

Cell surface PrP^{Sc} is the trigger for prion neurotoxicity



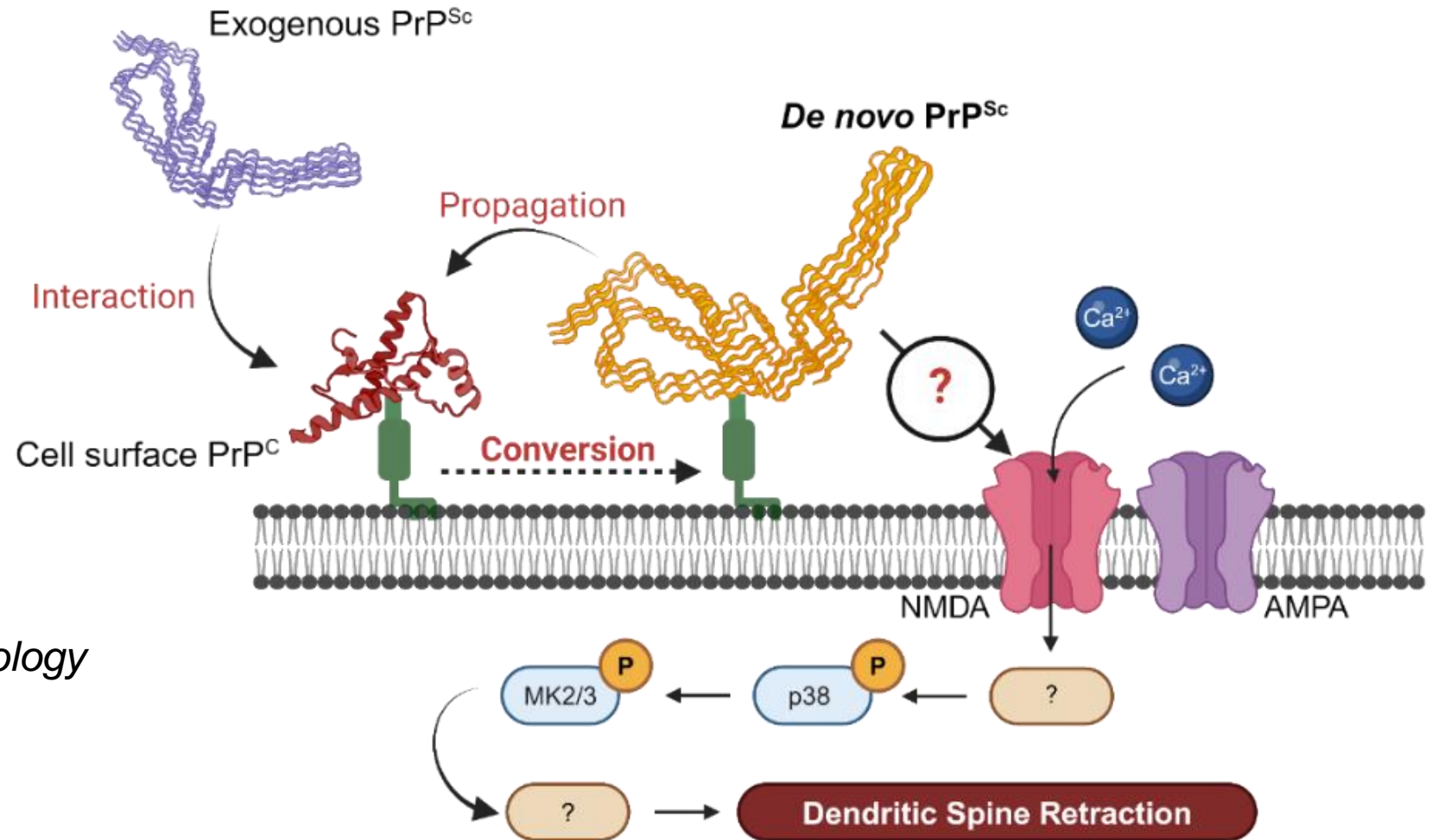
Boston University
Chobanian & Avedisian
School of Medicine

Jean Royce Gatdula
PhD Candidate

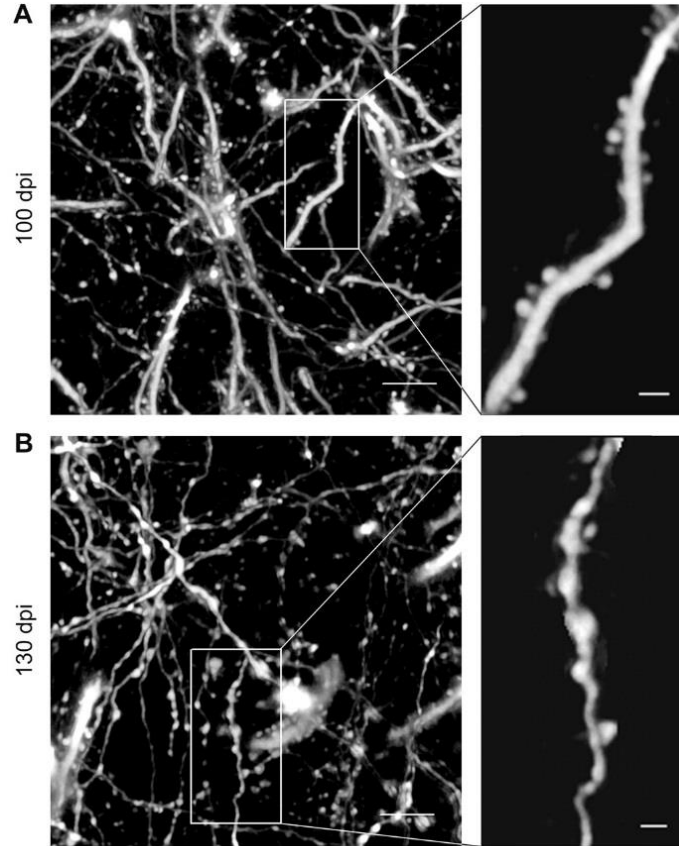
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Department of Biochemistry & Cell Biology

