LifeSensors TUBEs:
TANDEM UBIQUITIN BINDING ENTITIES

POLYUBIQUITIN BINDING DOMAINS

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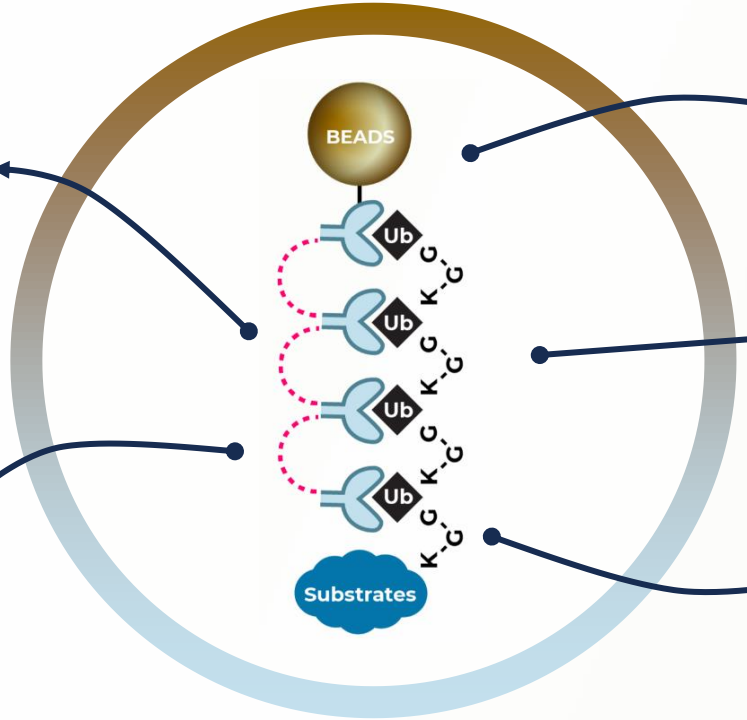
LifeSensors Inc. Mission

- Leadership in UPS, PROTACs, DUBTACs, and Molecular Glues
- Drug Discovery, UPS Enzymes, DUBs, PROTAC Screening Services
- Biomarker Development and Collaborative Research
- ~500 Products, DUBs, E3 ligases, Ubiquitin Affinity Matrices (TUBEs), Assay Kits and Proprietary Protein Expression Systems (SUMO)
- Profiling Compounds Against Ubiquitin Ligases and DUBs

TUBEs:
TANDEM UBIQUITIN BINDING ENTITIES

Ubiquitin Binding domains - specificity

Engineered for chain Selectivity



Versatile applications

Sub-nanomolar affinity binding

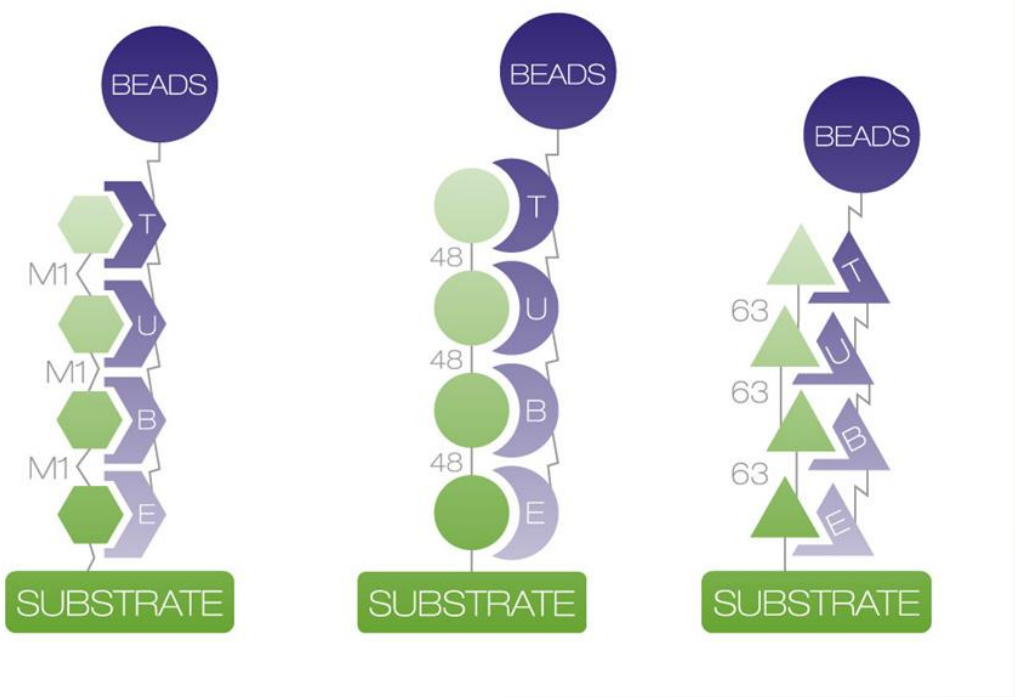
Protection against intrinsic DUBs

Novel Application of TUBES, in addition to Ubiquitination Studies

- ✓ Superior to antibodies, detection by Western blot
- ✓ Versatile tool for monitoring PROTAC and molecular glue function
- ✓ Isolation of ubiquitylated substrates from cell lysates
- ✓ Linkage specific isolation of ubiquitinated species
- ✓ Ubiquitin mass spec proteomics bypassing SILAC
- ✓ HTS of in vivo ubiquitylated proteins
- ✓ Perform E3 ligase assays using TR-FRET assays
- ✓ Imaging tools for In situ detection with fluorescence

