



## MODERN HUMAN ORIGINS

Lecture: Wednesdays, 16-18:00 c.t.

Institut für Naturwissenschaftliche Archäologie, Rümelinstraße 23, Room 602

### INSTRUCTORS

Dr. Christian Bentz (linguistics), [christian.bentz@uni-tuebingen.de](mailto:christian.bentz@uni-tuebingen.de)

Dr. Hugo Reyes-Centeno (paleoanthropology), [hugo.reyes-centeno@uni-tuebingen.de](mailto:hugo.reyes-centeno@uni-tuebingen.de)

Dr. Yonatan Sahle (archaeology), [yonatan.sahle@uni-tuebingen.de](mailto:yonatan.sahle@uni-tuebingen.de)

### COURSE DESCRIPTION

This course introduces the evolutionary study of the modern human lineage, with a review of the biological, cultural, and linguistic diversity of human populations over the last million years. It commences with an introduction to key concepts in evolutionary theory and their application to the study of humans. The course provides a survey of the fossil and archaeological records of the genus *Homo* and the speciation or divergence of human populations, including the emergence of human populations that anatomically resemble people living today and their associated cultural assemblages and behavioral repertoires. Likewise, the instructors will provide a historical overview of how advances in evolutionary theory, including the modern synthesis of the mid-twentieth century, have shaped our understanding of human evolution. In doing so, they set the stage for critically examining the origins of anatomical and behavioral modernity, as well as the co-evolution of biology and culture in human populations. The course is then divided into sections corresponding to the instructor's specializations in archaeology, paleoanthropology, and linguistics, providing a more comprehensive overview of how each discipline informs the emergence of biocultural modernity. Students enrolled in Winter Semester 2017-18 will attend the third annual, international symposium of the DFG Center for Advanced Studies "Modern human origins and dispersal." The course will be of interest to undergraduate students in archaeology, linguistics, paleoanthropology, prehistory, and evolutionary biology.

Students in linguistics (Faculty of Philosophy) can use this for one of the following modules: (1) BA Linguistics: Variation, Evolution & Change; (2) MA Linguistics: Language, Variation & Change; (3) MA Linguistics: Research Trends 1.

### COURSE GRADE

Written exam: mix of multiple-choice, short-answer, and essay (90 minutes)

## COURSE OUTLINE

- Oct 25 Anatomical and behavioral modernity** (Bentz, Reyes-Centeno, and Sahle):
- Evolutionary theory; history and philosophy of the science of human evolution
  - The modernity paradigm; gradual and punctuated change across time and space
  - Current debates in the study of modern human origins
- Nov 3-5 DFG Center symposium “Modern human origins and dispersal”**  
([www.wordsandbones.uni-tuebingen.de/symposium2017](http://www.wordsandbones.uni-tuebingen.de/symposium2017))
- Nov 8 Archaeology at the dawn of modern humans** (Sahle)
- Overview of the Early-Middle Pleistocene archaeological record
  - The African Middle Stone Age
  - The Middle Paleolithic of Eurasia
- (*Richter 2011; Wadley 2013; Toth and Schick 2015*)
- Nov 15 The archaeology of modern humans** (Sahle)
- Complex technologies and behaviors: revolution or evolution?
  - The Middle-Late Pleistocene archaeology of Africa
  - The Middle to Upper Paleolithic transition in Eurasia
- (*McBrearty and Brooks 2000; Roebroeks 2008; Conard 2010; Wadley 2013*)
- Nov 22 The Out-of-Africa dispersal: An archaeological perspective** (Sahle)
- Current views and appraisal of the archaeological evidence in hand
  - The role of technology and behavior: Is modern as modern does, or looks?
  - What archaeological evidence: future directions?
- (*Conard 2010; Shea 2011; Groucutt et al. 2015*)
- Nov 29 The Middle-Late Pleistocene fossil record of Africa and Eurasia** (Reyes-Centeno)
- Chronology and stratigraphy of key fossil discoveries
  - Classification, nomenclature, and taxonomy of fossils
  - Anatomically modern humans and their contemporaries
- (*White et al. 2003; Bräuer 2015*)
- Dec 6 Genomics of modern human origins and dispersals** (Reyes-Centeno)
- Genetics and genomics of recent human populations
  - Ancient DNA and fossil calibration methods for dating key events in human evolution
  - Inferences on human dispersals
- (*Cavalli-Sforza and Feldman 2003; Reyes-Centeno 2016; Nielsen et al. 2017*)
- Dec 13 Bio-cultural co-evolution and adaptations** (Reyes-Centeno)
- Evolution by neutral and adaptive forces, modes of transmission
  - Theoretical frameworks in the study of co-evolution
  - Recent and prospective evolution in human populations
- (*Laland et al. 2010; Renfrew 2010; Creanza and Feldman 2016*)

**Dec 18–Jan 7** Winter Break (no lectures)

- Jan 10**      **Adaptive and Non-adaptive Theories of Language Evolution** (Bentz)
- saltational vs. gradualist accounts
  - language and brain co-evolution
- (Christiansen and Chater 2008, Pinker & Jackendoff 2005; Fitch 2010, p. 73-143)
- Jan 17**      **Preadaptations to Language** (Bentz)
- The evolution of the vocal tract
  - Brain areas relevant for language processing
  - Genetic underpinnings of language
- (Klein 2017; Christiansen and Chater 2008; Fitch 2010, p. 297-364)
- Jan 24**      **Interfaces with Archaeology and Genetics** (Bentz)
- stone tool production and language
  - reconstructing the human past with linguistic and archaeological evidence
  - genetic and linguistic diversity
- (Creanza et al. 2015; Morgan et al. 2015; Moisik & Dediu 2017)
- Jan 31**      Review and discussion
- Feb 7**        Exam

## SUGGESTED TEXTBOOKS

Klein RG. 2009. *The Human Career: Human Biological and Cultural Origins*. Chicago: University of Chicago Press.

