WHOLE GENOME DOUBLING AND CANCER

Unscheduled whole-genome doubling (WGD) events give rise to tetraploid cells that are prone to replication-stress-induced DNA damage, chromosome instability, and oncogenic epigenetic alterations.

Proliferating whole-genome doubled cells are tumorigenic and comprise ∼37% of primary and ∼56% of metastatic solid tumors.

Whole-genome doubled cancer cells must acquire specific genetic and physiological adaptations to accommodate the unique stresses imposed by their doubled DNA and cellular content.

Identifying genes that are essential for the viability of proliferating whole-genome doubled cancer cells, yet dispensable for the viability of diploid cells (i.e., ploidy-specific lethal genes), has the potential to to uncover new cancer therapeutics.