



Medicyte GmbH

Infinity Gets Cultured

European Business Development Conference, Dresden

October 2014

Björn F. Lindemann, CEO

 medicyte

Medicyte GmbH

- ✦ Founded 2007, privately owned
- ✦ Unique IP-protected technology
- ✦ ISO 9001 certified



- Cell products for
- drug development
 - research
 - cell therapy



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The Worldwide Research Market

Cells and cell lines 1.8 bn €

Human primary cells 0.55 bn €

Cell-based assays 0.7 bn €

Annual growth rate 15 %

Dilemma in Cell Based Drug Discovery



Unlimited availability of cells



low physiological value of cellular model

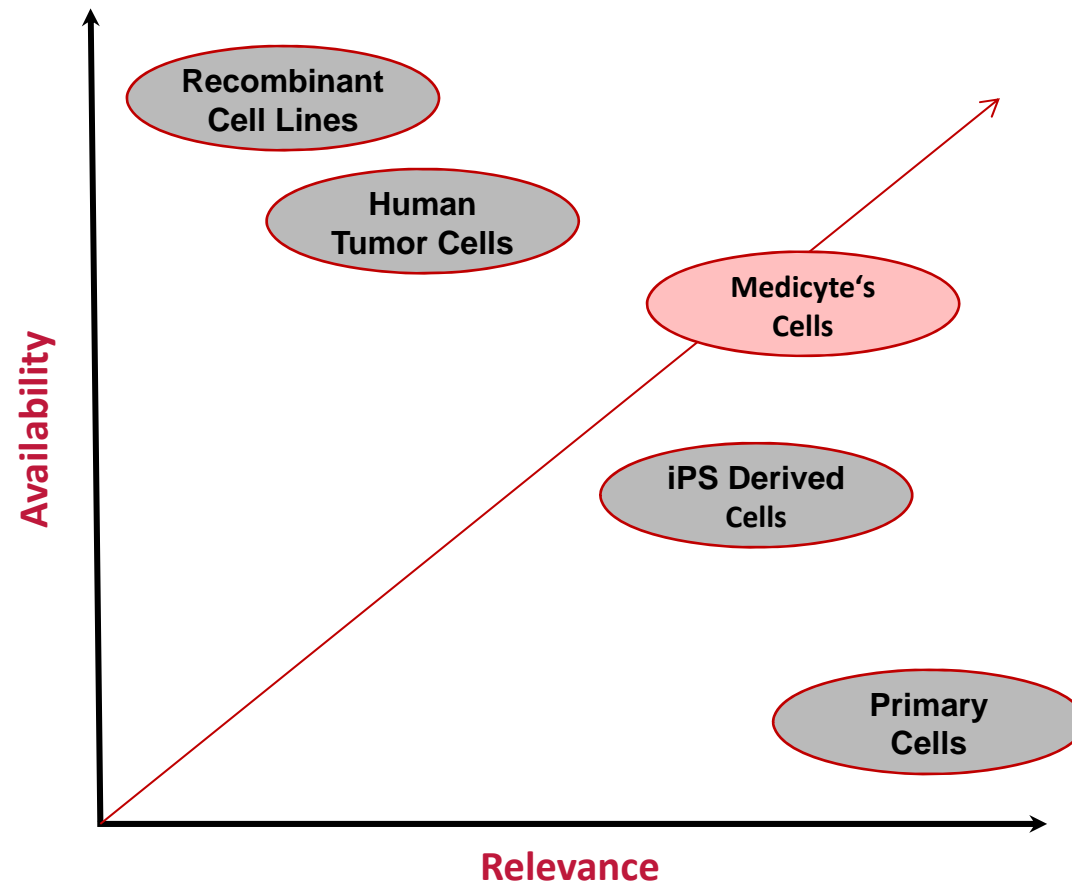
Cells of high physiological relevance



