



GenNext[®]
SMA TECHNOLOGIES

The Game-Changing AutoFox[®] System:

Reinventing Protein Higher
Order Structural Analysis

The Evolution of Flash Oxidation (Fox®) Technology



Actionable protein Higher Order Structure (HOS) data for advanced drug discovery and development

GenNext is on the leading-edge of innovation by delivering a superior, cost-effective, laser-free, and fully automated means of performing Hydroxyl Radical Protein Footprinting (HRPF) via our proprietary Flash Oxidation (Fox) technology.

The Fox-based HRPF method uses hydroxyl radicals ($\cdot\text{OH}$) to examine the solvent accessibility of amino acid side chains within a protein. By selectively abstracting hydrogen atoms from exposed amino acids, $\cdot\text{OH}$ radicals induce the formation of oxidation products that can be detected and analyzed for vital insights into protein structure and dynamics.

Our proven approach to protein Higher Order Structure (HOS) studies means that users, for the first time, can perform in-solution structural and interaction analysis on a wide range of protein sizes, conformational states, and concentrations that may be problematic or impossible to study with other methods. **Fox Technology generates actionable data related to a protein's structure, stability, and interaction giving insights into the protein's biological function and therapeutic efficacy/safety.**

Progressing from First to Second Generation Fox Technology

Big leaps in functionality, performance, and ease-of-use

Comprised of a user-friendly benchtop instrument coupled with intuitive data analysis software, our second-generation instrument, the AutoFox® System, has grown into a more robust and hands-free tool including:

- **Complete automation without operator intervention** to process up to 48 different samples at the push of a button.
- **No need for finicky fluidic and optical connections** with the new optofluidic chip.
- **No need to premix samples with H_2O_2** with on-board mixing on the optofluidic chip.
- **Samples can be labeled in seconds** instead of minutes with an increased illuminated flash volume from 0.1 μL to $\sim 3 \mu\text{L}$.
- **Flash lamp intensity automatically adjusts** for changes in background scavenging with real-time radical dosimetry closed-loop control.



Designed for high-throughput applications, the AutoFox System is a powerful tool for antibody-antigen epitope and paratope mapping, drug target engagement and allostery studies, protein interaction analysis, protein aggregation studies, PROTAC and molecular glue studies, and many more.

Advancements for High-Throughput & Reproducible HRPF

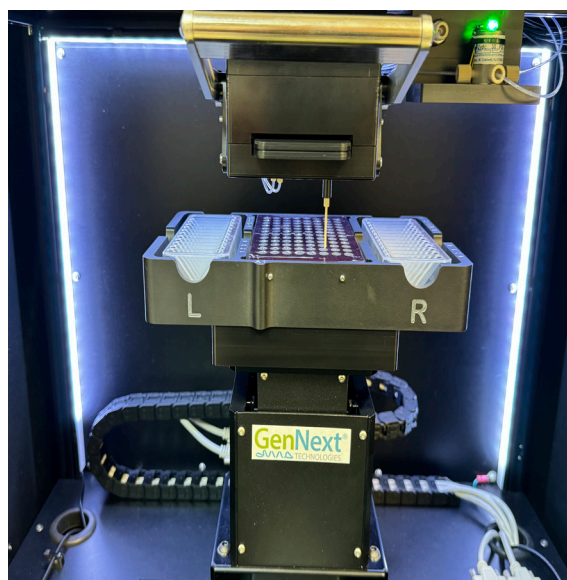
AutoFox[®] Optofluidic Chip

Plug-and-Play HRPF

At the heart of the AutoFox system is our proprietary optofluidic chip that eliminates the need for fused silica capillaries typically employed in HRPF studies. This compact, reusable microfluidic device is comprised of the following:

- **on-board, high efficiency, microfluidic mixer** for combining protein samples with labeling reagents,
- **serpentine photolysis cell** that labels up to 30 μ L in 10 seconds, and
- **integrated dosimetry cell** that provides real-time assessment of effective radical load, ensuring robust, reproducible, and actionable results even in the face of varying background scavenging.

The self-aligning mechanism of the AutoFox optofluidic chip makes changing chips fast and simple. The chip is easily installed and removed from the system via a compact manifold that ensures proper fit to optical and fluidic components. Gone are the frustrating days of installing capillaries with finicky optical and fluidic attachments.



