

Biology 4270 – History of Biology – Winter 2022

Instructor: Dr Steve Carr

Office Online [scarr \[at\] mun.ca](mailto:scarr@mun.ca),

Lectures TuTh 0900–1015 Zoom

Labs Mon 1400-1700 Zoom

Website: [<http://www.mun.ca/biology/scarr/Bio4270.html>]

Required Text: M Morange (TL Fagan & JM, translators) (2021). A History of Biology. Princeton. Available through Amazon and (or) online

Recommended Text: WF Bynum, EJ Browne, R Porter (1981). Dictionary of the History of Science.

Lecture Outline

1. Greek Science & Biology: Origins of Western Science
2. History of Evolution
3. History of Genetics
4. History of Microbiology
5. History of Development
6. Technology & Science: Does the Tail wag to Dog ?
 - Development of the microscope
7. Philosophy of Science & Biology
 - Popper *versus* Kuhn: Demarcation vs Scientific Revolutions
8. Specialty Topics
 - Avicenna & Islamic Medicine and Science
 - Travel is Broadening: Linnaeus, Cook, Humboldt in the 18th Century
 - Eugenics: CB Davenport & the Mismeasure of Man
 - Genetics in the Soviet Union under Vavilov & Lysenko
 - John & the Pump Handle: Birth of Epidemiology
 - "Spanish" Flu (1919) *versus* "Chinese" Covid-19 (2020) Pandemics
 - Miasma *versus* Germ Theories of Disease

Labs: Films on the History of Biology

- "Galileo " (Bertolt Brecht) (1975): How are science and politics intertwined?
- "The Voyage of Charles Darwin " (BBC: 7 parts): Origin of the *Origin of Species*
- "The Mystery of Photo 51 " (2003) [NOVA]: Who "discovered" DNA structure?
- "Dr Erlich's Magic Bullet " (1940): Science in the popular imagination
- "The Life of Louis Pasteur " (1936): Science in the popular imagination
- "Great Scientists Speak Again " : RM Eakin, in six parts
- "The Andromeda Strain " (1971): SciFi as an educational experiment
- "GAATACA " (1997): Now & Then, Worst *versus* Best Case Scenarios
- "Creation " (2009): What's wrong with this picture?

Grading Scheme:

Participation	15%	5% Lecture 10% Discussion
Project	35%	5% Proposal 10% Draft 20% Presentation
Exams	50%	20% Midterm 30% Final
	100%	

Grading Components

Discussion: Each student will lead discussion of one film, based on notes

Project: A one-paragraph **Proposal** is due <0900 on the date indicated.

A **Draft** PPT presentation (~10 slides) is due <0900 on the date indicated.

Presentations will be made on the dates indicated (TBD),

and evaluated for content, quality of graphics, and clarity of presentation.

Exams: Midterm & Final exams will consist of a subset of pre-assigned essay topics made available for throughout the semester. Answers will be prepared ahead of the exam time, and will be graded on that assumption. Details to be discussed.

Supplementary texts: work in progress

1. J Gribbin (2006). History of Western Science, 1543 - 2001. Folio Society. [Reprint from Penguin]
2. GER LLoyd (2012). Greek Science. Folio Societ. [Reprinted from WW Norton]
3. W Coleman (1977). Biology in the Nineteenth Century. Cambridge.
4. GE Allen (1978). Life Science in the Twentieth Century. Cambridge.
5. Ede & Cormack (2017). A History of Science in Society, Vols 1 & 2. 3rd ed. UToronto Press.
6. Loren Eiseley (1959). Darwin's Century. Anchor.
7. Humboldt: Personal Narrative. Penguin.
8. FM Snowden: Epidemics and Society. Yale.
9. Hippocrates: Hippocratic Writings. Penuin.
10. Aristotle. History / Parts / Movement / Progression / Generation of Animals.
11. JD Watson (1968). The Double Helix. Athaneum.
12. CR Darwin (1859). On the Origin of Species. [1959 Harvard U facsimile].
13. J Browne (19xx). Charles Darwin: (I) Voyaging, (II) Power of Place. Cambridge.
14. H Judson (1996). The Eighth Day of Creation. 25th anniversary ed. Cold Spring Harbor.
15. AH Sturtevant (1965). A History of Genetics. Cold Spring Harbor