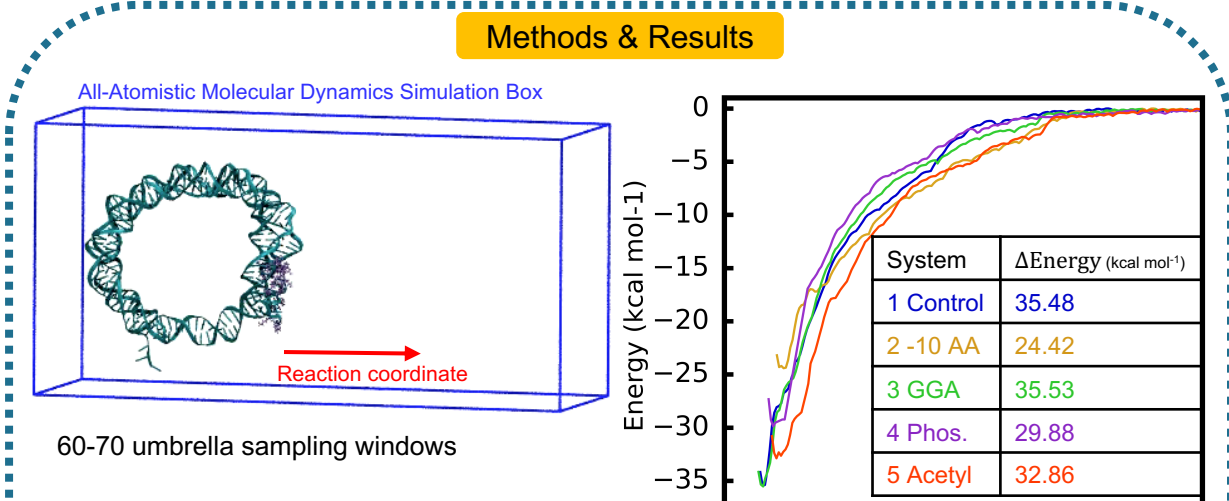


Chromosome

How do modifications to the histone H3 tail shift interactions between DNA and histone proteins?

Stretched end to end your DNA would go to the sun and back 300 times!

Chromatin Fiber



Background & Motivation

What is **Epigenetics**?

- Layer of regulation that controls activity of genes while not changing the DNA itself

Motivation

- Epigenetic tags are linked to **cancer biology**.
- Understanding underlying mechanisms advances research towards personalized cancer treatments

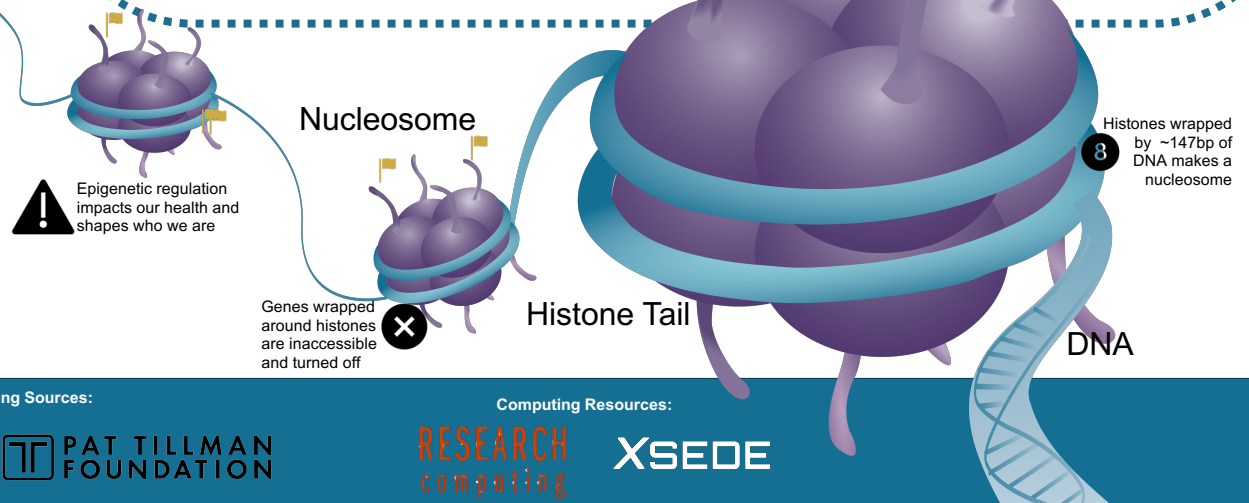
Why Histone H3 Tail?

- Largest # of known epigenetic tags
- Experimental collaboration**

H3 Tail Sequences & Mutants Studied

#1: ARTKQTARKSTGGKAPRKQLATKAARKSAPTGGVKKP
 #2: ARTKQTARKSTGGKAPRKQLATKAARKSAPTGGVKKP
 #3: ARTKQTARKSTGGAGGAGGAGATKAARKSAPTGGVKKP
 #4: ARTKQTARKSTGGKAPRKQLATKAARKSAPTGGVKKP
 #5: ARTKQTARKSTGGKAPRKQLATKAARKSAPTGGVKKP

Legend: ■ phosphorylation ▲ acetylation



Acknowledgments