FoxWare® Protein Footprinting Software

Hydroxyl Radical Protein Footprinting (HRPF) analysis software from GenNext Technologies—a user-friendly bioinformatics tool for interpreting results from Fast Photochemical Oxidation of Proteins (FPOP) experiments.

About FPOP HRPF HOS Data Analysis

Maximize the Results of your FPOP Experiments

FPOP HRPF is an emerging technique that elucidates biopharmaceutical higher order structures, biopharmaceutical aggregation, and ligand-protein interactions. Using hydroxyl radicals to label solvent exposed sides chains of 19 out of 20 natural amino acids, FPOP provides great protein coverage of solvent accessible residues.

Until the release of our FoxWare Software, the complexity of FPOP data required hours of laborious analysis to elucidate HOS information. Now, the analysis of your FPOP experimental results is just a click away.

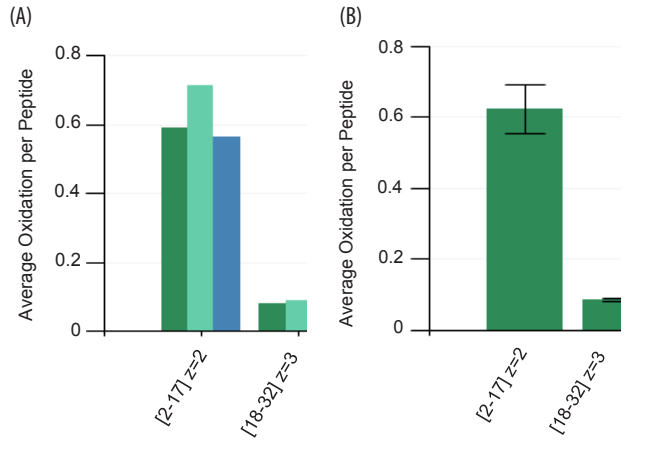

Figure 1: Histograms of (A) extent of peptide oxidation for individual runs and (B) average peptide oxidation between the replicate group.

FoxWare Software Features

Easily Perform Comparative HOS Analysis

Now with FoxWare Protein Footprinting Software, you can search for some or all possible FPOP modifications. FoxWare Software automatically calculates the extent of oxidation for each identified peptide and averages the oxidation between the replicate samples.

Each peptides' XIC and MS spectra are only clicks away providing a seamless path to investigate each modification.

XIC Retention Time, Peak Area, and Peak Intensity

With just a click, you can examine the XICs for both the unmodified and modified peptides. FoxWare® Protein Footprinting Software automatically evaluates and filters each XIC by its retention time, peak area, and MS1 spectra. You can easily unfilter or apply additional filters to any detected peak.

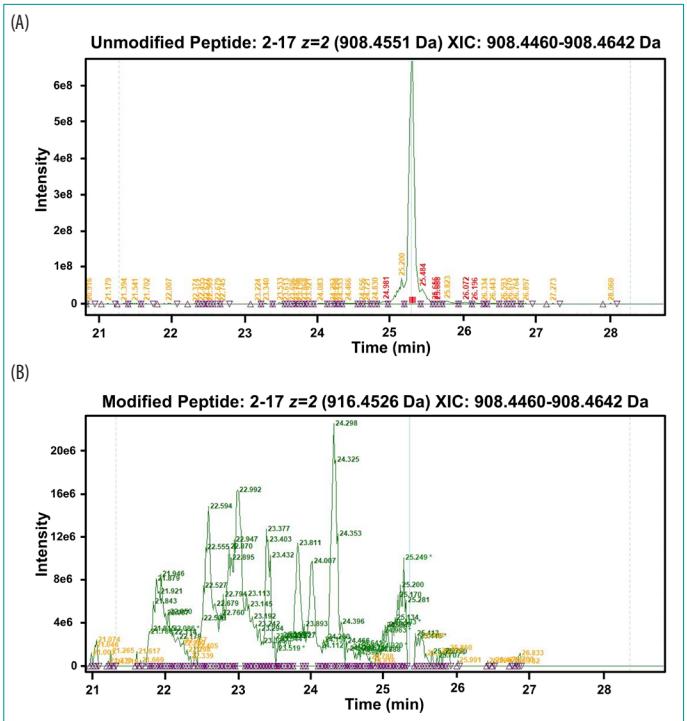

Figure 2: XIC of (A) unmodified peptide and (B) corresponding singly oxidized peptide.

Feature Detection and Isotopic Distribution

With the MS1 feature in the FoxWare® Protein Footprinting Software, the quality of identified XIC peaks can be easily monitored for greater identification confidence.

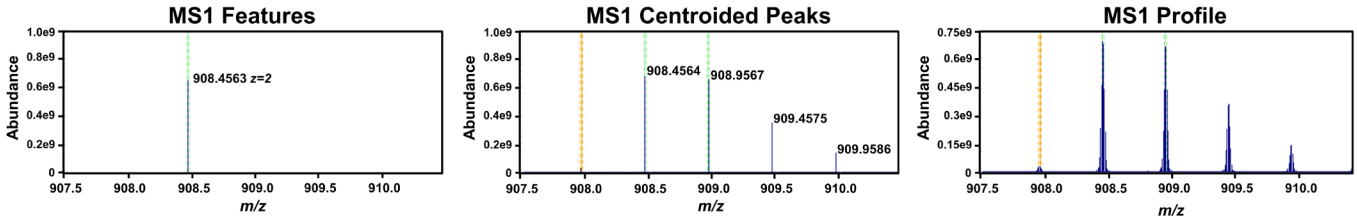

Figure 3: MS1 Feature detection and isotopic distribution of selected peptide.

