

# TRANSCCOMM

THE TRANSCCELL NEWSLETTER

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## HIGHLIGHTS

Advancements & innovations of Stem cells in Drug industry, Research Sources of Stem Cells, Banking to Bio-Banking: Transcell

## FROM THE EDITOR

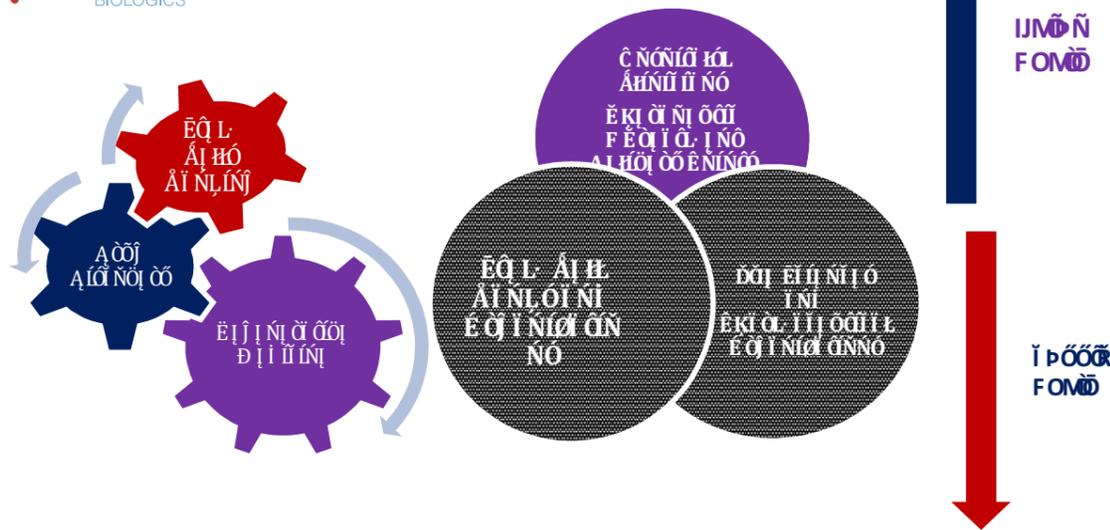


Regenerative Medicine with its increasing number of positive results in the domain of therapeutic applications further continues to offer pointers towards synergy between Organizations. The supply chain of an integrated activity brings the end-to-end spectrum of life sciences to the forefront of worldly hope. Key to the coming together of such an ecosystem stems from the much needed encouragement and the need to deliver a lasting solution for the most dreaded and threatening diseases challenging the world.

There is a newfound interest created with the application of new technologies and techniques based on disease modelling and thereby active product inventions to treat and cure. Regenerative inventions driven by the technological advancements are filling the much needed advantage of time and cost savings to offer the rejuvenation of a hope to fight the disease with an associated lower cost of treatment and medicinal availability.!

Continuing with the efforts aimed at developing protocol and configuration based stem cell products, solutions and services for the most discerning clinicians, hospitals and drug discovery organizations, Transcell presents this Newsletter derived from the precincts of Research and Innovations I am very happy to announce the entry of Transcell as a Pioneer in the domain of Stem Cells Banking, not limiting to the generic supplies in the supply chain of events but to integrate its innovations with the industry and the eco system of clinicians, hospitals and patients. This is foreseen to be unique in positioning the Company's vision to enter the drug discovery domain identifying novel drug molecules to treat Cancers & Neurodegenerative disorders.

Wishing all our customers and the readers, Happy Holidays!  
**Balasubramanyam P.V.S**



## Categorizing Stem Cells Banking Operations: A Boon to the Drug Industry

The most interesting fact is that Stem cells derived from patients (Eg: Solid tumor derived Stem cells) can be used to make human organ system replica and the entire disease and its response to drugs can be studied. These disease model organ chips will revolutionize the way clinicians treat a disease by offering an allowance to test and optimize dose of drugs. However, this also brings us to a point to ask ourselves where do we get stem cells? The answer is by donating to stem cell biobank. There are two approaches here that are to be discussed Donor derived stem cell biobanks and Patient derived stem cell biobanks.