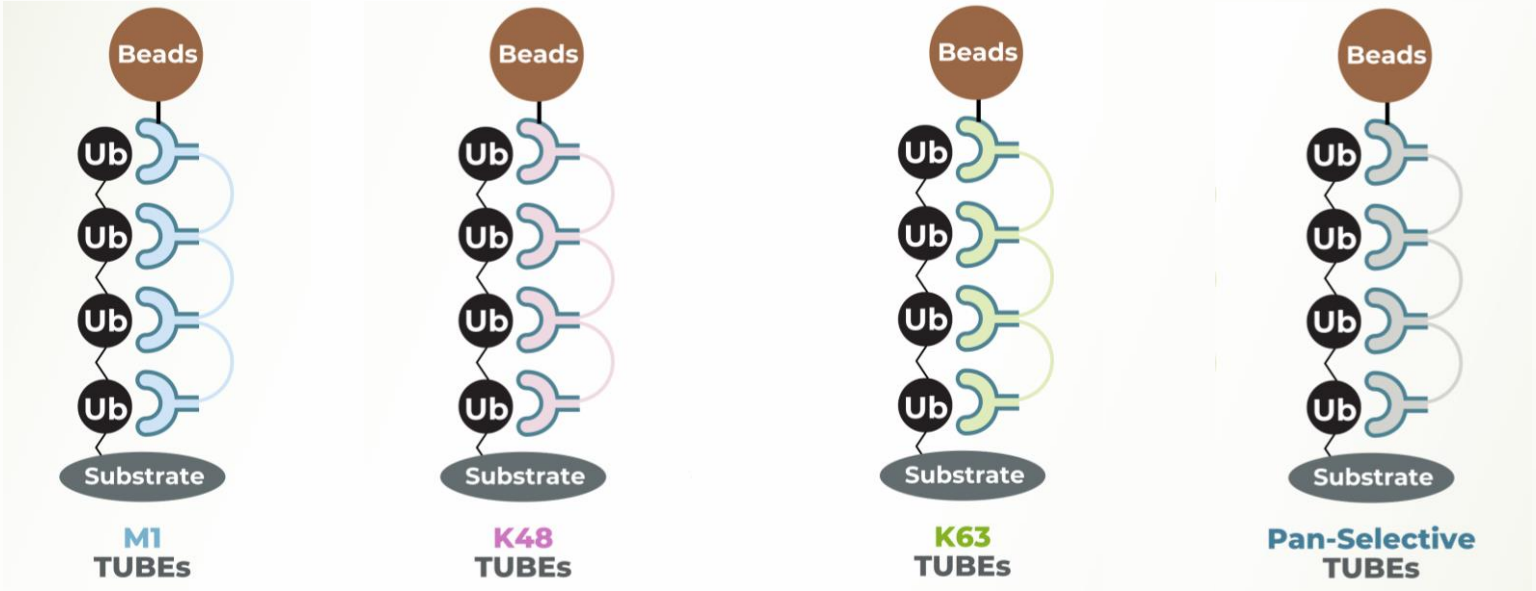
What are TUBEs?

TUBEs are high affinity ‘ubiquitin traps’ that capture poly-ubiquitinated proteins with sub-nanomolar affinity.

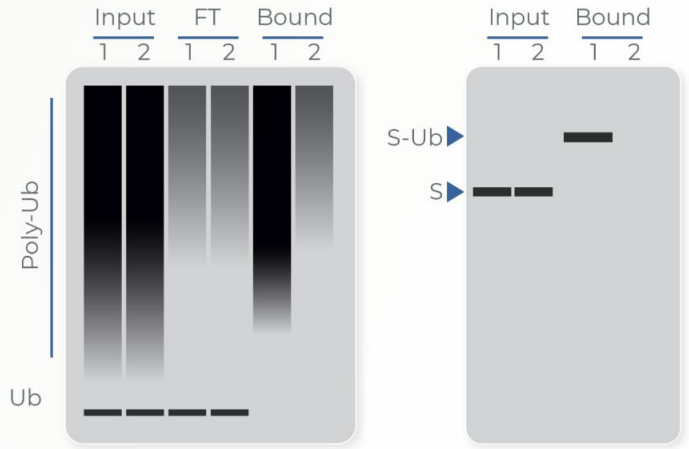


TUBEs can be used for capture or detection of total polyubiquitin or enrichment of linkage specific proteins K63-linked polyubiquitin, K48-linked polyubiquitin, and M1-linear polyubiquitin.

