



FINNGEN







**~10 % of the  
population =  
500,000 Finns**

# Goals of FinnGen

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**01**

PRODUCE MEDICAL  
INNOVATIONS BY  
COMBINING HEALTH  
REGISTRY AND  
GENOME DATA

**02**

SUPPORT FINLAND TO  
BECOME A PIONEER  
BIOMEDICINE AND  
PERSONALIZED  
HEALTHCARE

**03**

CREATE A CO-OPERATION  
MODEL BETWEEN PUBLIC  
SECTOR AND  
HEALTHCARE INDUSTRY

**04**

PROVIDE EARLY ACCESS TO NEW  
PERSONALIZED TREATMENTS  
AND HEALTH INNOVATIONS FOR  
ALL FINNS

Existing sample  
collections:

215 000 Finns



**10 % of the  
population**

285 000 new  
biobank sample  
donors within  
the upcoming 6  
years

Step 1:  
Producing  
genome data

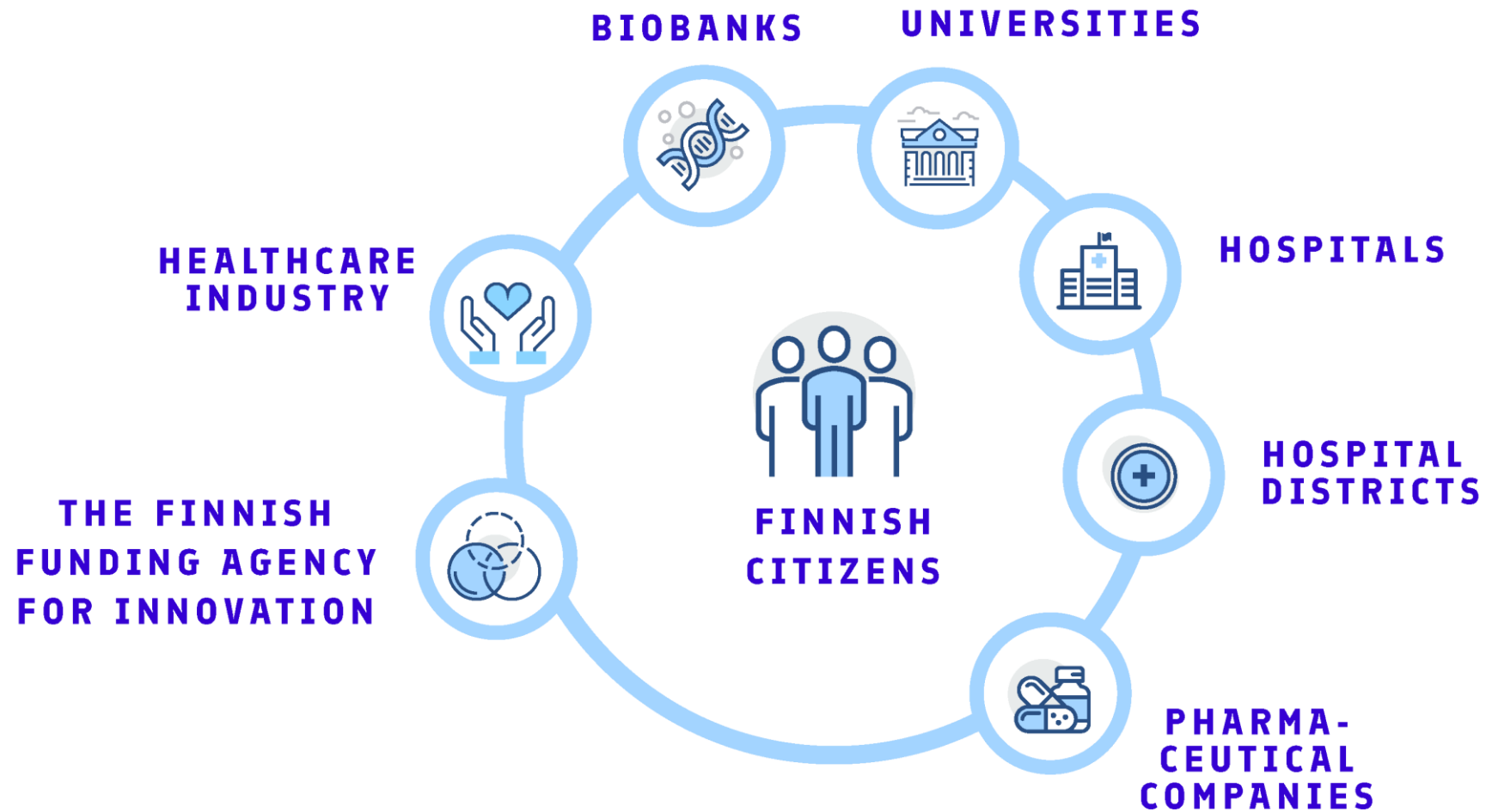


**10 % of the  
population**

Step 2:  
Combining  
