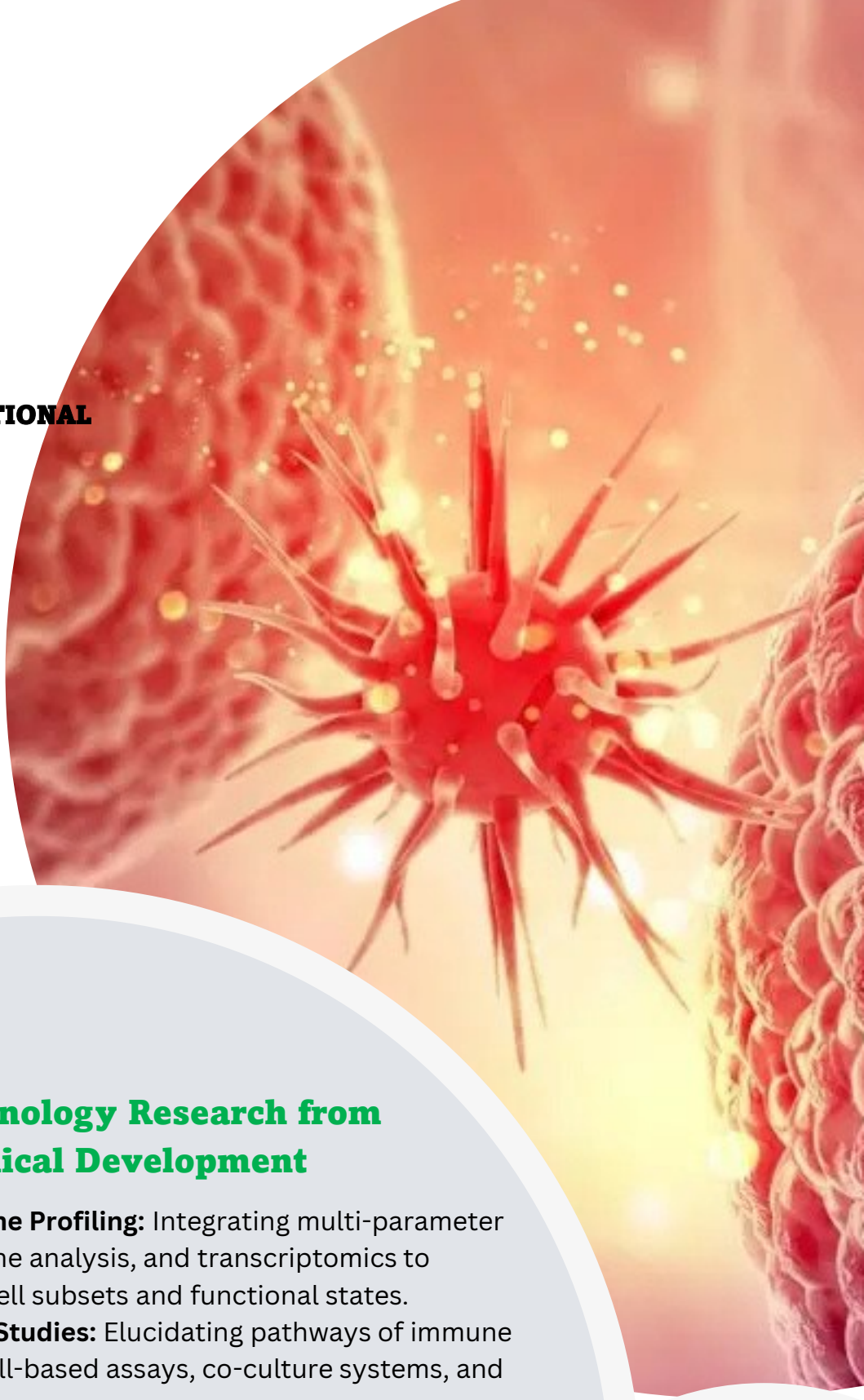
Axela Biosciences

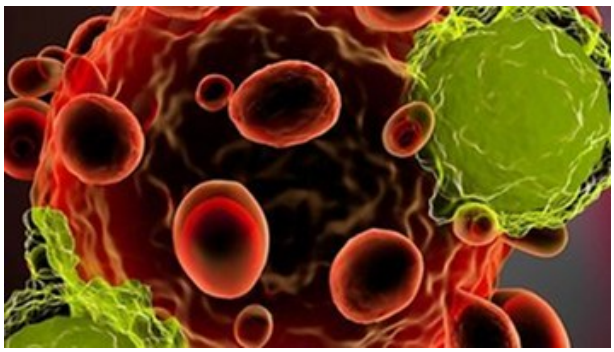
TRUSTED PARTNER ACCELERATING DRUG DISCOVERY & TRANSLATIONAL DEVELOPMENT



Advancing Immunology Research from Discovery to Clinical Development

- **Comprehensive Immune Profiling:** Integrating multi-parameter flow cytometry, cytokine analysis, and transcriptomics to characterize immune cell subsets and functional states.
- **Mechanism-of-Action Studies:** Elucidating pathways of immune modulation through cell-based assays, co-culture systems, and signaling analysis.
- **Predictive Translational Models:** Employing human primary cell assays and ex vivo immune models to bridge preclinical findings with clinical outcomes.
- **Biomarker Discovery and Validation:** Identifying and validating immune-related biomarkers for patient stratification, efficacy assessment, and safety monitoring.

IMMUNOLOGY IN DRUG DISCOVERY AND DEVELOPMENT



Immunology has become a cornerstone of modern biomedical research, guiding therapies that precisely engage or regulate the immune system. From cancer immunotherapies to autoimmune treatments, understanding immune mechanisms is critical for developing safer and more effective drugs.

In oncology, immune-based strategies have transformed treatment paradigms. Assays assessing checkpoint inhibitors, adoptive cell therapies, and novel immunomodulators reveal how drugs reshape tumor–immune interactions. Studies of PD-1/PD-L1, CTLA-4, TIGIT, LAG-3, and intracellular regulators such as CBLB, HPK1, and IDO help elucidate mechanisms and predict responses. Functional analyses of immune activation, cytokine secretion, and cytotoxicity provide direct efficacy and safety insights.

In autoimmune and inflammatory diseases, research aims to restore immune tolerance and prevent self-reactivity. Aberrant cytokine signaling—via TNFα, IL-6, IL-17, and IL-23—drives inflammation and tissue damage. Cell-based assays and cytokine profiling dissect disease pathways and evaluate drugs that modulate immune activation, proliferation, and differentiation, enabling rational design of targeted therapies that control inflammation without impairing host defense.

Beyond oncology and autoimmunity, immunology testing advances vaccines, allergy, infectious disease, and cell and gene therapy development. *In vitro* and *ex vivo* immune models bridge discovery and clinical stages, supporting early prediction of efficacy, safety, and immunogenicity.

