

LifeSensors TUBEs:
TANDEM UBIQUITIN BINDING ENTITIES

POLYUBIQUITIN BINDING DOMAINS

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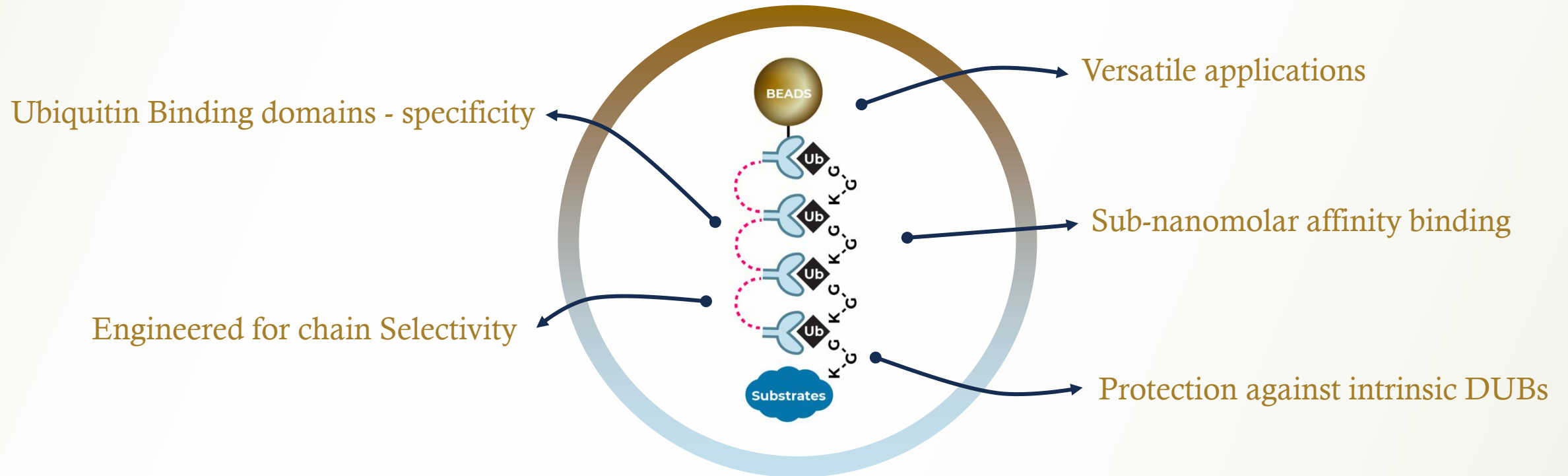
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LifeSensors Inc. Mission

