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Primate Transcriptome Evolution at the Cellular Level

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Previous studies of transcriptome evolution in various primate tissues have suggested that brain and testis may show patterns that could be indicative of positive selection. However, analyses of gene expression in tissue samples suffer from the limitation that they represent an average of expression patterns from many cells. Thus, the expression differences observed could represent changes in most or all cells in a tissue but equally well the averaged effects of different changes in different cell types, or a change in the cellular composition of the tissues. In order to address this issue we have used laser-assisted microdissection of tissue sections to study gene expression in defined cell populations in brain and testis of primate species. We find that transcription profiles can differ more between two cell populations within a tissue than between two entirely different tissues. We also observe that patterns suggestive of positive selection are present to various degrees in different cell populations of both brain and testis. In particular, whereas gene expression in seminiferous tubules shows signs of positive selections, the interstitial compartment of the testis does not. Similarly, whereas expression levels of genes expressed in neurons seem to have been the target of positive selection during primate evolution, this is not the case for genes expressed in endothelial cells in the same region of the brain.

CV

born in Zofingen (Switzerland) on 11.05.1977

since 2005: post doctoral fellow at the MPI/EVA in the department of Evolutionary Genetics which is headed by Svante Pääbo.

2001-2005: PhD thesis with Carlo Largiadèr in the research group of Laurent Excoffier at the Zoological Institute of the University of Bern on “Relationships between transcriptome diversity, genetic variability and phenotypic differences in brown trout (*Salmo trutta* L.)”.

2000-2001: Master thesis with Carlo Largiadèr in the research group of Laurent Excoffier at the Zoological Institute of the University of Bern on “Isolation and characterization of sex linked DNA markers in sticklebacks (*Gasterosteus aculeatus* L.) and brown trout (*Salmo trutta* L.)”.

1997-2000: Undergraduate studies in biology at the University of Bern