



UNIVERSITÀ
DI TRENTO

Dipartimento di
Biologia Cellulare, Computazionale e Integrata - CIBIO

9 APRIL

4 P.M.

ROOM A109 - POVO 1



Alice Gaiatto

EMBL - HEIDELBERG - GERMANY

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

Telomeric DNA damage can drive chromosomal rearrangements that contribute to **genome evolution** and **cancer development**. To sustain unlimited proliferation, cancer cells activate telomere maintenance mechanisms such as **Alternative Lengthening of Telomeres (ALT)**, which relies on **error-prone recombination-based DNA repair**. This study investigated how ALT influences the formation of **structural variants** in cancer genomes. Pan-Cancer Analysis of Whole Genomes (PCAWG) dataset revealed associations between **ALT-related features** and **complex rearrangements**. Experimental models of ALT induction and ATRX loss were analysed using the **MAGIC platform and Strand-seq** to characterise chromosomal alterations. ALT induction promoted mitotic errors and specific classes of complex rearrangements, with breakpoints enriched in **G-quadruplex-forming and replication-timing regions**. These results highlight the **mutagenic potential of ALT** and its role in generating distinct patterns of structural variation.