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Title: Quantitative analysis of surface marker on rare circulating tumor cells by ligand-targeted PCR

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Abstract

Quantitative assessment of surface proteins on tumor cells in circulation can be valuable for dynamic evaluation of metastatic diseases. Current analysis of surface molecules is mainly based on immunofluorescence or immunohistochemistry assay; however, the sensitivity and throughput limitations of these methods constrain their use for such purpose. Here we present a new technique, named ligand-targeted polymerase chain reaction (LT-PCR) for detecting a surface molecule with a conjugate of a high affinity ligand (e.g. peptide, antagonist, antibody, etc.) that specifically binds to the surface molecule and an oligonucleotide that serves as a detector molecule for quantitation of the ligand by quantitative PCR. To demonstrate the clinical utility of this assay, we performed this test to determine the total quantity of folate receptors on circulating tumor cells in donors with benign and malignant diseases. The analytical results indicated that the LT-PCR allows detection of attomoles of ligand molecules in the samples. Analysis of blood samples from lung cancer patients suggests significant correlation between the total quantity of surface folate receptors on circulating tumor cells and disease status.

Biography

Dr. Guohua Yang, now is a co-founder and the vice president of the department of research and development in Genosaber biotech Company. He got his B.S. degree in Biology from the University of Science and technology of China. Then he graduated from the institute of Biochemistry and Cell biology of shanghai, Chinese academy of Sciences, got his Ph.D. degree in Cell biology at 2006. Before in Genosaber, Dr. Guohua Yang worked in pharmaceutical companies for 5 years, specialist in cancer biology and small compound drug evaluation. At 2010, Dr. Wei He and Dr. Guohua Yang founded the Genosaber Biotech. Now the company research and development focus on the diagnosis of human cancer, especially on the circulating tumor cell isolation, diagnosis and its clinical usage.