Latest releases of "exzellent erklärt - Spitzenforschung für alle"

Start Time: Wednesday, July 26, 2023

End Time:

Every month, the podcast “exzellent erklärt” presents an exciting research topic from one of the 57 clusters of excellence in Germany. The journey goes right across the country, and the topics are just as diverse as the locations.

Here, we give a little recap of the last six episodes. An absolute recommendation for anyone who likes podcasts and is interested in science (and understands German)! Find it wherever you get your podcasts, and here: www.exzellent-erklaert.podigee.io

The texts for the individual episodes have been translated into English from the “exzellent erklärt” website.

PhenoRob - Autonomous systems in crop production

Released on 01 February 2023

What will the future of agriculture look like? At the PhenoRob Cluster of Excellence in Bonn, they have a pretty clear idea. Drones fly over the fields and record the condition of the plants.

Robots are on the move on the ground, selectively supplying individual crops with fertilizer or removing weeds.

The Cluster of Excellence "PhenoRob - Robotics and Phenotyping for Sustainable Crop Production" at the University of Bonn together with Forschungszentrum Jülich uses a technology-driven and cross-disciplinary approach to solve these pressing real-world problems and is a world leader in research on robotics and phenotyping for sustainable crop production. The vision of the cluster, under the leadership of scientific spokespersons Prof. Dr. Heiner Kuhlmann and Prof. Dr. Cyrill Stachniss, is to enable more productive, resource-efficient, and sustainable crop production by optimizing breeding and agricultural management through the development and deployment of new technologies.

Chronic inflammation - Where does it come from and can we stop it?

Released on March 01, 2023

Psoriasis, rheumatism, Crohn's disease - more and more people have to live with chronic inflammatory diseases. The Cluster of Excellence PMI (Precision Medicine for Chronic Inflammatory Diseases) is searching for the causes of these diseases and striving for individualized treatments for patients. The big goal is to stop inflammatory diseases and thus prevent their progression. In the search for the causes of chronic inflammatory diseases, cluster members also study ancient DNA (aDNA) to understand the evolution of the human immune system.

People in industrialized nations are suffering from chronic inflammatory diseases such as Crohn's disease, psoriasis, diabetes, or rheumatism at increasing rates. In the Schleswig-Holstein Cluster of Excellence, PMI scientists from different disciplines in medicine and basic research are working together interdisciplinarily to significantly improve the diagnosis, treatment, and prevention of these diseases. Their vision is complete control of the diseases - at every stage and as early as possible.

Cryptography - Quantum resistant and human

Released on April 01, 2023

Our data is encrypted when we surf the Internet or communicate via Messenger. Until now, many of these methods are quite secure - but when the quantum computer comes, this security

will be over. Therefore, the Cluster of Excellence CASA has developed encryption methods that can even withstand quantum computers. Research is also being conducted into how IT security can be implemented in such a way that it is easier for users to understand and use.

The Cluster of Excellence "CASA - Cyber Security in the Age of Large-Scale Adversaries" pursues the goal of enabling sustainable security against large-scale, especially nation-state, attackers. The research is characterized by a strongly interdisciplinary approach that examines not only technical issues but also the interplay between human behavior and IT security.

Neonatology - The dangers of infection for premature infants

Released on May 01, 2023

The team of the Cluster of Excellence RESIST cares for people who can be seriously harmed by bacteria and viruses - including, for example, premature and newborn babies. Because when they become infected with a germ, their immune system sometimes reacts far too strongly - which can lead to inflammation of the blood, lungs, and intestines. About a quarter of all babies born before 32 weeks of pregnancy develop a severe infection in infancy, which can also be life-threatening. It is not known exactly why this is so. New concepts of prevention and therapy are needed - also because the time after birth also influences susceptibility to allergies, infections, or chronic inflammatory bowel diseases in later life. Children must "slide in" to their environment and find a balance. This is the main task of immune adaptation in the first year of life.

Some people only fall ill slightly when they "catch" viruses or bacteria, but others very severely. But why do infections progress so differently? And how can the course of the disease be predicted and individual therapies developed? These questions are addressed by the team of the RESIST Cluster of Excellence, whose spokesperson is Prof. Dr. Thomas Schulz, Head of the Institute of Virology at Hannover Medical School (MHH). Thus, RESIST will help people with a weakened immune system. These are, for example, newborns, senior citizens, people with a congenital immune deficiency, and people whose immune system is dampened for therapeutic reasons or who wear an implant.

Scientific freedom - When research is attacked

Released on June 01, 2023

Science and democracy belong together. It is vital that science can act freely. Researchers should be able to decide for themselves on which topics they conduct research. They should be able to express themselves politically. However, scientific freedom is increasingly under attack worldwide. The three major challenges to scientific freedom are cultural change, economization, and alternative ways of gaining knowledge. Who threatens academic freedom and why? Are only autocratic systems threatened? What is the state of academic freedom in Germany?

The Cluster of Excellence "Contestations of the Liberal Script (SCRIPTS)" is a research network that investigates current disputes about the model of liberal democracy and market economy. The main goal of SCRIPTS is to understand why the liberal script has fallen into crisis despite its political, economic, and social achievements. SCRIPTS has been in existence since 2019 and is funded by the German Research Foundation (DFG) until the end of 2025 as part of the Excellence Initiative. The cluster is based at Freie Universität Berlin and links a total of eight Berlin research institutions.

The language of life - Recognizing and using biological signals

Released on July 01, 2023

How do the cells of a living being communicate with each other? The Cluster of Excellence CIBSS investigates the biological signals that ensure that cells and tissues in multicellular organisms work together and adapt to environmental influences. Understanding this "language of life" helps to master important societal challenges such as health and food security, because many diseases are based on faulty signaling processes - and signals influence how plants react to their environment and a changing climate.

Researchers in the Cluster of Excellence CIBSS - Centre for Integrative Biological Signalling Studies study how biological signals transmit information and interact to mediate cellular decisions. In CIBSS, research groups from the University of Freiburg, the University Medical Center Freiburg, and the Max Planck Institute for Immunobiology and Epigenetics work together in cooperative and interdisciplinary research projects.