

## **BioLife Solutions and Brooks Life Sciences Partner on Study of Best Practices for Shipping and Storing Time and Temperature Sensitive Biologic Materials**

**CryoStor® Cell Freeze Media, evo™ Smart Shipper and BioStore™ III Cryo LN2 Storage System Enable Improved Cell Viability and Faster Cell Recovery**

BOTHELL, Wash., Oct. 26, 2016 /PRNewswire/ -- [BioLife Solutions](#), Inc. (NASDAQ: BLFS), a leading developer, manufacturer and marketer of proprietary clinical grade cell and tissue [hypothermic storage](#) and [cryopreservation freeze](#) media and a related [cloud hosted biologistics cold chain management app](#) for [smart shippers](#), and Brooks Automation, a leading worldwide provider of automation and cryogenic equipment for life sciences, recently collaborated on a shipping and storage study to support best distribution practices for time and temperature sensitive biologic materials. Both companies serve the high growth regenerative medicine industry and are focused on delivering solutions that enable commercialization of cell-based products, including CAR T-Cells and other cell types, targeting cancer, heart disease, diabetes, stroke, movement disorders and loss.

BioLife's CryoStor and HypoThermosol® cell storage and shipping media are embedded in over 220 customer validations and clinical trials of cellular therapies. Brooks Life Sciences is the leading supplier of devices, tools, services and software for long term biologic sample storage and management.

The study was presented as a poster at the International Society for Cellular Therapy (ISCT) 2016 Annual Meeting in Singapore and can be found here; <http://www.biostorage.com/wp-content/uploads/2016/05/ISCT-2016-Brooks-BioLife-Poster-5-19-16-Printed-Version.pdf>.

An expanded white paper can be found here: [http://www.biolifesolutions.com/wp-content/uploads/2016/10/Biolife\\_Brooks\\_Whitepaper\\_OCT20\\_REL.pdf](http://www.biolifesolutions.com/wp-content/uploads/2016/10/Biolife_Brooks_Whitepaper_OCT20_REL.pdf)

In the study, current practices for cell freezing using a serum-containing home-brew freeze media and shipping using a common foam dry ice container were compared to best practices of using serum-free, clinical grade CryoStor freeze media and the award winning evo Smart Shipper. Cells were frozen, shipped from BioLife to Brooks, transferred to liquid nitrogen storage for 45 days, then shipped back from Brooks to BioLife and assessed for viability and functional recovery. Significant improvement in total cell survival (viability) and faster regrowth (recovery) post-thaw were observed in the cells frozen in CryoStor and shipped in the evo Smart Shipper.

Specific findings included:

- Jurkat T-cells frozen in traditional 95/5% cryomedia and shipped in an EPS container experienced a significant decline in viability immediately post thaw and a delayed return to function 48 hr post-thaw.
- The combination of CryoStor CS5 and the CRYO evo smart shipper afforded superior protection from cryopreservation and transportation stress with no measurable decline in structural and functional viability as a result of freezing, thawing and two cross-country transit events.
- The CRYO evo smart shipper and biologistex™ cloud-based shipment application allow real-time status, tracking and event alarms throughout the entire shipping process, permitting enhanced tracking and knowledge of any environmental excursions as they happen.
- The design of the CRYO evo smart shipper prevented payload warming from dry ice sublimation and maintained the Jurkat T-cells within the desired temperature range throughout transit.
- The BioStore III Cryo storage system safely stored the Jurkat T-cells below -190°C, prevented unauthorized access and monitored all activities to ensure no samples ever crossed Tg (-135°C). With LIMS connectivity, reports and alarms, storage conditions and inventory was available at all times.

Aby J. Mathew, PhD, Chief Technology Officer at BioLife Solutions, commented on the results by stating, "This was a very effective collaboration with Brooks, and provides more evidence to the clinical and research community about the benefits of Brooks' portfolio of sample storage and management tools and for CryoStor, which is optimized to support cells subjected to the stresses of freezing and thawing."

