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A novel dual-imaging probe for the detection of progressive ovarian cancer

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Ovarian cancer is the fifth most lethal cancer among women. Early detection is highly warranted in order to optimize therapy, and improve the overall prognosis. However, technologies for early detection of ovarian cancer are currently lacking.
Here, we describe the development of a new dual imaging probe for ovarian cancer. This imaging probe is based on folate as targeting moiety. Our probe is labeled with radioisotopes for positron emission tomography (PET), and a fluorescent dye for optical imaging. The radioisotope that we chose is gallium-68, which is coordinated using DOTA chelators. The dye that we chose is Cy5, which emits in the near-infrared (NIR) range, and which is advantageous for in vivo imaging due to the better signal-to-noise ratio.
To test our probe in vitro, we utilize the human ovarian cancer cell lines ES-2, which has a low expression of the folate receptor, and SKOV3, which has a high folate receptor expression. Moreover, ES-2 cells were stably transfecting it with a construct expressing the human folate receptor in a tetracycline-dependent manner.
The main advantage of this new dual imaging probe is the possibility to use each modality on its own, as well as in combination, which is anticipated to offer improved detection of ovarian cancer.

Author: Ms LITVINENKO, Alexandra (UNIGE)

Co-authors: Mr TELMAN, Vincent (UNIGE); Mr WALTER, Martin (HUG); Ms GROTZKY, Andrea (UNIGE)

Presenters: Ms LITVINENKO, Alexandra (UNIGE); Ms GROTZKY, Andrea (UNIGE)

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