

S E M I N A R

Department of Biological Sciences

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Hosted by A/P Henry Mok



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“Our work on the role of molecular chaperones in mitochondrial biogenesis led us to discover a Mitochondrial Unfolded Protein Response (mtUPR). We have found that in mitochondria from mammalian cells, the accumulation of unfolded proteins leads to the signalling between mitochondria and the nucleus, leading to the activation of genes encoding quality control proteins (chaperones and proteases) through an extended promoter element which incorporates a CHOP element.

Recently, the mtUPR has been found to be linked to the pathogenesis of inflammatory bowel disease through the induction of the dsRNA activated protein kinase (PKR). PKR is activated by a signal, yet to be determined, from the stressed mitochondrion, which leads to the attenuation of protein translation through phosphorylation of eIF2a. PKR also activates mtUPR responsive genes through the phosphorylation of c-Jun and activation of AP1. This series of events has been shown to occur in murine models of colitis and mitochondrial chaperonin 60, a key mtUPR responsive protein is elevated in patients with inflammatory bowel disease”.

The mitochondrial unfolded protein response: a biological process to prevent the loss of mitochondrial function

