Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V.

Pressemitteilung
des Leibniz-Instituts für
Analytische Wissenschaften – ISAS – e.V.

und

des Instituts für Analytische Chemie der
Universität Wien

17.06.2020

Researchers from Dortmund and Vienna develop unique software LipidCreator

Findings by means of new lipid analysis may be helpful for rapid and targeted diagnosis and prognosis of diseases

Science hast been increasingly using the many different functions of lipids in the human body to diagnose diseases earlier and to better predict their course. Although lipids have a big potential as biomarkers, their analysis has so far been technically complex. Therefore, researchers at the Leibniz Institute for Analytical Sciences (ISAS) and the Institute of Analytical Chemistry at the Universität Wien (University of Vienna) have developed the first software for targeted mass spectrometric analyses of lipids. "LipidCreator has a high clinical relevance. The software enables us to determine specific lipid groups and lipid signal molecules, which we have decoded using mass spectrometry, faster and more efficiently than before. This way, we gain insights into blood coagulation and the origin of thromboses, for example", explains Ass.-Prof. Dipl.-Biol. Robert Ahrends from the Universität Wien and former head of the "Lipidomics" research group at ISAS.

Various application areas and large lipid database

The new software, which the renowned journal "Nature Communications" has recently reported on, is an important step towards establishing the analysis of all lipids in a cell, tissue or organism. Not only does it enable new investigations in health research, but it is also suitable for various laboratory

Contact:

Rebecca Hameister
Press Office
ISAS City
Bunsen-Kirchhoff-Str. 11
44139 Dortmund, Germany
P: +49 (0)2 31.13 92-1082
E: rebecca.hameister@isas.de

Dipl.-Geogr. Lena Yadlapalli
Wissenschaftskommunikation
Universität Wien
Fakultät für Chemie, Dekanat
Währinger Straße 42
A-1090 Wien, Vienna
P: +43-1-4277-52012E:
lena.yadlapalli@univie.ac.at

Ass.-Prof. Dr. Robert Ahrends
Institut für Analytische Chemie –
Universität Wien
Währinger Straße 38
1090 Wien, Vienna
P: +43(1)4277-52304
M: robert.ahrends@univie.ac.at

environments. At the same time LipidCreator serves as a huge library of lipid knowledge.

Lipids play an important role in health

Lipids are chemically very different, have a complex structure and consist of combinations of different building blocks such as sugars, fatty acyls and binding types. In public perception, they are often notorious as fats that make people ill and fat - although they play an important role in the human body. For life is enveloped in lipids, fats and waxes: they form cells and organelles, convey information, protect the organism from harsh environmental conditions and serve as energy building blocks.

The mass spectrometry required for LipidCreator has become both faster and more sensitive in recent years. Today, up to 500 lipids can be analyzed by mass spectrometer.

LipidCreator can be used for example to characterize blood plasma and to analyze the role of lipids in the activation of thrombocytes. ©ISAS. The image may be used free of charge for editorial reporting on the LipidCreator, provided the source is named.

Peng, B., Kopczynski, D., Pratt, B.S. *et al.* LipidCreator workbench to probe the lipidomic landscape. *Nat Commun* **11,** 2057 (2020). DOI: 10.1038/s41467-020-15960-z

About ISAS

The Leibniz Institute für Analytische Wissenschaften - ISAS - e.V. develops powerful analytical methods with focus on health research: With its innovations, ISAS contributes to improving the prevention, early diagnosis and therapy of diseases. The Institute's goal is to advance precision medicine tailored to the individual patient. ISAS combines expertise in chemistry, biology, physics and computer science and cooperates with numerous national and international partners. The institute was founded in 1952 and has around 200 employees at three locations in Dortmund and Berlin. More information is available at www.isas.de.

About the Leibniz Association

ISAS is a member of the Leibniz Association, which links 96 independent research institutions. Its focus ranges from the natural, engineering and environmental sciences to the economic, spatial and social sciences and the humanities. Leibniz Institutes address socially, economically and ecologically relevant issues. They conduct knowledge- and application-oriented research, including in the overarching Leibniz research networks, they are or maintain scientific infrastructures and offer research-based services. The Leibniz Association sets priorities in knowledge transfer, especially with the Leibniz research museums. It advises and informs politics, science, business and the public. Leibniz institutions maintain close cooperation with the universities - including in the form of the Leibniz Science Campi, with industry and other partners in Germany and abroad. They are subject to a transparent and independent evaluation procedure. Due to their importance at national level, the federal and state governments jointly promote the institutes of the Leibniz Association. The Leibniz Institutes employ around 18,700 people, including 9,500 scientists and researchers. The total budget of the institutes is

more than 1.8 billion euros. Further information is available at www.leibniz-gemeinschaft.de.

About the Institute for Analytical Chemistry at the Universität Wien

The Institute of Analytical Chemistry focuses on quantitative trace analysis in complex systems, which are described holistically in space and time. The institute's goal is not only to develop methods for this type of analysis and to decipher the complexity of the systems, but also to bring these analytical processes into the practice relevant to the population. Further information is available at https://lipidomics.at

About the Universität Wien (University of Vienna)

The Universität Wien is one of the oldest and largest universities in Europe: around 9,800 staff members, including 6,800 scientists and scholars, work at 20 faculties and centres. This makes the Universität Wien the largest research institution in Austria as well as the largest educational institution: Currently, about 90,000 national and international students are enrolled; with 178 studies, it offers the most diverse range of courses in the country. The University of Vienna is also an important institution for continuing education. Further information is available at www.univie.ac.at/en/.