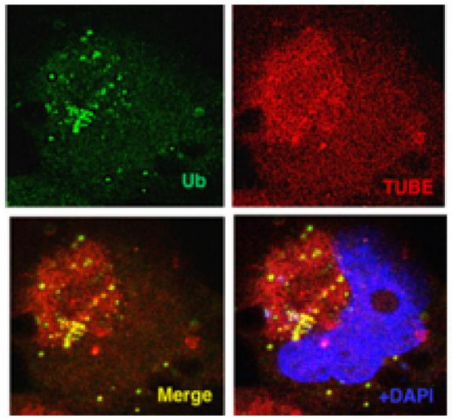
TANDEM UBIQUITIN BINDING ENTITIES (TUBEs)



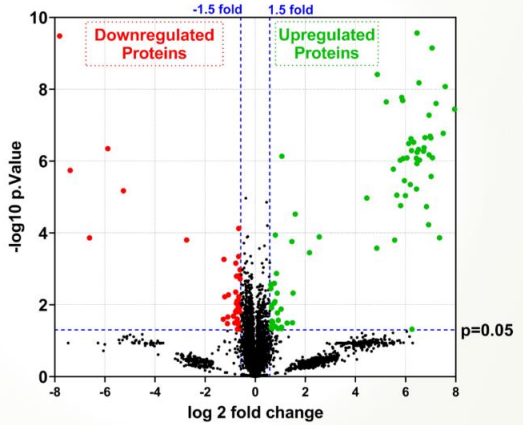
Poly-Ubiquitin Substrate Enrichment & Western Blotting



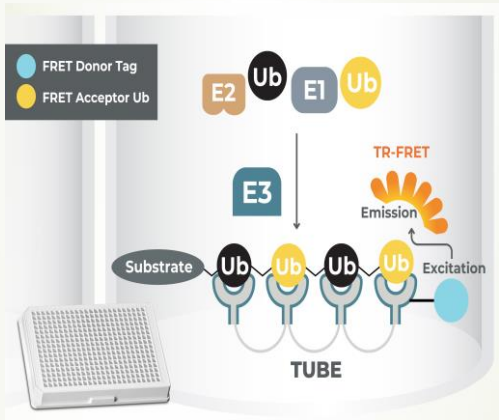
Fluorescent Microscopy



Mass Spectrometry Ubiquitomics



High-Throughput Screening



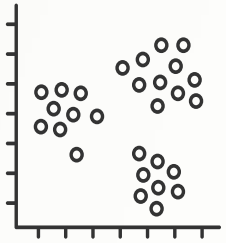
TUBEs for Research

- ✓ Follow dynamics of UPS by purification and detection of ubiquitinated proteins
- ✓ Follow PROTAC mechanism by analyzing Ub^{MAX} (maximum ubiquitination)
- ✓ Analyze chain selective ubiquitination of target proteins
- ✓ Pulldown studies with TUBEs to perform ubiquitin mass spec proteomics (ubiquitome)
- ✓ TUBE embedded microtiter plates to study diagnostic biomarker from blood
- ✓ TUBE microtiter plates to analyze overall up or down regulation of global ubiquitome/proteome
- ✓ Application of pan, K48, K63, M1 (linear) TUBE microtiter plates to analyze chain selective ubiquitination of POI
- ✓ Variety TUBE-based E3 ligase assays and HTS

