Induced Internalization of Surface Receptors

Published date: Feb. 1, 2012

Technology description

Summary

Cell-surface receptors are responsible for the biological activities of many molecules. Specific ligands bind to them, causing the cell-surface receptors to internalize or bring the receptor and ligand inside the cell. A number of diseases, including cancer, metabolic disorders, and viral infections are known to require the expression of cell-surface receptors for critical pathogenetic steps. This has prompted significant research efforts towards the development of pharmaceutical agents that block the signals from cell-surface receptors. While this current research shows great promise, there is a strong need for new therapeutic strategies that utilize the mechanistic properties of cell-surface receptors.
This technology describes a strategy for artificially inducing the internalization of surface receptors, and thereby blocking the effects of the ligands associated with that receptor. This method employs bifunctional ligands that bind to both a scavenger receptor and a target receptor. As proof of concept, the inventors Drs. Narazaki and Tosato have shown that a ligand capable of binding to the scavenger receptor SREC-1 and the neuropilin-1 receptor NRP1 induces the internalization of NRP1 and inhibits NRP1 signaling. The inventors propose that this strategy can be used to inhibit signaling from any target receptor if an appropriate bifunctional ligand is used. For example, the concept could be expanded to other receptors, such as HDL and LDL receptors. Likewise the bifunctional ligand could include specific antibodies or modified ligands that recognize cell surface receptors of biological importance. Accordingly, this approach could be used to limit tumor angiogenesis, limit tumor growth, block metastasis formation, block inflammation, block viral infection, and treat just about any disease where we identify a cell surface receptor an the molecular basis for disease.
Market:
Cancer is one of the leading causes of death in United States and it is estimated that there will be more than half a million deaths caused by cancer in 2008.
It is estimated that over one million people in the U.S. are living with HIV/AIDS and approximately 50,000 new infections occur each year.

Application area

Method of inducing the internalization of target receptors.

Inhibiting diseases or conditions associated with target receptors, such as HIV infection, cancer, or angiogenesis.
Treating diseases or conditions associated with target receptors, such as cancer, viral infections, or HIV infections.

Institution

NIH - National Institutes of Health

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com