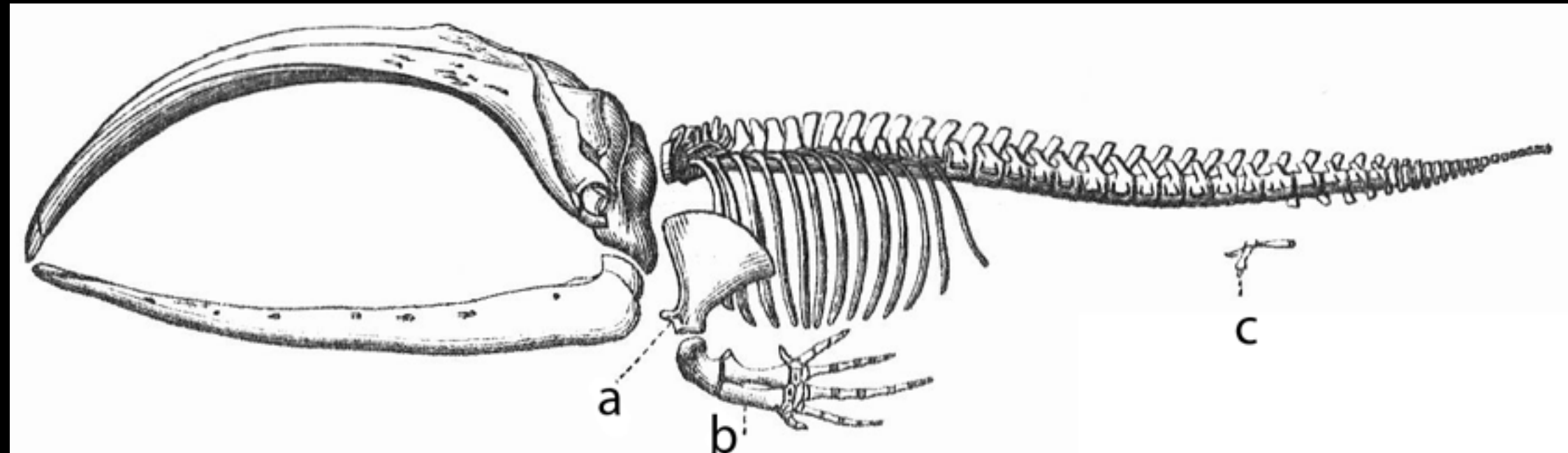
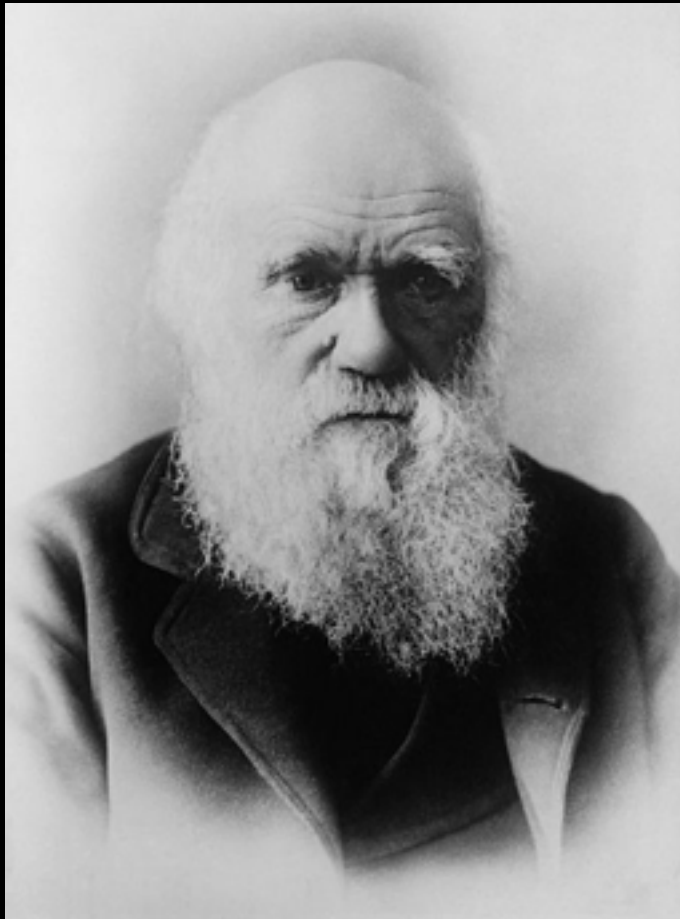


