Jerry L. Workman

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Jerry L. Workman is a biochemist who pioneered studies of chromatin in transcription regulation. His group defined nucleosomes/transcription factor interactions and their role in recruiting chromatin modifying complexes. They purified the first histone-modifying chromatin co-activator complexes, which initiated biochemical studies of epigenetics. They discovered the Set2/Rpd3S pathway to repair chromatin during transcription and nuclear complexes of metabolic enzymes linking histone modification to metabolism. Workman was born in northwest Illinois and received a B.S. in Biology from Northern Illinois University in 1979. He received his PhD in Cell and Molecular Biology from the University of Michigan in 1985. He was a postdoctoral fellow at Rockefeller University and Mass. Gen. Hospital/Harvard Medical School. In 1992 he joined the faculty at the Penn. State where he served as the Paul Berg Professor of Biochemistry and an Investigator of the Howard Hughes Medical Institute. In 2003 he became an Investigator of the Stowers Institute for Medical Research. Workman is a member of the National Academy of Science and The American Academy of Arts and Sciences, an honorary lifetime member of the Japanese Biochemical Society and a Changjiang “Yangtze River” Scholar of the Chinese Ministry of Education.

Transcription Regulation through Chromatin Modification

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Our laboratory has a long-standing interest in the role of chromatin in transcription regulation. We carried out the first biochemical characterization of the Swi/Snf chromatin remodeling complex and discovered the first nuclear histone acetyltransferase complexes including SAGA and NuA4 (Tip60). These complexes were found to be recruited to promoters and enhancers through interactions with sequence-specific transcription factors and lead to the modification and/or displacement of nucleosomes. Our studies on the Set2 histone methyltransferase have shown that it binds and travels with elongating RNA polymerase II methylating histone H3 on lysine 36. This methylation signals for the repair of chromatin behind elongating polymerase to maintain the fidelity of transcription initiation. Further studies have linked both Set2 and Swi/Snf to RNA splicing and processing.