Online version

PERSIMUNE newsletter December 2018.

Novel customized biomarker panel

Following the PERSIMUNE retreat 2018, the lead of the Immunologic Scientific Interest Group was asked to settle a group of clinical experts and senior researchers to develop a “must-have-biomarker” panel to be tested on PERSIMUNE biobank samples, with the ultimate goal to develop tools that may delineate various immunologic phenotypes associated with adverse host reactions.

A broad invitation was sent out resulting in feedback from 9 clinical experts and senior researchers participating in the process, which included four meetings and collection of written proposals from all participants in a process chaired by Søren Jacobsen and Sisse Rye Ostrowski.

At the initial meetings, a very broad panel of biomarkers was in play. To reduce the number of biomarkers, the group decided to exclude biomarkers that were expected to be undetectable in more than half of plasma samples from healthy individuals. Next, many analytes were excluded to reduce redundancy. Finally, analytes were selected to cover a broad spectrum of immunologic phenotypes with a feasible number of analytes.

The biomarker panel was customized to reveal different immunologic phenotypes including immunologic competence and dysfunction (inhibited/hyperactivated) of innate and adaptive immunity (including host vulnerability). Biomarkers of immune activation and ongoing infection were also included.

The following stratification model to cover this comprised

- Innate immunity: competence/dysfunction/vulnerability
- Adaptive immunity: competence/dysfunction/vulnerability
- Markers of infection

The biomarker panel suggested is based on a combination of routine KBA/KI analyses and analytes available for multiplex analyses by MSD.
Routine KBA/KI analyses: standard-CRP, hs-CRP, β2-microblobulin, procalcitonin, MBL, immunoglobulins
Multiplex analyses: TNF, IL-6, IL-10, IFN-γ, TGF-β, IL-8, MPO, IL-1ra, sTNFR, sIL-2rα

The work group chairs are open for any comments on the selected biomarker panel and would appreciate comments to persimune.rigshospitalet@regionh.dk before 15-01-2019. After deciding on the final biomarker panel, the workgroup chairs will obtain information about costs and plasma volume required for implementing the biomarker panel.

Søren Jacobsen & Sisse Rye Ostrowski

The individual biomarkers in the suggested panel were framed according to the table below. Some of the biomarkers may reflect more than one state.

	Activation markers	Inhibition markers	Vulnerability markers
Innate immunity (competence or dysfunction)	CRP (st/hs) IL-6 TNF IL-8 IL-1β MPO	TGF-β sIL-1Ra sTNFr	MBL (low:high states of lectin pathway function)
Adaptive immunity (competence or dysfunction)	Immunoglobulins IgG, IgA, IgM ↑ sIL-2Rα β2-microglobulin IFN-γ	IL-10 TGF-β sIL-1Ra sTNFr	Immunoglobulins IgG, IgA, IgM ↓
Infection	CRP (st/hs) Procalcitonin β2-microglobulin IFN-γ TNF IL-6		

PERSIMUNE biobank

PERSIMUNE biobank is administered by Copenhagen Hospital Biobank Unit where registration, handling and storage of samples is done. Sample collections stored in PERSIMUNE biobank hold a variety of different sample types: blood spots (neonatal samples), whole blood, plasma, feces, sputum and saliva. Blood samples are processed both manually and automatically in the laboratory and stored at -80 0C freezers in 2D barcoded tubes.

Data from the PERSIMUNE samples (including physical positions) are registered in a Laboratory Information Management System - Labware. The extraction of specific information from samples in research projects is therefore done in Labware. Projects in PERSIMUNE mainly includes finding and handing out samples from the biobank or doing quantitative or genetic analysis in the laboratory.

Overview of the different sample types and number of patients included in PERSIMUNE biobank:

Sample type	Whole blood	Plasma	Bloodspots	Faeces	Sputum	Saliva
***N* Patients**	6878	6921	14	667	49	65

Margit Larsen, Erik Sørensen & Henrik Ullum

New staff

Adrian Zucco is a MSc in Bioinformatics and Systems Biology. Adrian will initially join us for a year and during this time prepare to become a PhD student at PERSIMUNE. Adrian has joined the work on the microbiome pipeline and will also become involved in SNP analysis in the host genomics project.

Mathias Loft, is a MD and has begun as PhD student working on the PERSIMUNE IMAGING study at the Department of Clinical Physiology, Nuclear Medicine and PET, Rigshospitalet. Mathias started in August 2018.

Claudia Syueping Crowell is a MD from U.S. Claudia will participate in research activities within PERSIMUNE with a focus on the pediatric cohort. Claudia started in September 2018.

Danmarks Grundforskningsfond
Danish National Research Foundation

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