Vision, mission and aims of PERSIMUNE

Prof Jens Lundgren
Centre leader
The Rigshospitalet immunology vision

2011: immunology chosen as core strategic area
2013: committees formed (chair: Bente Klarlund-Petersen)
   Recommendations completed
   Application to DNRF submitted
2014: DNRF application granted
2015: PERSIMUNE opens
   Platform for implementing the vision
   Defined budget, governance structure and operational infrastructure
PERSIMUNE (PM)

• Core-function for immunological vision
  – Excellent research
• Include large groups of patients in care at Rigshospitalet as part of one research platform
  – data warehouse og biobank
• ”Upgrade” of bioinformatik, biostatistik, datamining, immunology
Main hypotheses and methods

- **Among patients with compromised immune function,**
  - pattern of not-yet identified risk factors exists that
  - explains variation in risk of developing infections

- **Methods:**
  - Pattern recognition of “big data” collected as part of routine care,
  - Host and microbial genetic analyses,
  - Immunological characterisation
  - Imaging incl tracer technology
Mission

• Identify *novel* host defence mechanisms, and the *pattern* of novel and already known mechanisms that best *explains* the *variation* in contracting infection(s)

• From this formulate “*immunodeficiency indices*”
  – Capture knowledge of this variation
  – Validated prospectively
  – Used for further individualise care
Severity of CMV infection at the time of diagnosis and CMV related hospital admission rates

- **CMV-related admission**
- **Severe (≥ 30,000 cps/mL)**
- **Moderate (10,000-29,999 cps/mL)**
- **Mild (< 10,000 cps/mL)**

Year of transplantation:
- **2007-2008**: 46%, 34%, 51%
- **2009-2010**: 53%, 29%, 59%
- **2011-2012**: 14%, 4%, 90%

MATCH program implemented

MATCH Study Group: Cunha-Bang et al,
PERSIMUNE can do more that its mission

Data warehouse
(routine data & data generated by PERSIMUNE, external data incl national registries) for other research purposes

Routine care
(e.g. MATCH, antibiotic stewardship)

Improved microbiological diagnostics
Why focus on immunodeficiency?

- Epidemic due to medicines - societal impact enlarging
- Ideal population for basic science model
  - “Stress-test” of host defence
    - If pre-existing weakness exist earlier to identify (signal-to-noise ratio highest)
    - In care – data re known mechanisms collected systematically
      - Allows for controlling in statistical analyses when evaluating possible novel mechanism(s)
Types of populations under study

• Patients groups, in care at Rigshospitalet, with pre-existing or acquired immune deficiencies
  – Transplant recipients, cancer patients, persons with autoimmune deficiencies, etc

• Single patients with history of repeated infections and with health family members

• Population studies (national registries and national biobank structures)
The 3 pillars of PERSIMUNE

- Discover novel markers of immunodeficiency
- Prediction of infectious phenotype
- Immune Deficiency Index
Research platform: "un-recognised invasive infections"

- Febrile syndromes with “unknown microbiological explanation”
  - Frequent
  - Severe
  - Empiric antibiotic therapy
  - Underlying reason
    - Invasive infection
      - Microbiological techniques unable to identify
      - (most probable bacterial or fungal pathogens)
    - Non-infectious
- Initial core PERSIMUNE platform
  - Required to classify suspected “cases”
How to get involved

• Department level
  – Include relevant patient groups
    • Prospectively
      – Contribute to PERSIMUNE biobank
    • Retrospectively re-creation
      – Possible contribution from existing biobank structures

• Individual level
  – Become member of one or more “scientific interest groups”
  – Lead/contribute to scientific projects
  – Stay informed via
    • Website: www.PERSIMUNE.org
    • Twitter: @PERSIMUNE
    • Facebook: https://www.facebook.com/PERSIMUNE
Thank you

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  – Prof Amanda Mocroft, ass prof Al Cozzi-Lepri, UCL
  – Prof Magnus Fontes, Institute Pasteur and University of Lund

• Investigators at Diagnostic & Clinical departments @ Rigshospitalet