genome data  
with digital  
health care data



# Partners



# Funding

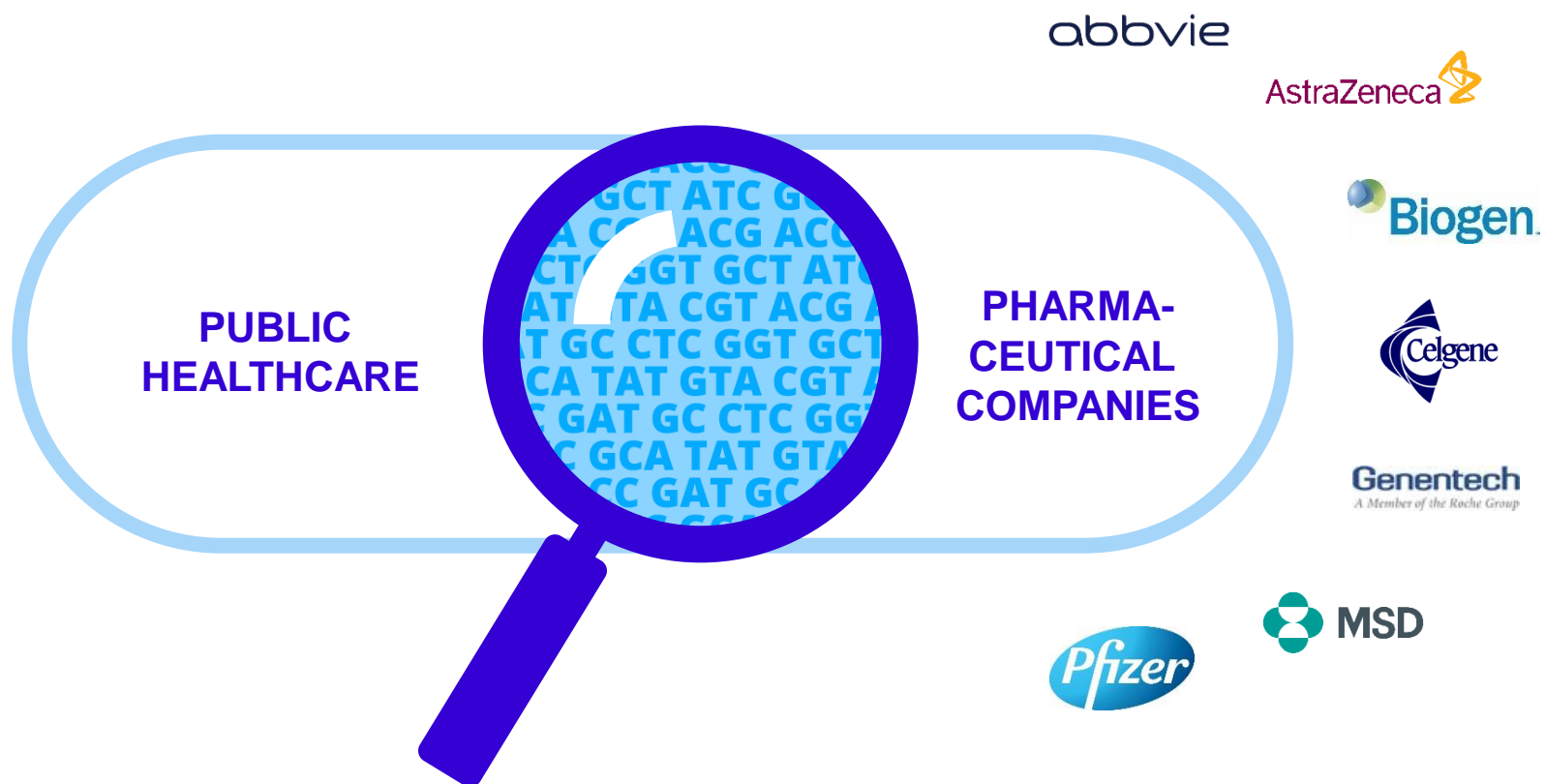


- **TEKES 20 M€**
- **PHARMACEUTICAL INDUSTRY 39 M€  
(7 GLOBAL COMPANIES)**
- **HOSPITAL DISTRICTS AND THL DONATE DOZENS  
OF MAN-YEARS OF LABOR INPUT BY  
COLLECTING SAMPLES**
- **THE INPUT OF FINNISH UNIVERSITIES AND THL**
- **THE INPUT OF FINNISH COMPANIES**

# Collaboration



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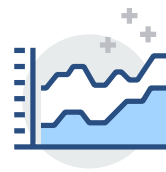


# Benefits



## Citizens

New, more reliable solutions for healthcare, disease prediction and prevention



## Pharma

Unique co-operation with new kind of partners. Access to valuable genotypic and phenotypic data from the Finnish population, possibility to identify new potential drug targets.



