Website address:
https://www.gesundheitsindustrie-bw.de/en/article/press-release/eu-foerdert-forschung-zu-ursachen-und-neuen-therapien-der-multiplen-sklerose

EU funds research into causes and new therapies for multiple sclerosis

The progression of multiple sclerosis (MS) can usually be slowed down with medication, but a cure is currently not possible. It is now established that Epstein-Barr viruses are involved in the development of MS. However, it is not known how the pathogens trigger the disease. The European Union is now funding the international research consortium BEHIND-MS as part of its HORIZON Europe program, which aims to clarify these associations in order to identify specific biomarkers and targeted therapeutic approaches. The consortium, led by the German Cancer Research Center, will receive 7.1 million euros over a period of five years.

Multiple sclerosis (MS), an inflammatory disease of the central nervous system, affects around 250,000 people in Germany and an estimated 2.8 million worldwide. MS is characterized by an inflammation-related loss of the myelin layer in the brain and spinal cord, which insulates the nerves - with sometimes serious consequences such as paralysis or severe visual impairment.

The cause of this destruction is not known. Viral infections, particularly with the Epstein-Barr virus, have been suspected for years. However, this link was difficult to prove, as up to 95% of all people become infected with EBV in the course of their lives - but MS is a rare disease. It was not until 2022 that a US research group achieved a breakthrough - by evaluating the viral status and MS diagnoses of an incredible 10 million US military personnel.

"They found that MS is 30 times more common among those infected with EBV than among people who have never been in contact with this virus - this is extremely strong evidence that the virus is causally involved in the disease," explains Henri Jacques Delecluse, virologist at the German Cancer Research Center. "This result was an important clue for us to be able to plan further research projects."

MS can be treated better and better. However, the therapies that mainly target the immune system are not always effective, and for many sufferers a severe course with severe physical limitations cannot be halted. " We need therapies getting to the roots of the disease. We need to understand how EBV induces the development of MS in the first place. To this end, we need more precise models to investigate the interaction of the viruses with their host cells. For example, we don't even know whether the immune cells of those affected can even eliminate EBV-infected cells? Or does this attempt to get rid of the pathogen lead to an overactivation of the immune system, which ultimately triggers autoimmune reactions? And which viral antigens play a role in this?" says Delecluse.

To answer these questions, the EU is now funding the international "BEDIND-MS" consortium under the leadership of Delecluse as part of its HORIZON Europe research funding program. A total of twelve partner institutions from six European countries are participating in the consortium. The interdisciplinary team initially aims to develop new cell and animal models in which the interactions of viruses, immune cells and nerve cells can be followed in detail under conditions that are as close to nature as possible. The researchers then want to use these systems to test various hypotheses on the development of the disease, including theories that do not focus solely on the marauding immune system. The search for genetic or infectious co-factors that promote the disease will also be part of the research program. This should make it easier to identify people with a particularly high risk of developing the disease.

"Ultimately, our goal is to identify biomarkers that signal specific stages or progressions of the disease and thus arrive at new, more precise therapeutic approaches. In this way, we hope to halt the cruel course that the disease takes in many cases," says Delecluse.

The funding for BEHIND-MS amounts to a total of 7.1 million euros over five years. Almost 3.7 million of this will go to the DKFZ.

The partners in the BEHIND-MS consortium are

- DKFZ (coordinator)
- Consiglio Nazionale delle Ricerche (Italy)
- Erasmus University Rotterdam (Netherlands)
- Helmholtz Center Munich
- Instituto Superiore di Sanita (Italy)
- University of Milan
- Fondazione Istituto Nazionale di Genetica Molecolare (Italy, affiliated)
- University of Zurich (associated)
- University Hospital Vall D'Hebron, Barcelona
- University of Münster
- University of Verona
- The European Multiple Sclerosis Platform (Belgium)

Press release

29-Nov-2023
Source: German Cancer Research Center (DKFZ)

Further information

- German Cancer Research Center (DKFZ), Heidelberg
- Horizon Europe