

Contemplate a tangled bank,
clothed with many plants of many kinds,
with birds singing on the bushes,
with various insects flitting about,
and
with worms crawling through the damp earth:
these elaborately constructed forms
have all been produced by laws
acting around us.
Thus, the war of nature,
from famine and death,
the production of higher animals
directly follows.
There is grandeur in this view of life:
whilst the planet has gone
cycling on according to
the fixed law of gravity,
from so simple a beginning
endless forms most beautiful and
most wonderful have been
and are being
evolved.

-Charles Darwin, *The Origin of Species* (1859)

Evolution, Biology 403

This course is about biological evolution.

The course website:

www.homepage.montana.edu/~arichman/403/Evol2009.htm

The instructors:

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Today

A Brief Introduction (to one of the most profound ideas anyone ever had)...

The major mechanism by which evolution occurs is natural selection

Example: Evolution of AZT resistance in HIV

Current status of the HIV epidemic:

How does AZT prevent infection by HIV?

Why does AZT only provide a short term benefit?

What change in the virus renders AZT ineffective?

How did the change to resistant HIV within the host individual occur?

Evolution of AZT resistance: A numerical example

The implications of evolution as an autonomous process:

Life is a tale told by an idiot -- full of sound and fury,
signifying nothing.

-William Shakespeare, *Macbeth*

Why does evolution matter?