UC Irvine 趙 Chao Family Comprehensive Cancer Center

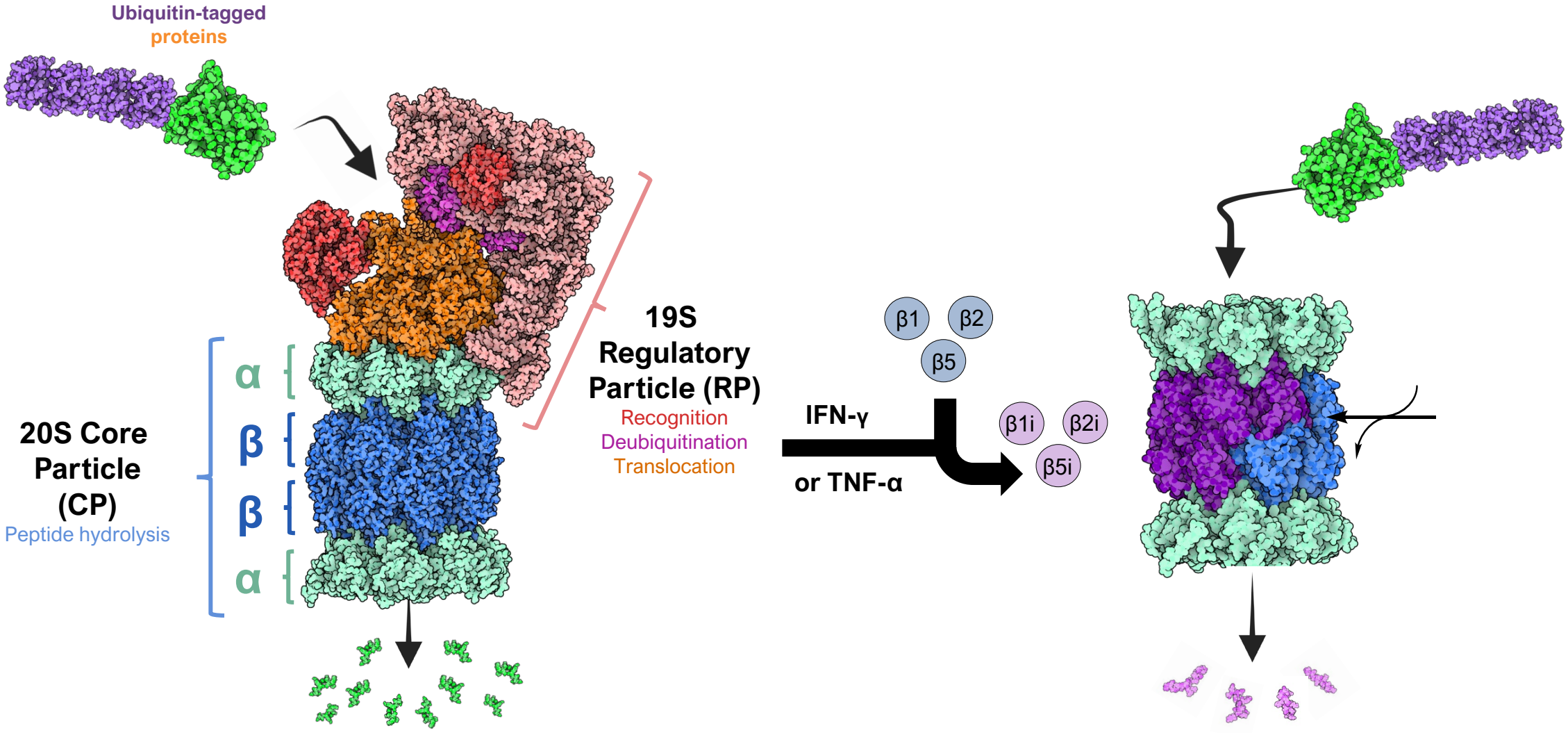
Drug Development Technologies Targeting the Proteasome

Darci Trader, PhD

2026 Scientific Retreat

November 5, 2026

The Proteasome



26S Proteasome

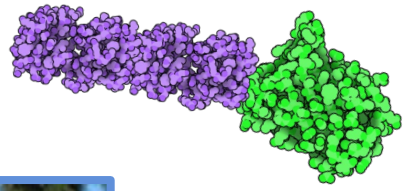
Ubiquitin-*Dependent* Degradation Pathway

Immunoproteasome

Can be capped by 19S RP, PA28, etc.