- 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

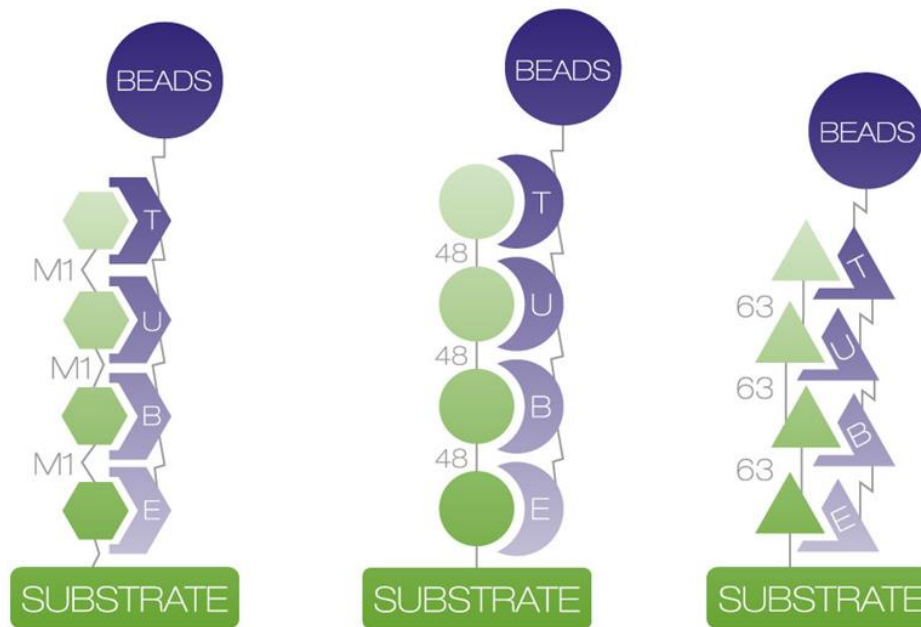


Novel Application of TUBES, in addition to Ubiquitination Studies

- ✓ 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

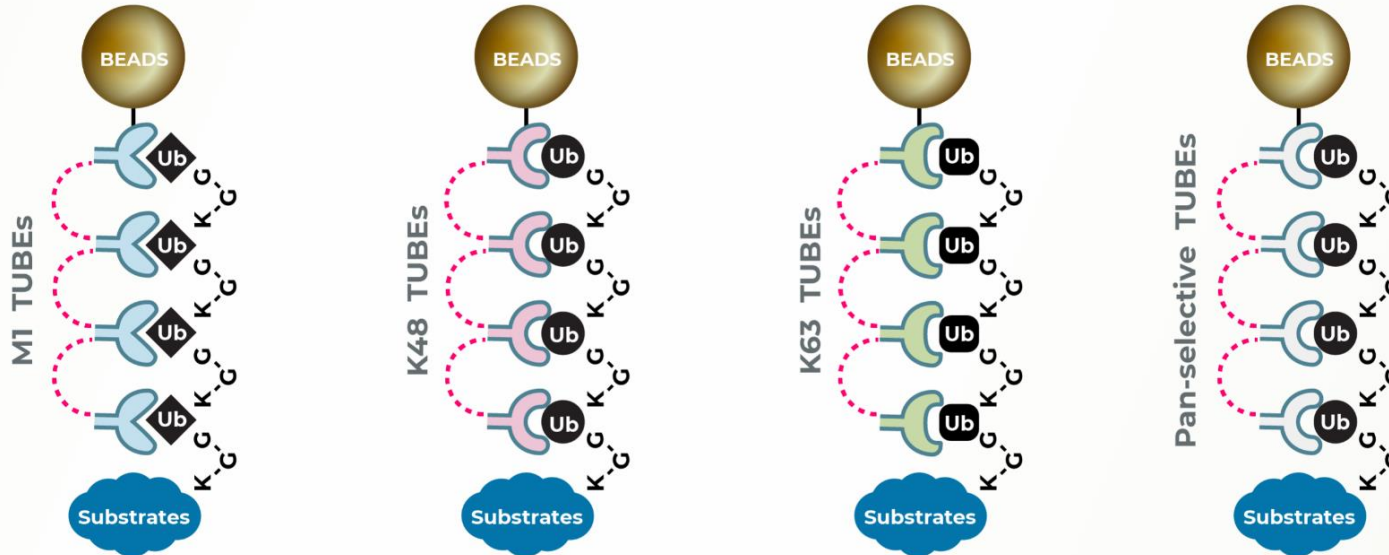
What are TUBEs?

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

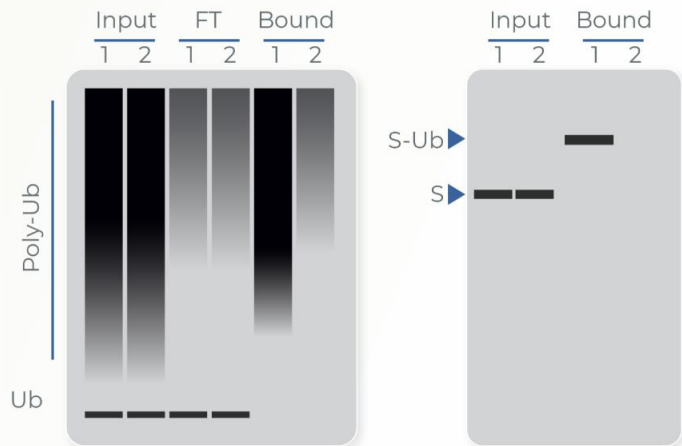


TUBEs can be used for capture or detection of total polyubiquitin or enrichment of linkage specific proteins **K63-linked polyubiquitin**, **K48-linked polyubiquitin**, and **M1-linear polyubiquitin**.