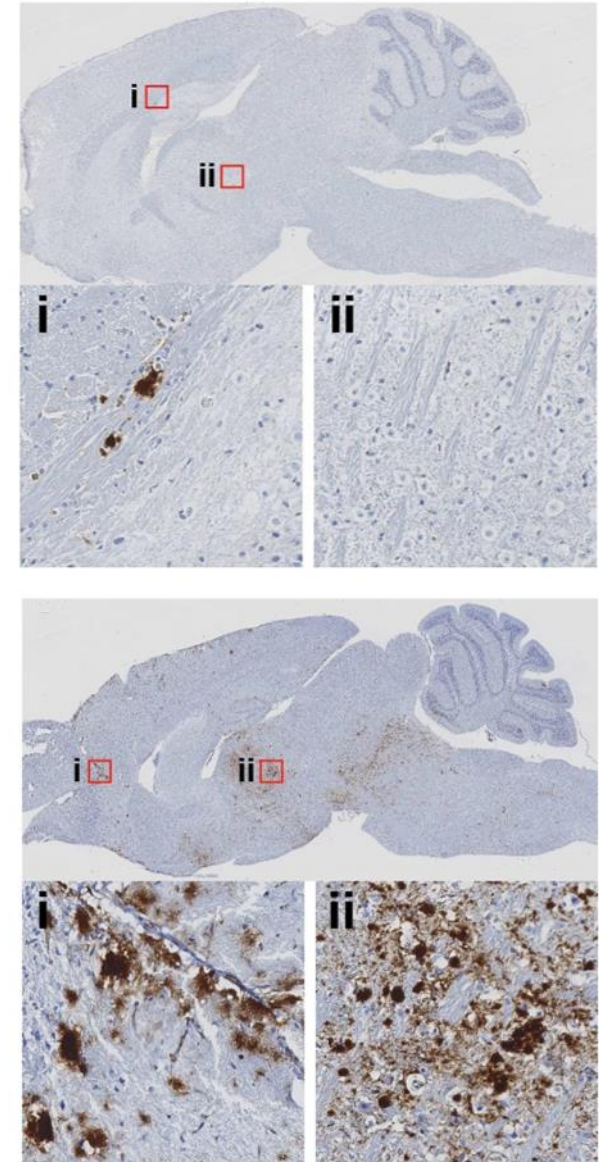
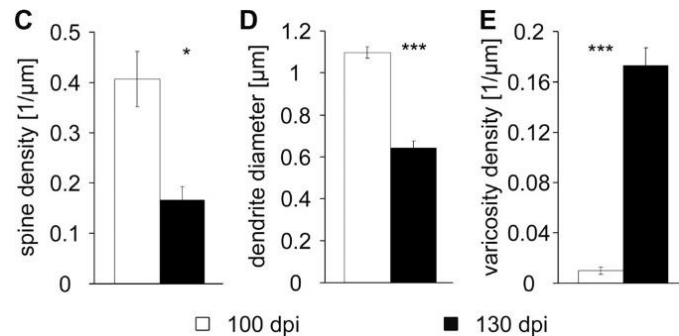
11/12/2024



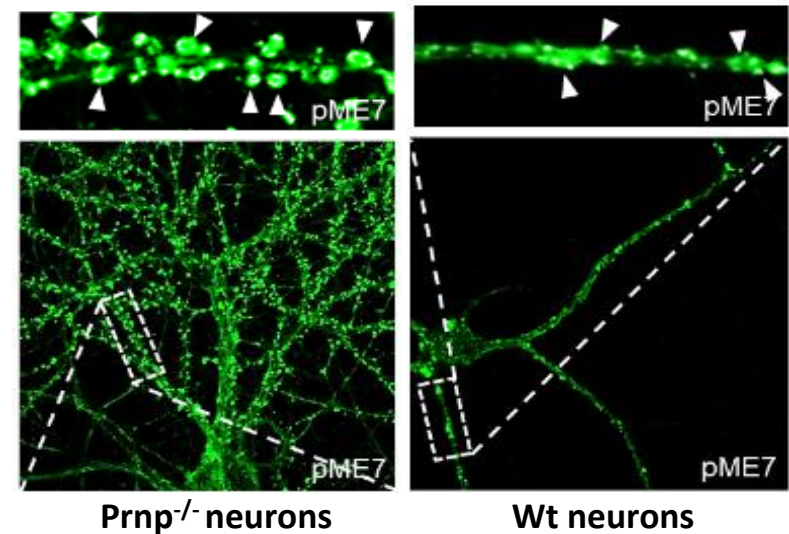
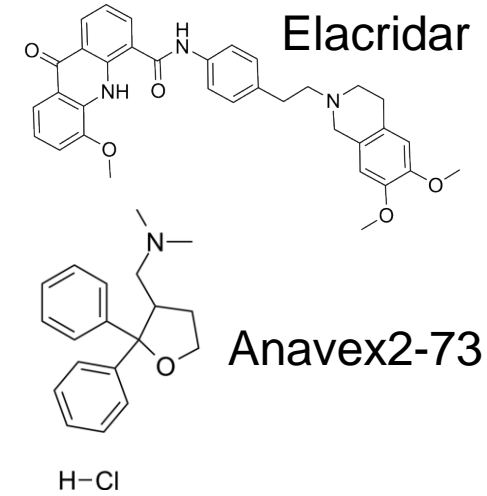
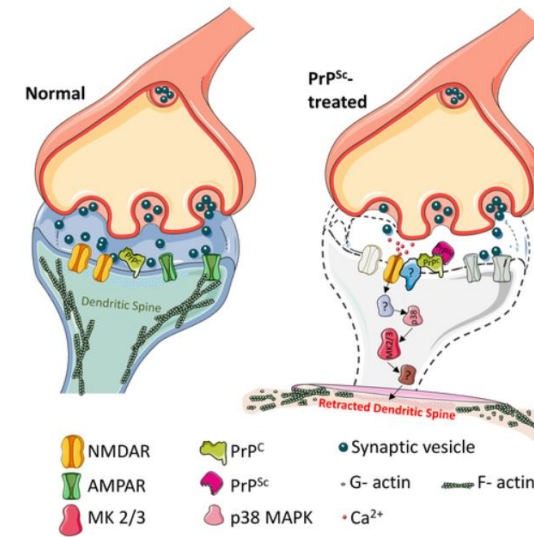
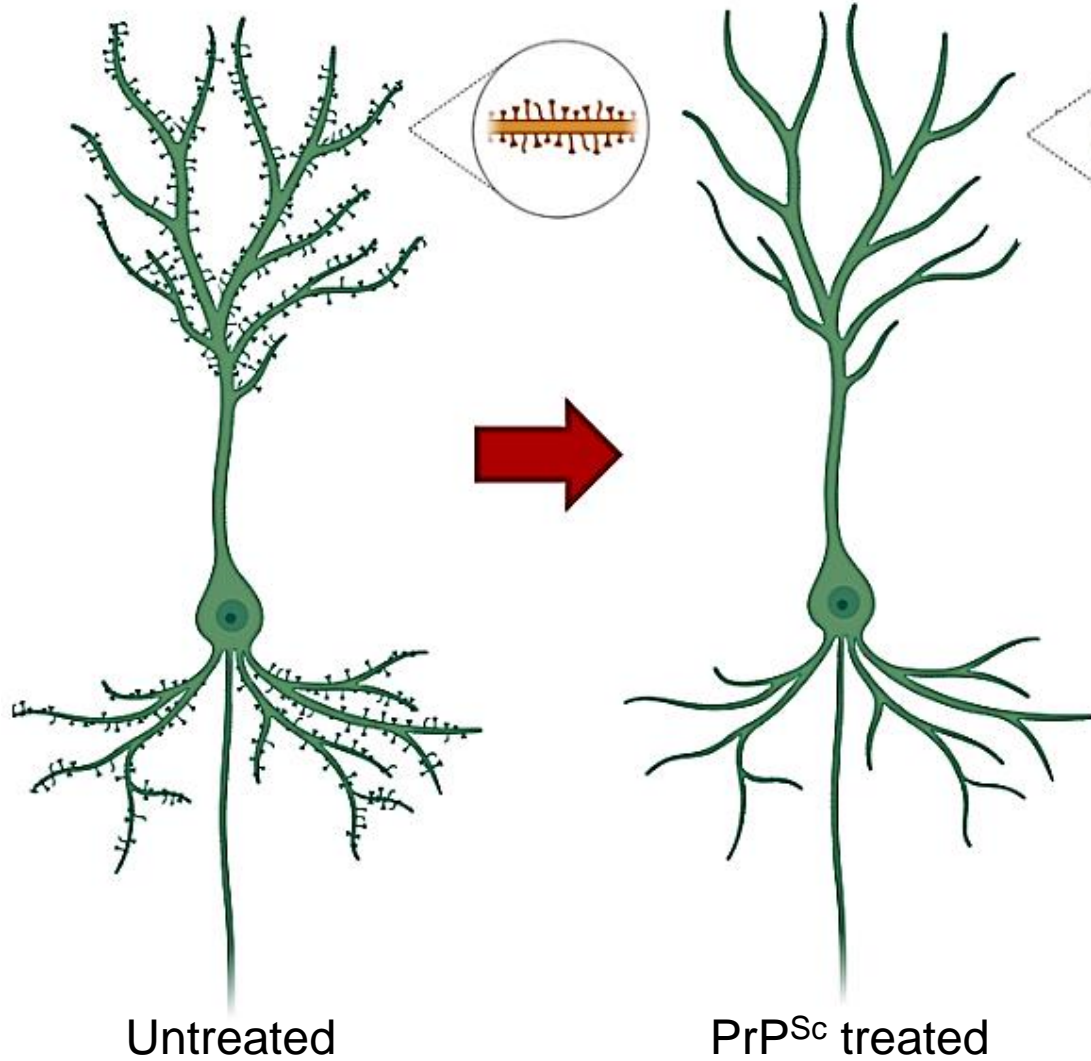
Synaptic degeneration begins very early in prion diseases



