



**Improving human health through biomedical innovation and discovery**



Provides cutting-edge stem cell products and services, human biospecimens, and contract research for pre-clinical drug discovery



Provides compliant materials for bio-production including advanced diagnostics and regenerative medicine therapies

REPROCELL DISCOVERY BRANDS  
bioserve • stemgent • alvetex • biopta

**Corporate  
Capabilities**

## Company Overview:

Established in 2003 by preeminent Japanese university researchers, REPROCELL quickly became the leading stem cell research company in Japan. REPROCELL products were employed by Professor Shinya Yamanaka (Nobel Laureate, 2012) during his pioneering research on induced pluripotent stem cell (iPSC) technologies at Kyoto University. REPROCELL was the first company to offer iPSC-derived human cardiomyocytes, hepatocytes and neuronal cells for research applications. As a market leader, with a portfolio of cells, culture media and reagents, the company was listed on the Japan JASDAQ / Growth stock market in 2013. Since then, REPROCELL has aggressively expanded its business through a series of commercial acquisitions.

In 2016, REPROCELL USA was established by merging the corporate holdings of Stemgent® (acquired 2015) and BioServe® (acquired 2014). A leader in iPSC reprogramming technologies, Stemgent® is recognized for the brands of Stemolecule™ and StemFactor™, which are small-molecules and proteins for various stem cell and iPSC applications that support reprogramming, growth and differentiation. BioServe® provides access to an extensive biobank of over half-a-million human tissue samples to support biomarker identification, and drug and disease research.

Also in 2016, REPROCELL Europe was established by merging the corporate holdings of Reinnervate® (acquired 2014) and Biopta® (acquired 2015). Known for the Alvetex® brand of cell culture plates and membrane products, Reinnervate® was focused on developing 3D models and applications for mammalian cell culture. Biopta® was a contract research organization (CRO) that specialized in custom drug discovery assays using live human tissues secured in accordance with government and medical agency ethical guidelines.

Together, the REPROCELL organization worldwide provides an integrated workflow with stem cells and discovery technologies for drug development and cutting-edge Regenerative Medicine.



REPROCELL HQ: Yokohama, Japan



REPROCELL USA: Beltsville, MD



REPROCELL EUROPE: Glasgow, UK

## Integrated Workflows of REPROCELL Products & Services:

Through REPROCELL, human bio-specimens (tissues, blood, etc.) can be obtained from partner organizations, reprogrammed by proprietary technologies into iPSC cells, and cultured using REPROCELL's portfolio of medium and reagents. The iPSC can be differentiated into various somatic cell types and grown using special scaffolds or culture-plates to create 3D model systems that more closely mimic the authentic human tissue. Furthermore, these bioengineered human tissue models or live normal human tissues can be used for pre-clinical drug development in partnership with our *Centre for Predictive Drug Discovery*. Hence, REPROCELL has products and services that cover the entire drug discovery workflow.

## Human Tissues Specimens

REPROCELL has one of the world's largest commercial bio-repositories of human tissue samples. The collection (formerly BioServe) includes over 600,000 samples of frozen tissue, FFPE tissue blocks, whole blood, serum, plasma, RNA and DNA samples linked to detailed clinical and demographic data from over 120,000 consented and anonymized patients from four continents.

Diseased and normal tissue are available, including many matched sample sets. The BioServe network of partner organizations also provides broader access to additional rare samples and the ability to source material specific to your research needs through prospective collections.

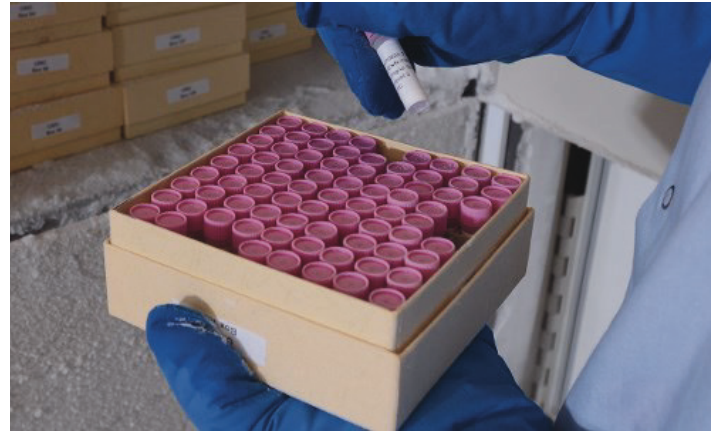
We have it...



