

Top-Down Proteomics

The ups and downs



Ciências
ULisboa

Promises

- Full proteome characterization at protein level
- Complete identification of proteoforms
- Characterization of protein networks
- Complete identification of PTMs
- Protein turnover
 - The lifetime of a protein



<http://www.kelleher.northwestern.edu/>

<https://prosightptm2.northwestern.edu/>

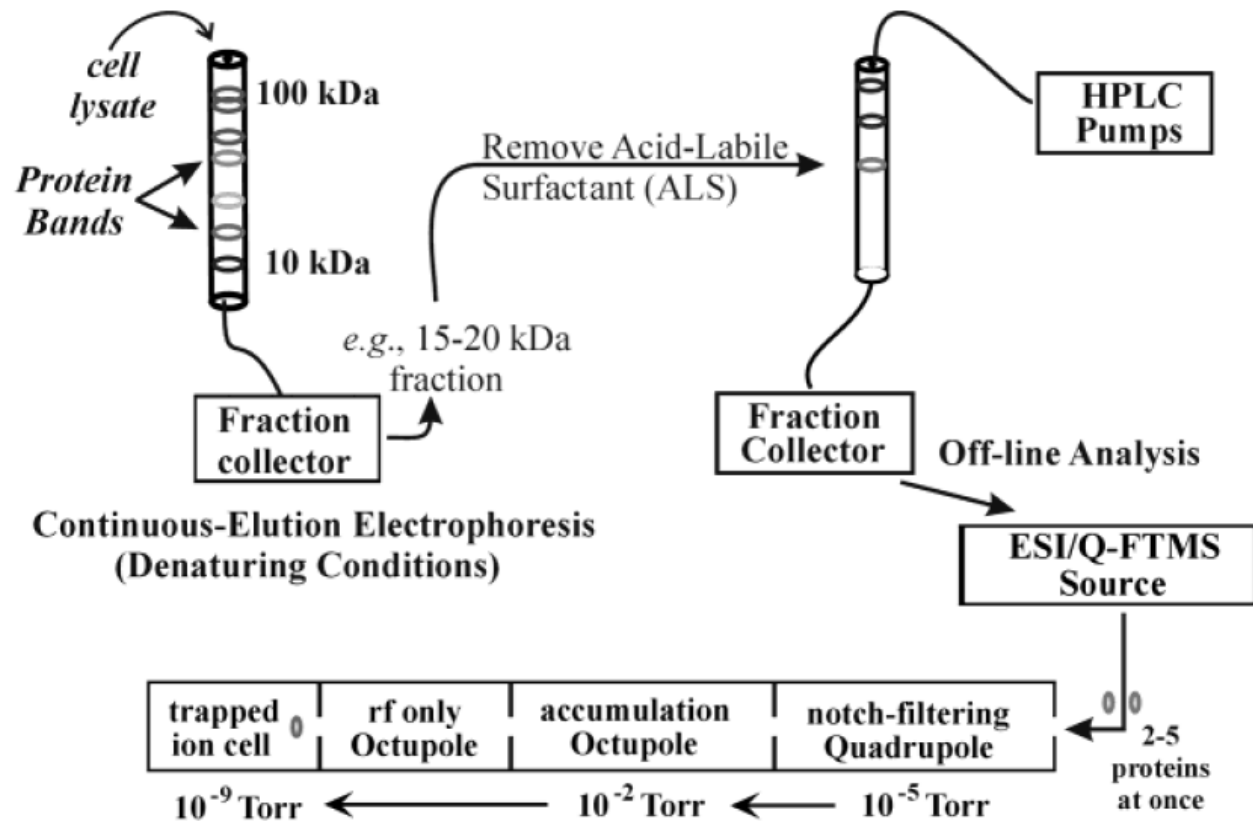


Neil Kelleher

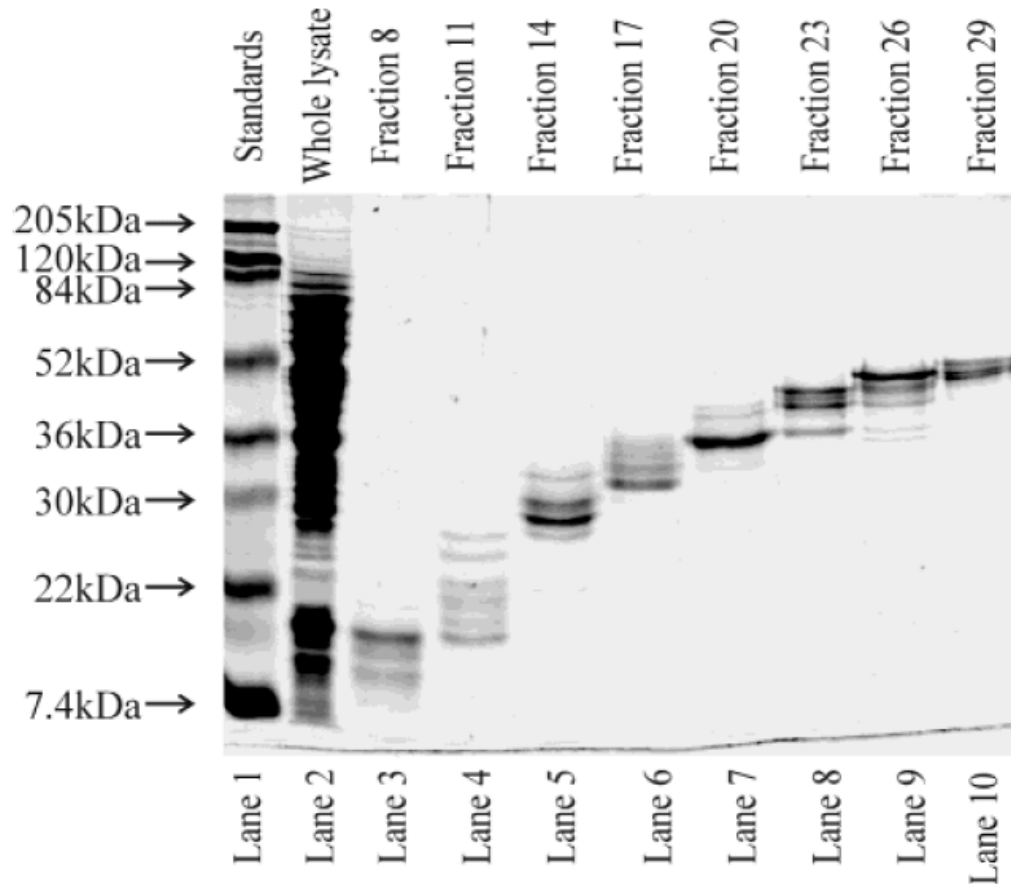
Challenges

- Protein separation technologies
 - Electrophoretic
 - Chromatographic
- Mass spectrometry
 - nanoESI
 - Ultra-high resolution
 - MSMS
 - CID
 - ECD
 - ETD

