

Class 11 - Embodiment



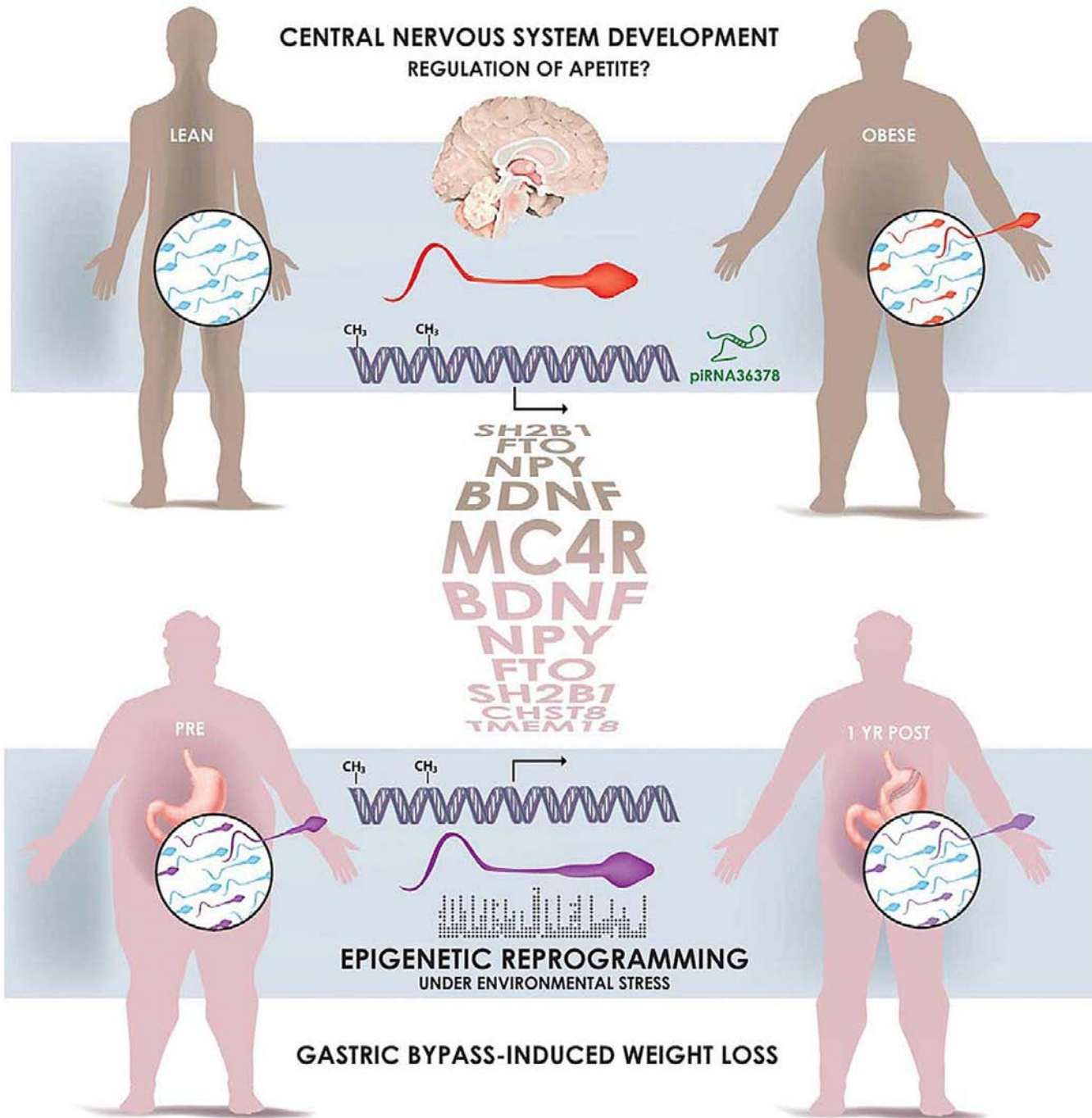
Agenda

- Epigenetics
- Cellular aging
- Stress
- video on HPA axis - reference back to rat pups
- short and long term effects
- cite courtney's research
- stress and susceptibility
- microbiome

