Dementias Platform UK
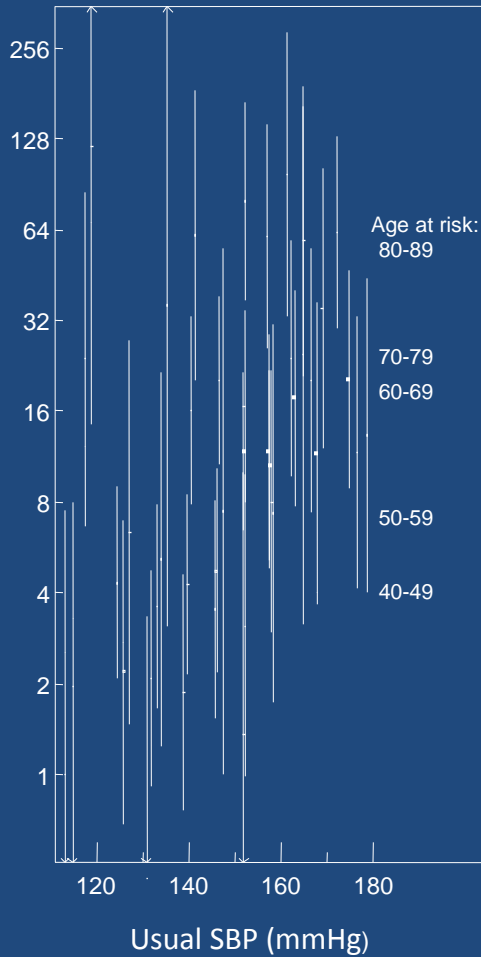Medical Research Council
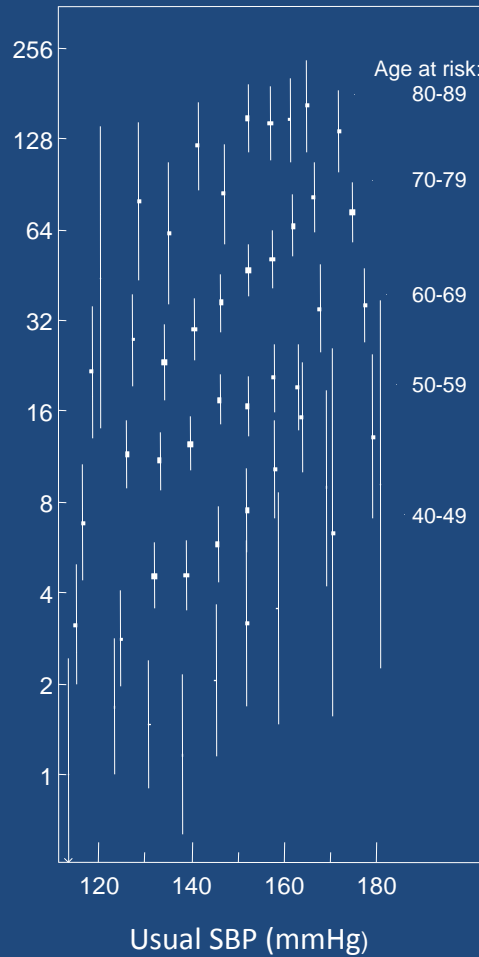
Creating the context for a new generation of highly targeted, highly informative clinical trials