TUBEs address critical TPD challenges

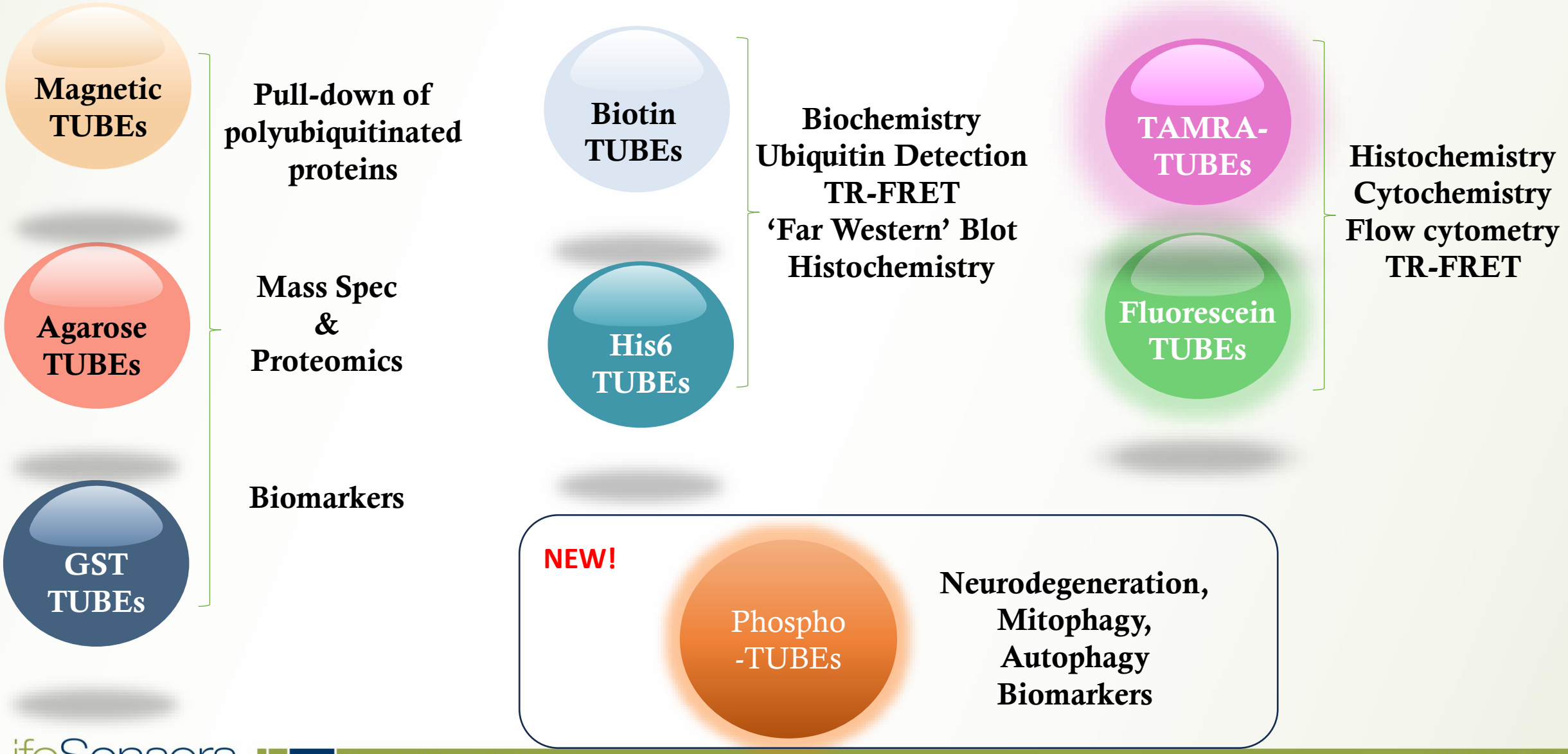
Ternary complex not sufficient to induce ubiquitination

Inherent rigidity hinders the formation of the ternary complex, affecting the overall degradation efficiency of the target protein



TUBEs, a flexible platform for comprehensive analysis of ligand-dependent ubiquitination

