicago Press, 2010), excerpt, 302-316.

William Jennings Bryan, "God and Evolution," *New York Times*, Feb. 26, 1922

Henry Fairfield Osborn, "Evolution and Religion," *New York Times*, Mar. 5, 1922

Edward Grant Conklin, "Bryan and Evolution," *New York Times*, Mar. 5, 1922

All reprinted in *Creation-Evolution Debates, Volume 2 of Creationism in Twentieth-Century America: A Ten-Volume Anthology of Documents, 1903-1961*, edited by Ronald L. Numbers (New York: Garland Pub., 1995), 1-19.

10/23 M: The Search for Human Origins in Central Asia 1

*Why were paleoanthropologists looking for early humans in central Asia? How did perspectives on its significance differ among American and Chinese scientists?*

Hsiao-Pei Yen, "Evolutionary Asiacentrism, Peking Man, and the Origins of Sinocentric Ethno-Nationalism," *Journal of the History of Biology* 47 (2014): 585-625

Henry Fairfield Osborn, "Why Central Asia?" *Natural History*, May-June 1926, 262-69.

William K. Gregory and J. Howard McGregor, "A Dissenting Opinion as to Dawn Men and Ape Men," *Natural History*, May-June 1926, 270-71.

10/25 W: The Search for Human Origins in Central Asia 2

*How did the French Jesuit community intersect with the communities we looked at on Monday? What was at stake politically, religiously, and scientifically in the search for fossil humans in China in the 1920s?*

Père Teilhard de Chardin, "Fossil Man in China and Mongolia," *Natural History*, May-June

1926, 238-245.

Chris Manias, "Jesuit Scientists and Mongolian Fossils: The French Paleontological Missions in China, 1923-1928," *Isis* 108 (2017): 307-332.

10/27 F: The Contested Role of Heredity in Evolution

*What evolutionary problems was Weismann trying to solve with his theory of heredity? What did it include? How did it differ from those of his contemporaries?*

August Weismann, *The Germ-Plasm. A Theory of Heredity*. Trans. W. Newton Parker and Harriet Rönnfeldt. (New York: Charles Scribner's Sons, 1893), 1-35, 75-77.

Stephen Jay Gould, *The Structure of Evolutionary Theory* (Cambridge, MA: Belknap/Harvard, 2002) 197-208.

10/30 M: The Modern Evolutionary Synthesis 1

*What constituted "the modern synthesis," according to Julian Huxley (a participant)? According to Stephen Jay Gould (looking back on it later)?*

Julian Huxley, *Evolution: The Modern Synthesis* (New York: Harper, 1942), 13-46

Stephen Jay Gould, *The Structure of Evolutionary Theory* (Belknap/Harvard, 2002), 503-508, 518-21, 524-28.

11/1 W: The Modern Evolutionary Synthesis 2

*Gould characterizes Mayr's 1942 Systematics and the Origin of Species in relation to some of the main themes Gould himself is interested in. What are these? What is Mayr's goal in Ch. 5 of his book? How does his definition of species contribute to the synthesis? What does it exclude?*

Stephen Jay Gould, *The Structure of Evolutionary Theory*, 531-43.

Ernst Mayr, Ch. 5, "The Systematic Categories and the New Species Concept," in idem, *Systematics and the Origin of Species* (Columbia Univ. Pr., 1942), 102-122.

11/3 F: Human Evolution after World War II

*In the wake of World War II, how did liberal biologists and anthropologists seek to justify unity and equality through science? What repair work might they have been doing with respect to the authority of science?*

UNESCO, "The Scientific Basis for Human Unity, 18 July 1950," *The Phi Delta Kappan* 32/2 (1950): 34-36.

Julian Huxley, "Man's Place and Role in Nature," in idem, *New Bottles for New Wine* (London: Chatto & Windus, 1959), 41-60.

Theodozios Dobzhansky, *Mankind Evolving: The Evolution of the Human Species* (NY: Bantam Books, 1962), "Evolution in Process," 301-333.

