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New insights into nucleosome positioning and spacing RAZVAN CHEREJI, National Institutes of Health, SRINIVAS RAMACHANDRAN, STEVEN HENIKOFF, Fred Hutchinson Cancer Research Center — The basic units of DNA packaging are called nucleosomes 147 bp of DNA wrapped around a histone octamer. Their locations on the chromosomes play an essential role in gene regulation. We use a novel technique of mapping nucleosomes, which virtually eliminates the background noise that is characteristic of nucleosome maps generated by other methods. We present a new method of obtaining precise measurements of internucleosomal spacing at the single gene level, which confirms the linker quantization hypothesis. We show that statistical mechanics can predict the genome-wide nucleosome organization in yeast. References: [1] RV Chereji et al., Phys. Rev. E 83, 050903 (2011) [2] RV Chereji and AV Morozov, J. Stat. Phys. 144, 379 (2011) [3] RV Chereji and AV Morozov, Proc. Natl. Acad. Sci. U.S.A. 111, 5236 (2014) [4] D Ganguli et al., Genome Res. 24, 1637 (2014) [5] N Elfving et al., Nucleic Acids Res. 42, 5468 (2014) [6] HA Cole et al., Nucleic Acids Res. 42, 12512 (2014) [7] RV Chereji and AV Morozov, Brief. Funct. Genomics 14, 50 (2015) [8] RV Chereji et al., Nucleic Acids Res. 44, 1036 (2016) [9] J Ocampo et al., Nucleic Acids Res. 44, 4625 (2016) [10] H Qiu et al., Genome Res. 26, 211 (2016) [11] RV Chereji, S Ramachandran, S Henikoff, in preparation

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