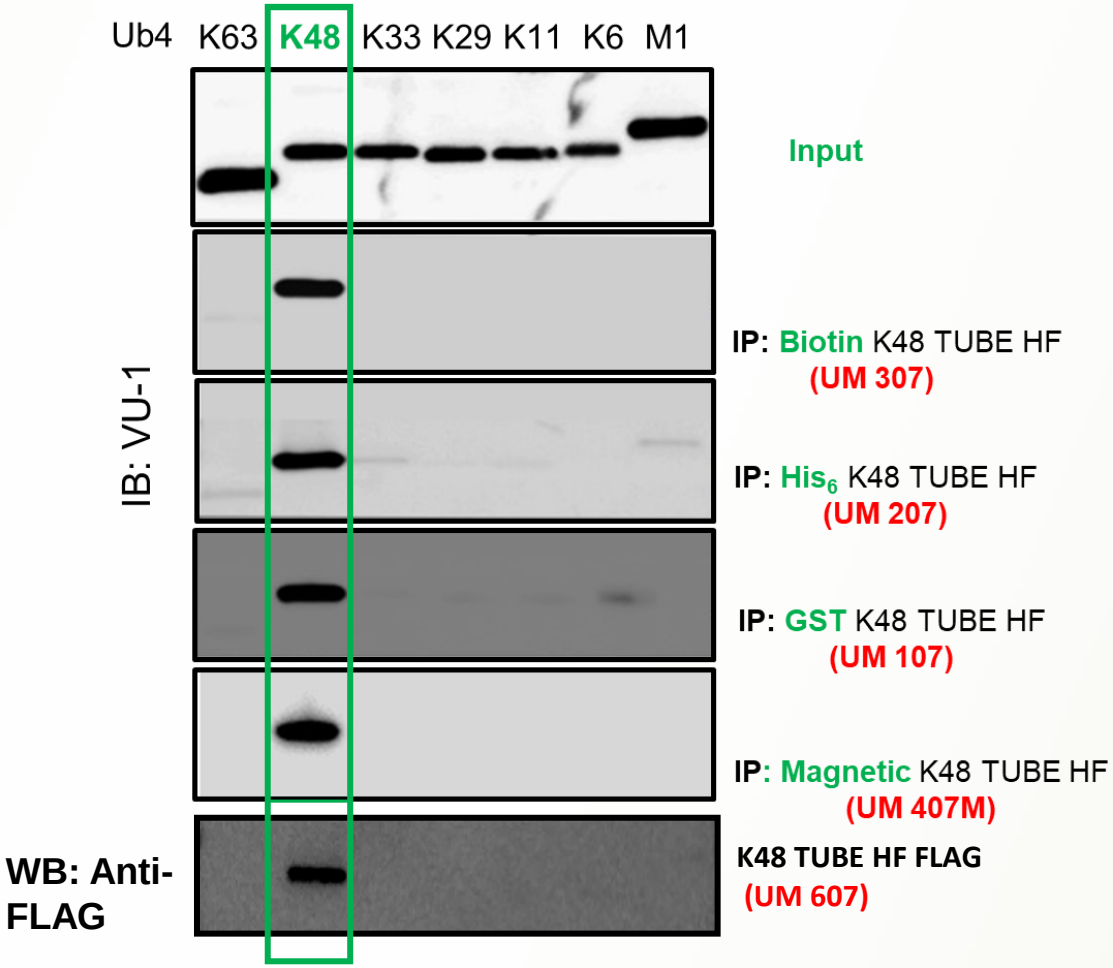
The Power of TUBE Applications



TUBEs for Drug Development

- ✓ Monitor drug mediated changes in ubiquitination in cells or tissues
- ✓ Analyze inhibitors or activators of E3s
- ✓ Assess DUB inhibitor or DUBTAC activity in cells or tissues
- ✓ Examine activation or inhibition of proteasome function in diseases
- ✓ Neurodegenerative diseases profiling from poly-ubiquitinated proteins from neurons
- ✓ Heart Failure and Cushing disease

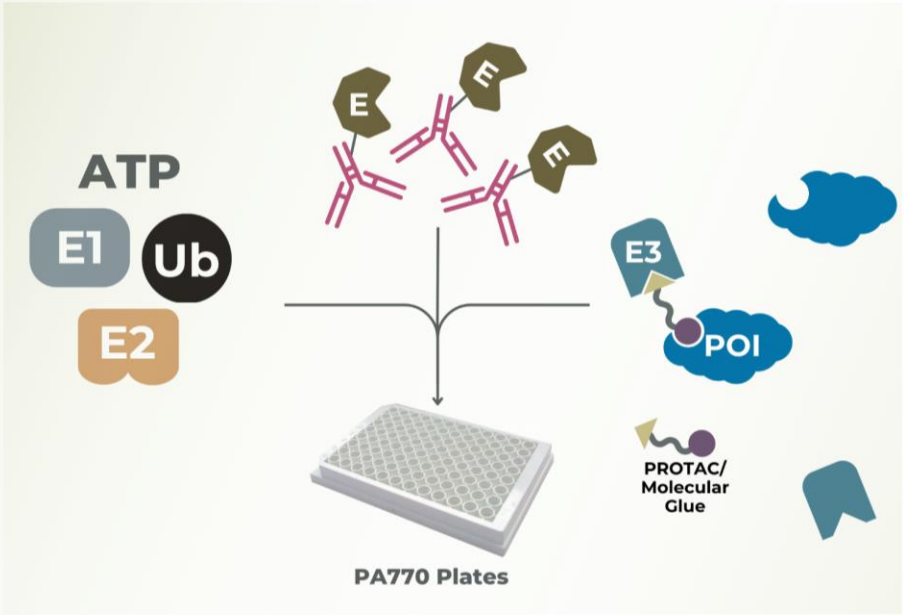
Lysine 48 Poly-ubiquitin TUBES are Highly Selective

