VolkswagenStiftung

COALITION - Communities allied in Infection

Initiative: zukunft.niedersachsen (nur ausgewählte Ausschreibungen)

Ausschreibung: Spitzenforschung in Niedersachsen – Vorbereitung für eine neue Bund-Länder-Initiative

Bewilligung: 16.02.2016

Laufzeit:

An infectious disease results from an uncontrolled spread of a microbial agent, i.e. bacteria, viruses or fungi, in an individual or a community of individuals. When infecting a susceptible individual, a microbial agent encounters a complex network of body cells and other factors which act together to contain and perhaps eliminate the invader; by virtue of their cooperation during the fight against the invader, these members of the body's immune system act as a 'community' - they never fight alone! Neither do the invading microbes - they arrive usually in large numbers, individual microbes may change rapidly to assume different specialised functions, for example by escaping the immune system or a drug, and therefore also cooperate as a community to achieve their aim. Likewise, 'good' microbes, which colonize our skin, our mouth and our intestinal tract and which help us with, for example, the digestion of food or the defence against 'bad' microbes, exist as a complicated community, with 'rules' that determine the stable co-existence of many different microbial species. Understanding how cellular and microbial communities work together (or against each other) is therefore important in order to develop new strategies to treat infectious disease that are not limited to killing bacteria or viruses with antibiotics or antiviral drugs. The consortium COALITION ('Communities Allied in Infection') brings together scientists from Hanover Medical School, the Twincore Institute of Clinical and Experimental Infection Research in Hanover, the University of Veterinary Medicine in Hanover, Technische Universität Braunschweig and the Helmholtz Institute of Infection Research in Braunschweig to investigate the role of microbial and cellular communities during infection. It will be investigated how microbial communities on mucosal (e.g. gut or respiratory tract) or artificial (e.g. implanted medical devices) surfaces are regulated, why individual members of a microbial or viral community succeed in transferring from one individual, or one species, to another and how the community of immune cells cooperates to ward of an invading microbial agent. A better understanding of microbial and cellular communities in infection will ultimately improve how we deal with infectious disease in man and animals.

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