Centre for personalized medicine managing infectious complications in immune deficiency

PERSIMUNE
The 3 pillars of PERSIMUNE

- **Immunodeficiency**
  - Increases risk of contracting disease
    - ideal population for *basic science model* to better understand interaction between immune function and disease
  - Epidemic due to medicines - societal impact enlarging

Discover novel markers of immunodeficiency

Prediction of infectious phenotype

Immune Deficiency Index
Infectious phenotype of immunodeficiency - diseases linked with immunodeficiency

1. Opportunistic infection
   i.e. infections linked with immunodeficiency
2. Cancer caused by viruses
   e.g. EBV, HPV, HCV, HBV, etc
3. Accelerated organ dysfunction
   due to extended infection-related inflammatory state
4. Allograft rejection / Graft-versus-Host in transplant recipients
   immune reaction triggered by infection

Risk of contracting these diseases varies across populations of immunodeficient persons
Methods

• Transform a tertiary-referral hospital to a research platform for our basic science model
  – Multiple types of immunodeficiency patients cared for
  – Ensure PERSIMUNE requirements are met
    • Large patient sample
    • Able to ascertain infectious phenotype
      – Infrastructure to capture relevant patient information (MATCH)
      – Diagnostic technology state-of-the-art
    • Central biobank facility
    • Long-term and diverse scientific interest by all relevant stakeholders
Individualized daily routine treatment circuit

Pattern recognition

Host Genetics

Microbial Genetics

Clinical Immunological Imaging

Immunologic characterization

Routinely collected hospital data

Immune Deficiency Index

Individualized daily routine treatment circuit

Risk Guided Treatment

Outcome evaluation

Non-predictive elements
Organisation – a scientifically strong multidisciplinary international team

**Advisory Group**
- Henry Masur, NIH (chair)
- Annemie Vandamme (bioinformatics); Brian Gazzard (ID), Rainer Weber (ID), Peter Reiss (ID)

**Host and microbial genetics (p. 10 & 11)**
- Finn Cilius Nielsen (p. 24)
- Lars Fugger (p. 22)

**Pattern recognition (p. 8)**
- Alessandro Cozzi-Lepri (p. 34), Amanda Mocroft (p. 34), Andrew Philips (p. 32)
- Magnus Fontes (p. 33)

**Immunological characterization (p. 12)**
- Peter Garred (p. 25)

**Imaging (p. 14)**
- Andreas Kjær (p. 23)

**Capture of the infectious phenotype @ RH (p. 7)**
- Jens Lundgren (p. 19)
- ID: J. Gerstoft (p. 30), Rheumatology: S. Jacobsen (p. 31), Lung: M. Iversen (p. 26), Heart: F. Gustafsson, Kidney: S.S. Sørensen (p. 27), Haematology: H. Sengelov (p. 29), Liver: A. Rasmussen, Oncology: G. Daugaard (p. 28) Paediatrics: Marianne Ifversen

**Centre Leader**
- Jens Lundgren (p. 19)

**Steering Committee**
- Participating core members (p. of CV)

**International collaborating hospitals**
- Johns Hopkins, Zürich U, Cologne U