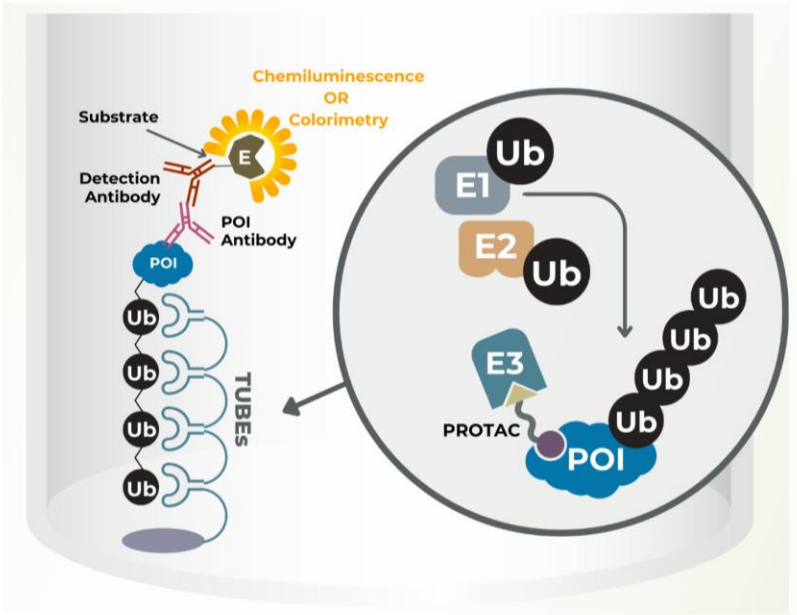


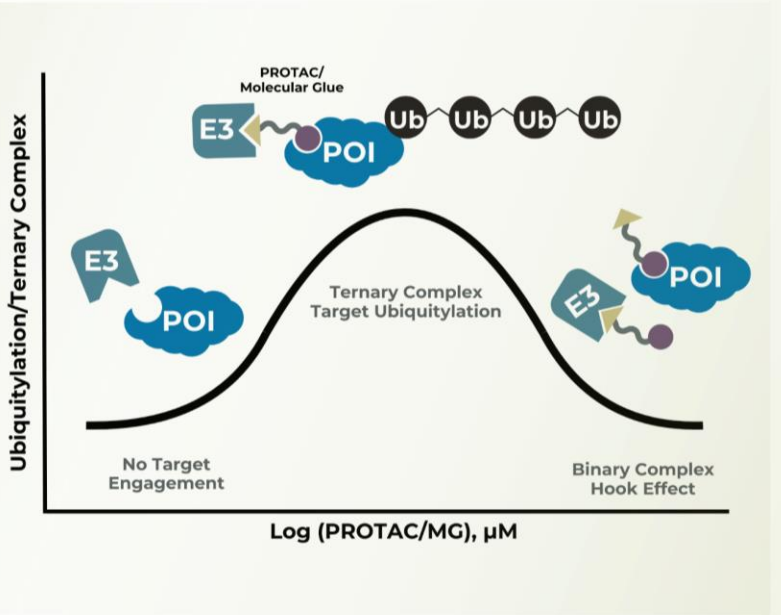
K48 TUBE HF FLAG detects only K48-linked ubiquitin chains in Western Blots

TUBE Application for HTS- In Vitro Biochemical Assay

To study functional ternary complex and 'PROTACability'