The precision medicine challenge

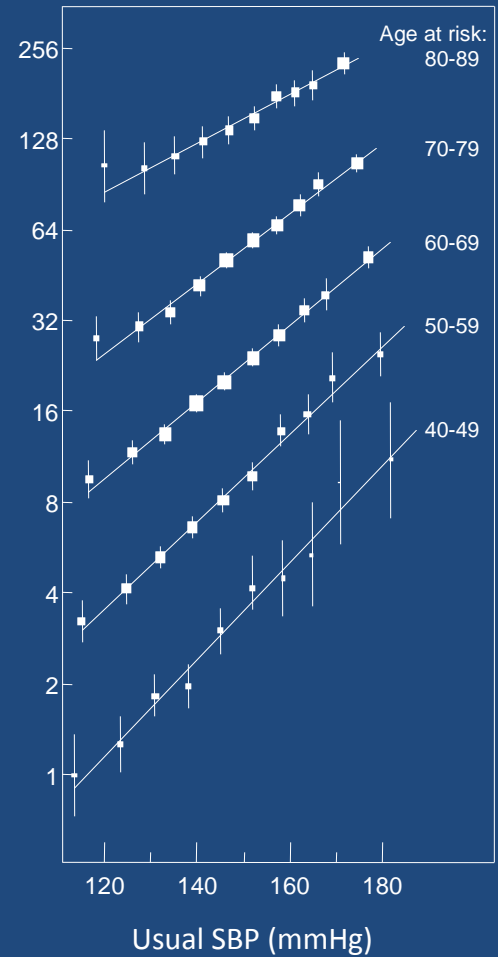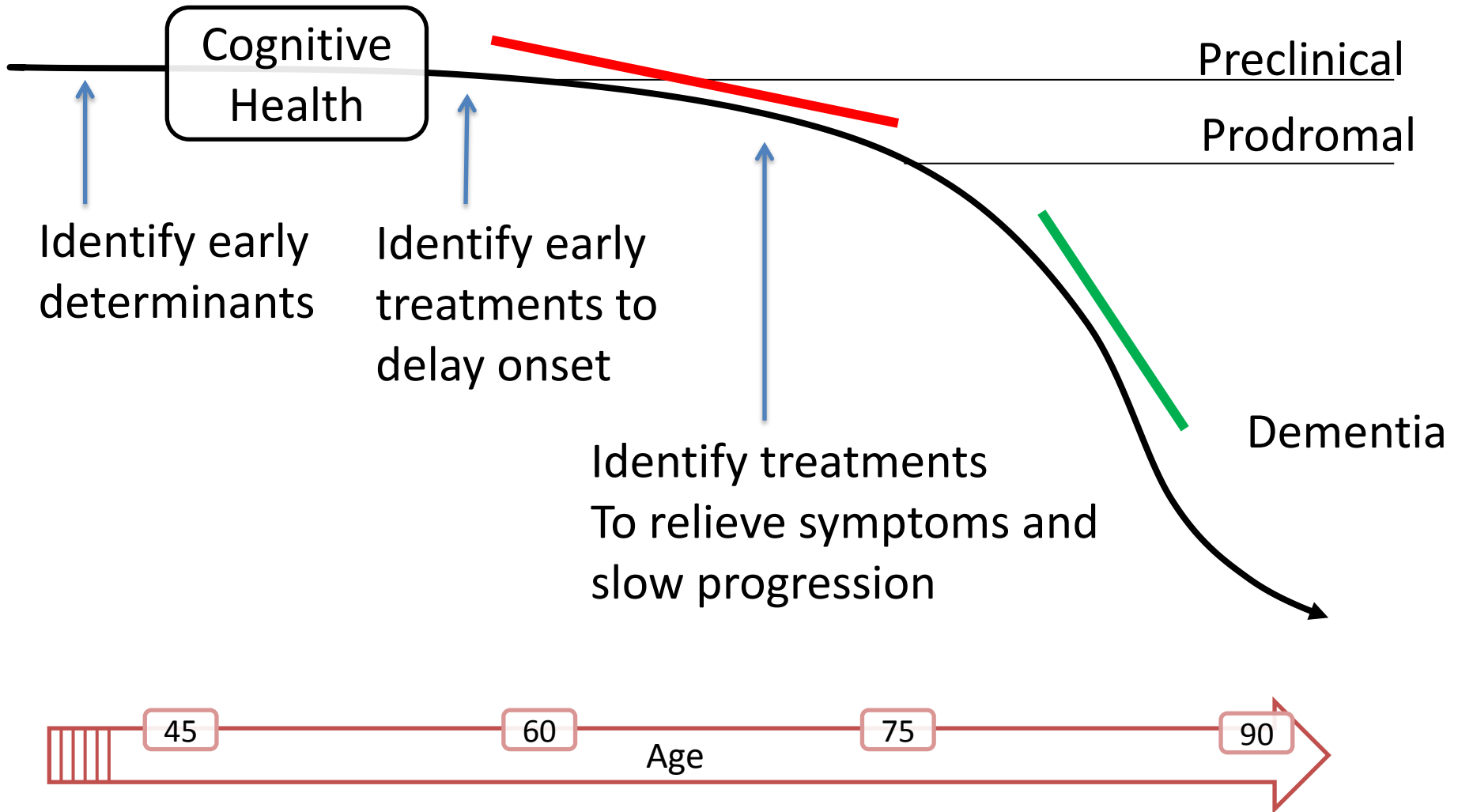# The experimental medicine challenge

