

## Spin Column Isolation of DNA-Protein Interactions from Complex Protein Mixtures for AFM Imaging

\*Peter R. Hoyt, \*Mitchel J. Doktycz, Robert J. Warmack  
and \*David P. Allison

Life Sciences Division, The Oak Ridge National Laboratory,  
Oak Ridge, TN 37830 and \*Genome Science and Technology Graduate School  
The University of Tennessee, 1060 Commerce Park, Oak Ridge, TN 37830

Applications of atomic force microscopy (AFM) to investigate structural-functional interactions between DNA and proteins, at the molecular level, should prove valuable for gaining a better understanding of gene expression. Specific genomic DNA-protein interactions occur within a sea of intracellular proteins. Successful AFM imaging requires isolating the specific DNA-protein complex free of background protein contamination. Using spin column chromatography we report the successful isolation and AFM imaging of transcription factor DNA complexes from DNA molecules incubated with crude cell lysates. This method should be applicable for the isolation and imaging of other specific DNA-protein complexes pertinent to functional genomic research.

Oak Ridge National Laboratory  
UT-Battelle, LLC  
for the  
U.S. Department of Energy  
under contract number DE-AC05-0096OR22725.