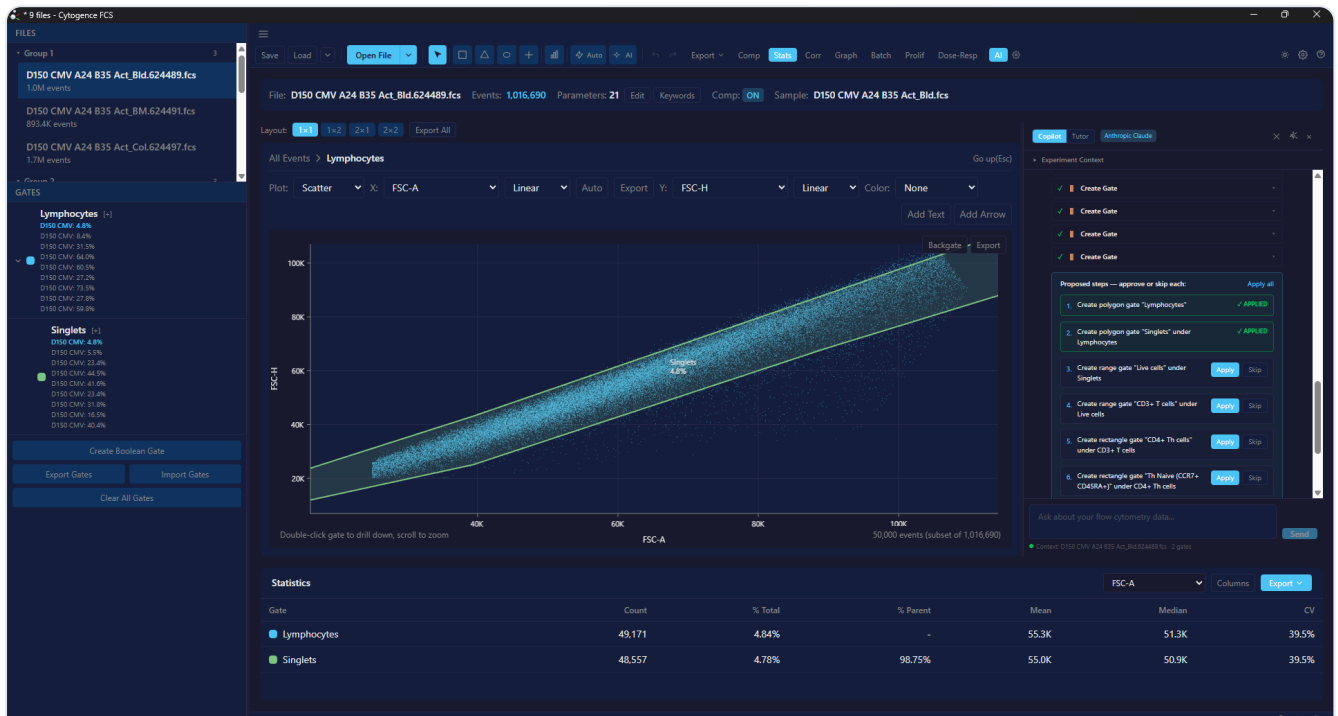


PRODUCT OVERVIEW

Cytogence FCS

A high-performance flow cytometry analysis platform, built from the ground up in Rust — pairing an **AI copilot** with a **flow-cytometry-trained gating model** that together propose a complete gating strategy you review and approve.



The AI copilot proposes each gate with a rationale; you approve, and the gate hierarchy and population statistics update instantly — here on a 1,000,000-event sample.

Built in Rust

Native engine built for large event files; GPU-accelerated plots.

Two AIs

A reasoning copilot plus a cytometry-trained gating model.

Privacy-first

Run the AI on-device; your data can stay on your machine.

Cross-platform

Windows, macOS, Linux — plus a web version (alpha).

6

Gate types + full hierarchy

200+

Automated tests passing

2.0–3.1

FCS versions supported

3+1

Desktop OSes + web

Built on a simple principle: the AI proposes, the analyst decides. Correctness-first engineering, transparent reasoning, and the option to keep every byte on your own machine — for labs that need to trust every gate.

Cytogence FCS covers the full workflow — from FCS loading to publication-ready figures — and backs every result with tested, standards-correct math: compensation validated against an independent reference (FlowKit), FlowJo-correct robust statistics, and hardware log-amplifier linearization at parse time.