Cognitive Health

Preclinical

Prodromal

Dementia

Identify early determinants

Identify early treatments to delay onset

Identify treatments
To relieve symptoms and slow progression
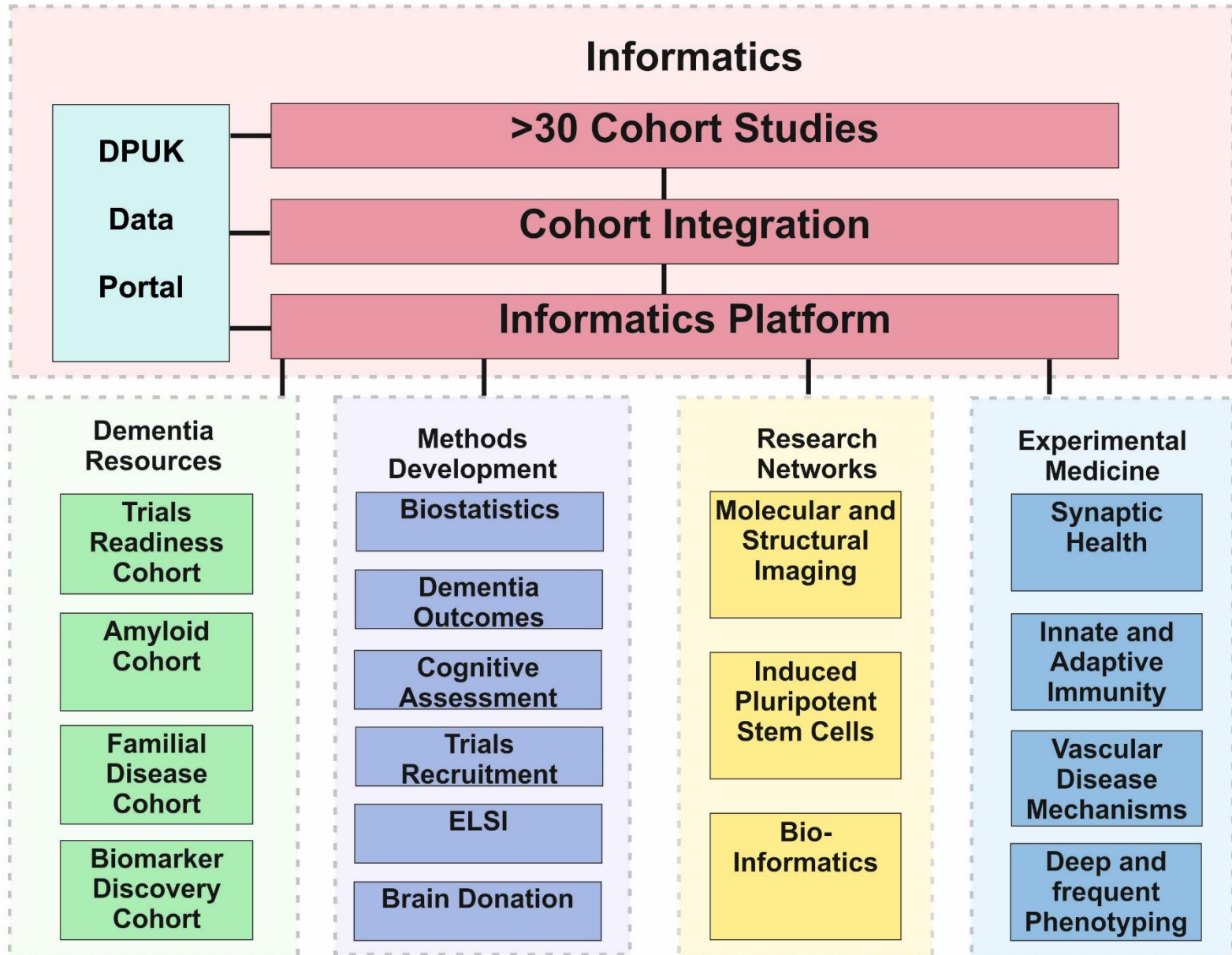
45   60   75   90
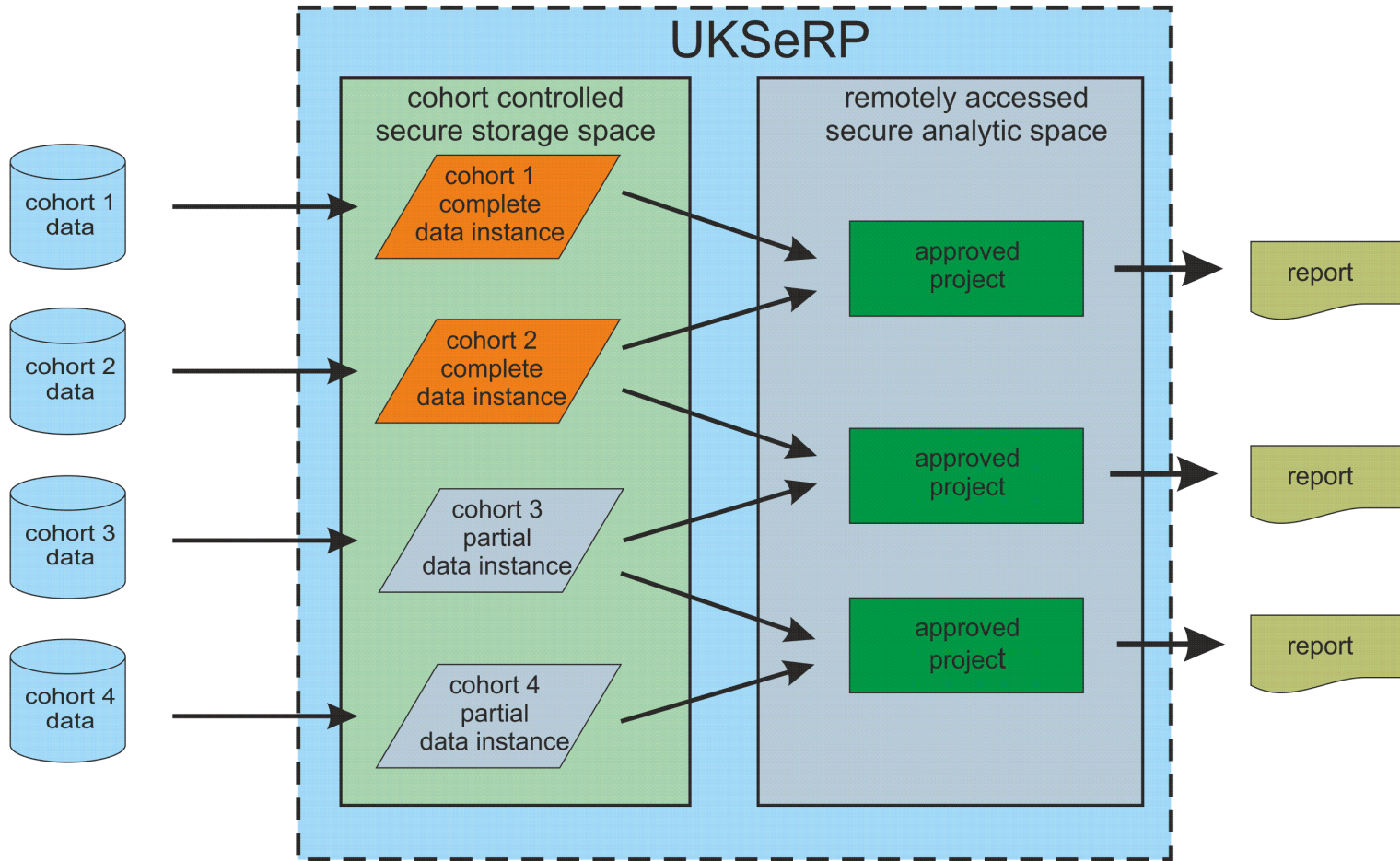
Age