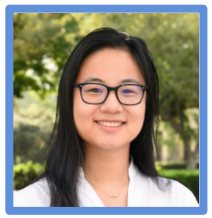
The Proteasome

Ubiquitin-tagged proteins





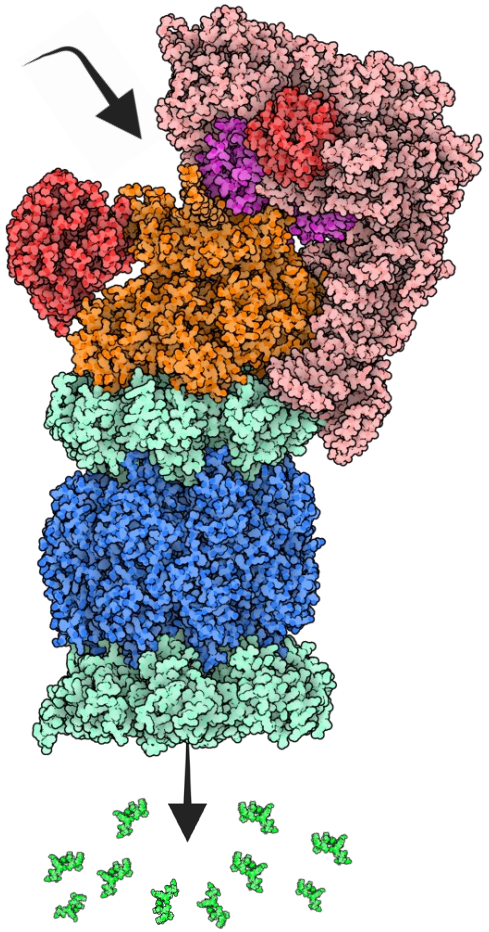
Robert Zepeda
4th Year



Spencer Brown
2nd Year



Jaida Osman
5th Year



26S Proteasome

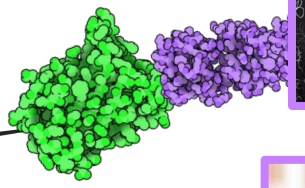
Ubiquitin-*Dependent*
Degradation Pathway

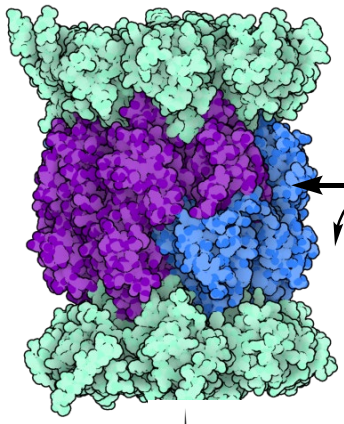
ALUMNI

Dr. Cody Loy (Ph.D.) 2026
Dr. Timothy Harris (Ph.D.) 2026
Dr. Kate Kragness (Ph.D.) 2026
Dr. Andres Salazar-Chaparro (Ph.D.) 2023
Dr. Christine Muli (Ph.D.) 2022
Dr. Marianne Maresh (Ph.D.) 2021
Dr. Breanna Zerfas (Postdoc) 2021
Dr. Wenzhi Tian (Ph.D.) 2021
Dr. Rachel Coleman (Ph.D.) 2020