Dendritic spines:
Sites of physiological synaptic modulation (learning/memory)
& neuropathology

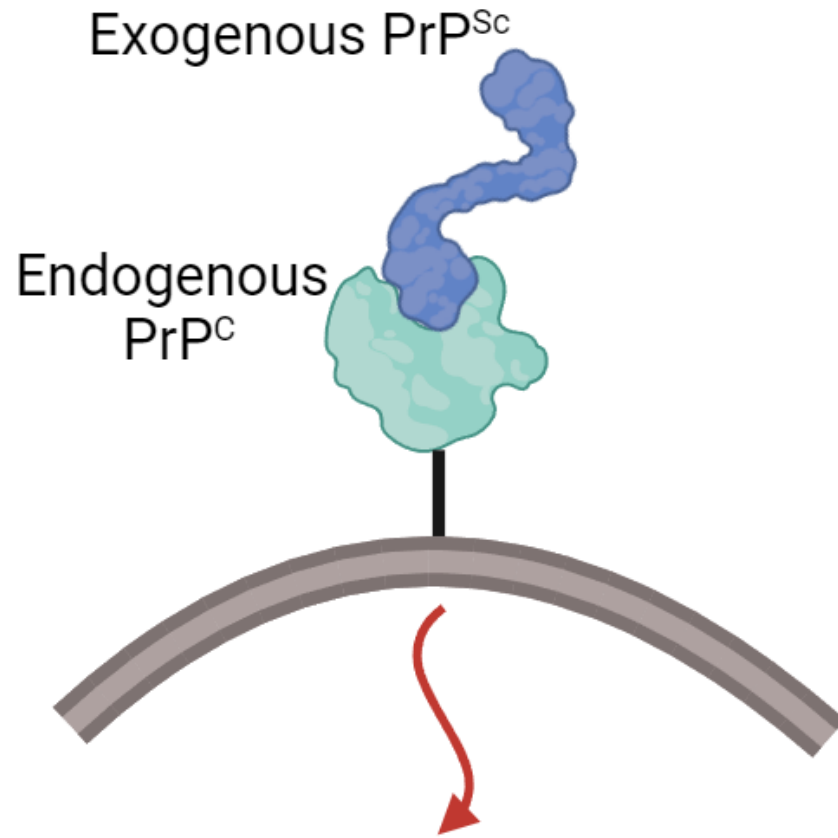


Synaptotoxicity Assay



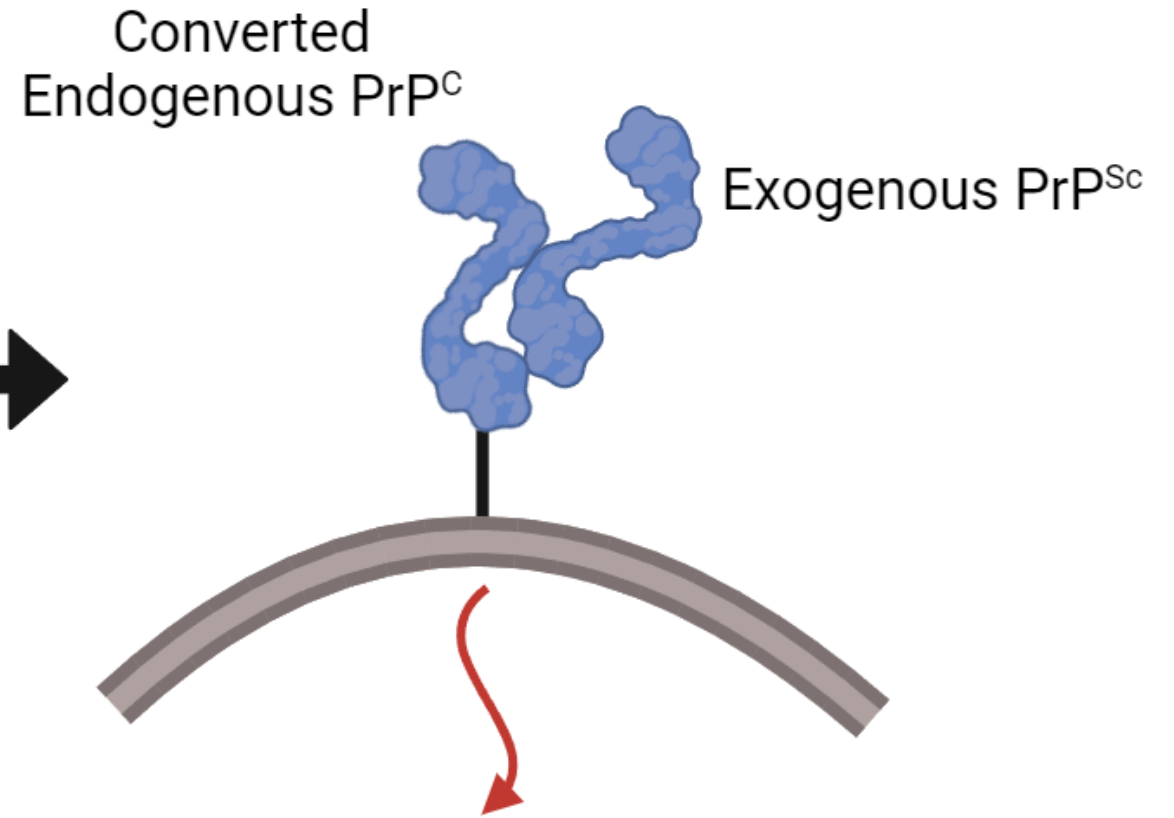
Is the conversion of PrP^C to PrP^{Sc} necessary for spine retraction?

