Development of an objective proteomic indicator of trauma severity

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Trauma

Trauma is one of the leading causes of death worldwide accounting for more fatalities than HIV and Tuberculosis combined together.

Despite the development of many indicators of trauma severity, accurately categorizing patients at admission still remains challenging as most severity scores are calculated retrospectively (from days to weeks after the trauma) and don't provide much information about pathways involved in trauma's immune dysregulation.

Biomarkers discovery pipeline
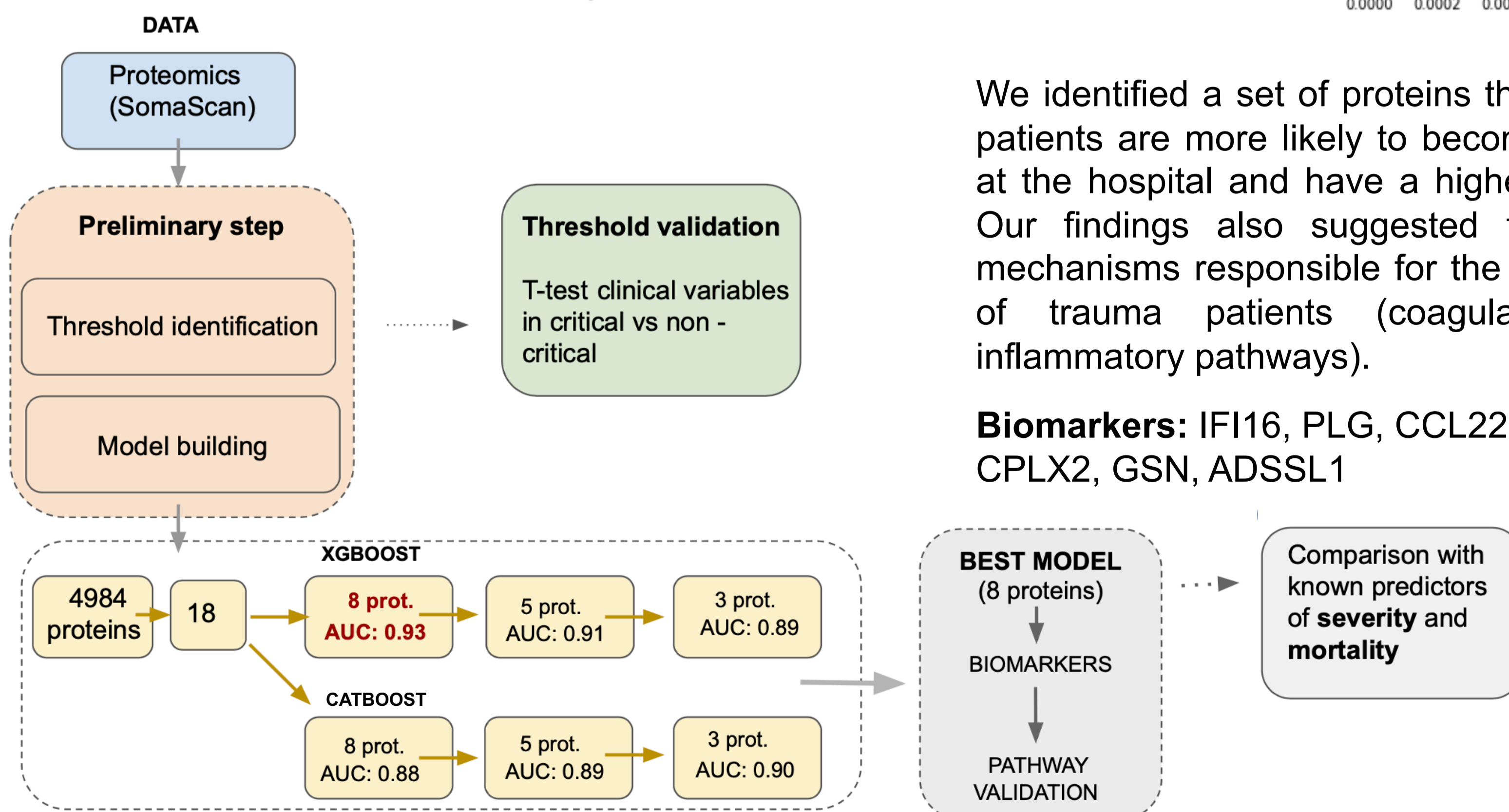


Proteins and pathways important in trauma

We developed a pipeline capable of identifying a small set of biomarkers (8) that can predict trauma severity at admission whilst also identifying dysregulated pathways.
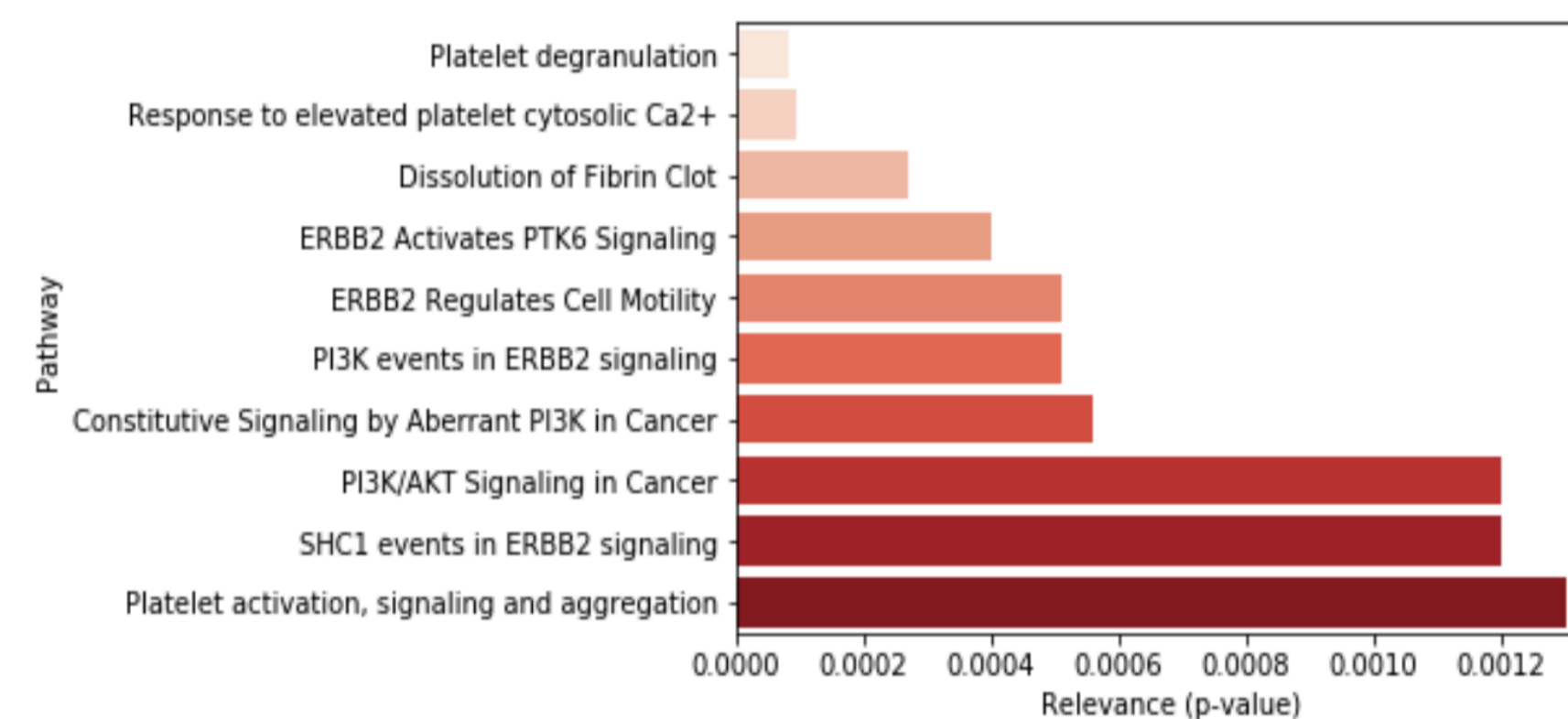
We identified a set of proteins that could predict which patients are more likely to become critical, stay longer at the hospital and have a higher chance of mortality. Our findings also suggested the presence of key mechanisms responsible for the immune dysregulation of trauma patients (coagulation, signaling and inflammatory pathways).

