

# Bioinformatics

## The Big Jaw

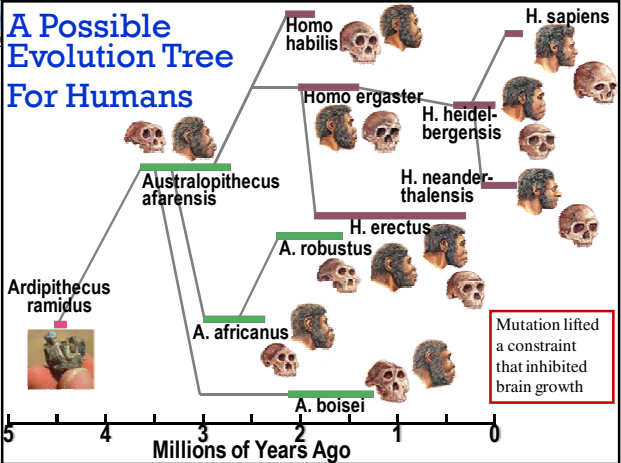
Sami Khuri  
Department of Computer Science  
San José State University  
San José, California, USA  
khuri@cs.sjsu.edu  
www.cs.sjsu.edu/faculty/khuri

©2013 Sami Khuri

Myosin gene mutation  
correlates with anatomical  
changes in the human lineage by  
Hansell H. Stedman et al.

NATURE: VOL 428, 25 MARCH 2004

### A Possible Evolution Tree For Humans



### Powerful Masticatory Muscles

- Powerful masticatory muscles are found in most primates, including chimpanzees and gorillas, and also in Australopithecus.
- Masticatory muscles are considerably smaller in members of Homo.
- The gene encoding myosin heavy chain (MYH) expressed in these muscles was inactivated by a frameshifting mutation after the lineages leading to humans and chimpanzees diverged.



A decrease in jaw-muscle size, produced by inactivation of MYH16, removed a barrier to the remodelling of the hominid cranium which consequently allowed an increase in the size of the brain.

