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6<sup>TH</sup> HANS TUPPY-LECTURE

# ADVENTURES IN THE CHROMATIN JUNGLE

## HOW TO PACKAGE AND READ YOUR DNA

**KAROLIN LUGER***University of Colorado at Boulder and Howard Hughes Medical Institute***WELCOME REMARKS****ANTON ZEILINGER***President of the ÖAW***HEINZ W. ENGL***Rector of the University of Vienna***MARCH 24, 2020****6:30 P.M.****UNIVERSITY OF VIENNA****GROSSER FESTSAAL****UNIVERSITÄTSRING 1, 1010 VIENNA**

How do you pack 46 human hairs, each 350 meters in length, into a golf ball? How would you then split each hair into two, without removing it from its confinement, and without creating knots or tangles? And how could you possibly find seventeen different names in the equivalent of ~ 40 phone books worth of text that is written on each hair? This 'mission impossible' is performed in every single one of the trillions of cells in your body, all the time, and entirely without your help.

The entire blueprint for each cell in the human body is encoded on DNA, an incredibly long and impossibly thin molecule. All DNA is tightly wrapped into nucleoprotein complexes called nucleosomes, and this profoundly affects access to the information stored in the DNA (gene transcription), the faithful duplication of the entire genome during cell division (DNA replication), and the cell's endless and vital efforts to repair damaging and disease-causing damage (DNA repair).

Over the past 25 years, Karolin Luger's lab has been interested in the molecular details of DNA organization in the nucleus. They are investigating its structure and study the mechanics of the elaborate and complicated machinery that decodes the information. More recently, they have begun to address the intriguing question of the evolutionary origin of DNA packaging principles, which must have been a very early and essential acquisition that was essential for the emergence of all multi-cellular organisms on earth.

Karolin Luger is an Austrian-American biochemist known for her work with nucleosomes and for the discovery of the three-dimensional structure of chromatin. She is the Jennie-Smoly-Caruthers Endowed Chair of Biochemistry at the University of Colorado, Boulder and an investigator at the Howard Hughes Medical Institute. Luger received the State of Vorarlberg's State Science Prize in 2007 and is a member of the American Academy of Arts and Sciences since 2017. In 2018, she was elected to the National Academy of Sciences and became a member of the European Molecular Biology Organization.

The „Hans Tuppy-Lectures“ are a joint lecture series of the University of Vienna and the Austrian Academy of Sciences (ÖAW) in honor of this well-known austrian biochemist and aim at bringing excellent researchers to Austria who have contributed significantly to biochemistry or molecular biology research.

After the lecture, you will be invited to a reception.

Please register: [www.oeaw.ac.at/anmeldung/tuppy-lecture](http://www.oeaw.ac.at/anmeldung/tuppy-lecture)