

# **UAB Epigenetics Retreat**

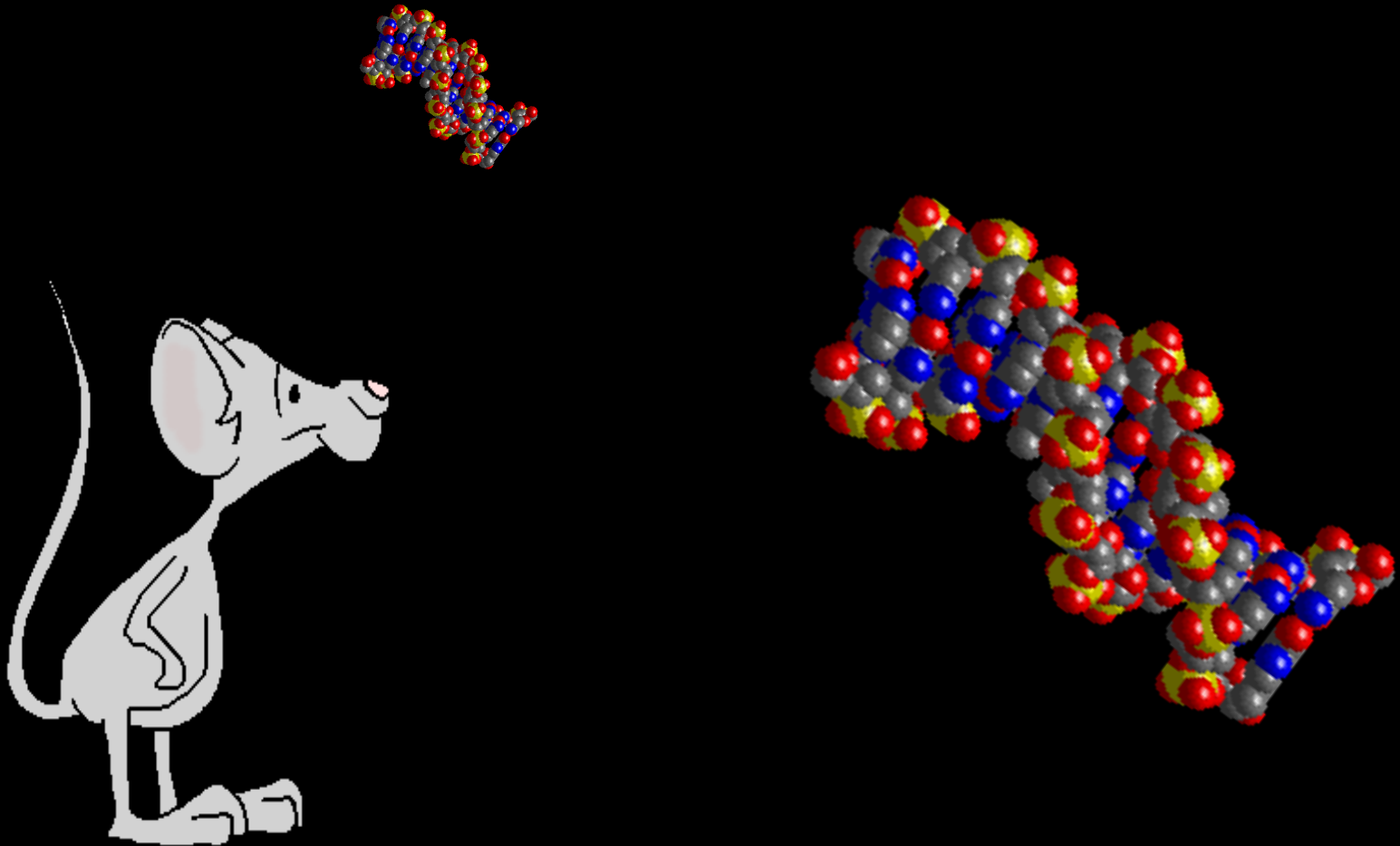
**July 2012**

## **Epigenetic Mechanisms in Memory Formation**