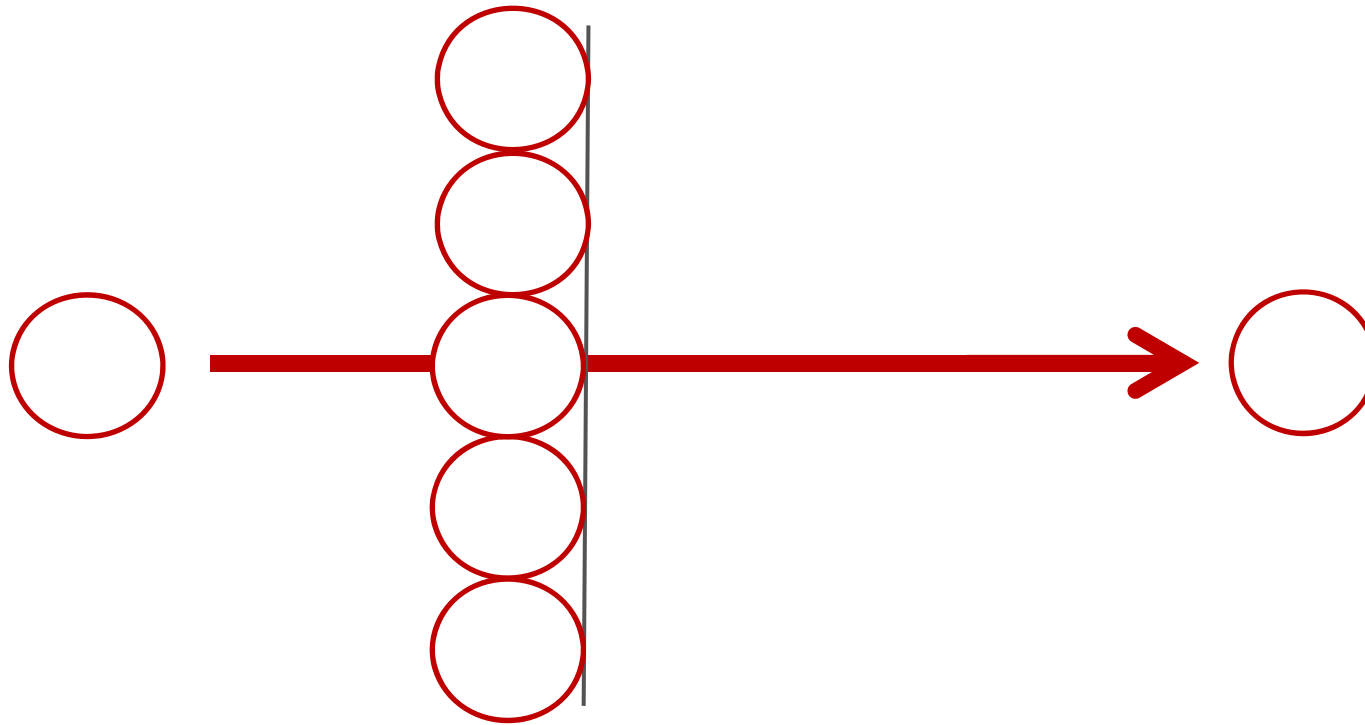
often very limited access and expensive



Finding the Best Cellular Model



The Medicyte Concept

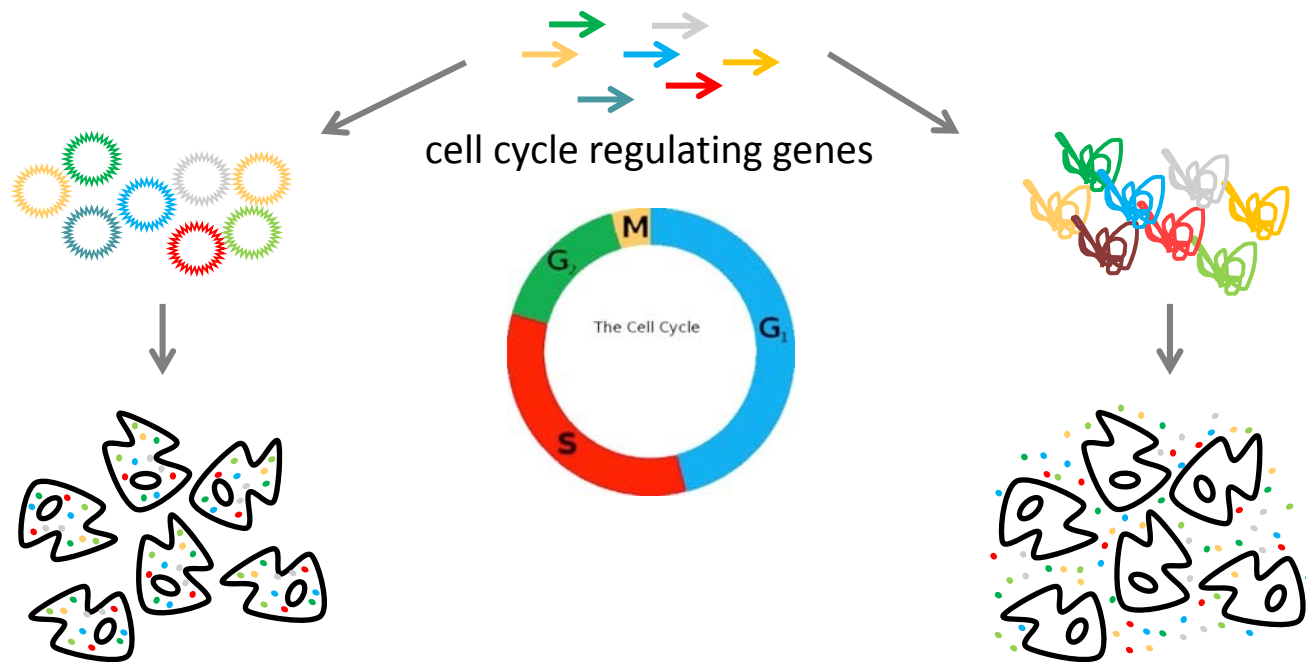


PROLIFERATION

DIFFERENTIATION

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upcyte[®] & vericyte[®]



upcyte[®]

Primary cells, proliferating by lentiviral transfer of cell cycle regulating genes

vericyte[®]

Primary cells, proliferating in medium supplemented with cell cycle regulating factors

Medicyte Meets a Need in Drug Discovery



Take Advantage of upcyte[®] & vericyte[®]

- Cost effective access to large scale of primary cells
- Availability of “relevant” cells for screening applications
- Virtually unlimited cells from single donors
