

## Human Adaptations chapter 16

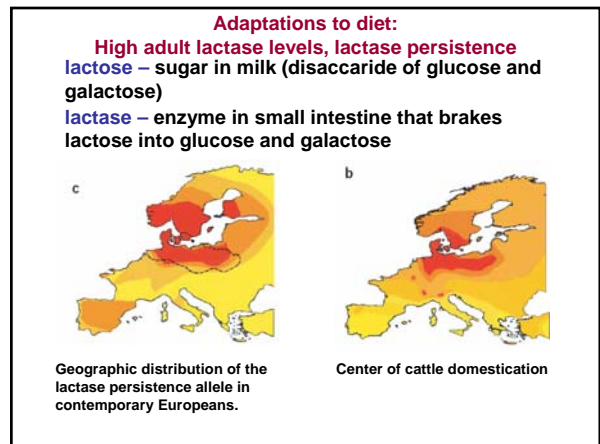
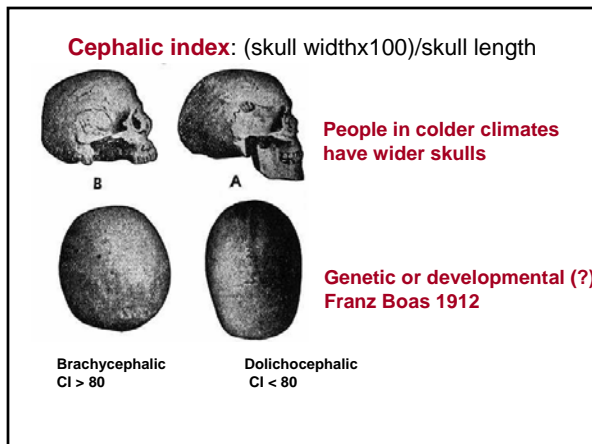
- Genetic – the result of natural selection
- Developmental – genes + environment  
**We are adapted to adapt**
- Acclimatization (long term and short term)
- immediate physiological responses
- Behavioral

### Genetic Adaptation: Body Proportions

**Bergmann's Rule**  
species in colder areas tend to have greater body mass than individuals in warmer areas.

**Allen's rule**  
species from colder climates usually have shorter limbs than the equivalent animals from warmer climates.

heat loss – surface  
heat retention – volume



### Developmental adaptations:

Adaptations to high altitudes  
(hypoxia, cold, excessive UV radiation)

- Increased chest size
- Shorter stature
- Late maturation

### Acclimatization to high altitudes:

1. Hyperventilation, Dizziness (immediate physiological response)

2. Increased production of red blood cells

3. Loss of appetite, weight loss



### Acclimatization to high UV radiation:

Tanning

### Immediate physiological responses



Cold:  
Vasoconstriction

↑  
↓  
Vasodilation

shivering

Heat → Vasodilation, sweating

### Species

a group of organisms that can potentially mate and produce fertile offspring

#### Ecological niche:

- ❖ where you live
- ❖ what you eat
- ❖ when you are active
- ❖ how you move
- ❖ ... everything else you do

## *Homo sapiens*

ch 12

1. What does it mean to be *Homo sapiens*?
2. Do all humans have a common ancestor?
3. How long ago did this common ancestor live?  
-- common female ancestor "Eve"  
-- common male ancestor "Adam"
4. Where did the common ancestor live?
5. Was this common ancestor a *Homo sapiens*?
6. Who are the Neanderthals? How are Neanderthals related to humans?
7. Did *Homo sapiens* co-exist and interact with the species of extinct humans?