P-51
TRANSCRIPTION APPARATUS OF THE YEAST VIRUS-LIKE ELEMENTS IS CLOSELY RELATED TO THE POXVIRAL TRANSCRIPTION APPARATUS

VÁCLAV VOPÁLENSKÝ*, MICHAL SÝKORA, KAMILA HORÁČKOVÁ, MARTIN POSPÍŠEK*

Charles University, Faculty of Science, Department of Genetics and Microbiology, Czech Republic
vaclav.vopalensky@natur.cuni.cz
martin.pospisek@ natur.cuni.cz

We employed virus-like elements (VLEs) pGKL1,2 from *Kluyveromyces lactis* as a model to investigate the previously neglected transcriptome of the broader group of yeast cytoplasmic linear dsDNA VLEs. We found that RNA polymerase encoded by the yeast cytoplasmic linear dsDNA plasmids, and also promoters recognized by this polymerase, shows high similarity to the poxvirus RNA polymerase and to the promoters of poxvirus genes. We show that the two RNAP subunits encoded by pGKL2 element interact *in vivo*, and this complex interacts with another two VLE-encoded proteins, namely the mRNA capping enzyme and a putative helicase. RNAP, mRNA capping enzyme and the helicase also interact with VLE-specific DNA *in vivo*. We performed 5' and 3' RACE analyses of all pGKL1,2 mRNAs and found them not 3' polyadenylated and containing frequently uncapped 5' poly(A) leaders that are not complementary to VLE genomic DNA. Moreover, we found the expression of pGKL1,2 transcripts is independent of eIF4E and Pab1 and is enhanced in *lsm1Δ* and *pab1Δ* strains. We believe that yeast linear plasmids has most likely an origin close to poxviruses and therefore are ideal non-infectious model for study of transcription mechanisms of viruses belonging to the family *Poxviridae.*

Acknowledgement
This work was supported by the project National Institute of Virology and Bacteriology (Programme EXCELES, ID Project No. LX22NPO5103) – Funded by the European Union – Next Generation EU.