

## Author's Accepted Manuscript

Highly sensitive fluorescent detection of p53 protein based on DNA functionalized Fe<sub>3</sub>O<sub>4</sub> nanoparticles

Qunfang Xu, Kaixin Liang, Jiang Ouyang, Wangsong Chen, Liu Deng, You-Nian Liu



PII: S0039-9140(18)30469-7  
DOI: <https://doi.org/10.1016/j.talanta.2018.05.009>  
Reference: TAL18649

To appear in: *Talanta*

Received date: 6 December 2017  
Revised date: 25 April 2018  
Accepted date: 2 May 2018

Cite this article as: Qunfang Xu, Kaixin Liang, Jiang Ouyang, Wangsong Chen, Liu Deng and You-Nian Liu, Highly sensitive fluorescent detection of p53 protein based on DNA functionalized Fe<sub>3</sub>O<sub>4</sub> nanoparticles, *Talanta*, <https://doi.org/10.1016/j.talanta.2018.05.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Highly sensitive fluorescent detection of p53 protein based on DNA functionalized Fe<sub>3</sub>O<sub>4</sub> nanoparticles

Qunfang Xu<sup>a,b,#</sup>, Kaixin Liang<sup>a,#</sup>, Jiang Ouyang<sup>a</sup>, Wangsong Chen<sup>a,b</sup>, Liu Deng<sup>a,b,\*</sup> and You-Nian Liu<sup>a,b,\*</sup>

<sup>a</sup> College of Chemistry and Chemical Engineering Central South University, Changsha, Hunan 410083, P. R. China

<sup>b</sup> Hunan Provincial Key Laboratory of Efficient and Clean Utilization of Manganese Resources, Central South University, Changsha, Hunan 410083, P. R. China

### Abstract

The accurate quantification of p53 protein expression level is of great importance for cancer diagnosis. Here, a highly sensitive fluorescent sensor based on DNA functionalized magnetic nanoparticles was developed for the detection of p53 protein expression. Instead of a monoclonal antibody, a consensus DNA was employed to capture p53 protein. Meanwhile the fluorescent dye tethered DNA was used as the signal output instead of enzyme tagged nanoparticle or antibody. Consequently, our developed method is cost-effective for both the p53 capture and detection by compared with the conventional immunoassay. The biosensor developed by the above strategy was used to quantitatively detect p53, which yields a detection limit of 8 pM with the linear range of 50 pM to 2 nM. The sensitive for specific p53 detection was

---

<sup>#</sup> These two authors are contributed equally to this work.

\* Corresponding authors. Tel/Fax: +86-731-8887-9616.

E-mail address: dengliu@csu.edu.cn (L. Deng); liuyounian@csu.edu.cn (Y.-N. Liu).

Download English Version:

<https://daneshyari.com/en/article/7675742>

Download Persian Version:

<https://daneshyari.com/article/7675742>

[Daneshyari.com](https://daneshyari.com)