- Adult cells used as starting point
- Expanded primary cells from distinct tissue subtypes
- Expanded patient derived cells from diseased tissues

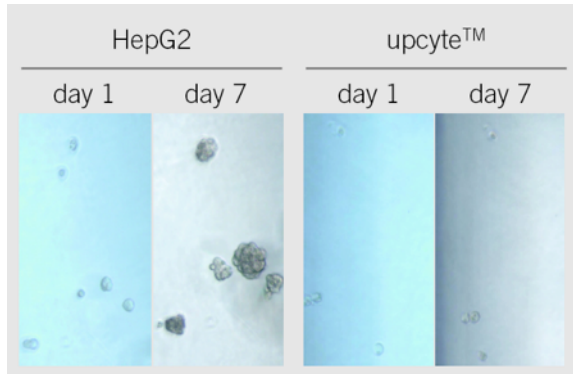
upcyte[®] and vericyte[®] Assay-Ready Cells

- ✓ upcyte[®] Hepatocytes
 - ✓ upcyte[®] Liver Sinusoidal Endothelial Cells
 - ✓ upcyte[®] microvascular Endothelial Cells
 - ✓ upcyte[®] Blood Outgrowth Endothelial Cells
 - ✓ upcyte[®] Coronary Artery Smooth Muscle Cells
 - ✓ upcyte[®] Keratinocytes
-
- ✓ vericyte[®] Natural Killer Cells
-
- ✓ PBMCs & purified Blood Cells (AccuCell[®])

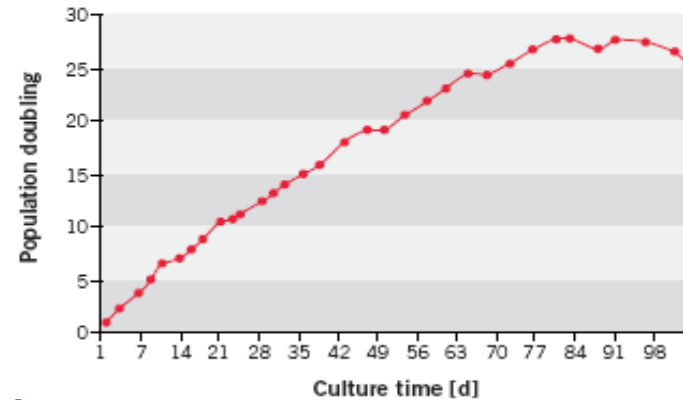


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upcyte[®] Hepatocytes are NOT Immortalized Tumor Cell Lines



