

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

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Poster number: 23



HEALS



CROME-LIFE



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GENETICS VARIATIONS & TRACE ELEMENTS STATUS IN HUMAN

(PATHO)PHYSIOLOGY

EXPOSURE

environmental
occupational

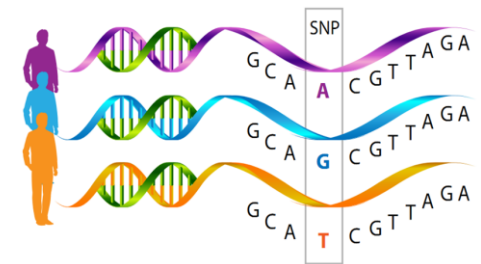
LIFE STYLE



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

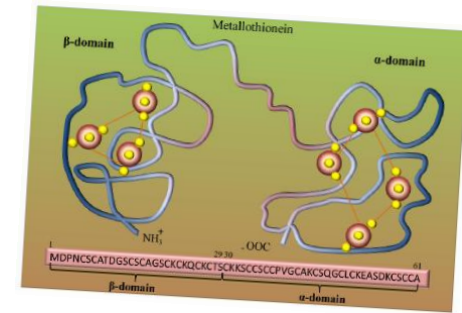


METALLOTHIONEINS

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**



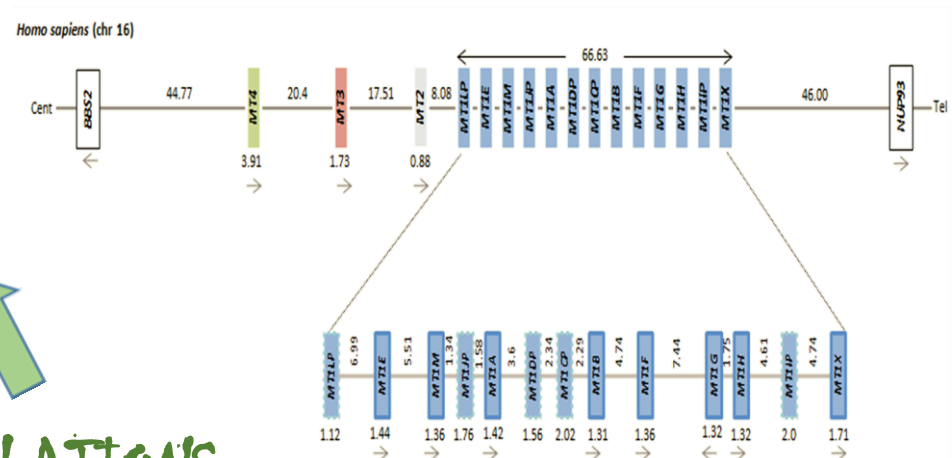
DNA ISOLATES
blood, saliva, cord tissue

POPULATIONS:

~ 200 pregnant females (PHIME)

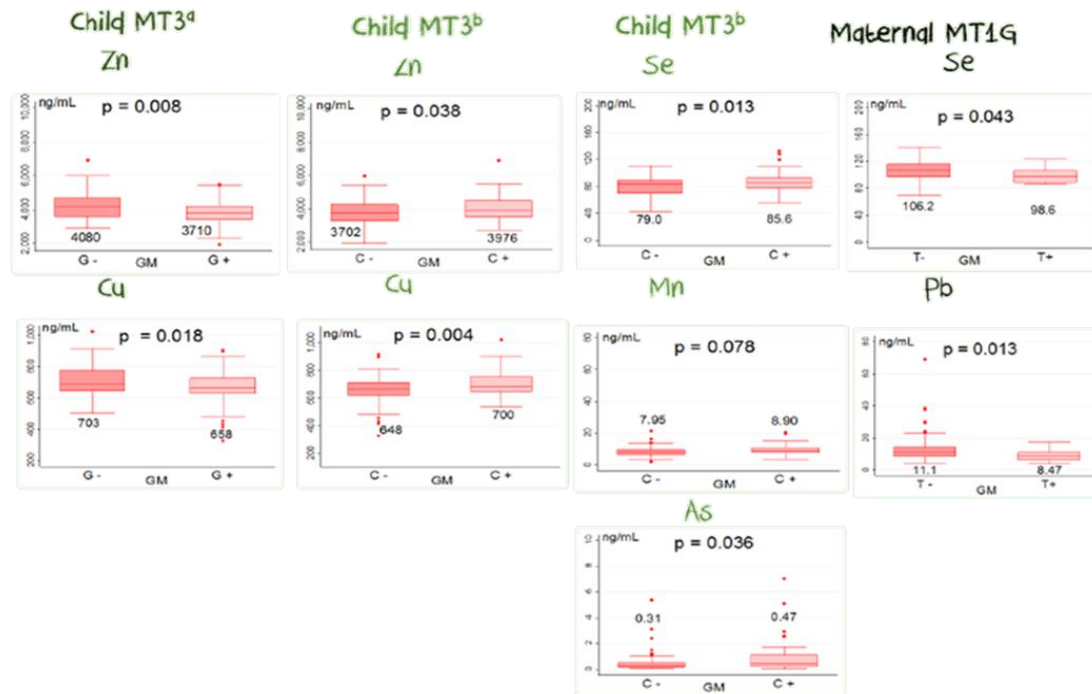
179 mother – child pairs (CROME-LIFE+)