Our network has it...



Or, we can collect it



Each human tissue sample is provided with:

- Detailed demographic information
- Gold standard clinical diagnostic information
- Complete drug history, including adverse events
- Full pathology report, including H&E slides
- Complete phenotypic data

Patient recruitment and tissue collection:

- Governed by IRB protocols and HIPAA regulations
- Ethically collected and broadly consented
- Sample data anonymized from original consents

### Global BioRepository Inventory by Disease Type:

Cancers:	Metabolic:	Miscellaneous:
Brain	Diabetes	Asthma
Breast	Cardiovascular	Pneumonia
Cervical		Dementia
Colon / GI	Immunological:	Renal Disease
Head & Neck	Lupus	Hepatic Injury
Leukemia / Lymphoma	Arthritis	Osteoporosis
Lung	Multiple Sclerosis	Sepsis
Ovarian	Psoriasis	
Prostate	Rheumatoid Arthritis	Other:
Renal		Controls
		Miscellaneous Tissue

## Molecular Services

REPROCELL has a suite of pre-clinical molecular services, including various genotyping services for the identification of genetic markers, validation of drug targets and correlation of clinical and molecular data to accelerate the development of new and safer drugs.

With CLIA-approved laboratories and over 20 years of custom service experience, you can trust our quality and data accuracy.



Our human tissue specimens and molecular services can help you accelerate Target Identification or other preclinical research.



## Cell Reprogramming

Our latest generation technology, the StemRNA 3<sup>rd</sup> Gen Reprogramming Kit is perhaps the most clinically relevant technology for generating iPSC cell lines.

Footprint-free and highly efficient, it is the only technology optimized for three different cell types including fibroblasts, blood-derived and urine-derived progenitor cells. It is the only reprogramming kit available that is enhanced by both microRNA and interferon-response suppression mRNAs, which when combined with a highly simplified protocol, will consistently ensure your success.

From the REPROCELL portfolio of cell culture reagents, you have access to nearly everything you need to do it yourself.

For basic or translational research, the pluripotent potential, stability and growth of iPSCs derived using StemRNA reprogramming technologies is cutting-edge. Using an entirely xeno-free protocol for fibroblast reprogramming, you can readily address the essential regulatory requirements for your iPSC line.

### Top Products:

StemRNA-3 <sup>rd</sup> Gen Reprogramming Kit	00-0076
* NutriStem <sup>®</sup> hPSC XF Medium	01-0005
* iMatrix-511 Stem Cell Culture Substrate	NP892-012
* StainAlive <sup>™</sup> TRA-1-60 Antibody	09-0068
* CryoStem Freezing Medium	01-0013-50

\*recommended for use with kit 00-0076



The StemRNA-3<sup>rd</sup> Gen Reprogramming Kit

## Services for Reprogramming & Custom Primary Cell Derivation

Do you need help acquiring human specimens for your iPSC cell generation? REPROCELL can source blood or urine from our network of clinical centers for use by our expert scientists to generate healthy or disease-model iPSC cell lines that precisely meet your needs.

We can provide multiple iPSC cell clones validated for pluripotency, genetically analyzed, and validated for authenticity. We will customize our service to provide the product and information you require. Why hassle with the details and months of laboratory labor? We've streamlined the process for speed and cost, so you need not bother!

Custom iPSC cell services use StemRNA Reprogramming Technologies and are available to both Academic and Industrial customers. Use of the iPSCs is royalty-free for all research activities. Some commercial-use applications are restricted and others require written authorization from REPROCELL. Ask us about details and for a quotation today!

Besides reprogramming, REPROCELL also offers services for expanding and differentiating your iPSC cell line into various somatic cell types. Focus on the research or drug development. Let REPROCELL take care of your iPSC cell or cell derivation needs.

In drug discovery, REPROCELL iPSCs are ideally suited for applications in Target Validation and Lead Identification.