Dose Response Curves

FoxWare Protein Footprinting Software creates hydroxyl radical dose response curves so you can easily track the change in oxidation with increasing hydroxyl radical exposure, thus creating an efficient test to ensure proteins remain natively folded during labeling.

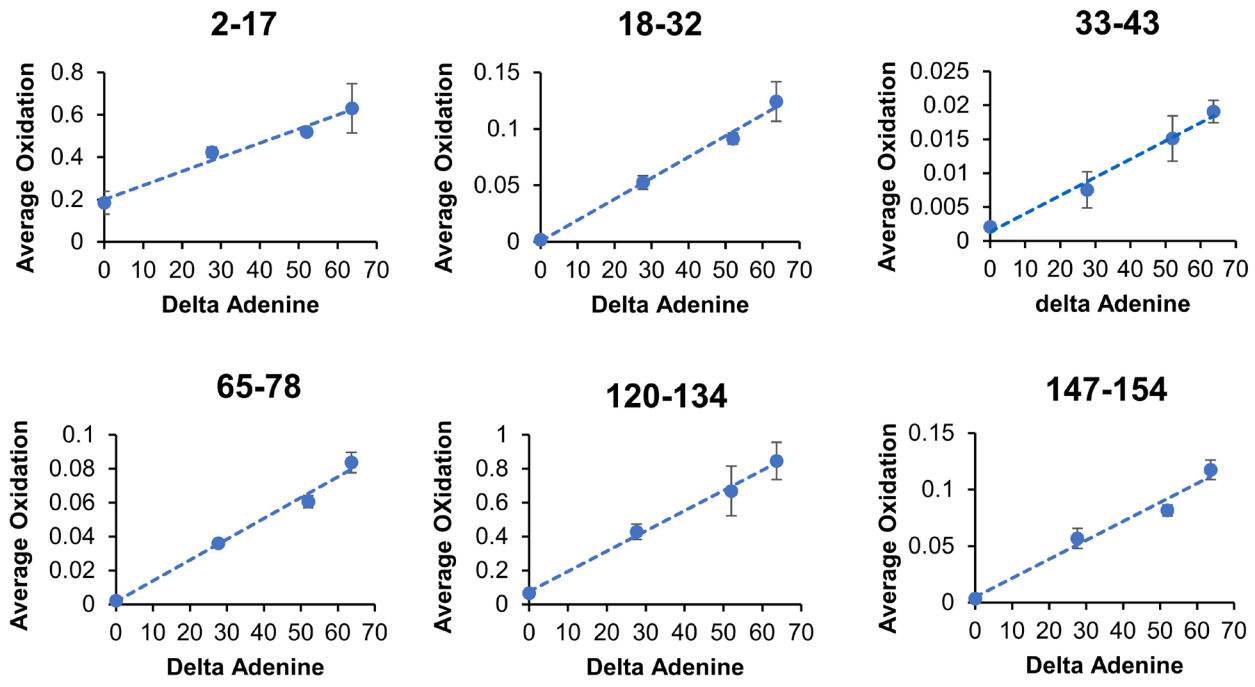

Figure 4: Change in average peptide oxidation over increasing hydroxyl radical dose. The change in adenine absorbance directly correlates to the effective concentration of hydroxyl radical. As the hydroxyl radical concentration increases the average peptide oxidation linearly increases.

Peptide Solvent Accessibility

For simplified observations of significant changes in peptide solvent accessibility between conditions, the software automatically generates illustrative Volcano Plots. These plots depict the p-value and fold change in oxidation (i.e., solvent accessibility) for each peptide, making it easy to pinpoint protein regions that are differentially affected.

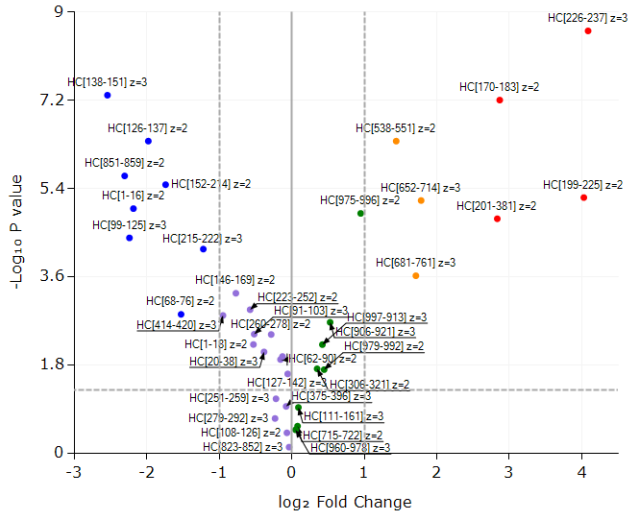

Figure 5: Volcano Plot comparing the average peptide oxidation between two conditions highlighting regions with significant change in solvent accessibility.

Discover the Benefits of HRPF

GenNext pioneered a superior, compact, cost-effective, and safe means of performing advanced HRPF Studies with the Flash Oxidation (Fox®) Protein Footprinting System.

Contact us to accelerate your biopharmaceutical and biosimilar development and protein conformational research.