**HematoLogics, Inc.**

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**Case Study: Eosinophilia and Unexpected B-ALL**

HematoLogics was contacted by a university medical center concerning a pediatric patient with a listed history of, "recent onset eosinophilia, history of steroids; now on hydroxyurea."

**Diagnostic Sample**

**∆N:™***(Difference from Normal)* ***Flow Cytometry*** confirmed a 43% eosinophil population and an unexpected abnormal 4.1% B-ALL population. **FACS**



**Eos**

Cytogenetics from the university was normal, as was FISH at HematoLogics*.* ***Fluorescent Activated Cell Sorting (FACS)*** isolated the B-ALL cells for ***B-cell gene rearrangement***. Results were positive and clonal profiling identified 3 amplicon peaks at bp 139, 278 and 339, providing an identifying fingerprint of the clone. The patient underwent 6 weeks of treatment.

**Week 6 Sample (post treatment)**

**∆N:™ *Flow Cytometry*** identified 66% eosinophils, and 6.1% abnormal lymphoblasts, while again the *Cytogenetics* and *FISH* were normal. Clinicians decided on a bone marrow transplant, questioning if both the eosinophils and B-cells were abnormal. ***FACS*** was performed to sort CD16 positive Eosinophils and CD19 positive B-cells, followed by ***SNP/CGH Microarray****.* It was demonstrated that the Eosinophils were normal and B-cells were abnormal.

 **FACS**

  

***SNP/CGH Microarray*** Normal Eosinophils

Abnormal

B-cells

Because of the presence of abnormal B-cells pre-transplant, a poor outcome was predicted and the patient was monitored monthly post-transplant and showed no sign of disease for 1.5 years.

 **1.5 Years Post- Bone Marrow Transplant Sample**

**∆N:**™ ***Flow Cytometry*** identifies a 0.01% abnormal B-cell population.





The abnormal B-cell population was sorted using ***FACS*** and a ***B-cell gene rearrangement*** was performed, showing an identical fingerprint to the original sample, confirming relapse. Treatment was resumed shortly thereafter.