# Take-Home Section:

# Final Exam (optional) [100 pts.]

Antoine-Laurent Lavoisier (1743-1794) 🡪 chemistry & physics

Joseph Priestley (1733-1804) 🡪 experimental chemistry

Benjamin Thompson, Count Rumford (1753-1814) 🡪 relation work & heat

John Dalton (1766-1844) 🡪 founder of modern atomic theory

Thomas Young (1773-1829) 🡪 wave theory of light

Augustin Jean Fresnel (1788-1827) 🡪 wave theory of light

Sir Humphry Davy (1778-1829) 🡪 physics & chemistry

Michael Faraday (1791-1867) 🡪 electricity & magnetism

James Prescott Joule (1818-1889) 🡪 mechanical theory of heat

William Thomson, Lord Kelvin (1824-1907) 🡪 19th century physics

James Clerk Maxwell (1831-1879) 🡪 electromagnetic theory of light

Ludwig Boltzmann (1844-1906) 🡪 kinetic theory & thermodynamics

Rudolf Clausius (1822-1888) 🡪 Second Law of thermodynamics

William Herschel (1738-1822) 🡪 discovery of Uranus

John Herschel (1792-1871) 🡪 astronomy & physics

William Huggins (1824-1910) 🡪 stellar spectroscopy

J. Norman Lockyer (1836-1920) 🡪 astrophysics

Percival Lowell (1855-1916) 🡪 existence & position of Pluto

Karl Schwarzchild (1873-1916) 🡪 predicted existence of black holes

Henry Norris Russell (1877-1957) 🡪 stellar evolution

Harlow Shapley (1885-1972) 🡪 structure of Milky Way

Edwin Powell Hubble (1889-1953) 🡪 expansion of the universe

Cecilia Payne (1900-1979) 🡪 founder of astrophysics

Fred Hoyle (1915-2001) 🡪 steady-state theory of the universe

Wilhelm Roentgen (1845-1923) 🡪 discoverer of X-rays

Albert Michelson (1852-1931) 🡪 the Michelson-Morley experiment

Hendrik Anton Lorentz (1853-1928) 🡪 theory of the electron

J. J. Thomson (1856-1940) 🡪 discoverer of electron

Heinrich Rudolf Hertz (1857-1894) 🡪 discovery of radio waves

Max Planck (1858-1947) 🡪 originator of quantum theory

Marie Curie (1867-1934) 🡪 discoverer of radium & polonium

Sir Arthur Stanley Eddington (1882-1944) 🡪 eclipse expedition of 1919

Niels Bohr (1885-1962) 🡪 quantum theory of atomic structure

Erwin Schrödinger (1887-1961) 🡪 wave mechanics

Werner Heisenberg (1901-1976) 🡪 uncertainty principle

Wolfgang Pauli (1900-1958) 🡪 exclusion principle

Ernest Rutherford (1871-1937) 🡪 founder of nuclear physics

Lise Meitner (1878-1968) 🡪 nuclear fusion

Otto Hahn (1879-1968) 🡪 radiochemistry

Sir James Chadwick (1891-1974) 🡪 discoverer of neutron

Leo Szilard (1898-1964) 🡪 nuclear fission

Enrico Fermi (1901-1954) 🡪 first atomic reactor

J. Robert Oppenheimer (1904-1967) 🡪 the Manhattan project

Otto Robert Frisch (1904-1979) 🡪 nuclear fission of uranium

Richard Feynman (1918-1988) 🡪 particle physics

Edward Teller (1908-2003) 🡪 hydrogen bomb

**“Nature” versus “Nurture”:**

# Genetics, Eugenics, Behaviorism

1. **Variation, Mutation, Mendelian Genetics**

Gregor Mendel (1822-1884) 🡪 “father” of genetics

August Weismann (1834-1914) 🡪 germ plasm theory

Hugo de Vries (1848-1935) 🡪 mutation theory

## Luther Burbank (1849-1926) 🡪 agricultural genetics

William Bateson (1861-1926) 🡪 rediscovery of Mendel

Thomas Hunt Morgan (1866-1945) 🡪 fruit fly genetics

Reginald Punnett (1875-1967) 🡪 poultry genetics

William E. Castle (1867-1962) 🡪 rodent genetics

Ronald A. Fisher (1890-1962) 🡪 population genetics

Sewall Wright (1889-1988) 🡪 population genetics

J. B. S. Haldane (1892-1964) 🡪 population genetics

Theodosius Dobzhansky (1900-1975) 🡪 evolutionary synthesis

1. **Eugenics, Psychology, Intelligence Testing**

Francis Galton (1822-1911) 🡪 “father” of eugenics

Karl Pearson (1857-1936) 🡪 biometry & eugenics

Henry H. Goddard (1866-1957) 🡪 "idiots" and "morons"

Charles Davenport (1866-1944) 🡪 Cold Spring Harbor

Alfred Binet (1859-1911) 🡪 intelligence testing

Lewis Terman (1877-1956) 🡪 I. Q. testing

Carl C. Brigham (1890-1943) 🡪 creator of SATs

## Cesare Lombroso (1835-1909) 🡪 criminology

Richard Dugdale (1841-1883) 🡪 study of criminal families

Havelock Ellis (1868-1935) 🡪 scientific study of sex

## Cyril Burt (1883-1971) 🡪 experimental psychology, mental tests

1. **Behaviorism, Anthropology, Miscellaneous**

### John B. Watson (1878-1958) 🡪 "father" of behaviorism

Ivan Petrovich Pavlov (1849-1936) 🡪 "classical conditioning"

B. F. Skinner (1904-1990) 🡪 "operant conditioning"

Franz Boas (1858-1942) 🡪 concept of “culture”

Alfred L. Kroeber (1876-1960) 🡪 Native American anthropology

Margaret Mead (1901-1978) 🡪 South Pacific anthropology

Trofim Lysenko (1898-1976) 🡪 genetics in the USSR

Nikolai Vavilov (1887-c. 1943) 🡪 victim of Lysenkoism

Edward Bagnall Poulton (1856-1943) 🡪 insect camouflage

Paul Kammerer (1880-1928) 🡪 the midwife toad

**Take-Home Portion:**

**Final Writing Assignment [100 points]**

1. ****Choose ONE of the scientists on the lists provided & find out who they are (where are they from, what is their training and background) and what they did (important research or theoretical work or important concepts).
2. You can use printed sources or the internet search engines, but try to find **reliable substantial sources from universities, colleges, museums, or research institutions** (if you cannot, then pick a different scientist)
3. **In your own words** in **5-7 pages** (typed, double-spaced) write a brief “scientific” biography of the person & his/her accomplishments. Consider historical context, do not write **presentist** history. Place the research or theories of the scientist you choose in the **BROADER** historical context, do not merely regurgitate facts about his or her life (this WILL NOT fulfill the assignment). Consider both **internalist** & **externalist** approaches in your paper.

Be sure to cite the sources of your information (including URLs for web sources). Try to find at least **THREE** sources (either printed or online). At least **one source must be printed** (**NOT** from the Internet). **Printed sources used should be photocopied and handed in with the final paper**. **Do NOT cite Wikipedia as one of your official sources**

1. Several useful online sources are:

**http://www.eugenicsarchive.org/eugenics/**

**http://cogweb.ucla.edu/EP/DNA\_history.html**

**http://www.aip.org/history/**

**NOTE: You may NOT do your report on Albert Einstein, but you may use the David Bodanis book (*E= mc2*) as one source for other physicists on the list. Also, if you have problems finding adequate information on your scientist then please see me. Avoid waiting until finals week to begin this assignment.**