Chemotherapy resistance: A new lead?

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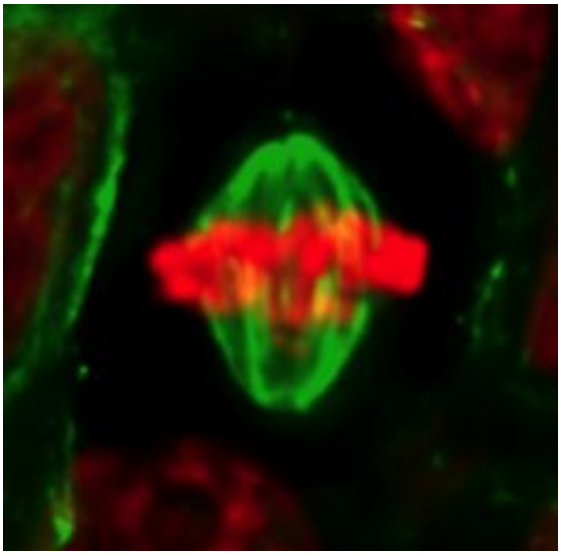
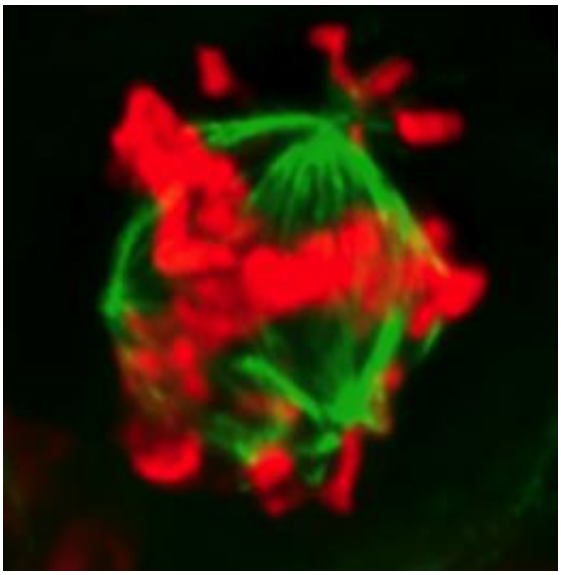


Untreated cell undergoing division. (Green: microtubules. Red: chromosomes)Credit: Sergey Tcherniuk

UA62784: that is the name of a molecule capable of preventing the proliferation of cancerous cells in vitro, and thus causing their cellular death. Its effects appear to amplify that of other anticancer agents currently used clinically, according to the work of the team headed by Ariane Abrieu, Inserm researcher at the Center de Recherche en Biochimie Macromoléculaire. This discovery could make it possible to overcome the phenomenon of resistance developed during certain chemotherapy treatments. The results are published in *Chemistry and Biology* on 26 May 2011.

Cancerous cells have the particularity of dividing in an uncontrolled manner. To prevent this happening, many of the anticancer drugs currently used clinically target microtubules. By destabilizing them, they block the division and thus the propagation of cancerous cells. However, these treatments are not effective on all cancers and, over time, come up against the phenomenon of resistance in certain tumors.



UA62784 treated cell undergoing division (Green: microtubules. Red: chromosomes) Credit: Sergey Tcherniuk

Sergey Tcherniuk, a member of Abrieu's team at the Centre de Recherche en Biochimie Macromoléculaire, has been able to demonstrate, in vitro, that the molecule UA62784 affects the way microtubules normally work. In fact, UA62784 blocks the division of cancerous cells, which for the main part causes cell death. Complementary experiments have shown that, when combined with other anticancer agents already used clinically in chemotherapy, UA62784 is able to boost their effect. Last but not least, effective doses

of UA62784 are much lower than those administered with current medicines. Treating patients with this molecule could thus reduce the occurrence of chemotherapy resistance.

Although this discovery is still only at the experimental stage, it makes it possible to envisage significant advances in chemotherapy-based clinical treatments, not just for tumors that have been totally resistant until now, but also those liable to relapse. The researchers are currently conducting in vitro tests in order to collect further data on the efficacy of UA62784 and find out how to optimize its effect, coupled or not with other conventional anticancer agents.

More information: UA62784 is a cytotoxic inhibitor of microtubules, not Cenp-E. S.Tcherniuk, et al. *Chemistry and Biology*, 26 May 2011.

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