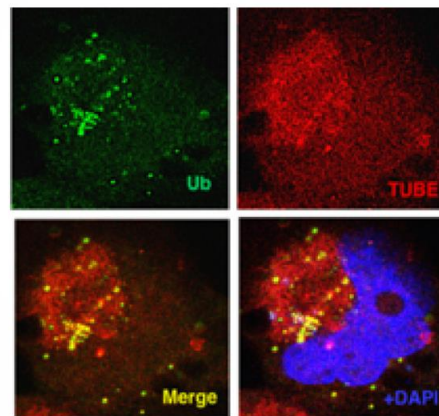
TANDEM UBIQUITIN BINDING ENTITIES (TUBES)



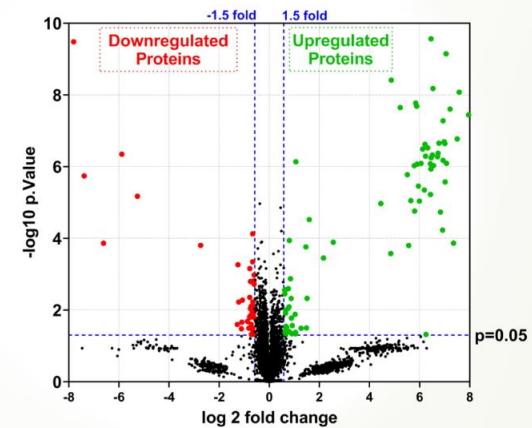
Poly-Ubiquitin Substrate Enrichment & Western Blotting



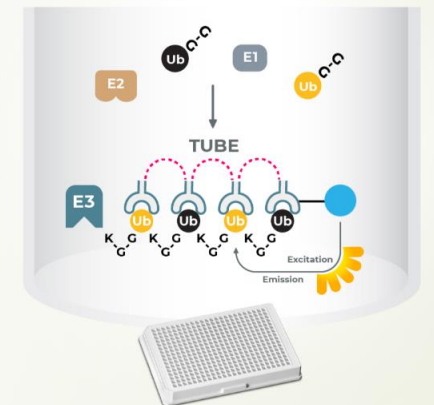
Fluorescent Microscopy



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

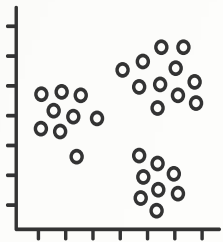
TUBEs address critical TPD challenges



Ternary complex not sufficient to induce ubiquitination

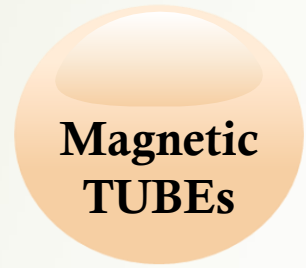


Inherent rigidity hinders the formation of the ternary complex, affecting the overall degradation efficiency of the target protein



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

The Power of TUBE Applications



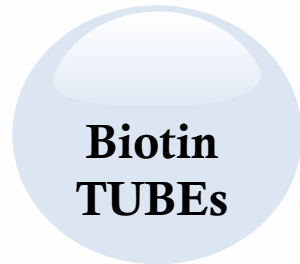
Pull-down of polyubiquitinated proteins



Mass Spec & Proteomics



Biomarkers



Biochemistry
Ubiquitin Detection
TR-FRET
'Far Western' Blot
Histochemistry



Histochemistry
Cytochemistry
Flow cytometry
TR-FRET



NEW!

