FLOW CYTOMETRY

The Flow Cytometry Platform is continuously expanding its capabilities to understand deeper biological processes. The facility offers a wide range of tools to satisfy your research requirements. The equipment utilized is cutting-edge and the expertise provided at SIgN is world-class.

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KEY EQUIPMENT
- FACS Aria III
- FACS Aria II
- FACSCelesta
- FACSVerse
- FACSymphony
- FACSMelody
- MOFLO
- MACSQUANT
- MACQUANT VYB
- LSRII
- FORTESSA
- INFLUX
- ACCURI
- AUTOMACS

LASERS AVAILABLE
- 355nm UV
- 405nm Violet
- 488nm Blue
- 561nm Y/G
- 633nm Red

CAPACITIES
- Cell sorting
  - Plate sorting
  - Tube sorting
- Cell analysis

SAMPLE TYPE
- Blood
- Fluids
- Tissues
- Human
- Mouse
- Swine
- Other

READOUTS
- Volume & morphological complexity of cells
- DNA content
- RNA Flow
- Telomere length
- Protein expression
- Phosphorylation & other modifications
- GFP/YFP/RFP and others
- Cell surface antigens
- Intracellular antigens
- Nuclear antigens
- Enzymatic activity
- Membrane properties
- Apoptosis
- Cell viability
- Oxidative burst
- Proliferation/ Cytotoxicity
- Autofluorescence
- Combinations of the above

ANALYSIS TOOLS
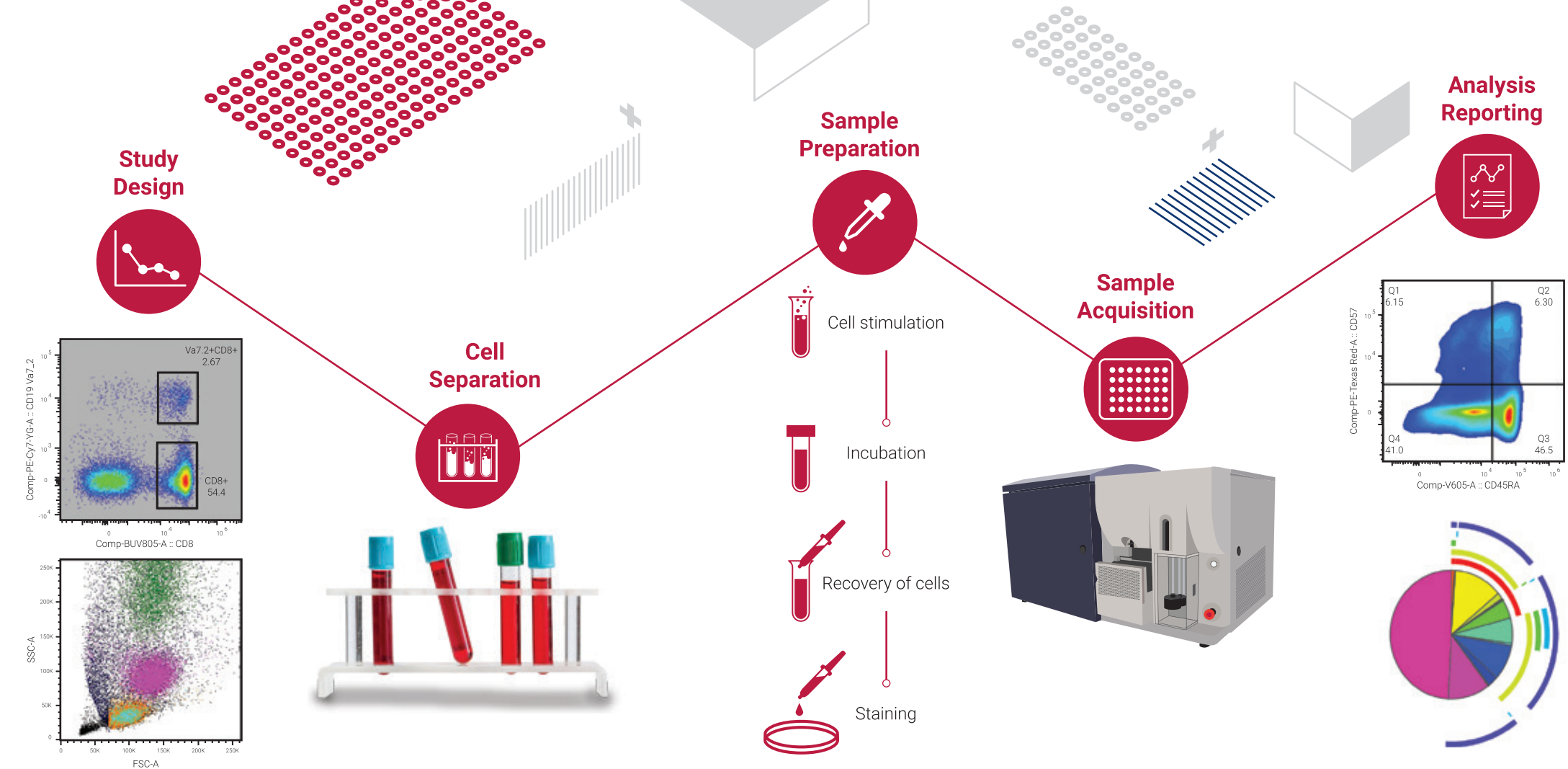- Flow AI
- Modalgate
- Cytofkit
- Tsne