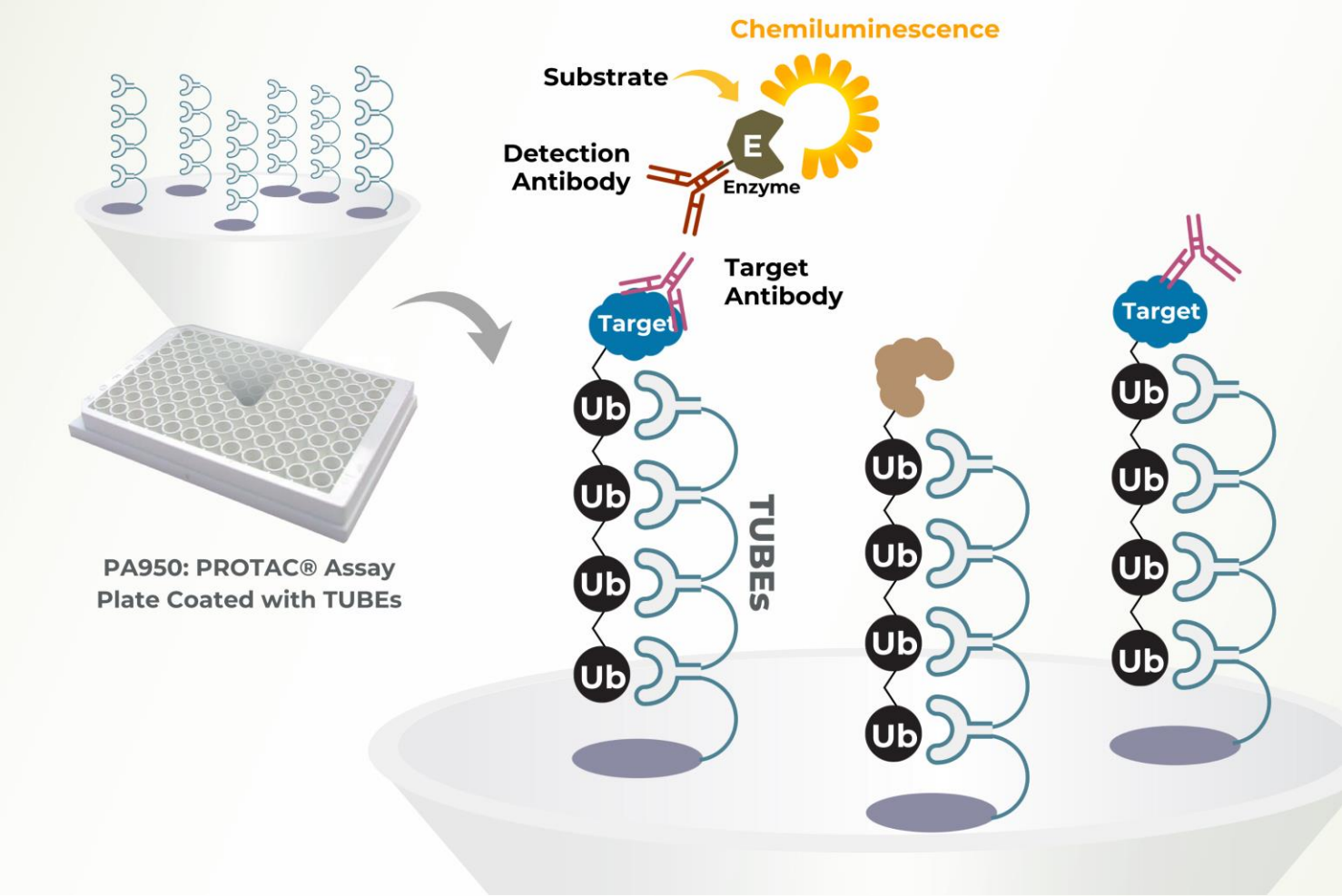




TUBE capture & PROTAC/MG mediated ubiquitination of POI detection

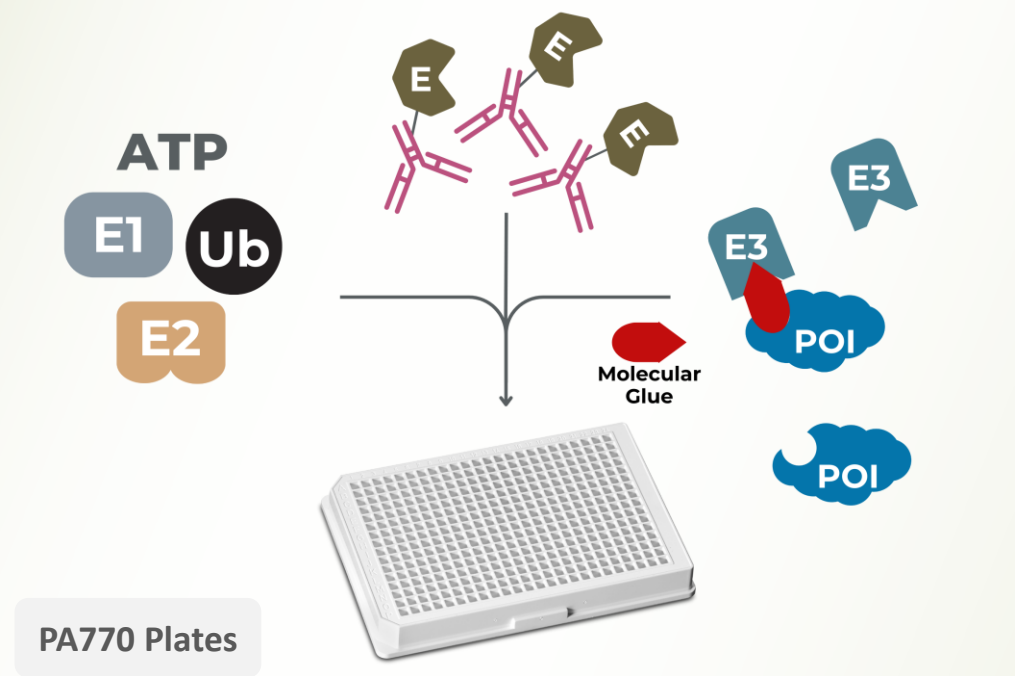
Cell-Based PROTAC Assay using TUBE-coated plate

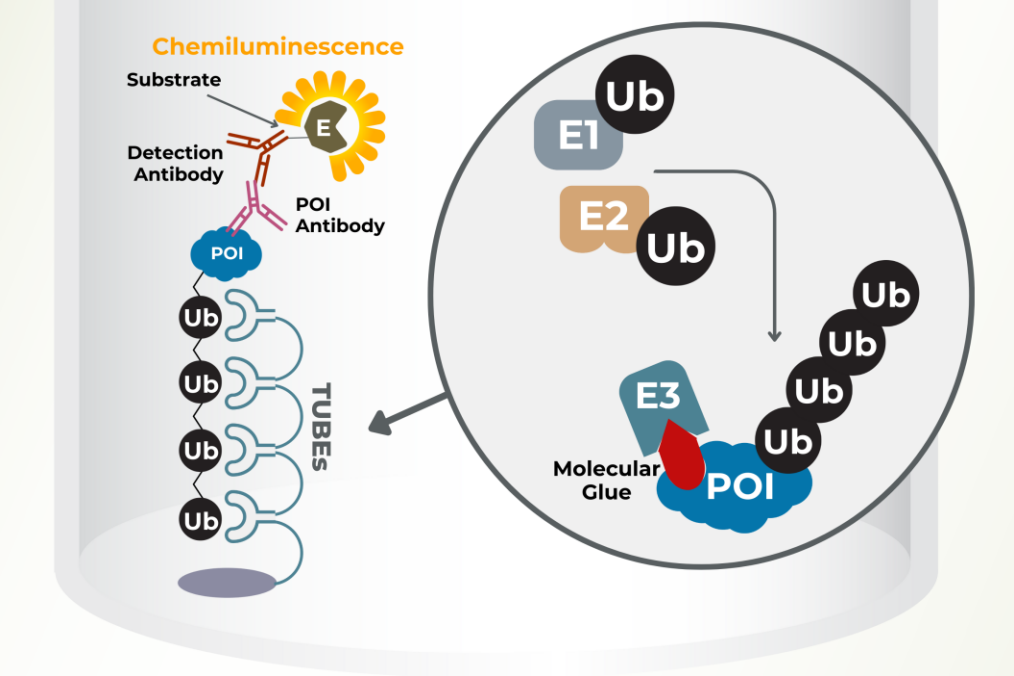
Directly monitor PROTAC-mediated ubiquitination and degradation of target protein



