



**UNIVERSITÀ
DEGLI STUDI
DI UDINE**
hic sunt futura



HR EXCELLENCE IN RESEARCH

Poly (ADP-ribose) polymerases in regulation of DNA repair

February 28th 2019

02.00 pm

Room C DAME -
Department of Medicine
P.Le Kolbe 4, Udine

The phenomenon of nicotinamide adenine dinucleotide (NAD⁺)-dependent poly(ADP-ribose)ylation catalyzed with PARP1 was discovered long time ago, but it is still unclear how this post-translational modification governs a multitude of cellular processes. PARP1 interacts with numerous nuclear proteins including histones, and orchestrates chromatin remodelling in response to DNA damage. When interacting with the damaged DNA, PARP1 catalyzes the synthesis of a long branched poly (ADP-ribose) polymer (PAR) by using NAD⁺ as a substrate. PAR can be attached to the acceptor amino acid residues of nuclear proteins or to PARP1 itself. This process leads to reorganization of the functional protein complexes involved in base excision repair (BER). The lecture will be devoted to protein-protein interactions operating in BER and to the role of PARP1 in regulation of this process. The data on search of new targets of poly(ADP-ribose)ylation catalyzed with PARP1 and PARP2 and on PARP1 cooperation with RNA binding proteins in DNA repair will be presented. It was found that multifunctional RNA binding protein YB-1 stimulates activity of PARP1. The results obtained show the key role of PARP1 in regulation of BER and the new mechanisms of stimulation of PARP1 activity. The data show the elevated activity of PARP-1 in cells of long-living mammals that can speak in favor of the various roles of PARP1 in longevity and aging.

SPEAKER

Dr. Olga Lavrik

Institute of Chemical Biology
and Fundamental Medicine
Siberian Branch of the Russian
Academy of Sciences
Novosibirsk, Russia
lavrik@niboch.nsc.ru

ORGANIZER

**Prof. Gianluca
Tell**

Head of the Laboratory
of Molecular Biology
and DNA repair
Department of Medicine,
University of Udine
gianluca.tell@uniud.it