Biomarkers: IFI16, PLG, CCL22, CHGB, CPLX1, CPLX2, GSN, ADSSL1

Proteins' effects on trauma severity
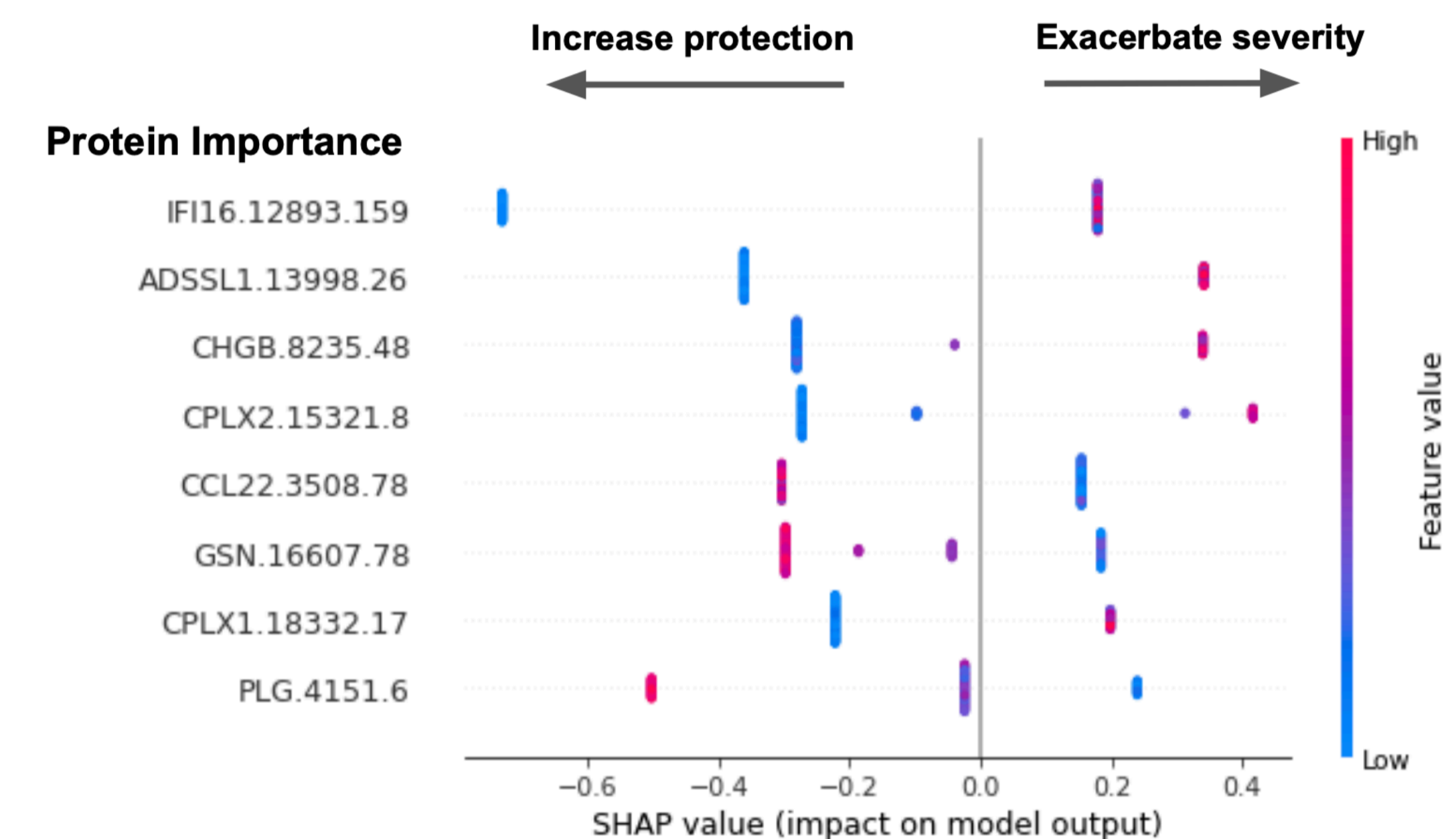
Last, we explored the effects of the selected proteins on trauma severity. We observed that low plasminogen (PLG) and Gelsolin (GSN) levels seem to exacerbate trauma severity while low levels of IFI16, ADSSL1, CPLX1-2 and CHGB seem to be protective.

Overall, our analysis suggested the presence of key biomarkers that could help reduce trauma severity and mortality in Emergency Care.

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