

Integrated Studies 0001: Becoming Humans
University of Pennsylvania
Fall 2022

EVOLUTIONARY BIOLOGY AND HUMAN LIFE (Professor Paul Sniegowski): The age of the earth and its living things, whether time is cyclic, endless, or directed toward some fixed end, and whether living creatures have always been just as they are today—these are subjects that have interested all human societies throughout history. Contemporary science tells us that the universe is some 13.7 billion years old, that Earth is roughly 4.6 billion years old, and that life on Earth began in simple single-celled form roughly 3.8 billion years ago and has evolved its present complexity and diversity through natural processes. How have these things come to be regarded as reliable truths about our world, and how reliable are they? This course will explore the development and substance of evolutionary biology in historical context, beginning before Darwin and ending in the 21st century. We will discuss historical sources in biology and geology primarily from the European scientific tradition, considering how religious doctrine, combined with antecedents in classical antiquity, influenced European efforts to understand nature. We will trace how an emerging view that the earth is immensely old influenced the thinking of Lamarck, Lyell, Darwin, Wallace, and others in the 19th century. We will then consider the rise of genetics, the fusion of paleontology, evolutionary theory and genetics that occurred in the 20th century, and the implications of genomic science in the 21st century. With historical and contemporary knowledge of evolutionary thinking in hand, we will explore the relevance of evolution to old questions about human biology, human nature, and human culture: Why do we grow old? Why do we tend to get cancer? How much of modern human behavior is explainable as a consequence of our evolutionary past? Is “race” a valid biological concept in humans? Is there a purpose to human life in the light of evolution? As we consider these and other questions from an informed scientific perspective, we will engage with classical thought on similar kinds of questions, asking whether our present understanding of evolution challenges long-held philosophical views.

THE GREEKS ON HUMAN ORIGINS, BIOLOGY AND COSMIC PURPOSE (Professor Ralph Rosen): We tend in our own era to think of ‘evolution’—and all the many questions about the origins, development and adaptation of living species associated with it—as a relatively recent scientific theory that emerged from the research of 19th-C thinkers such as Charles Darwin. But the questions that animated European scientists of the modern era were hardly new: humans had been grappling with the nature and meaning of their own physical and mental existence for centuries, and, despite limited technology and often inchoate systems of argumentation, they articulated many avenues of inquiry and methodologies that continue to shape the contours of modern science. This class will focus on the ancient Greek intellectual tradition that concerned itself with investigating the enigma of human origins, the nature of biological reproduction, physical and cultural change (what we might now call ‘evolution’), the interaction of ‘innate’ and ‘acquired’ traits, and grand—still controversial—questions of teleology (e.g., does human physiology suggest the intentionality of a creator with a cosmic plan? Do we live in an ordered or random universe? What does it mean to assign values to human behavior?). While many pre-modern societies around the world had also addressed some of the questions, the Greeks have left us a particularly rich and varied written tradition stretching from 6th C BCE to the 2nd C CE. This intellectual tradition directly informed the research program of early modern scientists, and has influenced many foundational aspects of even the most cutting-edge science today. We will, accordingly, explore this tradition, thematically and chronologically through a variety of Greek authors, some already celebrated, such as Plato and Aristotle, but just as many who are less well known, but no less profound and in some cases even more influential for the history of thinking about human origins and evolution—Presocratic philosophers, the ‘Sophists’, Hippocratic medical writers, Stoic philosophers, and the brilliant polymathic scientist and physician Galen.

