



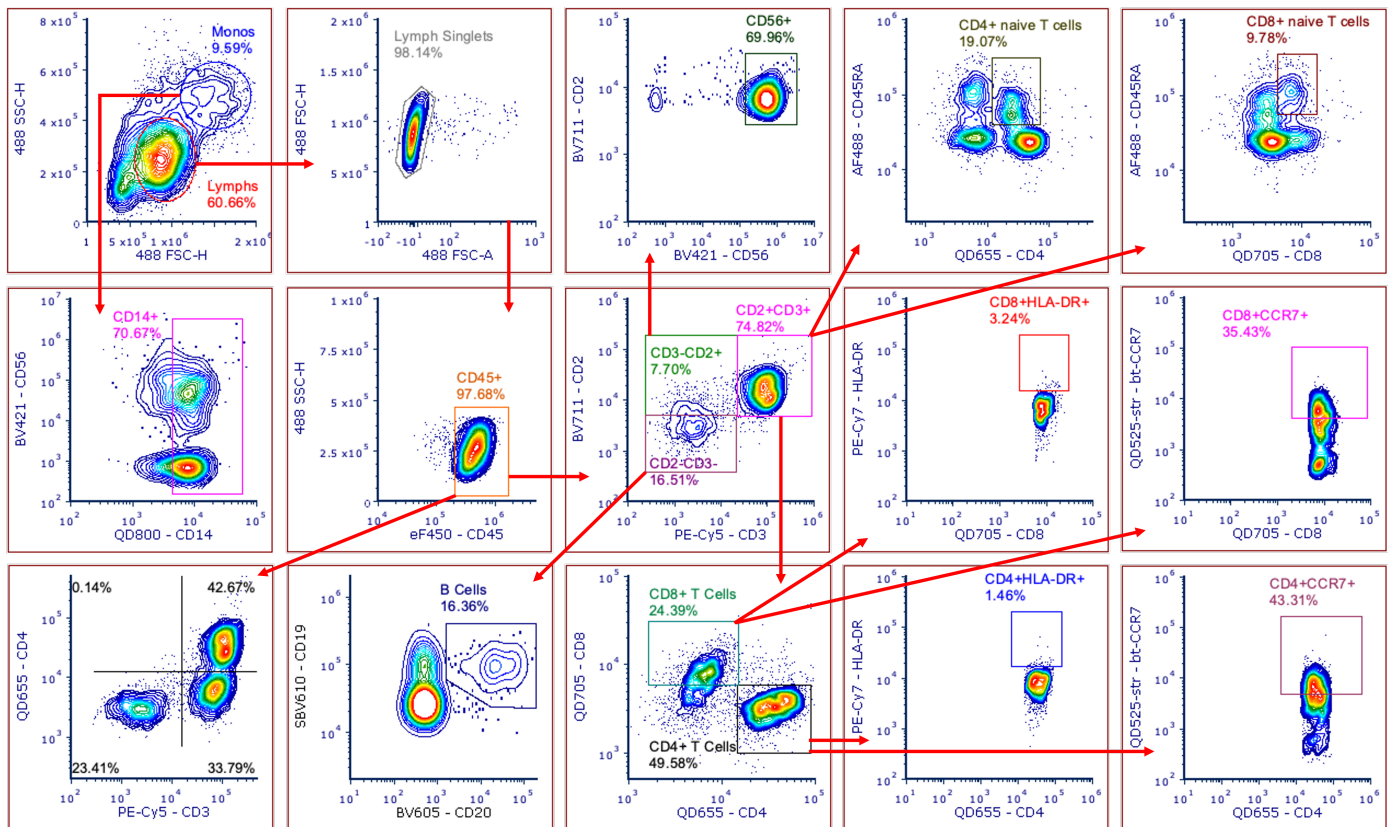
## Kinetic River Corp. completes Phase II SBIR grant from the National Institutes of Health

*Three-year program enables compensation-free 12-marker flow cytometry assays with just two lasers and six detectors using Time-Resolved methods*

**Mountain View, Calif., February 10, 2022** — Kinetic River Corp., a leader in development of advanced flow cytometry technology, announced today the successful completion of a Phase II Small Business Innovation Research (SBIR) project funded by the National Institutes of Health (NIH). The competitive \$1.5-M grant was awarded to Kinetic River by the National Institute of General Medical Sciences (NIGMS), which fosters research focused on development of innovative biomedical platforms.

