

BioMed Proteomics Core Facility (PCF)

Nicholas DaSilva, PhD

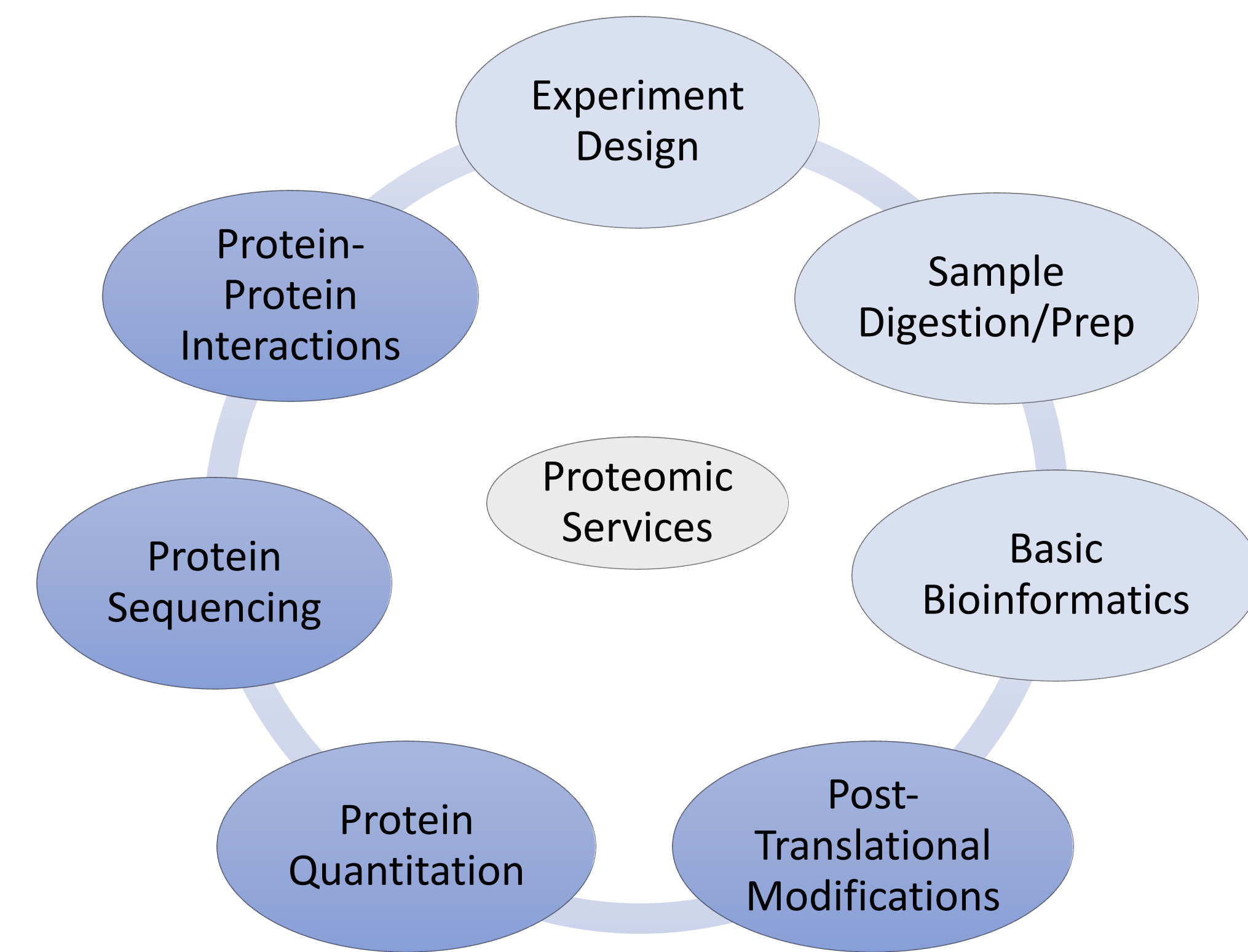
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LEGORRETA
CANCER CENTER
BROWN UNIVERSITY

Overview

The Proteomics Core Facility (PCF) is a shared resource that offers access to advanced mass spectrometry for users across the LCC and beyond. It aids in exploring protein identity, quantity, and function in various disease models.



