THE OFFICE OF RESEARCH AND SCHOLARSHIP PRESENTS

The History and Mystery of Chromatin

Ada Olins, Ph.D. and Don Olins, Ph.D.

Co-Discoverers of the Nucleosome, the Fundamental Subunit Structure of all Eukaryotic Chromatin and Chromosomes

UNE Research Professors

The name "Chromatin" was given by W. Flemming (~1880) to the nuclear substance that stains strongly in a light microscope. During the 1940's to 60's, it became clear that chromatin is a complex of (anionic) double-stranded DNA with an equal mass of highly basic histone proteins. Following the success of fiber x-ray diffraction in deciphering helical macromolecular structures (e.g., the single peptide alpha-helix, DNA double helix, collagen triple helix, etc.), it became "reasonable" to postulate that chromatin is a helix of nucleohistone. Electron microscopic evidence appeared to support this concept. In 1973-74 the chromatin field witnessed a significant paradigm shift, when our electron micrographs and parallel biochemical data (from other labs) demonstrated that the chromatin polymer is a "string-of-beads", which were named "nucleosomes". The "core" nucleosome contains ~160 bp of DNA, wrapped around an inner spool of 8 histones (two each of histones H3, H4, H2A and H2B) related by a dyad axis. Following the discovery of nucleosomes, there was again a profusion of chromatin helical models (e.g., "30 nm fibers"). Unfortunately, there is very little support for such higher-order structures in vivo. Since the discovery of the nucleosome, we have focused on a number of questions related to *in situ* higher-order chromatin structure: What controls the shape of the interphase nucleus? What are the properties of the chromatin "surface", adjacent to the nuclear envelope? What happens to chromatin during hyperosmotic dehydration of the live cell? We will present some of our published and unpublished data on these questions

LECTURE: Tuesday, November 12, 2019
12:00 – 1:00 pm | Desserts Provided
Leonard Hall, UNE Biddeford Campus
Livestream: http://stream.une.edu/events

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