Kevin O'Donnell, Vice President of Cold Chain Standards, Practices, and Compliance at BioLife remarked, "The evo Smart Shipper is designed to protect precious biologic payloads during shipments, by maintaining consistent temperature of the entire payload throughout transit, and while being subjected to challenging ambient temperature environments. This is critical for high value and potentially life-saving cellular therapeutics."

John Fink, Director, Product Marketing for Cryogenic Automation at Brooks, added, "This study further reinforces the need for enhanced and vigilant temperature monitoring of samples during transit and storage. BioStore™ III Cryo and TempAura™

seamlessly provide this capability and are complementary to the evo onboard payload monitoring system and biologistex cold chain logistics SaaS."

BioLife Solutions estimates the addressable market for small format shipping containers and data monitoring systems at \$500 million. Brooks estimates the addressable market for sample management at \$1.3 billion.

### **About BioLife Solutions**

BioLife Solutions develops, manufactures and markets biopreservation media products and smart shipping containers connected to a cloud hosted cold chain management app to improve the quality of delivery logistics for cells, tissues, and organs. The Company's proprietary HypoThermoso<sup>®</sup> and CryoStor<sup>®</sup> platform of solutions are highly valued in the biobanking, drug discovery, and regenerative medicine markets. BioLife's biopreservation media products are serum-free and protein-free, fully defined, and are formulated to reduce preservation-induced cell damage and death. BioLife's enabling technology provides commercial companies and clinical researchers significant improvement in shelf life and post-preservation viability and function of cells, tissues, and organs.

The [biologistex](#) cloud based cold chain management service is an integrated logistics and tracking and trace web app used by shippers of time and temperature sensitive biologic materials. The [evo Smart Shipper](#) is a state of the art precision thermal shipping container with embedded payload monitoring, GPS location tracking, and cellular communication electronics that transmit critical shipment information to the cloud. This SaaS app enables users to monitor high value shipments during transit and configure actionable alerts for downstream recipients for location, approaching destination, delivery, package open, and remaining shelf life or stability via the patent pending StableAlert<sup>™</sup> countdown timer. For more information please visit [www.biolifesolutions.com](http://www.biolifesolutions.com), and follow BioLife on [Twitter](#).

### **About Brooks Automation**

Brooks Life Science Systems is a division of Brooks Automation, a leading worldwide provider of automation and cryogenic solutions for multiple markets, including semiconductor manufacturing and life sciences. Our company provides comprehensive sample lifecycle management solutions including sample automation, cryogenics, consumables, compound and biological storage and flexible onsite or offsite sample storage models. With an expert team of sample management consultants, we deliver the highest quality management of research samples utilizing our industry-leading automation and cold-chain products, temperature-controlled storage facilities, global logistics services including our Relofleet<sup>®</sup> mobile biorepository, innovative sample bioprocessing solutions and our ISIDOR<sup>®</sup> transformational technology platform which integrates research samples and data. Our products, services and technology solutions support hundreds of bioscience customers around the world including the top 20 biopharmaceutical companies. Visit us at [www.brooks.com](http://www.brooks.com).

*This press release contains forward-looking statements, including, but not limited to, statements concerning new products, the company's anticipated business and operations, the potential utility of and market for its products and services, potential revenue growth and market expansion, market adoption of biologistex, commercial manufacturing of our customers' products, potential proceeds from the credit facility, and projected financial results, cash flow and liquidity, including the potential for reaching positive cash flow from operations next year. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. These statements are based on management's current expectations and beliefs and are subject to a number of risks, uncertainties and assumptions that could cause actual results to differ materially from those described in the forward-looking statements, including among other things, uncertainty regarding market adoption of products; uncertainty regarding third party market projections; market volatility; competition; litigation; and those other factors described in our risk factors set forth in our filings with the Securities and Exchange Commission from time to time, including our Annual Report on Form 10-K and Quarterly Reports on Form 10-Q. We undertake no obligation to update the forward-looking statements contained herein or to reflect events or circumstances occurring after the date hereof, other than as may be required by applicable law.*

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