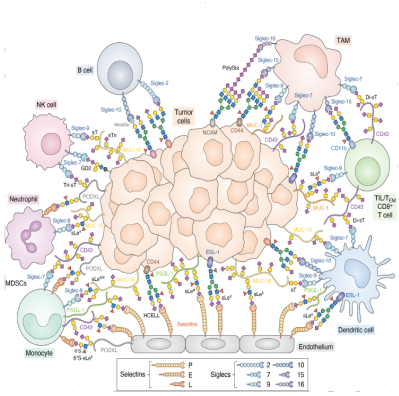
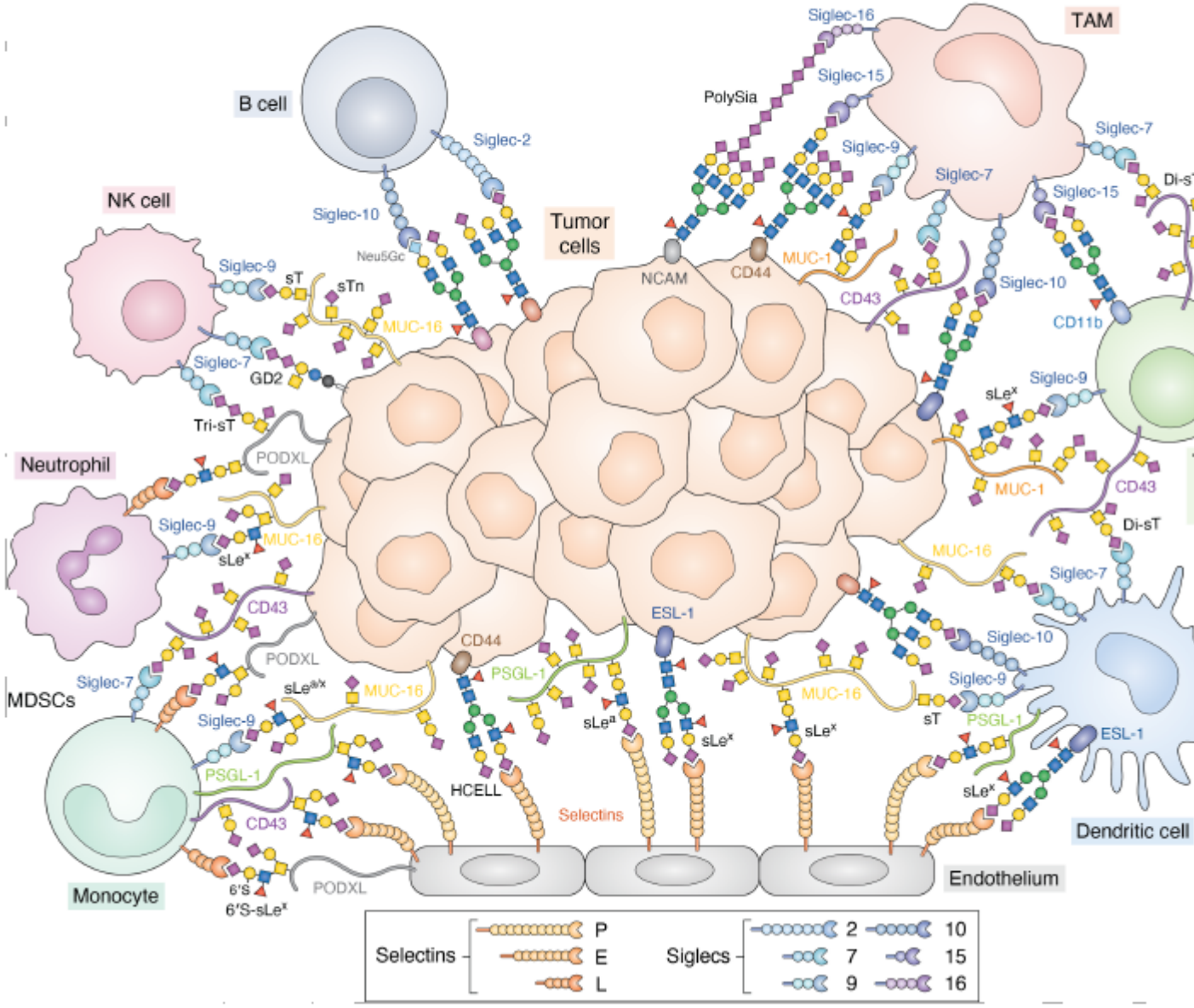


Writers and Readers of Sialylation in Immunoregulation in Cancer

Description

Sialic acids are the terminal monosaccharides of the glycocalyx that play a crucial role in shaping cell-cell interactions. They are strongly involved in regulating immune recognition and tissue homeostasis. In cancer, abnormal sialylation rewires the tumor microenvironment by increasing ligands for inhibitory Siglecs, suppressing immune effector functions, and aiding metastatic spread. This review offers a comprehensive overview of the dual role of sialyltransferases (the â??writersâ?•) and Siglecs/Selectins (the â??readersâ?•) in cancer progression. The authors explore the structural and functional diversity of these molecules, their dysregulation in malignancy, and their effects on tumorâ??immune interactions. Finally, emerging therapeutic strategies are discussed, including sialyltransferase inhibitors, sialidase conjugates, and Siglec-targeted immunotherapies, which together highlight the sialome as a promising target in cancer treatment.



Landscape of Siglecs and Selectins interactions known with their sialylated ligands in the tumor cell microenvironment of cancer. Schematic representation of known interactions between tumor cellâ??associated sialoglycans and their cognate receptors on immune and endothelial cells. Siglecâ??sialoside recognition mediates immune suppression, whereas Selectinâ??ligand binding (sLex, sLea) facilitates tumor cell adhesion, rolling, and metastasis within the vasculature.

Category

1. News