

# Peptide and Peptidomimetic Inhibitors of Smoothed Protein as Anti-neoplastic Agents

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## Technology description

### Summary

Cancer is caused by the improper regulation of certain signaling proteins in the cell. One of these pathways is the Hedgehog/Patched (HH/PTCH) pathway. Hedgehog is a secreted protein involved in the growth and development of embryonic cells. Patched is the receptor for hedgehog proteins and regulates a membrane protein called Smoothed (SMO). This pathway is activated in many tumor cells, including those in prostate, pancreas, stomach, and small cell cancer.

The technology is directed towards several synthetic peptides (including all-D analogs) corresponding to specific region of the SMO protein. Experiments in vitro demonstrate that they potentially suppress the growth of cancer cells and inhibit the expression of the HH/PTCH pathway genes. These novel SMO inhibitors are much more effective in inhibiting cell growth than currently available cyclopamine and cyclopamine derivatives. These novel peptides and their metabolically more stable analogs have a high potential for cancer therapy. Due to their high hydrophobic properties, these can be easily formulated for specific intratumor delivery or topical creams for skin disorders. 600,000 deaths from cancer related diseases estimated in 2006. This technology involving therapeutics for the treatment of several cancers has a potential market of several billion U.S. dollars. Psoriasis affects an estimated 2-3 percent of the world's population. Dermatologic diseases affect an estimated 50 million Americans. Skin therapeutic market is worth over \$2 billion in annual sales of prescription medications with an estimated yearly growth rate of 5%. The overall annual cost of psoriasis treatment has been estimated to be from \$650 million to \$2 billion in the United States

### Application area

A potent, highly soluble cancer therapeutic

Novel compounds that inhibit HH/PTCH pathway genes

Skin permeable compounds that can be formulated into topical creams for skin malignancies treatment and prevention and treatment of psoriasis

Institution

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