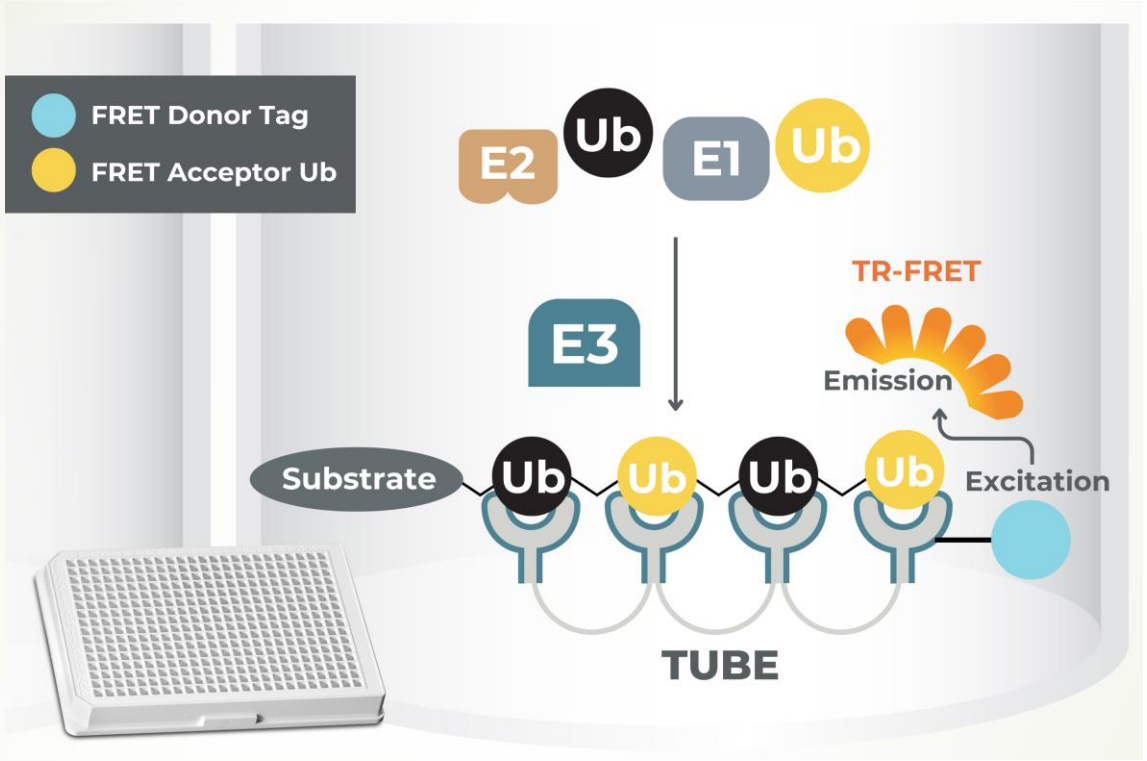
TUBEs' Role in Molecular Glue Discovery

Study Molecular Glue mediated ubiquitination and degradation simultaneously





TUBEs Facilitate Discovery of Novel E3 Ligase for KRAS



- ✓ High throughput screening for E3 ligase activators
- ✓ Homogenous assay for library screening
- ✓ Identification of novel E3 ligands
- ✓ SPR / TSA based confirmation and PROTACability

Novel Application of TUBES, in addition to Ubiquitination Studies

- ✓ Remarkable tools for monitoring PROTAC and molecular glue function
- ✓ HTS of in vivo ubiquitinated proteins
- ✓ Isolation of PROTAC/Mol Glue mediated ubiquitinated substrates from cell lysates
- ✓ Ubiquitin mass spec proteomics bypassing SILAC
- ✓ Perform E3 ligase assays using TR-FRET assays
- ✓ Superior to antibodies for pulldowns, and detection by Western blot
- ✓ Imaging tools for In situ detection with fluorescence

Thank You

We are your partner in UPS, TUBEs, DUBs, E3s, PROTAC, Mol Glue, Protein Expression, CAR-T/Gene therapy and vaccine development

Contact Us!

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