ascenion Technology transfer for academic research
A company of the LifeScience Foundation

REFERENCE NUMBER TO 03-00384

SHORT TERM ISOTOPE PULSE LABELING METHOD FOR ANALYZING METABOLIC STATES AND DRUG TARGETS IN BIOLOGICAL SAMPLES

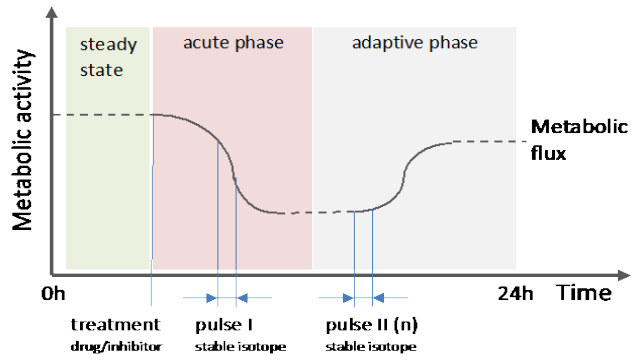
Keywords: pSIRM, metabolomics, metabolic dynamics, cellular metabolism, spectrometry, drug development

INVENTION NOVELTY

Here we present **p**ulsed **s**table **i**sotope **r**esolved **m**etabolomics (**pSIRM**) as a tool for dynamic metabolic characterization of cellular metabolism.

VALUE PROPOSITION

pSIRM will contribute to unravelling metabolic dynamics in complex metabolic networks, to identify drug targets and, most importantly, to measure drug action regarding its dynamics, on-target and off-target effects. pSIRM harbors the potential to make drug development much more efficient and cost effective.



Scheme of a possible pSIRM experiment to measure the direct response after a drug treatment and later adaptive changes of metabolism (S. Kempa, Max-Delbrück-Center)

TECHNOLOGY DESCRIPTION

We have adapted spectrometric methods for metabolomic profiling and stable isotope resolved metabolomics. In addition, we improved robustness and reproducibility of results and implemented a strategy for absolute quantification of metabolites. The technology was designed to enable automated processing of cell cultures during experimental procedures. Starting from 1.000.000 cells, we are now able to measure stable isotope profiles from as little as 500 cells – thereby saving on ingredients as buffers or stable isotopes and enabling simultaneous handling of diverse sets of experiments.

COMMERCIAL OPPORTUNITY

We are looking for industrial partners to cooperate on further optimizing, automating, and evaluating pSIRM technology. Licensing is also possible.

DEVELOPMENT STATUS

Proof of concept demonstrated, mechanistic studies of immune and cancer cells, characterization of metabolic drugs, identification and characterization of severe off-target effects.

PATENT SITUATION

Patents granted in EP (EP2944963B1) and US (US10082499B2); priority date: May 14, 2014

FURTHER READING

doi:10.1002/ijc.33423
doi:10.1161/CIRCULATIONAHA.120.052788
doi:10.1016/B978-0-12-801329-8.00009-X
doi:10.1038/nature22353
doi:10.1080/14756366.2021.1935917
doi:10.1186/2049-3002-2-9

MDC MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN IN DER HELMHOLTZ-GEMEINSCHAFT

Ascenion GmbH
Herzogstraße 64
D-80803 München
info@ascenion.de
www.ascenion.de

Licensing Contact
Dr. Rebekka Müller
Technology Scout
T: +49 30 9489-3004
rmueller@ascenion.de

Last updated September 2021