Where I am coming from

Belief in Christ is consistent with science including evolutionary biology
What does science say about the history of life?

What it *can* tell us

When and how different kinds of life appeared.

What it *cannot* tell us

About God’s hand in the process.
Bottom line on evolution

Theodosius Dobzhansky:

"Nothing in biology makes sense except in the light of evolution."

“Seen in the light of evolution, biology is, perhaps, intellectually the most satisfying and inspiring science. Without that light it becomes a pile of sundry facts some of them interesting or curious but making no meaningful picture as a whole.”
Why evolution?

To explain the diversity and patterns of life.
Species change from generation to generation
Species change from generation to generation
Species change from generation to generation
Species change from generation to generation
Species change from generation to generation
Species change from generation to generation
Species change from generation to generation
Mutation and natural selection
Common descent

One species

Barrier (river, mountain)

Divergence => 2 species
Common descent

Birth and death of new species
Common descent

Birth and death of new species
Tree of Life

David M. Hillis, Derrick Zwickl, and Robin Gutell, University of Texas.
Diversity and geography

Voyage of the *Beagle* 1831 - 1836

Galápagos Islands

Cape Verde Islands
Diversity and geography

Voyage of the *Beagle* 1831 - 1836
Diversity and geography

Darwin noticed:
- Islands have unique species of birds
- They resemble birds on the nearby mainland, not those on other islands

Map showing the Galapagos Islands and Cape Verde Islands.
Diversity and geography

Conclusion: island species evolved from mainland species
Diversity and geography: Hawaii
Hawaiian land animals must have arrived by air or on logs

- Snails
- Insects, spiders
- Birds: ~100 species
- Mammals: 1 species

No amphibians, snakes, lizards
The branching tree of life: Hawaiian honeycreepers

1 – 5 million years of evolution

Diet

seeds & fruit

insects

nectar

Artwork by HD Pratt
Used with permission of the artist

Diversity and geography: Australia

Why does Australia have so many odd animals?

- ~200 species of marsupials
- Placental animals (rodents, bats) are all fairly recent
The marsupial branch of the tree

http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1000436
How the kangaroo got to Australia

66 million years ago

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
How the kangaroo got to Australia

66 million years ago

Marsupials

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
How the kangaroo got to Australia

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
How the kangaroo got to Australia

50 million years ago

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
How the kangaroo got to Australia

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
How the kangaroo got to Australia

Plate tectonic maps by C. R. Scotese, PALEOMAP Project (www.scotese.com)
60 million years of evolution

Image credits:
Sugar glider: SunCoast Sugar Gliders
Koala: Guillaume Blanchard
Quoll: Sean McClean
Convergent evolution

Image credits
Sugar glider: SunCoast Sugar Gliders (customers)
Flying squirrel: North Carolina Wildlife Resources Commission
Moles: http://www.daviddarling.info/encyclopedia/C/convergevol.html
The whale branch of the tree
Whales with hind legs

Images: Philip Gingerich
Microraptor

A feathered dinosaur

Q Li et al. Science 2012;335:1215-1219
So what should we make of evolution as Christians?
Theodosius Dobzhansky:

"Nothing in biology makes sense except in the light of evolution."

"Seen in the light of evolution, biology is, perhaps, intellectually the most satisfying and inspiring science. Without that light it becomes a pile of sundry facts some of them interesting or curious but making no meaningful picture as a whole."

“It is wrong to hold creation and evolution as mutually exclusive alternatives. I am a creationist and an evolutionist. . . Creation is not an event that happened in 4004 BC; it is a process that began some 10 billion years ago and is still under way."
Evolution and the Bible

Problem: the creation accounts do not sound like an old earth and evolution

But it can be consistent with Genesis

• Concordist reading: Genesis 1 describes in general and figurative terms the history of life.
  See Dennis’s talk (but add creation by evolution)

• Nonconcordist reading: Genesis 1 was teaching theology, not biology.
  See Sarah’s talk
Theological issues

- Much of creation was by natural mechanisms.

  **Why is this a problem?**

- Suffering and death were not the result of human sin.
  (Applies to any old-earth view.)
Theology of suffering and death

Possible responses

• Only spiritual death is a result of sin. Physical death need not be an evil.

• God gave creation freedom in how it develops – just as God gives humans the freedom to do evil.

Are these adequate?
Reflections on natural evil: the Book of Job

Job’s friends accuse him (William Blake)
Reflections on natural evil: the Book of Job

God answers Job out of the whirlwind  (William Blake)
Reflections on natural evil: the Cross

Photo: Josée Holland Eclipse