**Role of regulatory proteins in the aging process**

Gábor Bánhegyi, Csaba Sőti, Tibor Vellai

(Semmelweis Univesity, Dept. of Medical Chemistry, Eötvös Lóránd University, Dept. of Genetics)

The heat shock transcription factor HSF1 directly regulates the activity of four UPR (unfolded protein response) genes in the nematode *Caenorhabditos elegans*.

Heat shock provokes endoplasmic reticulum stress in mammalian cells; however, silencing of Hsf1 did not decrease the level of stress markers, indicating other indirect connections in the control network.

The DAF-21/Hsp90 heat shock protein is required for the function and life-span extending effect of the stress-inducible DAF-16/FOXO transcription factorin *C. elegans*. The expression of *daf-16* is also activated by the sex-determination gene cascade. This can explain why hermaphrodites live significantly longer than males.

Csala M, Kardon T, Legeza B, Lizák B, Mandl J, Margittai É, Puskás F, Száraz P, Szelényi P, Bánhegyi G. On the role of 4-hydroxynonenal in health and disease. *Biochim Biophys Acta* 2015 Jan 30;1852(5):826-838

Margittai É, Enyedi B, Csala M, Geiszt M, Bánhegyi G. Composition of the redox environment of the endoplasmic reticulum and sources of hydrogen peroxide. *Free Radic Biol Med.* 2015 Jun;83:331-40.

Sturm Á, Ivics Z, Vellai T. The mechanism of ageing: primary role of transposable elements in genome disintegration. *Cell Mol Life Sci*, 2015 May;72(10):1839-47.

Holczer M, Márton M, Kurucz A, Bánhegyi G, Kapuy O. A comprehensive systems biological study of autophagy - apoptosis crosstalk during endoplasmic reticulum stress. *BioMed Res Int* 2015;2015:319589