

**HTST 476 (3 credits)**

**History of Science: “Wonderful Life –  
A Cultural History of the Biomedical Sciences”**

Fall 2017

Instructor: Prof. Frank W. Stahnisch  
Tues & Thurs: 14:00 a.m. – 15:15 p.m.  
Room SA 247 Social Sciences A

**Contact:**

fwstahni@ucalgary.ca  
Departments of History & Community Health Sciences  
Social Sciences Building, Room 606  
2500 University Drive N.W.  
(403) 210-6290

**Office hours:**

Thursday, 10:50-12:20 a.m.  
(Location: SS 606, Dep't. of History)

Course Librarian: Nadine Hoffmann (nadine.hoffman@ucalgary.ca)

**Course Outline:**

The modern biological and biomedical sciences have received great academic, social, and economic interest since the latter half of the 20<sup>th</sup> century. Extensive optimism is placed on the medical (e.g. genetic engineering), agricultural (e.g. nutritional science), and economic (e.g. pharmacological applications) prospects that have come to be associated with experimental biology and medical research. However, this cultural prominence of the biomedical sciences is a most recent development, since even for most parts of the 20<sup>th</sup> century the field of physics (atomic physics) as *the* model of a “hard science” was widely perceived as the leading discipline, while biology and medicine were only regarded as “soft or applied sciences.” When the perspective is taken back to the period of the “Scientific Revolution” and the “Early Modern Times,” then it becomes visible that biological research and education had largely been pursued from an angle of natural philosophy or as auxiliary subjects contributing to a university medical education. In this advanced undergraduate seminar, we will consider the development of the biological and biomedical sciences from the times of the Italian anatomist Andreas Vesalius (1514-1564) and the European Renaissance to modern industrialized research activities and the “Information Revolution” of the 20<sup>th</sup> century, which saw the rise of genetics, molecular biology, and neuroscience. This advanced undergraduate course explores changing concepts and ideas about “life,” “biology,” and “medicine” during 500 years. By looking at the ways how living phenomena had been observed, interpreted and manipulated throughout the history of the modern biomedical sciences, various issues regarding natural history collections, taxonomy, evolution, physiological determinism, reproduction, and consciousness are analyzed in their contingent scientific and cultural contexts.

**Evaluation:**

Seminar participation (incl. 4 quizzes):	20%
Oral presentations (incl. 10 min. presentation):	30%
Final paper:	50%

**Course Requirements / Evaluation:**

The assignments in the course are based on active participation (including 4 quizzes of 10 min. worth 2,5% each) in the course – and includes attendance and regular contributions to discussions –, one brief oral presentation (as a group presentation by two students worth 15%) and one final term paper. The 15-page essay (of about 4,000 words, excl. endnotes), which students are required to write on a topic related to the course, is due on Thursday Dec-14, 2017). Late assignments will be subject to a 5% penalty per day late. For advice and guidance in writing essays, please read “The History Student’s Handbook” ([http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history\\_students\\_handbook\\_2015.pdf](http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history_students_handbook_2015.pdf)) or go to the History Department’s Homepage (<http://hist.ucalgary.ca/>). Be sure to read the section on plagiarism carefully and observe that you give proper credit to the sources of your work. The policy at the UofC is that all allegations of plagiarism will be reported to the Associate Dean of Students who will rule on the allegations and apply the penalties in the course calendar. Academic dishonesty is a serious offence that can lead to a failing grade and/or expulsion from the University. The essential readings for this course will be available online from the electronic databases of the UofC Library; more material (such as links to literature and TFDL materials) will be offered through D2L. Those students who are interested in additional in-depth studies can buy the relevant books at the UofC Bookstore, where most of them are being made available.

**Students are requested to:**

Purchase the following books (UofC Bookstore: <http://calgarybookstore.ca/>)

The History of Life: A Very Short Introduction, by Michael J. Benton (Oxford: Oxford University Press 2008)

Wonders and the Order of Nature, 1150-1750, ed. by Lorraine J. Daston and Katherine Park (Chicago: University of Chicago Press 1998)

A Cultural History of Heredity, by Staffan Mueller-Wille and Hans-Joerg Rheinberger (Chicago: University of Chicago Press 2012)

The Epic History of Biology, by Anthony Serafini (New York: Basic Books, 2001)

The required readings are extremely important; students will be asked questions about them during the course.