Teaching Team Information

Evolutionary Biology and Human Life

Professor Paul Sniegowski, paulsnie@sas.upenn.edu, Office: 215-573-4085, Cell: 610-716-3907
Office Hours: Fridays, 3-4:30pm in Leidy 213, or by appointment

Greek Intellectual History

Professor Ralph Rosen, Cohen 292, rrosen@sas.upenn.edu, Office: 215-898-7425, Cell: 610-291-8075
Office Hours: Thursdays, 2-4pm

Seminars

Dr. David Dunning, Cohen Hall 175, dunningd@sas.upenn.edu
Office Hours: Tuesdays, 1:30-3:00pm and by appointment

Dr. Kristian Taketomo, Cohen Hall 175, taketomo@sas.upenn.edu
Office Hours: Tuesdays, 11:45-1:15pm and by appointment

Dr. Julio R. Tuma, Cohen Hall 435, tuma@sas.upenn.edu, 215-898-4772
Office Hours: Thursdays, 9:30-10:15am & 11:45-12:30pm, and by appointment

Texts

All course readings are available through the Canvas course website.

Key Dates:

Tuesday, August 30, 10:15am: Introduction to “Becoming Humans” with full teaching team

Tuesday, August 30, 3:30pm: First class in Greek Intellectual History with Professor Rosen

Thursday, September 1st, 10:15am: First class in Evolutionary Biology with Professor Sniegowski

Friday, September 2nd: First Seminar Session

Tuesday, Sept. 20: Bio Paper due at 10:00am via Canvas

Friday, September 23: First Integrative Assignment due at 5:00pm via Canvas

Tuesday Sept. 27: First Classics Paper due at 10:00am via Canvas

Wednesday, October 5: Second Integrative Assignment due at 5:00pm via Canvas

Tuesday October 18: Bio Problem Set due in class

Tuesday October 25, 3pm: Classics Mid-term: In Class

Tuesday November 1, 10:30am: Bio Mid-term: In Class

Friday, November 4: Third Integrative Assignment due at 5:00pm via Canvas

Tuesday November 22: Second Classics Paper due at 10:00am via Canvas

Friday, December 9: Fourth Integrative Assignment due at 5:00pm via Canvas

Thursday December, Bio Final Exam location and time TBA

Wednesday December, Classics Final Exam location and time TBA

If you intend to miss class for religious holidays that are not observed by the university, you must inform the appropriate professor of your anticipated absences by **September 20th** if you wish to request that alternative arrangements be made. For the university’s policy on religious holidays, see:

<https://almanac.upenn.edu/articles/recognized-holidays-for-fiscal-year-2022>

Seminar Times & Locations:

Please attend the seminar assigned to you by the Registrar:

- 301 Dr. Tuma, Fridays 10:15-11:05am, Hill House Seminar Room
- 302 Dr. Tuma, Fridays Noon-12:50pm, Hill House Seminar Room
- 303 Dr. Taketomo, Fridays Noon -12:50pm, Hill House Club Lounge
- 304 Dr. Taketomo, Fridays 1:45 - 2:35pm, Hill House Club Lounge
- 305 Dr. Dunning, Fridays 1:45 - 2:35pm, Hill House Seminar Room
- 306 Dr. Dunning, Fridays 3:30-4:20pm, Hill House Seminar Room

Assessment and Course Grade Breakdown

You will receive one single grade for Integrated Studies 001.

Each of the two streams and the Seminar is worth 30% of this single grade. The Thursday integrative session is worth 10% of this final grade.

The grade breakdown for each stream is as follows:

Evolutionary Biology (30% of INTG0001 grade)

Evaluation:

Paper:	—due Sept. 20:	20%
Problem set	—due Oct. 18:	10%
MIDTERM:	—November 1:	30%
FINAL:	—TBA:	40%

Greek Intellectual History (30% of INTG0001 grade)

Paper 1:	—due Sept. 27:	10%
MIDTERM	—Oct. 25:	30%
Paper 2:	—due Nov. 22:	20%
FINAL:	—TBA:	40%

Thursday Integrative Sessions (10% of INTG0001 grade)

Attendance and in-class exercises: 100%

Seminar (30% of INTG0001 grade)

