Welcome to the Kampmann Lab!

The Kampmann lab develops and applies innovative technologies to understand cellular and molecular mechanisms of human diseases, and to discover new therapeutic strategies. A major focus of our research are neurodegenerative and neuropsychiatric diseases.

We have pioneered a CRISPR-based functional genomics platform in human iPSC-derived neurons, glia and 3D assembloids, which enables genome-wide modifier screens of disease-relevant cell biology in patient-derived cells.

We use biochemistry, biophysics and cell biology to test mechanistic hypotheses generated by our functional genomics platform.

Major research questions are:

- How do different human cell types respond to stress?
- Which molecular mechanisms underlie the selective vulnerability of specific subtypes of neurons to stress and disease?
- What controls protein aggregation in neurons, and why is it toxic?
- How is dysfunction of different cellular processes (neuronal activity, protein
homeostasis, autophagy, endolysosomal trafficking, mitochondria) coupled in neurodegeneration?

- What are the mechanisms by which disease-associated genetic variants cause brain diseases?
- What controls beneficial and toxic functions of astrocytes and microglia in disease?

We are committed to diversity, equity and inclusion. Read more about our mission and values. [1]

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