## COURSE CALENDAR & READINGS SCHEDULE

**September, 5-9 BLOCKWEEK: NO CLASS!!**

**Tues, 12 Sept: Course Introduction – “Wonderful Life”**

Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 1-14.

### **PART 1. ANATOMY AND NATURAL HISTORY IN THE RENAISSANCE AND EARLY MODERN PERIOD**

**Thurs, 14 Sept: Changes in Natural History and the Scientific Revolution**

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 21-67.

**Tues, 19 Sept: Anatomy during the Italian Renaissance**

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 255-302.

**Thurs, 21 Sept: The “Founder of Modern Anatomy:” Andreas Vesalius (1515-1564)**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 75-88.

**Tues, 26 Sept: Networks of Botany and the Place of Naturalistic Collections**

Emma C. Spary, “‘Peaches which the Patriarchs Lacked:’ Natural History, Natural Resources and the Natural Resources in France”, *History of Political Economy* 35 (2003), pp. 14-45.

**Thurs, 28 Sept: Wonder Chambers during the Early Modern Period**

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 329-364.

### **PART 2. FROM ROMANTICISM AND NATURPHILOSOPHIE TO EXPERIMENTAL SCIENCE IN THE NINETEENTH AND TWENTIETH CENTURY**

**Tues, 3 Oct: The Systemae Naturae**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 89-102.

**Thurs, 5 Oct: Georges Cuvier (1769-1832), Comparative Anatomy, and Palaeontology**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 139-170.

**Tues, 10 Oct: Friedrich Schelling (1775-1845) and the Beginnings of Naturphilosophie**

Timothy Lenoir, 'Kant, Blumenbach, and Vital Materialism in Germany', *Isis* 71 (1980), pp. 77-108.

**Thurs, 12 Oct: The Birth of "Biology" – Embryology, Cell Theory and Physiology**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 111-116.

**Tues, 17 Oct: Johannes Mueller's (1801-1859) Lab – The School of Physical Physiologists**

Laura Otis, 'The Metaphoric Circuit: Organic and Technological Communication in the Nineteenth Century', *Journal of the History of Ideas* 63 (2002), pp. 105-128.

**Thurs, 19 Oct: French Physiology: From Neurological Ablation Experiments to Clinical Cinematography**

Frank W. Stahnisch, 'Historical and Philosophical Perspectives on Experimental Practice in Medicine and the Life Sciences', *Theoretical Medicine and Bioethics* 26 (2005), pp. 397-425.

**Tues, 24 Oct: Charles Darwin (1809-1882) and the Theory of Human Evolution**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 209-232.

**Thurs, 26 Oct: Early Darwinian Controversies and the Rise of Social Darwinism**

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 233-248.

**PART 3. FROM EXPERIMENTAL PHYSIOLOGY TO THE HUMAN GENOME PROJECT IN THE TWENTIETH CENTURY**

**Tues, 31 Oct: Reviving Gregor Mendel (1822-1884): The Development of Experimental Genetics**

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 127-160.

**Thurs, 2 Nov: Scientific Medicine, Urbanization, and Degeneration Discourses**

Hans-Joerg Ritter and Volker Roelcke, 'Psychiatric Genetics in Munich and Basel between 1925 and 1945: Programs – Practices – Cooperative Arrangements', *Osiris* 20 (2005), pp. 263-288.

**Tues, 7 Nov: Racial Anthropology and the Early Eugenics Movement**

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 95-126.

**Thurs, 9 Nov: “Laboratory Disease,” Experimental Thought Styles and Biological Warfare**

Christoph Gradmann, ‘Money and Microbes. Robert Koch, Tuberculin and the Foundation of the Institute for Infectious Diseases in Berlin in 1891’, *History and Philosophy of the Life Sciences* 22 (1996), pp. 59-79.

