

**P011** Circulating chaperonin 60 in the plasma of British civil servants  
A. Shamaei-Tousi, A. Steptoe, A. Coates and B. Henderson  
*Cellular Microbiology Research Group (AST and BH) and  
Department of Epidemiology and Public Health (AS)  
and Department of Medical Microbiology,  
St George's Hospital Medical School (AC), London.*

Chaperonin (Cpn) 60, together with its co-chaperonin Cpn10, are major molecular chaperones involved in protein folding. Recently, detectable levels of Cpn60 (HSP60) protein have been found in the peripheral circulation of normal individuals. Elevated levels of this protein have been suggested to be linked to the development of heart disease. As part of the Whitehall study, blood has been taken from 1229 British civil servants. Plasma was assayed for level of Hsp60 and tumour necrosis factor  $\alpha$  (TNF $\alpha$ ). Approximately 30% of this population of normal individuals contain plasma levels of HSP60 greater than 1000 ng/ml. At this concentration this protein acts as a cytokine able to activate a range of cell populations. Another 30% of this cohort have undetectable levels of HSP60. So far, 20% of this population has been analyzed for plasma TNF $\alpha$ , which has been shown to be positively correlated with levels of HSP60. To determine if the elevated HSP60 levels are due to differences in promoter efficiency, polymorphisms in the promoter region of the *HSP60* gene in 15 individuals (7 with undetectable and 8 with very high levels of circulating HSP60) were sequenced. Nucleotide variants were detected at positions 121 and 646 in the promoter region in both high and low HSP60 groups potentially ruling out transcriptional control as the explanation for these vastly different levels of circulating HSP60. Further analysis is underway to determine the explanation for this enormous variation in human circulating HSP60 in the normal population.