Welcome to the Kampmann Lab!

The Kampmann lab develops and uses innovative technologies to understand cellular and molecular mechanisms of human diseases, and to discover new therapeutic strategies.

A major focus of our research are diseases associated with protein misfolding, such as neurodegenerative diseases [1]. We ask how cells maintain their proteins in a functional and balanced state. In human cells, this is accomplished by a network of over 1,000 different factors called the proteostasis network [2]. Our goal is to understand how this network functions, and how it is challenged and rewired in disease states, including neurodegenerative diseases [1] and cancer [3].

Our functional genomics [4] technology, which integrates CRISPR/Cas9-based control of gene function and large-scale genetic interaction maps, enables us to elucidate dynamic networks and to pinpoint nodes that are potential therapeutic targets. CRISPRi and CRISPRa genetic screens in cells derived from human induced pluripotent stem cells (hiPSCs) can reveal mechanisms of disease-associated genes and of selective vulnerability of specific cell types. We use biochemistry, biophysics and cell biology to "zoom in" on individual nodes of the network and to reveal their mechanism of action. (Read more about our research here [5].)
We are recruiting highly motivated students, postdocs, staff scientists and research assistants, ideally with experience in bioinformatics/computational analysis of complex datasets or iPSC technology. Please contact us [6] for more information.

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Links
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