

CONSTITUTIVELY ACTIVE GENES LOCALIZE TO THE NUCLEAR PERIPHERY IN YEAST CELLS,  
Adam Kim, Sara Ahmed, Jason H. Brickner\*, Northwestern University, Department of Biochemistry  
Molecular Biology and Cell Biology, Evanston, IL, 60201

Localization of genes to the nuclear periphery has been shown to play a role in the regulation of gene transcription. Certain inducible yeast genes are targeted from the nucleoplasm to the nuclear periphery upon transcriptional activation. At the periphery, these genes associate with the nuclear pore complex, a large channel connecting the nucleus to the rest of the cell. Furthermore, peripheral localization enhances the transcription of these inducible genes. We asked whether targeting and localization at the nuclear periphery was a feature unique to inducible genes or a more general phenomenon. We localized five genes that are expressed constitutively: *ACT1*, *RPL10*, *ENO1*, *PMA1* and *HSP150*. These genes are all constitutively expressed genes that are crucial for the cell's growth and survival. Using a chromatin localization assay, we found that *ACT1*, *ENO1*, and *PMA1* localized to the nuclear periphery. Mutations in components of the nuclear pore complex that are required for localization of inducible genes at the nuclear periphery also caused a loss in peripheral localization of *ACT1*. These results suggest that peripheral localization of genes is a more general phenomenon than previously thought and that constitutively expressed genes may employ DNA targeting mechanisms similar to those used by inducible genes.