WE095 Thermal history, heat shock and metal toxicity tolerance in the zebrafish (Danio rerio) A. Pilehvar, Antwerp university / Biology; R. Blust, University of Antwerp. Zebrafish have become one of the most important animal models in biological research including ecotoxicology. Although there are several studies in literature on the metal uptake and toxicity in zebrafish, investigation on the interaction between thermal background of the organism and metal uptake and toxicity are rare. The aim of our study is to examine the effect of thermal acclimation and sub-lethal heat shock (in long and short intervals) on the metal uptake and toxicity in adult zebrafish. Different temperature shocks (32?C and 34?C) were applied to the fish and they were subsequently exposed to the metal contaminated water containing Cu, Cd or Cu+Cd. The condition of the fish was monitored for 10 days, including behavioural and physiological metrics and also water quality monitoring (ammonia concentrations, metal analysis etc.). At the end of the exposure period, whole body and tissue metal concentrations were determined (i.e. brain, gills, liver, gut and muscle). The results showed that the fish which were exposed to the Cu were more sensitive than the ones exposed to Cd. Moreover, the toxicity in the Cu+Cd exposure was much higher than expected. The sensitivity of the fish to metal exposure depended on the thermal prehistory of the fish, the physiologically optimal temperature range (26-28°C) was neither the most metal sensitive nor tolerant acclimation temperature. A 32°C heat shock significantly improved tolerance against single and mixture metal toxicity compared to the ones not shocked or shocked at 34?C.The results also showed that short shock intervals leads to better tolerance against toxicity of metal mixtures. The results of these experiments show that the thermal prehistory and exposure temperature play an important role in determining the tolerance of zebrafish towards metal exposure. Heat shock treatment increases the tolerance but both the applied temperature and duration of the heat shock are critical in determining the final impact on metal tolerance. The observed effects are only partially related to the effect of temperature on metal uptake and accumulation and indicate that temperature acclimation and heat shock treatment result in homeostatic adjustments and up-regulation of certain defence system that also have an impact on metal tolerance. Analysis of gene expression and protein profiles is underway to reveal the molecular physiology that may provide explanations for the effects observed at the organismal level.