## Advancements & Innovations

Challenges are many and creating a disease model with the fact of being genetically so diverse is also very intriguing. It is becoming increasingly important to have human stem cell models. A parallel can be drawn with that of the immense help that a black box of a plane offers to investigators trying to figure out what went wrong in a plane crash.



Stem cells have given us the black box of data and information on various kinds of the most threatening diseases. This is where the relevance of various modelling techniques come that can recapitulate many diseases in a

small model of petri plate in which the Stem cells are grown in-vitro using laboratory assets. You can see what begins to go wrong at a cellular level much before we would ever see symptoms appearing in diseased patient. It also opens up the possibility or ability to test drugs directly on human cells that can offer considerable reduction in the discovery life cycles.

Patient derived Stem cell Biobanks serve the same purpose storing complete information residual of a particular disease cell type that which needs to be harvested, studied and exploited for new drug discoveries. They function as intermediaries to boost the research period by shortening time required for preclinical studies. Stem cells if preserved serve as the best models of disease because of the fact that they can be multiplied without limitation and can also be differentiated into other kind of cells. Investigators from Wyss Institute have developed something called as organ-on-chip, which aims to bring a paradigm shift in drug discovery. The organ on chips are products of marriage between chip fabrication technology and 3D cell culturing technology, by building cells of human organ tissues like heart, kidney, brain and interconnecting them to mimic whole human body physiology. These chips could form an accurate alternative to traditional animal testing and bring down time and cost of drug discovery.

### Donor derived stem cell biobank

The stem cells are preserved from donor samples (Private Family stem cell banking) to ensure for their usage in future for any ailments. These samples are collected from healthy individuals and are preserved after regular processing. The Umbilical cord blood and tissue based stem cells, Dental pulp stem cells and Adipose derived stem cells come under this category as therapeutic tools where they are infused into the patient's body for 3Rs

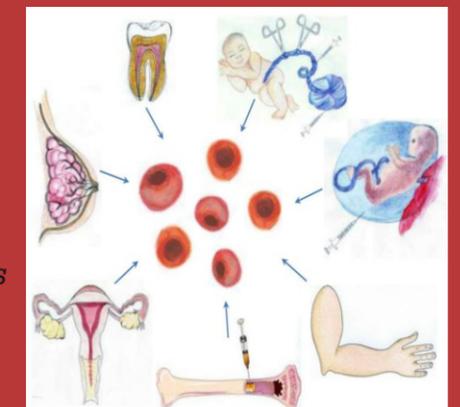
namely Regeneration, Repair and Reconstruction purposes.

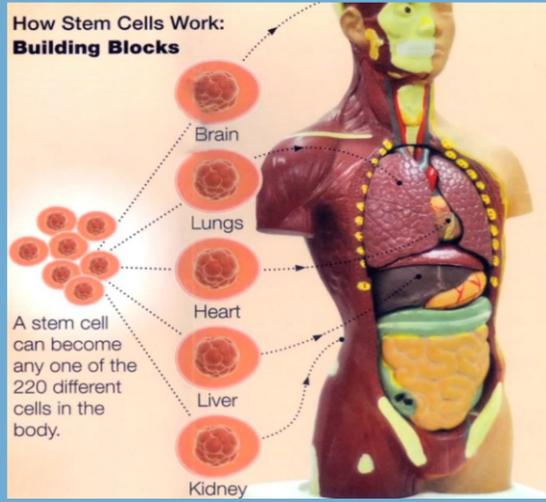
### Patient derived stem cells biobank

Patients donate their samples for clinical and research purpose. These stem cells could be used to construct an organ on chip or cell based screens/platforms to test various compounds and also to study the mechanism/pathways of diseases. This approach bypasses the knockout animal models of a disease which often does not have same human physiology. Stem cells from Tumor biopsies and Genetic diseases

### Boon to the Clinicians and Hospitals: Established Clinical Sources From Healthy Donors For Treatment Purpose:

- Umbilical cord blood (*main site of blood stem cells*)
- Dental pulp (*good source of clinical grade Mesenchymal stem cells*)
- Umbilical cord tissue (*source of clinical grade Mesenchymal stem cells*)
- Adipose (*source of clinical grade Mesenchymal Stem cells – semi invasive method of sample collection*)
- Bone marrow (*both Blood stem cells and Mesenchymal stem cells- Invasive, limited and painful*)
- Peripheral blood (*blood stem cell – semi invasive*)





