



Nanoxis

Membrane protein solutions

Nanoxis AB

Advanced Solutions for Membrane Protein Sample Preparation and Analysis





Nanoxis

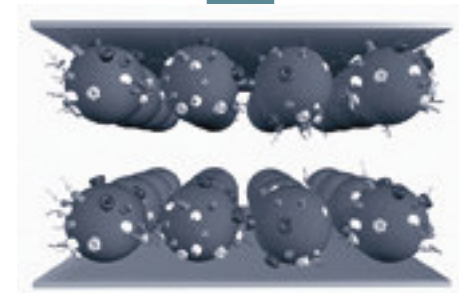
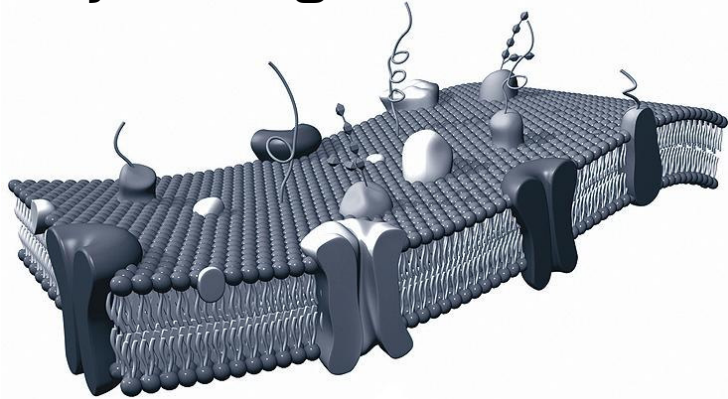
Membrane protein solutions

LPI™ (lipid-based protein immobilization) Technology

Immobilized Target

Functional Membrane Proteins

Any Biological Membrane



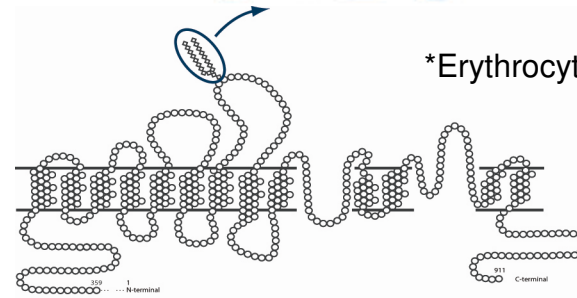
Research

Interest



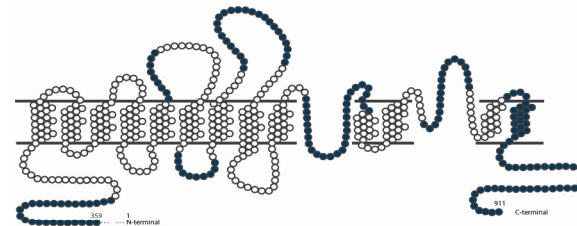
Multi-Step / Multi Protease Digestion

Sugar removed by **PNGase F**

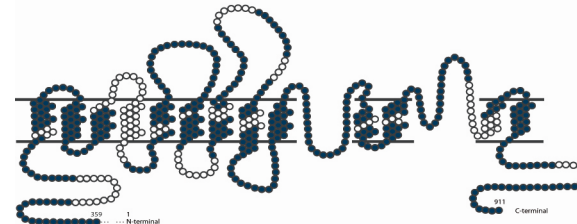


*Erythrocyte Anion exchanger

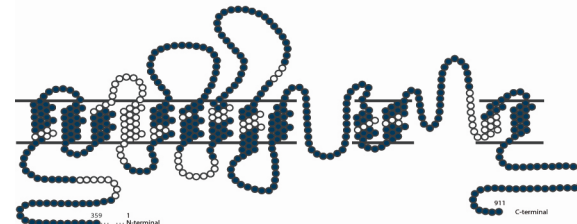
Exposed loops digested by **Trypsin**



Transmembrane parts digested by **Pepsin**



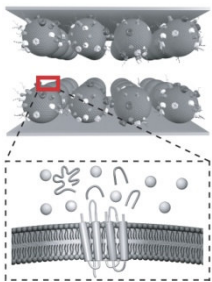
Total sequence coverage >80%



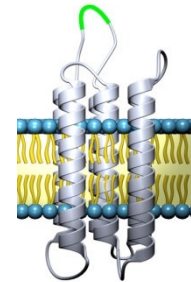


Antigen epitope identification

Nanoxis' approach



1. B3AT_HUMAN	Mass: 101727	Score: 625
Queries matched: 71		
Peptide		
1. K.LSVDPGFK.V		
2. R.AAATLMSERV + Oxidation (M)		
3. K.ASTPGAAAIQEVK.E		
...		
XX. K.ATFDEEEGRDEYDEVAMPV. + Oxidation (M)		

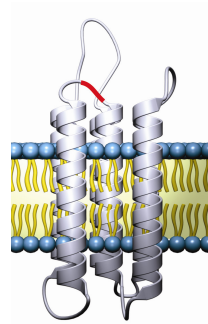
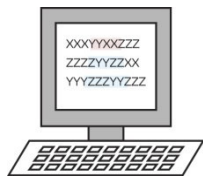


Peptides exposed in the 3D structure are digested and identified by LC-MS/MS.

