BioAnalysis Establishes AUC as Game-Changing Platform for Targeted Protein Degradation Research

Study published in European Biophysics Journal represents significant advancement in analytical methods for rapidly growing therapeutic modality.

PHILADELPHIA, PA, UNITED STATES, March 31, 2025 /EINPresswire.com/ -- BioAnalysis LLC, a leading biophysics, chromatography, and mass spectrometry collaborative research organization, today announced the publication of groundbreaking research establishing analytical ultracentrifugation (AUC) as a comprehensive platform for characterizing targeted protein degradation mechanisms. The study, published in the European Biophysics Journal, represents a significant advancement in analytical methods for this rapidly growing therapeutic modality.

The research, led by BioAnalysis in collaboration with scientists from AbbVie, demonstrates that sedimentation velocity AUC and sedimentation equilibrium AUC can successfully profile degrader-induced ternary complex formation — the critical mechanism in targeted protein degradation therapies.

"Targeted protein degradation has emerged as one of the most promising frontiers in drug discovery, but understanding the precise mechanisms of ternary complex formation has been challenging," said Lake Paul, founder and CEO of BioAnalysis and corresponding author on the paper. "Our research demonstrates that AUC offers a unique and powerful approach that has been surprisingly overlooked in this field."

Breakthrough Methodology for Ternary Complex Formation
The study, titled "A paradigm shift: analytical ultracentrifugation as a multi-attribute platform

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> *Lake Paul, PhD | CEO and Founder of BioAnalysis*

method in targeted protein degradation," details how AUC enables simultaneous evaluation including:

- Sample purity assessment and detection of aggregation
- Direct quantification of percent ternary complex formation
- Determination of binding and kinetic rate constants
- Detailed hydrodynamic characterization
- Confirmation of 1:1 stoichiometry in ternary complexes

The methodology delivers significant advantages over traditional approaches by eliminating the need for protein labeling or surface immobilization, while providing comprehensive data from a single experimental platform.

Rigorous Validation Supporting Scientific Excellence
The AUC methodology has been rigorously validated through:

- Comparison with established analytical techniques (AlphaLISA, TR-FRET)
- Direct determination of complex stoichiometry via SE-AUC
- Quantitative analysis of cooperative binding effects
- Hydrodynamic modeling correlating with Hydrogen Deuterium Exchange data

"This approach represents a significant advancement in how we characterize degrader compounds," notes Michael DeLion, director of analytics and research at BioAnalysis. "Through our Client Partnership approach, we've demonstrated that AUC can replace multiple orthogonal techniques, providing more comprehensive data while streamlining the analytical workflow. Our Rapid Delivery capabilities ensure clients receive these insights when they need them most."

Impact on Drug Development
Lead author Alexander Yarawsky emphasized the practical impact: "This isn't just an incremental improvement — it represents a fundamental shift in analytical capability. Researchers can now obtain deeper mechanistic insights with less time and material, potentially accelerating the drug development process."

Judith Ronau, senior scientist in biochemistry at AbbVie and co-author of the study, stated: "At AbbVie, we are committed to understanding the mechanism of degrader action through the development of assays designed to characterize each step of the process." When discussing ternary complex formation specifically, Ronau added, "While the broader degrader community has developed various assays for this step of the process, AUC has been overlooked."

The methodology is expected to have broad applications across targeted protein degradation research, including:

- Enhanced structure-activity relationship insights for compound optimization

- Improved screening efficiency for degrader candidates
- More robust data packages for regulatory submissions
- Better understanding of binding kinetics and cooperativity

The full paper, 'A paradigm shift: analytical ultracentrifugation as a multi-attribute platform method in targeted protein degradation,' is available in the European Biophysics Journal at https://doi.org/10.1007/s00249-025-01735-1

About BioAnalysis LLC
BioAnalysis, based in Philadelphia's Kensington neighborhood, is a collaborative research organization providing analytical services for gene therapy and biotherapeutics development. Founded in 2019, the company combines scientific excellence with community impact, serving clients worldwide while actively creating opportunities in the life sciences industry for local community members.

Specializing in biophysics, chromatography and mass spectrometry applications for gene therapy and biotherapeutics, BioAnalysis offers deep expertise in method development, cGMP validation and testing. The company is guided by five core pillars: Scientific Excellence, Client Partnership, Rapid Delivery, Value Always and Community Impact.

For more information, visit www.bioanalysisllc.com.

Craig Schrolucke
Inspiration Foundry
+1 937-254-7583
email us here