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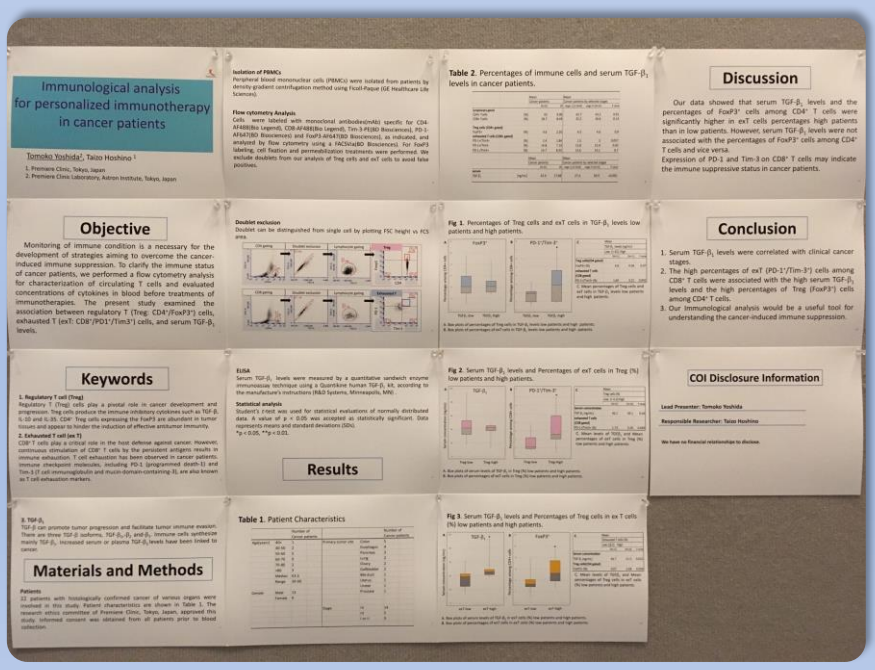
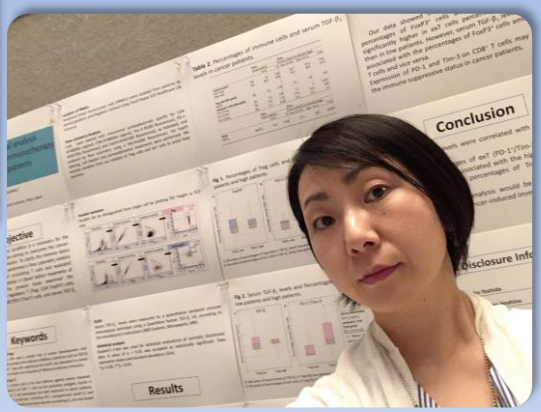
Immunological analysis for personalized immunotherapy in cancer patients

Tomoko Yoshida and Taizo Hoshino
Premiere Clinic
Premiere Clinic Laboratory

Purpose: Monitoring of immune condition is a necessary for the development of strategies aiming to overcome the cancer-induced immune suppression. To clarify the immune status of cancer patients, we performed a flow cytometry analysis for characterization of circulating T cells and evaluated concentrations of cytokines in serum before treatments of immunotherapies. The present study examined the association between regulatory T (Treg: $CD4^+/FoxP3^+$) cells, exhausted T (exT: $CD8^+/PD1^+/Tim\text{-}3^+$) cells, and serum TGF-$\beta_1$ levels. **Methods**: 22 patients with histologically confirmed cancer of various organs were involved in this study. Ages ranged from 39 to 90 years, with median of 63 years. We employed a flow cytometry analysis of mononuclear cells isolated from the patient blood. Serum levels of TGF-β_1 were determined by ELISA. **Results**: Our data showed that the mean percentage of Treg cells among $CD4^+$ cells was 4.6±2.26 %, the mean percentage of exT cells among $CD8^+$ cells was 2.4±1.84 % and the mean value of TGF-β_1 was 42.4±17.7 ng/mL. The statistical analysis indicated that the percentages of exT cells were significantly higher in TGF-β_1 high patients than in TGF-β_1 low patients, and also the strongly expression of FoxP3 on $CD4^+$ cells was correlated with a higher percentage of exT cells. However, the high serum levels of TGF-β_1 were not associated with the expression of FoxP3 on $CD4^+$ cells. **Conclusions**: Circulating Treg cells, exT cells and serum TGF-β_1 levels would be markers for the individual immunosuppression status in cancer patients.