# Scientific Evidence for Evolution



Evolution

Evidence

Biogeography

Fossils

Homologies

DNA and  
Proteins

Mathematical  
models

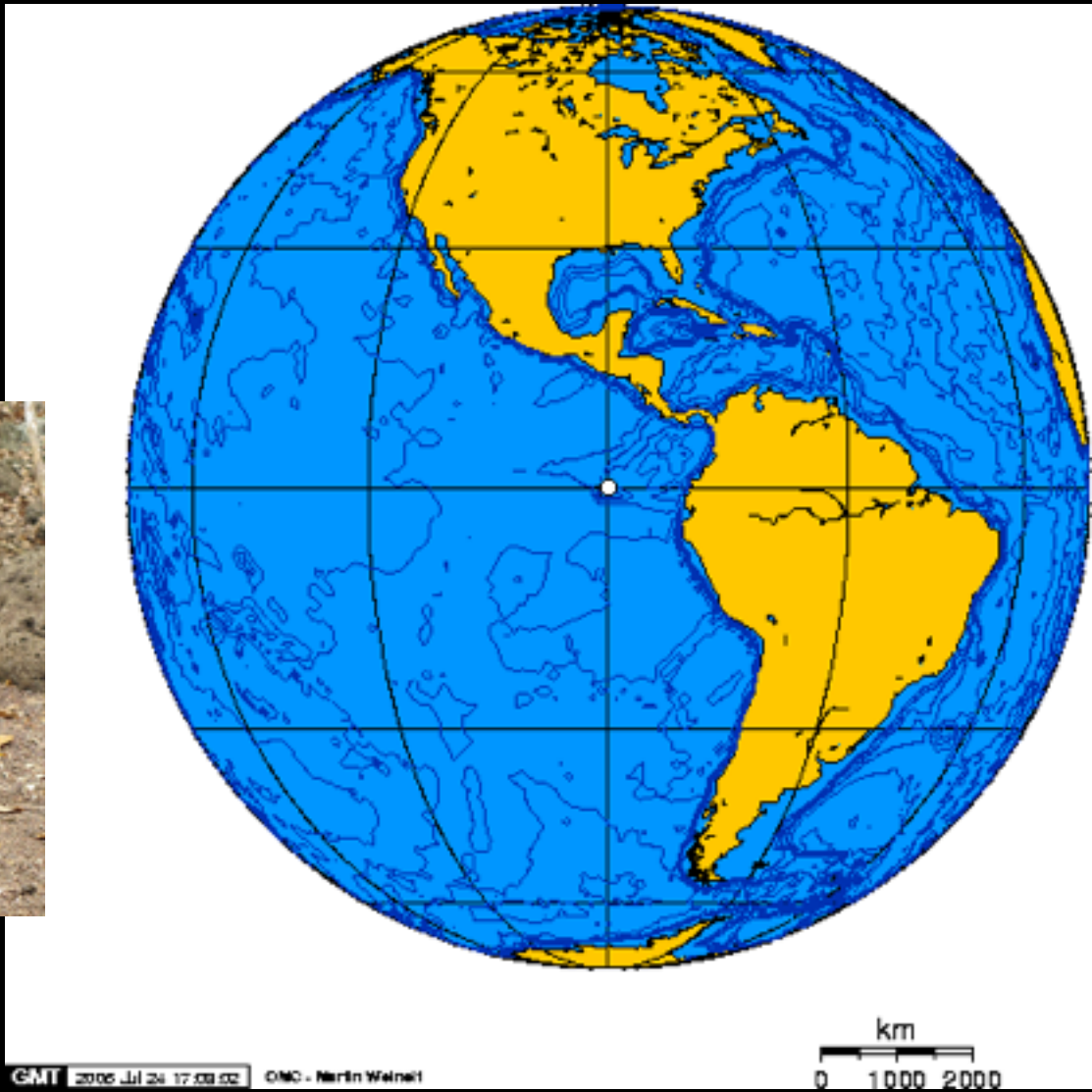
Galapagos  
species

Horses

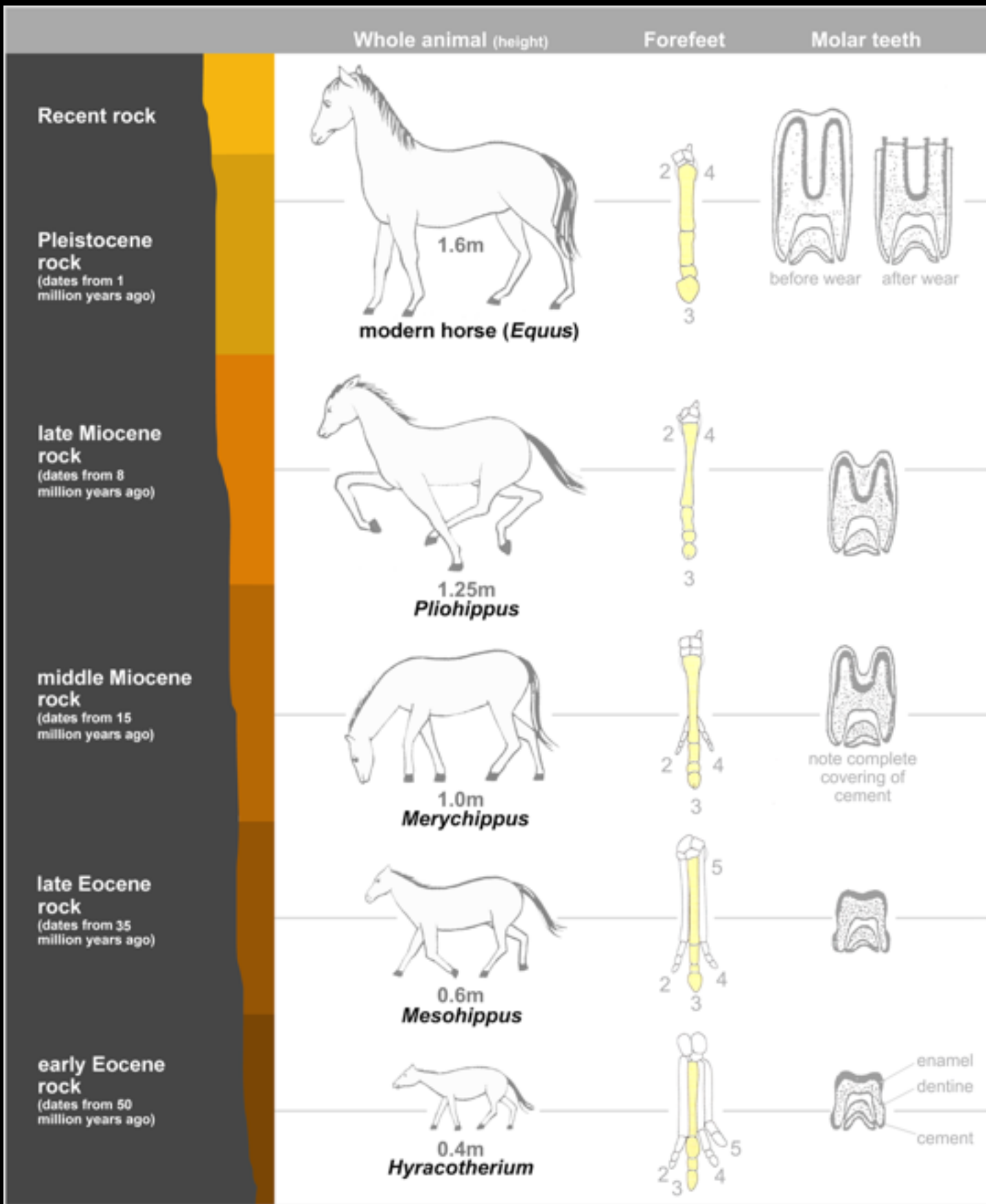
Anatomy

Human  
FGF2 gene

Population  
simulation



