

Module-Metabolite Correlations

Regulation of alpha-beta T cell activation 30.97%; Regulation of adaptive immune response 5.2%; Macrophage activation involved in immune response 4.26%

Natural killer cell proliferation 24.12%; B cell activation involved in immune response 13.83%; Lymphocyte activation involved in immune response 9.97%; Regulation of neutrophil migration 9.65%

Regulation of immunoglobulin mediated immune response 60.71%**; Negative regulation of complement activation 17.86%; Negative regulation of immune effector process 10.71%; Positive regulation of B cell differentiation 10.71%*

Ribosomal large subunit biogenesis 33.33%**; Ribosome assembly 33.33%**;
Formation of cytoplasmic translation initiation complex 22.22%**; Cytoplasmic
translation 11.11% **

Positive regulation of macrophage tolerance induction 50%; Isotype switching 25%; Positive regulation of neutrophil activation 16.67%; memory t cell differentiation 8.33 %

Negative regulation of isotype switching to IgE isotypes 60% *; Negative regulation of T cell proliferation 20% *; somatic hypermutation of immunoglobulin genes 20% *

Natural killer cell differentiation 28.74%, Macrophage activation involved in immune response 9.35%; Activation of innate immune response 5.61%

Cell surface toll-like receptor signaling pathway 33.33% *, Regulation of pattern recognition receptor signaling pathway 33.33% **, Cytosolic pattern recognition receptor signaling pathway 33.33%*

Positive regulation of antigen processing and presentation 47.62% **; Negative regulation of B cell activation 23.81%; Regulation of humoral immune response mediated by circulating immunoglobulin 14.29%

Positive thymic T cell selection 50%; Positive regulation of MDA-5 signaling pathway 25%*; Isotype switching to IgG isotypes 25%

Mast cell degranulation 40%; Cell surface pattern recognition receptor signaling pathway 40% *; Regulation of cellular extravasation 20%*

Regulation of pattern recognition receptor signaling pathway 66.67%; regulation of granulocyte chemotaxis 33.33%

Positive regulation of megakaryocyte differentiation 50%**; Negative regulation of viral-induced cytoplasmic pattern recognition receptor signaling pathway 50%*

Antimicrobial humoral immune response mediated by antimicrobial peptide 25%; Positive regulation of mast cell degranulation 25%; Regulation of CD4-positive, alpha beta T cell activation 12.5%; Positive regulation of activated T cell proliferation 12.5%

Mature B cell differentiation 21.03%; Negative regulation of leukocyte activation 17.76%; Mature B cell apoptotic process 12.62%

Response to type II interferon 50%*; Neutrophil chemotaxis 50%

Somatic diversification of immune receptors via germline recombination within a single locus 29.63%; Positive regulation of neutrophil migration 18.52%*; T cell receptor signaling pathway 14.81%

