Post-Doc Positions at the Institute of Evolution, University of Haifa, Haifa, Israel

We are looking for independent, motivated, diligent, laborious, dedicated Bioinformaticians as post-doctorate fellows for a project aimed at revealing the mechanisms of cancer-resistance and anti-cancer activity of the hypoxia-tolerant subterranean, blind mole-rat, Spalax. Our project has captured the interest of the scientific community and we have ample financial support for the studies. Generous fellowships ($30K to $40K according to qualifications and performance) are available, immediately, primarily for Post-Docs experts in bioinformatics with a background of good understanding biological questions. That is that can independently handle raw output data of RNA-seq / miR seq/ Genomic, analyze it and can interpret intelligently the relevant biological background. Outstanding candidates for PhD experienced in Bioinformatics will also be considered. Training and understanding cancer research is an advantage. Experience of writing manuscripts for publication and a publication record in relevant journals are expected. English skills both oral and written are required. American, Western-European or Israeli education is a significant benefit.

Scientific background: We are working with the hypoxia-tolerant (down to 3% O₂), long-lived (>20 years) subterranean blind mole-rat, Spalax, which shows an outstanding cancer-resistance and anti-cancer capabilities. Observations of thousands of individuals at our Institute have never noticed a spontaneous malignant tumor. Furthermore, we have found in Spalax different structure and function of major genes related to cancer (p53, heparanase, genes of antioxidant defense and DNA-repair genes). Assessment of Spalax transcriptome assembly and expression data has revealed enrichment of genes that overlap cancer resistance, apoptosis, angiogenesis, and hypoxia-tolerance and elicits much wider and stronger expression in Spalax than in rat (Malik et al, 2012, BMC genomics, 13, 615). Moreover, Spalax has shown extremely high cancer-resistance to chemical carcinogens that induced cancer in 100% of mice and rats. Most intriguing, fibroblast cells only from Spalax, but not from other species, inhibit growth and kill cancer cells, but not normal cells, from various tissues and species, most importantly a wide range of human cancer cells. This is exhibited in both co-culture system or by exposure to factors secreted into conditioned media harvested from Spalax fibroblasts. Decreased cancer cell viability and proliferation, reduced colony formation in soft agar, disturbed cell cycle progression, chromatin condensation, nuclei deformation and mitochondrial fragmentation were reproducibly observed (Manov et al., 2013, BMC biology 11, 91). Our present objectives is to identify and isolate the substances secreted by Spalax cells, resolve with which components they interact that are active only on cancer cells, in order to unravel the biological mechanisms and pathways that evolved in Spalax cell machinery and ultimately lead to the death of cancer-cells. The study could attest to be a breakthrough in cancer research, using the long lived, hypoxia- and cancer-tolerant Spalax as a significant biological resource for biomedical research that hopefully could open new horizons in treatment and prevention of cancer in humans.

Contact: The applications should be submitted, together with extended CV and bibliography, summary of past accomplishments, and contact information of 3 referees, to Prof of Research Aaron Avivi (aaron@research.haifa.ac.il) AND Dr. Imad Shams (imadshams@gmail.com). (http://evolution.haifa.ac.il/index.php/29-people/personal-websites/77-personal-site-avivi)