Together, these approaches provide the foundation for precision medicine, accelerating immune-targeted therapy discovery and improving clinical success across diverse diseases.

ASSAY PLATFORMS FOR DISCOVERY AND TRANSLATIONAL DEVELOPMENT

Our integrated technology suite enables comprehensive immune and translational analysis from discovery through development. Combining advanced cell, protein, and gene-level platforms, we deliver deep mechanistic and biomarker insights that accelerate the development of vaccines, biologics, and cell and gene therapies.

CELL-BASED ANALYSIS

Flow Cytometry

Multiparametric analysis of immune cell populations based on surface and intracellular markers.
Applications: Immune profiling, cell phenotyping, activation and proliferation assays, cytokine analysis.

IncuCyte® Live-Cell Imagin

Real-time quantitative imaging of live cells to track dynamic biological processes.
Applications: Cell proliferation, cytotoxicity, immune-cell killing, migration, and morphology studies.

High-Content Imaging (Evos™)

High-resolution microscope based real-time imaging platform for monitoring, capturing and analyzing cells/tissues.
Applications: Brightfield and multi-color fluorescence image/video, transfection efficiency, viability/migration assessment, and protein expression analysis.

SPATIAL GENOMIC & PROTEOMIC PROFILING

nCounter® (NanoString)

Digital, amplification-free multiplex quantification of RNA and protein targets.
Applications: Gene expression profiling, immune pathway analysis, biomarker discovery and validation.

GeoMx® Digital Spatial Profiler

High-plex molecular profiling with spatial resolution in tissue context.
Applications: Spatial transcriptomics and proteomics, tumor microenvironment analysis, biomarker discovery.

RNA-seq

Genome-wide transcriptomic analysis providing comprehensive gene expression insights.
Applications: Differential gene expression, pathway analysis, immune response profiling, biomarker discovery.

PROTEIN AND BIOMARKER ANALYSIS

MSD®

Electrochemiluminescence-based multiplex immunoassay for high-sensitivity protein quantification.
Applications: Cytokine and biomarker profiling, pharmacodynamic and immunogenicity studies.

Simple Western

Capillary-based automated system for quantitative protein detection.
Applications: Protein expression, pathway activation, post-translational modification studies.