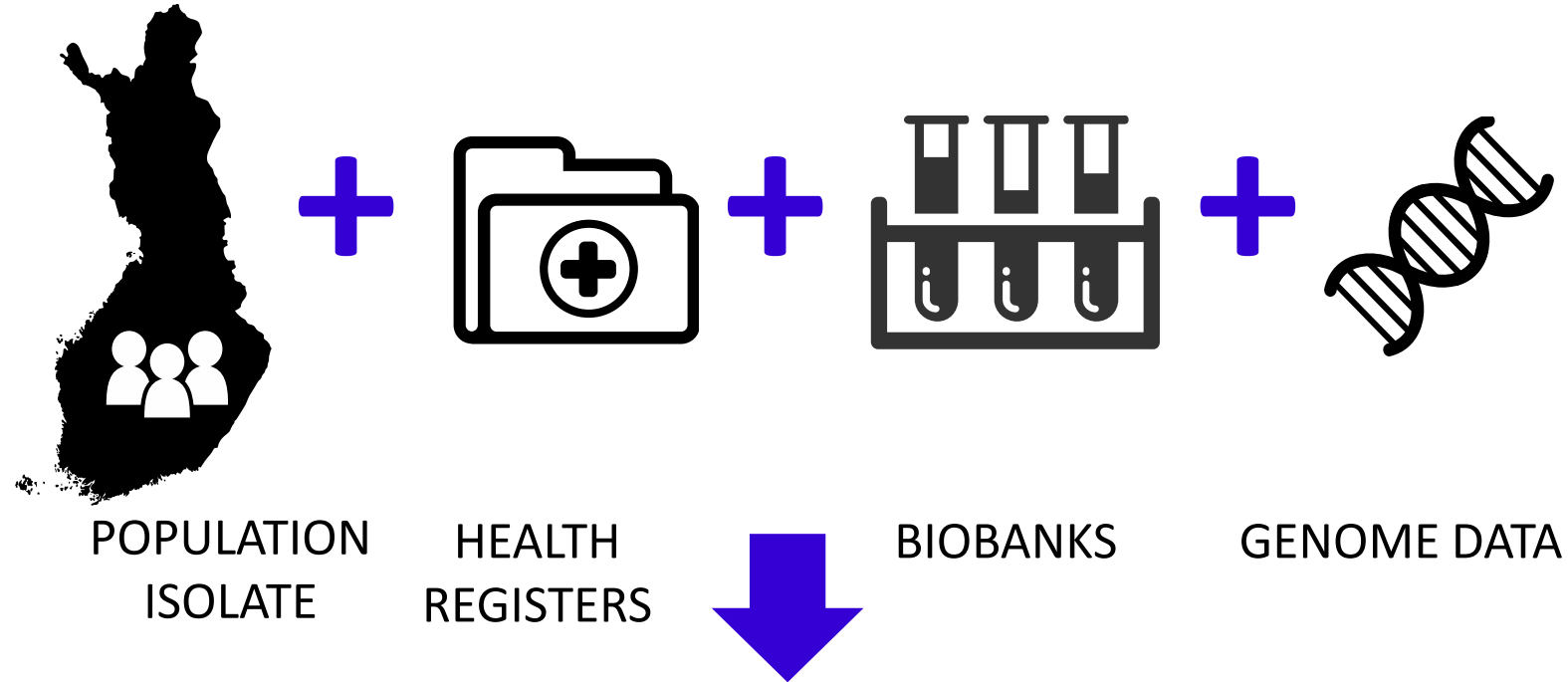
## Biobanks

Expanding the sample collections and enriching the value of the samples with genomic data. Highlighting the excellence of Finnish biomedical research.



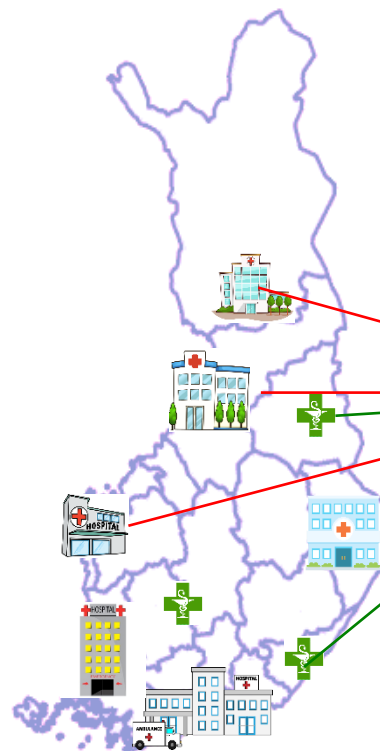
## Research

The data generated will remain in Finland and can be used for future research purposes increasing the attractiveness of Finland as a partner.



