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A new strategy for cancer treatment

Background

Epithelial ovarian cancer (EOC), which is the most common and the most deadly form of ovarian cancer, is the fifth leading cause of cancer death in women. Treatments for EOC are still based chemotherapy, which are general cytotoxic agents known to elicit several side effects and resistance. There has been no improvement on the 5-year survival rate, which is only 30%, highlighting the need for better and different drug treatments. So far there are currently no forms of targeted treatment and new drugs acting through novel mechanism of action could be used alone or as “add-on” to existing therapies.

Technology

The team of Pr Anne-Marie Mes-Masson, in collaboration with Dr Jian Wu, medicinal chemist at the Jewish General Hospital, has recently discovered that the small GTPase Ran is one of the most promising epithelian ovarian cancer (EOC) candidate biomarker but also a promising target for cancer. Results have shown that Ran inhibition does not affect the growth of normal cells but only cells displaying abnormal chromosomal number (aneuploid cells), including EOC cells, are sensitive to Ran silencing. Aneuploidy may represent an ‘Achilles Heel’ of the cancer celland represent a novel strategy to eliminate cancer cells. Because genome instability is a universal characteristic of cancer cells affecting 90% of solid tumors, Ran inhibition has the potential to treat tumors despite of their heterogeneity. The team has identified novel chemical compounds which are small molecules, inhibitors of Ran GTPase.

Application

- Targeting the aneuploidy in cancer cell through Ran inhibition to develop a new strategy for the treatment of cancer.

Competitive Advantages

• Ran = validated target in cancer and prognostic marker
• Unique model systems: largest ovarian cancer tumor bank in Canada
• Aneuploidy = « Achilles heel » of the cancer cells
• Potential to use in all cancer displaying aneuploid genomes
• Potential to target tumors despite of their heterogeneity
• Identification of small molecule inhibitor: 1 promising compound
• Potential market leadership position for this therapeutic strategy

Next Steps

- In vitro/in vivo characterization of Ran inhibitors
- Testing with different types of cancer

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