**November, 10-13 MID-TERM BREAK: NO CLASS!!**

**Tues, 14 Nov: Public Health Experimentation: The Case of Radium Dial Workers and Industrial Health Implications**

Maria Rentetzi, ‘The U.S. Radium Industry In-House Research and the Commercialization of Science’, *Minerva* 46 (2008), pp. 437-462.

**Thurs, 16 Nov: From the Discovery of DNA to the Human Genome Project**

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 161-186.

**Tues, 21 Nov: Medicine as a Commodity: Biobanks, Stem Cells, and the Influences of Big Pharma**

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 187-219.

**Thurs, 23 Nov: Modern Neuroscience as a New Interdisciplinary Research Field**

Frank W. Stahnisch, ‘Transforming the Lab: Technological and Societal Concerns in the Pursuit of De- and Regeneration in the German Morphological Neurosciences, 1910-1930’, *Medicine Studies. An International Journal for History, Philosophy, and Ethics of Medicine & Allied Sciences* 1 (2009), pp. 41-54.

**Tues, 28 Nov: Student Presentations I**

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

**Thurs, 30 Nov: Student Presentations II**

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

**Tues, 5 Dec: Student Presentations III**

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

**Thurs, 7 Dec: Student Presentations IV**

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

**Written Assignment:**

Term paper (15 pp, 12pt, 1,5-spaced, 4,000 words max., excl. endnotes & bibliography)!

[End of Teaching Session on Friday, Dec-8 / Term Paper: Dec-14, 2017 / Red Box Policy]

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**Important Departmental, Faculty, and University Information**

*Department Twitter @ucalgaryhist*

**Faculty of Arts Program Advising and Student Information Resources:**

- Have a question, but not sure where to start? The Arts Students Centre (ASC) is your information resource for everything in Arts! Drop in at Social Sciences 102, call 403-220-3580, or email [artsads@ucalgary.ca](mailto:artsads@ucalgary.ca). For detailed information on common academic concerns, you can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate>.
- For program planning and advice, contact the Arts Students Centre (ASC) in SS 102, call 403-220-3580, email [artsads@ucalgary.ca](mailto:artsads@ucalgary.ca), or visit <http://arts.ucalgary.ca/advising>.
- For registration issues, paying fees and assistance with your Student Centre, contact Enrolment Services at 403-210-ROCK (7625), visit the office in the MacKimmie Library Block (MLB) or their website at <http://www.ucalgary.ca/registrar/>.

**Writing:**

This course will include written assignments. Faculty policy directs that all written assignments (including, although to a lesser extent, written exam responses) will be assessed at least partly on writing skills. Writing skills include not only surface correctness (grammar, punctuation, sentence structure, etc.) but also general clarity and organization. Research papers must be properly documented.

**Writing Support:**

Students are also encouraged to use Writing Support Services and other Student Success Centre Services, located on the 3<sup>rd</sup> floor of the Taylor Family Digital Library (TFDL). Writing Support Services assist with a variety of assignments, from essays to lab reports. Students can book 30-minute one-on-one appointments online, sign up for 15-minute drop-in appointments, and register for a variety of writing workshops. For more information on this and other Student Success Centre services, please visit [www.ucalgary.ca/ssc](http://www.ucalgary.ca/ssc).

**Copyright:**

The University of Calgary has opted out of the Access Copyright Interim Tariff proposed by the Copyright Board. This means that instructors in all University of Calgary courses will strictly adhere to Copyright Act regulations and the educational exceptions permitted by the Act for both print and digital course material. What this simply means is that no copyrighted material may be placed on course D2L or web sites without the prior permission of the copyright holders. In some cases, this may mean that instructors will require you to purchase a print course pack from the University of Calgary bookstore or that you will have to consult books on reserve at the library. For more information on the University of Calgary's copyright policy, see <http://library.ucalgary.ca/copyright>.