ELISA / AlphaLISA®

Versatile immunoassay platforms for quantitative detection of proteins and analytes.
Applications: Cytokine and antibody quantification, target engagement, pharmacodynamic studies.

IHC Autostainer

Visualization of protein expression and spatial localization within tissue sections.
Applications: Tissue biomarker validation, immune-cell infiltration, target distribution analysis.

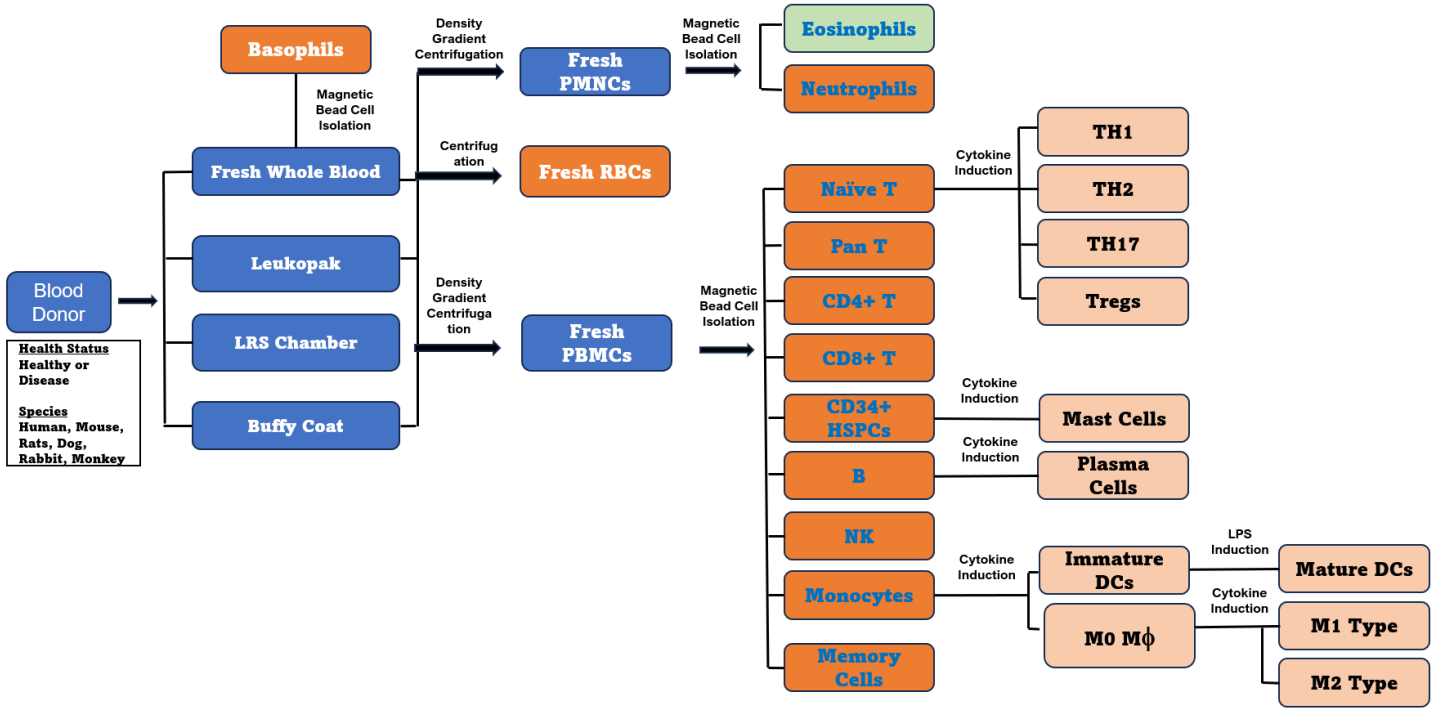
Luminex® Multiplex Immunoassay

Bead-based technology for simultaneous detection of multiple soluble analytes.
Applications: Cytokine profiling, immune response characterization, biomarker validation at protein and mRNA levels.

Whole Slide Imaging Scanner

Captures full tissue sections in high resolution for detailed visualization and quantitative analysis of histology and biomarker expression.
Applications: Digital pathology, biomarker validation, immune-cell infiltration, and target distribution.

