Hochschule Kaiserslautern
University of Applied Sciences

Applied Research Center
Integrated Miniaturised Systems

IMS

Assessing the Potential of Bacterial Signal Peptides for Cancer Treatment

Glioblastoma multiforme (GBM) is a very aggressive brain tumor with a mean survival time of 1.5 years after diagnosis. Our project aims at a novel therapy of glioblastoma multiforme, one of the most lethal forms of human cancer.

Formyl peptide receptors (FPRs) are abundantly expressed in glioblastoma multiforme, other tumors and their progenitor cells but are rare in healthy tissue. This makes them attractive targets for drug delivery into these tumor cells. However, such targeted drug delivery systems do not yet exist.

We recently developed peptides (Fig. 1) that are up to 100-fold more potent than any yet published formyl peptide receptor agonists and have an up to 10,000-fold selectivity for either human FPR1 or FPR2. These peptides bind to the receptors (Fig. 2) within seconds, form long-term stable complexes and efficiently trigger endocytosis. We plan to develop modified peptide variants that can be used to effectively deliver radioactive material or other drugs to tumor cells.

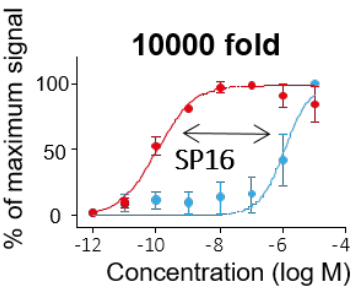

Figure 1: Development of highly selective formyl peptide receptors ligands.

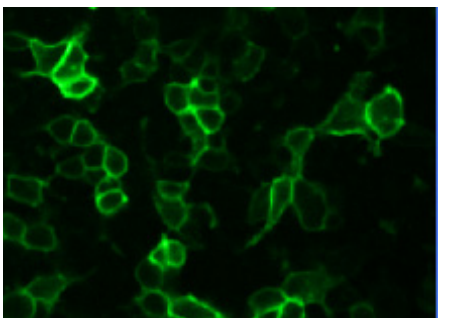

Figure 2: Cell surface binding of fluorescence labelled peptides to HEK293 cells expressing a specific formyl peptide receptor.

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