→ upcyte[®] Hepatocytes do not grow anchorage independently



→ upcyte[®] cells do not grow indefinitely

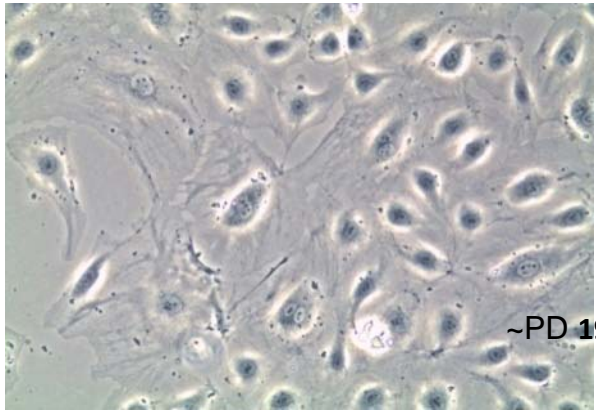


→ upcyte[®] Hepatocytes do not form tumors in mice

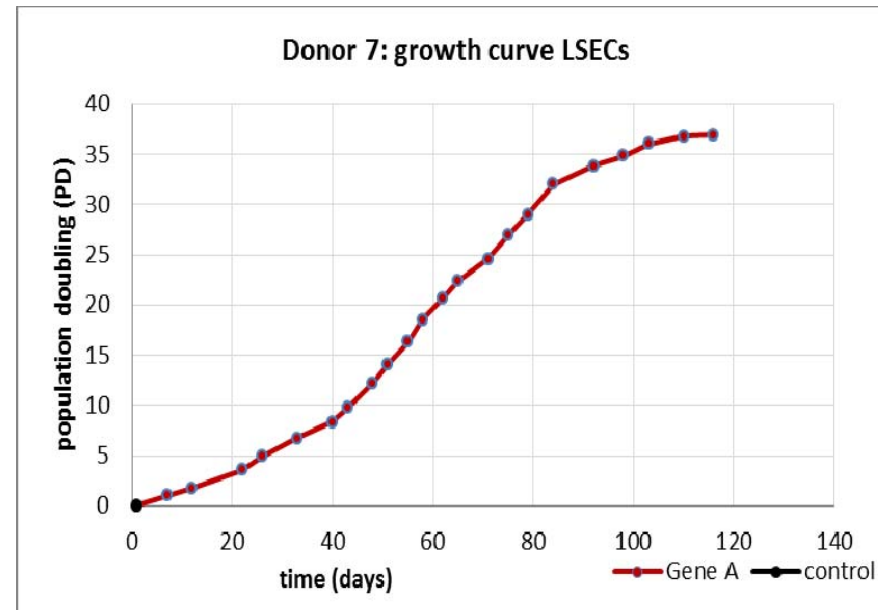


→ upcyte[®] Hepatocytes express REIC/DKK3

upcyte® Liver Sinusoidal Endothelial Cells (LSECs) can be expanded up to 35 population doublings



