RELATIVE SIZE OF CEREBRAL CORTEX (Chapter 20)

- Difference in brain size associated with cerebrum
- Outer cerebrum, cerebral cortex, shows greatest development in human
- Human larger brain size = large brain case/cranium
  - ∴ Brow ridge tends to be vertical and less prominent
- Less prominent brow ridge and shortening of snout = human has flatter face (though nose bone is still protruding)
- An evolutionary trend in hominins

PROGNATHISM & DENTITION (Chapter 20)

- Compared to other primate, human dentition = very distinctive
- Human's canine are align with other teeth and look more like incisors
- Small canine and incisors = less space in jaw
  - ∴ Tooth row, dental arcade, evolve into parabolic shape instead of "U" shaped
- Decrease in canine size = no need for diastema
  - ➔ Diastema allow closing of jaw with large canines
- Molar and premolar become smaller due to change in diet
  - ➔ Where diet consist of softer food including meat, then cooked food
- Gradual loss of wisdom teeth (3rd molar)
- Apes and early hominins have forward jutting jaw
  - ➔ Characteristic known as prognathism
- Gradual reduction in teeth size = flatter face, development of chin, prominent nose

EFFECT OF ENVIRONMENT ON HOMONIN EVOLUTION

- Hominins thought to have lived on woodlands or forest environment
  - ➔ Early hominins were aped like with features suited for arboreal
  - ➔ Gap in forest canopy = need to travel on open ground
    - ∴ Turned bipedal as natural selection favoured bipedal walking ape
- Benefits of bipedal locomotion
  - ➔ Increase range of vision to spot prey and predators at a distance
  - ➔ Increase size, intimidating predators
  - ➔ Hands free to carry more food and offspring, and allow tool use
  - ➔ Higher reach when picking fruits from trees
  - ➔ Improved cooling of body
    - ➢ With less surface areas exposed to sun
    - ➢ Upper body is above ground to have more wind

CULTURAL EVOLUTION IN HOMININS

Early Homo

- Were hunter gathers and brought food back to base
  - ➔ Relied mainly on plants and occasionally meat
  - ➔ Adult males: hunted
  - ➔ Adult females: gathered plant materials
  - ➔ Young left at safety of home base
- Increase of brain size from consumption of high energy dense food, from meat
  - ➔ Meat isn't simply gathered
  - ➔ Meat is caught and killed, or stolen from predators, not simply gathered like plant food
    - ➢ Therefore, requiring development of reasoning and cunning power
- Food gathered or hunted would be shared, which develop group to be more close knitted
  - ➔ Building social and economic function unit leading to development of spoken language
    - ➢ There was increase in speech production area of brain
    - ➢ But, larynx not yet capable of making complex sounds

Table 19.2 Hominin cranial capacities

Hominin	Cranial capacity (cm^3) (an estimate of brain size)
Australopithecus afarensis	430
Australopithecus africanus	457
Australopithecus garhi	450
*Paranthropus boisei**	491
*Paranthropus robustus**	542
Homo habilis	590
Homo rudolfensis	774
Homo ergaster	800
Homo erectus	1004
Homo heidelbergensis	1226
Homo neanderthalensis	1485
Homo sapiens	1350

*Note: Many classification schemes include the genus *Paranthropus* in the genus *Australopithecus*.