

BtBs Seminars

Biotechnology and Biosciences Seminars



Silvia Barabino

Department of Biotechnology and Biosciences
University of Milano-Bicocca

Amyotrophic
Lateral
Sclerosis



From DNA Damage to Bioenergetic Collapse: Genome–Mitochondria Crosstalk in ALS

Amyotrophic lateral sclerosis (ALS) is characterized by both genomic instability and mitochondrial dysfunction, yet the mechanistic connection between these hallmarks remains unclear. We previously demonstrated that the RNA-binding protein FUS promotes DNA damage response (DDR) signaling through liquid-liquid phase separation, enabling the recruitment of repair factors and proper DNA repair organization. Now we found that persistent DDR signaling is sufficient to trigger an early bioenergetic collapse characterized by reduced respiration and ATP production. Now we identify a potential mechanistic pathway linking DDR-induced PARP1 activation and NAD⁺ depletion to impaired oxidative phosphorylation. Importantly, these defects are reversible through DNA damage resolution, PARP1 inhibition, or NAD⁺ replenishment. Our findings identify a pathogenic nuclear–mitochondrial axis linking genomic instability to metabolic dysfunction in ALS and suggest new therapeutic opportunities targeting DDR-driven bioenergetic failure.



Thursday
June 18, 2026



U3-BIOS building
room U3-09



4.00 pm
to 5.00 pm

Host:
BtBs-UNIMIB



The certificates of attendance for the seminar are also valid for the acquisition of CFU credits
For information, please visit the seminar's webpage

search: #BtBsUNIMIB



FOLLOW US & Let's Get Conneted