AGNIESZKA KENDRICK

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Kendrick is a biochemist who studies the molecular motors cells use to transport necessities and function. Her work sheds light on the dysfunction of these motors in disease, like cancer and numerous neurological disorders, while also having broader implications due to the prevalence of these motors throughout the body's diverse cell types.

THE CHALLENGE

Cells use molecular motors to transport the necessities for proper cellular function. These highly dynamic, energy-driven molecular machines travel along a cellular highway system—called the cytoskeleton—to transport diverse cargo such as organelles, vesicles, mRNA, and viruses. Cells have different types of motors that can move in opposite directions or on different cytoskeletal tracks. Although transport disruption is linked to cancer and numerous neurological diseases, including Alzheimer's disease, we still don't fully understand how these motors work to transport items throughout the cell.

THE APPROACH

Kendrick investigates how cellular motors are assembled, how they handle diverse cellular cargo, and how they communicate with each other. She uses advanced imaging tools like cryogenic electron microscopy (cryo-EM) combined with single-molecule and live-cell imaging methods to piece together the principles of these motors. Her multidisciplinary approach allows her to unravel how cells transport important materials and how regulating or disrupting that transport either prevents or contributes to disease.

THE INNOVATIONS AND DISCOVERIES

- Kendrick discovered a protein that links cellular motors that move in opposing directions and share the same cytoskeletal track.
- Kendrick showed that a cellular motor called cytoplasmic dynein-1 can carry diverse cargo by creating multiple specialized carrying complexes to attach new cargo.
- Kendrick contributed to defining the different steps in cellular motor activation.

For more information, please visit:
WWW.SALK.EDU/SCIENTIST/AGNIESZKA-KENDRICK

ALZHEIMER'S DISEASE | CANCER | MOLECULAR MOTORS