Tox testing of antibody drug conjugates

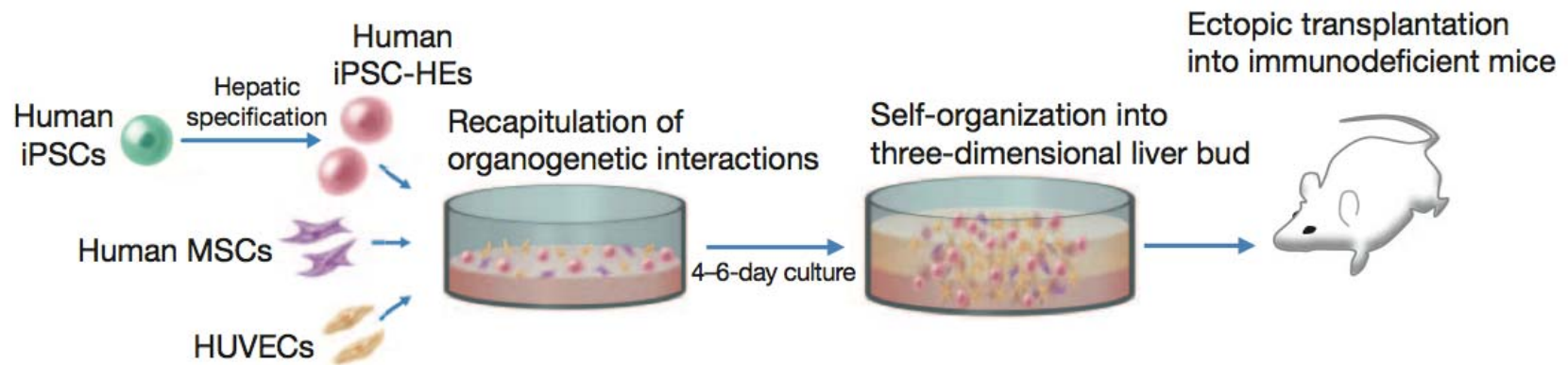


Liver Buds

Vascularized and functional human liver from an iPSC-derived organ bud transplant.

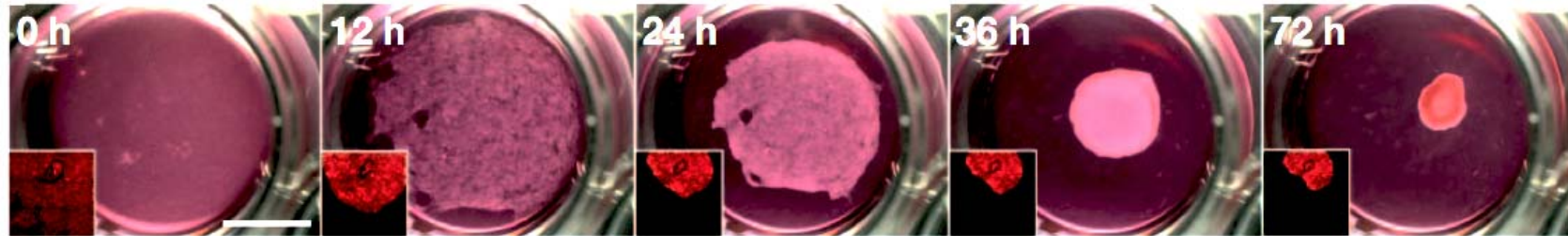
Takebe T, Sekine K, Enomura M, Koike H, Kimura M, Ogaeri T, Zhang RR, Ueno Y, Zheng YW, Koike N, Aoyama S, Adachi Y, Taniguchi H.

Nature. 2013 Jul 25;499(7459):481-4.

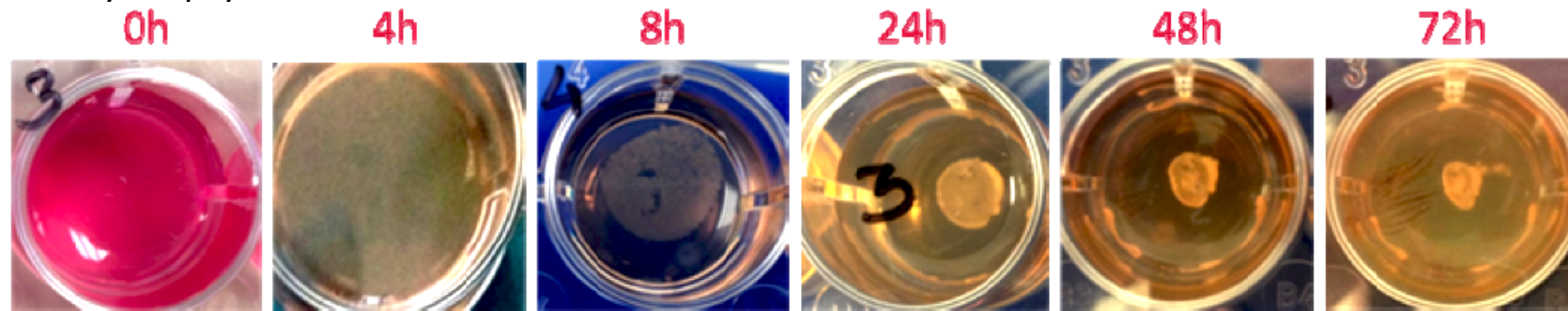


Liver Buds

Nature paper



Medicyte upcyte[®]



differentiated human upcyte[®] hepatocytes,
upcyte[®] LSECs (Liver Sinusoidal Endothelial Cells),
upcyte[®] MSCs (Mesenchymal Stem Cells)

