

a

LLM-based interpretation

User Provided Prompt

PROMPT

The adaptive immune response is a critical biological process that involves the activation of T cells, including both alpha-beta and gamma-delta T cells, through the T cell receptor signaling pathway. This process is facilitated by cell surface receptor signaling pathways and is crucial for the body's defense against pathogens. Dendritic cell chemotaxis plays a significant role in this process, guiding immune cells to the site of infection. The activation of T cells also leads to the positive regulation of vasculature development, promoting blood vessel growth and aiding in the delivery of immune cells. Additionally, the immune response involves the production of granzymes, which initiate programmed cell death in infected cells. The negative regulation of the T cell apoptotic process ensures the survival of these crucial immune cells. Cell adhesion is another important aspect of the immune response, allowing cells to bind to each other and to the extracellular matrix. The interleukin-15-mediated signaling pathway and the positive regulation of interleukin-2 production are involved in the proliferation and differentiation of T cells. Lastly, the inflammatory response, a key component of the immune response, helps to eliminate pathogens and repair tissue damage. From a clinical perspective, understanding these processes can provide insights into the development of therapies for immune-related diseases.



Large Language Model

b

GO Term Retrieval

GO Terms


GENE ONTOLOGY
 Unifying Biology

**Gene Ontology
Analysis Tool**

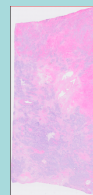
 Retrieved
Gene Symbol List

c Import ST dataset and align ST data with WSI

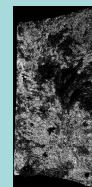
Spatial Transcriptomics Dataset

Transcriptomics
Data

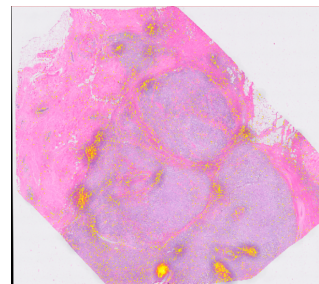
H&E



DAPI


 SIFT &
bUnwrapJ

 Spatial
Alignment
Matrices

**QuST: QuPath Extension
for Loading ST Data**

 Spatial insights, incl. single-cell clusters or regions
identified by QuST-LLM