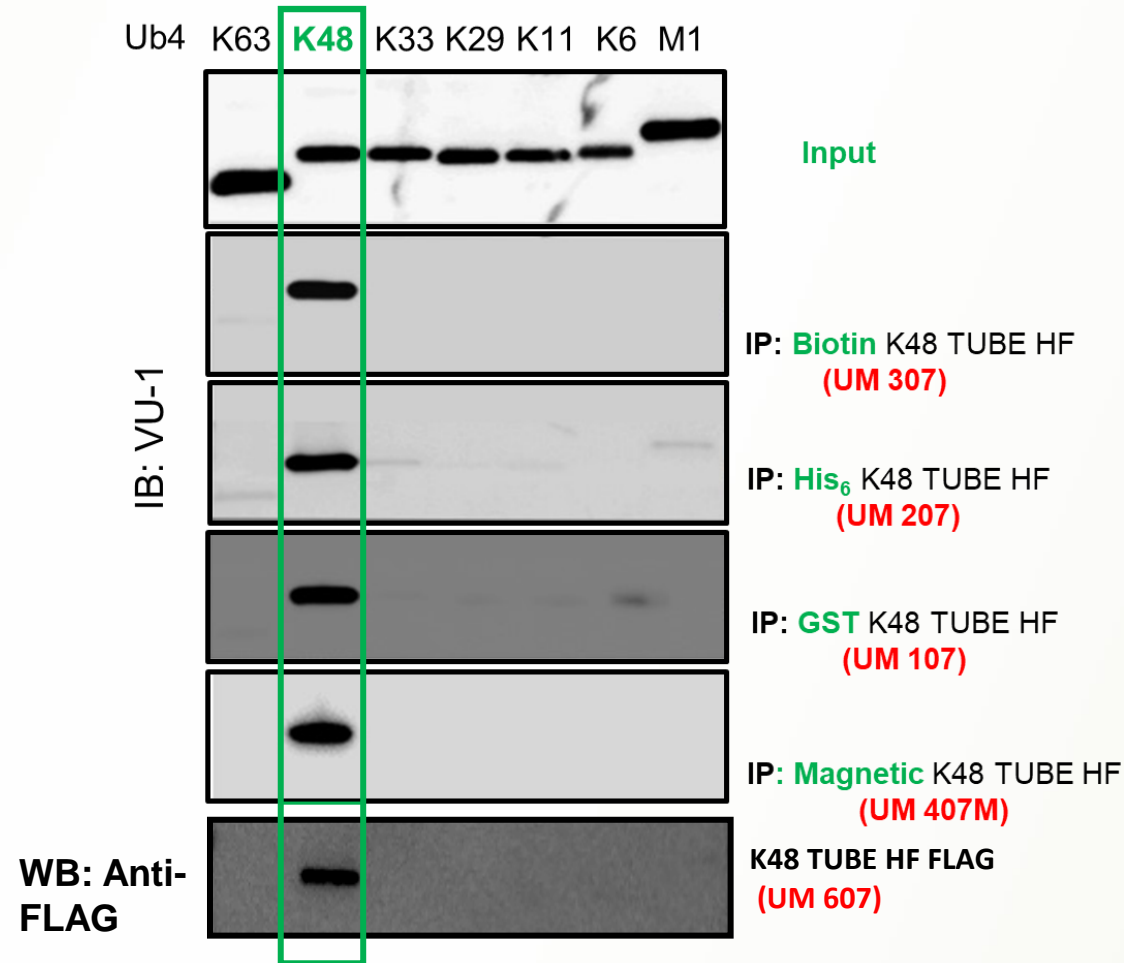
A brown, glossy sphere with the text "Phospho-TUBEs" inside.

Neurodegeneration,
Mitophagy,
Autophagy
Biomarkers

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](#)

