ISCF D2EDPM Challenge
Accessing Biomedical Data for Data Analysis
6th July 2022

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ISCF Challenge Director - Data to Early Diagnosis and Precision Medicine
Content

Overview of D2EDPM Challenge

Examples of achievements to date

Challenges to overcome
Investments in ISCF Data to Early Diagnosis and Precision Medicine Challenge

- **£100M Supporting genomics by:**
  - Whole genome sequencing of UK Biobank participants
  - Whole genome sequencing of cancer trial patients, in collaboration with Genomics England
  - CR&D projects whole genome sequencing for more targeted cancer therapies

- **£37.5M: Building an integrated health data landscape** in partnership with Health Data Research UK
  - Funding six digital innovation hubs
  - UK Health data alliance and Health Data Gateway

- **£76M: Supporting earlier and more accurate diagnosis** by
  - Creating five Centers of Excellence in digital pathology, imaging and AI
  - CR&D projects in partnership with Cancer Research UK, to integrate multiple diagnostic modalities to provide earlier and more accurate diagnosis
  - Supplemented by £50M capital investment funding from the Department of Health

Total £210M UKRI funding has leveraged £253M co-funding from 85 Companies and charities
5 Centres in digital pathology, imaging and AI

• ~100 partners inc 30 SMEs, NHS and research organisations

• ISCF funding £49.7m, leveraged funding £41.3m

  • Digital pathology focus: NPIC and PathLAKE
  • Radiology/in-vivo imaging focus: LMIAIC and NCIMI
  • Digital pathology and in-vivo imaging focus: ICAIRD
Integrated diagnostic solutions for early detection

**INCISE**
**Lead:** University of Glasgow
- CANON Medical Research Europe, Limited
- BIOCLAVIS Limited
- NHS Greater Glasgow and Clyde
- ORACLEBIO Limited

**ID-LIVER**
**Lead:** The University of Manchester
- University of Nottingham
- TRUSTECH Smart Healthcare Ventures Limited
- The Sollis Partnership Limited
- SECTRA Limited
- Roche Diagnostics Limited
- Manchester University NHS Foundation Trust
- PERSPECTUM Diagnostics LTD
- GE Medical Systems Limited
- Northwest eHealth Limited
- JIVA.AI Limited
- Health Innovation Manchester
- Octopus Investments Limited
- Nottingham University Hospitals NHS Trust

**ACTIONED**
**Lead:** Queen's University, Belfast
- Roche Diagnostics Limited
- Sonrai Analytics Ltd

**iDx-LUNG**
**Lead:** University of Southampton
- University of Leeds
- Roche Diagnostics Limited
- BC Platforms
- Leeds Teaching Hospital NHS Trust
- Janssen

**DART**
**Lead:** University of Oxford
- Royal Brompton & Harefield NHS Fdn Trust
- GE Healthcare Limited
- Roche Diagnostics Limited
- OPTELLUM Ltd
- Nottingham University Hospitals NHS Trust
- Royal Marsden NHS Foundation Trust
- Roy Castle Lung Cancer Foundation

**DELTA**
**Lead:** University of Cambridge
- Newcastle University
- University of Oxford
- King's College London
- Health Data Insight C.I.C.
- Cambridge University Health Partners
- Foundation for Genomics & Population Health
- CYTED Ltd
- West Yorkshire and Harrogate Cancer Alliance
- Heartburn Cancer UK
- Action Against Heartburn

**CROHN’S**
**Lead:** Motilent Ltd
- Nottingham University Hospitals NHS Trust
- University College London
- Great Ormond Street
UK Biobank Whole Genome Sequencing

- Sequencing completed in December 2021
- First 200,000 sequences available in September 2022
- Remaining 300,000 sequences available in mid 2023

£200M project (+ Vanguard phase)
- £50M ISCF
- £50M Wellcome
- £100M Industry

Data platform funded by Wellcome (£20M)
Health Data Research Gateway

Gateway to health data and tools for research

Search, discover and request access to hundreds of datasets, tools and resources for your research. Join the thousands of researchers and scientists worldwide who are already using the Gateway for research and scientific discovery.

I'm looking for...

* Advanced Search

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www.healthdatagateway.org

- 700+ datasets
- Cohort Discovery
- Search via data utility
- Metadata federation
Challenge – creating AI algorithms with minimum bias?

STAGES

1. FIND DATA
2. PREPARE & VALIDATE DATA
3. TRAIN MODEL
4. TEST & VALIDATE MODEL
5. GAIN REGULATORY APPROVAL

Robust validated algorithms
Challenge – meaningful integration of data from different modalities and sources

- Synthetic & in silico
- Electronic Health Records
- Imaging
- Registries
- Genomic and omics
- Cohorts & Biobanks
- Real World Data
- Clinical trials

Health data assets

UK-wide secure interoperable infrastructure
Growing capacity and capability
Right analytical tools and methods
Support from patients, public and professionals