MOLECULAR MICROBIOLOGY AND IMMUNOLOGY (MMI)

MMI 0401 - The Molecular Cause of Aging
Credit(s): 2-12 Credits
As we get older, mutations accumulate in mitochondrial DNA. By age 60 it is not unusual for 1 out of every 100 mito DNA molecules to be mutant in neurons and muscle cells. However, since each cell may have hundreds of thousands of mitochondrial DNA’s, it is controversial whether a few mutations in this pool of DNA actually are pathogenic. We have developed a transgenic mouse model, which demonstrates that a few bad apples indeed do spoil the barrel. In this model, mito DNA mutations only accumulate rapidly after birth so that by 4-5 weeks of age these mice have mito mutations at levels commonly found in aged humans. The mutations only accumulate in mitochondrial DNA and only in the heart. The mice develop profound dilated cardiomyopathy at 4-5 weeks of age. We think that the molecular basis for the pathogenesis of low levels of mito DNA mutations rests with a hitherto unrecognized mechanism: namely, mutations induce mitochondrial pore disease in response to increasing levels of malfolded proteins.

MMI 0903 - Molecular Microbiology and Immunology Research
Credit(s): 1-12 Credits (Repeatable for credit)