Attendance & Participation: End of Semester	20%
Integration Assignment 1: Due September 23 at 5 p.m	10%
Integration Assignment 2: Due October 5 at 5pm	15%
Integration Assignment 3: Due November 4 at 5pm	25%
Integration Assignment 4: Due December 9 at 5pm	30%

Policy on Academic Integrity: Students are expected to follow the Code of Academic Integrity as laid out in the College regulations (<https://catalog.upenn.edu/pennbook/code-of-academic-integrity/>). Violations of the code — i.e., cheating on exams, plagiarism, etc. — will be referred to the Office of Student Conduct, and will be given a failing grade for the assignment, plus whatever other sanctions are levied by the Office. *If you have any questions or doubts about what constitutes a violation of the code, please ask.*

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<p>WEEK 1: August 29- September 2: Origins</p>	<p>August 30::</p> <p>Introduction to “Becoming Humans” with Teaching Team</p>	<p>August 30: Introduction.</p> <p>What do we mean by ‘Classics’ and ‘Classical Studies’? Why do we study the Greeks? Some consideration as well of chronology, historical periodization and geography.</p> <p>Reading (optional):</p> <ul style="list-style-type: none"> James I. Porter, ‘What is Classical about Classical Antiquity: Eight Propositions’ (<i>Arion</i> 2005). 	<p>September 1: Deep time, geology, and physics.</p> <p>Approaches to understanding the age of the earth and the universe, from early geology to radiometric dating.</p> <p>Readings:</p> <ul style="list-style-type: none"> “Set Piece on Geologic Time”, pp. 69–99 in <i>Annals of the Former World</i>, by John McPhee Evolution 101 readings: In the section History of Evolutionary Thought: 1800s, read Biostratigraphy: William Smith, and Uniformitarianism: Charles Lyell. In the section History of Evolutionary Thought: 1900 to Present, read Radiometric Dating: Clair Patterson. 	<p>September 2:</p> <p>Seminars</p>