Protein separation for top-down

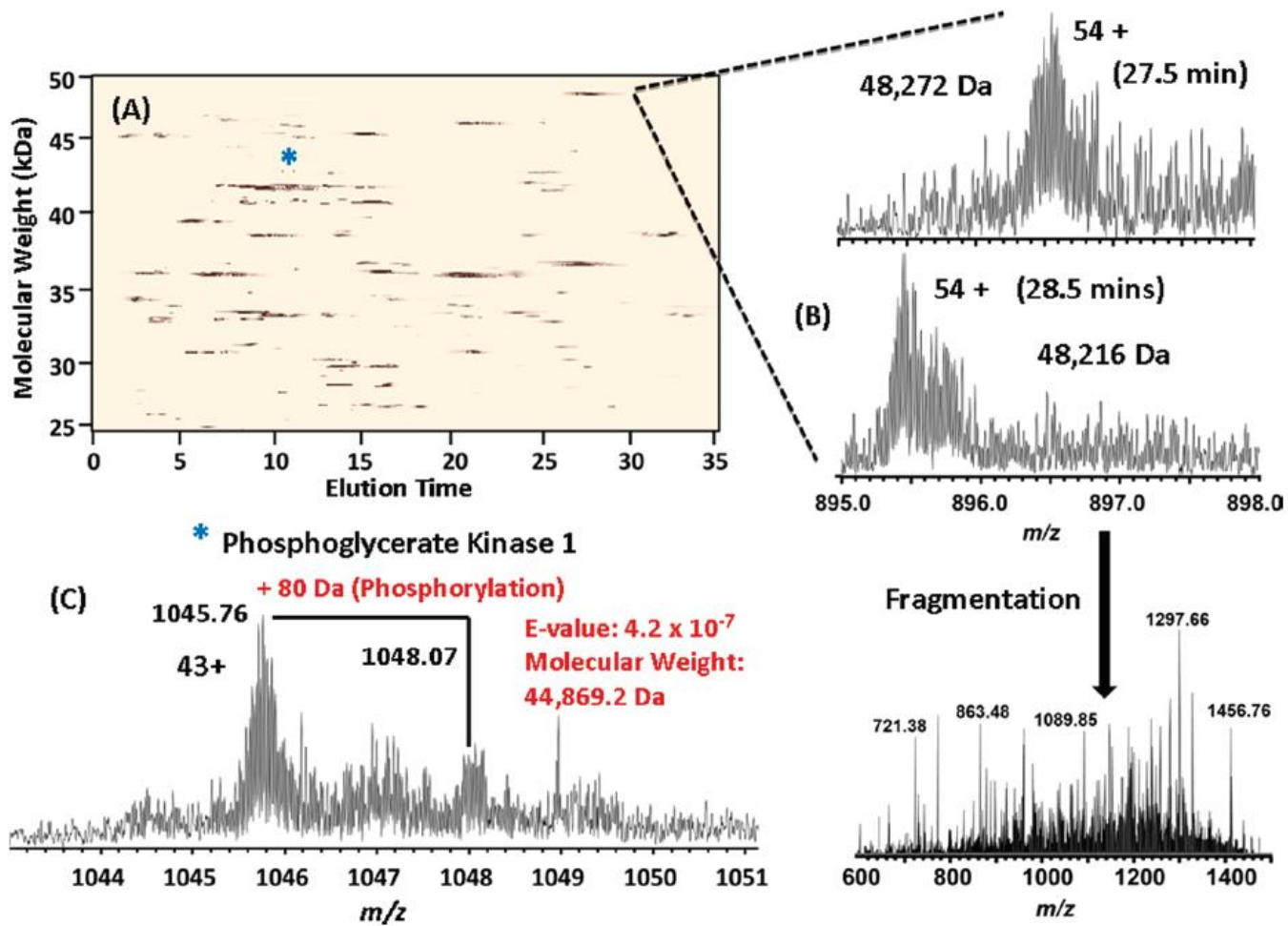


Yeast proteome

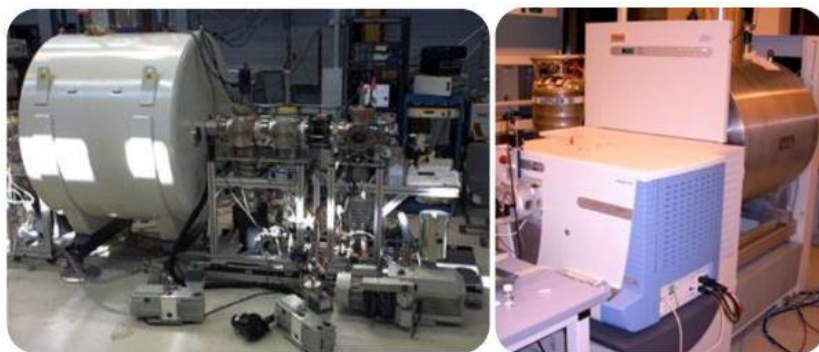


6.000 proteins...
20.000 proteoforms
400 identified

Data...



Improvements: MS

