



Progress in molecular and cellular parasitology is providing an increasingly precise picture of host-parasite interactions: about the molecular signals, pathways and systems that allow parasites to prosper in their hosts. However, some of the most obvious and fundamental actors at the host-parasite interface are largely ignored – amongst these are physical and especially mechanical forces, spanning from molecular to tissue scales and far beyond. Most parasites thrive in a micro-world, where physical conditions differ dramatically from the ones prevailing in the macro-world that we know. Inertia is negligible, viscosity dominates, and fluid flow can be in turn extraordinarily fast or very slow, laminar or turbulent. Parasites have to cope with these varying physical cues; they have to move and steer, pass through void spaces or swim in extremely crowded environments, full of obstacles and varying degrees of confinement. They have to reversibly attach to surfaces, break through barriers, and penetrate tissues or membranes. They have to tune their power so as not to harm the host, or destroy cells while hiding within them. Parasites can join forces, form swarms and display varying degrees of collective behaviours, many of which are probably independent of chemical signalling, but rather the product of physical cues such as hydrodynamic coupling. Now is the right time to view parasitism from a more physical, micro-engineering point of view. We need a better understanding of the physics of molecular forces generated by motors, bonds, and barriers. We need to understand the build and behaviour of parasites, both as physical entities and highly evolved micromachines. And we need to appreciate the biomechanical cues provided by the parasites' microenvironments. Our SPPi 'Physics of Parasitism', aims at bringing together parasitologists, cell biologists, structural biologists, physicists, mathematicians and material scientists.

Eine Initiative zur Einrichtung eines DFG Schwerpunktprogramms

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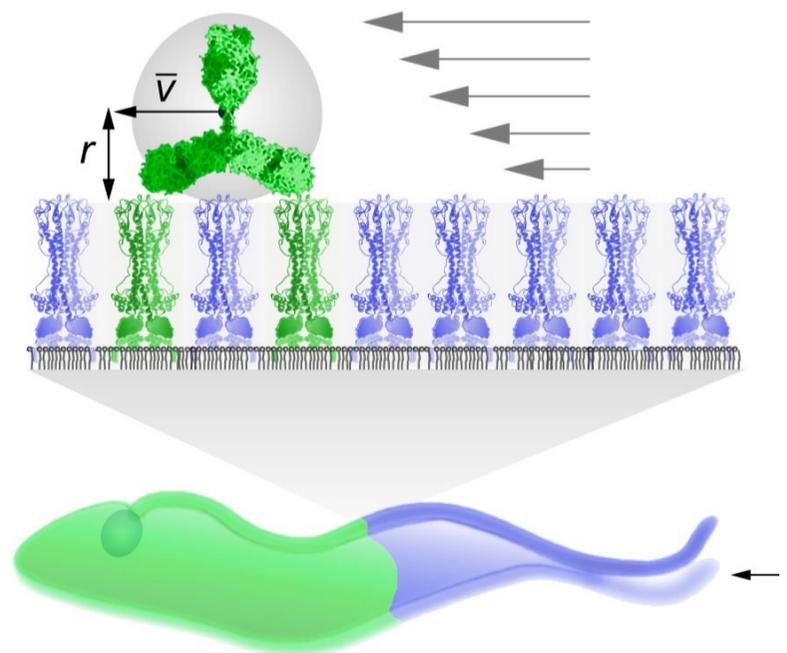
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The most intimate physical connection we might experience with parasites



Our initiative is open to interested scientists from all fields, including parasitology, cell biology, medicine, experimental and theoretical physics, mathematics, material sciences and engineering. If you wish to receive further information, sign up to our mailing list:

https://lists.uni-wuerzburg.de/mailman/listinfo/SPPi_pop

Register here for the network meeting:

<https://www.biozentrum.uni-wuerzburg.de/zeb/pop-network/>