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Human monoclonal anti-EGFR antibodies for cancer therapeutics

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Antibodies specific for cell surface receptors overexpressed on a number of cancers have been utilized for development of targeted immunotherapeutics. While many therapeutic antibodies in oncology function by binding to cell surface receptors at an epitope which blocks ligand binding, thus inhibiting receptor activation, antibodies that not only bind the cell surface receptor but also are internalized into the cell allow use of the antibody to deliver various payloads into the cell to achieve a therapeutic effect. This talk will discuss the factors that impact on the therapeutic effect of anti-EGFR antibodies as naked IgG and EGFR-targeted nanoliposomal particle. These factors include antibody intrinsic affinity, avidity, drug sensitivity, and binding epitopes.

Biography

Zhou was originally trained as a protein chemist in Peking University specializing in protein engineering of protease and protease inhibitors. She is skilled in both rational design and directed evolution to engineer proteins. Zhou has developed novel ways to generate (Zhou et al. 2009), optimize human antibodies for drug delivery (Zhou et al. 2007), and identify the tumor-associated antigens (TAAs) (Goenaga et al. 2007). Expanding the phage display to yeast display, and combining both in the discovery of antibodies targeting TAAs, Zhou has successfully generated a panel of human antibodies for cancer detection and therapeutics, some of which were licensed for further development. The novel method to screen phage display antibodies using both cancer cells and yeast-displayed antigens made it possible to generate disease associated monoclonal antibodies to virtually any antigens with high throughput (Zhou et al. 2010). Concurrently, Zhou has led and completed UCSF participation in a multi-university research initiative launched by the Lustgarten Foundation to develop early detection for pancreatic cancer. The monoclonal antibodies and assays developed have shown promises in pancreatic cancer serological detection. In addition to improving antibody affinity for target antigen, Zhou has also adapted the display technology to engineer Fc function, which was funded by the Department of Defense, and established a new way to alter *in vivo* effects of therapeutic antibodies.

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