



UNIVERSITÀ
DI TRENTO

Dipartimento di
Biologia Cellulare, Computazionale e Integrata - CIBIO

9 APRIL

4 P.M.

ROOM A109 - POVO 1

ALICE GALIATTO

EUROPEAN MOLECULAR BIOLOGY LABORATORY - HEIDELBERG



- ● **MAGIC AIDS THE IDENTIFICATION OF**
- ● **CHROMOSOMAL REARRANGEMENTS**
- ● **TRIGGERED BY ALT INDUCTION**

Telomeric DNA damage can cause chromosomal rearrangements that promote **genome evolution** and **cancer**. Many cancer cells maintain telomeres through **Alternative Lengthening of Telomeres (ALT)**, a recombination-based mechanism that is prone to errors. This study examined how ALT contributes to structural variants in cancer genomes. Analysis of the Pan-Cancer Analysis of Whole Genomes (PCAWG) dataset showed **links between ALT features and complex chromosomal rearrangements**. Experimental models inducing ALT and ATRX loss revealed increased mitotic errors and specific complex rearrangement patterns, with breakpoints enriched in G-quadruplex and replication-timing regions. Overall, the findings show that ALT has strong mutagenic potential and shapes distinct **structural variation patterns in cancer genomes**.