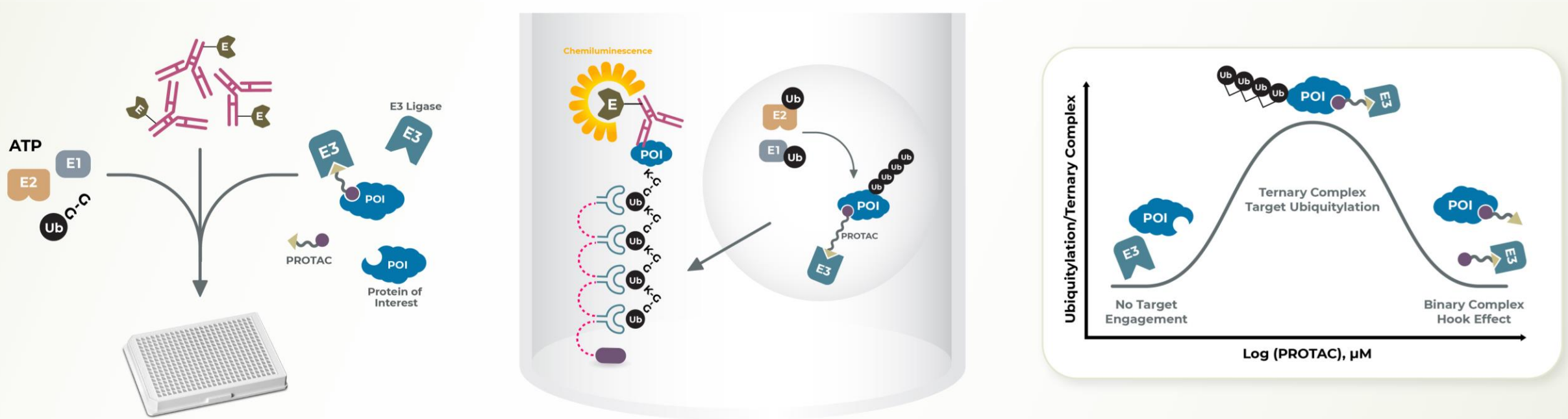
Lysine 48 Poly-ubiquitin TUBES are Highly Selective



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

TUBE Application for HTS- In Vitro Biochemical Assay

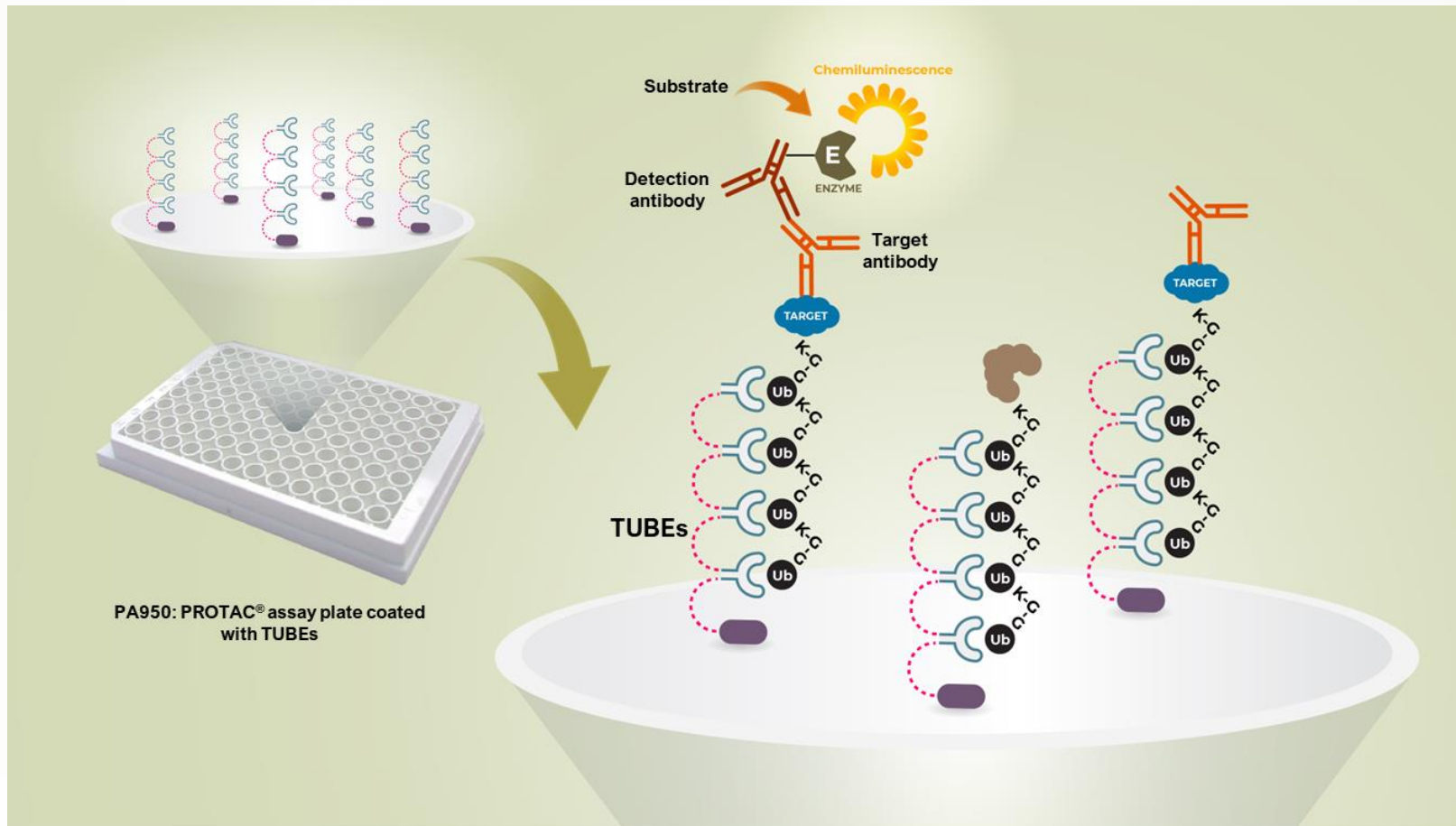
To study functional ternary complex and 'PROTACability'



