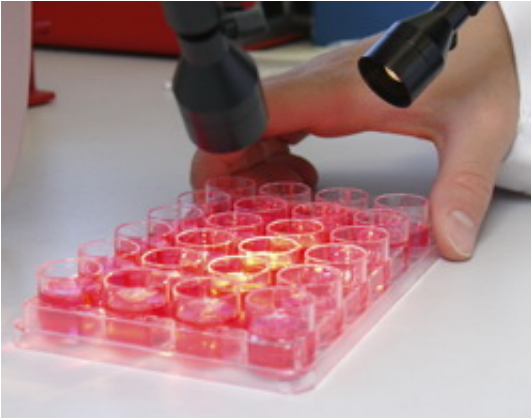


Exploring the relation between stem cells and tumor growth

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An EU research project has shed light on the tumor-growth role of a key-signalling pathway in mammary gland stem cells.

Tumor stem cells (TSCs) identified in several tumour tissues are functionally similar to mature stem cells, and are capable of creating new tumours. TSCs are thought to originate from either transformed [adult stem cells](#) or [progenitor cells](#).

The hedgehog (Hh) signalling pathway gives stem cells the required information to differentiate. Different kinds of cells have different concentrations of Hedgehog proteins. Malfunction of the pathway can result in diseases like cancer.

The aim of the EU-funded Mammahoglr project was to further investigate the Hh signalling pathway supporting tumour-growth role in gland stem/progenitor [cell fate](#) and [cancer development](#).

In the framework of this project, unique and innovative tools were established. A mouse model with conditionally regulated Hh-pathway activation was created in the mammary gland. This model was used for monitoring the dynamic changes in

the stem/progenitor [cell population](#).

Furthermore, an innovative tumor mouse line was developed, in which the Hh-pathway could be activated and deactivated. This cell line promises to shed light on the early stages of tumour development and identify the cancer-initiating cells.

The results showed a significant increase in tumor formation and growth rate upon Hh-pathway activation. Additionally, stem cell marker Leucine-rich repeat-containing G-protein coupled receptor 5 (Lgr5) was over-expressed in and induced by Hh pathway activation tumours, suggesting that these tumors are less differentiated. Therefore, the system of induced tumours developed within Mammahoglr project represents a relevant model to investigate the role of the Hh-pathway in [breast cancer](#).

The confirmation of the role of an activated Hh-pathway in the development of breast cancer and the tools developed will guide the therapeutic strategies to new, specifically targeted drugs.

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