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Press release

Max-Planck-Institut für Biologie Tübingen
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Beatrice Ramm's new Max Planck Research Group Leader will investigate pattern formation across biological scales

Beatrice Ramm, the new research group leader at the Friedrich Miescher Laboratory of the Max Planck Society, is heading the new research group in "Synthetic Biology Approaches to Pattern Formation. She will investigate pattern formation across biological scales, from bacterial systems to the development of higher organisms, using the interdisciplinary field of synthetic biology.

Starting in January 2025, Beatrice Ramm is heading the new research group in "Synthetic Biology Approaches to Pattern Formation" at the Friedrich Miescher Laboratory of the Max Planck Society in Tübingen.

Beatrice Ramm says, "I am fascinated by the beauty and complexity of self-organized pattern formation in biology. Patterns are everywhere in the natural world and even simple observations reveal this --- think of the zebra stripes or the leopard dots. Pattern formation also occurs at the microscopic level: from the cellular logistics in bacteria to the embryonic development of organisms. It is a very intriguing process where individual components, such as proteins or cells, interact with each other to produce surprising behaviors that cannot be predicted from the components alone. This emerging complexity makes it both challenging and exciting to study, requiring us to use methods from different disciplines like biochemistry, biophysics and synthetic biology. To truly understand how these patterns are formed and uncover their surprising functions, we either rebuild them in the test tube, one component at a time, or create molecular tools to precisely control and probe them in living cells and tissues."

"Starting my own group in Tübingen is a very exciting step for me. I look forward to establishing my own group as part of this diverse and dynamic scientific environment, and to mentoring young researchers as they explore their own ideas and begin to make discoveries."

Biological patterning: a diverse field spanning tissues, organisms, and scales

Beatrice and her team aim to understand the fundamental principles governing pattern formation across different scales in biology, a process by which living systems organize themselves in space and time. They will use an interdisciplinary approach that employs biochemistry, biophysics, and synthetic biology to investigate how these complex patterns arise from mechanical, biochemical, and physical factors. Their research will explore how simple protein systems organize bacterial cells and how multicellular patterns that shape mammalian tissues are formed.

Welcome to the Institute, Beatrice!

"We are very pleased to recruit Beatrice for our institute. We are confident that Dr. Ramm's leadership and expertise will drive innovation and contribute significantly to our understanding of this complex and vital area of research," says Andrei Lupas, Managing Director of the Friedrich Miescher Laboratory in Tübingen.

Beatrice has an educational background in biochemistry. She obtained her PhD in 2020 at the Max Planck Institute of Biochemistry in Germany while enrolled at the Ludwig Maximilian University of Munich. After a short research stay as a postdoc, she moved to Princeton University in the USA, where she was an Associate Research Scholar and a Fellow at the Center for the Physics of Biological Function. She worked towards mechanistically understanding intracellular protein reaction-diffusion systems and phase separation processes using experimental approaches such as in vitro reconstitution and single-molecule techniques. From January 2025, she heads her Max Planck research group at the Friedrich Miescher Laboratory in Tübingen.

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Beatrice Ramm, the new research group leader working on ‘Synthetic Biology of Pattern Formation’ at the Friedrich Miescher Laboratory of the Max Planck Society in Tübingen.
MPI-Biologie Tübingen