SAMPLE PREPARATION & CELL ISOLATION



IMMUNE CELL ASSAY BY CELL TYPE

LET'S SUPPORT YOUR IMMUNOLOGY RESEARCH TO THE NEXT LEVEL

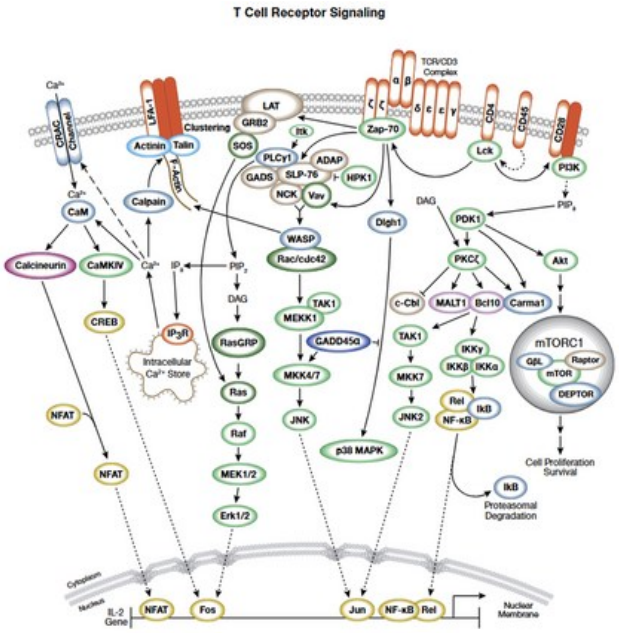
Our team of immunologists offers comprehensive innate and adaptive immune cell assays to evaluate immune modulation, safety, and efficacy throughout the drug discovery and development process.

Our Core Service Areas:

- **Immune activation and signaling assays**
- **Checkpoint and co-stimulatory receptor studies**
- **Immunotoxicity and cytokine release testing**
- **Mechanistic and biomarker discovery support**

T CELL

- ❑ T cell activation and proliferation (anti-CD3/CD28; PHA/Con A, PMA/ionomycin, SEB, anti-PD1, anti-CTLA4) via high throughput flow cytometry, or CFSE dilution or EdU/BrdU assay
- ❑ Antigen-specific recall response assay
- ❑ Target expression profiling on cell subsets (resting and activated)
- ❑ Screening for the ability to reverse T cell exhaustion
- ❑ Treg suppression assay
- ❑ Modulation of differentiation and cytokine profile
- ❑ Chemotaxis and migration
- ❑ MLR: PBMC/T cell/DC, one way or two-way
- ❑ Checkpoint blockade assays
- ❑ Cytokine secretion profiling (ELISA, Luminex, cytokine microarray, ELISpot)
- ❑ T cell surface marker expression analysis
- ❑ Analysis of naïve or memory T cell populations
- ❑ Expansion and functional analysis of rare antigen-specific T cells
- ❑ Natural or inducible regulatory T Cell (Treg) functional assays
- ❑ Immune synapse formation, microscopy of receptor clustering at contact sites
- ❑ Cytotoxic T-lymphocyte killing
- ❑ Cytotoxicity testing of CD8 T or CAR-T cells
- ❑ Cytokine storm risk analysis
- ❑ AlphaLISA for Phospho SLP-76



B CELL

- ❑ Antibody production, ELISA or ELISpot for IgG, IgM, IgA.
- ❑ Activation and proliferation, CFSE dilution post anti-IgM/CD40L stimulation
- ❑ Plasma cell differentiation ($CD27^+CD38^+$ or $CD138^+$ markers).
- ❑ Antibody class switching
- ❑ Antigen presentation
- ❑ BCR signaling (BTK, CARD11/BCL10/ MALT1 complex),
- ❑ BTK inhibition/degradation
- ❑ Target expression profiling on B cell subsets (resting and activated)

NK CELL

- ❑ Target expression on NK cells
- ❑ Modulation of activation and killing (CD69, CD25 expression, Fas ligand, granzyme secretion)
- ❑ Receptor profiling, NKG2D, KIR, DNAM-1, TIGIT, SIGLEC, etc.
- ❑ ADCC, AICC
- ❑ NK cell cytokine production by intracellular flow cytometry, Luminex or MSD immunoassays
- ❑ Degranulation assay, surface CD107a mobilization
- ❑ Proliferation assay
- ❑ Exhaustion assay

DENDRITIC CELL

- ❑ Flow cytometric analysis for DCs
- ❑ Imaging analysis for DCs
- ❑ DC maturation, expression of CD83, CD86, CCR7 after stimulation (e.g., LPS, poly I:C).
- ❑ Functional DC and T cell co-cultures
- ❑ Tolerogenic DCs
- ❑ Genetic manipulation of primary moDC
- ❑ DC activation of autologous antigen specific T cell
- ❑ Antigen uptake assay, FITC-dextran or DQ-OVA internalization.

