

# Unlocking the Future of Medicine: Chemistry of Life Processes Institute at Northwestern

## THE POWER OF PROTEINS

If there's one common thread that unites us all, it's the desire to maintain our health and vitality as we age. When diseases like Alzheimer's or cancer strike, the lack of effective treatments can drastically impact our lives. Imagine a future where early, non-invasive tests and actual cures for these diseases are a reality. What's holding us back from these breakthroughs?



**The key is to understand our proteins, the workhorses of cells, with a new and unprecedented level of detail, here's how:**

### Revolutionary Diagnostics:

Proteomics, the study of human proteins, enables the precise diagnosis of neurodegenerative diseases and elusive cancers that are currently difficult and costly to identify. Early and accurate detection paves the way for better treatments, saving lives and reducing healthcare expenses.

### Precision Medicine:

Proteomics helps us develop more accurate and targeted treatments, which can greatly improve patient outcomes. By focusing on proteins, we gain a deeper understanding of disease development and progression. This knowledge not only boosts the quality of life for people of all ages but also holds the potential to extend lifespan and reduce the rising costs of medical care.

## Northwestern: Leading the Charge

Northwestern University's **Chemistry of Life Processes Institute** (CLP) is at the forefront of protein-informed medicine. Under the visionary leadership of **Neil L. Kelleher**, an internationally recognized proteomics expert, CLP is spearheading an ambitious initiative to map the entire human proteome. In the next three years, CLP aims to identify better targets for Alzheimer's ALS, Parkinson's disease and cancer paving the way for the development of new biomarkers and highly precise drugs and diagnostics for these devastating diseases. By merging excellence in protein-informed medicine with cutting-edge technology development, CLP is ushering in an era where we can all enjoy longer, healthier, and more productive lives.

## PROTEINS PLAY A CRITICAL ROLE IN DISEASE

Hard-working proteins play a critical role throughout the body. When we develop Alzheimer's, cancer, heart disease and other disorders, the problem is almost always manifested through proteins and their various forms (**proteoforms**). Studying abnormal proteoforms provides a pathway to understanding and combating these diseases. Despite the pivotal role proteoforms play in human health and disease, most have yet to be identified and measured.

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