11/6 M: Evolution and Belief 3: Teilhard de Chardin

*The Jesuit paleontologist Pierre Teilhard de Chardin sought to extend evolution from the realm of biology to that of philosophy and religion, in a way that he hoped would be acceptable to the Catholic Church. His explicit effort at reconciliation put him at odds with both the*

Vatican and many of his scientific colleagues. How does Julian Huxley's introduction situate Teilhard in relation to science, philosophy, religion, and Huxley himself? What is **your** reaction to the selection from Teilhard's *Phenomenon of Man* (edited by Barlow)?

Pierre Teilhard de Chardin, *The Phenomenon of Man* (New York: Harper & Brothers, 1959), "Introduction" (by Julian Huxley) and "Preface," 11-30.

Connie Barlow, *Evolution Extended: Biological Debates on the Meaning of Life* (Cambridge, MA: MIT Press, 1994), 145-164

11/8 W: Unit 2 Review Day: Receive 2<sup>nd</sup> Essay assignment (due 11/17)

11/10 F: Independent work day

Undergrads: work on Part II essay question on your own.

Grads: work on research paper.

### **Part III: The Changing Science of Evolution Since the 1950s: Extension or New Revolution?**

*Analytic foci: (1) Problems for evolutionary theory in the MS framework: do their solutions constitute a new revolution in understanding of evolution? (2) historians, philosophers, and scientists using history to shape the future of biology: what's at stake?*

11/13 M: The Synthesis Secured in the Lab: Antibiotic Resistance

*How did the issue of antibiotic resistance support the modern evolutionary synthesis? What assumptions of the synthesis did it need to alter?*

Bernard D. Davis, "Bacterial Genetics and Drug Resistance," *Public Health Reports* 67, no. 4 (1952): 376-379.

Angela N. H. Creager, "Adaptation or Selection? Old Issues and New Stakes in the Postwar Debates over Bacterial Drug Resistance." *Studies in History and Philosophy of Science* 38 (2007): 159-190.

11/15: W: The Synthesis Secured in the Field: Industrial Melanism

*How did the case of the peppered moth come to be represented as iconic for the modern evolutionary synthesis? Why was this problematic? Do you buy Rudge's argument?*

Kettlewell, H.B.D. "Darwin's Missing Evidence," *Scientific American* 200, no. 3 (1959): 48-53.

Joel Hagen, Retelling Experiments: H.B.D. Kettlewell's Studies of Industrial Melanism in Peppered Moths," *Biology and Philosophy* 14 (1999): 39-54.

David Rudge, "Does being wrong make Kettlewell wrong for science teaching?" *Journal of Biological Education*, 35, no. 1 (2005): 5-11.

11/17 F: The Synthesis Secured: Comparing the Cases

Essay 2 due!



Review readings for M and W. In-class exercise: drawing out key points/themes/topics of these readings for future.

11/20 M: Units of Selection I: Groups and Genes

*What was at stake for the players in the group selection controversy? What were they trying to account for?*

Mark Borrello, "The Rise, Fall and Resurrection of Group Selection," *Endeavour* 29, no.1 (March 2005): 43-47.

V. C. Wynne-Edwards, "Intergroup Selection in the Evolution of Social Systems," *Nature*, No. 4907 (Nov. 16, 1963): 623-626.

Robert L. Trivers, "The Evolution of Reciprocal Altruism," in Arthur Caplan, *The Sociobiology Debate: Readings on Ethical and Scientific Issues* (New York: Harper and Row, 1978) 213-226. Excerpted from *The Quarterly Review of Biology* 46 (March 1971): 35-39, 45-47.

Richard Dawkins, "Replicator Selection and the Extended Phenotype," *Zeitschrift für Tierpsychologie* 47 (1978): 61-76.

11/22 W: Units of Selection II: Hierarchy

*What is the role of hierarchy in the essays by Gould, on the one hand, and Szathmáry and Smith, on the other? How do the pictures they present shift the grounds from the scientists we looked at on Monday?*

Stephen Jay Gould, "Is a New and General Theory of Evolution Emerging?" *Paleobiology* 6, no. 1 (1980): 119-130.

