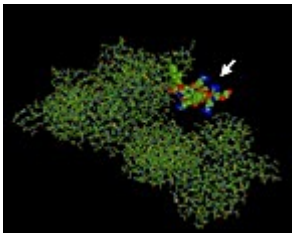
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Peptide Specific for Fibroblast Growth Factor Receptor 2 for Detection and Therapy of Gastrointestinal Adenocarcinomas

TECHNOLOGY NUMBER: 7309



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Category
Diagnostics
Life Sciences

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OVERVIEW

An amino acid sequence that has affinity and specificity for fibroblast growth factor receptor 2 (FGFR2)

- A fast target binding, low cost, reduced toxicity peptide compared to existing options
- Diagnostic imaging peptide for early stage, aggressive breast, prostate, and colorectal cancers

BACKGROUND

Fibroblast growth factor receptor 2 (FGFR2) is a transmembrane receptor tyrosine kinase that signals cell division, growth and differentiation. Defects in FGFR2 expression and signaling are oncogenic and occur in some of the most aggressive and common cancer types, including breast, prostate, esophageal and colorectal cancer. Elevated FGFR2 expression levels are often associated with aggressive tumor behavior, metastasis, and poor prognosis, making it a potential biomarker for disease severity and patient outcomes. In addition to gene amplification and overexpression, mutations in the FGFR2 gene have been identified in various cancer types. These mutations can lead to constitutive activation of FGFR2 signaling pathways, driving tumor growth and progression. Detection of specific FGFR2 mutations may serve as biomarkers for predicting response to targeted therapies, such as FGFR inhibitors. FGFR2 is therefore a promising early cancer biomarker and an important target for cancer therapy, and a need exists for novel methods to assess and manage patients with FGFR2 defects.

INNOVATION

Researchers have identified a 12 amino acid peptide sequence that shows robust binding affinity and specificity for the extracellular domain of fibroblast growth factor receptor 2 (FGFR2). The binding properties of this peptide to FGFR2- and FGFR2-expressing tumor cells have been visualized via multiple in vitro assays and validated with both pre-malignant and

malignant biopsy specimens of human esophagus and stomach. Additionally, this peptide binds to the extracellular domain of FGFR2 without interfering with receptor signaling, making it advantageous for diagnostic imaging. The fast target binding, low cost of production, and reduced toxicity make this peptide preferable to existing monoclonal antibodies. This peptide is a promising clinical tool for both the detection and targeted therapy of cancers linked to FGFR2 dysregulation. This innovation can therefore serve as a diagnostic or therapeutic agent for early cancer detection, cancer staging, a method to monitor therapeutic response, or a means for guiding choice of therapy and targeted drug delivery.

PATENT APPLICATION

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