**INNOVATIVE STUDY DESIGNS**

# National registers



All data harmonized  
Interconnected by the 11 digit person  
number

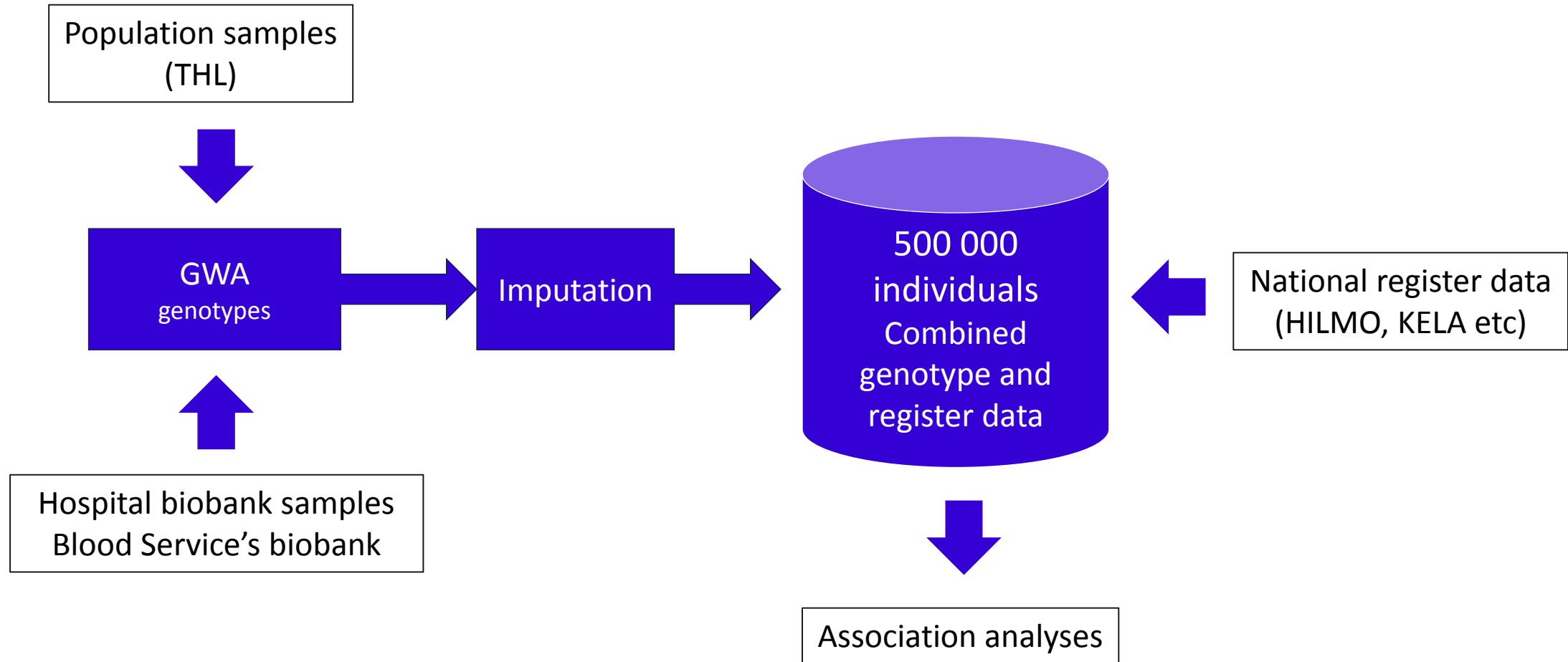
Hospital discharge  
Hospital procedure  
Outpatient visit  
Outpatient procedure  
Primary care  
Primary care procedure  
Cancer register  
Cause of death  
Drug purchase  
Drug reimbursement

Register data  
for  
administration

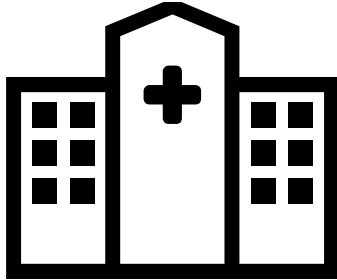
Register data  
for  
administration

Register data  
for  
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# FinnGen samples and data



Prospective collections 300 000

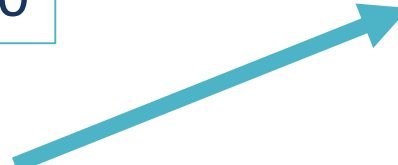
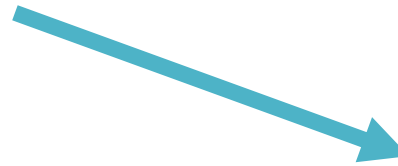


Hospital biobanks

Legacy collections 200 000

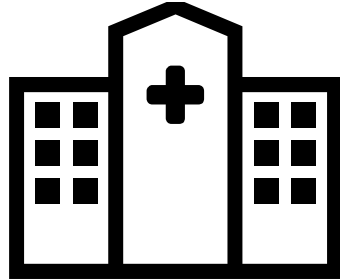


- Epidemiological cohorts (Finnish, H2000)
- Disease collections:
  - Diabetes, Botnia
  - Migraine
  - Schizophrenia