# Biogeography



***Equus***  
Recent



***Pliohippus***  
Late Miocene



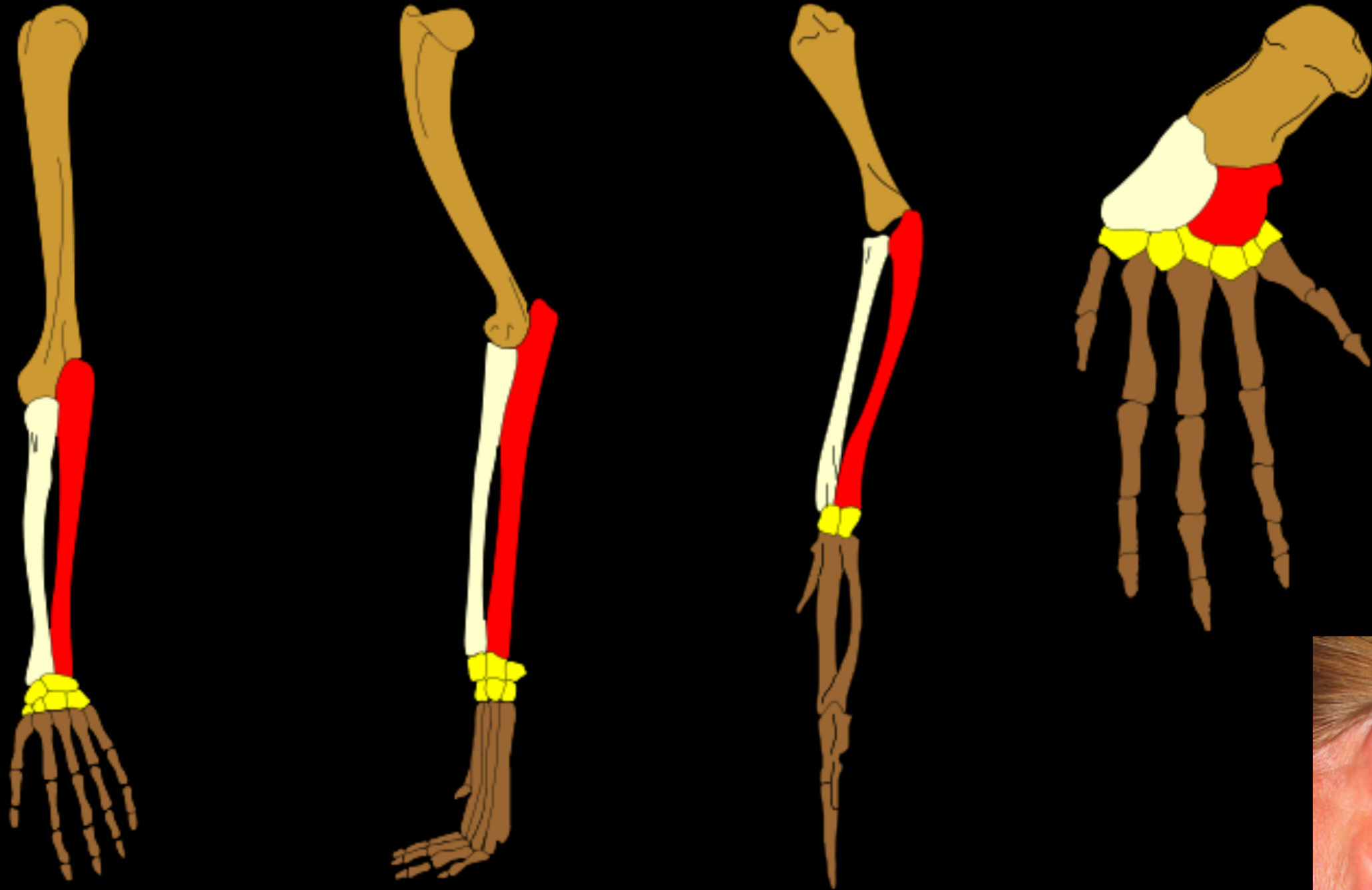
***Merychippus***  
Middle Miocene



***Meshippus***  
Late Eocene

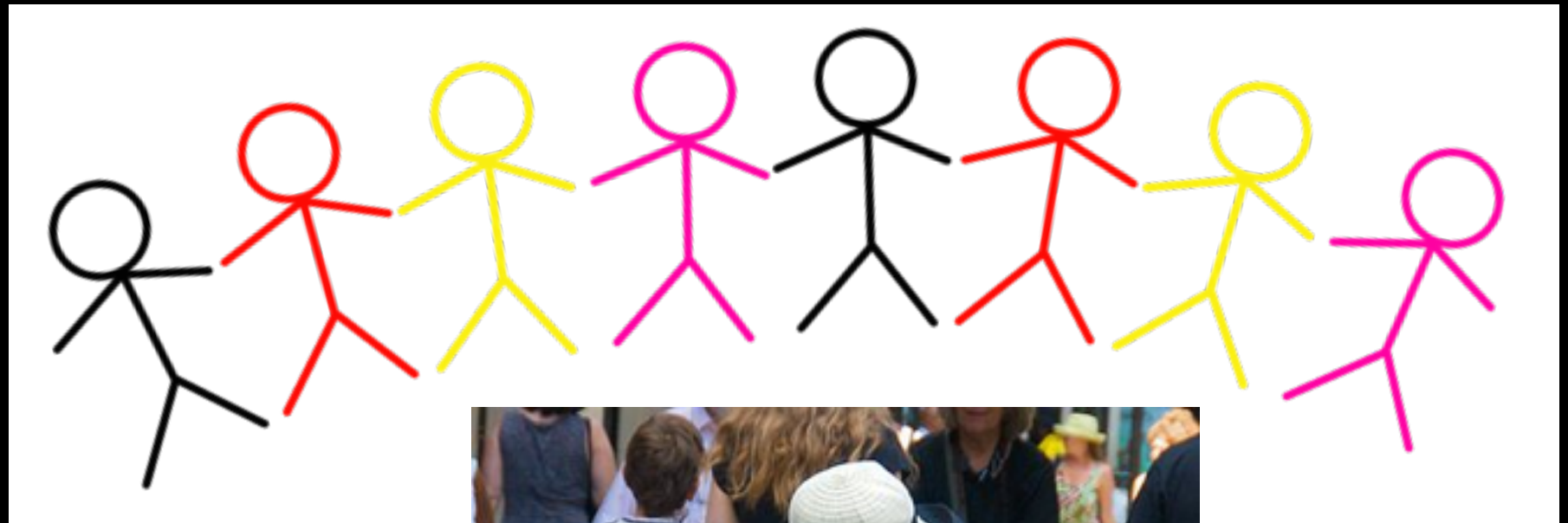


# Fossils



# Homologies

the fat cat ate the rat  
the fat cat ate the rat  
the fat car ate the rat  
the fat car ate the rat  
the fat car ate the rat  
the fat car ate the bat  
the fat car ate the bat  
the far car ate the bat



# Telephone

**i** You've been redirected to your nearest

• Take me back to [www.ensembl.org](http://www.ensembl.org)

Search:  for

e.g. **BRCA2** or **rat X:100000..200000** or **coronary heart disease**

### Browse a Genome

The Ensembl project produces genome databases for vertebrates and other eukaryotic species, and makes this information freely available online.

Click on a link below to go to the species' home page.