Eörs Szathmáry and John Maynard Smith, "The Major Evolutionary Transitions," *Nature* 374 (16 March 1995): 227-232.

11/24 F: Thanksgiving break-no class!

11/27 M: Big-Picture Critiques

*What new elements are brought into play by these big-picture challenges to the modern evolutionary synthesis? Looking back over these readings and recent ones, note their dates of publication. What seems to have changed from ca. 1980 to ca. 1995?*

Stephen Jay Gould and Richard Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme," *Proceedings of the Royal Society of London. Series B, Biological Sciences* 205/1161 (1979): 581-598.

Scott F. Gilbert, John M. Opitz, and Rudolf A. Raff, "Resynthesizing Evolutionary and Developmental Biology," *Developmental Biology* 173 (1996): 357-372

11/29 W: Evo-Devo: A Revolution in Biology?

*Two biologist-philosophers debate whether or not Evo-Devo constitutes a revolution in biology. But why do they care? What's at stake for them?*

Francisco J. Ayala and Robert Arp, "Introduction" to "Part VI: Does Evolutionary

Developmental Biology Offer a Significant Challenge to the Neo-Darwinian Paradigm?” in *Contemporary Debates in Philosophy of Biology*, edited by Francisco J. Ayala and Robert Arp © 2010 Blackwell Publishing Ltd. ISBN: 978-1-405-15998-2 (4 pages)

Manfred D. Laubichler, “Evolutionary Developmental Biology Offers a Significant Challenge to the Neo-Darwinian Paradigm” in Ayala and Arp, *Contemporary Debates* (14 pages);

Alessandro Minelli, “Chapter 12: Evolutionary Developmental Biology Does Not Offer a Significant Challenge to the Neo-Darwinian Paradigm” in Ayala and Arp, *Contemporary Debates* (14 pages).

12/1 F: Evo-devo: Competing Histories

*What’s at stake for the authors in these different representations of the history of evo-devo?*

*Google the authors’ names to find out their disciplinary affiliations.*

Alan C. Love and Rudolf A. Raff, “Knowing your ancestors: themes in the history of evo-devo” *Evolution & Development* 5, no. 4 (2003): 327-330.

Gregory K. Davis, Michael R. Dietrich, and David Jacobs, “Homeotic Mutants and the Assimilation of Developmental Genetics into the Evolutionary Synthesis,” in *Descended from Darwin: Insights into American Evolutionary Studies, 1900-1970*, edited by Joe Cain and Michael Ruse (Philadelphia: American Philosophical Society, Transactions of the American Philosophical Society, volume 99, part 1, 2009), 133-154.

12/4 M: Symbiosis, Horizontal Gene Transfer, and Evolution

*What challenges to the modern evolutionary synthesis are presented by symbiosis and horizontal gene transfer?*

Jan Sapp, *Genesis: The Evolution of Biology* (New York: Oxford University Press, 2003), 234-251

Fernando de la Cruz and Julian Davies, “Horizontal Gene Transfer and the Origin of Species: Lessons from Bacteria,” *Trends in Microbiology* 8, no. 3 (March 2000): 128-133.

Luis Boto, “Horizontal gene transfer in the acquisition of novel traits by metazoans,” *Proceedings of the Royal Society B* 281 (2014): 20132450. (8 pages)

12/6 W: “Soft Inheritance”—The Revenge of Lamarck?

*How does the picture of inheritance presented by Jablonka and Lamb challenge the modern evolutionary synthesis? How does this reinforce what we’ve seen before, and what’s different here?*

*N.B. The readings by West-Eberhard, Haig, and Godfrey-Smith will be divided and students will report on them.*

Eva Jablonka and Marion J. Lamb, “Soft Inheritance: Challenging the Modern Synthesis,” *Genetics and Molecular Biology*, 31, no 2 (2008): 389-395. (ALL)

Eva Jablonka and Marion J. Lamb, “The Expanded Evolutionary Synthesis—a Response to Godfrey-Smith, Haig, and West-Eberhard,” *Biology & Philosophy* 22 (2007): 453-472 (ALL)

**To be divided among students:**

David Haig, “Weismann Rules! OK? Epigenetics and the Lamarckian Temptation” *Biology and Philosophy* 22 (2007): 415-428.

