



## Laudation for Dr. Lena Pernas

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**Finalist of the Eppendorf Award for Young European Investigators 2022**

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I guess we all know about diseases caused by eukaryotic single-cell parasites, such as malaria. However, living in Germany, you probably believe that unless you travel to the tropics you are safe from such nasty critters. Well, you are wrong. There is one such parasite, distantly related to malaria, that is shockingly widespread across Europe: the parasite *Toxoplasma gondii*, responsible for toxoplasmosis. In Germany, infection rates range from 20% to 70% of the entire population. Raw pork meat (such as Mett) is the main source of the parasite – the more Mett is consumed, the higher the prevalence. Most of the infections are asymptomatic, but that can change if your immune system is not able anymore to continuously keep the parasite in check.

Let me now introduce Lena Pernas, one of the finalists of this year's Eppendorf Young Investigator Award. Lena is from the USA and did her undergraduate education at the University of California Los Angeles. She then moved to Stanford where she carried out her PhD with John Boothroyd, a world-leading expert in *Toxoplasma*. After a highly successful research period, Lena remained fascinated by the organism and searched for a suitable postdoc lab. The best fit was the lab of Luca Scorrano, then in Geneva, but Luca was about to

July 2022

move to the University of Padua in Italy. Although she never planned to work and live in Italy, I guess the European background of her parents facilitated the move. There she was again highly successful, allowing her to secure one of the highly coveted Max-Planck Research Group Leader positions at the MPI in Cologne. So she has remained in Europe, at least for now. In a short period of time, she established her own group and made what I consider a major discovery.

What is this all about? Once *Toxoplasma* enters cells of the host, a tug-of-war begins between the parasite and organelles called mitochondria, the powerplants of (almost) every cell in our body. The mitochondria fight the parasite by sequestering fatty acids, thus depriving it from essential nutrients needed for growth. The parasite retaliates by trying to grab and disable mitochondria. Lena's recent work has not only uncovered how this works but also that the mitochondria fight back by shedding parts of their outer membrane. This discovery is novel and surprising, pointing towards a hitherto overlooked general mechanism common to all cells. However, let us Lena tell the story by herself – let us welcome Lena Pernas!