Largest state-of-the-art Flow Cytometry Platform in South-East Asia
ICCE Certified staff (International Society for Advancement of Cytometry)

HELPING YOU AT EVERY STAGE OF YOUR RESEARCH

Our team is dedicated to support your projects from defining sample collection protocols, staining panel design, sample preparation & acquisition, as well as result interpretation & reporting. Alternatively, you can just use our equipment. If required, our operators will train & support you to ensure optimum study outcomes.

SELECTED PUBLICATIONS
- See P et al. Mapping the human DC lineage through the integration of high-dimensional techniques. *Science*. 2017 Jun 9;356(6342).
- Monaco G et al. flowAI: automatic and interactive anomaly discerning tools for flow cytometry data. *Bioinformatics*. 2016 Aug 15;32(16):2473-80.
- Larbi A et al. From "truly naïve" to "exhausted senescent" T cells: when markers predict functionality. *Cytometry A*. 2014 Jan;85(1):25-35.

Study Design

Cell Separation

Sample Preparation
- Cell stimulation
- Incubation
- Recovery of cells
- Staining

Sample Acquisition

Analysis Reporting

CUTTING–EDGE CELL ANALYSIS

Poly-functionality

Pie Chart Arc Legend
- CD154 +
- IFNG +
- IL2 +
- IL17 +
- TNFA +

Phenotype Complexity

Individual Functions

FROM WHOLE BLOOD COMPOSITION . . .

Whole blood or PBMC stained for 15 min at 4°C with monoclonal antibodies as indicated, analyzed on LSRII 5 laser. Duration of experiment is <2 hours.

- Monocytes — CD16 / CD14
- Granulocytes — SSC / CCR3
- NK cells — CD3 / CD56
- Dendritic cells — CD123 / FceRIA
- CD4+ T cells — CD3 / CD4
- CD8+ T cells — CD3 / CD8
- Treg cells — CD25 / FoxP3
- B cells — CD3 / CD19
- γδ T cells — Vδ2 TCR / Vδ1 TCR
- MAIT cells — Va7.2 / CD161
- NKT cells — CD3 / CD56

. . .TO SINGLE CELL ANALYSIS

- Cell culture
- Tissue sample
- Transfection

Single-cell Sorting

- Gene-expression
- Expansion
- Co-culture

MULTIPLEXED SOLUBLE PROTEIN ASSAYS

The Multiplexed Soluble Protein Assays Platform is involved in running large-scale studies with clinical collaborators & industry partners. The service offerings are customizable & ongoing technology development increases the breadth of capabilities whilst optimizing study outcomes. The incorporation of DropArray technology enables a great reduction in multiplex cost & volumes of valuable clinical samples used.

KEY EQUIPMENT
- FLEXMAP 3D
- DropArray system
- TECAN EVO200 robot for large-scale studies

CAPACITIES
- 96-well plate format
- DropArray plates (sample vol. = 5μL)

SAMPLE TYPE
- Plasma/ serum
- Body fluids
- Tissue lysates
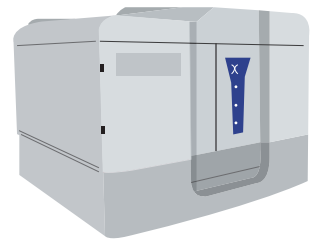- Tissue exudates
- Human
- Mouse
- Swine
- Cell supernatants

SCOPE OF SERVICES
- Study design
- Measurement of multiple soluble analytes (up to 50)
- Customization of assays
- DropArray to reduce cost and sample volume usage (5μL)
- Data analysis and reporting

APPLICATIONS
- Cytokines & Chemokines
- Inflammation & Immunology
- Cardiovascular Disease
- Neuroscience
- Cell signaling
- Metabolism
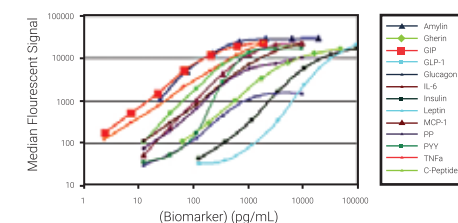- Endocrine
- Apoptosis
- Isotyping
- Toxicity
- Cancer

Study Design — **Sample Preparation & Acquisition** — **Analysis Reporting**

IMMUNO–INFORMATICS

The Immuno-Informatics Platform focuses on applying analytical methods to understand the scientific data generated from immunology studies. The established pipelines and workflows facilitate the interpretation of complex datasets. The bioinformatics team can also identify cross-correlations between various datasets from microarray, NGS, flow cytometry, ELISA and Multiplexed Soluble Protein Assays.

