Metallothionein (MT) polymorphisms and trace elements in Slovenian mother-child pairs (CROME-LIFE+ and HEALS study)

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GENETICS VARIATIONS & TRACE ELEMENTS STATUS IN HUMAN

(PATHO)PHYSIOLOGY

EXPOSURE
environmental
occupational

LIFE STYLE

STATUS OF TRACE ELEMENTS
essential (Zn, Cu, Mn, Se)
non-essential – potentially toxic (Hg, As, Pb, Cd, Cr)

INDIVIDUAL GENETICS

GENES RELATED TO METABOLISM OF TRACE ELEMENTS
METALLOTHIONEINS
METALLOTHIONEINS (MTs)

METAL BINDING PROTEINS:

- low molecular weight (6-7 kDa), high Cys content (~30%), high metal affinity
- metal(loid)s homeostasis, detoxification, cellular oxidative stress protection
- 11 (sub)isoforms, at least 11 functional genes

DNA ISOLATES

blood, saliva, cord tissue

POPULATIONS:

~ 200 pregnant females (PHIME)
179 mother – child pairs (CROME-LIFE+)
FUTURE: adolescents (SLO-HBM), mother-twins pairs (HEALS)
• 178 mothers (age, $\bar{x} = 36$ years); 179 children (7-8 years, 90 girls, 89 boys)
• 12 single nucleotide variations determined in MT genes (MT1a,b,e,f,g,x; MT2a, MT3, MT4)
• 9 trace elements measured in urine and blood (Hg, As, Pb, Cd, Cr, Zn, Cu, Mn, Se)

**RESULTS (CROME LIFE+):**

**FUTURE WORK:**
- other populations
- interpretation of results
THANK YOU

I'LL CLIMB UP THIS STRAND OF DNA TO SEE WHERE LIFE TAKES ME