

Loss of chromosome 8p governs tumor suppression and drug response

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In a typical cancer cell, up to one-quarter of the genome is lost due to large chromosomal deletions, while the concomitant loss of hundreds of genes creates vulnerabilities that are impossible to reveal through the study of individual genes. Prof. Anna Sablina and her team at VIB/KU Leuven optimized a workflow for the generation of cell lines with targeted chromosomal deletions.

Prof. Anna Sablina (VIB/KU Leuven): "We proved that the generated models mimic human cancers harboring deletions that allow researchers to assess the role of a particular chromosomal deletion in cancer development and progression."

Chromosome versus Gene

All current approaches in cancer research focus on studies of individual genes or non-coding RNAs. The team of Anna Sablina now applied chromosomal engineering to model [chromosomal aberrations](#) that are commonly observed in cancer patients. To their surprise chromosomal deletions led to phenotypes that are completely different from what was found from the studies of single genes or micro-RNAs, indicating that chromosomal deletions should be considered as distinct mutational events.

Chromosomal engineering allows to really mimic large-scale genomic alterations observed in breast cancer patients. But since this means applying genomic engineering to the human genome, these studies are

limited to in vitro systems that not always allow to model processes occurring during cancer development and progression.

Prof. Anna Sablina (VIB/KU Leuven): "Applying chromosomal engineering to greater numbers and subtypes of human cells will make it possible to generate a library of human cells that represent the diversity of genomic abnormalities observed in cancer cells. This approach will maximize the efficiency of large-scale functional genomics efforts and accelerate the functional annotation of the human [cancer](#) genome. The generated isogenic cells will also represent a useful platform to identify drugs that selectively kill tumor [cells](#) harboring a particular chromosomal abnormality."

More information: Yanyan Cai et al. Loss of Chromosome 8p Governs Tumor Progression and Drug Response by Altering Lipid Metabolism, *Cancer Cell* (2016). [DOI: 10.1016/j.ccell.2016.04.003](https://doi.org/10.1016/j.ccell.2016.04.003)

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