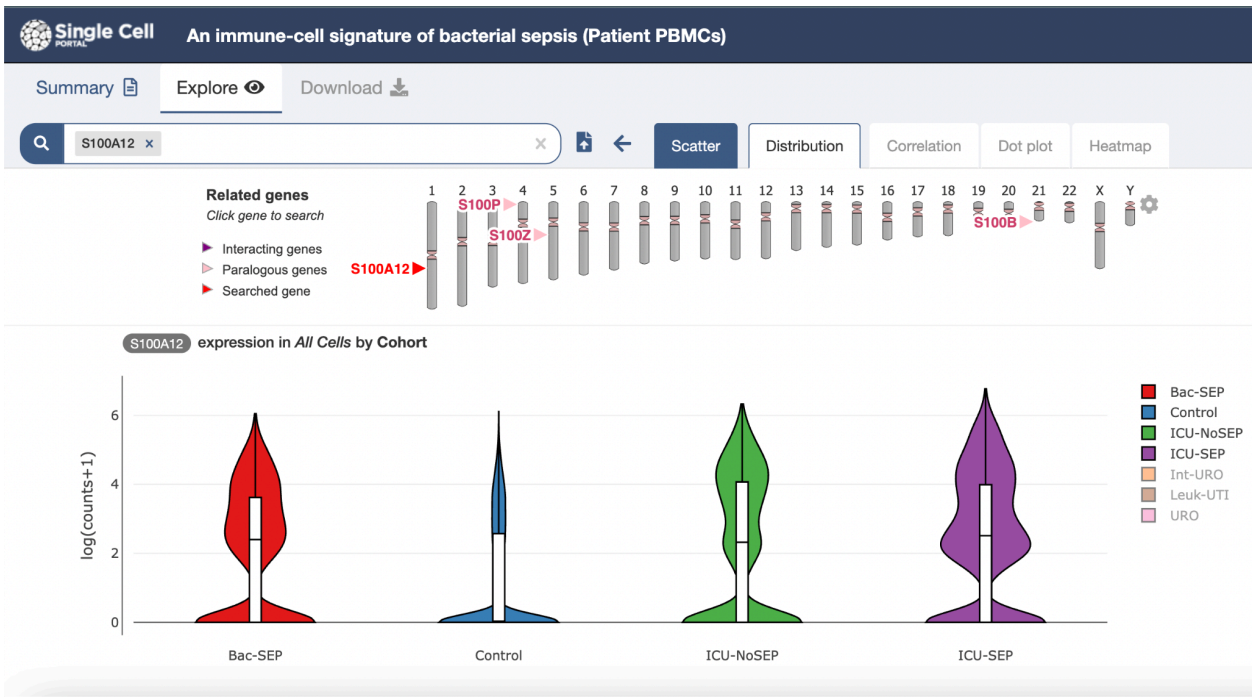
scRNA-seq _ S100A12:

This visualization is from the Single Cell Portal, using data from a study titled “An immune-cell signature of bacterial sepsis (Patient PBMCs)”. The data represent single-cell RNA sequencing (scRNA-seq) of peripheral blood mononuclear cells (PBMCs) across multiple patient cohorts, including healthy controls, sepsis patients, and ICU patients with or without sepsis.



The gene under investigation here is **S100A12**, a well-known pro-inflammatory mediator produced primarily by myeloid cells such as neutrophils and monocytes. It plays a critical role in immune responses and inflammation, particularly during infections like sepsis.

Each violin shape represents the distribution of gene expression in all cells from the respective cohort. The wider the violin at a particular height, the more cells there are expressing the gene at that level. The white bar in the center shows the interquartile range (25th–75th percentiles), and the thin black line extends from the minimum to maximum non-outlier values.

🔴 **Bac-SEP** (Bacterial Sepsis): Patients diagnosed with bacterial sepsis.

🔵 **Control**: Healthy individuals with no signs of infection.

🟢 **ICU-NoSEP**: Patients in the ICU but without sepsis.

🟣 **ICU-SEP**: ICU patients who meet the criteria for sepsis.

Biological Interpretation

🟣 ICU-SEP (Purple)

- Highest expression of S100A12 overall.
- The violin is both wider and taller than others, peaking more than log(counts +1) ≈ 6.
- Indicates that many immune cells in ICU-SEP patients express S100A12 at high levels.

🔴 Bac-SEP (Red)

- Also shows elevated expression, but to a slightly lesser extent than ICU-SEP.
- Expression values close to 6, with fewer cells expressing at the highest levels.
- Suggests a strong inflammatory response but slightly less pronounced than ICU-SEP.

🟢 ICU-NoSEP (Green)

- Moderate expression levels.
- Violin is relatively tall but narrower.
- This may reflect baseline immune activation in critically ill but non-septic patients.

🔵 Control (Blue)

- Very low S100A12 expression.
- The violin is narrow.
- Represents the normal baseline, with minimal inflammation.

S100A12 is a pro-inflammatory gene primarily expressed by monocytes and neutrophils.
Its upregulation in sepsis, especially in ICU-SEP patients, aligns with its role in innate immune activation and systemic inflammation. The elevated expression in Bac-SEP and ICU-SEP supports the **gene's potential as a biomarker for sepsis severity**.