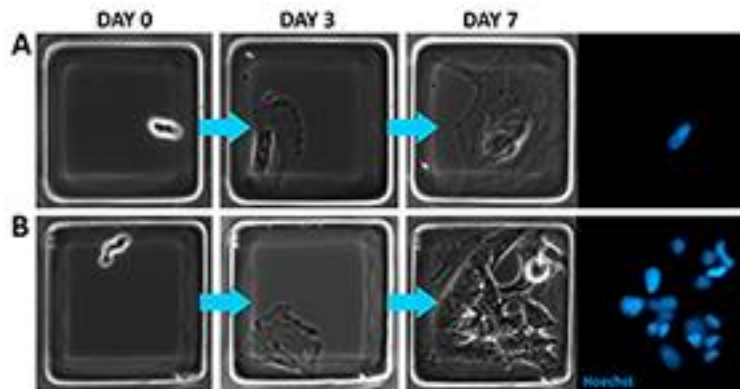


## Optimizing Smooth Muscle Cell Cryopreservation for Cardiovascular Research

**AMSBIO, in collaboration with the University of Strathclyde (UK),** announce the release of a poster that describes a comprehensive assessment of the effects of three different cryopreservation reagents (CELLBANKER® 1, CELLBANKER® 2 and commonly used 10% DMSO) on the viability and proliferative capacity of vascular smooth muscle cells (vSMCs)



**Image caption::** Tracking single vSMC morphology and proliferative

### Central to understanding

the vascular remodelling that underlies cardiovascular diseases is the ability to perform reliable single-cell analysis of vSMCs. Large-scale solutions for single cell analysis and the tracking of cell fate using microarray technologies are well established. However, challenges exist when working with freshly isolated vSMCs, as these quickly deteriorate in buffer and there is a limited time before they lose their native phenotype in culture. To reduce animal use and maximise the number of viable cells, establishing a protocol for robust cryopreservation of native vSMCs is critical.



**Image caption :** CELLBANKER® series of cell freezing media offer high cell viability (>90%) in serum, serum-free, GMP and DMSO-free formats



### **The poster explains**

how Dr. Mairi Sandison and Dr. Michele Zagnoni at the University of Strathclyde have developed a novel single-cell culture approach for tracking phenotypic heterogeneity in vSMCs, to advance our understanding of the cellular sub-populations that are drivers of disease. They, and doctoral student Ellis Smith, developed a sophisticated microwell array designed for the long-term confinement of single vSMC progeny. This approach leverages the exceptional cell-repellent properties of Lipidure®-CM as a coating material, to ensure robust confinement of these highly adherent, migratory cells, enabling reliable tracking of phenotypic changes in large numbers of single cells and their progeny over time. Furthermore, the research team utilized CELLBANKER® cryopreservation media to preserve freshly isolated vSMCs, increasing the number of experiments that can be performed from a single tissue.

### **Key findings of this research demonstrate**

the remarkable benefits of CELLBANKER® cryopreservation media. Notably, CELLBANKER® cryopreservation media significantly improved survival rates of freshly isolated myocytes. Whilst the post-thaw viability of primary cells was significantly reduced by cryopreservation in DMSO-based media (78% viability rate), and to a lesser extent in CELLBANKER 2 (85%), high levels of viability were maintained in CELLBANKER 1 (95%). Additionally, the researchers observed that CELLBANKER® 1&2 significantly outperformed DMSO-based protocols when assessing the growth of frozen primary cells. After just one week of culture, vSMCs preserved in CELLBANKER® 1 or 2 exhibited four to five times the cell growth compared to cells preserved in DMSO-based cryopreservation media.

### **To download**

and read the poster in full please visit

[https://resources.amsbio.com/Presentation/Cryopreserving\\_SMCs\\_Poster.pdf](https://resources.amsbio.com/Presentation/Cryopreserving_SMCs_Poster.pdf).

The CELLBANKER® series of cell freezing media enables the stable long-term storage of cells. With its unique formulation which enables stable cryopreservation and high viability after freeze-thaw procedures, CELLBANKER is a trusted solution for the storage of any cell type including sensitive cell lines. For further information please visit <https://www.amsbio.com/cellbanker-cell-freezing-media/> or contact AMSBIO on on +31-72-8080244 / +44-1235-828200 / +1-617-945-5033 / [info@amsbio.com](mailto:info@amsbio.com).

### **AMS Biotechnology (AMSBIO)**

Founded in 1987, AMS Biotechnology (AMSBIO) is recognized today as a leading transatlantic company contributing to the acceleration of discovery through the provision of cutting-edge life science technology, products, and services for R&D in the medical, nutrition, cosmetics, and energy industries. AMSBIO has in-depth expertise in extracellular matrices to provide elegant solutions for studying cell motility, migration, invasion, and proliferation. This expertise in cell culture and the ECM allows AMSBIO to partner with clients in tailoring cell systems to enhance organoid and spheroid screening outcomes using a variety of 3D culture systems, including organ-on-a-chip microfluidics. For drug discovery research, AMSBIO offers assays, recombinant proteins, and cell lines. Drawing upon a huge and comprehensive biorepository, AMSBIO is widely recognized as a leading provider of high-quality tissue specimens (including custom procurement) from both human and animal tissues. The company provides unique clinical grade products for stem cells and cell therapy applications. This includes GMP cryopreservation technology, and high-quality solutions for viral delivery.



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