Duno Dantis
5th Year





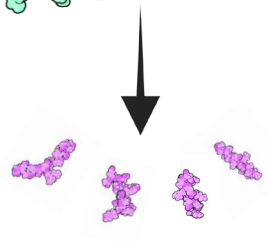




Kristina McKee
2nd Year



Shawn Vinogradsky
3rd Year

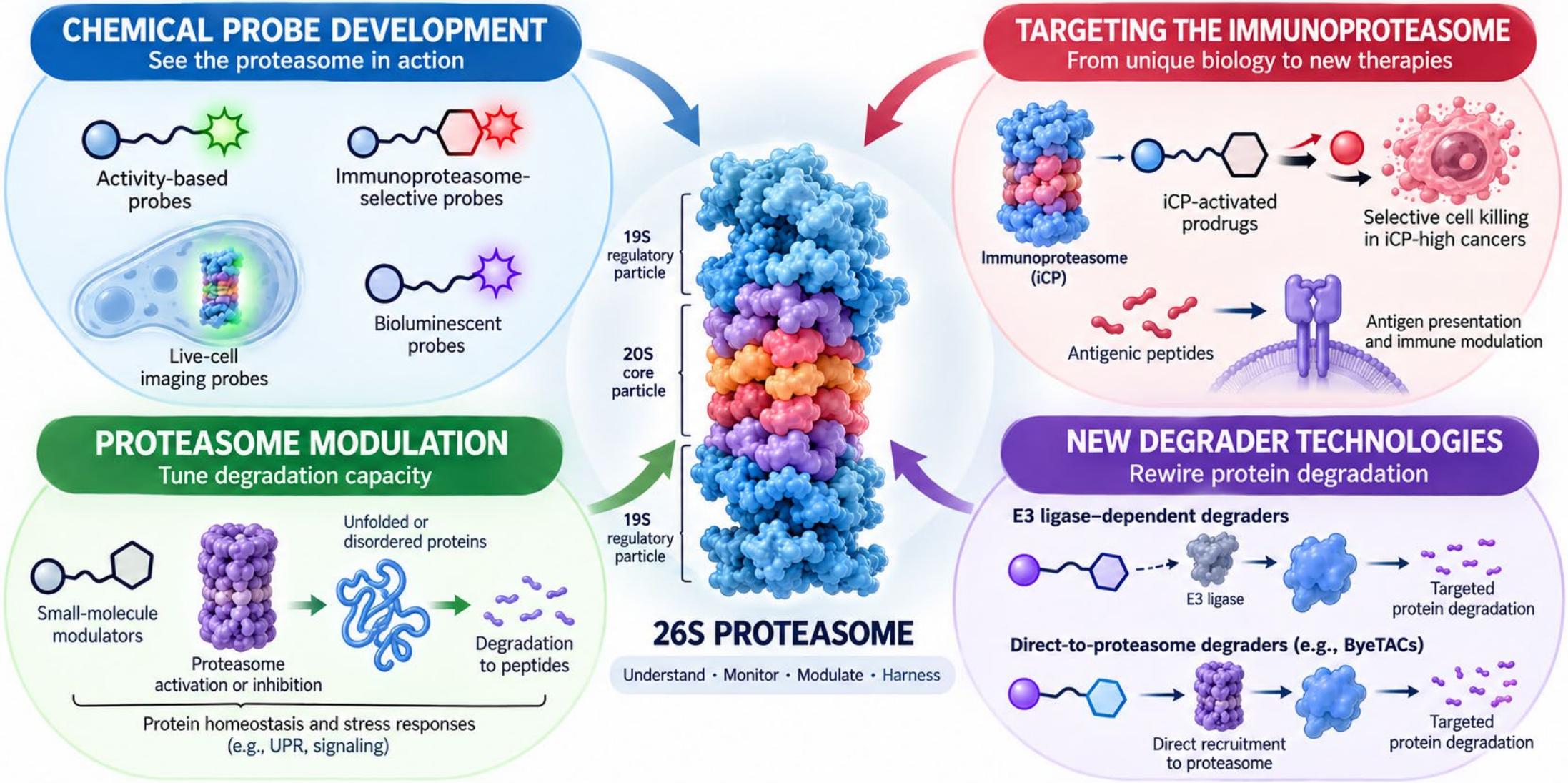


Immunoproteasome

Can be capped by 19S RP, PA28, etc.