Binding



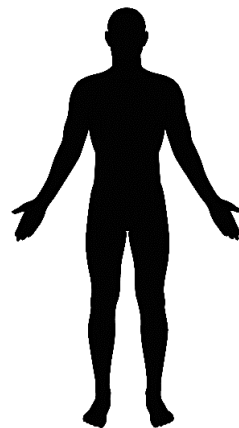
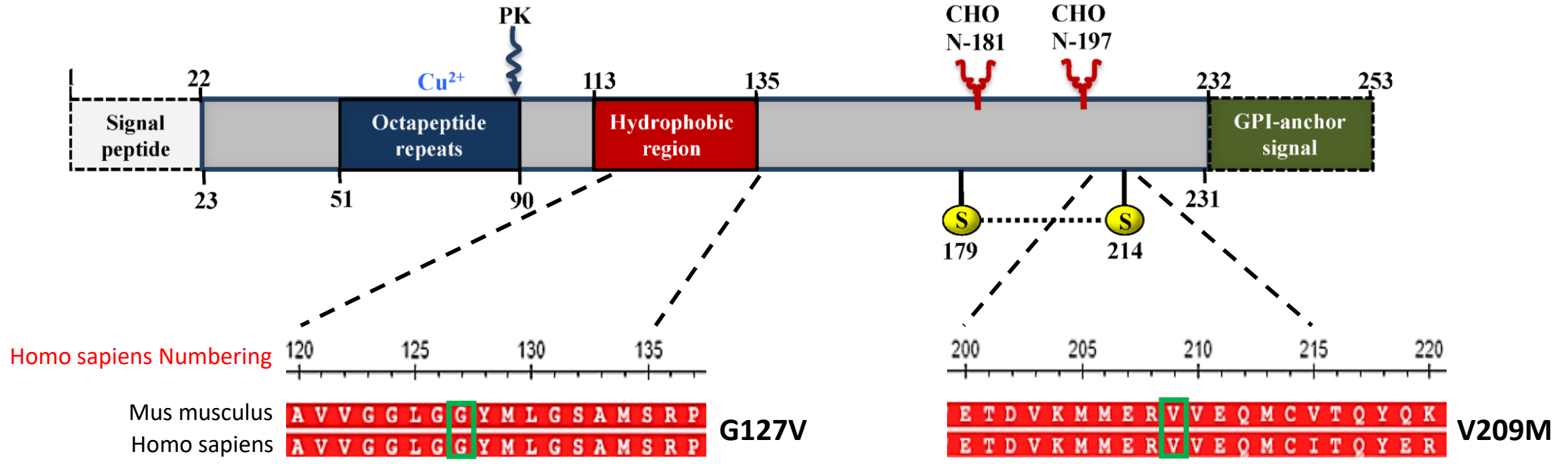
Neurotoxic Signal?

Conversion

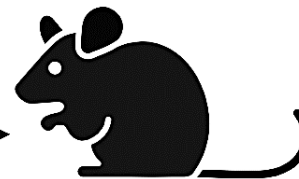


Neurotoxic Signal?

Protective Mutations of Interest



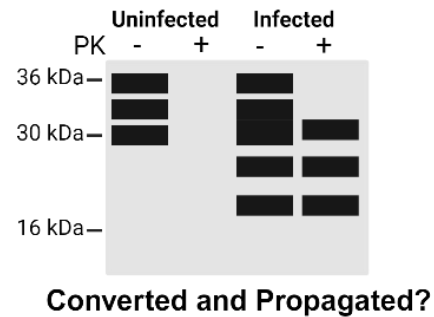
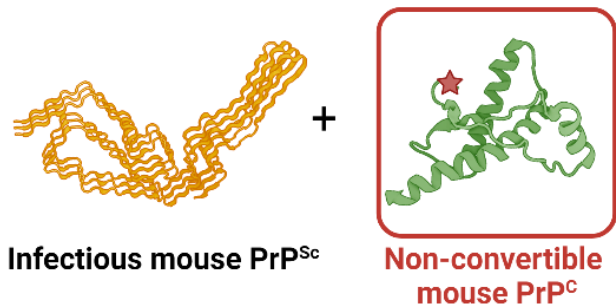
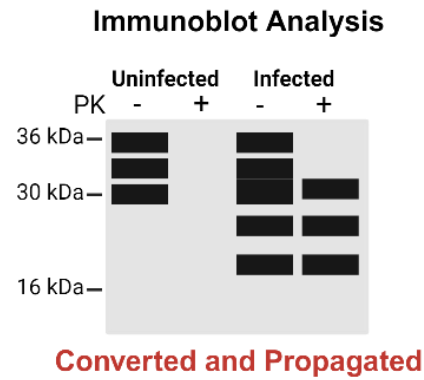
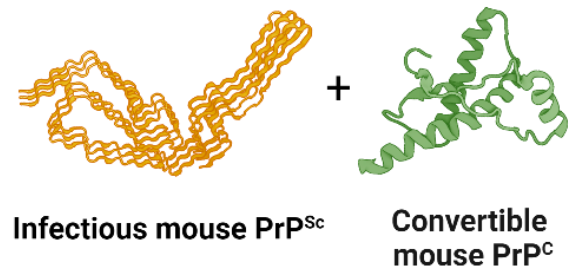
huPrP G127V
huPrP V209M