GENERAL REASONING

AI copilot

Works through your data step by step and proposes each gate with a plain-language rationale — nothing is applied until you approve it.

- ✓ **Propose & approve** — deferred actions, committed only on your click
- ✓ **Allowlisted tool set**; a transparent, per-step log of every call and result
- ✓ Copilot and Tutor assistant modes

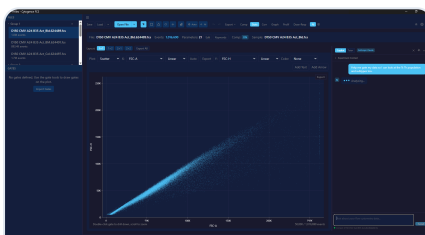
CYTOMETRY-NATIVE

Trained gating model

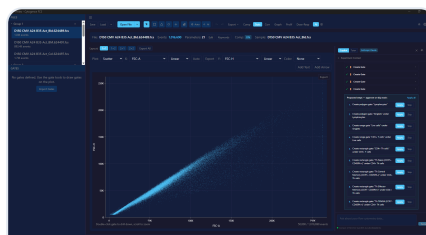
A model trained specifically on flow cytometry data to identify cell populations — bringing domain expertise the general model doesn't have.

- ✓ **Panel- & instrument-agnostic** — generalizes beyond its training panels
- ✓ **Knows what it knows** — reports confidence, flags unfamiliar data
- ✓ Hands off to the copilot for the rest — one complete hierarchy

ASK → PROPOSE → APPROVE



1 · Ask. Describe the goal in plain language — e.g. "gate for the %Th population and subtypes."



2 · Propose. A complete, ordered strategy — each step with Apply or Skip. Nothing committed to the data.



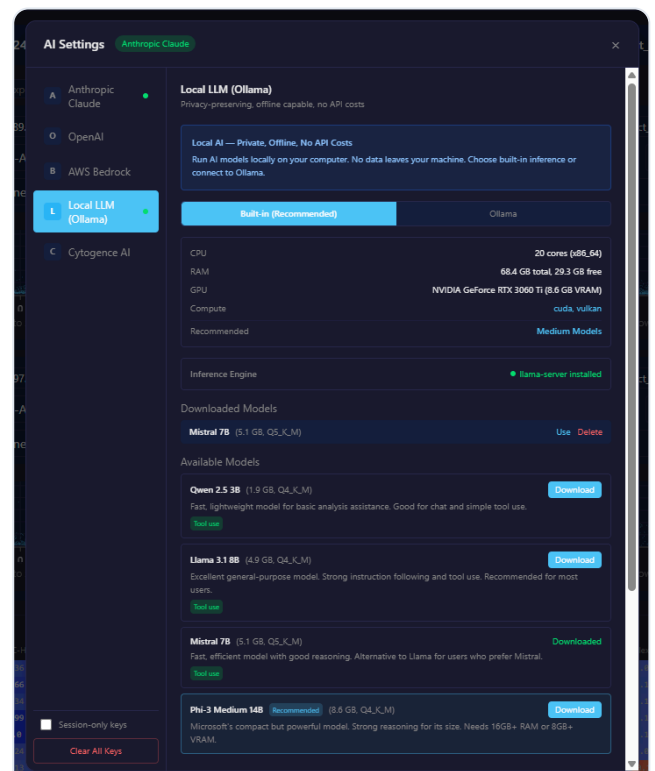
3 · Approve. Gates are applied, the hierarchy is built, and statistics compute for every population.

02 Cloud or fully local — you choose

PRIVACY BY DESIGN

Run the copilot on a frontier cloud model, or entirely on your own machine. CytoFlow FCS ships built-in local inference and detects your hardware to pick a fitting model — so sensitive data can stay on-device.

- ✓ Providers: **Anthropic Claude**, **OpenAI**, **AWS Bedrock**, or local models
- ✓ **Built-in local inference**, sized to your GPU (CUDA / Vulkan) — no external API
- ✓ **Strict local mode** — no cytometry data leaves your machine
- ✓ API keys **zeroized on drop**; SHA-256-verified local model downloads

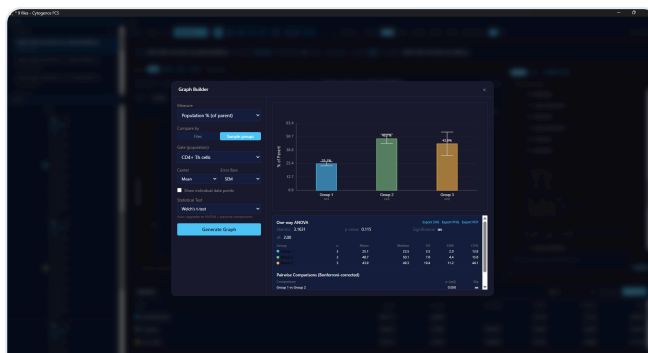


Choose a provider or run a local model; the app inventories your CPU, RAM, and GPU and offers matched, tiered models.

