

1. Chu,† C.-H., G.-Z. Pan,† et al. (2025). Nuclear paxillin functions as a molecular switch for alternative splicing in neurons during a critical period of brain development. **The EMBO Journal** 44, 5965–5992. DOI: 10.1038/s44318-025-00560-8.
This study identified paxillin as an activity-dependent nuclear regulator of alternative splicing during the postnatal critical period. It established a mechanistic link between synaptic activity, paxillin S119 phosphorylation, and critical-period splicing programs required for neural plasticity.
2. Chen, S.-W., et al. (2025). ECM29/Proteasome-Mediated Self-Antigen Generation by CNS-Resident Neuroglia Promotes Regulatory T Cell Activation. **Cell Reports** 44, 115161. DOI: 10.1016/j.celrep.2024.115161.
This work showed that ECM29/proteasome-dependent antigen generation in CNS-resident neuroglia helps shape the self-antigen landscape and promotes regulatory T cell activation. It extended my proteostasis research into CNS immune tolerance and neuroimmune regulation.
3. Chen, C., et al. (2022). Neuronal paxillin and drebrin mediate BDNF-induced force transduction and growth cone turning in a soft tissue-like environment. **Cell Reports** 40, 111188. DOI: 10.1016/j.celrep.2022.111188.
This study demonstrated that paxillin and drebrin form a softness-dependent module that mediates BDNF-induced force transduction and growth cone turning in soft brain-like environments. I led the project concept and integrated the mechanobiology, imaging, and developmental analyses.
4. Lee, M., et al. (2020). Ecm29-mediated Proteasomal Distribution Modulates Excitatory GABA Responses in the Developing Brain. **Journal of Cell Biology** 219(2): e201903033. DOI: 10.1083/jcb.201903033.
This work showed that ECM29-dependent proteasome localization regulates local NKCC1 abundance, the timing of the excitatory-to-inhibitory GABA switch, and neuronal excitability during development. It extended my proteasome program from axon biology to functional circuit maturation.
5. Chang, T.-Y., et al. (2017). Paxillin facilitates timely neurite initiation on soft-substrate environments by interacting with the endocytic machinery. **eLife** 6:e31101. DOI: 10.7554/eLife.31101.

This study identified a neuronal paxillin mechanism adapted to soft, brain-like mechanical environments and showed that paxillin promotes neurite initiation through interaction with the endocytic machinery. It established neuronal mechanobiology as a major direction of my independent research program.

6. Hsu, M.-T., et al. (2015). Stage-dependent axon transport of proteasomes contributes to axon development. ***Developmental Cell*** 35, 418–431. DOI: 10.1016/j.devcel.2015.10.018.

This study identified ECM29 as a key adaptor linking proteasomes to long-range transport in developing neurons and showed that stage-dependent proteasome positioning contributes directly to axon development. It established the proteasome-distribution program as a major axis of my laboratory.