# New Products and Approaches

Predicting Alzheimer's risk through changes to mTOR pathways

The mTOR pathway is essential for the coordination of intra and extra-cellular signals concerning cell growth, division and differentiation. Research has demonstrated that mTOR signalling dysregulation in Alzheimer's disease (AD) brains is closely related to the presence of soluble amyloid and tau proteins, which aggregate and form amyloid plaques and neurofibrillary tangles. As such, disruption to mTOR signalling is linked to hallmark pathologies of AD.

Cytox has developed *geno*TOR™ to analyse the genetics known to regulate the mTOR pathway, and predict the risk of any individual developing AD through disruption to their mTOR pathways. The algorithm powering *geno*TOR™, which uses a simple blood or saliva sample, analyses ~35,000 single nucleotide polymorphisms (SNPs) that are known to play a role in 21 different mTOR-regulated pathways.

The output from *geno*TOR™ has multiple uses. Firstly, a Polygenic Risk Score, to identify and stratify patients most at risk of developing AD, to enrich clinical trial recruitment beyond APOE-e4 variants. Additionally, *geno*TOR™ can provide insights into specific mTOR pathways to identify likely responders to therapies designed to regulate or modify these pathways.
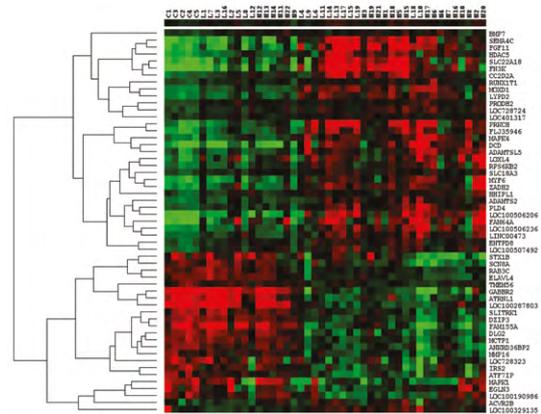
*geno*TOR™-derived heatmap showing differential expression of mTOR genes (downregulated: green; upregulated: red; unchanged: black)

For more information please contact tony.hill@cytoxgroup.com

Clinical study analysis - Improving the genetic approach to Alzheimer's

We are transforming the future of healthcare by predicting those most at genetic risk for developing late-onset Alzheimer's disease

Failure in an Alzheimer's clinical trial – while always disappointing – remains the most likely outcome. The latest such news cames from **Eli Lilly** and **Roche,** in February this year, who were testing their respective products solanezumab and gantenerumab in a Phase II/III study in patients with Autosomal Dominant Alzheimer's Disease (ADAD), an uncommon genetic and early onset form of the disease. At Cytox we are transforming the future of healthcare by predicting those most at genetic risk for developing late-onset Alzheimer's disease.

Despite this latest failure, the **DIAN-TU-001** study was well conceived. ADAD patients have single mutations in one of the APP, PSEN1 or PSEN2 genes, which leads to early deposition of amyloid plaques in the brain, and early onset Alzheimer's - in all cases.

To continue with Tony Hill's blog **click here**

Genetic risk assessment in Alzheimer's disease – MedNous

In the latest issue of MedNous, Alex Gibson – Business Development Officer at Cytox – discusses how *geno*SCORE™, Cytox's Polygenic Risk Score test, builds on the existing approaches for identify suitable patient candidates for clinical trials.

Click here to access the full article in the archive.

Tackling the trillion dollar disease – BioScience Today

Tony Hill – Chief Commercial Officer at Cytox – writes in BioScience Today about how Cytox is taking a far deeper look into the genetics behind Alzheimer's Disease.

Click here to access the full article in the archive.