TUBE Capture & PROTAC Mediated Ubiquitination of POI Detection

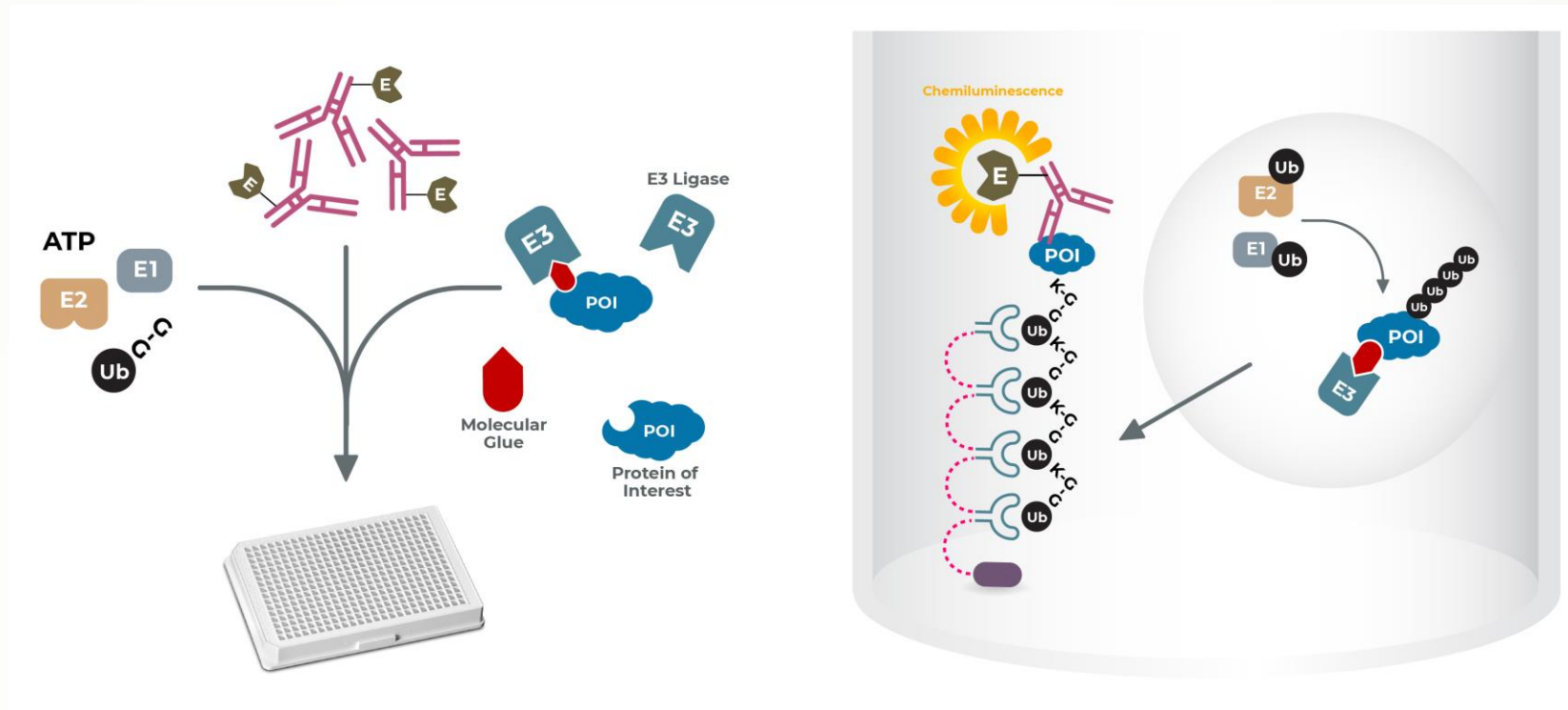
Cell-Based PROTAC Assay using TUBE-coated plate

