



# Blood Biobanking – Chances and Risks

The Bavarian Red Cross „Blood Donor Biobank“



## Outline

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- Types of biobanking
- Why blood biobanking?
- Why blood banks?
- Why the Bavarian Red Cross Blood Bank?
- The „Blood Donor Biobank“
- Chances and risks of blood biobanking



## Different Types of Biobanks

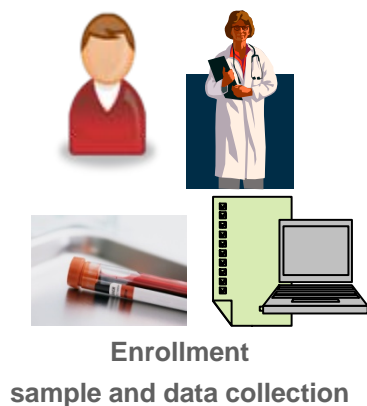
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- Genetic biobanks collect biological samples from the general population or particular subsets of individuals
- Disease biobanks collect samples from patients suffering from selected conditions
- Prospective banking of normal and pathological samples(leftover samples) collected during routine clinical pathology diagnostic procedures
- Prospective banking of samples collected from healthy volunteers

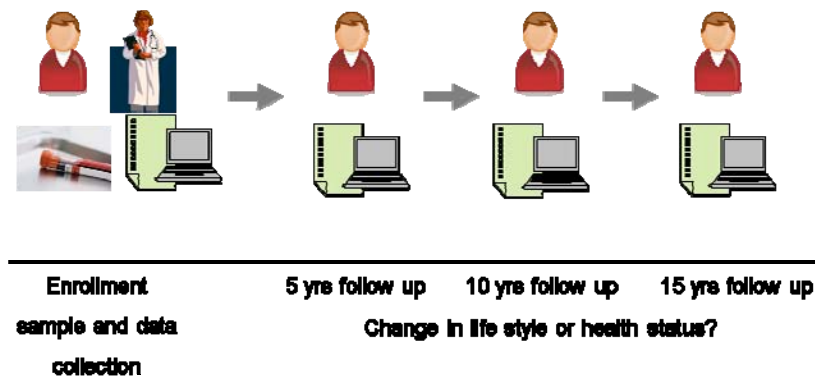


## Two Models of Biobanking

### Collection of patient material



### Collection of samples from healthy volunteers





## Pitfalls Prospective Biobanks

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- Reasonable number of participants required
- Time until a healthy individual becomes ill is not foreseeable
- High degree of compliance required
- High infrastructure, administration and storage costs



## Why Blood Biobanking?

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- Easy to access – convenient for donor (higher degree of compliance)
- Easy to collect – convenient for doctor/study nurse
- Easy to transport and to store – convenient for biobank operator
- Easy to analyse – convenient for researcher



## Why Blood Banks?

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- Blood banks are biobanks
  - Collection and storage of biological material and associated data
  
- Existing infrastructure for
  - Large volume operation
  - Sample traceability
  - Sample storage
  - Networking capability
  
- Well established standards for the manufacture of pharmaceutical blood products (experienced employees, GMP facilities, SOPs, regular audits)



## Why the Bavarian Red Cross Blood Bank?

### ■ Red Cross Blood Banks

- The Red Cross collects one third of the 75 Mio blood donations that are collected annually worldwide
- In more than 20 countries (e.g. Australia, Japan, Belgium, Finland, Switzerland) blood supply is solely organised by the national Red Cross
- In 35 countries the national Red Cross is responsible for the predominant part of the blood supply (US, Austria, Germany)

### ■ The situation in Germany

- Red Cross Blood Banks are responsible for 80% of the blood supply
- 8 blood banks collect 4,5 Mio blood units of approximately 2 Mio blood donors