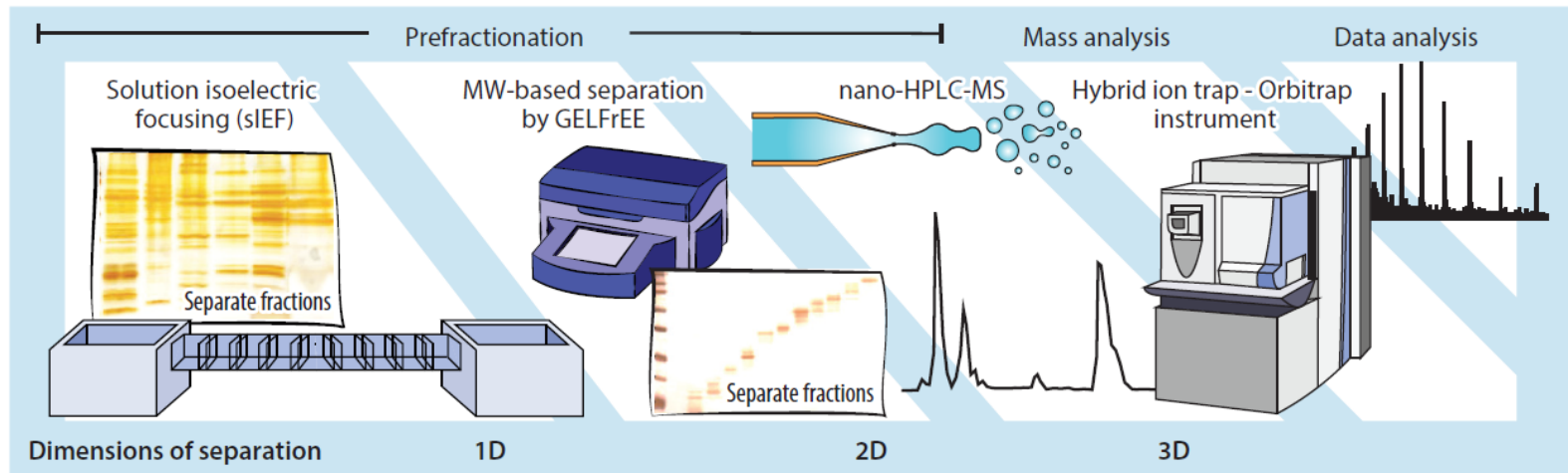


From FTICR
To
Orbitrap...



Almost tens of thousands...

Improvements: Separation and MS



Future directions

- Proteome analysis
- Specific proteins
- Native complexes

