LAMININ IS A KEY COMPONENT OF THE CANCER STEM CELL NICHE, SUSTAINING CELL GROWTH AND GUIDING TUMOR ANGIogenesis, INVASION AND METASTASIS

Laminins are one of the major glycoprotein families present at the basement membrane (BM) of the extra cellular matrix (ECM) which underlie most cells in the body and separate epithelial and endothelial cells from connective tissues. Laminins play a vital role in regulation of normal cellular processes, such as adhesion, migration, proliferation, and differentiation. As a major BM component of the stem cell niche, laminins affects stem cell behaviour by maintaining the self-renewal capacity or guide differentiation into a variety of specialized cell types.

Laminins are also heavily involved in the development of early stage cancers, tumor progression and invasion. Laminins have been shown to sustain the growth of cancer stem cells and to regulate key cellular events for tumor angiogenesis, cell invasion and metastasis development, including the regulation of epithelial-mesenchymal transition and basement membrane remodeling.

The accumulating evidence in this emerging research area suggests that laminins represent potential therapeutic targets against cancer stem cells, and could potentially be used as predictive and prognostic markers.
LN511 PROMOTES SELF-RENEWAL OF BREAST CANCER STEM CELLS AND IS A POTENT ADHESIVE AND MIGRATORY SUBSTRATE FOR METASTATIC BREAST TUMOR CELLS IN VITRO

Human recombinant laminin cell culture substrate Biolaminin 511 LN (LN511) is a critical niche component for breast cancer stem cells (CSCs). Breast CSCs produce a LN-511 matrix that functions as a ligand for the α6β1 integrin, promoting self-renewal and tumor initiation but also activation of the Hippo transducer TAZ. TAZ regulates transcription of the laminin α5 subunit and the formation of the LN511 matrix, establishing a positive feedback loop between TAZ and LN511 that contributes to stemness in breast cancer (Chang et al., 2015). LN511 also is a potent adhesive and migratory substrate for metastatic breast tumor cells in vitro and its expression correlates with tumor grade and metastatic potential in vivo. The migration and invasion responses of metastatic breast tumor cells has been shown to be mediated primarily via the α3β1 integrin cellular receptor (Kusuma et al., 2011).

LN521 PROVIDES A GOOD SUPPORT FOR CULTURE OF VARIOUS NEURAL TUMOR CELLS

REFERENCES

A laminin 511 matrix is regulated by TAZ and functions as the ligand for the α6β1 integrin to sustain breast cancer stem cells. Chang C., Lal Goel H., Gao H., Pursell B., Shultz L.D., Greiner D.L., Ingerpuu S., Patarroyo M., Cao S., Lim E., Mao J., Kulju McKee K., Yurchenco P.D., Mercurio A.M. Research communication, 2015
