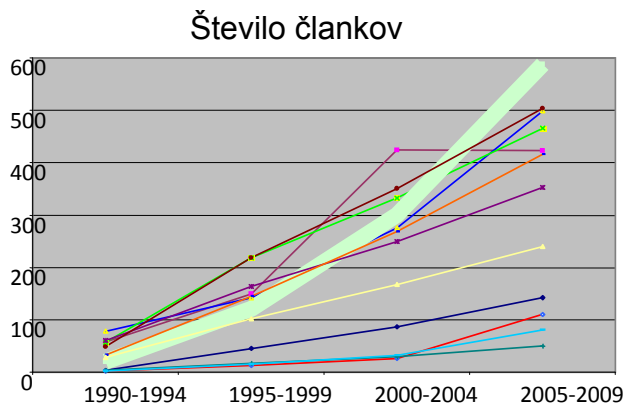


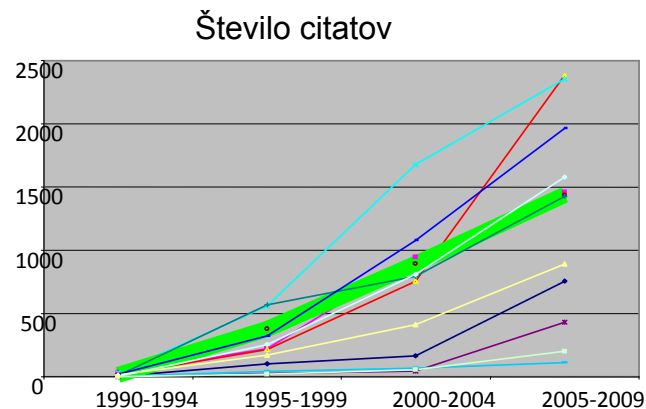
# MEDICINA

## Področje: 3.07 Metabolne in hormonske motnje

Raziskave s področja metabolne in hormonske motnje (3.07) so v porastu, prav tako njihova odmevnost (graf 1 in 2). Na našem področju združujejo različne klinične ustanove, trdne so tudi povezave klinika – predklinika. Mednarodno sodelovanje pa je tako v sklopu Evrope kot tudi z ameriškimi institucijami.



Graf 1



Graf 2

**Dosežek 1:** A microarray based identification of osteoporosis – related genes in primary culture of human osteoblasts. Trost Z, Trebse R, Prezelj J, Komadina R, Logar DB, Marc J.Bone. 2010 Jan;46(1):72-80.

### **A microarray based identification of osteoporosis-related genes in primary culture of human osteoblasts**

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#### **Abstract**

Genetic factors influencing the pathogenesis of osteoporosis are still largely unknown. We employed genome-wide gene expression approach in order to discover novel genes involved in the pathogenesis of osteoporosis. ....Further **biostatistical analysis of the microarray data by gene set enrichment analysis suggested oxidative stress may have an important part in the pathogenesis of osteoporosis.** Thus, secondly, we tested it by an in vitro assay on human **osteosarcoma cell line cells** treated with hydrogen peroxide. **After 72 h of treatment with 500 µM hydrogen peroxide, the upregulation of the same genes involved in the response to oxidative stress as on the microarrays was observed:** MT1G (metallothionein 1G, 22.1-fold,  $p < 0.05$ ), TXNRD1 (thioredoxin reductase 1, 3.7-fold,  $p < 0.05$ ), AOX1 (aldehyde oxidase 1, 24.5-fold,  $p < 0.05$ ) and GSR (glutathione reductase, 4.7-fold,  $p < 0.05$ ). Our results present a novel list of genes and metabolic pathways that may be associated with the pathogenesis of osteoporosis. ....

V patogenezi nastanka osteoporoze je prevladovala “estrogen – centric” teorija, ki je pripisovala padcu estrogenov po menopavzi osrednjo vlogo v patogenezi te “tihe” bolezni, ki s staranjem prebivalstva predstavlja vse večji svetovni problem <sup>1</sup>. Šele v zadnjih nekaj letih so rezultati raziskav na podganah privedli do spoznanja, da je oksidativni stres (ali pomanjkljiva obramba pred njim) verjetno enako ali še bolj pomemben pri nastanku osteoporoze kot padec estrogenov <sup>2</sup>. Pričujoči prispevek slovenskih avtorjev je med prvimi v svetu, kjer so rezultati na humani populaciji v skladu s to teorijo.

<sup>1</sup>Riggs BL, Khosla S, Melton LJ. A unitary model for involutional osteoporosis. Estrogen deficiency causes both type I and type II osteoporosis in postmenopausal women and contributes to bone loss in aging men. J Bone Miner res 1998; 13: 763

<sup>2</sup> Manolagas SC. From estrogen-centric to aging and oxidative stress: a revised perspectives of the pathogenesis of osteoporosis. Endocr rev 2010; 31: 266