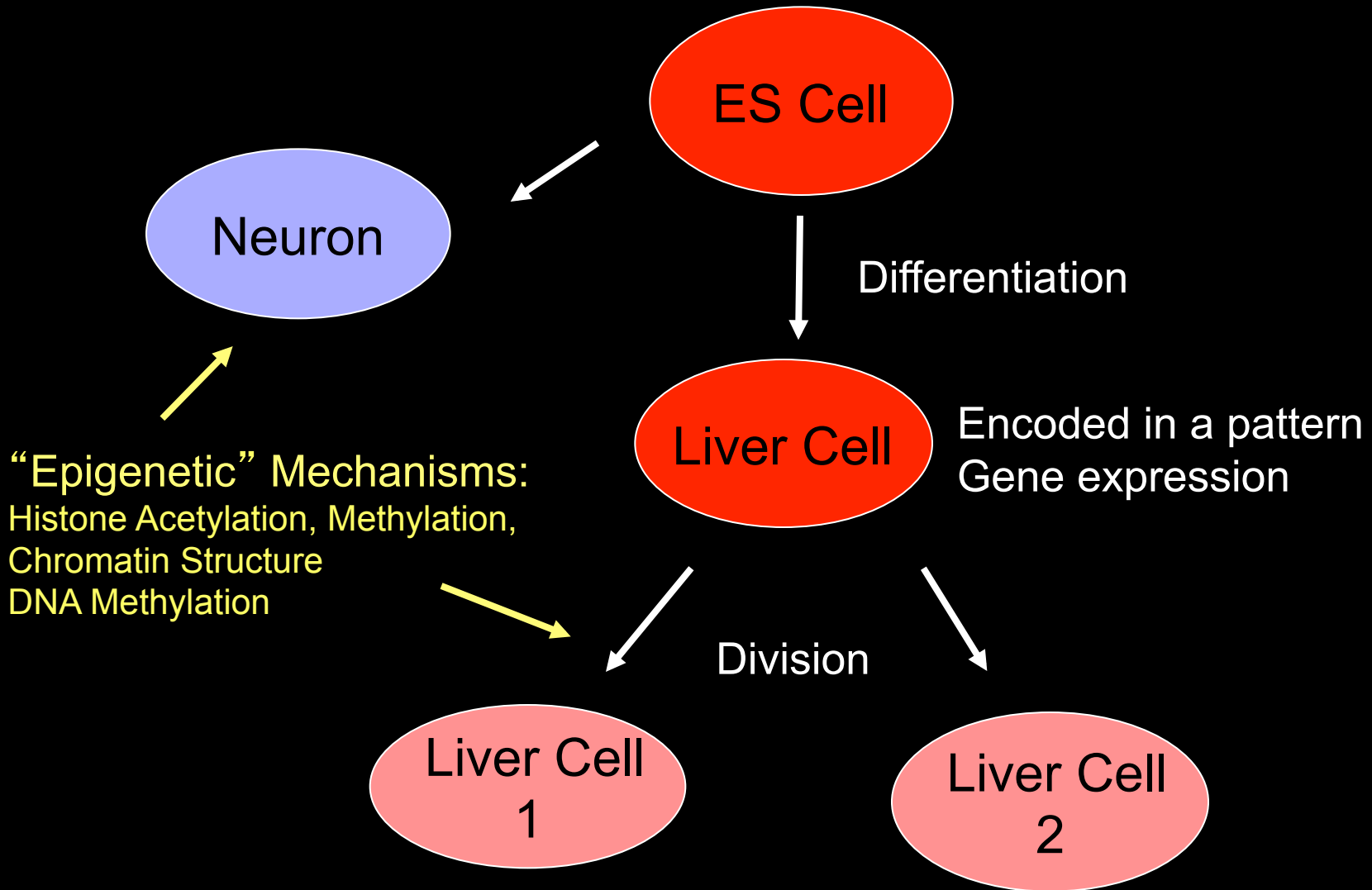
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# The Molecular Basis of Memory

