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48 In a flash: Astrochemist Paola Caselli has always steadfastly pursued her professional goals.

18 PARASITES

18 Genes as Parasites

Parasites exist not only in the plant and animal kingdoms, they are also a part of us. Our genome contains myriad short stretches of DNA – known as transposons – that propagate at the genome's expense. Researchers at the Max Planck Institute for Developmental Biology want to shed light on the processes by which transposons are copied – not only because they can cause disease, but also because they may be an important engine of evolution.

26 A Stickleback Full of Worms

Around 40 percent of all species on Earth are parasitic. Even a fish such as the three-spined stickleback is plagued by up to 25 different parasites. One of them particularly appealed to scientists at the Max Planck Institute for Evolutionary Biology: the tapeworm *Schistocephalus solidus*. They are researching the numerous tricks that host and parasite use to outdo each other.

34 Perilous Puddles

Admittedly, the research subject isn't particularly appetizing: *Strongyloides stercoralis* – small parasitic worms that live in their host's intestines and have the potential to cause severe problems. Nevertheless, researchers at the Max Planck Institute for Developmental Biology are fascinated by this threadworm. It has a unique life cycle, and to this day, no one really understands why.

ON THE COVER A human whipworm of the genus *Trichuris* can grow as long as five centimeters. This intestinal parasite comprises a thread-like anterior end connected to a thicker posterior end containing the internal organs, making the worms resemble a whip. Some species infect animals, such as dogs, cats or pigs, but humans, too, can serve as hosts for whipworms. Infections are usually imperceptible. Only very severe cases might result in intestinal bleeding and diarrhea.

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Personal Portrait: Paola Caselli

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Plastics are practical – not least because they last. But when they find their way into the environment, this is precisely what becomes a problem. Scientists at the Max Planck Institute for Polymer Research in Mainz are therefore developing alternative materials that can be broken down by microorganisms once they have served their purpose.

ENVIRONMENT & CLIMATE

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Debates on global warming focus on one main cause: CO₂ emissions from the combustion of fossil fuels. But humankind is also changing the climate by clearing forests and through farming, forestry and animal husbandry. Researchers at the Max Planck Institute for Meteorology are investigating the consequences of these activities for the climate.

CULTURE & SOCIETY

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Especially small and medium-sized businesses are increasingly falling victim to criminal competitors or being targeted by foreign intelligence services. Nevertheless, most cases remain shrouded in mystery. Scientists at the Max Planck Institute for Foreign and International Criminal Law are conducting research into, among other things, the scale of industrial espionage and how companies are combating it.

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