



Department of Biological Sciences Seminar Announcement

Molecular Chaperones for Collagen and Elastin: Structural Insights into Their Actions

In contrast to our understanding of the workings of molecular chaperones that help globular proteins to fold, information on chaperone proteins for 'fibrous' proteins such as collagen and elastin have, until recently, been rather limited and pertains to some of the enzymes involved in post-translational modifications. A 47kDa collagen-specific chaperone protein called Hsp47 has recently been identified and studied extensively in several laboratories including ours. Many functional roles have been attributed to this protein. In the past couple of years, we have extensively studied the structure and function of Hsp47 and have shown that, *in vitro*, this protein inhibits the rate of fibril formation by collagen. It is likely that Hsp47 plays an analogous *in vivo* role by preventing premature intracellular aggregation of triple-helical procollagen. We have also linked the pH-dependent Hsp47's conformation to its fibril-inhibition function. We have also identified the Hsp47 binding regions in collagen using peptides derived from collagen. In a very recent study, we have shown that FKBP-65, a proline *cis-trans* isomerase, may act as a chaperone to elastin. In contrast to Hsp47's action on collagen, FKBP-65 *helps* the coacervation of tropoelastin into an ordered aggregate, possibly by catalyzing the formation of the beta-sheet secondary structure. The therapeutic implications of our findings on Hsp47 and FKBP-65 will be discussed in light of our results using the high-throughput method for identifying chemicals that bind to these proteins.



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Date: 4 April 2003, Friday

Time: 4 - 5pm

Venue: LT 20

Host: Prof Hew Choy Leong

All are welcome