



**Title:** Identifying Correlations Between Single-Cell Immune Signatures and Trauma Recovery

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**Abstract:**

Post-trauma patients are at high risk for delayed recoveries, which can lead to a longer hospital stay, higher financial costs, and stress (1). The role of the immune system in trauma recovery is still unclear, but a previous study has shown that correlations exist between certain immune cell populations and surgical recovery (2). Whole blood samples from 17 patients admitted to the ICU for various trauma were profiled by mass cytometry at day 1 and day 3 post admission. Multi parametric clustering identified immune phenotypes in patients at both time points, which were correlated against individual clinical parameters. Strong correlations were found between monocyte clusters and T cell clusters to hospital length of stay. Patients with increased abundance of monocytes in peripheral blood, tend to experience longer hospital stays which, in the long term, could serve as a prognostic biomarker for overall outcome post trauma, as well as aid in therapeutic enhancements for patients with a traumatic injury.