MACROPHAGE/MONOCYTE

- ❑ Macrophage polarization (CD80/CD86 vs. CD163/CD206,etc).
- ❑ Cytokine release
- ❑ Macrophage and T cells co-cultures
- ❑ Phagocytic assays
- ❑ Monocyte activation test (MAT) for pyrogenic substances in pharma products (PyroMAT assay)
- ❑ Receptor internalization and trafficking
- ❑ Oxidative burst assay, ROS generation (e.g., DCFDA or DHR flow assay)
- ❑ Antigen presentation assay, upregulation of MHC-II and co-stimulatory molecules (CD80/CD86).

MAST CELL

- ❑ CD34+ progenitor cell differentiation to mast cells
- ❑ Degranulation: histamine, PGD2, and β-hexosaminidase release
- ❑ Tryptase activity in mast cell culture
- ❑ Cytokine / chemokine secretion
- ❑ Calcium flux and signaling
- ❑ FcεRI-mediated activation
- ❑ Non-IgE activation via TLRs, complement (C3a/C5a), MRGPRX2 agonists, neuro-peptides (SP)
- ❑ Transwell migration toward SCF, CCL2, CXCL12

NEUTROPHIL/BASOPHIL

- ❑ Phagocytosis assay
- ❑ Enzyme release assay
- ❑ ROS and inflammatory mediator assay
- ❑ Respiratory burst
- ❑ NETosis assay
- ❑ Interaction with various cell types
- ❑ Chemotaxis assay
- ❑ Basophil activation test (BAT)
- ❑ Tumor- associated neutrophil (TANs) assay
- ❑ Degranulation assays (MPO, elastase)
- ❑ Calcium flux

EOSINOPHIL

- ❑ Extracellular trap formation (EET)
- ❑ Degranulation (EPO, EDN, histamine)
- ❑ Cytokine production
- ❑ Calcium flux
- ❑ Chemotaxis assay
- ❑ Cytotoxicity assay

INNATE LYMPHOID CELL (ILC)

- ❑ Flow cytometry assays
- ❑ Cytokine release assays
- ❑ Co-culture assays

EPITHELIAL/IMMUNE/MICROBIAL COCULTURES

- ❑ Immune cells epithelial co-culture assays
- ❑ Barrier integrity assays (TEER)
- ❑ Flow cytometry assays
- ❑ Cytokine release assays

FIBROBLAST

- ❑ Epithelial-to-mesenchymal (EMT) assay
- ❑ Fibroblasts-to-myofibroblasts (FMT) assay
- ❑ M1 polarization assay
- ❑ M2 polarization assay

PLATELET

- Activation assay
- Platelet-leukocyte aggregate analysis

HEMATOPOIETIC STEM CELL

- ❑ Murine and human HSC assays
- ❑ Growth and expansion
- ❑ Flow cytometric phenotyping
- ❑ Colony forming units (CFU-GM, etc)
- ❑ Transfection/genetic modification

MICROGLIAL CELL /NEURON

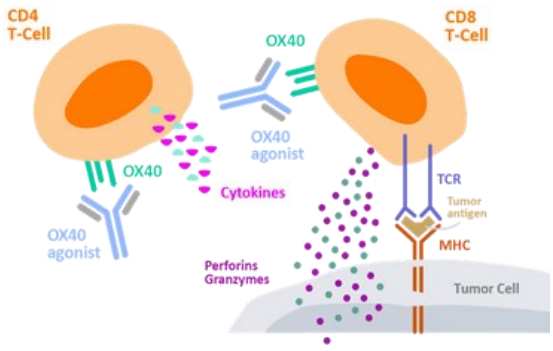
- ❑ Phagocytosis assay
- ❑ Co-culture assay
- ❑ Activation assay
- ❑ ROS / Nitric Oxide (NO) Production
- ❑ Migration / cchemotaxis
- ❑ Calcium imaging
- ❑ Synaptic function
- ❑ Neuron-microglia co-culture

