

Strategic Impact of MultiOmics

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Human personalized omics profiling (hPOP)

2016 (Pilot)
US HUPO
Boston



31 participants

2016
HUPO
Taipei



106 participants

2017
HUPO
Dublin



115 participants

2018
HUPO
Orlando

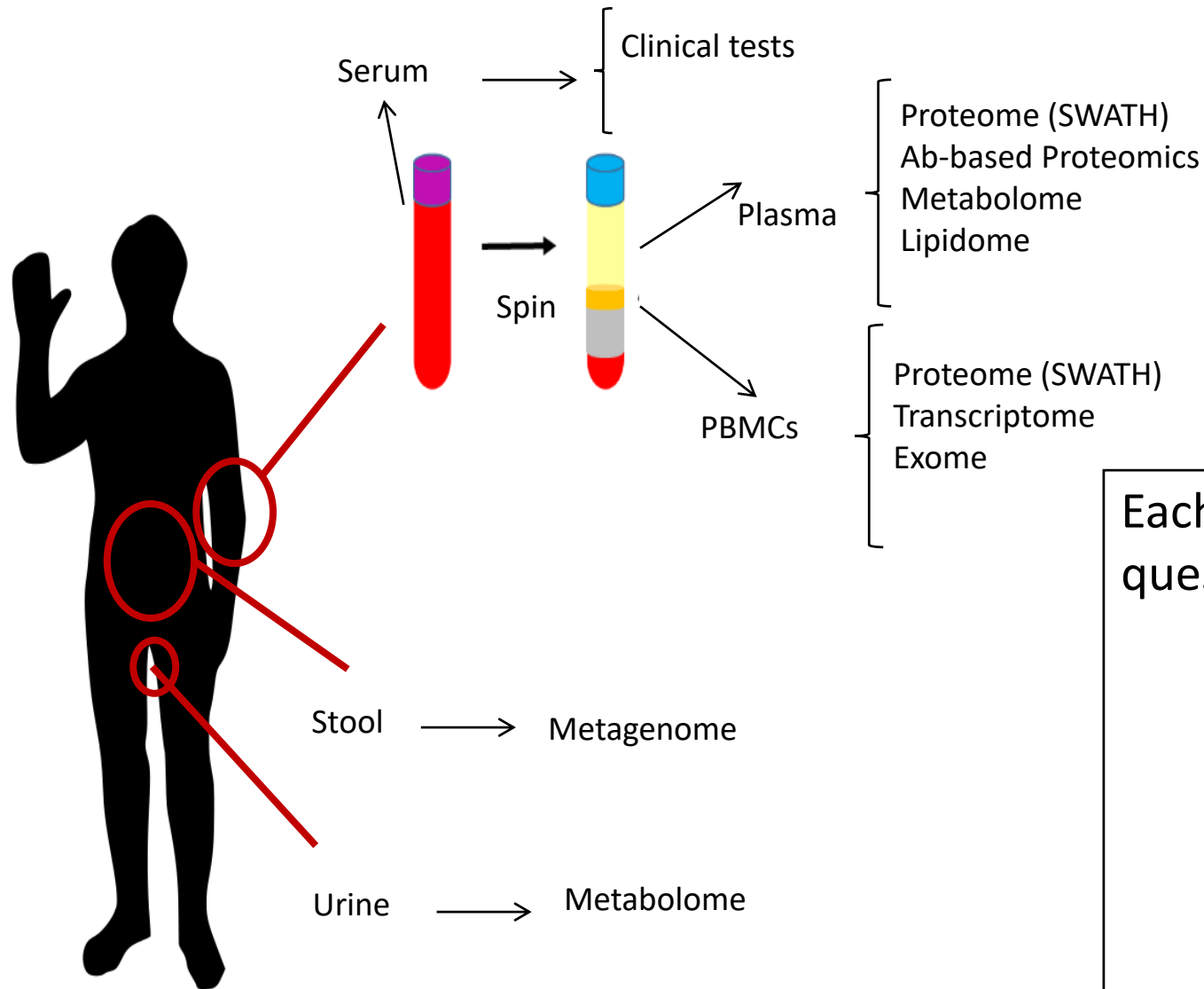


90 participants



43 participants

hPOP: Specimen Types, Omic Assays and Questionnaires



Each participant filled out 5 questionnaire:

- Eating habits
- Food log
- Health status and medical history
- Stress survey
- Physical activity survey

15 international groups

Snyder: Transcriptome, Proteome (Swath), Lipidome, Untargeted Metabolome, Clinical

Institution	Investigator	Assay	material
University of British Columbia	Philip Lange	Degradome	PBMCs and plasma
Universite du Quebec a Montreal	Lekha Sleno	metabolome	Plasma, urine
The University of Manchester	Richard Unwin	Metallome	Plasma
Florey Institute of Neuroscience and Mental Health	Blaine Roberts	Metallome	Plasma, serum, urine, stool
The Hong Kong Polytechnic University	Thomas Lam	Proteome (SWATH)	Plasma
Science for Life Laboratory, KTH	Peter Nilsson, Fredrik Edfors, Jochen Schwenk, Matthias Uhlen	Autoantibody, proteome	Plasma
Aalborg University Hospital	Marlene Jorgenson	Vesicle monitoring/phenotyping	Plasma
Aalborg University	Allan Stensballe	PTM/EV profiling (PASEF)	Plasma, urine, stool
University of Salamanca	Manuel Fuentes	Immune monitoring obesity	Plasma and Serum
University of Alberta	Lara Mahal	Glycome/Glycoproteome	Serum
University of Muenster	Simone Koenig	Protease activity	Serum
Institute for Systems Biology	Robert Moritz	Metaproteome. 16S	Stool
University of Tuebingen	Oliver Poetz	Kidney injury markers	Urine
Florida State University	Rakesh Singh	Proteome	Urine

Government Funded Major Research Projects

1. MoTrPAC: Molecular Transducers Physical Activity Consortium
2. HuBMAP: Human BioMolecular Atlas Program
3. HTAN: Human Tumor Network
4. GTEx: Gene and Tissue Expression
5. NASA Twins Study
6. iHMP: Human Microbiome Project

Themes



MoTrPAC
The Molecular Transducers of
Physical Activity Consortium

1. MoTrPAC: Molecular Transducers Physical Activity Consortium
2. Truly integrated:
 - RNA-Seq, WGS, ATAC-Seq, DNA Methylation
 - Metabolomics: Targeted and untargeted
 - Proteomics: Untargeted, Somalogic

HuBMAP and HTAN

1. Make single cell maps of normal (HUBMAP) and Precancer tissues (HTAN).
 1. Spatial
 2. Nearly everyone is doing RNA-Seq and many ATAC-Seq
2. Most groups that use proteomics are doing CODEX or MIBI

Some additional thoughts

1. The omics field is moving toward single cell (HuBMAP, HTAN)
2. Throughput is important
3. Areas/Projects that the Proteomics community should lead
 - a) iPOP/Wellness
 - b) Nutrition