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Identifying the chromosome 21 genes that drive accelerated ageing in Down syndrome stem cells

Name of Supervisor: Wolvetang , Aguado

Short one paragraph abstract: People with Down syndrome (trisomy 21) exhibit accelerated aging of multiple tissues but which of the 135 protein coding genes on chromosome 21 are responsible remains unclear. To discover this we will use CRISPR-enabled genome manipulation technologies in human Down syndrome stem cell models.

Modelling novel childhood leukodystrophies

Name of Supervisor: Wolvetang, Pietrogrande, Shaker

Short one paragraph abstract: Clinical collaborators have identified a novel brain disease in children that leads to focal loss of myelin in the brain. We aim to establisj induced pluripotent stem cells from these individuals and assess whether oligodendrocytes are defective in their ability to de;posit myelin using in vitro cultures human brain organoids.

Peroxisomes and Ataxia telangiectasia

Name of Supervisor: Wolvetang, Withey

Short one paragraph abstract: Ataxia telangiectasia is a debilitating disease in children that is due to loss of function of the ATM kinase. ATM regulates DNA repair in the nucleus but also plays an important role in coordinating anti-oxidant defence. Here we will investigate how ATM may be involved in regulating the amount of catalase (a major anti-oxidant defence enzyme) in peroxisomes, using human stem cell derived liver cells.