Value Added

- Streamlined Digestion, Desalting, LC/MS, and Data Analysis Workflow
- Reduced Turnaround Times
- Consultation on Experiment Design, Grant Support, and Troubleshooting

Major Equipment /Technologies

- Thermo Fisher Q Exactive Orbitrap
- Thermo Fisher UltiMate 3000 UHPLC
- Proteomics analysis tools: MaxQuant, Proteome Discoverer, SEQUEST, MASCOT
- Protein Digestion Platform: Semi Automated Protifi SDS-Trap (S-Trap) + Tecan A200

Key Personnel

- Nicholas DaSilva, PhD (Director and Operator)
- Arthur Salomon, PhD (Faculty Director)
- Advisory Board (Edward Hawrot, Pamela Swiatek, Robert Sobol, Gaurav Choudhary, Bharat Ramratnam, Patrycja Dubielecka, George Lisi, Robbert Creton, Joseph Schrader (URI), Christopher Reid (Bryant))

Scientific Impact

Discovery Proteomics of mouse oocytes (Pilot)

Protein Profiling of Extracellular Vesicles

Bile Acid Proteomics from Mice

Treated vs non-treated ovarian cancer cell Proteomics

Temporal Proteomics in stressed vs non-stressed plant pollen

Protein Identification from cell fraction Gel Bands

Interactomics via IP Pull Down

Secretomics from Cell Culture Media

Phosphopeptide Enrichment and Quantitation with TiO₂

Differential Protein Abundance in Live and Formaldehyde Fixed Sea Urchin Spines

Rates

| Service (per sample, 4/2023) | Internal Academic | External Academic | Commercial |
|---------------------------------|-------------------|-------------------|------------|
| Basic | \$93 | \$148 | \$237 |
| Complete | \$113 | \$179 | \$286 |
| Phosphoproteomics | \$189 | \$301 | \$481 |
| Self-Use | \$25 | \$39 | \$63 |
| Custom Services | \$76 | \$122 | \$194 |