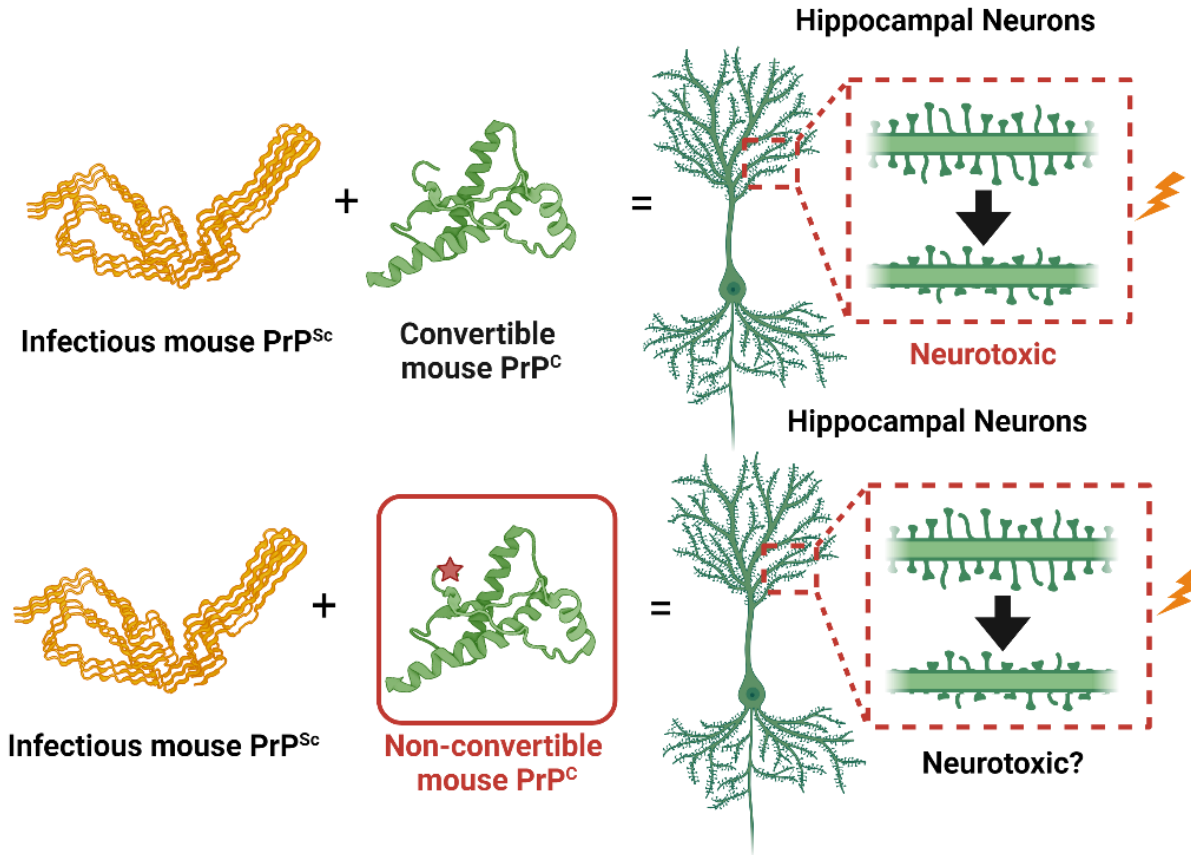
moPrP G126V
moPrP V208M

Do G126V and V208M PrP exhibit a protective phenotype *in vitro*?

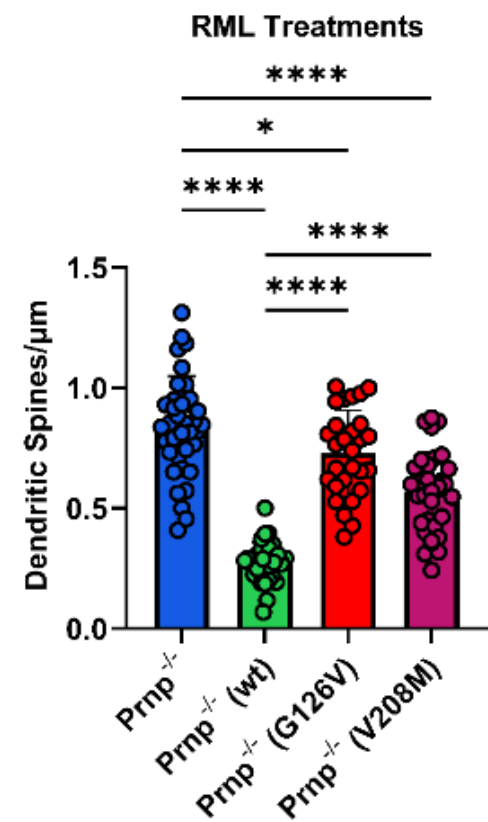
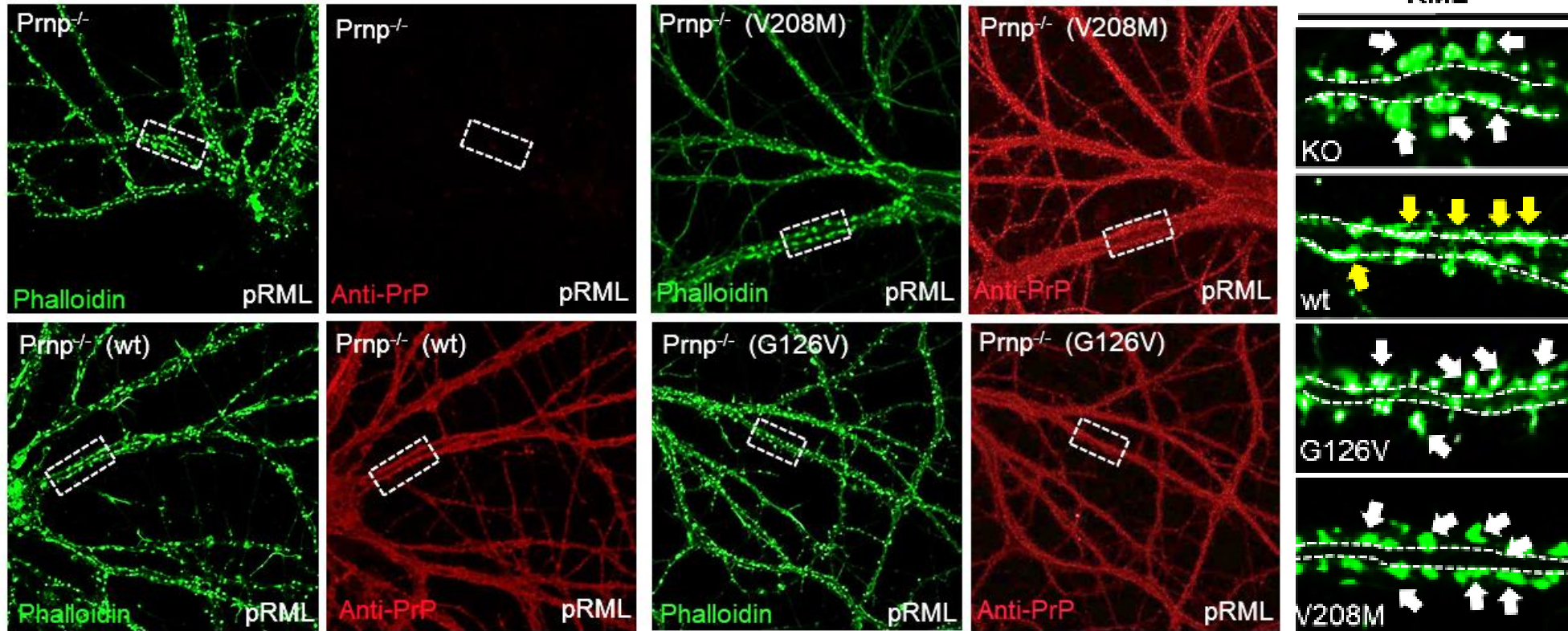
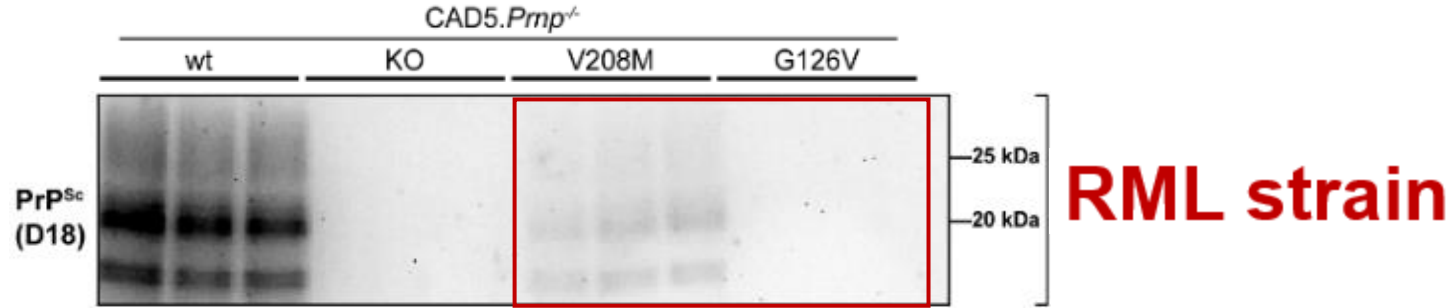
Biochemical Characterization



