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**6TH HANS TUPPY-LECTURE****HOW IT ALL BEGAN****DYNAMIC GENOME ORGANIZATION IN HUMANS,
ANCIENT BACTERIA, AND GIANT VIRUSES****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***NOVEMBER 25, 2021****7:00 P.M.****AUSTRIAN ACADEMY OF SCIENCES****ONLINE: WWW.OEAW.AC.AT/****VERANSTALTUNGEN/LIVE**

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 words 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 our body, all the time, and entirely without our input.

The entire blueprint for each cell in the human body is encoded on DNA, an incredibly long and impossibly thin molecule. Small segments of DNA are tightly wrapped into nucleoprotein complexes called nucleosomes, like a string of beads tossed into a bowl. This profoundly affects access to the information stored in the DNA, and thus determines every cell's identity and function. This organization also impacts the faithful duplication of the entire genome during cell division, and the cell's endless and vital efforts to repair potentially fatal and disease-causing breaks and tangles.

Over the past 25 years, Karolin Luger's lab has been studying the molecular details of DNA organization in humans. The researchers are investigating its structure and study the mechanics of the elaborate and complicated machinery that decodes the information. Luger's team also studies the evolutionary origins of DNA packaging principles, which must have been a very early and essential acquisition that enabled the emergence of all multi-cellular life. To this end, they study genome packaging in ancient 'archaebacteria' and in giant viruses.

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.

The event can be followed via live-stream:

www.oeaw.ac.at/veranstaltungen/live