Core enabling utilities

- **Identification of highly characterised participants**

  – **Recruitment of stratified samples**

  – **Discovery studies, trials, in-silico experiments**

- **Technology capacity building:**

  – **Imaging, stem cells, bioinformatics:**

    - **Sharing best practice, niche expertise**

    - **Standardising protocols, streamlining governance**

- **Rapid data access:**

  – **Triangulation between multiple independent datasets**

  – **>30 cohorts: 2M participants**

Dementias
Platform UK
Medical Research Council

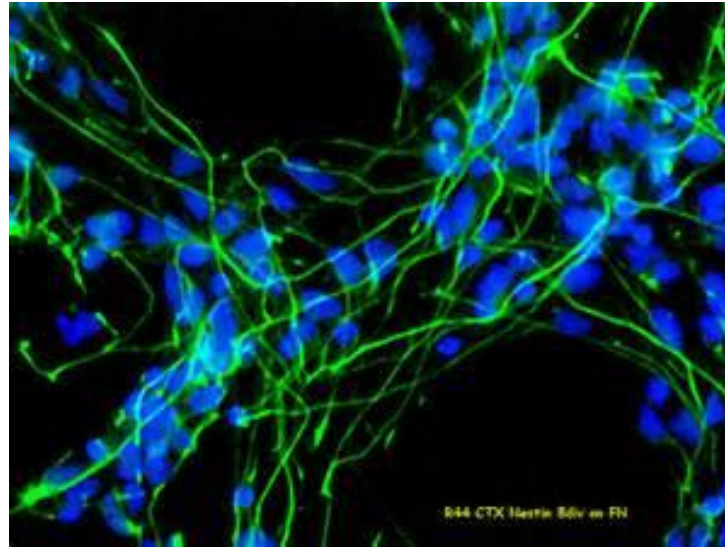# Integrated Infrastructure

Rapid Data Access

7 site PET/MR imaging network

- Step change in molecular imaging capability
- Lowering barriers to, and increasing the impact of, imaging studies
  - Economies of scale
  - Knowledge sharing and standardisation of protocols
  - Recruitment of highly characterised cohort participants

