Immunofluorescence detection with quantum dot bioconjugates for hepatoma *in vivo*

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**Abstract**  The use of highly specific and highly sensitive immunofluorescent probes is a promising approach for biomedical imaging in living tissue. We focus on immunofluorescence with quantum dot bioconjugates for hepatoma detection *in vivo*. We synthesized specific immunofluorescent probes by linking quantum dots to AFP antibody for specific binding alpha-fetoprotein -an important marker for hepatocellular carcinoma cell lines. *In vivo* studies, the QDs-Anti-AFP probes in tumor have exhibited characteristic QD fluorescent property and demonstrated active tumor targeting and spectroscopic hepatoma imaging with an integrated fluorescence imaging system. We have investigated the inhomogeneous distribution of the QDs-Anti-AFP in tumor by using a site-by-site measurement method to test their ability for distribution studies of cancer cells. These results demonstrate the practicality of QD bioconjugates as attractive fluorescent probes for biomedical detection.