### Research sources published

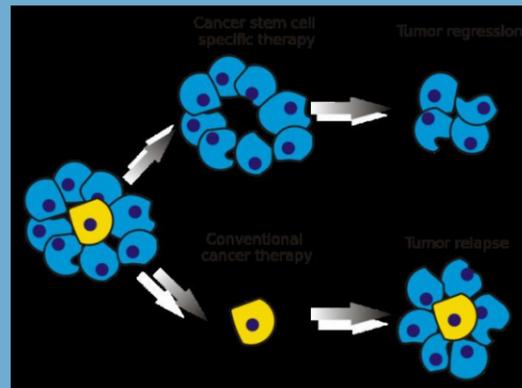
- Brain
- Liver
- Menstrual blood
- Synovial fluid
- Heart
- Pancreas
- Intestine

## Banking to Bio-Banking: Transcell – The Pioneer in the Value Chain

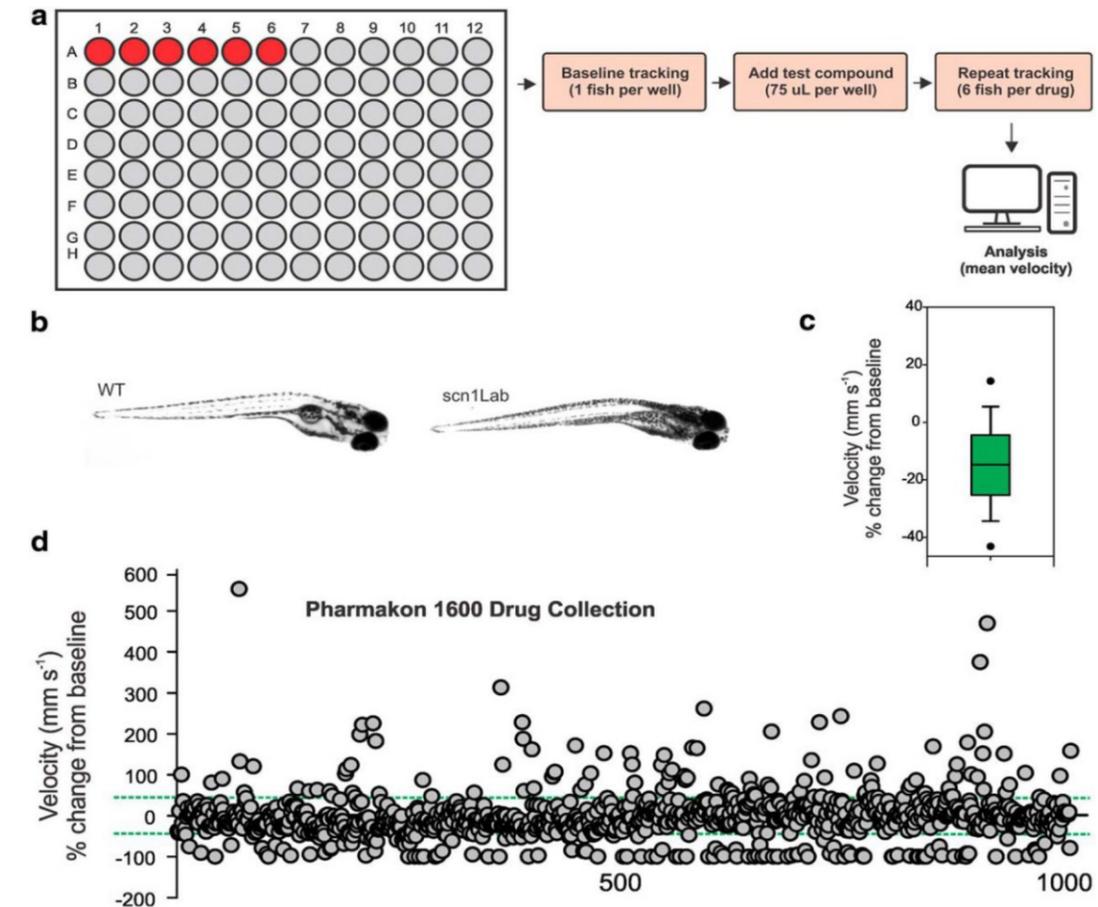
### Tumor/Tissue Biobank

Stem cells cause cancer! No they don't!  
The tumour resident progenitor cells that gives rise to tumour specific cells are called Cancer stem cells. These cancer stem cells are misunderstood as the therapeutic stem cells becoming cancerous upon transplantation by laymen. This is to enlighten about the misconception that therapy worthy adult stem cells do not become a tumour as they don't have the genes that trigger any uncontrolled growth.

