

SEMINAR

“Non-canonical RNA polymerases”

Dr. Maria Sokolova

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13.00 - 14.30

Room 407,

TPOC-3



SEMINAR ABSTRACT:

Transcription of genes, from DNA to RNA, is the first step of gene expression. Genomes of all cells are transcribed by multi-subunit RNA polymerases, ancient enzymes that existed in primordial cells from which all currently living organisms evolved. Besides these “canonical” RNA polymerases, diverse non-canonical transcription enzymes encoded by viruses exist. Characterized non-canonical RNA polymerases have unique features which could either be “innovations” which emerged during the fast evolution of viral RNA polymerases or relics from the ancient times.

In this talk, Dr. Maria Sokolova will present her work on functional and structural analysis of a non-canonical RNA polymerase encoded by giant bacteriophage AR9. While canonical RNA polymerases only transcribe standard, double-stranded DNA, the AR9 enzyme is able to recognize and transcribe single-stranded DNA. Maria will overview further perspectives of the work and will tell about few other putative non-canonical RNA polymerases which are currently under investigation by her team.

SPEAKER INTRODUCTION:

Dr. Maria Sokolova graduated with honors from Peter the Great St. Petersburg Polytechnic University in 2013 (Master of Science in Physics). In 2014, Maria started her postgraduate studies at Skoltech, supervised by prof. Konstantin Severinov. In June 2018 Maria defended her PhD thesis “Functional and structural analysis of a non-canonical multisubunit RNA polymerase encoded by giant bacteriophage AR9” which was evaluated as a research project of the highest caliber.

As a research scientist at the Center of Life Sciences, Maria continued her work on structural and functional characterization of non-canonical viral RNA polymerases. In August 2018 Maria took the initiative to organize and lead the undergraduate summer practical school “Search for antibiotics produced by bacteria” that was a highly successful one according to students’ enthusiastic and excited responses. Maria organized every aspect of the school starting from its general concept and personally led most of the classes.