Consiglio Nazionale delle Ricerche
Istituto di Genetica Molecolare
Luigi Luca Cavalli-Sforza

9th ARTURO FALASCHI LECTURE

Venerdì 25 Giugno 2021
ore 11:00

AULA F
Polo Didattico Campus Aquae
Strada Cascina Cascinazza, 29 - 27100 PAVIA

Dr. Daniela Corda

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National Research Council (CNR)

"PARP12-dependent mono-ADP-ribosylation controls specific membrane transport routes"

ADP-ribosylation is a fundamental post-translational modification involved in several physiological and pathological conditions. Among the Poly-ADP-Ribosyl-Polymerase (PARP)-family members known to modify specific cellular substrates, the mono-ADP-ribosyl transferase PARP12 resulted to be of interest due to its localization at the Golgi complex and its potential role in regulating intracellular membrane traffic. Indeed, PARP12 was shown to be involved in the oxidative-stress response as well as in the regulation of membrane transport.

We analyzed different traffic steps and found that PARP12, through the modification of two members of the Golgin and Rab families (Golgin-97 and Rab14), participates in the regulation of the exocytic and endocytic pathways.

We could delineate the role of Rab14 in controlling the maturation of the transferrin-receptor recycling endosomes, and reveal that the ADP-ribosylated Rab14 is required to interact with those proteins of the recycling-endosome compartment needed to form active/functional complexes. Similarly, PARP12-mediated Golgin-97 ADP-ribosylation was shown to be required for transport of E-cadherin to the plasma membrane, suggesting that PARP12 may contribute to the maintenance of E-cadherin-mediated cell polarity and cell-cell junctions.

In conclusion, PARP12-dependent mono-ADP-ribosylation provides a central control mechanism in the homeostasis of intracellular membrane traffic, with important physiological and pathological consequences.

FAB·T

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