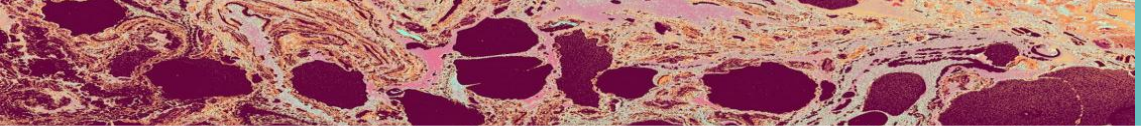

Multi-peptide Platform for Targeted Treatment and Diagnosis of Aggressive EGFR/PI3K/AKT/mTOR-Overexpressing Cancers

KEYWORDS

Anaplastic Thyroid Carcinoma
EGFR-targeted drug delivery
PIP3-binding peptides
AKT signaling inhibition

PATENT

Title
EGFR targeting peptide

&

PIP3 and EGFR binding polypeptide complexes and use thereof for cancer therapy

Priority dates
20/10/25 & 04/06/25

LICENSING

Exclusive, non-exclusive licences and research collaborations

INVENTORS

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PROBLEM

While one of the patents specifically addresses the technical need for a selective delivery vehicle to improve both the diagnosis and treatment of lethal cancers like ATC, the other addresses the extreme aggressiveness and poor prognosis of Anaplastic Thyroid Carcinoma (ATC), which has a median survival rate of only four months after diagnosis. The problems of the current treatments are :

- Lack of Specificity: Traditional anti-cancer molecules lack the ability to discriminate between healthy and cancerous tissues, leading to high toxicity and systemic side effects.
- Delivery Barriers: There is a critical need for vectors capable of exploiting receptor-mediated endocytosis to deliver therapeutic agents directly into the intracellular environment of cancer cells.
- Limited efficacy of current treatments, especially single target inhibitors (signaling molecules belonging to MAPK or PI3K/AKT/mTOR pathways)
- Rapid development of tumor resistance via activation of alternative oncogenic pathways
- Treatment delays incompatible with a median survival of less than five months
- High systemic toxicity of non-targeted chemotherapy leading to treatment interruptions
- Hyperactivation of the PI3K/AKT/mTOR pathway driving proliferation and inhibiting apoptosis

SOLUTION

The proposed solution consists of a **dual-targeting peptide-based technology** designed to simultaneously address the selective delivery and treatment of aggressive cancers, particularly **Anaplastic Thyroid Carcinoma (ATC)**. This integrated approach utilizes specialized **vector peptides** and **therapeutic peptides** combined into a single **molecular complex**.

- Targeted delivery via EGFR-binding peptide enabling receptor-mediated endocytosis without disrupting EGFR normal signaling
- Intracellular inhibition of the PI3K/AKT/mTOR pathway through selective PIP3 binding, inducing apoptosis in cancer cells
- Dual-function supramolecular peptide complex combining targeting and therapeutic moieties in a modular, stable structure
- Enhanced efficacy through multivalent design (e.g., MAP scaffold) increasing binding strength and activity
- Offers potential theranostic applications, combining non-invasive monitoring of drug delivery (via imaging agents) with targeted treatment and reduced systemic toxicity

INNOVATION

- **Dual-targeting peptide complex.**
- **Selective intracellular delivery.**
- **Non-competitive EGFR binding.**
- **Emerging theranostic platform potential**

TECHNOLOGY STATUS

TRL 3 : Analytical and experimental critical function and/or characteristic proof-of-concept

MARKETS

- **Biopharmaceutical oncology industry**
- **Molecular imaging diagnostics**
- **Precision cancer therapeutics**
- **Biomedical research applications**

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