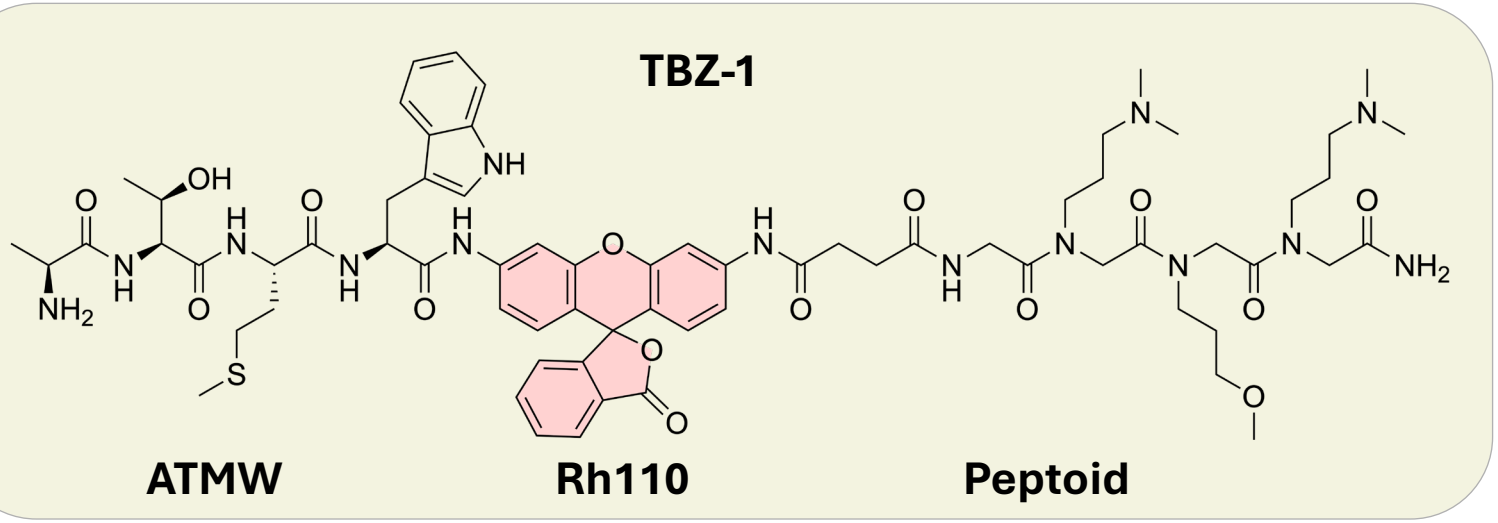
A Decade of Chemical Biology at the PROTEASOME