Movie break

How the epigenome works

**CENTRAL NERVOUS SYSTEM DEVELOPMENT
REGULATION OF APETITE?**

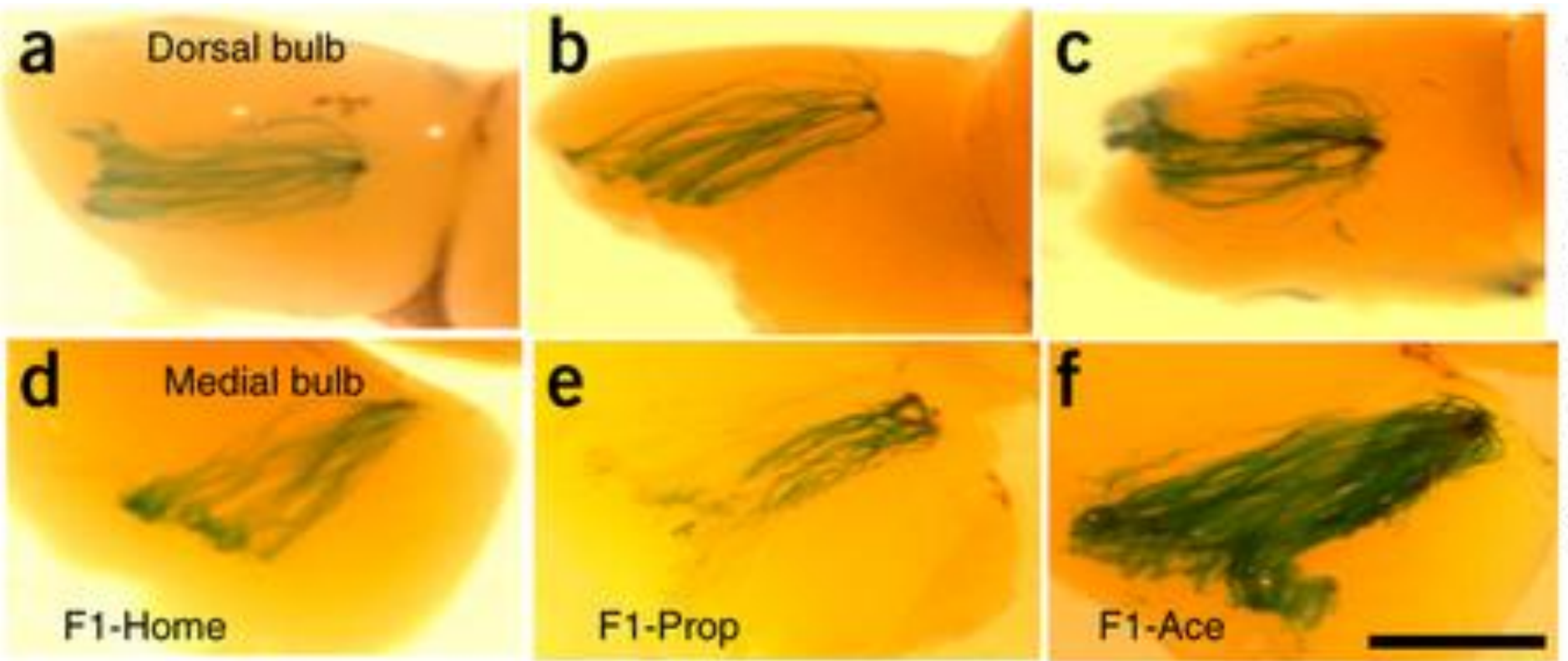


Modifying the epigenome

- Behaviors (diet)
- Physical exposures (pollution)
- Social environment
 - Heightened stress response of babies after 9/11: 16% affected in the second trimester, 30% in the third trimester

Movie break

- Epigenetic changes in rats



Reprinted by permission from Macmillan Publishers Ltd: Nature Neuroscience.
Source: Dias, Brian G., and Kerry J. Ressler. "Parental olfactory experience influences behavior and neural structure in subsequent generations." *Nature Neuroscience* 17, no. 1 (2014): 89-96.

