

## Claudia Keller Valsecchi joins IMB as a junior group leader

**Mainz, 1 May 2020** - *The Institute of Molecular Biology (IMB) is delighted to welcome Dr Claudia Keller Valsecchi as a new Junior Group Leader. Claudia joins IMB from the Max Planck Institute of Immunobiology & Epigenetics in Freiburg, where she worked as a postdoctoral fellow. Her research focuses on understanding gene copy number and its relevance for cell function, disease, and evolution.*

All sexually reproducing organisms inherit two copies of the genome – one from the father and one from the mother. Having two copies of the genome is thought to provide a “fail-safe” mechanism, so that if one copy of a gene is mutated the other copy can act as a back-up. However, recent studies show that mutations in even one gene copy frequently have adverse effects. Moreover, having more than the normal number of genomes also results in developmental failure or severe disorders, as seen in Down’s Syndrome or cancer. This suggests that inheriting exactly one gene copy from both the mother and father is important for proper function. On the other hand, gene and chromosome duplications are also an important driver for evolution of novel traits, suggesting that increases in gene copy number can sometimes be beneficial.

Claudia’s research focuses on investigating how cells keep gene copy number in check to prevent disease while still allowing gene copy number to change for evolutionary flexibility. As Claudia puts it, “How do cells juggle the good (evolving novel genes), the bad (expression imbalance) and the ugly (developmental delay and malignancies)?” To look for answers to this question, she plans to study the cellular mechanisms that shut off or activate expression of genes that are naturally imbalanced. The most famous example is the X chromosome: males have only one copy (XY), while females have two (XX) and must equalise expression of X chromosome genes for normal function. Nature has invented multiple ways to correct expression of genes on the X chromosome: in humans, females inactivate one of their X chromosomes through epigenetic mechanisms such as histone modifications and DNA methylation. By studying such mechanisms, Claudia wants to gain insights into how cells more generally control gene dosage in development and evolution, and eventually unravel some of the mysteries surrounding diseases caused by gene dosage alterations.

### **Further information**

Claudia Keller Valsecchi is a Junior Group Leader at IMB. Further information about research in the Keller Valsecchi lab can be found at [www.imb.de/research/keller-valsecchi](http://www.imb.de/research/keller-valsecchi).

### **About the Institute of Molecular Biology gGmbH**

The Institute of Molecular Biology gGmbH (IMB) is a centre of excellence in the life sciences that was established in 2011 on the campus of Johannes Gutenberg University Mainz (JGU). Research at IMB focuses on three cutting-edge areas: epigenetics, developmental biology, and genome stability. The institute is a prime example of successful collaboration between a private foundation and government: The Boehringer Ingelheim Foundation has committed 154 million euros to be disbursed from 2009 until 2027 to cover the operating costs of research at IMB. The State of Rhineland-Palatinate has provided approximately 50 million euros for the construction of a state-of-the-art building and is giving a further 52 million in core funding from 2020 until 2027. For more information about IMB, please visit: [www.imb.de](http://www.imb.de).

### **Boehringer Ingelheim Foundation**

The Boehringer Ingelheim Foundation is an independent, non-profit organization committed to the promotion of the medical, biological, chemical, and pharmaceutical sciences. It was established in 1977 by Hubertus Liebrecht (1931–1991), a member of the shareholder family of the company Boehringer Ingelheim. With the Perspectives Programme “Plus 3” and the

Exploration Grants, the foundation supports independent junior group leaders. It also endows the internationally renowned Heinrich Wieland Prize as well as awards for up-and-coming scientists. In addition, the Foundation is donating a total of 154 million euros from 2009 to 2027 to the University of Mainz for the Institute of Molecular Biology (IMB). Since 2013, the Foundation has been providing a further 50 million euros for the development of the life sciences at the University of Mainz.  
[www.bistiftung.de](http://www.bistiftung.de)

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