Hypothalamic-Pituitary-Adrenal Axis

Hypothalamus

Pituitary Gland

CRF

POMC-ACTH

Adrenal Glands

Corticosteroids
- Mineral corticoids
- Glucocorticoids
Chronic Exposure to Stress

Hypothalamus
Pituitary Gland

CRF
POMC-ACTH

Adrenal Glands

Corticosteroids
• Mineral corticoids
• Glucocorticoids
• Alcoholism and alcohol abuse
• Chronic obstructive pulmonary disease (COPD)
• Depression
• Fetal death
• Health-related quality of life
• Illicit drug use
• Ischemic heart disease (IHD)
• Liver disease

• Risk for intimate partner violence
• Multiple sexual partners
• Sexually transmitted diseases (STDs)
• Smoking
• Suicide attempts
• Unintended pregnancies
• Early initiation of smoking
• Early initiation of sexual activity
• Adolescent pregnancy
how early experiences alter gene expression and shape Development

1. eXTerNAL eXPerleNces (e.g., stress, nutrition, toxins) spark signals between neurons
2. neural signals launch production of gene regulatory proteins inside cell
3. gene regulatorY proteins attract or repel enzymes that add or remove epigenetic markers
4. ePigeNetic “mArKers” control where and how much protein is made by a gene, effectively turning a gene “on” or “off,” thereby shaping how brains and bodies develop

DNA strands encircle histones that determine whether or not the gene is “readable” by the cell

chromosome — can pass on genes to next generation

gene — a specific segment of a DNA strand

Neuron (brain cell)

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