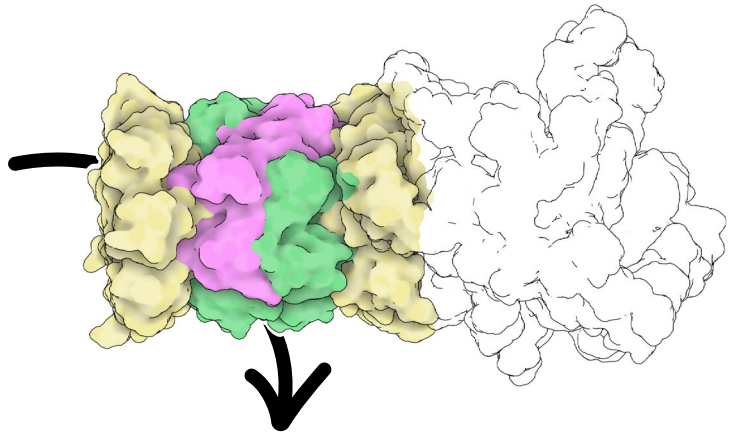
Trader Lab | 2016 - 2026



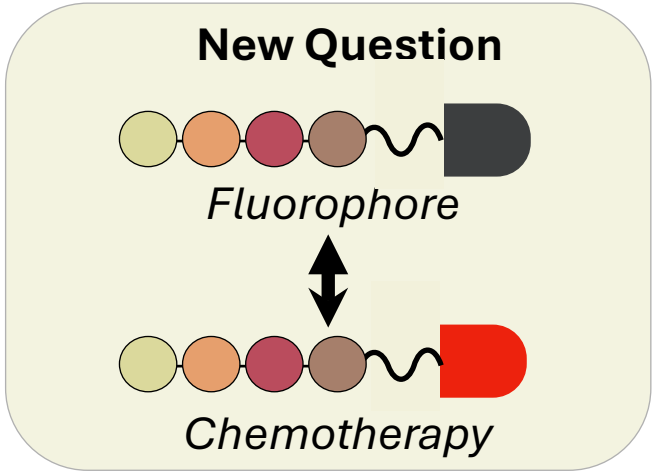
Immunoproteasome Activity Based Probe TBZ-1

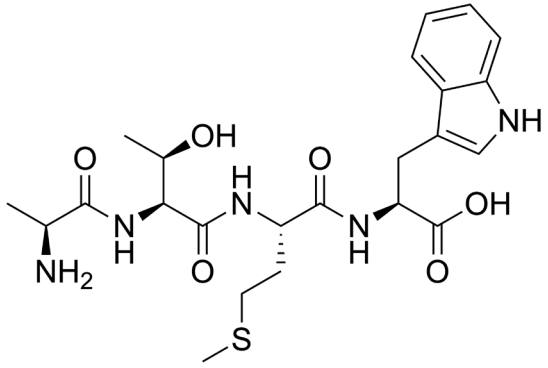
Using ATMW to develop a fluorescent based probe to monitor iCP activity in cells

