Editorial

Accelerating research for Parkinson's disease

Despite considerable ongoing translational and clinical research efforts, no disease-modifying drugs have been approved for Parkinson's disease. The Accelerating Medicines Partnership Parkinson's disease (AMP PD) programme, launched on Jan 30, 2018, is the most ambitious initiative so far to find a cure for Parkinson's disease. Formed by the US National Institutes of Health (NIH), the US Food and Drug Administration (FDA), five biopharmaceutical and life science companies, and one non-profit organisation, this partnership is focused on discovering novel therapeutic targets and on developing biomarkers to help validate existing therapeutic targets for Parkinson's disease.

Over the past decade, the neurology community has made strides in establishing of strategies for the standardised collection of biosamples from individuals with Parkinson's disease, through programmes such as the Michael J Fox Foundation Parkinson's Progression Markers Initiative and its complementary BioFIND observational study, the US National Institute of Neurological Disorders and Stroke (NINDS) Parkinson's Disease Biomarkers Program, and the Harvard Biomarker Study. These initiatives have highlighted shared interest between public and private organisations and the data being generated present an opportunity to drive biomarker development more intensively than to date for translation into more effective therapies. The AMP PD programme is being run by the Foundation for the NIH, a non-profit organisation set up by the US Congress to facilitate alliances with public and private institutions in support of the NIH mission. The Foundation will manage the partnership with GlaxoSmithKline, the Michael J Fox Foundation, NINDS, Pfizer, Sanofi, Celgene, Verily Life Sciences, and the FDA, and coordinate the pledged investment of US\$ 24 million over 5 years. A knowledge portal will be established to store and enable access to both raw and analysed datasets, such as whole genome sequences, RNA sequence data, and clinical datasets generated from existing longitudinal cohorts. Further data will be added from ongoing large-scale omics projects.

The first stage of the programme, expected to be completed within 18 months of the launch, will establish a framework for AMP PD by creating working groups, developing the knowledge portal, harmonising clinical data across cohorts, and generating whole transcriptome RNA sequence data with the goal of identifying targets and pathways altered by disease progression. Stage 2, anticipated to take 3 years, will build upon this framework by pursuing additional large-scale biomarker discovery (eq, extracellular RNA, proteomics, and metabolomics) for patient stratification, monitoring of disease progression, and determination of prognosis. A further aim is to do single-cell RNA sequence analyses to potentially enable the identification of common signatures between CSF, plasma, and brain tissue. The final stage will entail replication of results for the most promising biomarkers identified in stage 2 and will allow the addition of further omics approaches if technologies move forward during the programme. Although AMP PD will begin this work with data that have already been collected from longitudinal cohorts, incorporation of additional data from two phase 3 clinical trials in patients with early Parkinson's disease is anticipated to accelerate progress: the Study of Urate Elevation in Parkinson's Disease, Phase 3 (SURE-PD3; NCT02642393), a double-blind placebo controlled trial to determine whether oral inosine slows clinical decline, which is due to complete in 2020; and the Efficacy of Isradipine in Early Parkinson Disease (STEADY-PD3; NCT02168842), a double-blind, placebo-controlled study, which is about to be completed. The knowledge portal will enable not only the deidentified clinical data from these trials and others to be shared broadly, but also the research community to participate in and share the analysis of biosamples collected during such studies.

Sharing results from analyses of phase 3 data via the knowledge portal will provide the opportunity to conduct analyses on a scale that could not be performed by a single partner alone. The AMP PD knowledge portal will enable use of data science solutions and disease modelling to further understanding of the pathogenesis of Parkinson's disease. Bringing together the collective capabilities and resources across public and private sectors offers the best opportunity to identify and address challenges in early stage drug development and thus the best opportunity for finding a cure. The Lancet Neurology





For more on the NIH Accelerating Medicines Partnership see https://www. nih.gov/research-training/ accelerating-medicinespartnership-amp For more on the NIH mission see https://www.nih.gov/about-nih/ what-we-do/mission-qoals