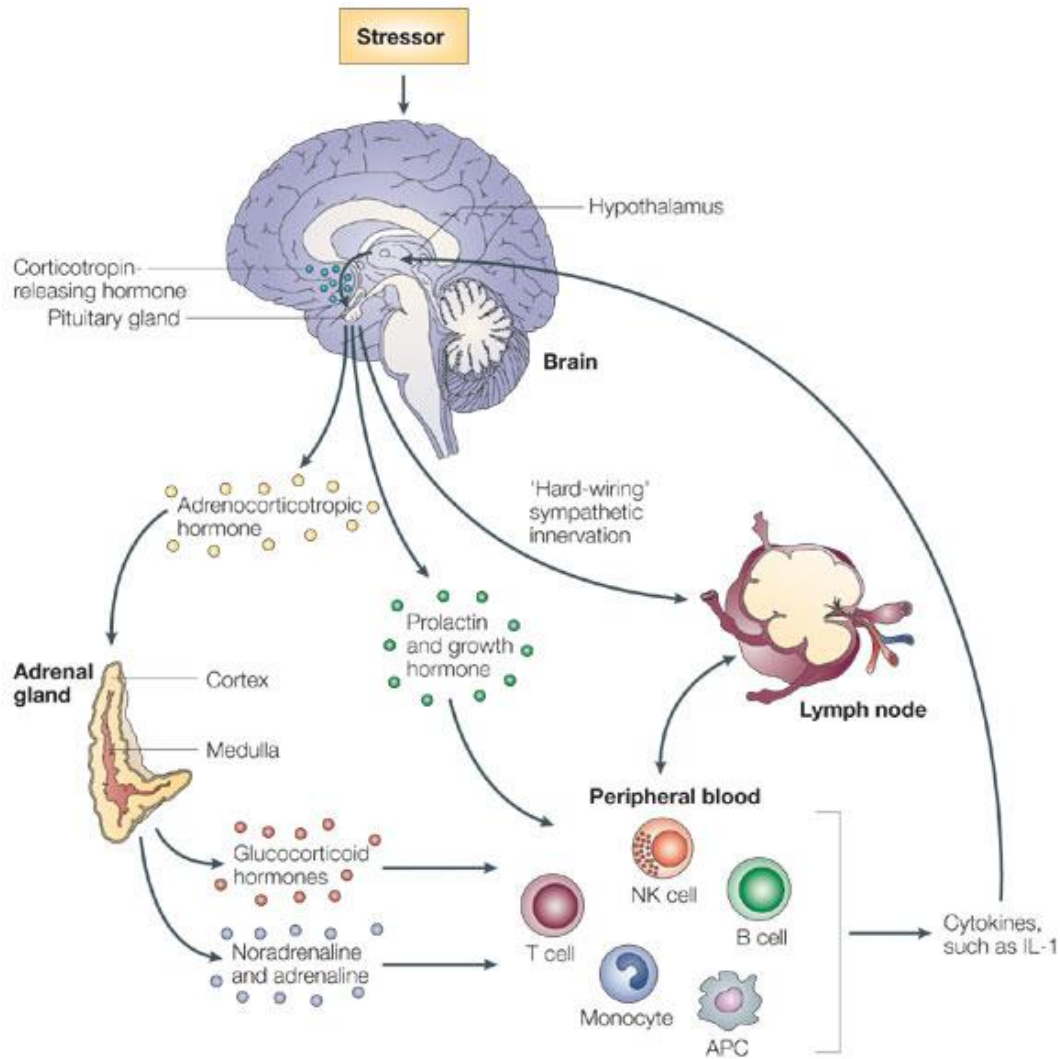
Cellular aging

- What are tellomeres?
- Another movie
- What did caregiving do to tellomere length?

Movie break!

- Stress

Stress



- Increased blood pressure
- Increased blood sugar
- Atherosclerosis
- Decreased cognitive function
- Anxiety and depression
- Coping behaviors (substance use, binge eating)
- Weakened immune system
- GI symptoms
- Weight gain
- Cellular aging
- Cancer
- Heart disease
- Stroke

Nature Reviews | Immunology

Stress and development

- In utero exposure
 - Transmission through breast milk
 - Changes in parenting behavior
 - Shared stressful environment
 - More?
-
- Consequences for brain size and function
 - Consequence for infectious disease susceptibility
 - Consequence for metabolic function

Infectious disease

- Susceptibility
- Ohio State University Medical School in the 1980s
 - Three days of exams
 - Lower levels of natural killer cells, gamma interferon, weak response of T-cells
- Studies of caregivers and the socially isolated and depressed
 - Wear and tear on immune function
- What did Dowd et al find?

Gene-environment interaction

- Social control, contextual triggers
- How does this differ from epigenetic changes?

Embodiment

- (1) bodies tell stories about—and cannot be studied divorced from—the conditions of our existence;
- (2) bodies tell stories that often—but not always—match people's stated accounts; and
- (3) bodies tell stories that people cannot or will not tell, either because they are unable, forbidden, or choose not to tell.

Krieger, N. (2005). Embodiment: a conceptual glossary for epidemiology. *Journal of Epidemiology and Community Health*, 59(5), 350–355. <http://doi.org/10.1136/jech.2004.024562>

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Spring 2016

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