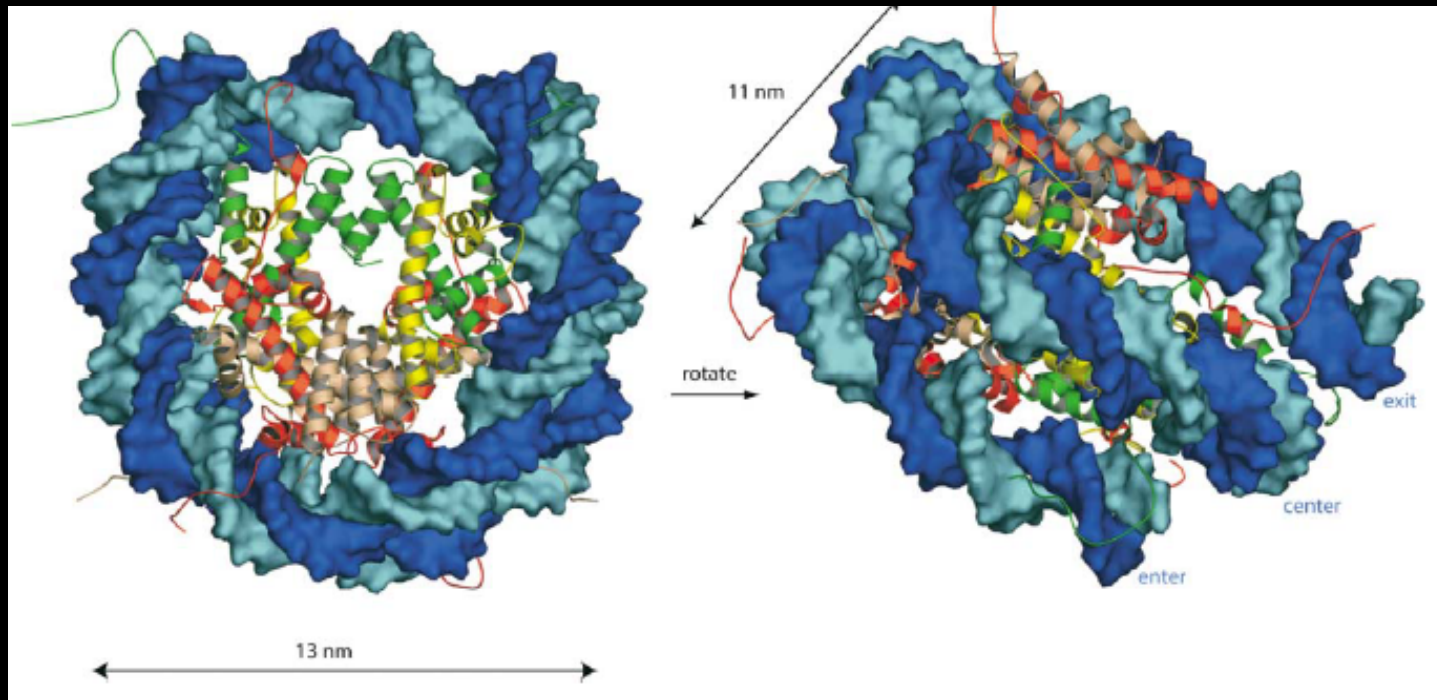
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# Memory at the Cellular Level