## Stem Cell Culture

The history of REPROCELL started with cell culture media products. From Primate ES medium for feeder-dependent culture, to ReproFF2 medium for feeder-free, REPROCELL original media are reliable and high quality.

Other products sold by REPROCELL include NutriStem® hPSC XF Medium from Biological Industries, made under GMP and supported with a drug-master-file to the US FDA. And StemFit® from Ajinomoto, is a popular rich medium available in Japan and the USA.

ReproNaive™ is a unique formulation to convert primed-state iPS cells to embryonic-like naïve stage cells by simple cultivation.

And ReproCryo RM is a clinical-grade, DMSO-free freezing medium supported with a drug-master-file in Japan.

## 3D Cell Culture

Technologies for cultivation of cells in 3D are becoming increasingly important in disease modeling, artificial organs, and drug discovery applications. REPROCELL offers multiple 3D products and formats from which to choose.

Alvetex®, REPROCELL's award-winning synthetic cell-culture scaffolds, are available in individual insert, multiwell plate, or other configurations.

REPROCELL can also provide services for bioengineered tissue models. An example is our first-to-market, fully-human, autologous skin model for immune reaction assay service using Alvetex. Ask us how we can help you.

EZSPERE non-adherent microwell plates (Asahi Glass Company) promote formation of hundreds or thousands of aggregated cell spheroids.

For optimized iPS cell suspension culture, the 3D Magnetic Stir and Disposable Bioreactor System (ABLE Biott Corp.) is an outstanding option for growing 30 to 100 mL of batch culture.

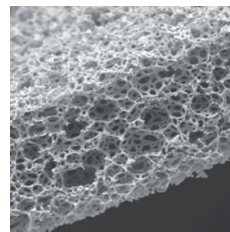
### Top Products:

Primate ES Culture Medium	RCHEM001
ReproFF2	RCHEM006
NutriStem® hPSC XF Medium	01-0005
StemFit AKO2N (Japan only)	RCAK02N
StemFit Basic O2 Medium	ASB01
ReproCryo RM	RCHEFM004
ReproCryo DMSO Free RM	RCHEFM003
ReproNaive™ Medium	RCHEMD008
Dissociation Solution	RCHETP002

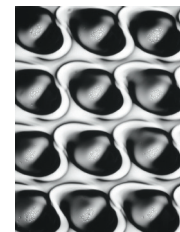
For cultivation, dissociation, and freezing, we have a cell culture media right for you.

AteloCell® (Koken Pharma) is a cell culture scaffold made entirely from natural bovine collagen in the shape of discs and sponges.

And finally, IPS-Spheres™ from Brilliant Research are micro-carrier beads for bioprocesses for culture and differentiation of iPSCs.



Alvetex® Scaffold membrane structure



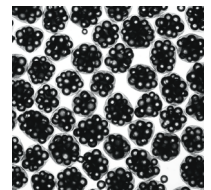
EZSPHERE nanowells



30 mL ABL Bioreactor



AteloCell® sponges and scaffold structure



IPS-Spheres™

Cell culture applications are important in nearly all stages of drug development from Target Validation through Pre-clinical Safety assessment.



## Cell Differentiation

As a pioneering company in the production of iPSC-derived cells, REPROCELL has a portfolio of normal and disease-model cells that include neurocytes, hepatocytes and cardiomyocytes.

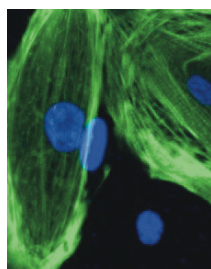
Our know-how and robust manufacturing processes ensure reproducible product and mature cell types that are electrophysiologically responsive (e.g. cardiomyocytes, neurocytes) with mature morphologies.

Our culture media for cell maturation offer some options including ReproNeuro MQ medium which significantly enhances neuronal signaling as detected by MEA analysis.

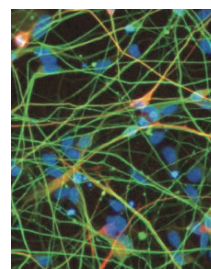
REPROCELL is experienced in custom cell model development and we engage in proprietary collaborations for developing custom differentiation protocols. We can also use or modify your protocol. If you have a particular need, please ask for a project consultation.