Peter Godfrey-Smith, “Is It a Revolution?” *Biology & Philosophy* 22 (2007): 429-437

Mary Jane West-Eberhard, "Dancing with DNA and Flirting with the Ghost of Lamarck,"  
*Biology & Philosophy* 22 (2007): 439-451.

**Optional:** David Epstein, "How an 1836 Famine Altered the Genes of Children Born Decades Later" (<http://io9.gizmodo.com/how-an-1836-famine-altered-the-genes-of-children-born-d-1200001177>), filed 8/26/13.

12/8 F: The Big Picture

*So what do we think? Are we in a new revolution?*

Kevin N. Laland et al., "The Extended Evolutionary Synthesis: Its Structure, Assumptions and Predictions," *Proc. Royal Society B* 282 (2015): 20151019. (14 pages)

Review readings from Sept. 8

12/11 M: The Ultimate Revolution? De-Extinction

*Most of the challenges to the modern synthesis we've looked at so far have to do with changing theoretical assumptions supported by new lines of research. But what about human intervention? What if we could change one of the most basic premises of evolution itself, by eliminating extinction? Should we?*

Beth Shapiro, *How to Clone a Mammoth* (Princeton: Princeton University Press, 2015), 1-50

12/13 W: Last Class! Unit and Course Review

**Final papers due Dec. 20 by 10 a.m.**

### **Academic Performance and Accommodation:**

**Classroom etiquette:** While you are in class, you should pay attention exclusively to matters relevant to this class. Cell phones must be turned off and put away. You may use a laptop only for taking or viewing notes for this class, not for any other purposes during class time.

**Extensions** are only granted if requested before the due date, and only in case of illness or other serious emergency. All extensions will have a definite new due date established. Papers received after the new due date will be subject to late paper penalties.

**Late paper policy:** any piece of writing that you hand in late without an extension will have the following penalties assessed: a quarter of a grade for every working day late. For example, if the paper on its merits deserves a B, after one day it would receive a B/BC, after two days a BC, after three a BC/C, after four a C. NOTE: LATE FINAL PAPERS WILL NOT BE ACCEPTED.

**Academic Credit and Plagiarism:** Students may not copy sentences or ideas from others (including authors, websites, or other students) without giving credit to those sources; if someone else's words are so wonderful that you cannot substantially rephrase them, you must put them inside quotation marks, using the exact same words. If you omit the quotation marks or the credit, you are plagiarizing. Plagiarism is grounds for failure on the assignment plagiarized; repeated plagiarism is ground for failure in the course. If you use 3 or more words in a row from another source, they must be placed in quotation marks and footnoted. Otherwise, it is plagiarism. For more details on what plagiarism is and how to avoid it, consult a style manual, the History Lab, or the Writing Lab. An excellent source of all the ways you can go wrong is: <http://students.wisc.edu/doso/docs/Plagiarism.pdf>

**Appealing a Grade:** If you have questions about a grade, come speak to me. If the problem is not resolved, speak with the History of Science Undergraduate Advisor, Scott Burkhardt. He will attempt to resolve the issue informally and inform you of the Appeals Procedures if no resolution is reached informally.

**Access and Accommodation:** I will make every effort to honor requests for reasonable accommodations made by individuals with disabilities. (If you think you qualify for accommodation, please contact the McBurney Disability Resource Center [[www.mcburney.wisc.edu](http://www.mcburney.wisc.edu)] to establish your eligibility for services.) Requests for accommodation can be responded to more effectively if I receive them as far in advance as possible, preferably at the beginning of the semester. Such requests are confidential.

**Religious Observance:** If religious holidays or observances conflict with your participation in this course, please come talk to me well in advance for us to work out alternative arrangements.

If any other problems arise, either academic or personal, which might jeopardize your performance in the course, you must try to inform me after class or by the soonest available office hour, by email ([lknyhart@wisc.edu](mailto:lknyhart@wisc.edu)).