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Cover story

# A new homing peptide toward tumor vasculature shows tissue specificity

It is well known that a tumor is a rapidly growing tissue when it is compared with other normal tissues. However, tumors cannot grow beyond a critical size when there is an insufficient supply of oxygen and nutrients to maintain their abnormal growth. In a hypoxic state, cancer cells release numerous growth factors to initiate angiogenesis to keep enough blood supply for their growth. Therefore, tumor vasculature is an excellent target for those who want to design delivery carriers to treat cancers with high specificity. RGD binds to the vascular integrin $\alpha V\beta 3$ specifically and is known as a typical homing peptide toward the endothelial wall of tumor vasculature. Trials to increase targeting efficiency of delivery carriers with cyclic RGD have been reported recently. However, not many achievements were made in finding new homing peptides which is specific to tumor vasculature. Recently, biopanning in peptide libraries with phage-display technique has been used for finding new homing peptides targeting the intended cells, tissues and organs. How exciting it is, if one can find novel homing peptides which can identify tissue specific biomarkers with high efficiency. By using the phage-display technique, Xiaoli Hui et al. demonstrated a new homing peptide which targets human gastric cancer efficiently [1].

The homing peptide, CGNSNPKSC, showed higher bindings to the tumor vasculature endothelial cells in vitro. The homing peptide labeled with Technetium-99m also showed high specificity to blood vessels in gastric cancer with using a tumor-bearing mice model. The authors also carried out a number of biological studies to demonstrate recognition of receptors expressed by endothelial cells of human gastric cancer. Although characterization of its receptor needs further studies, this new homing peptide can be a good candidate in targeting gastric cancers with a high efficiency for diagnostic and therapeutic purposes. There is no doubt that more homing peptides will be discovered, leading to exciting new treatment of cancers.

## Reference

[1] Xiaoli Hui, Yu Han, Shuhui Liang, Zhiguo Liu, Jingtao Liu, Liu Hong, Lina Zhao, Li He, Shanshan Cao, Bei Chen, Kun Yan, Bin Jin, Na Chai, Jing Wang, Kaichun Wu, Daiming Fan, Specific targeting of the vasculature of gastric cancer by a new tumor-homing peptide CGNSNPKSC, J. Control. Release 131 (2008). doi:10.1016/j.jconrel.2008.07.024.

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