Prospective collections 140 000



Hospital biobanks

Legacy collections 200 000

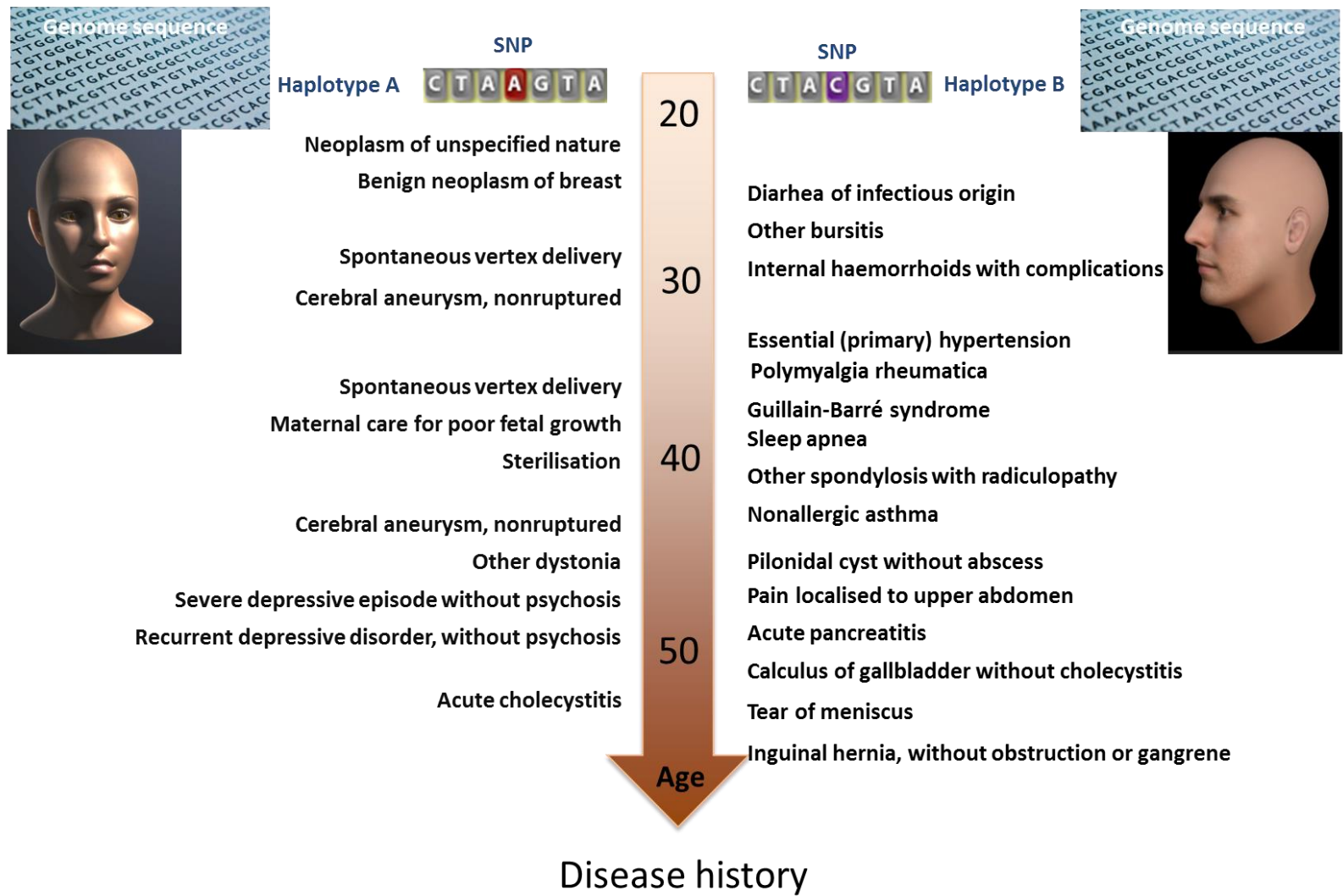


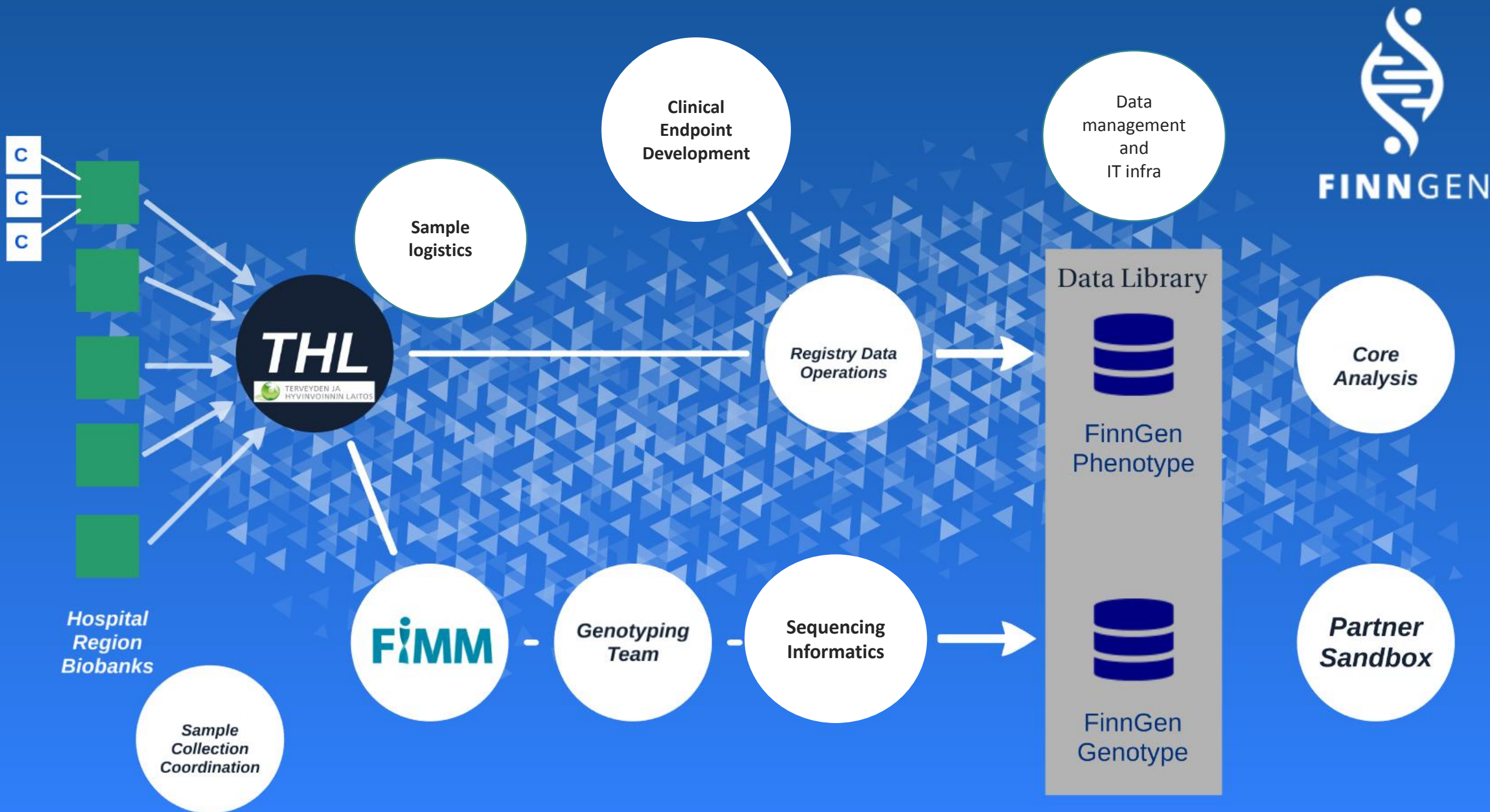
- Epidemiological cohorts (Finnrisk, H2000)
- Disease collections:
  - Diabetes, Botnia
  - Migraine
  - Schizophrenia

**FinnGen 1**  
**First 3 years**



# EXAMPLE OF HEALTH HISTORIES FROM TWO PERSONS FROM THE NATIONAL BIOBANKS WITH A 40 YEAR FOLLOW-UP







FINN GEN

# FinnGen analysis strategies and scientific aims

*Utilize genetic strategies to understand disease mechanisms*

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**GWAS**

Genome-wide association analysis

**PheWAS**

Wide phenotypic mining



Better understanding of genetic background of diseases

Common risk factors between different diseases

Identification of causative genetic variants

Identification of disease subgroups  
(stratification)

Identification of risk groups  
(prevention)