TUMOR/IMMUNE CELL

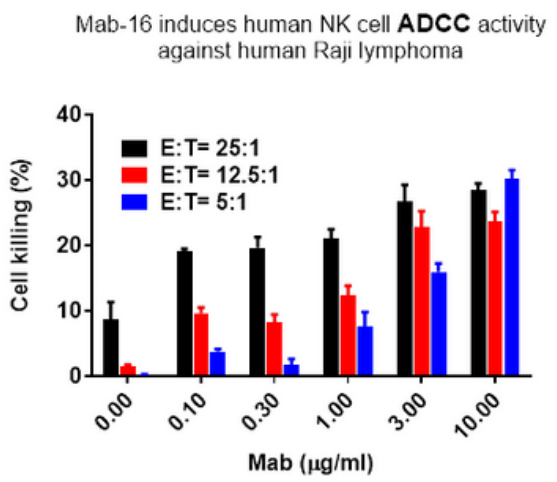
- ❑ Tumor associated macrophages assay
- ❑ MDSC (Myeloid-Derived Suppressor Cells) suppression assay
- ❑ ADCC
- ❑ CDC
- ❑ ADCP
- ❑ T cell killing – LDH or DELFIA assay
- ❑ Modulation of tumor-derived immune mediators (e.g., eicosanoids, chemokines, cytokines)
- ❑ Direct cytotoxicity and cell cycle arrest
- ❑ Ki-67 staining
- ❑ CFSE / CTV dilution
- ❑ Colony formation / clonogenic assay
- ❑ 3D Tumor / spheroid assays

NOVEL IO TARGETS

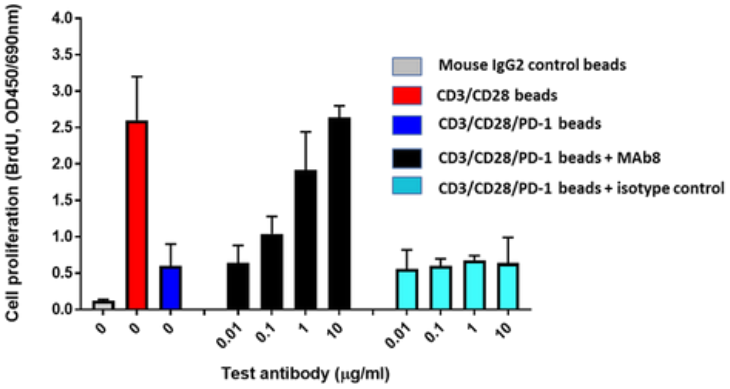
- ❑ Biochemical and cell-based screening assays for novel immunotherapy.
- ❑ IC50 determination for small or large molecules against immune targets
- ❑ Immune Checkpoint Targets (TIGIT, LAG-3, VISTA, HHLA2, etc.)
- ❑ Co-Stimulatory Receptors (OX40, CD27, GITR, etc.)
- ❑ Bi-Specific Antibodies
- ❑ Antibody-Drug Conjugates (ADCs)
- ❑ Oncolytic Virotherapy
- ❑ CAR-T/CAR-NK



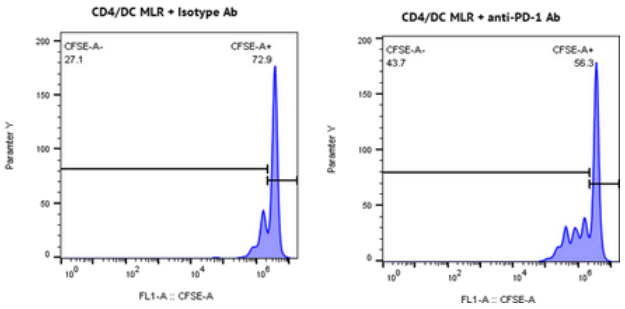
EXAMPLE DATA



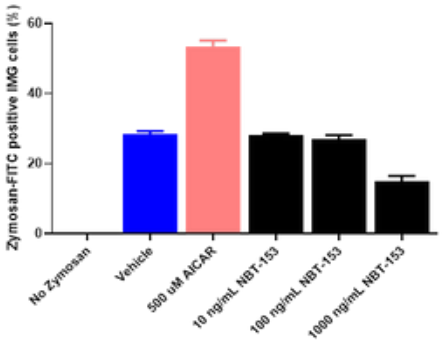
BrdU incorporation assay to measure anti-PD1 antibody effect on PD1–mediated inhibition of **T-cell activation**



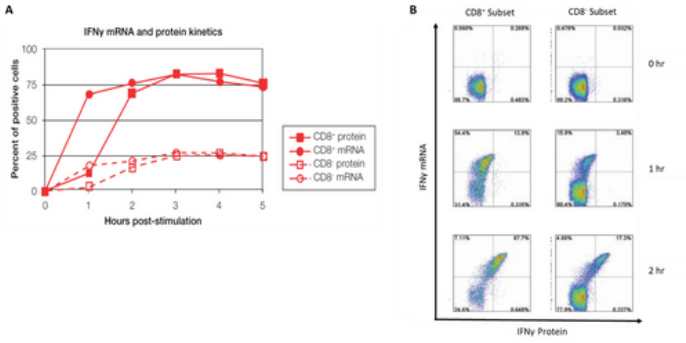
Flow cytometric analysis of **T-cell proliferation (CFSE dilution assay)**