# Chromatin Structure



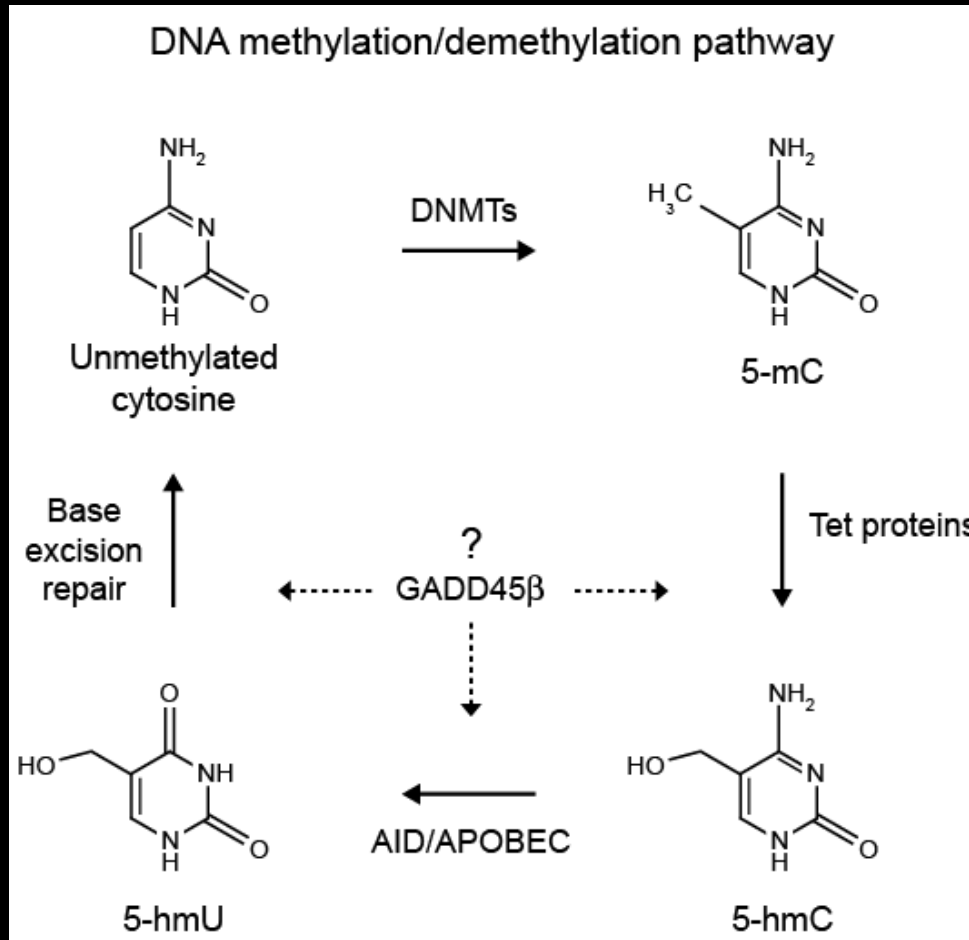
# Histone Modification in Memory Formation

- Histone Acetylation, Methylation, Phosphorylation, Subunit Exchange
- HDAC Inhibitor Augmentation of Memory
- Novel AD Therapies
- Drug Addiction



Is chemical modification of DNA involved in memory?

# A Model for Active DNA De-methylation In Memory



# The Molecular Basis of Long-term Memory

- **Epigenetic mechanisms are involved in memory formation**
- **Development and long-term memory are homologous molecular processes**
- **A universal molecular alphabet for triggering lasting cellular change**



