CLINICAL PROTEOMICS
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THE PLASMA PROTEOME

Proteins
- Functions
  - Plasma
  - Water
  - Small molecules
  - Proteins
- Concentration range of the plasma proteome
- Drawn from the plasma proteome database

FINGER PRICK AND BLOOD COMPOSITION

Blood cells
- 44% Plasma
- 5 x 10^11 Erythrocytes
- 2 - 4 x 10^11 Thrombocytes
- 5 - 10 x 10^11 Leucocytes

APPLICATIONS
Cases versus controls studies
- Biomarker candidates
- Longitudinal trajectories

PLASMA PROTEOME PROFILING
- Plasma proteome profiling of diverse disease, risk, treatment, lifestyle or other relevant alternatives over time can accelerate the discovery of novel plasma proteins changes in a general overview

MOLECULAR PHENOTYPING
- The plasma proteome profile of an individual is calculated using the information and signs from association with the knowledge base

BIOMARKER DISCOVERY

Triangular strategy
- Numbers of candidates
- Numbers of proteins
- Discovery
- Validation
- Depletion

Rectangular strategy
- Numbers of candidates
- Numbers of proteins
- Discovery
- Validation
- Randomization

TODAY’S BLOOD TESTS

Clinical decisions made
- with lab testing 77%

Distribution of laboratory tests
- Clinical decisions made with lab testing 77%
- Clinical decisions made without lab testing 23%

 POTENTIAL FOR NEW BIOMARKERS

The blue area illustrates the density of biomarkers as a function of increasing depth of the plasma proteome. Within the Hill most abundant proteins, 1% are already known biomarkers. The top of the yellow region extrapolates the proportion of the known proteins to the complete plasma proteome. If the portion of biomarkers is increased as high as 1% or the Hill most abundant proteins, there are at least potential biomarkers to be discovered (yellow area).

56% Plasma
- 90% Water
- 3% Small molecules
- 7% Proteins

PROTEIN DISTRIBUTION

Tissues
- Functional proteins
- Plasma proteins
- Tissue proteins

Numbers of proteins
- 70 Biomarkers
- 23%
- 47 Biomarkers
- 4%