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+):



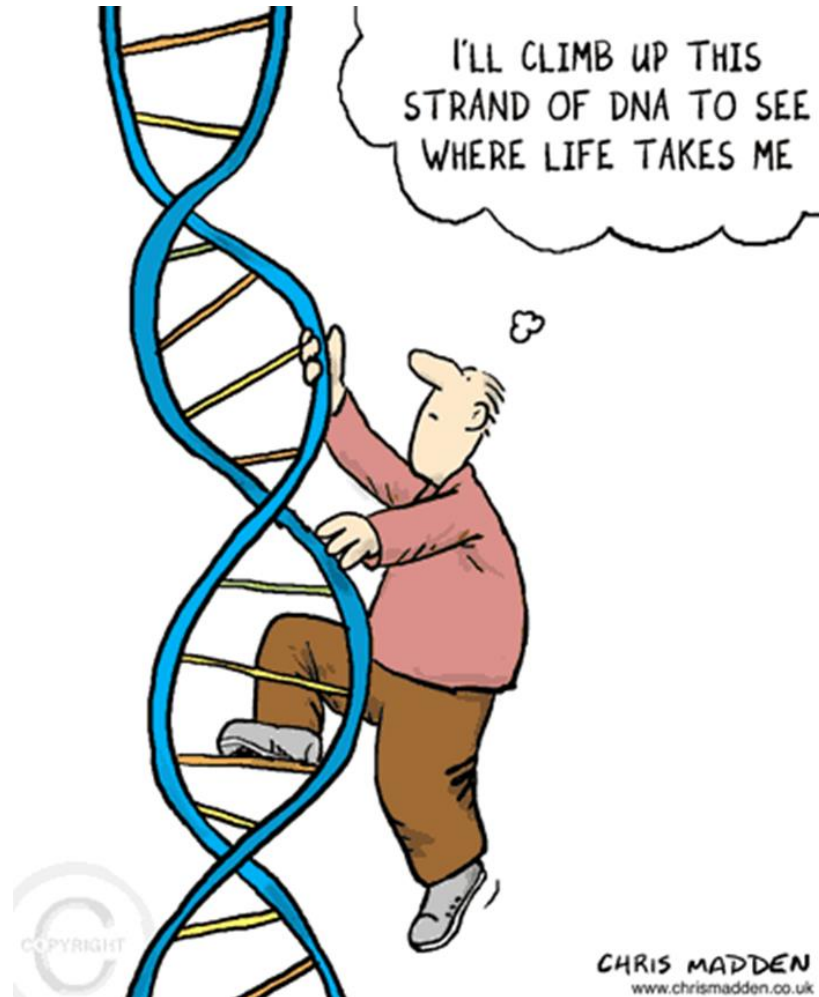
FUTURE WORK:

- other populations
- interpretation of results

Figure 2: Differences in blood metal(loids) levels of minor alleles carriers and noncarriers for selected MTs SNPs

(Boxplot showing: median, 25th and 75th percentile, min and max and outliers; added are GM values for each group and statistical difference (p) based on multiple linear regression)

THANK YOU



CHRIS MADDEN
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