**Popular genomes** ([Log in to customize this list](#))



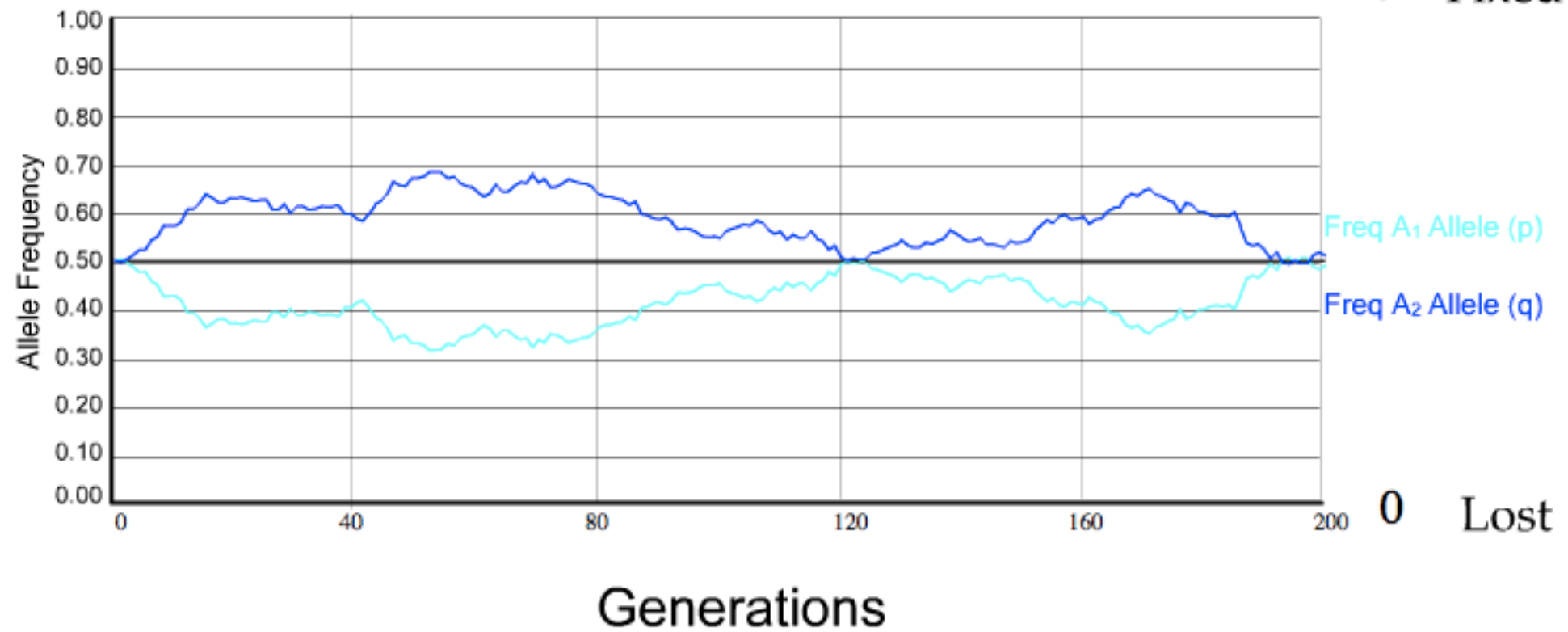
<http://uswest.ensembl.org/index.html>

# Human FGF2 gene



# DNA Alignment

<input type="checkbox"/> Finite Pop.	Pop. Size <input type="text" value="1000"/>	# of Populations (1-5) <input type="text" value="1"/>	Fitness			<input type="checkbox"/> Migration?	Mutation Rate		<input type="checkbox"/> Bottle Neck?		
Initial Frequency of A <sub>1</sub> allele <input type="text" value="0.5"/>	Number of Generations <input type="text" value="200"/>		A <sub>1</sub> A <sub>1</sub>	A <sub>1</sub> A <sub>2</sub>	A <sub>2</sub> A <sub>2</sub>	Two General Models Island/Source-sink	A <sub>1</sub> => A <sub>2</sub>	A <sub>1</sub> <= A <sub>2</sub>	Start	End	BN Pop.
			<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>		<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



[http://www.radford.edu/~rsheehy/Gen\\_flash/popgen/](http://www.radford.edu/~rsheehy/Gen_flash/popgen/)

# Population Simulation



## Acknowledgements

“3T3 Cells.” *Wikipedia, the Free Encyclopedia*, July 23, 2013. [http://en.wikipedia.org/w/index.php?title=3T3\\_cells&oldid=565489857](http://en.wikipedia.org/w/index.php?title=3T3_cells&oldid=565489857).

“File:Chathamensis.jpg.” *Wikipedia, the Free Encyclopedia*. Accessed November 1, 2013. <http://en.wikipedia.org/wiki/File:Chathamensis.jpg>.

