### Internship Available

**Research group**  

**Daily supervisor**  
Philip Nijland

**Contact**  
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**Title project**  
Astrocytic PGC-1alpha increases mitochondrial antioxidant capacity and suppresses inflammation: Implications for multiple sclerosis

**Research aim**  
Gain more insight in the functional role of PGC-1alpha expression in astrocytes in active MS lesions

**Short content**  
Multiple sclerosis (MS) is generally characterised as an auto-immune-mediated disease in which infiltrating macrophages and T-lymphocytes provoke focal demyelination in the brain and spinal cord. The last decade emerging evidence has pointed towards a key role of reactive oxygen species (ROS) in MS pathology. We observed a marked upregulation of PGC-1α in astrocytes in MS lesions. PGC-1α is a transcriptional co-regulator which is involved in the transcription of a broad set of genes, most of which are involved in energy metabolism but also include antioxidant and inflammatory genes. Therefore we want to investigate the role of PGC-1α in ROS scavenging and the inflammatory profile of human astrocytes.

**Techniques and methods**  
Cell culture of primary human astrocytes, lentiviral overexpression of PGC-1α, RNA isolation and qPCR, ELISA, immunohistochemistry, immunocytochemistry. Mitochondrial assays cell cultures, western blot.

**Literature:**  
2 papers  
- Mitochondrial dysfunction contributes to neurodegeneration in multiple sclerosis.  
  2014.
- Reduced expression of PGC-1α partly underlies mitochondrial changes and correlates with neuronal loss in multiple sclerosis cortex.  
  2013.

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**INTERESTED?**  
Send a message to [p.nijland@vumc.nl](mailto:p.nijland@vumc.nl), including your motivation and CV.

**General questions:**  
[stages.mcbi@vumc.nl](mailto:stages.mcbi@vumc.nl).