Kinetic River Corp. receives another Phase I SBIR grant from the National Institutes of Health

Label-free technology aims at distinguishing cancer cells from normal cells at high speed

Mountain View, Calif., USA, July 27, 2018 — Kinetic River Corp., a leader in custom flow cytometry instrumentation, announced today that it has received a Small Business Innovation Research (SBIR) grant from the National Institutes of Health (NIH). The competitive Phase I grant was awarded to Kinetic River by the National Institute of General Medical Sciences (NIGMS), which fosters research focused on development of innovative biomedical diagnostic and therapeutic platforms.

The ability to rapidly detect cancer cells and distinguish them reliably from normal cells would be of great utility with both blood-borne cancers and solid tumors. Current methods rely on pathological examination of prepared tissue slices, which takes hours to days; or on flow cytometry assays involving expensive antibody-conjugated fluorescent markers, which limit deployment for screening applications. Label-free microscopy techniques have been demonstrated, but are too slow to give statistically robust information on a sufficient number of cells.

The SBIR grant is helping to fund the development of Kinetic River's *Tiber* cell-analysis technology. This approach is aimed at distinguishing cancer cells from normal cells without any expensive fluorescent markers: a rapid, simple, and inexpensive approach to cancer cell discrimination. Kinetic River's *Tiber* label-free technology benefits from years of related proprietary research and development in flow cytometry instrumentation and cell analysis.

"Receiving another SBIR grant is very encouraging," said Giacomo Vacca, Ph.D., president of Kinetic River. "We are building momentum in our development efforts, and NIGMS's continued support of our innovative research is tremendously helpful. The potential impact of a label-free tool for detecting cancer cells at high throughput cannot be overstated. We are excited to have the opportunity to speed up the path to market for this new extension to our product platform."

The *Tiber* leverages Kinetic River's fluorescence lifetime technology, for which two US patents have already been awarded, with more US and international patents pending. By measuring the intrinsic signatures of biomolecules involved in cellular metabolism (such as cofactors NADH and FAD), *Tiber* aims to eliminate the need for expensive antibody-conjugated fluorescent markers for detection and

identification of cancer cells. This approach translates proven, but slow, fluorescence lifetime methods from microscopy to the high-speed realm of flow cytometry.

A successful demonstration of feasibility will enable further development of the *Tiber* technology into a standalone analyzer for the laboratory. Applications of this label-free cell discrimination capability range from cancer diagnostics and cancer treatment monitoring to tumor heterogeneity studies and drug development. Because it will not use expensive reagents, the *Tiber* analyzer is expected to drastically reduce operational costs.

About Kinetic River

Kinetic River Corp. is a biophotonics design and product development company specializing in flow cytometry. Based in California's Silicon Valley, Kinetic River offers cutting-edge flow cytometry instrumentation solutions, including the *Potomac* modular flow cytometer and the *Danube*, a fluorescence lifetime flow cytometer. Kinetic River also provides a range of expert witness services, training seminars, and technical consulting services to clients worldwide. For more information, visit KineticRiver.com.

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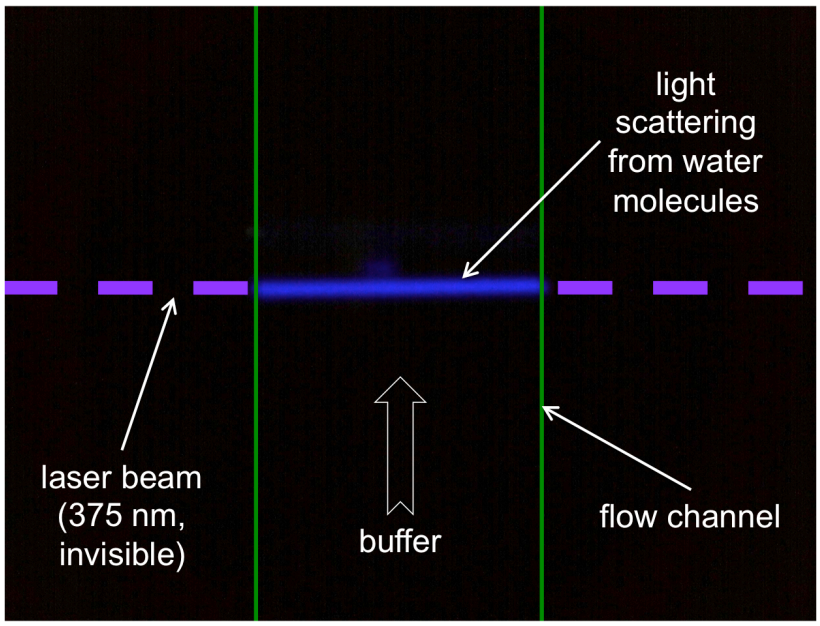
 Research reported in this release was supported by NIGMS of the National Institutes of Health under grant number 1R43GM128546-01. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.



The *Tiber* technology is based on a pulsed UV laser for label-free excitation of biomolecules. The laser beam, which invisible to both the eye and most cameras, shows up in this image as deep blue due to Raman scattering from water molecules in the flow channel of the *Tiber* instrument. The instrument sensitivity is such that this normally undetectable signal has to be specially filtered out.