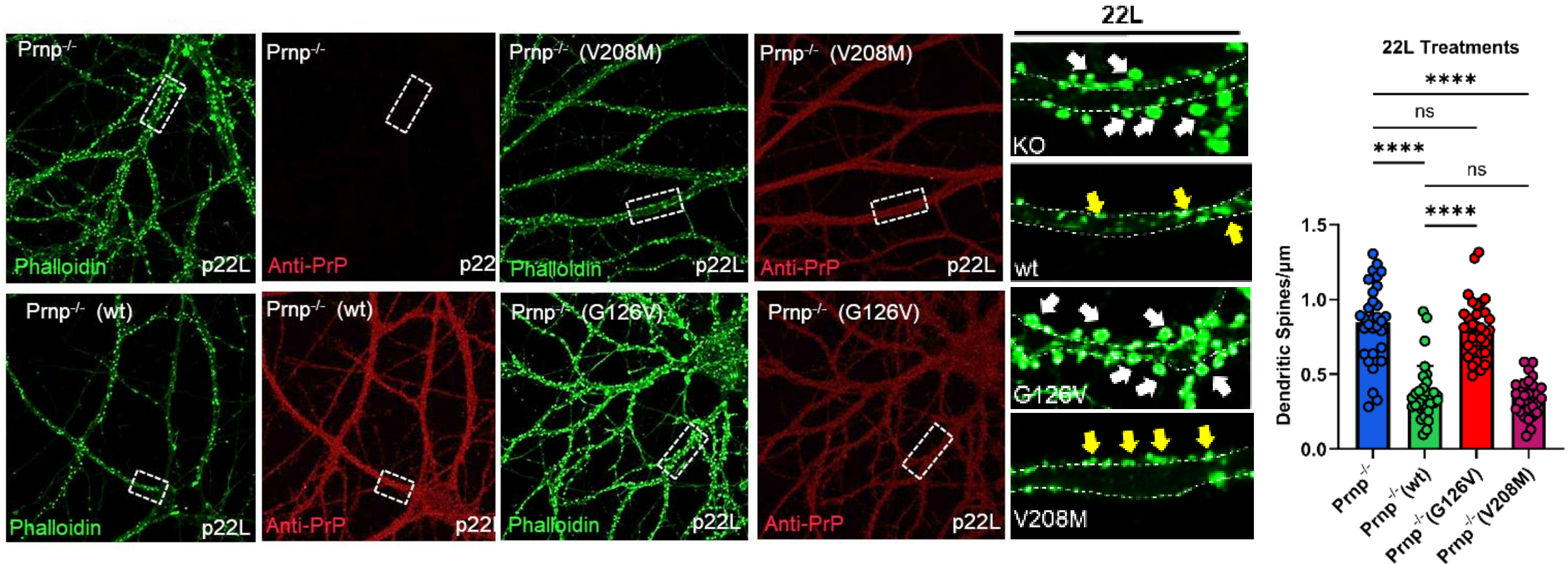
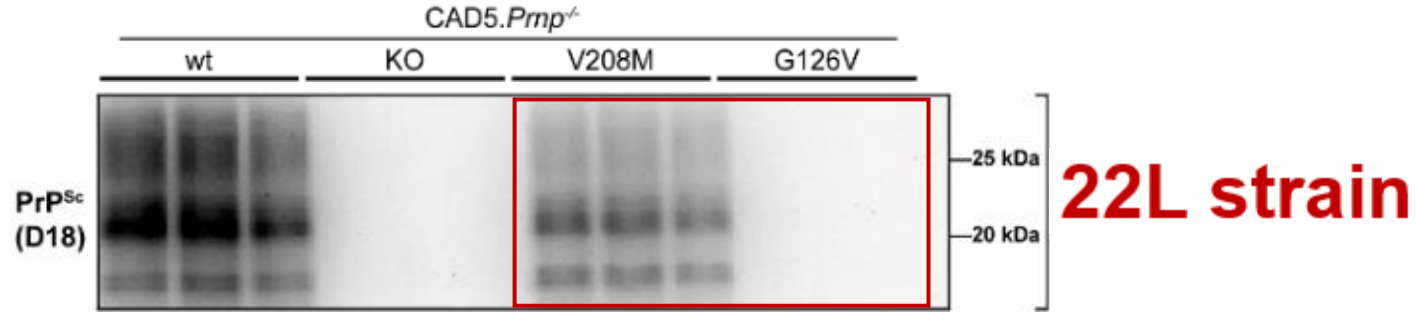
Morphological Characterization



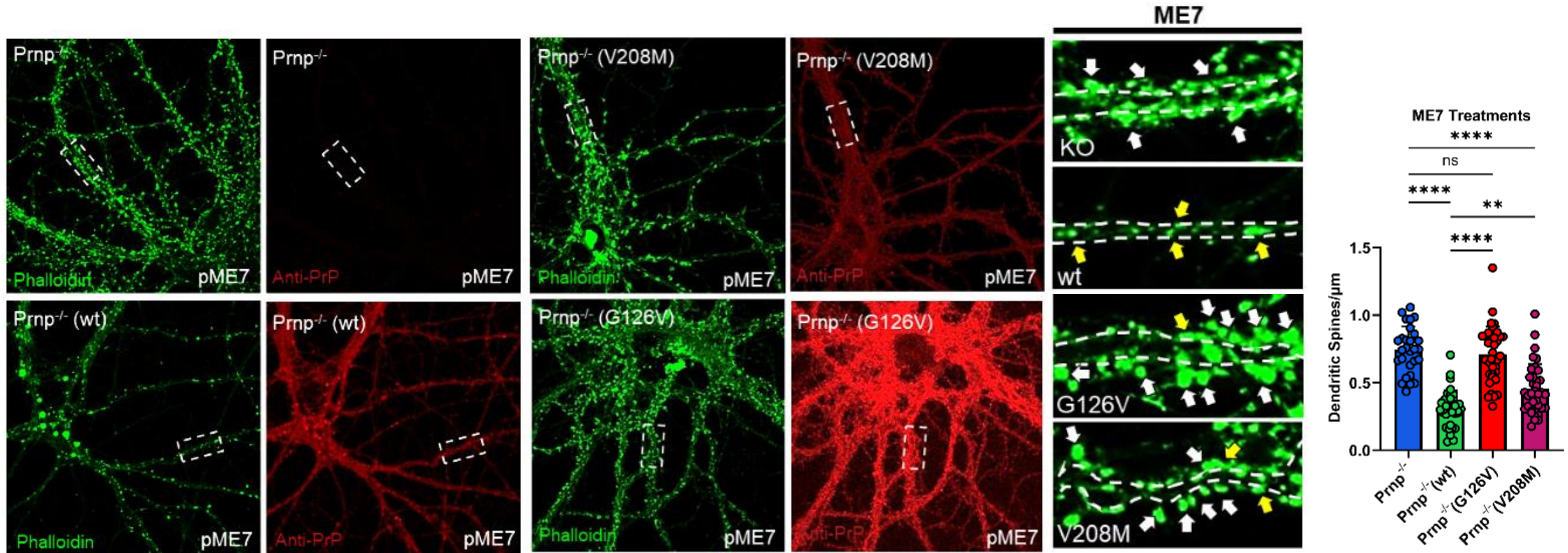
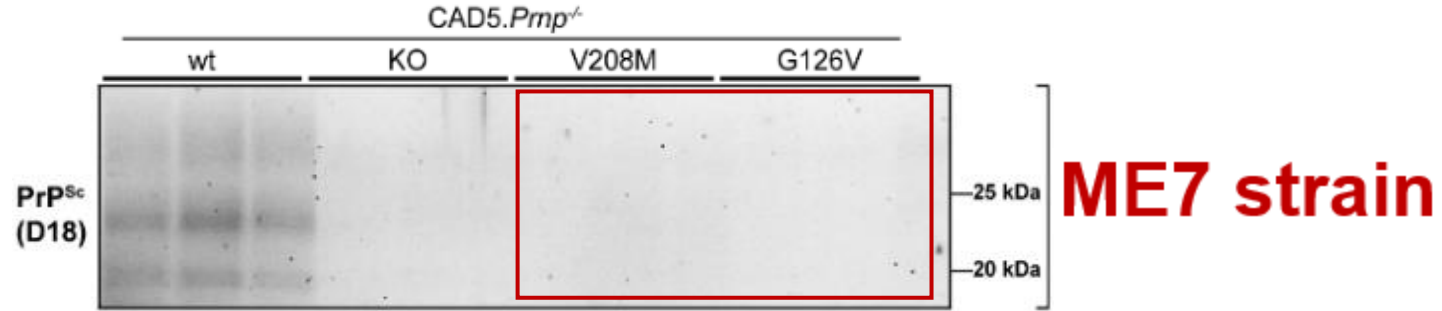
G126V and V208M prevents prion formation and spine retraction



