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Education:

- Ph.D. 1998 Rutgers, New Jersey
- Postdoc. 1998-2005, The Rockefeller University
- B.A. 1988, Nanjing University, China
- M.S. 1991, Shanghai Institute of Biochemistry, China

Research Interest:

- **Regulation of gene expression and nuclear transport**

The nuclear pore complexes (NPCs) are multiprotein assemblies embedded in the nuclear envelope and play a critical role in regulating essential cellular events including replication, transcription, translation and DNA repair by controlling transport of macromolecules into and out of the nucleus. Each NPC contains about 30 different proteins, which are collectively called nucleoporins (Nups). Recent studies have shown that the composition and the architecture of NPCs vary under different growth conditions. However, the regulation of Nup gene expression and the functions of individual Nups are not well understood. Our research is focused on the following specific aims to address these questions.

1. Transcriptional regulation of nucleoporin (Nup) gene expression in Saccharomyces cerevisiae.

The basic architecture and the major components of the NPCs are evolutionarily conserved between yeast and metozoa. We use yeast as a model system to study the regulation of Nup gene expression in response to cell cycle signals and environmental stimuli. To understand the regulation of Nup genes at the transcriptional level, we collaborate with Dr. Qiu's lab and use a combination of bioinformatic, molecular and biochemical approaches to identify regulatory elements in the promoters of Nup genes and the proteins that bind to these elements

2. Functions of nucleoporin Tpr (translocated promoter region) in various nuclear processes and its role in pathogenesis.

Tpr is a major component of the filament structures that anchor at the nuclear basket of the mammalian NPCs and extend to the nuclear interior. It has been implicated in diverse nuclear events, including nuclear organization, RNA processing, and nuclear export of protein and mRNA. However, the roles of Tpr in these processes are unknown. We focus on elucidating the mechanisms by which Tpr carries out its various functions. Using yeast genetic and biochemical approaches, we have identified several novel Tpr interacting proteins. Currently, we are characterizing the composition and functions of two protein complexes including Tpr.

Selected Publications:

- Benavides, M., Chow-Tsang, L., Zhang, J. and Zhong, H. (2013) The novel interaction between microspherule protein Msp58 and ubiquitin E3 ligase EDD regulates cell cycle progression Biochim Biophys Acta Molecular Cell Research) 1833(1): 21-32. doi: 10.1016/j.bbamcr.2012.10.007. Epub 2012 Oct 12.
- Zhong, H., Shio, H., and Yaseen, N. (2006) Ultrastructural Nuclear Import Assay. Methods 39(4), 309-15.
- Zhong, H., Takeda, A., Nazari, R., Shio, H., Blobel, G. and Yaseen, N. (2005) Carrier-independent nuclear import of the transcription factor PU.1 via RanGTP-stimulated binding to Nup153. J. Biol. Chem. 280(11),10675-82.
- Boehmer, T., Enninga, J., Dales, S., Blobel, G. and Zhong, H. (2003) Depletion of a single

nucleoporin, Nup107, prevents the assembly of a subset of nucleoporins into the nuclear pore complex. PNAS 100(3), 981-985.

- Fontoura, B. M., Dales, S., Blobel, G. and Zhong, H. (2001) The nucleoporin Nup98 associates with the intranuclear filamentous protein network of TPR. PNAS 98(6), 3208-3213.