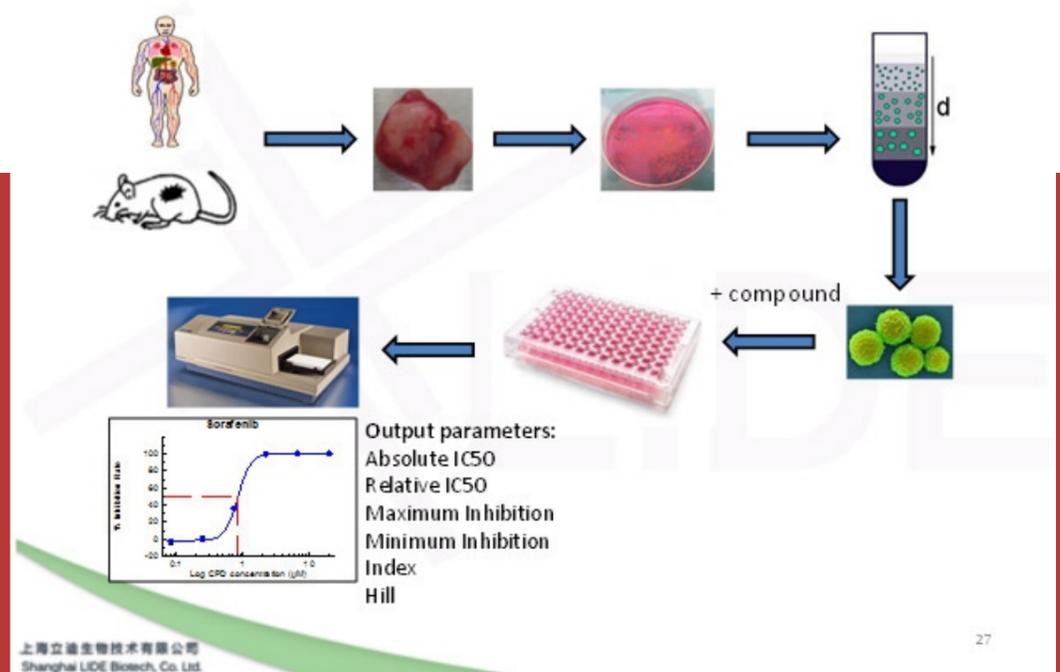
The cancer is defined by its uncontrolled growth of cells and currently treated with chemotherapy agents or by radiation therapy. Most of these therapies always register low odds of killing cancer cells entirely, which is why cancer becomes recurrent and resistant to the therapy administered. Researchers now believe and showed that cancer has certain kind of cells in them which are similar to mother cells in property, they differentiate into cell type and can make a copy of it. It has been proposed that killing the cancer stem cell could wipe cancer completely from the body



Therefore, it is of immense importance to research this cancer stem cells for susceptible chemotherapy instead of directly targeting cancer cells. To aid such work, patient derived cancer stem cell biobank would be ideal to access in accelerating drug discovery in Oncology beating the traditional methods.



### In vitro Chemosensitivity Assay (TCA)



## CLINICIAN DESK

Glioblastoma multiforme (GBM) is the most aggressive form of brain cancer with marginal life expectancy. Based on the assumption that GBM cells gain functions not necessarily involved in the cancerous process, patient-derived glioblastoma cells (GCs) were screened to identify cellular processes amenable for development of targeted treatments. The quinine-derivative NSC13316 reliably and selectively compromised viability. Synthetic chemical expansion reveals delicate structure-activity relationship and analogs with increased potency, termed Vacquinols. Reference: Cell , Volume 157 , Issue 2 , 313 - 328

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