# Acknowledgements



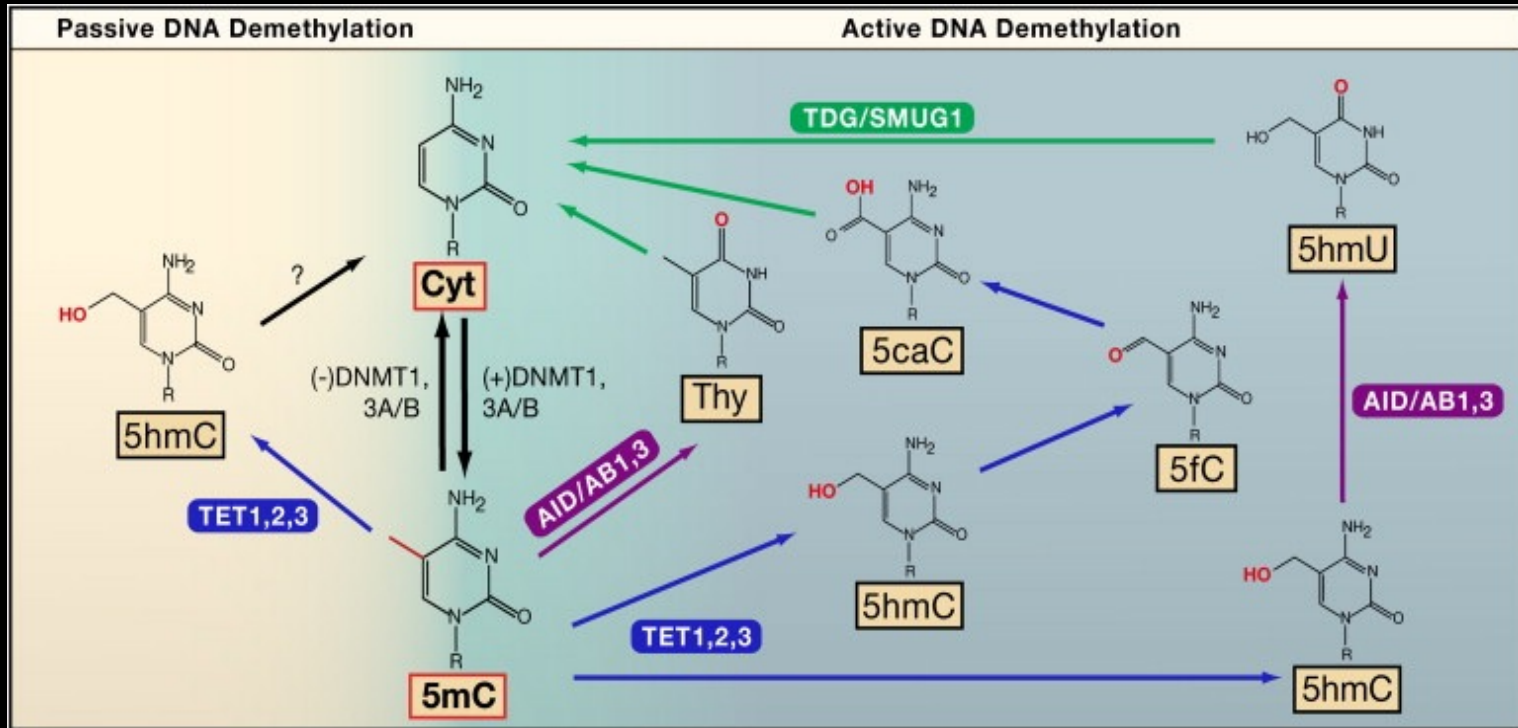
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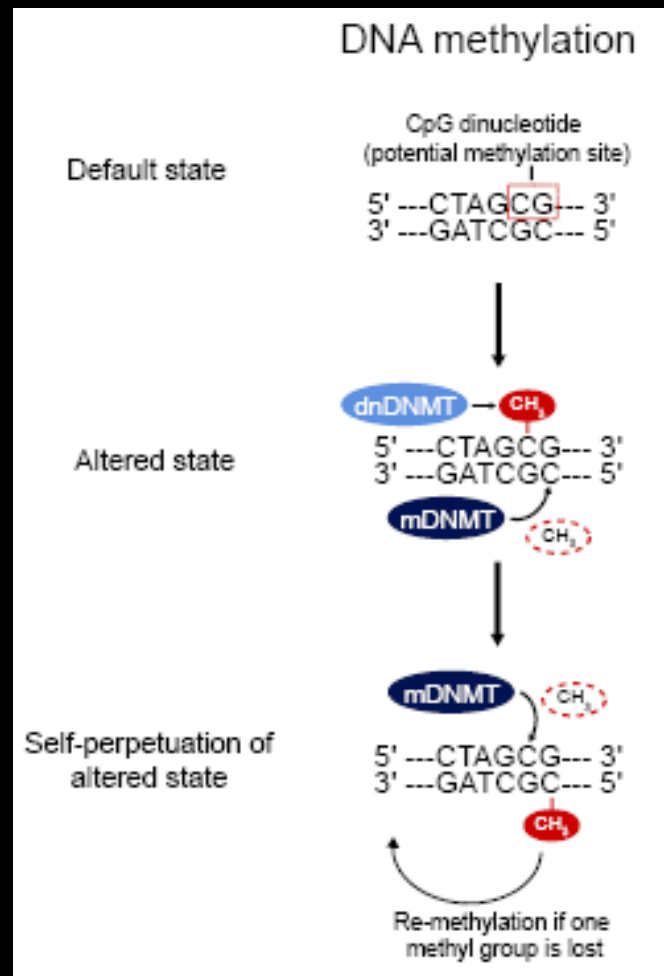


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# A Model for Active DNA De-methylation In Neurons



# The Molecular Basis of Memory



# Synapse Specificity vs. Cell-wide Changes