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<p>WEEK 2: September 5-9: Change and the Natural World</p>	<p>September 6: Natural history and natural selection.</p> <p>The influences of natural history and biogeography on 18th- and 19th-century thinking about the diversity and apparent purposefulness of living things.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Introduction by Ernst Mayr (1964) to Darwin's 1859 <i>On the Origin of Species</i> ● "On the Tendency of Varieties to Depart Indefinitely from the Original Type", by A.R. Wallace. 1858 ● <i>On the Origin of Species</i>, by Darwin: <ul style="list-style-type: none"> ○ read Darwin's "Introduction" (pp. 1-6, read online or download) and ○ Chapter 3, "Struggle for Existence" (pp. 60-79, read online or download). ● Evolution 101 readings: In the section History of Evolutionary Thought: Pre-1800, read Observation and Natural Theology: William Harvey and William Paley. In the section History of Evolutionary Thought: 1800s, read Early Concepts of Evolution: Jean Baptiste Lamarck, Natural Selection: Charles Darwin and Alfred Russel Wallace, and Biogeography: Wallace and Wegener. 	<p>September 6: Presocratics and Sophists</p> <p>Early Greek thinkers on the pre-history of humankind, golden-age thinking, myths of progress and decline. Early theories of human origins and attempts at evolutionary thinking and anthropology.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Anaximander, Thales, Xenophanes, Heraclitus — fragments in Curd, <i>A Presocratics Reader</i> ● Hesiod, <i>Works and Days</i>, pp. 87-103 only ● David Sedley, <i>Creationism and its Critics in Antiquity</i> (pp. 1-26 only, "The Presocratic Agenda") 	<p>September 8:</p> <p>Discussion led by Dr. Tuma</p>	<p>September 9:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays	Greek Intellectual History Tuesdays	Integrative Session Thursdays	Seminar Fridays
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	10:15-11:35 a.m. ARCH 208	3:30-4:50 p.m. ARCH 208	10:15-11:35 a.m. ARCH 208	
<p>WEEK 3: September 12-16: What is an Organism and How Does it Work?</p>	<p>September 13: What runs in families? I. The problem of heredity.</p> <p>The tendency for offspring to resemble parents had been known for thousands of years, but mechanisms governing heredity remained obscure well into the 19th century.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● <i>On the Origin of Species</i>, Chapter 1, “Variation under Domestication” (read online or download) and Chapter 2, “Variation under Nature” (read online or download) ● “Parents and children: ideas of heredity in the 19th century”, by John C. Waller (2003). 	<p>September 13: Hippocratic ‘rational’ medicine.</p> <p>Introduction to Hippocratic medical authors (5th-4th C BCE). The Hippocratic question of ‘science’ vs. ‘superstition’, ‘primitive humans’, human ‘nature’.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Vivian Nutton, <i>Ancient Medicine</i>, pp. 37-86: <ul style="list-style-type: none"> ○ Chapter 3: ‘Before Hippocrates’ ○ Chapter 4: ‘Hippocrates, The Hippocratic Corpus and the Defining of Medicine’ ● Hippocrates, ‘Tradition in Medicine’ [aka <i>On Ancient Medicine</i>] 	<p>September 15:</p> <p>Discussion led by Dr. Taketomo</p>	<p>September 16:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:15 a.m. ARCH 208	Seminar Fridays
<p>WEEK 4: September 19-23: Generation and Reproduction</p>	<p>September 20: What runs in families? II. The rediscovery of Mendel</p> <p>Mendel’s experimental work with peas, which revealed the fundamental patterns of heredity in creatures like us, was rediscovered in 1900—marking the beginning of genetics and setting the stage for a theory of evolution that combined genetics and natural selection.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Evolution 101. In the section History of Evolutionary Thought: 1800s, read Discrete Genes are Inherited: Gregor Mendel • “Experiments in Plant Hybridization,” by Mendel (1865) • Mendelian Genetics, from knowgenetics.org. <p>BIO PAPER DUE</p>	<p>September 20: Hippocratic and Aristotelian embryology</p> <p>Hippocratic texts on reproduction, embryology and gynecology.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Hippocrates, <i>The Seed, The Nature of the Child</i> • Helen King, <i>Hippocrates’ Woman</i>, pp. 1-20 • Bonnie MacLachlan, ‘Voices from the Underworld: The Female Body Discussed in Two Dialogues’ (<i>Classical World</i> 2006, 423-433). 	<p>September 22:</p> <p>Discussion led by Dr. Dunning</p>	<p>September 23:</p> <p>Seminars to be held in Kislak Rare Books Library at Noon & 1:45 pm</p> <p>First Integrative Assignment due at 5:00pm via Canvas</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 5: September 26-30: Remarkable Creatures</p>	<p>September 27: The “Modern Synthesis.”</p> <p>Genetics, evolutionary theory since Darwin and Wallace, biogeography, and observations from the fossil record merged to form a synthetic theory of evolution in the first few decades of the 20th century.