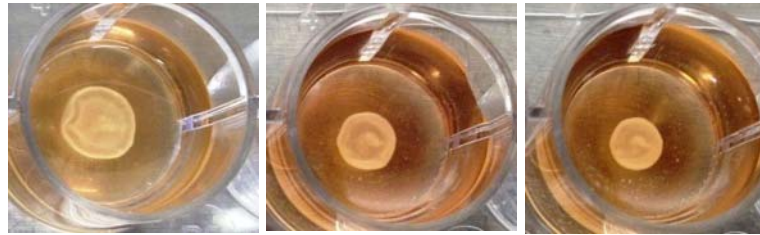
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Scalable Generation of Liver Organoids

24h

48h

72h



24-well



48-well

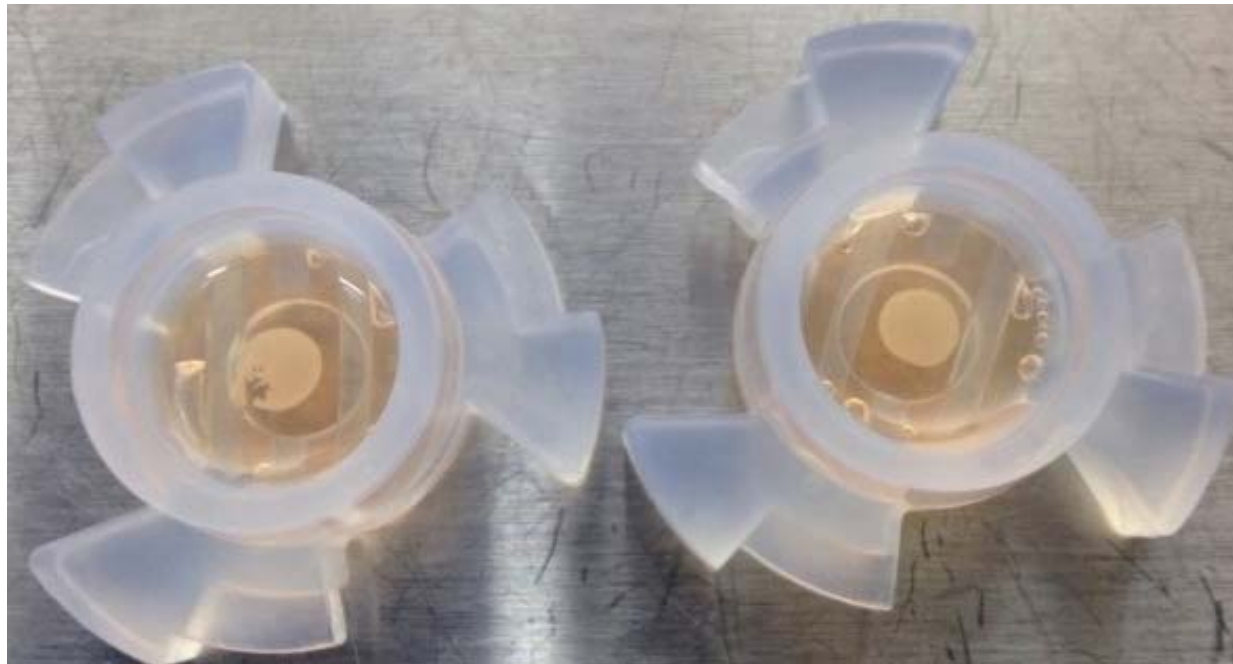


96-well

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Scalable Generation of Liver Organoids

