Abstract Submitted
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Phosphorylation of histone H3 Thr 118 converts nucleosomes into a higher-mass complex[1] JUSTIN NORTH, MICHAEL POIRIER, Department of Physics, The Ohio State University, MICHELLE FERDINAND, JENNIFER OTTESEN, Department of Biochemistry, The Ohio State University — The nucleosome is the fundamental unit of DNA compaction in eukaryotes by which 147 base pairs of DNA wrap 1.7 times around a protein complex called the histone octamer. Numerous chemical modifications are found in vivo that alter octamer surface charge and shape. One such modification is phosphorylation of histone H3 residue Thr 118 located in the dyad region of the nucleosome. We find that phosphorylated H3 T118 (H3 pT118) octamer, when reconstituted with DNA of about 200bp, suppresses nucleosome formation and promotes formation of a higher-mass DNA-protein complex. Coordinately, dephosphorylation of H3 pT118 octamer by phosphatase results in reconstitution of normal nucleosomes. DNAse I foot printing reveals that while DNA contacting the octamer surface in nucleosomes is less accessible than free DNA, the entire DNA strand is equally accessible in the higher-mass complex and is digested at one-third the rate of free DNA.

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