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● <i>On the Origin of Species</i>, Chapter 4, “Natural Selection” (read online or download) ● Evolution 101. In the section History of Evolutionary Thought: 1900 to Present, read Random Mutations and Evolutionary Change: Ronald Fisher, JBS Haldane, & Sewall Wright, Starting “The Modern Synthesis”: Theodosius Dobzhansky, and Speciation: Ernst Mayr. 	<p>September 27: Curious Greeks find old bones.</p> <p>Paleontology among the Greeks. Theories connecting observation of dinosaur fossils with mythological stories.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Mayor, <i>The First Fossil Hunters</i>, Ch. 3 ● Philostratus, <i>Of Heroes</i>, secs. 1-8 ● G. E. R. Lloyd, ‘The Evolution of Evolution’ (rept., 2006) <p style="text-align: center;"><i>PAPER 1 DUE</i></p>	<p>September 29:</p> <p>Discussion led by Dr. Sniegowski</p>	<p>September 30:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 6: October 3-7: Populations and Environments</p>	<p>October 4: Population and quantitative genetics</p> <p>We use some blackboard work and simple computer simulations to investigate how evolution occurs at the genetic level. We address how rapidly evolution can occur as well as the interacting roles of genetics and environment in determining individual phenotypes.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Evolution 101. In the section Mechanisms: The Processes of Evolution, read Descent with Modification, Mechanisms of Change, and Genetic Variation. 	<p>October 4: Hippocratic thinking on interactions between environment and physiology/physiognomy</p> <p>The Hippocratic treatise, <i>Airs Waters Places</i> is an early (5th C BCE) treatise on (as we would now put it) public health, environmental influences on bodily type, temperament, and even national character. It even tries to come to terms with eccentric phenotype variation in proto-evolutionary, nearly epigenetic, terms.</p> <p>Readings:</p> <ul style="list-style-type: none"> • G. E. R. Lloyd, 'The Invention of Nature' (1991) • Hippocrates, <i>Airs Waters Places</i> <p>SECOND INTEGRATIVE ASSIGNMENT DUE at 5:00pm Wednesday, October 5th</p>	<p>October 6:</p> <p>FALL BREAK; NO CLASS</p>	<p>October 7:</p> <p>FALL BREAK; NO SEMINARS</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 7: October 10-14: Teleology: Do Things Have a Purpose?</p>	<p>October 11: Mutation: The origin of genetic variation.</p> <p>Do genetic mutations arise indifferently (“randomly”) or do they arise preferentially when needed? We discuss the history of ideas about how mutations occur, contrasting views of mutation rooted in Lamarckian and Darwinian perspectives on evolution.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Evolution 101. In the section Mechanisms: The Processes of Evolution, read Mutations, Mutations (2 of 2), The Causes of Mutations, and Mutations are Random. In addition, read DNA Basics and Different Types of Mutations. • <i>On the Origin of Species</i>, Chapter 5, “Laws of Variation” (read online or download) 	<p>October 11: Aristotle on animals: morphology and teleology.</p> <p>The great Aristotle’s attempts to theorize the nature and purpose of animal morphology and phenotypes.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Aristotle: <i>Generation of Animals</i>, books 1-2 • Aristotle: <i>History of Animals</i>, books 1 and 9 • Aristotle: <i>Parts of Animals</i>, book 1 	<p>October 13:</p> <p>Discussion led by Dr. Rosen</p>	<p>October 14:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 8: October 17-21: Ordering the World</p>	<p>October 18: The tree of life</p> <p>The history of attempts to classify life, from pre-Darwinian schemes to modern phylogenetic approaches.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Re-read <i>On the Origin of Species</i>, Chapter 4, pp. 126-130 (read online or download) • Evolution 101: read all nine subsections in the section Patterns, from The Family Tree to Important Events in the History of Life <p><i>PROBLEM SET DUE</i></p>	<p>October 18: Plato's Social Engineering/Eugenics</p> <p>Plato's attempt in his <i>Republic</i> to engineer a rational, just state through top-down legislation and whether it is useful, or inappropriately anachronistic, to align his thinking with eugenic theorizing of the 19th and 20th centuries.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Plato: Republic, book 5 • Select articles on Plato's eugenics 	<p>October 20:</p> <p>Discussion led by Dr. Taketomo</p>	<p>October 21:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 9: October 24-28: Breeding Humans</p>	<p>October 25: Eugenics.</p> <p>We discuss the dark history of eugenic ideas—inspired in part by genetic approaches to evolution—in the 19th and 20th centuries.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Introduction to Eugenics, from knowgenetics.org ● “Taking race out of human genetics,” Michael Yudell, Dorothy Roberts, Rob DeSalle, and Sarah Tishkoff (<i>Science</i>, 2016) ● “American Chronicles: Old Hatreds,” by Ian Frazier (<i>New Yorker</i>, 2019) ● “Where Science Meets Fiction: The Dark History of Eugenics,” by Adam Rutherford (<i>Guardian</i>, 2022). 	