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Cancer cell specific fluorescent methionine protected gold nanoclusters for in-vitro cell imaging studies

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Abstract

Benefiting from the excellent photostability and biocompatibility, fluorescent nanoclusters have recently emerged as a highly attractive bio-sensing and imaging material, especially in early diagnosis of cancer. However, their clinic applications were limited by the unsatisfactory specificity and the complex synthesis. In this study, novel methionine coated gold nanoclusters (Met-AuNCs) have been prepared via an easily-achievable one-pot synthetic method. The prepared Met-AuNCs showed high imaging-specificity: after incubating with Met-AuNCs for 1 hour, cancer cells (including A549, HeLa, MCF-7, HepG2) were fluorescent, while the normal cells (WI-38 and CHO) showed no fluorescence. According to a series of controlled experiments, the reason for the high imaging-selectivity was proposed to originate from the specific recognition of L-type amino acid transporter overexpressed in cancer cells.

Graphical abstract

¹ Yiting Pan and Qinzhen Li contributed equally to this work.

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