KEY EQUIPMENT
- 31 node, 8 cores/node, 48Gb RAM/node linux cluster
- 12 core, 64Gb RAM, 18 Tb RAID5 linux workstation
- 6 core, 48Gb RAM, 35 Tb RAID5 Solaris database server and backup storage

SCOPE OF SERVICES
- Database Management
- R-coding or statistics
- Bio-informatics analysis
- Microarray analysis
- NGS analysis
- Flow cytometry analysis
- Multiplexed Soluble Protein Assays analysis
- Development of novel bioinformatic tools
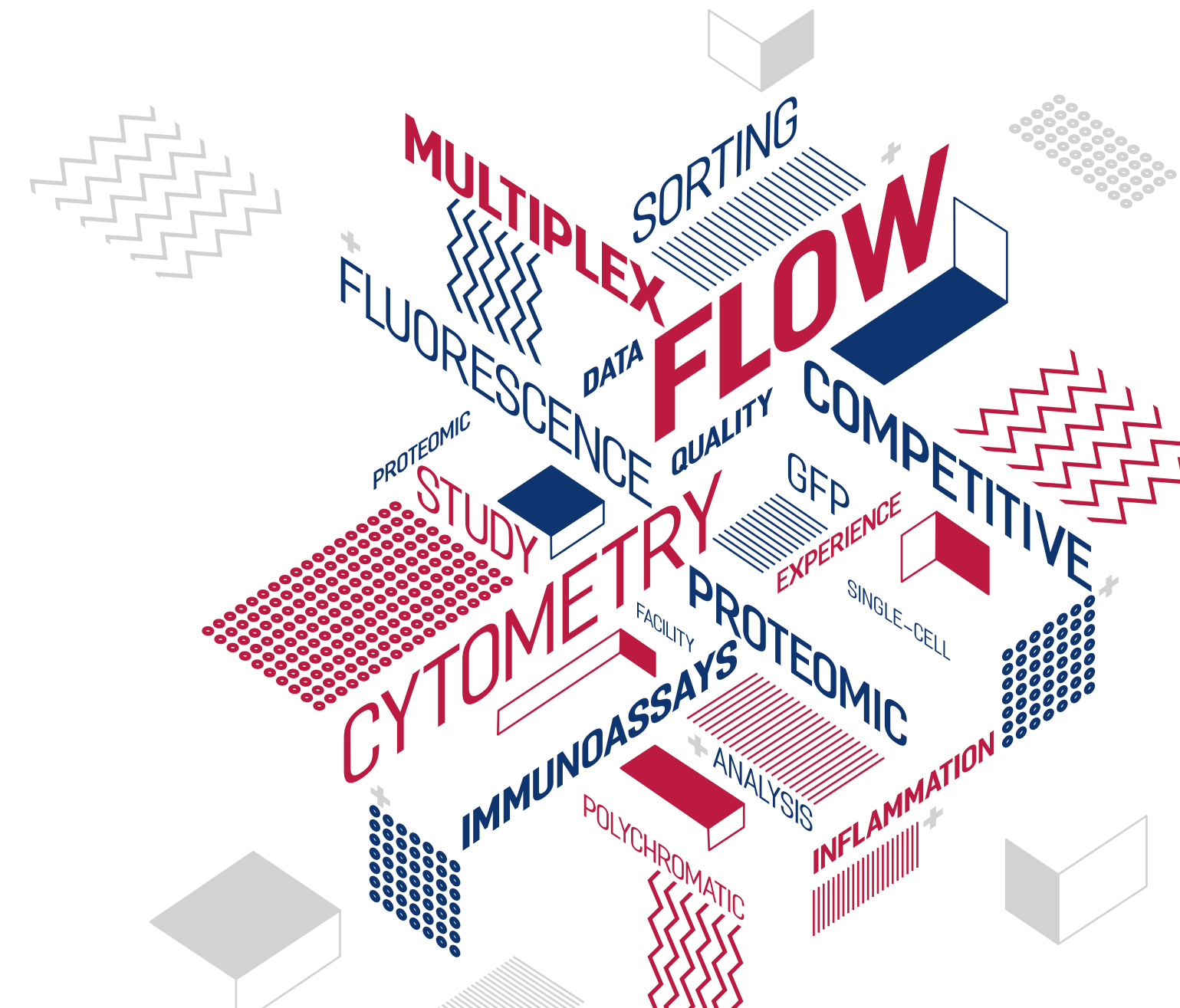- Large scale cohort studies and clinical trials

IMMUNOMONITORING SERVICES

MULTIPLEX SORTING DATA FLOW FLUORESCENCE QUALITY COMPETITIVE PROTEOMIC STUDY GFP EXPERIENCE CYTOMETRY PROTEOMIC FACILITY SINGLE-CELL IMMUNOASSAYS ANALYSIS INFLAMMATION POLYCHROMATIC