

Gerontology Notes 2/26

The Biology of Aging:

1. Primary Aging → unavoidable, inevitable (internal feelings of age)
 - Senescence – gradual, universal change of aging, always taking place
2. Secondary Aging → Experienced by most but not all. (external behaviors)
 - Functions of disease, disuse/abuse

Why do we Age: Cellular Theories –

- Hayflick Limit → Cells can only divide so many times before the process is exhausted.
 - Cell growth stops
- Cross Linking → Proteins produce molecules that make the body stiffer
 - (heart, muscles, arteries)
 - This is part of the aging process but not the reason why we age
- Free Radicals → Unstable molecules that damage proteins, fats, and lipids.
 - This contributes to disease

Rate of Living Theories:

- Wear and Tear Theory → Aging occurs because of the system wearing out over time.
- Autoimmune Theory → Aging is a function of the body's immune system becoming defective, it produces antibodies against itself.

Can Aging be Reversed or Delayed:

1. Telomeres = the end of chromosomes
 - Telomeres shorten with age, evidence → Progeria (someone born old)
 - Developing treatment to prevent shortening of telomeres
2. Growth Hormones = Replace depleted hormones
3. Caloric Restriction = Reducing calorie intake by 50-70%
 - Increased life expectancy & delayed disease

Predicting Longevity:

1. Heredity: How long did your parents/grandparents live?
2. Social Factors: Health attitudes, habits, life style, occupations
3. Biological Factors: extra X chromosome in females help in resistance to infection

Important Lifestyle Practices:

- Do not smoke
- Moderate alcohol use
- Healthy diet, regular exercise
- Social integration

Changes in Physical Appearance:

1. Visible signs of aging: skin wrinkles, gray hair, loss or gain in weight
2. ½ inch height decrease per decade beginning in 40's
3. Some changes can be modified

Sensory Deficits with Age:

- Decreased sensitivity to – smell, taste, temperature, pain
- Increased instability of posture and gait

Age Related Changes in Vision:

Presbyopia → extreme far sightedness

- Problems adapting to the dark
- Increased sensitivity to glare
- Diminished depth perception (risk in falls)

Glaucoma → Hardening of the eyeball, and buildup of fluid in the eyes.

- If left untreated, can destroy vision

Macular Degeneration → Deterioration of the retina

- Leading cause of blindness