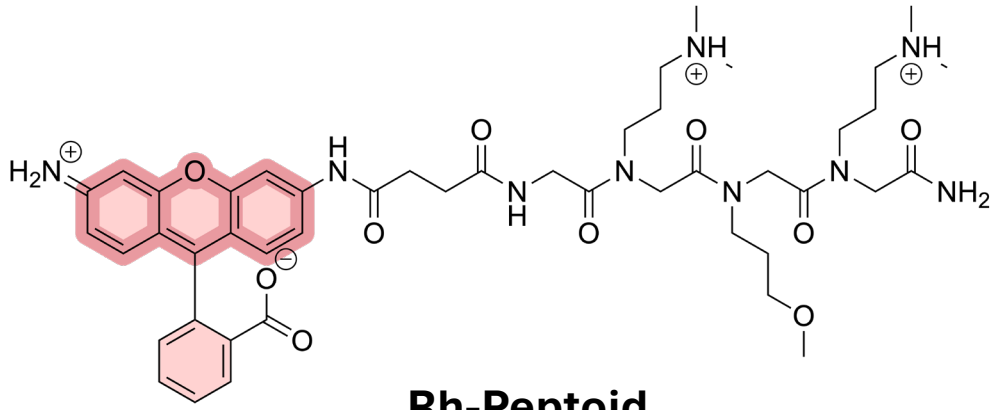




Fluorescence Quenched



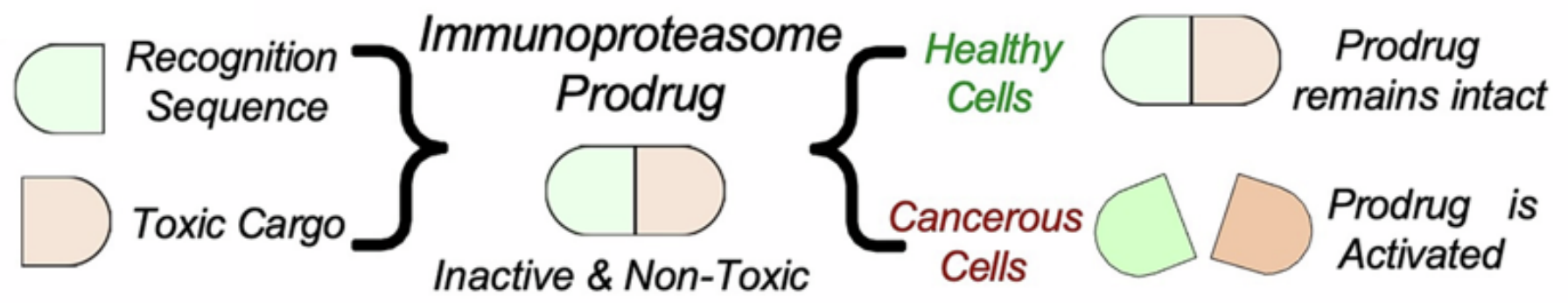




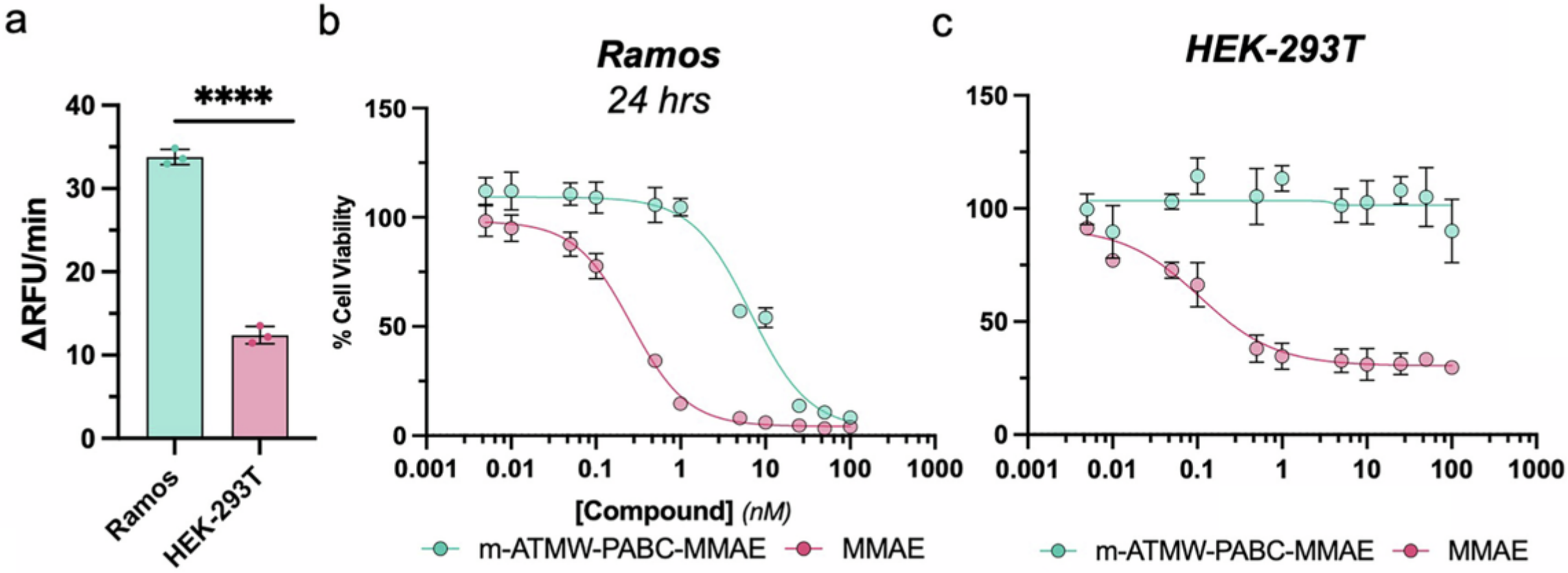
Fluorescent

Zerfas. B.L. *J. Am. Chem. Soc. 2019, 141, 13, 5252–5260*

