Development of pathological periostin measurement device

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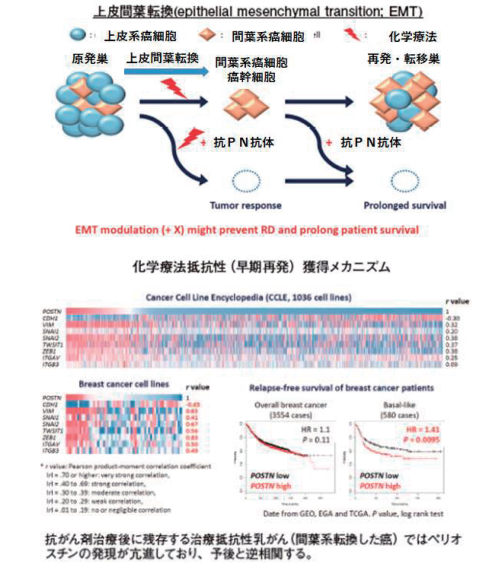
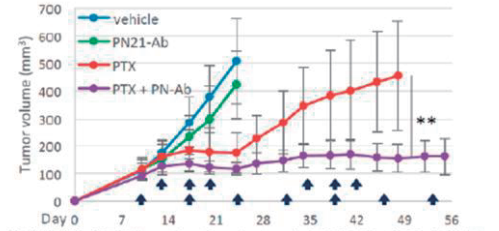
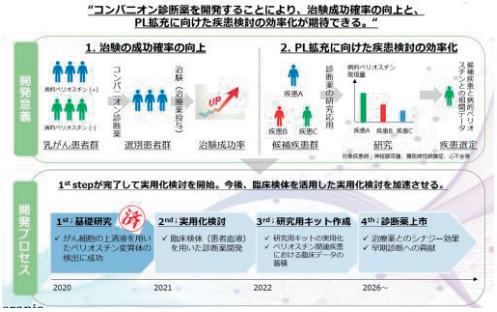
Project Outline

Epithelial-to-mesenchymal transition (EMT) is currently considered to be a major mechanism responsible for chemoresistance. It is thought that mesenchymal cancer cells that are resistant to anticancer drugs later undergo mesenchymal-epithelial transition and become stagnant (figure on the right). Next, in order to search for specific targets, we conducted a joint research with UCSD in US, using tissue samples from more than 1,000 cases of malignant tumors to comprehensively identify the gene of eight mesenchymal markers that have the strongest correlation. As a result, we discovered the periostin gene. In particular, in breast cancer, there was a clearer relationship between periostin gene expression and EMT. Furthermore, it was found that there is a strong correlation with the prognosis of basal type (mainly TNBC). The periostin gene has a splicing variant in which an exon is dropped, so when we investigated which exon's expression was strongly altered in a chemotherapy-resistant model, we found that it was periostin exon 21 (see figure on the right). Therefore, we administered a pathological periostin-neutralizing antibody that uses exon 21 as an antigen to a chemotherapy-resistant model of TNBC, and confirmed that it significantly suppressed recurrence. (Patent already obtained) Furthermore, we have developed a diagnostic agent to measure blood pathological periostin (patent applied for), and plan to study its potential as a companion diagnostic agent. Furthermore, in addition to malignant tumors other than breast cancer, pathological periostin is secreted for various chronic inflammatory diseases such as steroid-resistant atopic dermatitis, steroid-resistant asthma, diabetic retinopathy, and pulmonary fibrosis, and has the potential as a diagnostic agent.







Target disease: Chronic inflammatory disease
Patent Information: Domestic Application
Features of the technique: Measure only pathological periostin
Marketability, development challenges: It needs to be measured in a variety of clinical diseases.
Desired corporate collaboration: We are looking for a corporate collaboration to license out