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Research Description:

There are three research aspects focusing on targeted tumor therapy in Dr. Ma's laboratory. 1) Search new target against metastasis: We are trying to find new molecular targets for drug development through microRNA technology. By arrays of microRNA derived from different tumor tissues, we obtained several microRNAs related to cancer metastasis. These microRNAs will be further analyzed to discuss possibility to be drug targets. 2) Discover new drug and develop new delivery system targeting cancer molecule using nanotechnology. Collaborated with chemists of Beijing University, we are evaluating new nanomaterials as anti-cancer drugs. Because of the unique physical characters, nanomaterial has special ability disturbing tumor growth. However, the mechanism of this anti-cancer function has not been declared. Our results revealed that some of these nanomaterials could induce a cascade of immune response in vivo, which caused a mild anti-cancer effect. Using nanospheres, we developed a colon targeting drug delivery system, which could inhibit the growth of colon cancer. This nanosphere is pH sensitive and able to dissolve oil soluble chemodrugs. Also, the application of the nanosphere could change drug administration rout from i.v. to oral, which has a better compliance with patient. 3) Biotherapy for cancer. We are conducting adoptive cell therapy to cancer patients in our hospital. The therapy applied the most advanced technologies in the world. The cancer patients received the treatment had improved quality of life and prolonged survival time. Some people in our group are working for better biotherapy and we hope their research achievements will benefit cancer patient

Selected Publications:

1. Yuan W, Sui C, Liu Q, Tang W, An H, Ma J*.Up-Regulation of MicroRNA-145 Associates with Lymph Node Metastasis in Colorectal Cancer. *PLoS One*. 9(7):e102017(2014)
2. Zhao C, Feng Q, Dou Z, Yuan W, Sui C, Zhang X, Xia G, Sun H, Ma J*, Local targeted therapy of liver metastasis from colon cancer by galactosylated liposome encapsulated with Doxorubicin.*PLoS One*.:8(9):e73860(2013)
3. Hu Y, Yuan W, Zhao NN, Ma J*, Yang WT, Xu FJ*, Supramolecular pseudo-block gene carriers based on bioreducible star polycations. *Biomaterials*. 34(21): 5411-22(2013)
4. Li WB, Yuan W, Xu FJ, Zhao C, Ma J*, Zhan QM.,Functional Study of Dextran-Graft-Poly((2-Dimethyl Amino)Ethyl Methacrylate) Gene Delivery Vector for Tumor Therapy, *Journal of Biomaterials Applications*. 28(1):125-35(2013)
5. Wei Yuan, Chunyan Li, Chen Zhao, Chenguang Sui, Wan-Tai Yang, Fu-Jian Xu, Jie Ma*. Facilitation of Gene Transfection and Cell Adhesion by Gelatin-Functionalized PCL Film Surfaces. *Advanced Functional Materials*. Vol:22,pp1835-1842. (2012)