Contribution ID : **16** Type : **not specified**

Hands-on activities in groups

Tuesday, 16 September 2025 14:00 (2:30)

Content

Hands on 3 **The role of mechanical forces in inhibiting cancer cell proliferation in the heart.** Serena Zacchigna

Both primary and secondary cardiac cancer are extremely rare. While the low incidence of primary tumors is expected, due to the low proliferation rate of cardiomyocytes, the low incidence of metastasis is enigmatic, considering that the heart is highly vascularized and blood constantly flows through it. We recently demonstrated that cancer cells ectopically implanted into the heart grow less than in any other organ. However, the mechanisms that inhibit cancer cell proliferation in the heart remain elusive. Mechanical forces operating in a beating heart have been proposed to blunt the proliferative potential of cardiomyocytes. We hypothesized that the same forces inhibit cancer cell proliferation in the heart. Consistently, our preliminary data indicate that cancer cells grow massively in mechanically unloaded hearts. In this experiment, cancer cells and primary health fibroblasts will be mechanically stimulated using a custom device able to stretch cells in 3D, to mimic a beating heart, at multiple pressures and frequencies, followed by quantification of cancer cell apoptosis and proliferation. We would like to generate a model to infer the best combination of pressure and frquency to use in order to reduce proliferation and induce apoptosis in cancer cells, while minimally affecting the beahvior of healthy cells.

Hands-on 4 **TBA**

Summary

Session Classification : notitle