<p>October 25: In-Class Midterm</p>	<p>October 27:</p> <p>Discussion led by Dr. Sniegowski</p>	<p>October 28:</p> <p>Seminars</p> <p>Possible Visit to Penn Museum</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 10: October 31- November 4: Is There Such a Thing as Human Nature'?</p>	<p>November 1: In-Class Midterm</p>	<p>November 1: Plato on humans in 'their natural state'.</p> <p>Plato had much to say about the question of what divides humans from other animals. In particular he was deeply concerned with how one moves from biology to moral behavior, from nature to culture (and whether there really <i>is</i> or <i>should be</i> a distinction between the two for humans). Does 'might' make 'right' for <i>humans</i>, as it seems to in the animal world.</p> <p>Readings:</p> <ul style="list-style-type: none"> ● Plato: <i>Republic</i>, book 1 (Thrasymachus) ● Plato: <i>Gorgias</i>, pp. 826-837 (Callicles) ● Thucydides: Book 5 ('Melian dialogue') 	<p>November 3:</p> <p>Integrative Lecture by Dr. Tuma</p>	<p>November 4:</p> <p>Seminars</p> <p>Third Integrative Assignment due at 5:00pm via Canvas</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 11: November 7-11: Atoms and Molecules</p>	<p>November 8: What runs in families? III. The molecular revolution in biology.</p> <p>From the mid-20th century to the present, biology—including evolutionary biology—has been transformed by our understanding of the molecular basis of biological processes.</p> <p>Readings:</p> <ul style="list-style-type: none"> • In “Molecular Biology,” from the <i>Stanford Encyclopedia of Philosophy</i>, read section 1, “History of Molecular Biology” • A Brief Guide to Genomics, from the National Human Genome Research Institute 	<p>November 8: Greek ‘Atomists’</p> <p>The origins of Greek atomic and molecular thinking in a pre-microscopic era. Philosophical and empirical arguments for atoms; anti-atomism and other theories of matter.</p> <p>Readings:</p> <ul style="list-style-type: none"> • “Ancient Atomism” in the <i>Stanford Encyclopedia of Philosophy</i> • Lucretius, <i>On the Nature of Things</i> (pp. 158–176) 	<p>November 10:</p> <p>Discussion led by Dr. Rosen</p>	<p>November 11:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 12: November 14-18: Evolutionary Medicine</p>	<p>November 15: Evolution and human health</p> <p>Implications of evolution for medicine.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Evolution 101. Read all subsections in the section Relevance of Evolution: Medicine, from Escape of the Pathogens: An Evolutionary Arms Race to Understanding Evolution is Important; In Understanding Evolution, read Another Perspective on Cancer: Evolution Within. • “Aging: Lifespan and the Evolution of Somatic Mutation Rates,” by Ben Galeota Spring and Paul Sniegowski. 	<p>November 15: Diagnosing ancient diseases</p> <p>The idea of ‘evolutionary medicine’ is also relevant for questions of ancient epidemiology, particularly when we want to identify ancient diseases using scientific nomenclature that makes sense to us. We consider the problem of retrospective diagnoses of historically significant epidemics, such as ‘plague’ (a catch-all term that in fact can refer to an assortment of pathologies), and more routine outbreaks of other infectious diseases in antiquity, especially in light of what we know about how microorganisms evolve across many generations.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Hippocrates: Epidemics, book 1 • James Longrigg, Greek Medicine, ch. 10 (‘Epidemic Diseases’), which includes Thucydides’ account of the Athenian plague • Selected recent scholarship on the Athenian plague 	<p>November 17:</p> <p>Discussion led by Dr. Dunning</p>	<p>November 18:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>Thanksgiving Week: November 21-25</p>	<p>November 22: NO CLASS; THURSDAY SCHEDULE DUE TO THANKSGIVING HOLIDAY</p>	<p>November 22: NO CLASS; THURSDAY SCHEDULE DUE TO THANKSGIVING HOLIDAY</p> <p>NB: WEDNESDAY, NOVEMBER 23 WILL FOLLOW FRIDAY SCHEDULE DUE TO THANKSGIVING HOLIDAY</p> <p>PAPER 2 DUE</p>	<p>November 24: THANKSGIVING HOLIDAY</p>	<p>November 25: THANKSGIVING HOLIDAY</p>
<p>WEEK 13: November 28- December 2: Nature/Nurture</p>	<p>November 29: Human Behavior in Evolutionary Context</p> <p>We consider how human behaviors are influenced by our evolutionary past and by culture.</p> <p>Readings:</p> <ul style="list-style-type: none"> • From <i>Baboon Metaphysics</i> (2007) by Dorothy Cheney and Robert Seyfarth, read: <ul style="list-style-type: none"> ○ chapter 1, “The Evolution of Mind” ○ chapter 7, “The Social Intelligence Hypothesis”, and ○ chapter 12, “Baboon Metaphysics” 	<p>November 29: Human nature: intrinsic or learned and acculturated?</p> <p>The medical scientist Galen (2nd C CE) pondered this question in several treatises, approaching the problem empirically and theoretically. We explore his thinking this week on inherited traits, temperament, ‘child psychology’, the teachability of moral behavior and the intransigence of personality.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Galen: On the Diagnosis and Treatment of the Affections [‘pathologies’] of the Soul 	<p>December 1:</p> <p>Discussion led by Dr. Tuma</p>	<p>December 2:</p> <p>Seminars</p>

