THE DARK AND THE BRIGHT SIDE OF CHROMOSOME INSTABILITY

Chromosomal instability is a pervasive mechanism in cancer, generating the variability on which Darwinian evolution of cancer can rely. As in many biological situations, the degree of instability is a trade-off. Too little is ineffective (from a cancer perspective), but too much is cytotoxic.
Paclitaxel (Taxol) is a chemical drug used to treat several types of cancer. It interferes with microtubule assembly, resulting in multipolar spindles. Not all patients respond positively to treatment. Scribano et al. (Science Transl. Med., 2021) studied patients with breast cancer treated with paclitaxel. They found that tumors with a preexisting high rate of chromosomal instability were more sensitive to paclitaxel than chromosomally stable tumors. That is, the tumor instability reaches, thanks to paclitaxel, the threshold of cytotoxicity.
In conclusion, pretreatment chromosomal instability can be used as a predictive biomarker for response to paclitaxel.

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