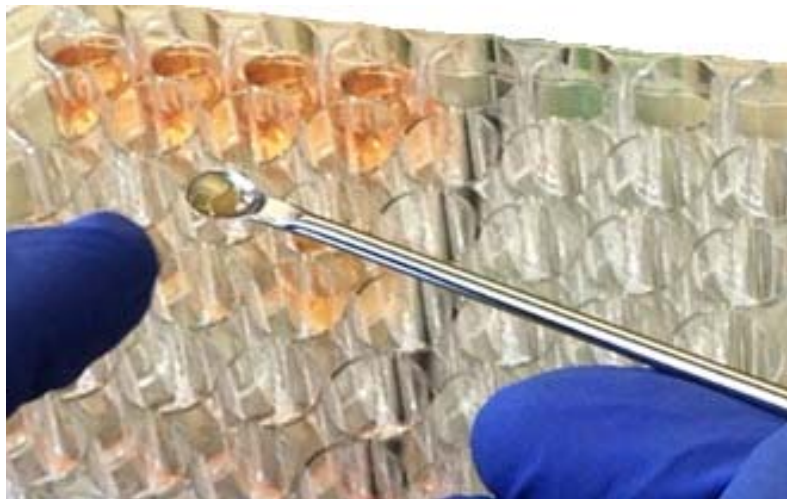
perfusion system



Liver Organoids Grown in a Bioreactor



liver buds (2-3 mm)