Weekly Theme	Evolutionary Biology Tuesdays 10:15-11:35 a.m. ARCH 208	Greek Intellectual History Tuesdays 3:30-4:50 p.m. ARCH 208	Integrative Session Thursdays 10:15-11:35 a.m. ARCH 208	Seminar Fridays
<p>WEEK 14: December 5-9: To What End?</p>	<p>December 6: Evolution, Purpose, and Design</p> <p>We consider, in light of evolution, large and persistent questions about the purposefulness of living things and the meaning of human lives. Our focus is on a famous recent court case concerning the teaching of evolution that took place in Pennsylvania.</p> <p>Readings:</p> <ul style="list-style-type: none"> • <i>On the Origin of Species</i>, Chapter 14, “Recapitulation and Conclusion” (read online or download) • “Darwin in the Dock”, by Margaret Talbot (<i>New Yorker</i>, 2005) • <i>Memorandum Opinion In the United States District Court for the Middle District of Pennsylvania, Case No. 04cv2688, Judge John E. Jones III</i> (December, 2005). Read the whole thing if you can, but be sure in any case to read the following: Introduction; Section A: Background and Procedural History; Section E.4: Whether ID is Science; and Section H: Conclusion. 	<p>December 6: Teleology: the question of purpose</p> <p>The Greeks were as interested in the question of (what we call) ‘intelligent design’ and its opponents (arguing for cosmic randomness, chance, or some variation on this) as we are. Stoic theorizing about divine purpose and intelligent design; Galen’s intellectual frustration as he tries to work out how and why human beings come into being and develop as embryos in the specific ways they do.</p> <p>Readings:</p> <ul style="list-style-type: none"> • Galen’s on the Formation of Fetuses, pp. 194-201 only. • Galen’s On the Usefulness of Parts, Book 1, pp. 67-75 • Galen’s On the Usefulness of Parts, Book 17: ‘The Epode’ 	<p>December 8:</p> <p>Discussion with Everyone on the Teaching Team</p>	<p>December 9:</p> <p>Seminars</p> <p>LAST CLASS FOR INTG0001</p> <p>Fourth Integrative Assignment due at 5:00pm via Canvas</p>