The identified epitope is highly accessible by the antibody.

Specific and high affinity antibodies.

Traditional approach



Prediction based on hydrophobicity, similarity and statistics. In silico only.

Selected exposed peptide might not be the most accessible.

Unspecific and low affinity antibodies.

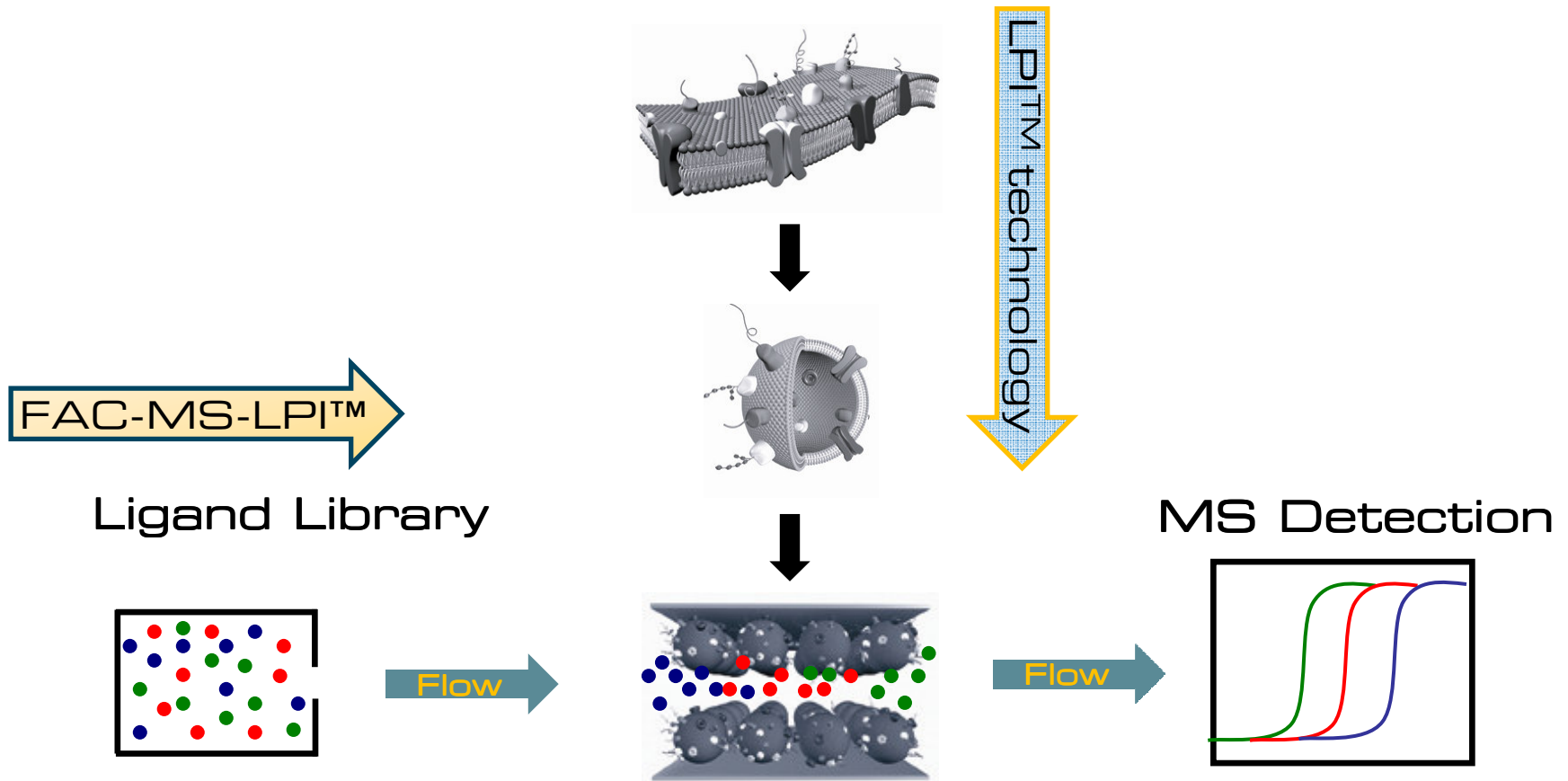


Nanoxis
Membrane protein solutions



Ligand screening

Frontal Affinity Chromatography, FAC-MS-LPI™





Functional assays

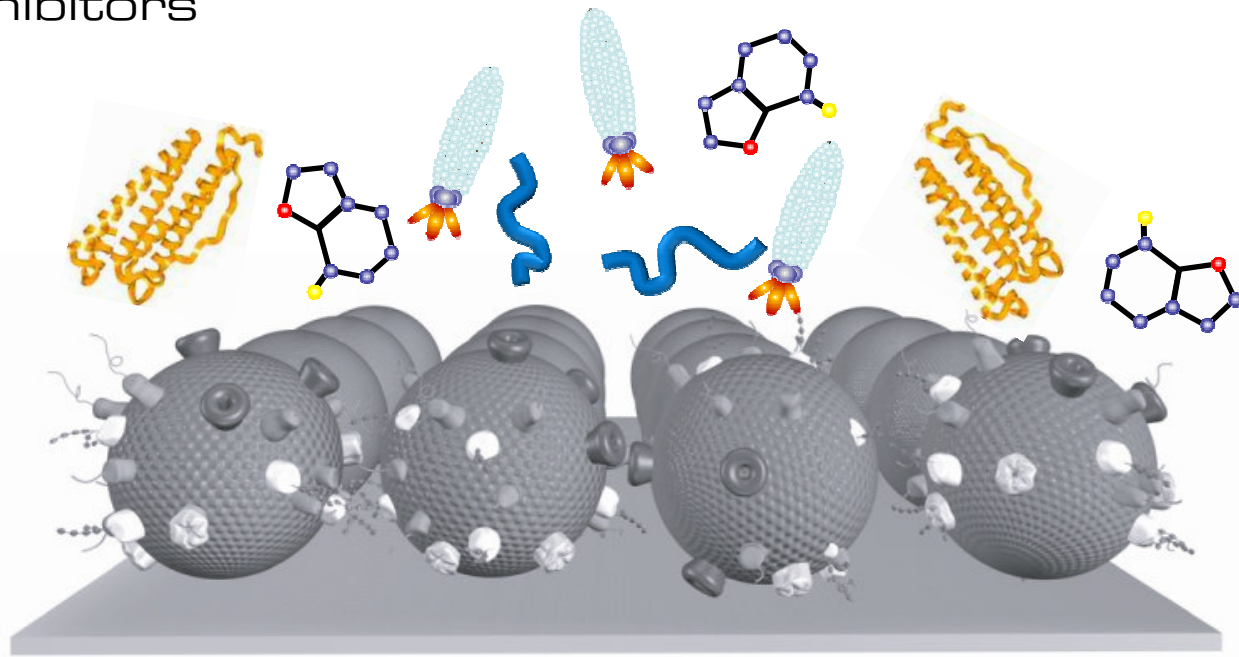
Binders

Proteins

Peptides

Phages Particles

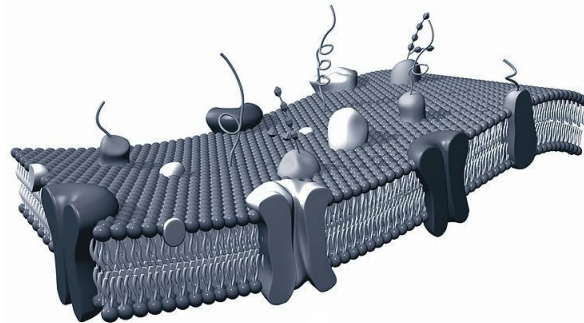
Ligands/Inhibitors





Quantitative proteomics

Biological Membrane of Interest

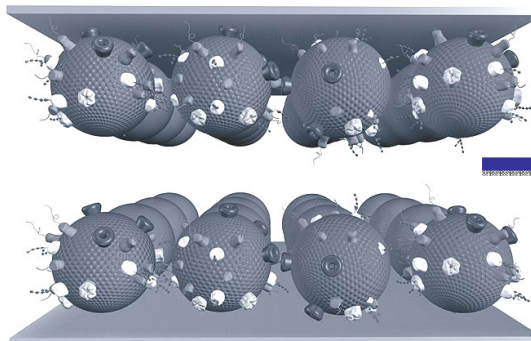


Native Extra Cellular
Domains Exposed

Protein of Interest



Tryptic Digest



Signature Peptide
(Standard Protein)
Protein of Interest



Quantitative proteomics

Internal standard

- Characterize Membrane Proteins by MS
- Choose Carefully the Signature Peptide
- Peptide Synthesis,
- Signature Peptide ^{13}C , ^{15}N

Absolute quantitation

- Tryptic Fragments Labeled/Unlabeled
- Analyse Tryptic Fragments by MS
- Compare Tryptic Fragments



Quantitative Proteomics



Nanoxis
Membrane protein solutions



Lipid-based Protein Immobilization Technology (LPI™)

Membrane Protein Immobilization



Functional Membrane Proteins

Correct Structure with Exposed Extra cellular Domains



Any Biological Membrane



No use of Detergents



Rapid and Easy