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Press release
For immediate release

CD Laboratory for Lipid Emulsions as a Paradigm Shift in Chemotherapy

Graz, 2 June 2026: Despite considerable advances in oncology research, cancer is still one of the leading causes of death worldwide. For patients, their families and the health care system, the disease remains an enormous challenge. Particularly problematic are the side effects of many therapies as well as the ability of tumors to develop a resistance to drugs over the course of treatment.
Against this backdrop, a new Christian Doppler Laboratory has been set up at the Medical University of Graz to pursue an innovative approach to cancer treatment: the use of novel lipid emulsions as a possible complement to chemotherapy.

Investment in innovative cancer research

Funded by the Austrian Federal Ministry of Economy, Energy and Tourism (BMWET) along with industrial partner Fresenius Kabi Austria, the new Christian Doppler lab at Med Uni Graz aims to develop new and more effective chemotherapy approaches. The seven-year research program has broad public and industrial support. Beate Rinner will direct the lab.

Federal minister Wolfgang Hattmannsdorfer: "Life sciences and medical technology are key technologies in our industrial strategy for 2035 and critical sectors for Austria's future as a business location. The new CD lab shows how specific medical innovations can emerge from excellent research undertaken with innovative companies—with better treatment, greater patient quality of life and new value added for our location."

The research focuses on developing a new intravenously administered nanoemulsion based on omega-3 fatty acids derived from algal oil. The goal is to make existing chemotherapy more effective while improving how it is tolerated.
The initial scientific evidence suggests that certain omega-3 fatty acids—especially DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid)—inhibit tumor growth and can support the effects of classic chemotherapies.

New combinations for better therapies

One of the questions the new lab addresses is how to combine different Omega-3 formulations with established cancer therapies. Investigations aim to discover what combinations are particularly effective at attacking tumor cells while healthy cells are protected as best as possible.

The research team employs three-dimensional, patient-specific tumor models to study these effects under realistic conditions. They depict tumor cells as well as their biological environment including immune cells. "This lets us investigate the disease under conditions much closer to real ones than in classic cell cultures," explains head of lab Beate Rinner. Tumor tissue obtained from surgical procedures is prepared under strictly controlled conditions and used to develop functional models.

Research in the context of the entire organism

Another focus is on how safe the new approaches are. Heart muscle cells are created in the lab from the patient's own cells in order to detect possible effects on the heart in an early stage. Effects on skin cells are also systematically investigated in order to create a comprehensive safety profile.
Furthermore, the research team analyzes how omega-3 fatty acids influence the immune system. The goal is to understand whether and how the body's own tumor defense system can be supported.

From basic research to application

The Christian Doppler lab pursues a translational approach: Basic research findings should be translated into medical applications as rapidly as possible. The aim is to better understand the active mechanisms of the new lipid nanoemulsions and derive new therapeutic approaches from them.
In the long term, the findings should serve as the basis for clinical trials. The project might help to make chemotherapy more effective, more personalized and better tolerated in the future, thereby improving patient quality of life considerably.

Cooperation as an innovation engine

As part of the Christian Doppler Research Association, the new lab is an example of the close cooperation between science and industry. This partnership makes it possible to translate research findings into medical applications more quickly and drive targeted innovation.
By using omega-3-based lipid emulsions, the project is pursuing a promising new approach in cancer research—with the goal of advancing chemotherapy and opening up new perspectives for treatment.

About the Christian Doppler Research Association

Christan Doppler laboratories conduct high-quality application-oriented basic research in which outstanding scientists cooperate with innovative companies.
The Christian Doppler Research Association is regarded internationally as a best practice model for promoting this cooperation.
Christian Doppler labs are funded by the government and by participating companies. The most important public funding agency is the Austrian Federal Ministry of Economy, Energy and Tourism (BMWET).

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