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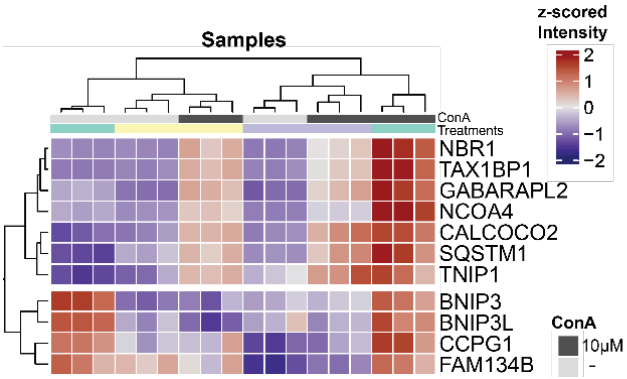
Licensing Opportunity

Precision monitoring of autophagy via a targeted proteomic approach



Summary

We developed a monitoring approach that supports high-throughput and high-accuracy analyses of biological specimen to determine the activity and specificity of autophagy, a biological process involved in cancer and neurodegeneration.

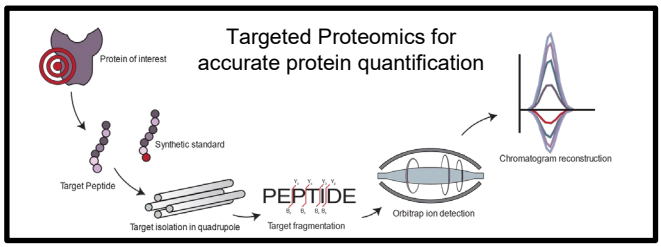
Background

Autophagy is a cellular recycling pathways that is often found dysregulated in so called Western lifestyle diseases such as cancer, neurodegenerative and metabolic disorders. Many different subtypes of autophagy exist that ensure the turnover of superfluous or damaged cellular material.

So far, determining the activity and specificity of autophagy is very laborious and cannot be performed on a routine manner on many samples. By our approach relying on targeted proteomics, we can monitor abundance changes of numerous autophagy-relevant proteins in a very short time frame. This supports the routine determination of autophagic states of biological samples which can e.g., be used in autophagy drug development.

Invention

We setup a targeted proteomics approach relying on mass spectrometry to measure abundance changes of 40 autophagy-relevant proteins within 2 hours. Up to now, autophagy is monitored by single-protein analyses, experiments taking up to 2 days. Per protein up to three peptides are monitored generating multiple datapoints per peptide, which allows to determine the accuracy of measurements.
Thus, this innovative invention supports precision medicine approaches aiming at targeting autophagy in diverse disease settings.



Fields of Application

Basic research;
Drug development, diagnosis and prognosis in:

- Neurodegeneration
- Cancer
- Metabolic disorders

Patent Status

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