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# Cell Talk: Re-writing the book of immune-focused inter-cellular communications

The immune system is highly complex and dynamic. The amount of research data on the immune system is vast, diverse and growing every day. And yet the immune system is still poorly understood. Artificial Intelligence (AI) and machine-learning methods are going to be only practical way to make sure we fully benefit from the collective efforts being made to advance immunology and science in general.

**16,000,000** abstracts were read, representing

**57 YEARS** of research



**EVERY DAY** **48** new immunology papers are published that's 1 every 30 minutes!

## NEW STUDY from CytoReason

quadruples the recorded library of organised inter-cellular signaling interactions data published in **Nature Biotechnology**



## Massive amounts of data

**2 million** RNA seq samples

**7,400** genetic association studies

**1.6 million** immunology papers in PubMed

**34,000** immune related clinical studies, deep molecular and clinical data per patient

**10 petabytes** of sequence data held by the NCBI (roughly equivalent to 385 years worth of films on DVD).



**4,118**

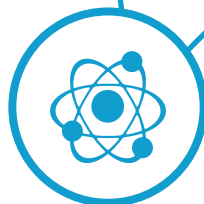
**directional cell-cytokine interactions** were reported by the study, defining the full landscape of published scientific knowledge in the field



**1,300** cell types and **170** cytokines were included in the study



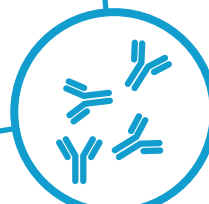
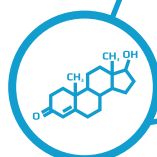
**3,000** previously unlisted cellular interactions mapped by the study



Validated prediction methodologies were used on the data to generate

**355 novel cell-cytokine interactions**

Discoveries born out of a better contextual understanding of existing immune system knowledge



**188** diseases were classified according to their immune system relationships

(based on cell-cytokine interaction profiles), capturing commonalities based on molecular properties - providing potential new approaches for therapeutic interventions

CytoReason's unique immune-focused machine learning technology creates the largest reference body of inter-cellular immune communications - and uses it to generate 335 entirely novel predicted cell-cytokine interactions - important new clues in the fight against disease and better drug development.