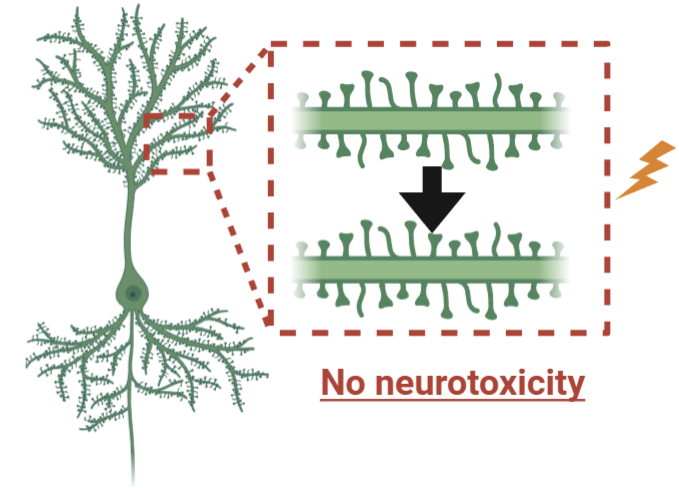
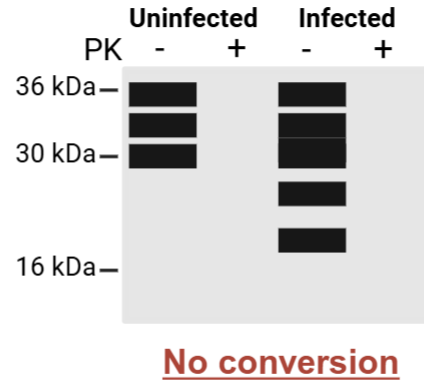
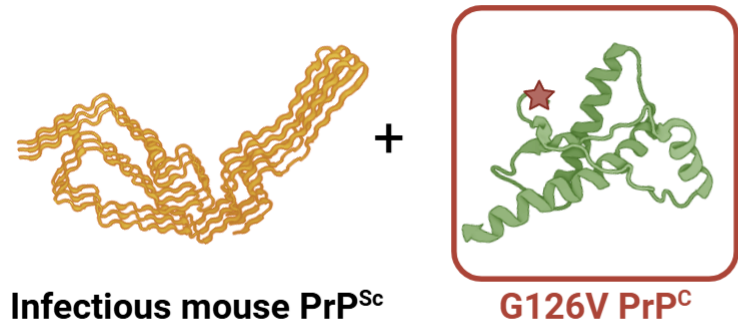
G126V completely prevents spine retraction and prion formation but not V208M



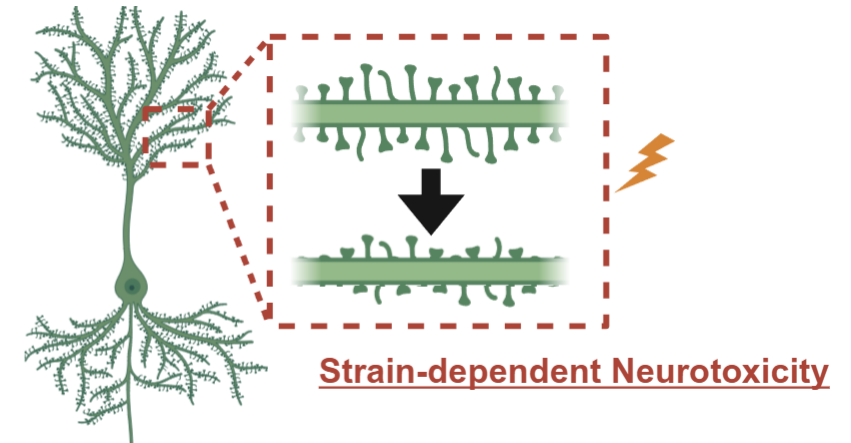
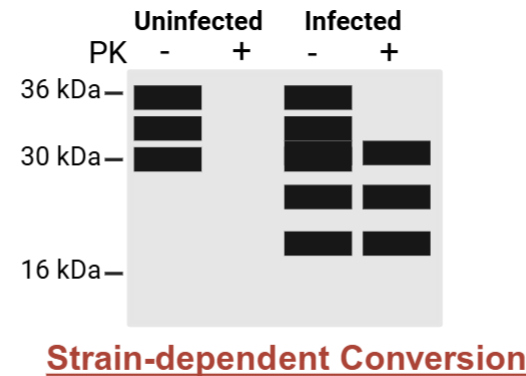
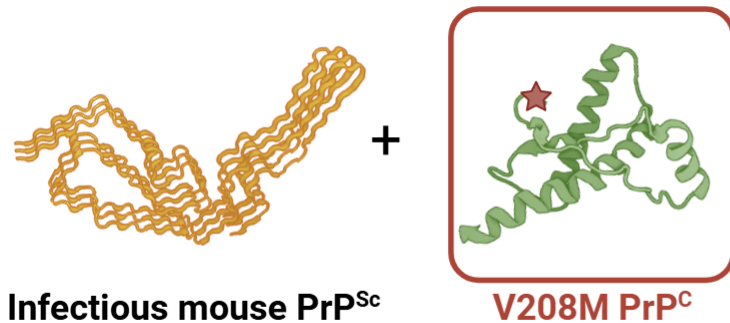
G126V and V208M prevent prion formation and spine retraction