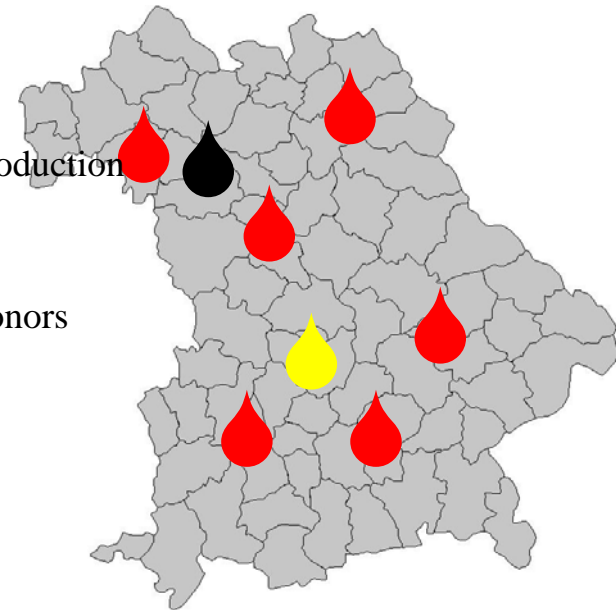




## Why the Bavarian Red Cross Blood Bank?

### ■ The Bavarian Red Cross Blood Bank

- Pharmaceutical company founded in 1953
- 6 institutes for transfusion medicine, 1 central production site and 1 plasma centre
- 20 blood drive sessions a day, 5 days a week
- 500000 blood units p.a. collected from 400000 donors
- > 33000 laboratory tests daily
- > 700 Employees
- > 250 Medical doctors
- > 18000 honorary helpers





## The „Blood Donor Biobank“

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### ■ Reasons for a biobank at the Bavarian Red Cross blood bank

- Well characterised and large donor collective
- Over 4 Mio plasma samples stored in a fully automated and access controlled storage facility at -42°C
- Experienced in the conduction of epidemiological and diagnostic studies according to ICH GCP and other international and national guidelines
- Donors are willing to participate in research studies



## Over 4 Mio samples stored at -42°C

Legally required plasma sample of every blood donation for potential follow up analysis

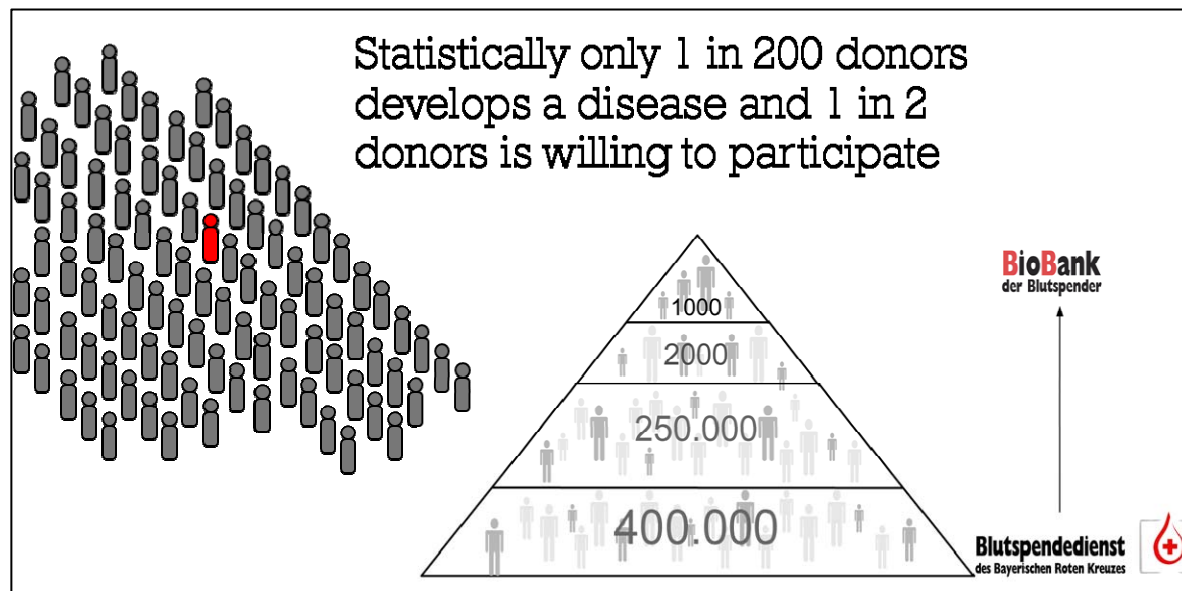
**Cold storage facility at the production site**

