Novel EGFR Tumor-Associated Antigens and Enhanced Agonist Epitopes

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Background
The epidermal growth factor receptor (EGFR) is an attractive target for cancer therapy because it is highly overexpressed and correlated with poor prognosis in epithelial malignancies, including head and neck squamous cell carcinoma (HNSCC). Although clinical responses have been achieved using EGFR inhibition through blocking antibodies or EGFR tyrosine-kinase inhibitors, many patients do not respond to these treatments. Since delivery of large molecules such as antibodies across the blood brain barrier is difficult, the need exists for additional EGFR inhibition therapies.

Technology Description
Investigators have identified and characterized novel EGFR tumor-associated antigen (TAA) epitopes and enhanced agonist epitopes. Preclinical studies indicate that these EGFR agonist epitopes bind HLA-A2 molecules at lower peptide concentrations with higher stability compared to other predicted EGFR-TAAs. Further studies demonstrate that EGFR specific T-cell lines generated against the EGFR-TAA induced higher levels of tumor killing agents and resulted in more efficient killing of human tumor cells overexpressing the EGFR-TAA. Thus, these agonist epitopes of EGFR have been incorporated into immunotherapy protocols, and may constitute an alternative and/or additional approach for the treatment of EGFR expressing cancers.

Applications
1. Incorporation into cell-based or immunotherapy protocols
2. Cancer Vaccines
3. Combination therapy with various anti-EGFR antibodies and small molecule inhibitors

Advantages
• TAA can be incorporated into immunotherapy protocols as a single agent or in combination with other antigen epitopes, adjuvants, chemotherapy, or targeted small molecule or antibody therapies.

Stage of Development
Phase I clinical studies in patients with HNSCC

PCT Patent Application filed

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Research Interests

- Cancer immunology and immunotherapy
- Mucosal Tumor Immunology
- Antigen processing and presentation to T cells
- Role of human papillomavirus (HPV) in head and neck cancer
- Strategies of immune evasion by cancer cells

Selected Publications


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