iCP as a Prodrug with MMAE

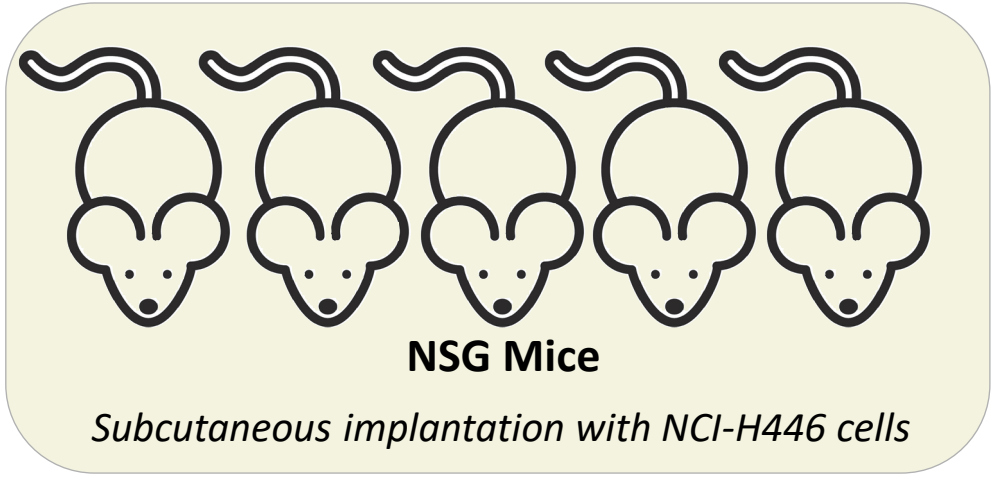


Cell Based Data



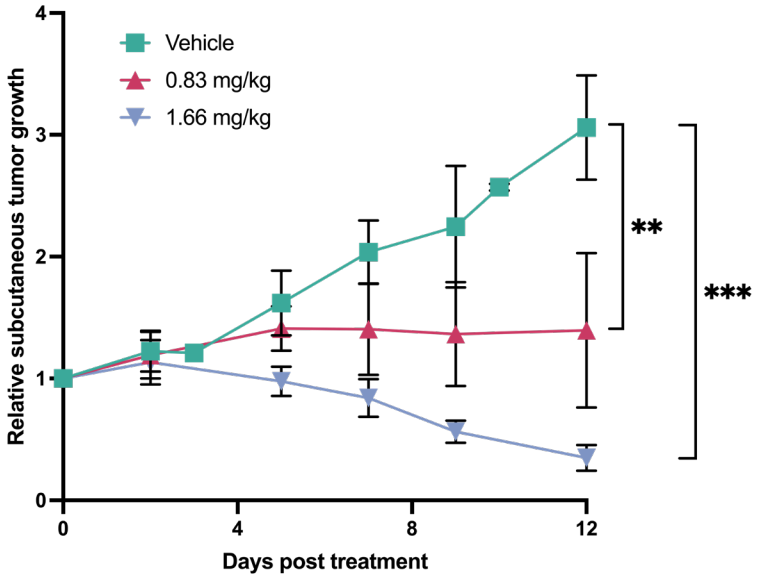
*Loy, C.A. et. al. Signal Transduction and Targeted Therapies, **2026**, 11, 330; In collaboration with Benavente Lab*