Identification of protective variants

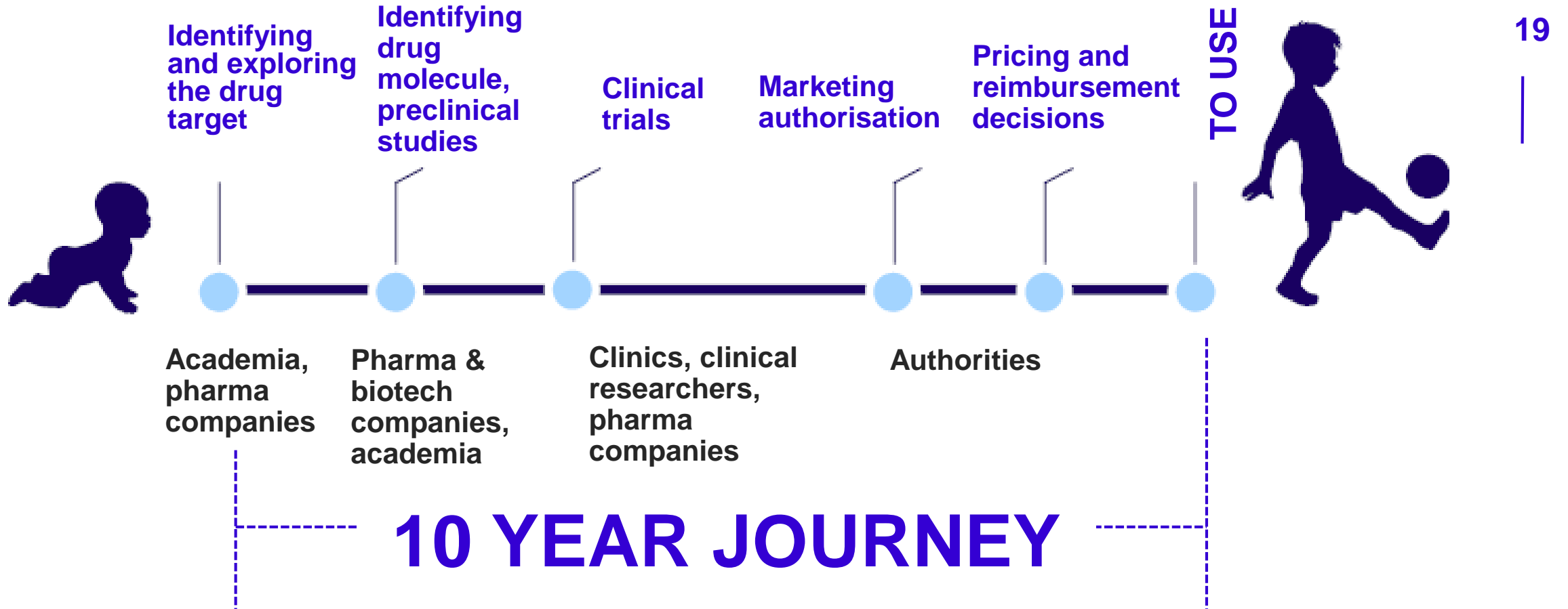
**Benefits for the pharma partners?**



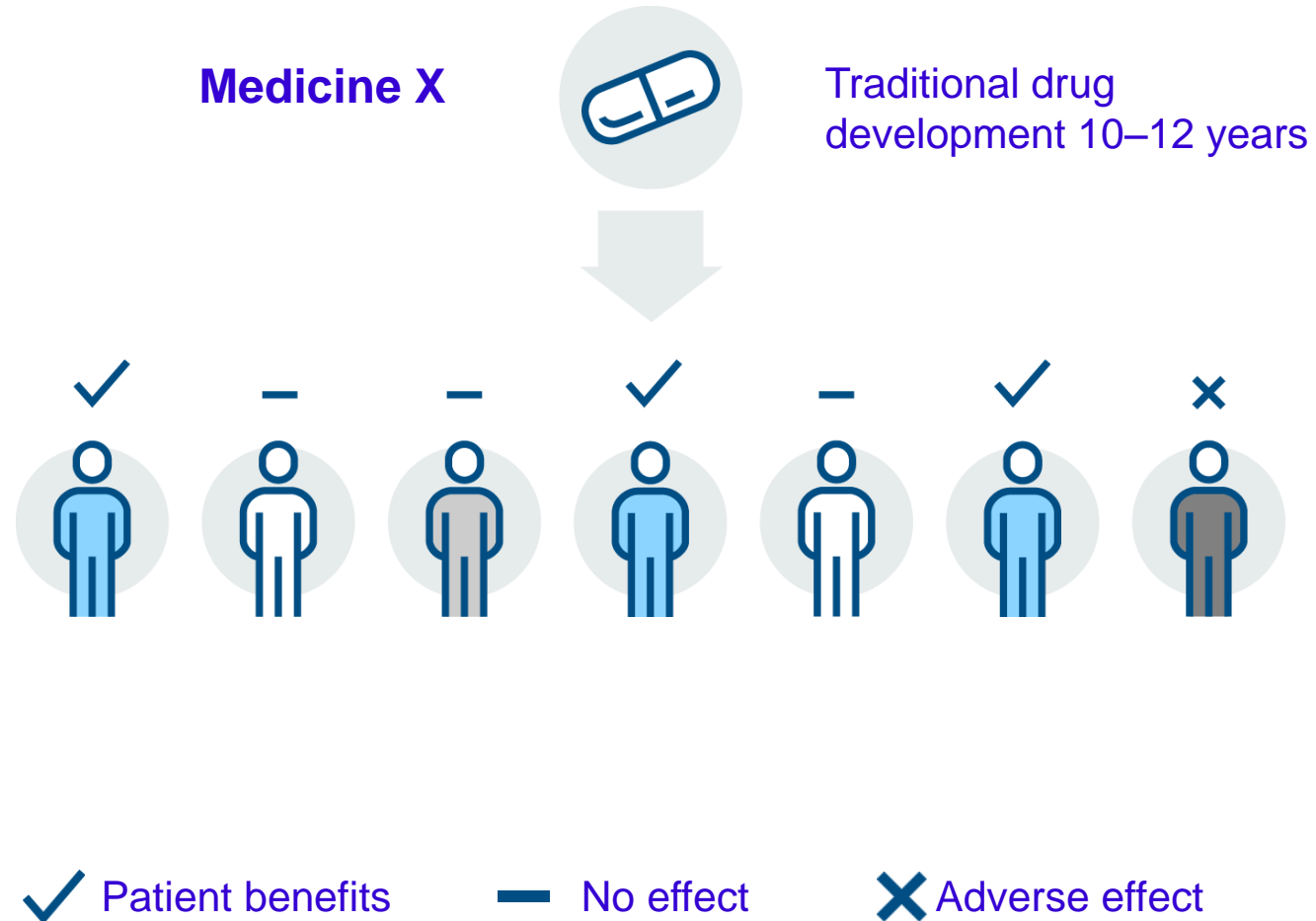
# Drug development takes time



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# Personalized medicine

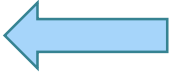
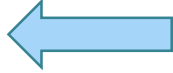



# TEKES-hakemuksessa mukana olleet yritykset



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- BCB Medical,
- BC Platforms, 
- Blueprint Genetics,
- MediSapiens, 
- Negen,
- Orion,
- Terveystalo 
- Woble Genomics

# Coordinated by:



**HiLIFE UNIT**

# Funding partners:

abbvie

Genentech  
*A Member of the Roche Group*

AstraZeneca

MSD

Biogen

Pfizer

Celgene

BUSINESS  
FINLAND



# In co-operation:



Hospital District of Southwest Finland  
University of Turku  
Satakunta Hospital District  
Vaasa Hospital District

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Hospital District of Helsinki and Uusimaa (HUS)  
University of Helsinki  
Kymenlaakso Social and Health Services (Carea)  
South Karelia Social and Health Care District (Eksote)



Finnish Red Cross Blood Service  
Finnish Association of Hematology  
Institute for Molecular Medicine Finland (FIMM), HiLIFE,  
University of Helsinki