Gating is only the start. Visualize, compensate, compare groups, and fit curves — then export publication-ready figures, all in one application.



Visualization & correlation. Compare samples in flexible multi-plot layouts (up to 2x2), GPU-accelerated via PixiJS, with a parameter-correlation matrix.



Group statistics & graphs. Compare populations across groups — Welch's t, Mann-Whitney, ANOVA, Kruskal-Wallis with Bonferroni-corrected pairwise tests — and export the figure.



Auto-compensation. Compute the spillover matrix from single-stain controls with stain-index and FMO diagnostics — matrix math validated against FlowKit.



Dose-response fitting. 4-parameter logistic curves via Levenberg-Marquardt, with EC50/IC50, Hill slope, R^2 , and convergence diagnostics — built in.

Gating engine

Rectangle, polygon, ellipse, range, quadrant, and boolean gates. Full hierarchy, backgating, undo/redo, real-time statistics.

Transforms

Linear, logarithmic, biexponential (logicle), arcsinh, and hyperlog, with automatic axis ticks.

ML auto-gating

K-means, DBSCAN, and Gaussian Mixture Models with BIC and elbow model selection for unsupervised populations.

Statistics

Mean, median, and geometric-mean MFI, plus FlowJo-correct robust CV and percentile metrics per population.

Proliferation

GMM-based dye-dilution modeling with generation peak fitting; division, proliferation, and expansion indices.

Export

Publication-ready SVG and PDF vector graphics, PNG for slides, and CSV for statistics and event data.

04 At a glance

File formats	FCS 2.0 / 3.0 / 3.1 — integer, float, double, ASCII	Statistics	MFI ×3, robust CV; t / Mann–Whitney / ANOVA / Kruskal–Wallis (Bonferroni)
Core engine	Native Rust; Tauri 2 desktop	AI providers	Anthropic Claude, OpenAI, AWS Bedrock, local
Visualization	PixiJS, GPU-accelerated (WebGPU / WebGL)	Local models	GGUF, SHA-256 verified; CUDA / Vulkan
Gate types	Rectangle, polygon, ellipse, range, quadrant, boolean	Privacy modes	Standard · Enhanced · Strict (on-device)
Transforms	Linear, log, logicle, arcsinh, hyperlog	Exports	SVG, PDF, PNG, CSV (statistics & events)
Compensation	Auto from single-stain controls; FlowKit-validated	Platforms	Windows, macOS, Linux · web alpha (fcs.cytogence.com)
Auto-gating	K-means, DBSCAN, GMM (BIC / elbow)		

Engineered for correctness

Compensation validated against an independent reference (FlowKit), FlowJo-correct robust CV, and \$PnE hardware-log linearization at parse time — under 200+ automated tests.

Private & secure

Run the AI fully on-device in strict mode — nothing leaves your machine, and the web build runs 100% in your browser (nothing uploaded). Keys are zeroized on drop; session-only and clear-all-keys options.

Transparent & reproducible

Propose-and-approve keeps the analyst in control of every gate; every suggestion, tool call, and result is shown in a per-session log. Open formats throughout — no data lock-in.

WHO IT'S FOR

Immunology & immuno-oncology

Deep immunophenotyping and functional panels — T-cell subsets, activation, exhaustion, and beyond.

Core & shared facilities

Consistent, auditable gating across operators and studies, with reproducible outputs.

Translational & biotech

Privacy-sensitive and regulated workflows that need on-device AI and traceable analysis.

Request a demo or technical session

Get in touch with the **Cytogence FCS team**. Cytogence is the bioinformatics division of KeyQ, Inc. — analysis software and computational-biology services across flow cytometry, spatial biology, and multi-omics. Patent pending.

support@cytogence.com

cytogence.com/contact

cytogence.com/fcs

+1 (888) 509-CYTO (2986)