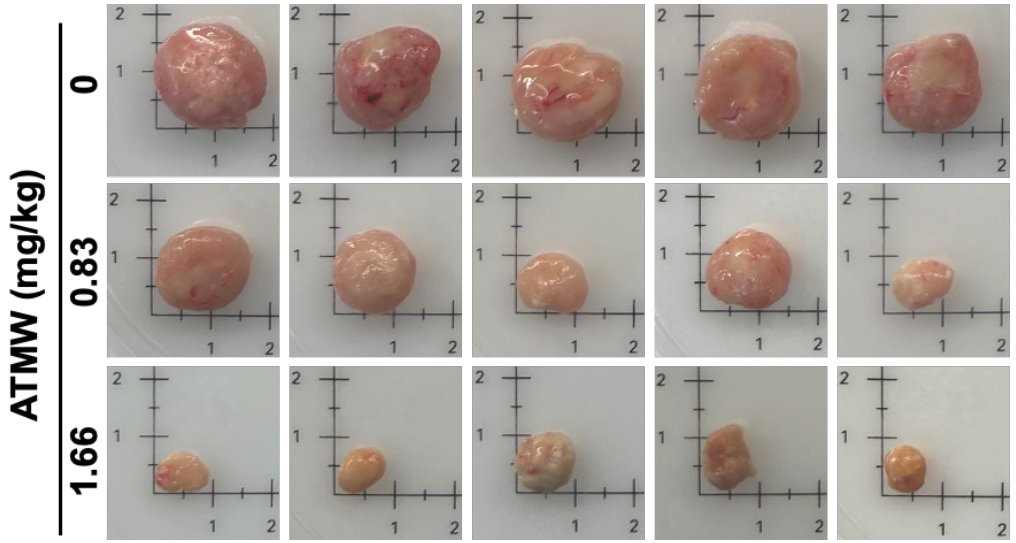
In Vivo Results

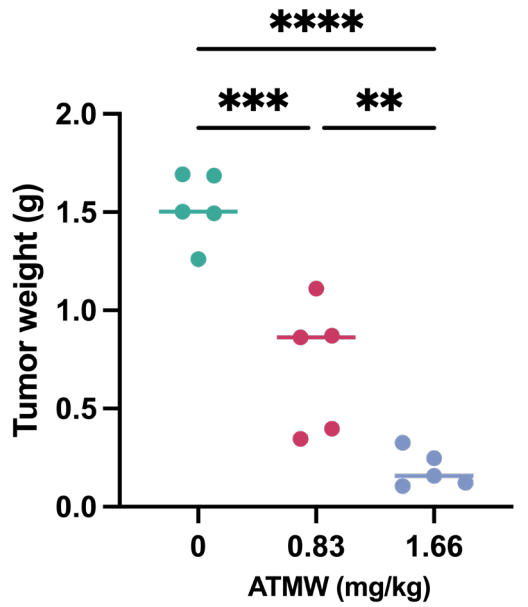


Dosing Regimen
Mon-Wed-Fri

- **Vehicle (*0 mg/kg*)**
- **Low dose (0.83 *mg/kg*)**
- **High dose (*1.66mg/kg*)**







*Loy, C.A. et. al. Signal Transduction and Targeted Therapies, **2026**, 11, 330; In collaboration with Benavente Lab*

THE TRADER LAB
EST. 2016

Full Story: Signal Transduction and Targeted Therapies, 2026, 11, 330

National Institutes of Health

W.M. KECK FOUNDATION

Booster Therapeutics

COI: Prof. Trader is a scientific co-founder and shareholder

Current Trainees

Duno Dantis
Jaida Osman
Kristina McKee
Robert Zepeda
Shawn Vinogradsky
Spencer Brown

UCI School of Pharmacy & Pharmaceutical Sciences

apda AMERICAN PARKINSON DISEASE ASSOCIATION
Strength in optimism. Hope in progress.

UCI Health
Chao Family Comprehensive Cancer Center



Past Trainees

Dr. Cody Loy
Dr. Timothy Harris
Dr. Kate Kragness
Dr. Eslam Ibrahim
Dr. Andres Salazar
Dr. Saayak Halder
Dr. Mariane Maresh
Dr. Wenzhi Tian
Dr. Christine Muli
Dr. Breanna Zerfas
Hanna King



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Comprehensive Cancer Center

Thank You!