MAMBE is a product based on the successful collaboration with the Max Planck Institute for Evolutionary Biology in Pfin. In cooperation, both the institutions in Pfin and Kiel have already established a graduate school, which has been running successfully for five years. During their interdisciplinary work, Schulenburg realized that a programme combining Molecular Biology and Evolution is not available anywhere else in Germany. However, from Schulenburg’s point of view, it is needed: “Complex pathogen-host interactions can only be explained by combining different research disciplines from the life sciences”, he states. “In this context, an evolutionary perspective has become of particular importance, because it helps us understand why a certain characteristic has become so complex over millions of years, for example the process of aging.”

MAMBE specifically aims to foster interdisciplinary connections and creative thinking. It will also help master’s degree students to improve their skills in scientific communication and critical thinking. They will be prepared to prepare seminar talks, small written reports, and scientific manuscripts. The curriculum runs over four semesters. During the first and second semesters, students will acquire knowledge on evolution of organisms and molecules, molecular biology of dynamic processes and – as an elective subject – biological data analysis. The third semester is reserved for research modules and the development of a scientific topic, which will result in research work for the master’s thesis during the fourth semester.

Besides focusing on an academic career, MAMBR graduates will be able to work in various fields of profession. They are attractive for industrial and small companies or governmental offices that are active in research and in the development of new products.

A newly designed master’s degree programme combines Molecular Biology and Evolution. It closes a gap in the curriculum and is meant to attract students who wish to focus on international cutting-edge fields of work. Also, graduates will be welcomed by medical or agricultural companies using the corresponding thorough professional training.

The master’s degree programme is limited to 20 students. Thereby, Schulenburg hopes to create an interactive atmosphere during classes and stimulate mutual learning.

Ann-Christin Wimber

www.biologie.uni-kiel.de/en/studying/mambe

Life in progress

MAMBE – that is the name of a new master’s degree programme at Kiel University and is short for Master in Molecular Biology and Evolution. It starts this winter term; it would like to attract German and international students.

Kiel scientists present a new study on the coevolution between host and pathogens. Their results not only shed new light on evolutionary dynamics, but may also lead to more sustainable treatment strategies in the future.

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If the host does not produce any counter-adaptations, the pathogen can lose its ability to harm the host. Secondly, the Kiel scientists were able to demonstrate that the bacteria achieve their high virulence by increased production of a toxic substance that damages the host. The increased amount of this poison is linked to a certain genetic characteristic of the bacterium which is favoured during evolutionary adaptation to the host. These results demonstrate that ongoing coevolution can shape the characteristics of the genome and thus central aspects of the biology of the pathogen.

Further research is still required before the current findings can be applied to human disease. They may nevertheless suggest that an increase in selective pressure on the pathogen can enhance its harmful potential. The increased use of antibiotics, for example, promotes the spread of resistant pathogens and ultimately aggravates disease progression. The Kiel researchers are convinced that a different strategy is worth consideration: Instead of aiming at pathogen elimination, it may be more efficient to promote tolerance of the host to the disease agent. This could prevent an escalating arms race on the pathogen side and thus represent a more sustainable treatment strategy to cope with infectious diseases.

Christian Urban

Health versus disease: an evolutionary arms race

Kiel scientists present a new study on the coevolution between host and pathogens. Their results not only shed new light on evolutionary dynamics, but may also lead to more sustainable treatment strategies in the future.

For those without a bike or a car - you have a new option. A newly designed master’s degree programme combines Molecular Biology and Evolution. It closes a gap in the curriculum and is meant to attract students who wish to focus on international cutting-edge fields of work. Also, graduates will be welcomed by medical or agricultural companies using the corresponding thorough professional training, which help to minimize the spread of antibiotics resistance in hospital garmes.

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Every year, new flu germs emerge, and life-threatening diseases such as Ebola cause global concerns at regular intervals. To achieve better understanding of the underlying disease epidemics, research into the adaptability and thus the evolution of the infectious pathogens is necessary. Scientists at the Department of Evolutionary Ecology and Genetics at Kiel University have now been able to gain important new insights: With the help of innovative experiments in the lab, they examined extremely rapid, mutual adaptations of host and pathogen. Their new findings on this so-called coevolution of host and pathogen might be of value to improve under-