G126V PrP^C completely prevents prion formation and spine retraction



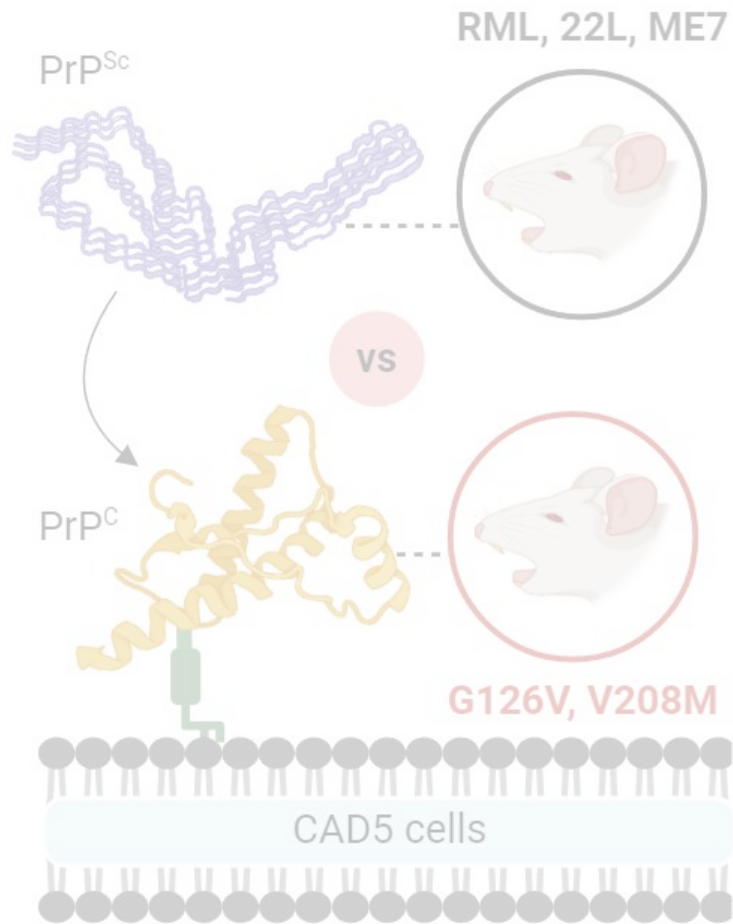
V208M PrP^C partially prevents prion formation and spine retraction



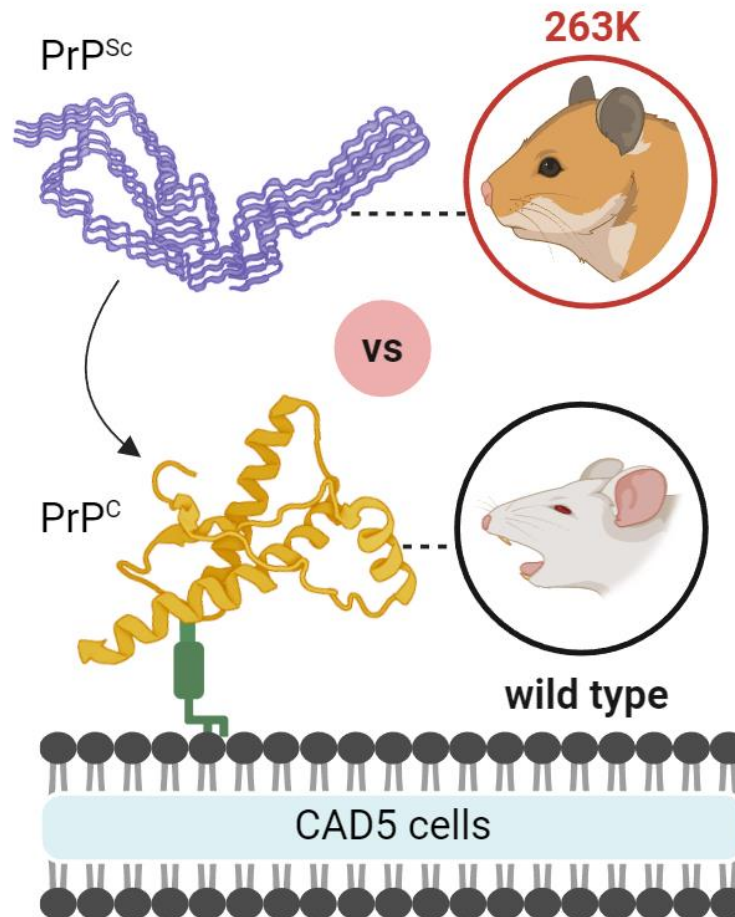
Cell surface PrP^{Sc} is the trigger for prion neurotoxicity

Want to know more? Visit my poster!

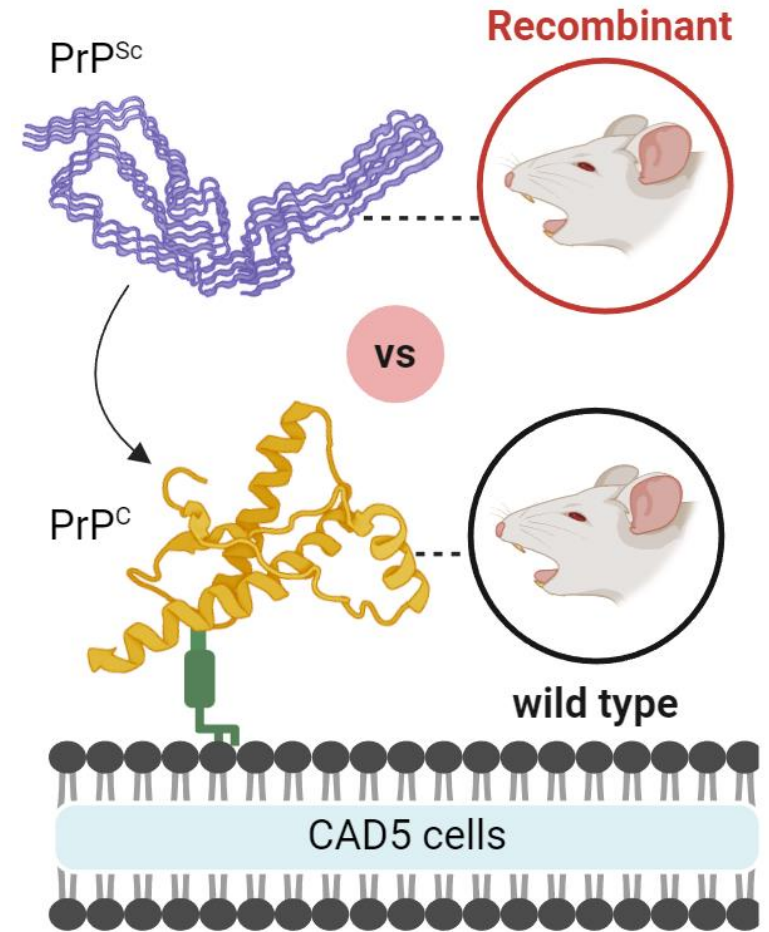
Non-convertible PrP^C mutants



Mouse-Hamster Species Barrier



Infectious & "Non-infectious" Recombinant PrP^{Sc}



Acknowledgements

Lab Members

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