Flow cytometry is a powerful cell analysis tool with broad utility in research and clinical fields as diverse and important as tumor biology research, cancer and AIDS diagnostics, immunophenotyping, and cancer immunotherapy. Fluorescent markers are used to distinguish different cell types; however, the spectral emission overlap between the various markers causes many problems, from a limit to the maximum number of markers measurable in any given sample to a high burden on operators and high costs of reagents and controls to perform the compensation procedures typically required using purely spectral methods.

### COMPENSATION-FREE 12-MARKER CELL ASSAY



Results from a 12-marker assay on commercial mononuclear cells performed on the *Arno* using only two lasers (405 and 488 nm) and six fluorescence detectors. None of the measured parameters needed to be compensated for spectral spillover. Each detector collected emissions from two markers; the detected emissions were then separated by fluorescence lifetime using proprietary algorithms. Boxes and red arrows indicate the gating procedure for isolating cell subpopulations.

The NIH award enabled the continued development of Kinetic River's "Arno" technology for time-resolved cell analysis. One of the applications made possible by this patented approach is compensation-free flow cytometry: By discriminating fluorescent markers not only by their color but also by the decay of their fluorescence emissions (their "lifetime"), the Arno avoids the issues of spectral spillover that hamper existing flow cytometers.

In addition, Kinetic River demonstrated doubling the number of markers measurable on each detector, while paving the way to tripling them. Lifetime-based discrimination allows emissions from multiple markers to be collected by each detector, greatly expanding the analytical power of flow cytometry while minimizing the number of lasers and detectors needed in a system.

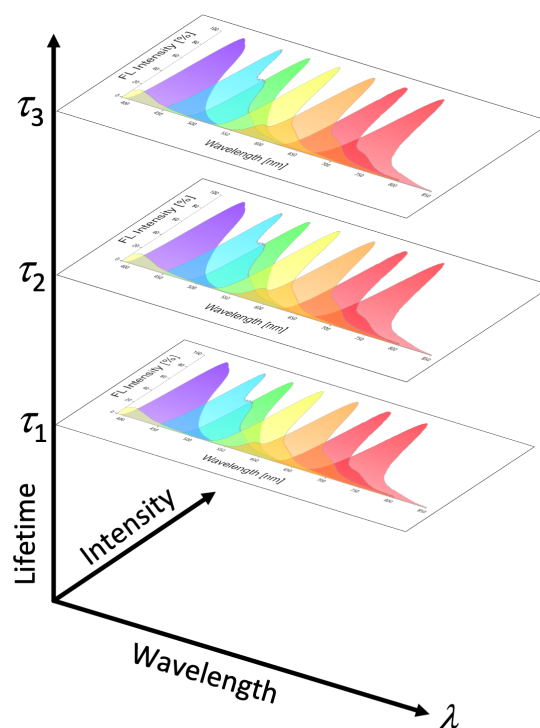
"These results cap more than seven years of research and development," said Giacomo Vacca, Ph.D., president of Kinetic River. "The fact that we were able to perform a 12-marker assay using only 2 lasers and 6 detectors is unprecedented. Even more exciting than that is the range of different applications these results open up, from compensation-free flow cytometry to a vastly expanded number of fluorescent labels measurable with, in fact, fewer lasers and detectors than on existing analyzers."

Dr. William Telford of the National Cancer Institute, who collaborated on these experiments, said: "We performed benchmark measurements on a spectral cytometer using the exact same fluor-antibody conjugates as on the Arno compensation-free analyzer, and the results were very much in agreement. In some cases, the Arno was able to distinguish fluor contributions even where the spectral cytometer struggled due to the near-complete spectral overlap between fluorescent emissions."

The time-resolved cell analysis technology developed at Kinetic River has applications to compensation-free flow cytometry, highly multiparametric flow cytometry, and flow cytometry with automated autofluorescence removal. Dr. Vacca added: "We are now taking the next steps toward commercialization, including partnering with established industry players to help accelerate the transition to market."

**About Kinetic River** - Kinetic River Corp. is a product design and development company focused on flow cytometry and optics. Based in California's Silicon Valley, Kinetic River offers cutting-edge instrumentation solutions for biomedical research and the life sciences, including the on-market Potomac modular flow cytometer and the Arno compensation-free flow cytometer (under development). Kinetic River also provides a range of technical consulting services and training seminars to clients worldwide. For more information, visit [KineticRiver.com](http://KineticRiver.com). Kinetic River® and the Kinetic River logo are registered trademarks of Kinetic River Corp.

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The time-resolved cell analysis technology developed at Kinetic River has demonstrated the doubling of the number of markers measurable with a fixed set of lasers and detectors, and paves the way to a tripling of the same, as illustrated in this diagram. The patented approach is able to do so by resolving emissions from fluorescent labels based on time—allowing the "stacking" of multiple sets of labels.