Rpt6 phosphorylation: A Novel mechanism to control proteasome function and its implications in synaptic plasticity and disease.

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Introduction

The Ubiquitin proteasome system regulates protein homeostasis essential for many cellular processes (cell cycle, DNA repair, Protein sorting, compartmental trafficking, stress responses, endocytosis and protein degradation). Protein degradation happens in neurons and can regulate synaptic plasticity. Dysfunction in protein degradation machinery leads to disease. The Patrick lab studies neuronal activity-dependent protein degradation and has previously shown that phosphorylation of proteasomal subunit Rpt6 can regulate synaptic strength bi-directionally and new spine formation.

Current Models of Altered proteasome function in the Patrick Lab.

Activity dependent regulation of proteasome function

With the validation of this phospho-specific antibody, we can now evaluate how Rpt6 phosphorylation is regulated in both Normal neuronal physiology and age-related as well as in neurodegenerative disease (e.g. AD, PD, HD).

Conclusion

Assessment of Rpt6 phosphorylation in wild type C57black6 mice

Euthanasia of C57black6

Brain extraction

Brain Lysis

SDS-PAGE and Western Blotting

Evaluation of total protein from brain tissue

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