Jobling M, Hurles M, and Tyler-Smith C. 2004. *Human Evolutionary Genetics: Origins, Peoples & Disease*. New York: Garland Science, Taylor & Francis Group.

Müller-Beck H. 2004. *Die Steinzeit: der Weg der Menschen in die Geschichte*. München: Verlag C.H. Beck.

Schrenk F. 2008. *Die Frühzeit des Menschen: Der Weg zum Homo sapiens*. München: Verlag C.H. Beck.

## READING LIST

Bräuer G. 2015. Origin of Modern Humans. In: Henke W, and Tattersall I, editors. *Handbook of Paleoanthropology*. 2 ed. Heidelberg: Springer-Verlag. p 2299-2330.

Cavalli-Sforza LL, and Feldman MW. 2003. The application of molecular genetic approaches to the study of human evolution. *Nat Genet*.

Christiansen MH, and Chater N. 2008. Language as shaped by the brain. *Behavioral and Brain Sciences* 31: 489-558.

Christiansen MH, and Kirby S. 2003. *Language evolution*. Oxford: Oxford University Press.

- Conard NJ. 2010. Cultural modernity: Consensus or conundrum? *Proceedings of the National Academy of Sciences* 107(17):7621-7622.
- Creanza N, and Feldman MW. 2016. Worldwide genetic and cultural change in human evolution. *Current Opinion in Genetics & Development* 41:85-92.
- Creanza, N., Ruhlen, M., Pemberton, T.J., Rosenberg, N.A., Feldman, M.W. and Ramachandran, S. 2015. A comparison of worldwide phonemic and genetic variation in human populations. *Proceedings of the National Academy of Sciences*, 112(5), pp.1265-1272.
- Fitch WT. 2010. *The Evolution of Language*. Cambridge: Cambridge University Press.
- Groucutt HS, Petraglia MD, Bailey G, Scerri EML, Parton A, Clark-Balzan L, Jennings RP, Lewis L, Blinkhorn J, Drake NA et al. 2015. Rethinking the dispersal of *Homo sapiens* out of Africa. *Evolutionary Anthropology* 24(4):149-164.
- Klein RG. 2017. Language and human evolution. *Journal of Neurolinguistics* 43: 204-221.
- Laland KN, Odling-Smee J, and Myles S. 2010. How culture shaped the human genome: bringing genetics and the human sciences together. *Nat Rev Genet* 11(2):137-148.
- McBrearty S, and Brooks AS. 2000. The revolution that wasn't: a new interpretation of the origin of modern human behavior. *Journal of Human Evolution* 39(5):453-563.
- Moisik, S.R. and Dediu, D. 2017. Anatomical biasing and clicks: Evidence from biomechanical modeling. *Journal of Language Evolution*.
- Morgan, T.J.H., Uomini, N.T., Rendell, L.E., Chouinard-Thuly, L., Street, S.E., Lewis, H.M., Cross, C.P., Evans, C., Kearney, R., De La Torre, I. and Whiten, A. 2015. Experimental evidence for the co-evolution of hominin tool-making teaching and language. *Nature communications*, 6.
- Nielsen R, Akey JM, Jakobsson M, Pritchard JK, Tishkoff S, and Willerslev E. 2017. Tracing the peopling of the world through genomics. *Nature* 541(7637):302-310.
- Pinker S, and Jackendoff R. 2005. The faculty of language: what's special about it? *Cognition* 95: 201-236.
- Renfrew C. 2010. Archaeogenetics - Towards a 'New Synthesis'? *Current Biology* 20(4):R162-R165.
- Reyes-Centeno H. 2016. Out of Africa and into Asia: Fossil and genetic evidence on modern human origins and dispersals. *Quaternary International* 416:249-262.
- Richter J. 2011. When did the Middle Paleolithic begin? In: Conard NJ, and Richter J, editors. *Neanderthal Lifeways, Subsistence and Technology: One Hundred Fifty Years of Neanderthal Study*. Dordrecht: Springer Netherlands. p 7-14.
- Roebroeks W. 2008. Time for the Middle to Upper Paleolithic transition in Europe. *Journal of Human Evolution* 55(5):918-926.
- Shea JJ. 2011. *Homo sapiens* is as *Homo sapiens* was. *Current Anthropology* 52(1):1-35.
- Toth N, and Schick K. 2015. Overview of Paleolithic Archaeology. In: Henke W, and Tattersall I, editors. *Handbook of Paleoanthropology*. Berlin, Heidelberg: Springer. p 2441-2464.
- Wadley L. 2013. Recognizing Complex Cognition through Innovative Technology in Stone Age and Palaeolithic Sites. *Cambridge Archaeological Journal* 23(2):163-183.
- White TD, Asfaw B, DeGusta D, Gilbert H, Richards GD, Suwa G, and Clark Howell F. 2003. Pleistocene *Homo sapiens* from Middle Awash, Ethiopia. *Nature* 423(6941):742-747.