



CALIFORNIA STATE SCIENCE FAIR 2004 PROJECT SUMMARY

Name(s) Serena A. Lee	Project Number S0413
Project Title Analysis of Ferritin Expression in Various Cell Lines with Flow Cytometry	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this study was to analyze the expression of the iron-storage protein heavy-chain ferritin in various cancer cell lines. A correlation was predicted to be the higher amount of ferritin, the higher amount the regulatory T cells will be activated. Previous studies showed that melanoma cell lines that expressed ferritin had higher percentages of T-regulatory cells.</p> <p>Methods/Materials The cell lines analyzed include: Raji, MT-1, YT-2C2, TPH-1-0, DEV, L540, Colo 667, Holm-3, Su-DHL-4, Su-DHL-6, Su-DHL-10, and Su-DHL-16. Each cell line had 3 sample tubes: control, cells with the secondary antibody only, and stained. The reason for the secondary antibody control is to make sure that the secondary antibody isn't randomly binding to any part of the cell. The cells were first washed and then a primary antibody was added and then the cells were incubated. The cells were then again washed and a secondary antibody with a FITC conjugate was added to the sample. After incubation, the cells were washed a final time and immediately analyzed by flow cytometry.</p> <p>Results The TPH-1-0 cell line showed the highest percentage of ferritin expression (98.13%) and the Su-DHL-16 came in second highest with a ferritin expression percentage of 80.28%. The DEV cell line had the lowest expression of ferritin (2.74%) with its secondary antibody control expressing a ferritin percentage of 3.85%.</p> <p>Conclusions/Discussion This means that the DEV cell line does not contain ferritin at all. Future studies will involve injecting ferritin-positive cell lines into separate mice. The cells will be collected and stained to determine whether there is a correlation between the amount of ferritin and the regulatory T cells or not. The TPH-1-0 mice are expected to contain a high level of T-regulatory cells in the blood while the DEV mice are expected to contain the least amount of T-regulatory cells in the blood.</p>	
Summary Statement Various cancer cell lines were analyzed by flow cytometry to detect the amount of ferritin expressed in each cell line.	
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