

hey

Epigenetics

We first talked about two different mice. What was different and why?

Obese & yellow - ↓ DNA methylation
skinny & brown - ↑ DNA methylation

What is epigenetics? What are the two main types?

Heritable changes in the gene not associated to changes of the sequence
DNA methylation & Histone modifications

What are the 4 main post-translation histone modifications?

Phosphorylation

methylation

Acetylation

ubiquitination

How do these modifications happen?

The N-terminus of histon tails (unpacked)
are modified

What does acetylation do? What does methylation do?

HAT opens DNA = ↑ transcription

Add bulky methyl group = DNA/transcription off

What is the environment's role?

controls changes of the gene activity

When are we most susceptible? What is developmental plasticity?

fetal/early development

The idea of how "moldable" epigenetics is

What do developmental geneticists' study?

- what genes are expressed & when
- what part of an embryo are genes expressed
- regulation
- results of defects

What is developmental programming?

How exposure in a critical period in development influences later function

Describe the Dutch Hunger Winter and its effects on the population.

famine = 500 cal/day for pregnant women

found that those "starved" in 3rd trimester had the highest possibility of Type II diabetes

(3rd trimester most important)

How does Heat stress affect milk production and epigenetics?

causes epigenetic changes to alveoli = less milk

this is passed down for multiple generations

milk/profit loss for many years

What effect does IVF and ART have on the fetus?

can cause issues w/ imprinted genes

lower birth weight