Targeted Therapeutic for Bladder Cancer

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Technology description

Background

Bladder carcinomas are among the more frequent and highly recurrent cancers. In spite of its obvious high impact on public health and to its increasing burden to the health budget, available therapies are still of limited efficacy. Bladder instillation of nontargeted therapeutics is rendered inefficient by dilution of the agent by urine influx and elimination of the agent by the periodic voiding of the bladder content.

Technology Summary

Researchers at Purdue University have developed a family of artificial multivalent targeting peptides that show improved protein solubility/stability, greater binding potential, and a very high rate of uptake by tumor cells. This design is based on the strategies utilized by different bacteria, such as the therapeutically used Bacillus Calmette Guerin (BCG), to bind and to be internalized by tumor cells without causing patient hypersensitivity, morbidity, and risk of infection. Further, this technology has the potential for use as a targeting agent for the delivery of therapeutics to treat bladder cancer by having this technology formulated into pharmaceutically suitable carriers and administered into the lumen of the bladder. This revolutionizes bladder cancer treatment and can lead to therapeutic innovations in other cancer-based domains such as the treatment of skin and lung cancer.

Related Publications

Coon, B. G., S. Crist, A. M. Gonzalez-Bonet, H. K. Kim, J. Sowa, D. H. Thompson, T. L. Ratliff, and R. C. Aguilar. Fibronectin attachment protein from bacillus Calmette-Guerin as targeting agent for bladder tumor cells. International Journal of Cancer, 2012, 131 (3): 591-600. doi: 10.1002/ijc.26413.

Application area

Delivery of therapeutics for treating bladder cancer
Potential use in the treatment of other cancers

Advantages

Greater protein stability, solubility, and tumor cell binding properties
Fast and efficient uptake by tumor cells
No infection risk or hypersensitivity developed

Institution

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