

Postdoc Research Opportunities

Probing Transcription Elongation through Chromatin

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Environmental Diseases and Medicine Program

Laboratory of Molecular Carcinogenesis

ID# HNV06-17

Our goals are to investigate the dynamic interplay between signals from the extracellular environment and transcription by RNA polymerase II and to probe how chromatin structure and epigenetics influence gene activity. Although it has been known for many years that the compaction of DNA into chromatin can occlude protein binding sites and gene promoters, the ways in which the cellular machinery manipulates chromatin structure to influence gene expression remain poorly understood. Understanding the transcriptional responses to specific stimuli is crucial for a full appreciation of many biological and pathological events involving gene-environment interactions.

Primary aims of our research are to elucidate the regulation of transcription elongation and to address how histone modifications and nucleosome remodeling affect Polymerase II movement through a gene.

We are undertaking a variety of approaches to identify and characterize proteins that regulate transcription elongation and chromatin structure, combining in vivo RNAi, Microarray expression and ChIP-on-chip location analysis with in vitro biochemical and biophysical assays (e.g. Adelman, et al., *PNAS*, 2002; *Mol. Cell*, 2004; *Mol. Cell*, 2005; *Mol. Cell Biol.* 2006). These studies also take advantage of the availability of cutting-edge protein expression, structural biology and mass spectrometry facilities at the NIEHS, as well as the novel, single-molecule biophysical techniques that are being developed in our laboratory.

Applicants must possess a Ph.D. degree in Biochemistry, Genetics or a related field and have less than three years of postdoctoral experience. Salary will be commensurate with experience. Candidates with experience in *Drosophila* or mouse models are especially encouraged to apply. Applications should be received no later than **November 20, 2006**. For consideration, send cover letter, curriculum vitae including list of publications, and the names/phone numbers/email addresses of three people who could provide letters of reference to:

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