

Revolutionizing Protein Higher Order Structural Analysis with Fox[®] Technology

Products and services for Hydroxyl Radical Protein Footprinting (HRPF) to accelerate biopharmaceutical/biosimilar development and protein conformational research



Fig 1: Flash Oxidation (Fox[®]) Protein Footprinting System

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GenNext pioneered a superior, compact, cost-effective, and safe means of performing Hydroxyl Radical Protein Footprinting (HRPF) with our proprietary Flash Oxidation (Fox) Protein Footprinting System.

The Fox approach to HRPF enables the study of dynamic, in-solution structure and interactions for a wide range of protein sizes, states, and concentrations which may be problematic or impossible to study with other HOS techniques. Fox[®] Technology generates actionable data related to a protein's stability, safety, and biological function.

The Fox family of products includes the Fox System comprised of three modules (the Photolysis System, Radical Dosimeter, and Product Collector), along with FoxWare[®] Software and instrument accessories for lab-built FPOP systems.

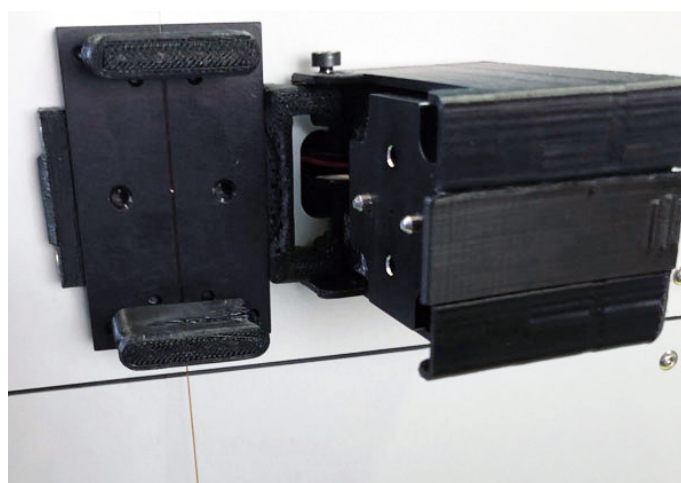


Fig 2: Fox[®] Photolysis System

Fox[®] Photolysis System

Laser-free Fast Photochemical Oxidation of Proteins

Our proprietary high energy plasma photolysis source creates impressive •OH radical loads at a fraction of the cost of other methods. Our Fox Photolysis System photocatalyzes the creation of •OH radicals from H₂O₂ in a highly controlled and cost-effective manner.

Fox[®] Radical Dosimeter

Precisely Measure Hydroxyl Radical Concentration

Superior reproducibility is achieved with the Fox Radical Dosimeter—the world’s first •OH radical measurement system that automatically controls the generation of effective •OH radical concentration in the face of unpredictable and varying background scavenging.

The dosimeter delivers near real-time measurement of •OH radical concentration, making it simple to detect problems with biopharmaceutical solutions or assay conditions before mass spectrometric analysis is performed, vastly improving ease-of-use while simultaneously ensuring labeling confidence and fidelity.



Fig 3: Fox[®] Radical Dosimeter

Fox[®] Automated Product Collector

Automatically Collect & Deposit Labeled Samples

The Fox Automated Product Collector is an easy-to-use compact device that automatically collects and deposits labeled sample into designated microtubes, eliminating sample collection workload while delivering maximum product purity.

The Collector is controlled by the same software that coordinates the functionalities of the Photolysis, Radical Dosimeter, and integrated microfluidics systems. This single software program eliminates the need to monitor photolysis processing time to insure proper collection of labeled product without undue introduction of unlabeled sample.

User selected product volume is precisely delivered to collection tubes containing quenching solution, enabling reproducible and predictable quenching for each labeled sample.



Fig 4: Fox[®] Automated Product Collector

FoxWare[®] Protein Footprinting Software

Easily Perform Comparative HOS Analysis

Traditionally, processing HRPF data has been agonizingly laborious. Researchers were compelled to use a piecemeal approach to understanding the data by arduously stitching together results from multiple proteomics data analysis packages and manually manipulating data in spreadsheets.