Directly monitor PROTAC-mediated ubiquitination and degradation of target protein

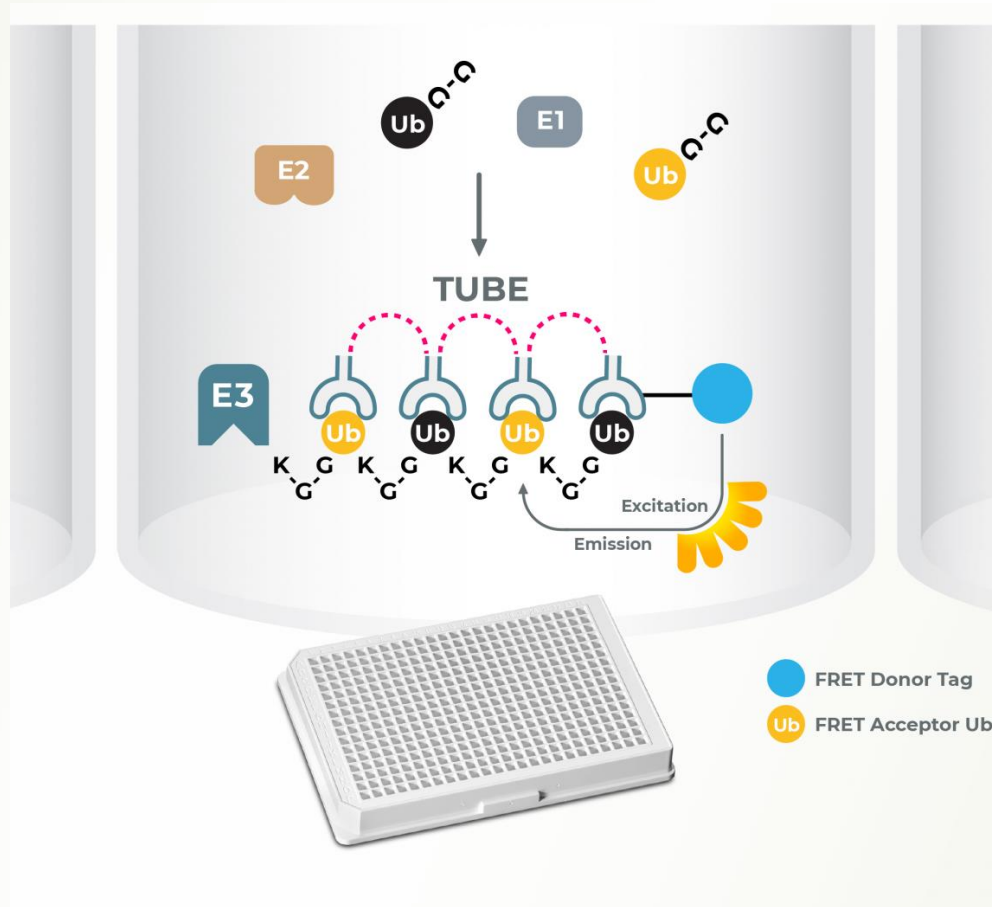


TUBEs' Role in Molecular Glue Discovery

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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