Drug Discovery & Development

Stem Cell Marker for Breast Cancer

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a cell surface marker for somatic mammary stem cells and mammary tumor stem cells.

Overview

In patients who develop breast cancer, malignant tumors frequently begin in somatic mammary stem cells. In addition, breast tumors have a stem cell component that propagates the tumor, which may explain why some tumors recur after initially effective treatment. In order for these tumors to be successfully contained or eradicated, the cancer stem cell population needs to be targeted, a process made difficult by the lack of cell surface markers for mammary tumor stem cells.

The Invention

UW-Madison researchers have discovered that the low density lipoprotein receptor related protein LRP5 is a cell surface marker for somatic mammary stem cells and mammary tumor stem cells. LRP5 helps initiate signaling by the Wnt family of secreted lipoproteins. Wnt signaling plays a significant role in normal mammary gland development and is also the most common source of tumor initiation for human epithelial tissue. Adult female mice that lack LRP5 lack ductal stem cells in their breast tissue, showing that although the loss of Wnt signaling does not affect breast tissue grossly, it dramatically changes the growth potential of the tissue. Inhibiting LRP5 greatly interferes with the ability of ectopic Wnt signaling to initiate and maintain tumors.

Applications

- Assessment of breast biopsy samples
- Screening and isolation of breast cancer stem cells
- Breast cancer treatment target
- Identification of agents that modulate LRP5 activity

Key Benefits

- Provides—for the first time—a biomarker for mammary stem/progenitor cells
- Inhibition of LRP5 likely has minimal side effects.

Additional Information

For More Information About the Inventors

- Caroline Alexander

Tech Fields

- Drug Discovery & Development : Other drug discovery & development

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854