**-42°C, access controlled and fully automated**



## Large donor population

400000 registered blood donors

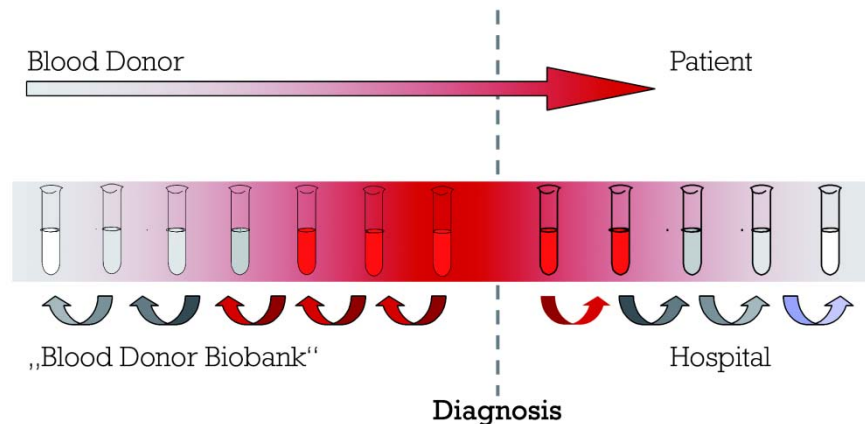




## The „Blood Donor Biobank“

### ■ Available samples

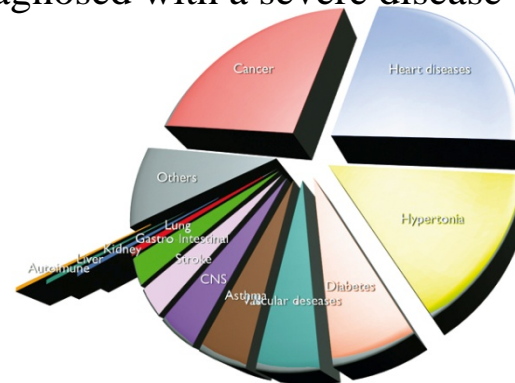
- Multiple plasma samples of one donor
- Plasma samples taken every 6 months on average over a period of 7 years
- Samples taken before the diagnosis of a disease





## The „Blood Donor Biobank“

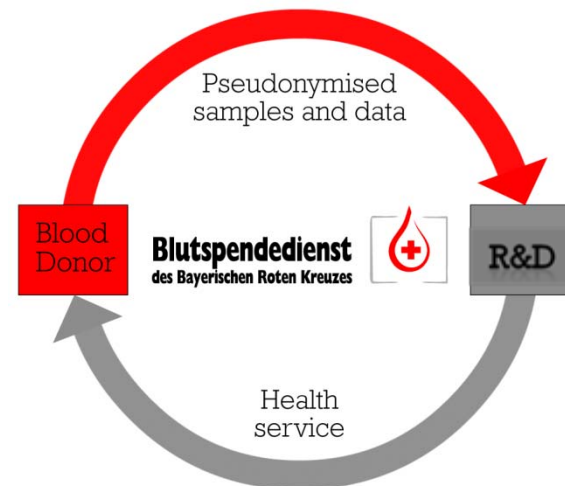
- Approval by the responsible ethics committee and data protection board
- Written informed consent of more than 10000 donors
  - 5000 healthy and active blood donors
  - 5000 former blood donors diagnosed with a severe disease
    - Cancer
    - Heart disease
    - Diabetes
    - Cardio vascular
    - Stroke
    - CNS
    - Autoimmune, Asthma
  - Over 100000 plasma samples for research projects





## The „Blood Donor Biobank“

Our idea is to contribute to the identification of predictive biomarkers by providing samples collected before the diagnosis of a disease





## Blood Biobanking- Chances and Risks

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### ■ Chances

- Accessibility allows regular sample collection
- Blood is routinely collected at blood donation sessions, hospitals, doctor surgeries
- Blood collection is easy to standardise
- Low collection, shipment and storage costs
- Allows screening procedures

### ■ Risks

- Only circulating biomarkers can be identified/analysed
- Multiple operators , no standardised procedures





# Thank You

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