**Red Box Policy:**

Essays and other assignments may be handed in to the red box located outside of the History Department office (Social Sciences, Room 656). Please include the following information on your assignment: **1) course name and number, 2) instructor, 3) your name and 4) your student number**. Assignments received after 4:00 p.m. will be date stamped with the date of the next business day. We do not time stamp any papers. Please do not bring your paper into the office to be stamped. The box is emptied promptly at 8:30 a.m. and at 4:00 p.m. Monday to Friday.

**Departmental Grading System:**

The following percentage-to-letter grade conversion scheme has been adopted for use in all Canadian Studies, History, and Latin American Studies courses.

Percentage	Letter Grade	Grade Point Value	Description
90-100	A+	4.00	Outstanding
85-89	A	4.00	Excellent—superior performance showing comprehensive understanding of subject matter.
80-84	A-	3.70	
77-79	B+	3.30	
73-76	B	3.00	Good—clearly above average performance with knowledge of subject matter generally complete.
70-72	B-	2.70	
67-69	C+	2.30	
63-66	C	2.00	Satisfactory—basic understanding of the subject matter.

Percentage	Letter Grade	Grade Point Value	Description
60-62	C-	1.70	Receipt of a grade point average of 1.70 may not be sufficient for promotion or graduation.
56-59	D+	1.30	Minimal pass—marginal performance; generally insufficient preparation for subsequent courses in the same subject.
50-55	D	1.00	
0-49	F	0	Fail—unsatisfactory performance or failure to meet course requirements.

### Plagiarism:

Plagiarism occurs when one submits or presents one's work in a course, or ideas and/or passages in a written piece of work, as if it were one's own work done expressly for that particular course, when, in fact, it is not. As noted in *The History Student's Handbook* ([http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history\\_students\\_handbook\\_2015.pdf](http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history_students_handbook_2015.pdf)), plagiarism may take several forms:

- Failure to cite sources properly may be considered plagiarism. This could include quotations, and wording used from another source but not acknowledged.
- Borrowed, purchased, and/or ghostwritten papers are considered plagiarism, as is submitting one's own work for more than one course without the permission of the instructor(s) involved.
- Extensive paraphrasing of one or a few sources is also considered plagiarism, even when notes are used, unless the essay is a critical analysis of those works.
- The use of notes does not justify the sustained presentation of another author's language and ideas as one's own.

Plagiarism is a serious academic offence and written work that appears to contain plagiarized passages will not be graded. All such work will be reported to the Faculty of Arts' associate deans of students who will apply the penalties specified in the *University of Calgary Calendar*.

### Universal Student Ratings of Instruction (USRI):

At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference. Please participate in USRI surveys.

### Academic Accommodations (implemented July 1, 2015):

The student accommodation policy can be found at: [ucalgary.ca/access/accommodations/policy](http://ucalgary.ca/access/accommodations/policy).



Students needing an Accommodation because of a Disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities [ucalgary.ca/policies/files/policies/student-accommodation-policy](http://ucalgary.ca/policies/files/policies/student-accommodation-policy).

Students needing an Accommodation based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the course instructor.

### **Campus Resources for Mental Health**

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

### **Other Useful Information:**

- Faculty of Arts Representatives: 403-220-6551, [arts1@su.ucalgary.ca](mailto:arts1@su.ucalgary.ca), [arts2@su.ucalgary.ca](mailto:arts2@su.ucalgary.ca), [arts3@su.ucalgary.ca](mailto:arts3@su.ucalgary.ca), [arts4@su.ucalgary.ca](mailto:arts4@su.ucalgary.ca).
- Campus Security & Safewalk: 403-220-5333, <http://www.ucalgary.ca/security/safewalk>.
- Freedom of Information: <http://www.ucalgary.ca/legalservices/foip/foip-hia>.
- Emergency Evacuation Assembly Points: <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- Student Union Information: <http://www.su.ucalgary.ca/>.
- Graduate Student Association: <http://www.ucalgary.ca/gsa/>.
- Student Ombudsman Office: <http://www.ucalgary.ca/provost/students/ombuds>

*Fall 2017*