AutoFox[®] Robotics

Automated labeling at the push of a button

The system's automated, high-throughput capacity significantly reduces hands-on time and facilitates easy workflow integration by **labeling each sample in 30 seconds, with the capacity to label up to 48 different samples.**

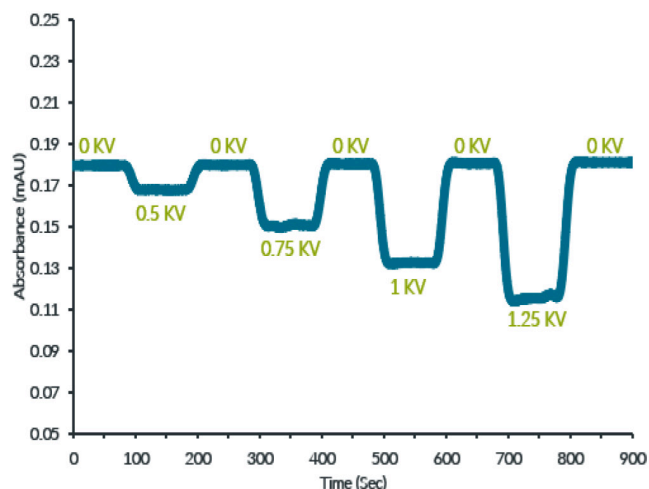
The AutoFox sample deck is driven by a custom three-axis robot that moves samples, reagents, and quenching solutions directly to and from the optofluidic chip, automating full HRPF labeling and minimizing experimental error.

Samples and quench solutions are presented using a 96-well microtiter plate. Twenty-four additional 3 mL wells are provided for on-deck collection of waste and storage of chip wash solutions. The self-aligning chip is designed for precise registration of optical and fluidic trains and is easily installed or removed from the clamshell assembly.

On-Chip, Real-Time Dosimetry

Closed-loop control of effective radical yield

Based upon proprietary radical dosimetry technology, the AutoFox[®] system photometrically determines effective radical concentration in real-time and automatically adjusts flash fluence to achieve reproducible radical load even in the face of varying protein load, introduction of protein ligands, as well as variation in buffer composition and excipients. Real time dosimeter display enables easy inspection and validation of desired radical load.

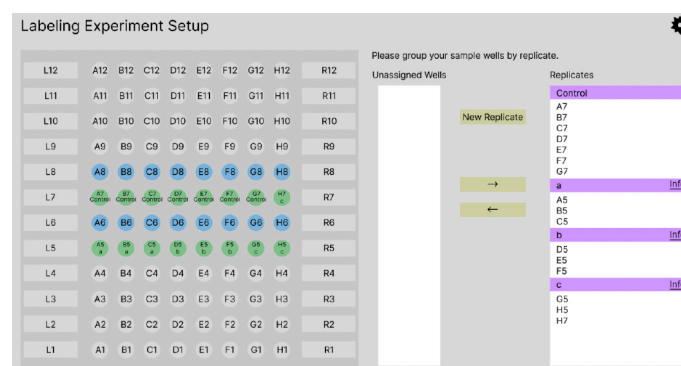


Intuitive Control & FoxWare[®] Software

Easy creation of method and sequence files, along with intuitive downstream data analysis

The AutoFox System is PC-controlled by an easy-to-use interface that runs on a laptop computer. Method and sequence file architecture makes for simple and reliable system programming and operation.

FoxWare[®] Software is a powerful bioinformatics tool developed specifically to meet the demands of HRPF analysis. The software removes data processing bottlenecks and generates actionable results with a user-friendly interface and built-in analysis tools. Intuitive algorithms enable qualitative and quantitative comparative studies of the HOS footprint to address key requirements in biopharmaceutical and biosimilar research.



Purchase a System or Service Contract

Harness the power of fully automated, chip-based HRPF with the new AutoFox[®] System. Save time and money, enjoy a much simplified and faster workflow, and produce robust and reproducible HOS data.

Contact us to learn how our technology can easily fit into your lab's workflow or test-drive the AutoFox System on an outsourced project basis.