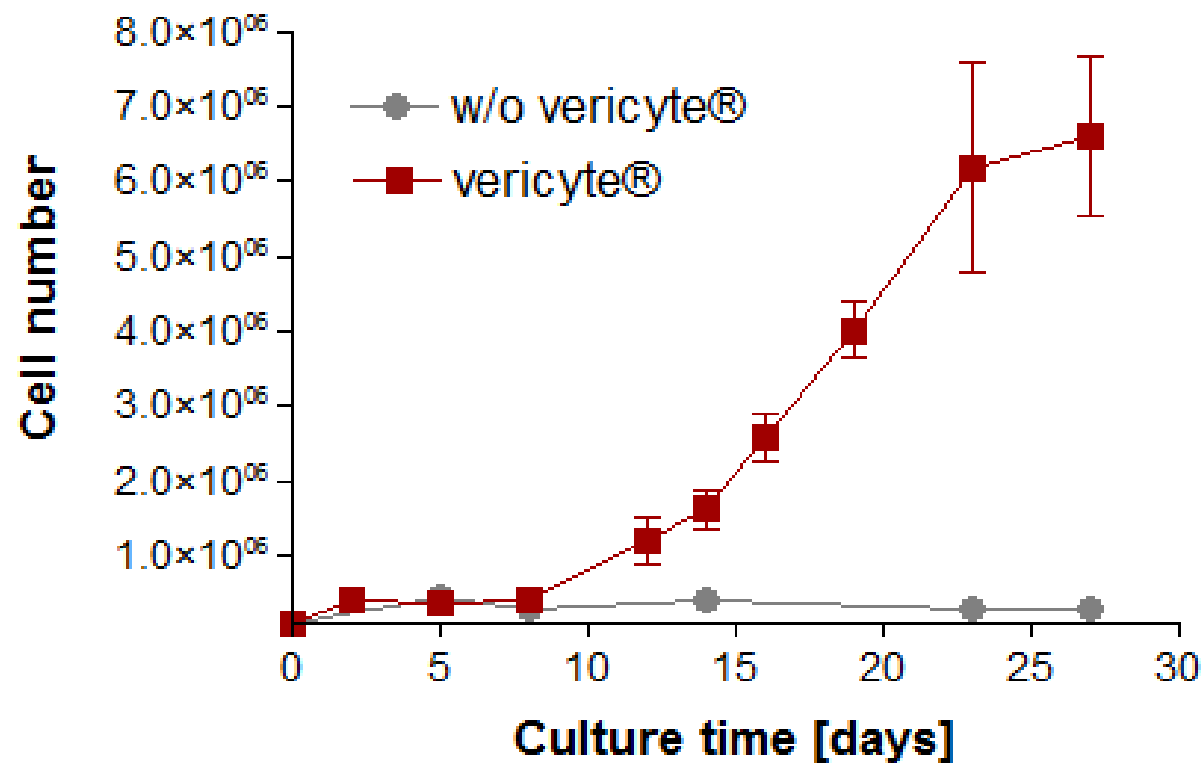


**Loading liver buds
into bioreactor** →



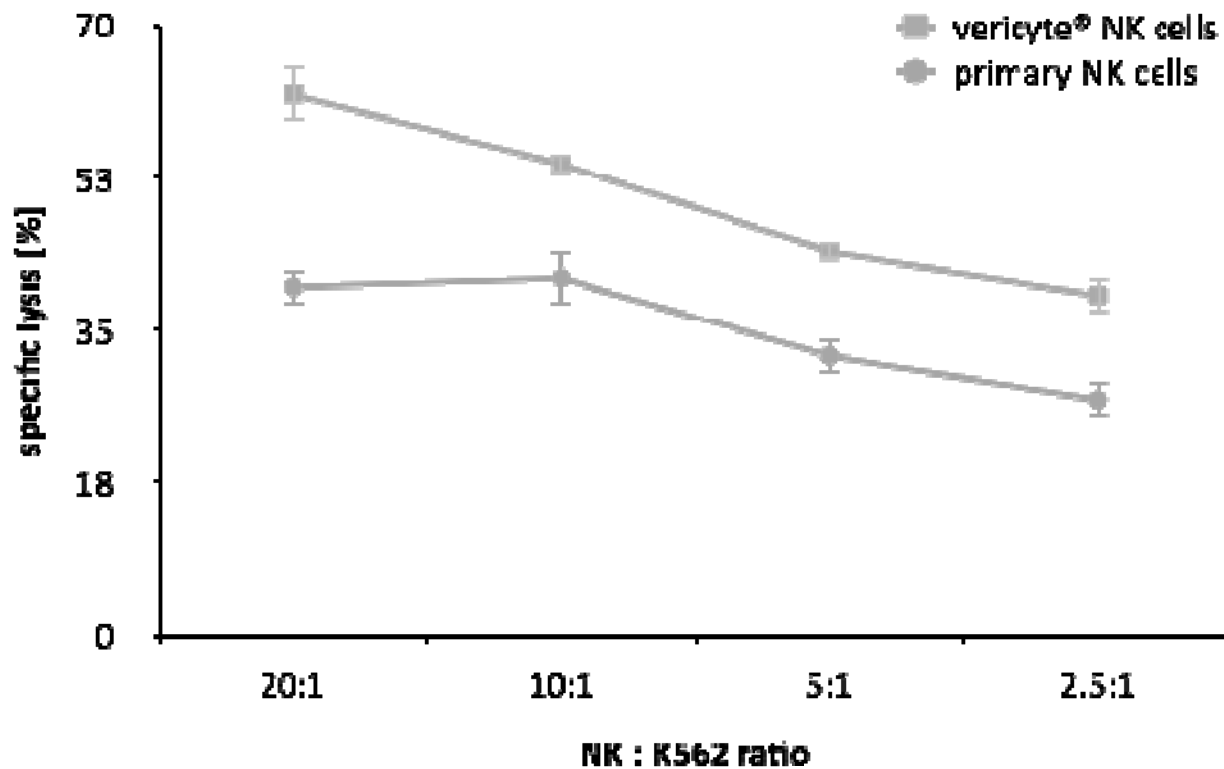
vericyte[®] Cells

vericyte[®] Cells are true human primary cells without genetic modifications



Technical characteristics - vericYTE[®] NK Cells

vericYTE[®] NK cells are perfectly capable of killing their target cells



Product Line - vericyte®

Cell Types

- vericyte® NK cells
- vericyte® Endothelial Cells
(HDVECs, HAoECs, HPAECs & ACAECs)
- vericyte® Smooth Muscle Cells
(HCASMCs, HAoSMCs, HPASMCs)
- vericyte® primary Keratinocytes



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BAL – BioArtificial Liver

120,000 waiting transplant patients (USA 2011)

5,800 transplants done

3,000 waiting patients died

Medicyte in collaboration on BAL

- ✦ Bridging time to a liver transplant in acute liver failure
- ✦ Bridging time to full recovery after liver transplant

Medicyte in collaboration on
therapeutic liver regeneration



Discover more!



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