Flow cytometric analysis of **microglial phagocytosis** (IMG microglial cells intake zymosan-fluorescein bioparticles

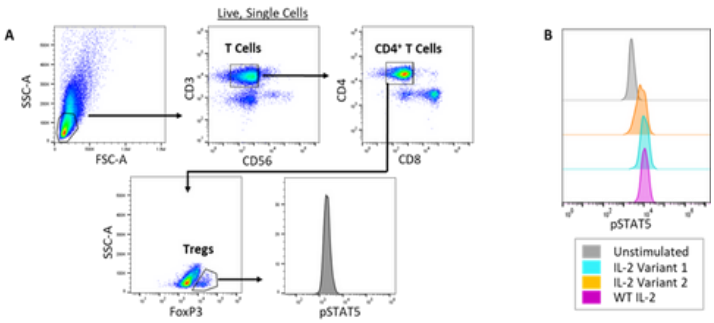


PrimeFlow cytometric analysis of time kinetics of IFN-γ mRNA and protein expression in viable CD8+ and CD8– cells in human PBMCs



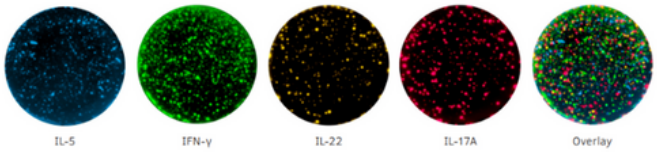
Multidimensional cytometric analysis of STAT5 phosphorylation

(A) Gating strategy to identify Tregs and examine STAT5 phosphorylation in a human PBMC. (B) PBMCs were treated with wildtype (WT), Variants 1 and recombinant IL-2. pSTAT5 in Tregs was determined by **PhosphoFlow.**

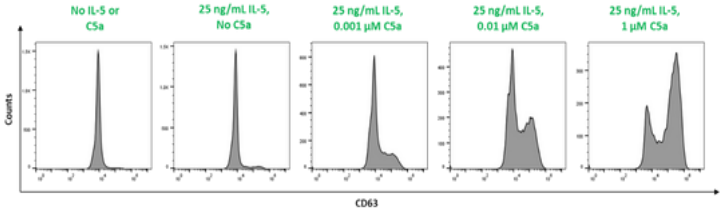


EXAMPLE DATA

Fluorescent **ELISpot (FluoroSpot)** analysis of IL-5, IFN-γ, IL-22 and IL-17A secretion by Mab-stimulated human PBMCs

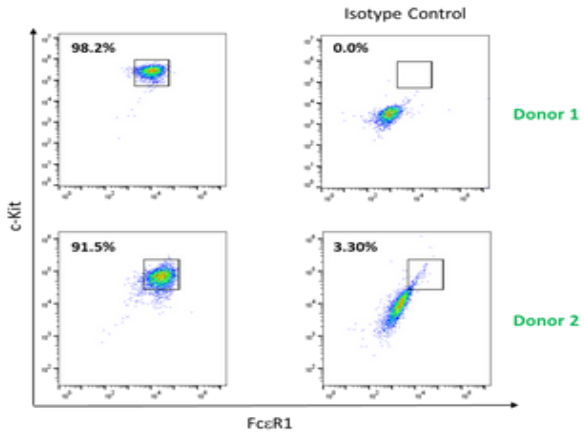


Eosinophil degranulation. Human eosinophils were primed with IL-5 and stimulated with complement factor 5a. CD63 expression, a degranulation marker, was monitored with cytometry.

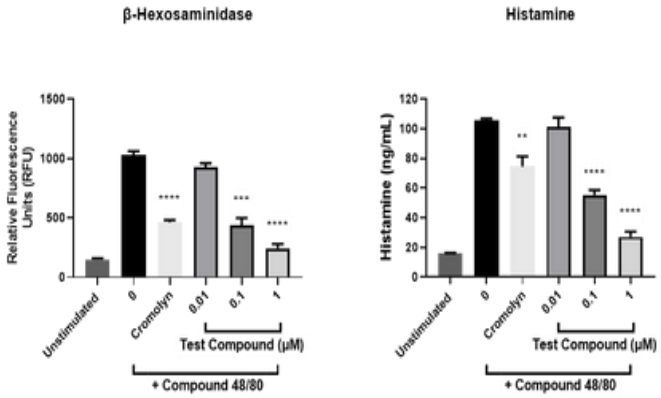


Mast cell degranulation

A) Human mast cells were differentiated from primary CD34+ hematopoietic precursor cells. Purity was evaluated based on the expression of c-kit and FcεR1 with flow cytometry.