Deliverables

All Services include Sample Prep

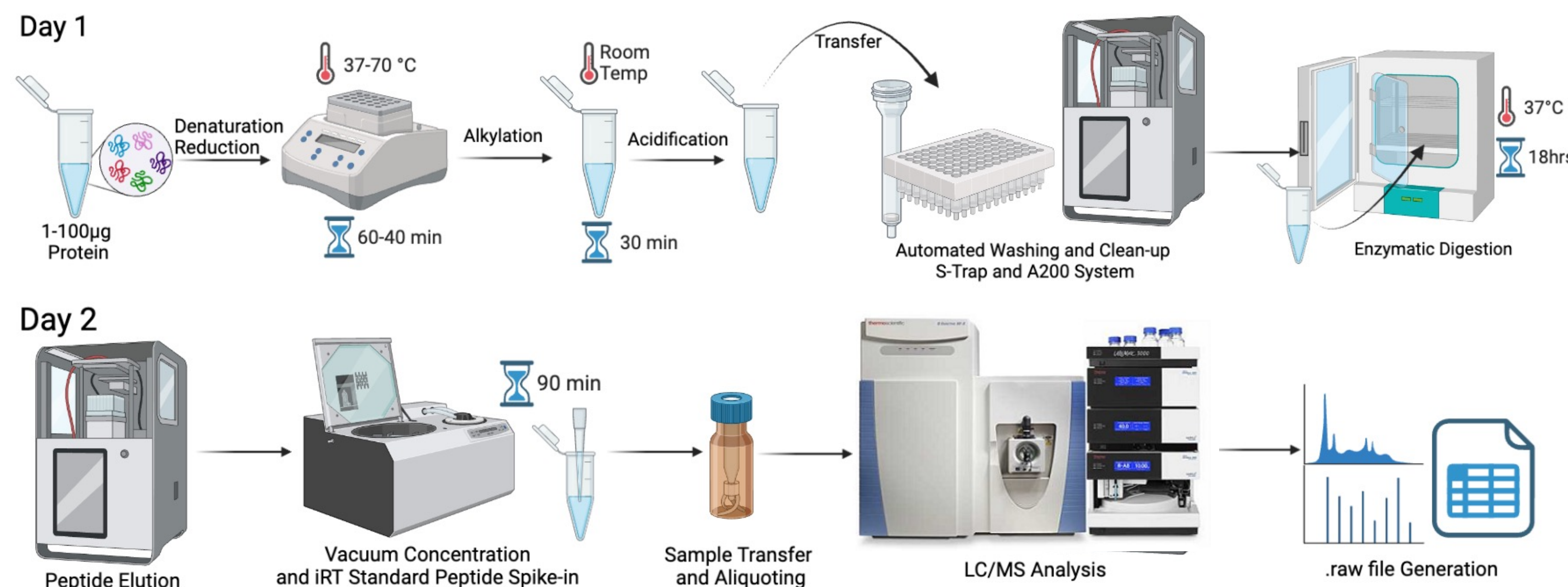
RAW Data Only

RAW Data+Excel Report

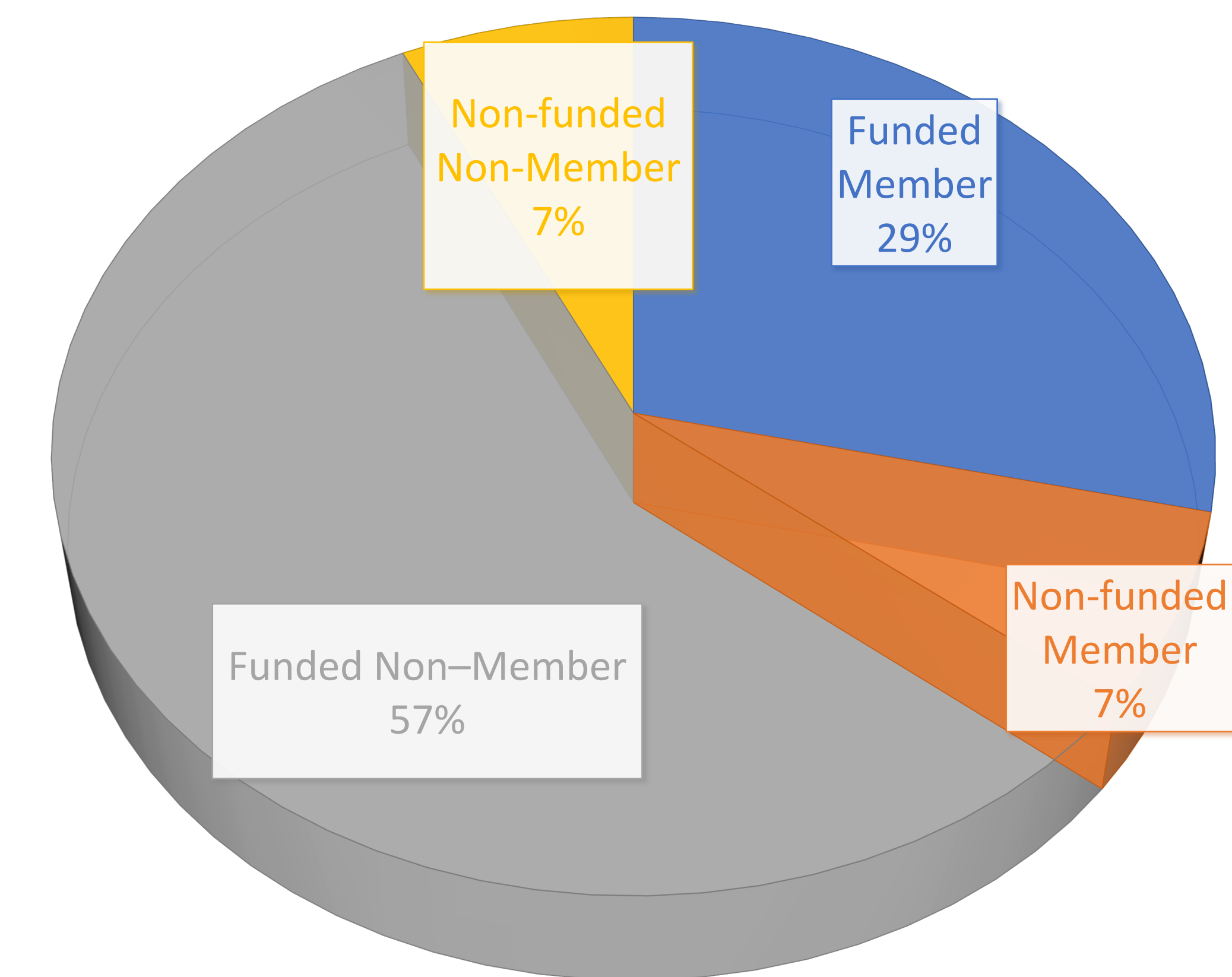
RAW Data+Report+Sites

Additional Analysis
Analytical Development

Workflow



User Profile



Total Users: 14

Cancer Center Members Users: 5 (29%)

Total Users with Peer-Reviewed Funding: 12 (86%)

Affiliations: NIH/NICHD, Brown University (MCB, Neuroscience), WIH, RI Hospital, VA Providence

Future Plans

- Automation of Protein Digestion (A200) and Analysis (Spectronaut (DIA), Spectromine (DDA))
- Expand Single Cell Proteomic Capabilities (CellenOne)
- Integration with iLabs for project management
- \$1.4M S10 Instrumentation Grant for Eclipse Tribrid Mass Spectrometer
- Reduce Data Analysis Turnaround times