6 centre iPS Cells network

- Provide neuronal models of clinical phenotypes

- Preserve cell lines from cohorts

- Develop cellular basis of disease stratification

- Interrogate pathogenic pathways

- Early drug development studies
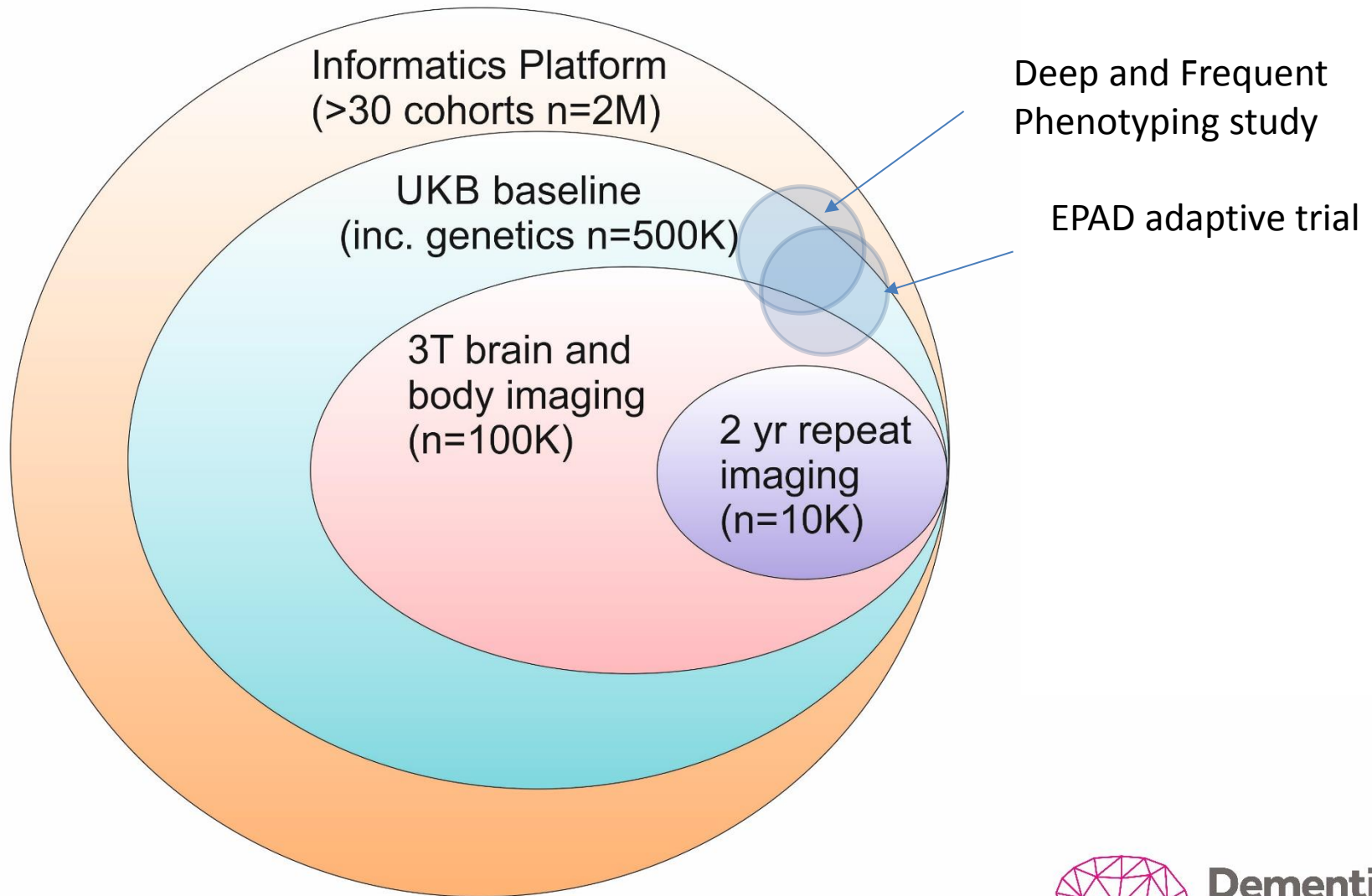
5 centre Informatics network

- >30 Cohorts   (Swansea)
- Imaging and EHR linkage   (Oxford)
- Wearable and other Devices   (Manchester)
- Genomics   (Cardiff)
- Tissue and Brain banking   (Bristol)

Highly characterised trials recruitment

Informatics Platform
(>30 cohorts n=2M)

UKB baseline
(inc. genetics n=500K)

3T brain and
body imaging
(n=100K)

2 yr repeat
imaging
(n=10K)

Deep and Frequent
Phenotyping study

EPAD adaptive trial

Dementias Platform^{UK}
Medical Research Council

Risk stratification for clinical studies (and in silico experiments)

Sample	N
UKB base population	502,713
Episodic memory	498,053
Episodic memory >2 SD below mean	17,096
...... plus age 55 years+	12,447
...... plus APOE4 carrier (20%)	2,489

Opportunities: collaboration

- Data access
  - Register as a scientist through the website
  - Apply for data access through the portal
  - Portal goes live imminently
- Cross-initiative partnerships
  - Canada: CCNA, CLSA
  - USA: ADNI, GAAIN
  - Europe: MEMENTO, DZNE, ROADS

Dementias Platform UK
Medical Research Council

Araclon Biotech
GRIFOLS

SomaLogic

Imperial College London

Swansea University
Prifysgol Abertawe

UNIVERSITY OF CAMBRIDGE

IXICO

Newcastle University

Johnson & Johnson
INNOVATION

MedImmune

UCL

gsk

THE UNIVERSITY of EDINBURGH

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

UNIVERSITY OF OXFORD