# In co-operation:



Northern Savo Hospital District  
University of Eastern Finland  
South Savo Social and Health Care Authority  
Joint Municipal Authority for North Karelia Social and Health services (Siun sote)  
Eastern Savo Hospital District

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Central Finland Health Care District  
University of Jyväskylä



Northern Ostrobothnia Hospital District  
University of Oulu  
Nordlab  
Central Ostrobothnia's Joint Municipal Authority for Specialised Medical Care and Basic Services  
Kainuu Social and Health Care Joint Municipal Authority  
Lappi Hospital District  
Länsi-Pohja Hospital District

# In co-operation:



**Finnish Clinical  
Biobank Tampere**

**Pirkanmaa Hospital District  
University of Tampere  
Kanta-Häme Hospital District  
South Ostrobothnia Hospital District**

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**NATIONAL INSTITUTE  
FOR HEALTH AND WELFARE  
FINLAND**

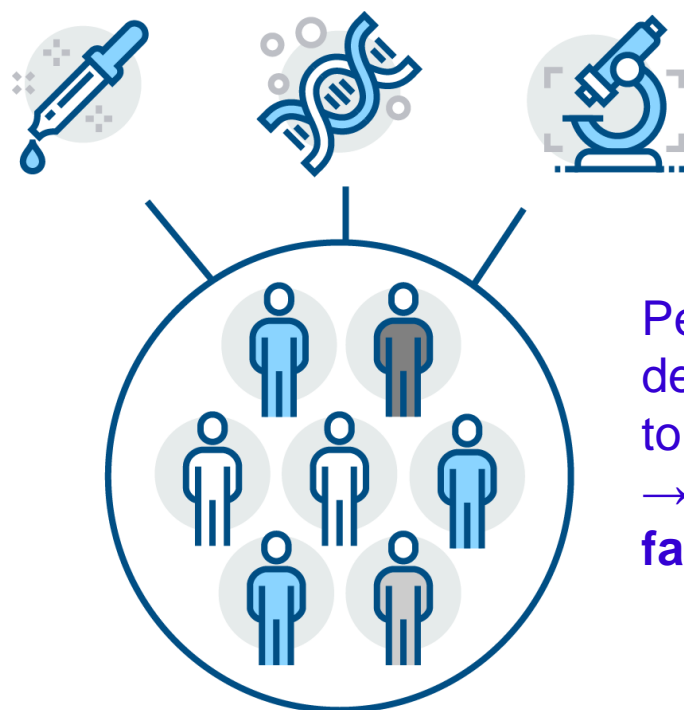
**The National Institute of Health and Welfare**

**THL BIOBANK**

Blood Service's  
**BI  BANK**

**The Finnish Red Cross Blood Service**

# Personalized medicine



Personalized drug development can be up to 3-4 years faster.  
→ **reduced cost and faster health benefits**

