National Cancer Institute, NIH
United States

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High-Throughput Metabolomic Biomarker Measures in Diverse Ancestries

Cohort Consortium
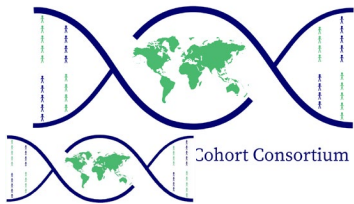
High-Throughput Metabolomic Biomarker Measures in Diverse Ancestries

Principal Investigators (alphabetical)

- Adam Butterworth, University of Cambridge
- Andre Brunoni, Universidade de São Paulo
- Arash Etemadi, National Cancer Institute, NIH
- Hakon Hakonarson, Center for Applied Genomics, Children's Hospital of Philadelphia

Team Members

- Patrick Sleiman (CHOP)

Background

- Chronic diseases impose a high burden on the health system.
- Health outcomes can be significantly improved through early diagnosis and intervention.
- Early diagnosis often unavailable particularly for individuals in low and middle income countries and minority populations in high income countries.
- Metabolic profiling represents a highly-scalable model for risk prediction and prevention.
  - Because of its relatively low cost, it offers a route to individualized medicine for these populations.

Aims

- Aim 1: Develop Organizational Structure for Metabolomics:
  - a strategy for coordinated metabolic screening and clinical implementation for all of the IHCC.
- Aim 2a: Generate Metabolic Profiles on 5,000 Individuals with Genetic and/or Health Outcome Data.
- Aim 2b: Analyses of association between metabolic metabolite levels (such as lipid profiles) and genetic data

Nightingale Health Blood Biomarkers

- NMR-based (Nuclear Magnetic Resonance spectroscopy) platform

- 228 biomarkers

- 100µl of plasma or serum
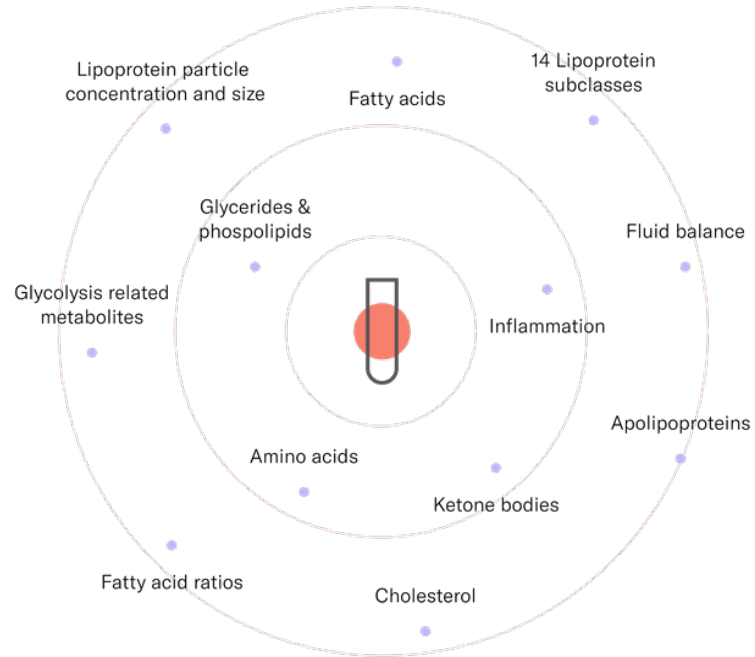
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Participating Cohorts

Cohort Name	Study samples	Principal Investigator/Lead(s)
South Asian Cohorts (BELIEVE)	1,500 samples of South Asian ancestry from Dhaka, Bangladesh	Adam Butterworth
ELSA-Brasil	1,000 samples from Brazilian civil servants	Andre Brunoni
Golestan Cohort Study	1,000 samples from Northeast Iranian general population	Arash Etemadi
Children's Hospital of Philadelphia (CHOP)	1,500 samples of African American children	Hakon Hakonarson

Project expansion

- The project is developed with the intention of scaling-up beyond the 4 initial pilot studies.
- Potential to combine with several other IHCC cohort using the same platform:
  - UK Biobank
  - Mexico City Study
  - UK Blood Donors Cohort
  - Kadoorie Biobank

Commercial break!

- An example of IHCC role in inclusiveness
- Tune in tomorrow!

  - Panel: LMIC/LRC/LRS Cohorts' Outlook on Resource Gaps and Barriers
    Session Time: 14:00 – 14:50 UTC

Cohort-specific outcomes

- Diabetes (South Asian Cohorts)
- Ischemic heart disease (Golestan Cohort Study)
- Autoimmune/autoinflammatory disease (CHOP)

Timeline

- December 2020: All 5,000 samples shipped
- May 2021: All samples analyzed and ready to be released
- July 2021: Project-specific analyses finalized
- September 2021: IHCC report and recommendations
- Upon completion of analysis, data will be made available to all IHCC cohort members

Thank you!

Tune in tomorrow!
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Session Time: 14:00 – 14:50 UTC