B) Mature mast cells were stimulated with compound 48/80, and the release of β-hexosaminidase and histamine were quantified.



HUMAN IMMUNE CELL PRODUCTS

HIGH VIABLITY AND PURITY CELLS

Axela Biosciences Inc. is a dependable source of primary human immune cells. Cells are isolated directly from healthy donors and maintained under stringent QC measures to guarantee cell purity and viability. Our selection includes a diverse range of immune cell types, allowing customers to investigate the immune system and its response to various stimuli, as well as to assess the efficacy and toxicity of drug candidates.

Our inventory of highly purified primary immune cells encompasses 200+ unique donor lots, each of which has been extensively characterized with the following biological and demographic data:

- ❑ Age, gender, ethnicity, height, and weight
- ❑ Cell count, viability, and function
- ❑ Purity and cellular characterization by flow cytometric analysis
- ❑ Availability of matching plasma
- ❑ ADCC testing results for selected lots
- ❑ High-resolution HLA-typing results (if applicable)
- ❑ FcγRIII genotype characterization (if applicable)
- ❑ Ready-to-use cells with guaranteed concentration or counts
- ❑ Ethically sourced from world renowned blood institutions.
- ❑ Institutional Review Board (IRB)-approved consent forms and protocols.
- ❑ Donors screened for HIV-1, HIV-2, hepatitis B, hepatitis C, human T-lymphotropic virus, syphilis, Chagas, West Nile virus and others.

Cell Type	Product (Available as Fresh and Cryopreserved)	Catalog #	Isolation Method
PBMC	Human Normal PBMC	A-PI-010	Density Gradient Centrifugation
T Cell	Human Normal PB **CD3+ Pan T** Cells	A-PI-015	Negative Selection
	Human Normal PB **CD3+ Pan T** Cells	A-PI-020	Positive Selection
	Human Normal PB **CD3+ γδ T** Cells	A-PI-025	Negative Selection
	Human Normal PB **CD4+ T Helper** Cells	A-PI-030	Negative Selection
	Human Normal PB **CD4+ T Helper** Cells	A-PI-035	Positive Selection
B Cell	Human Normal PB **CD27- Naïve B** Cells	A-PI-095	Negative Selection
	Human Normal PB **CD27+ Memory B** Cells	A-PI-100	Positive Selection
	Human Normal PB **CD19+ B** Cells	A-PI-105	Negative Selection
	Human Normal PB **CD19+ B** Cells	A-PI-110	Positive Selection
NK Cell	Human Normal PB **CD56+ NK** Cells	A-PI-115	Negative Selection
	Human Normal PB **CD56+ NK** Cells	A-PI-120	Positive Selection
Monocyte	Human Normal PB **Pan** Monocytes (**CD14+, CD16+, CD14+, CD16+**)	A-PI-125	Negative Selection
	Human Normal PB **CD14- CD16+** Monocytes	A-PI-130	Positive Selection
	Human Normal PB **CD14+ CD16-** Monocytes	A-PI-135	Negative Selection
	Human Normal PB **CD14+** Monocytes	A-PI-140	Positive Selection
Dendritic Cell	Human **Immature** Dendritic Cells	A-PI-145	Monocyte-Derived
	Human **Mature** Dendritic Cells	A-PI-150	Monocyte-Derived
	Human Normal PB **Plasmacytoid** Dendritic Cells	A-PI-155	Positive Selection
	Human Normal PB **Myeloid** Dendritic Cells	A-PI-160	Negative Selection
Macrophage	Human **M1** Macrophages	A-PI-165	Monocyte-Derived
	Human **M2a** Macrophages	A-PI-170	Monocyte-Derived
	Human **M0** Macrophages, mixed	A-PI-175	Monocyte-Derived
Neutrophil	Human Normal PB **CD66b+ CD16+** Neutrophils	A-PI-180	Monocyte-Derived
Mast Cell	Human Mast Cells (**growing**)	A-PI-185	CD34+ PB Stem Cell-Derived
	Human Mast Cells (**cell pellets**)	A-PI-190	CD34+ PB Stem Cell-Derived
Stem Cell	Human Normal PB **CD34+ Hematopoietic Stem/Progenitor** Cells	A-PI-195	Positive Selection

LIST OF PRIMARY HUMAN IMMUNE CELLS

We Can Be Reached at

scientist.com

ScienceExchange

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