CLINICAL PROTEOMIC TECHNOLOGIES FOR CANCER

http://proteomics.cancer.gov

Proteomics and the NCI

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Potential of Clinical Proteomics

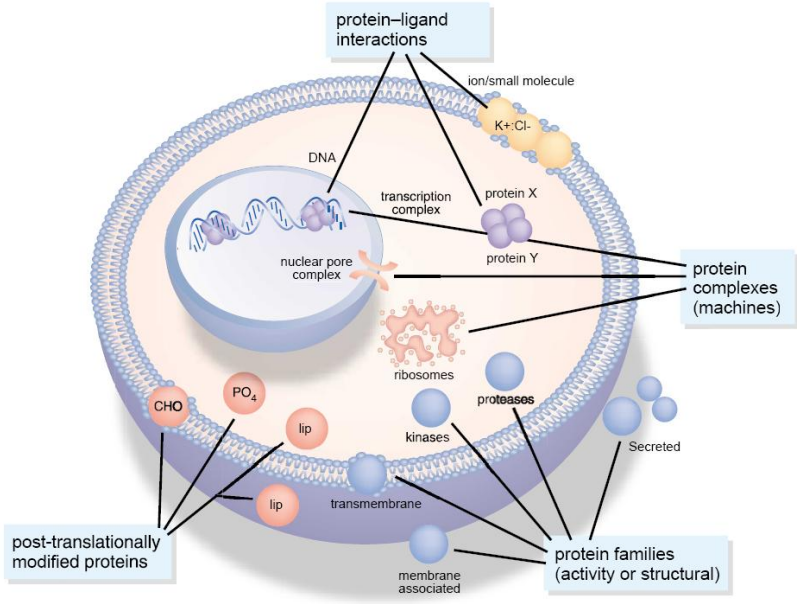
CLINICAL PROTEOMIC TECHNOLOGIES FOR CANCER

Clinical proteomic technologies offer the potential opportunity to enable:

- Early detection of cancer
- Molecular imaging probe and sensor development
- Discovery of targeted drugs
- Rationally developed clinical trials (e.g., stratification, intermediate endpoints)

Clinical Proteomics Today

- **No** single technology platform can satisfy all of the desired proteomic measurements
- **No** mature, “true” proteomic technology
- **No** performance criteria
  - Poor confidence in protein measurement results
  - Difficulty in assessing agreement of different experiments
  - Conflicting reports in the literature
  - Lost opportunities

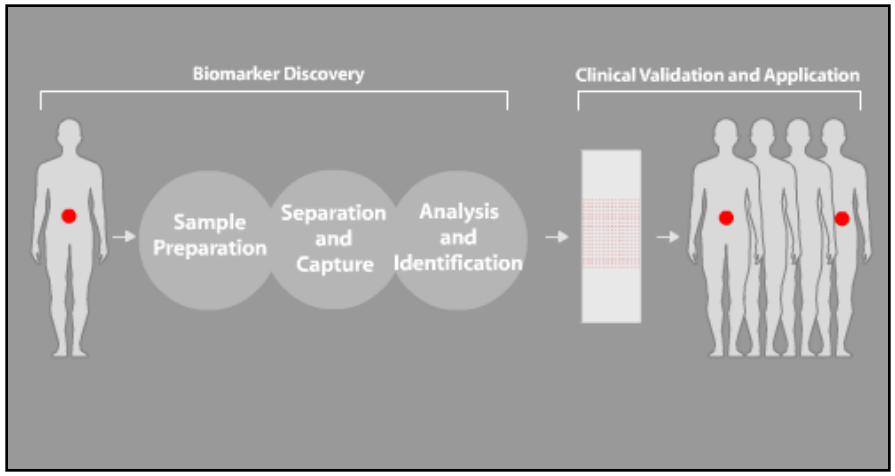


Scott D. Patterson & Ruedi H. Aebersold, Proteomics: the first decade and beyond, *Nature Genetics* 33, 311-323 (2003)

Sources of Variability

- **Experimental Design**
- **Platform evaluation**
  - Technical (resolution, accuracy, dynamic range, sensitivity, reproducibility)
  - Cross verification among platforms
- **Specimen collection, handling, storage and processing**
- **Data acquisition/analysis**
- **Data Reporting**

NCI Online Tutorial



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If proteomics to successfully make its way into clinical diagnostics, universally accepted metrics needed at many steps along pipeline to clarify experimental results and make them comparable.

Run to Run -- Instrument to Instrument -- Lab to Lab

Clinical Proteomic Technologies for Cancer (CPTC = Team Science)

- Launched 4Q/2006
- Define proteomic platform performance characteristics (developing SOPs, reference materials, reagents, standards, etc.) at every step/bottleneck of the biomarker discovery pipeline.
- All to be in Public Domain - Products and Data

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