Moreover, multi-purpose proteomics software packages that are broad in scope fail to fully address specific workflow, chemical labeling/artifacts, and comparative study requirements of HRPF HOS analysis.

To address these shortcomings, GenNext Technologies developed FoxWare Protein Footprinting Software, the first commercially-available software designed for HRPF HOS data analysis. Intuitive algorithms enable the qualitative and quantitative comparative studies of HOS footprint to answer key questions in biopharmaceutical and biosimilar research.

The software is completely compatible with our Fox[®] System as well as laser-based FPOP HRPF methods. Bioinformatics and data processing bottlenecks are being eradicated, and actionable HRPF data are keystrokes away with FoxWare Protein Footprinting Software.

Fox[®] HRPF Accessories

Modules & Software for Lab-Built HRPF Systems

For pioneering scientists currently employing lab-made HRPF instruments, GenNext offers a series of accessories to accelerate your research:

- Radical Dosimeter Module
- Product Collector Module
- Module Controller
- FoxWare Protein Footprinting Software

GenNext's Radical Dosimeter and Product Collector modules are specifically designed to enable convenient integration with existing HRPF setups.

The small footprint of the Dosimeter and Collector Modules can be easily mounted on optical breadboards directly in-line with existing HRPF capillary systems. The Radical Dosimeter is placed immediately downstream of the laser photolysis region and the Product Collector receives the terminal end of the system's capillary.

Under software control, our Module Controller automates the entire HRPF process for more reproducible results. The controller coordinates the activities of all of your GenNext components, including the Dosimeter and Product Collector, as well as your system's laser and syringe pump.

The near real-time dosimetry allows users to monitor effective labeling before MS analysis — saving time, money, and precious sample. Each labeling experiment can be performed flawlessly without the negative impact of uncontrolled scavenging or human error.



Fig 5: Fox[®] HRPF Accessories

Fox® Services Program

Fast & Cost-Effective Access to Fox Technology

Use our services offering to access our proprietary HRPf technology to solve valuable and intractable problems — while constraining upfront costs and risk — as you evaluate the impact of Fox Technology on your structural biology research.

- **Validation:** Test the impact of Fox Technology on the efficacy and safety of your biologics
- **Low risk:** Experience a low-risk and high-reward technology adoption pathway
- **Gain competency:** Emerge as a leader in structural biology with novel and high-impact results

Take the First Step

Let our team demonstrate how the Fox platform can transform your biopharmaceutical research. We're happy to explore your HRPf application area (see table on right) and take a deep dive on your specific project requirements.

Employing an affordable fee-for-service structure, every project uses a research collaboration model. We will define a specific multi-phase approach that facilitates timely turnaround of valuable research data. Regularly scheduled check-points enable a joint review of experimental results and continued program refinement.

Service clients also qualify for priority instrumentation access at preferential pricing when ready to bring the analytical power of Fox Technology in-house.

Fox® Technology In Biosimilar Discovery & Development

Fox Discovery Applications	Fox Development Applications
Rx Binding Validation <ul style="list-style-type: none"> • Orthosteric • Allosteric • Conformational Change • GPCR cascade 	Expression/Harvest Optimization <ul style="list-style-type: none"> • HOS Integrity at Peptide/Residue Levels • Differential Process Analysis
mAb Therapeutics <ul style="list-style-type: none"> • Epitope Mapping • Paratope Mapping • Affinity Determination 	Therapeutic Aggregation Studies <ul style="list-style-type: none"> • Interactive Domains/Residues • Excipient/Amino Acid Effects
Conformational Analysis <ul style="list-style-type: none"> • Conformer Detection • Discrete Functional Analysis 	Thermal Stability Studies <ul style="list-style-type: none"> • Thermal-Induced Changes in Conformation
Biosimilar Assessment <ul style="list-style-type: none"> • Candidate validation via HOS 	Therapeutic Formulation <ul style="list-style-type: none"> • Concentration • Excipients • Delivery System

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Discover the Benefits of Protein Footprinting

Contact us for products and services to investigate biopharmaceutical structure, interactions, folding, aggregation, formulation, and delivery.