*File:Darwin-s-tubercle.jpg*, n.d. <http://commons.wikimedia.org/wiki/File:Darwin-s-tubercle.jpg>.

“File:Galapagos-satellite-esilandnames.jpg.” *Wikipedia, the Free Encyclopedia*. Accessed October 31, 2013. <http://en.wikipedia.org/wiki/File:Galapagos-satellite-esilandnames.jpg>.

“File:GNigrita.jpg.” *Wikipedia, the Free Encyclopedia*. Accessed November 1, 2013. <http://en.wikipedia.org/wiki/File:GNigrita.jpg>.

“File:Homology Vertebrates.svg.” *Wikipedia, the Free Encyclopedia*. Accessed October 31, 2013. [http://en.wikipedia.org/wiki/File:Homology\\_vertibrates.svg](http://en.wikipedia.org/wiki/File:Homology_vertibrates.svg).

“File:Orthographic Projection Centred over the Galapagos.png.” *Wikipedia, the Free Encyclopedia*. Accessed November 1, 2013. [http://en.wikipedia.org/wiki/File:Orthographic\\_projection\\_centred\\_over\\_the\\_Galapagos.png](http://en.wikipedia.org/wiki/File:Orthographic_projection_centred_over_the_Galapagos.png).

Konversionlexikon, Meyers. *Deutsch: Skelett Eines Bartwales (a - Schulterblatt, b - Vorderbein, c - Rest Des Hinterbeins)*, 1988. Meyers Konversionlexikon 1888. [http://commons.wikimedia.org/wiki/File:Whale\\_skeleton.png](http://commons.wikimedia.org/wiki/File:Whale_skeleton.png).

Lilyu. *Friendly Stickmen*, December 17, 2008. Own work. [http://commons.wikimedia.org/wiki/File:Friendly\\_stickman.svg](http://commons.wikimedia.org/wiki/File:Friendly_stickman.svg).

publisher, Bain News Service. *Charles Darwin. 1 Negative : Glass ; 5 x 7 in. or Smaller. From a Photograph by Elliott & Fry. According to Gene Kritsky, Maintainer of an Archive of Darwin Photographs, This Was from a Photography Session at Darwin's Home, Down House, and on Another Photograph from That Session Darwin Wrote "1879" on the Back. It Was Later Widely Sold and Distributed on Heavy Card Stock by Elliott & Fry, with a Caption Dating It "Circa 1880". It Was Later Reproduced in a Wide Range of Darwiniana.*, 1879. Library of Congress[1]. [http://commons.wikimedia.org/wiki/File:Darwin\\_restored2.jpg](http://commons.wikimedia.org/wiki/File:Darwin_restored2.jpg).

version, Original uploader was Mcy jerry at en wikipedia Later. *English: en:Evolution of En:horse*, February 5, 2006. Transferred from en.wikipedia. <http://commons.wikimedia.org/wiki/File:Horseevolution.png>.

Weston, Mike. *Lonesome George*, December 10, 2006. Flickr: Lonesome George 2. [http://commons.wikimedia.org/wiki/File:Lonesome\\_George\\_in\\_profile.jpg](http://commons.wikimedia.org/wiki/File:Lonesome_George_in_profile.jpg).

Yourdon, Ed. *Little Girl Whispering Something in a Woman's Ear.*, July 18, 2009. originally posted to Flickr as Let me tell you a secret. [http://commons.wikimedia.org/wiki/File:Let\\_me\\_tell\\_you\\_a\\_secret.jpg](http://commons.wikimedia.org/wiki/File:Let_me_tell_you_a_secret.jpg).

Zell, H. *Deutsch: Evolution Der Pferde. Zusammengestellt Aus Skeletten Des Staatlichen Museums Für Naturkunde Karlsruhe, Deutschland.*, September 29, 2010. Own work. [http://commons.wikimedia.org/wiki/File:Equine\\_evolution.jpg](http://commons.wikimedia.org/wiki/File:Equine_evolution.jpg).



[www.bozemanscience.com](http://www.bozemanscience.com)