Gene Markers for Cervical Cancer Targeted Therapy

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Technology description

Problem or Unmet Need:
Current treatment modalities for invasive cervical cancer result in largely unpredictable patient response. As a result, there is a pressing need for rational design of predictive biomarkers that can better guide treatment strategies in order to provide safer and more efficacious therapy. Recent advances in genomic and proteomic technologies have shown great promise in identifying biomarkers to enable more advanced diagnosis and allow for personalized therapy to improve clinical outcomes.

This technology details a range of biomarkers that have been identified as being down-regulated in cervical cancer cells by genomic analysis of cervical cancer tissue and cell lines, as well as cytological pap smears. Specifically, these markers are related to the tumor necrosis factor (TNF) receptor superfamily pathway that plays a role in tumor cell apoptosis. It has been shown in vitro that cells with these expression profiles more readily respond to TNF-related apoptosis inducing ligand (TRAIL) therapy. In addition, partial expression patterns were also identified in precancerous cervical lesions, implicating these genes in the early onset of cervical cancer and potentially allowing for these markers to be utilized for early-stage diagnosis. This technology could be used as a targeted method to develop more effective treatment regimens when using TRAIL-agonists.

Application area

Personalized medicine -- Individual cancers exhibiting changes in these markers could be more effectively treated with TRAIL-agonists combined with other drugs used in related pathways.
Drug development -- These biomarkers could be used for the development of more effective cervical cancer treatments.
Cancer diagnosis -- The early onset of cervical cancer could be more readily identified by performing genomic analysis of tumor tissue.
Cervical cancer research -- These markers provide a foundation upon which additional research could be performed to identify pathways involved in the development of cervical cancer.

Advantages

Provides the ability to improve currently available therapeutic options by molecular stratification of patients for effective treatment
Enables simultaneous development of more effective and less toxic cancer therapies and diagnostic tools

Institution

Columbia University

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com