### Top Products:

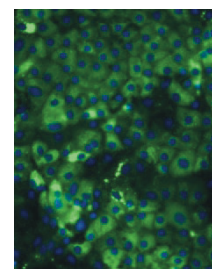
ReproCardio2	RCDC001N
ReproHepato	RCDH001N
ReproNeuro	RCDN001N
ReproNeuro AD-Mutation	RCDN002N
ReproNeuro AD-Patient 1	RCDN003P
ReproNeuro MQ Medium	RCDN102
MesoFate Cardio Dif. Medium	RCHEMD008



ReproCardio™



ReproNeuro™



ReproHepato™

## Reagents

REPROCELL provides a single source of critical reagents for stem cell biology research. Each of our trusted brands are known for quality and consistency.

StainAlive™ antibodies allow you to ascertain pluripotency marker expression in culture without destroying or contaminating live cells.

Our catalog of over 50 small molecules includes GSK-3β inhibitors like CHIR99021, Rho-kinase (ROCK) inhibitors like Y27632, and TGF-β1 inhibitors like SB431542, among many other Stemolecules™ for stem cell research.

Our portfolio of Stemfactor™ cytokines and growth factors include basic FGF, LIF and Activin A to name a few.

### Top Products:

StainAlive SSEA-4 Antibody	09-0097
Stemolecule CHIR99021	04-0004-10
Stemolecule Y27632	04-0012-10
Stemolecule SB431542	04-0010-10
Stemolecule PD0325901	04-0006
Stemfactor FGF basic XF	03-0002
Stemfactor Human LIF	03-0016-100
Stemfactor Human Activin A	03-0001
Stemfactor TGF-β1 (human)	03-0004

**REPROCELL's differentiated cell products and reagents are particularly useful to support research efforts in Lead Optimization and Pre-clinical Safety.**



## Drug Discovery Research Services

REPROCELL (formerly Bioptra) has been providing contract research services to the pharmaceutical industry since 2002 and has established itself as the world leader in the use of fresh functional human tissues to better predict drug performance prior to human clinical trials.

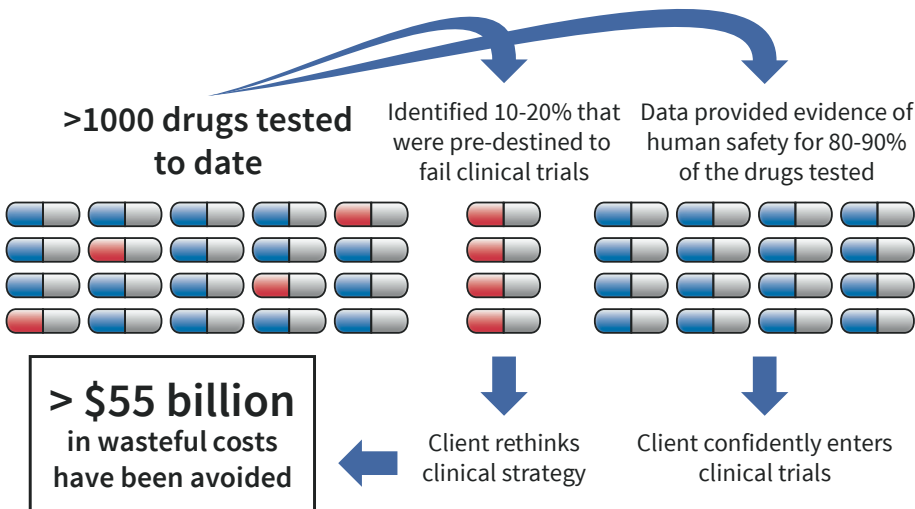
Our research staff has broad expertise in all areas of human tissue research including sourcing, handling and experimenting with fresh clinical material. Our expert scientists are available 24/7 to generate data that will add commercial value and de-risk drug development programs by predicting the safety, efficacy, absorption or metabolism of compounds in phenotypically-relevant healthy and diseased human tissues.

With the establishment of the Centre for Predictive Drug Discovery (opened in Glasgow, UK, in 2017) our European capabilities have also expanded to offer iPS cell services and capabilities in bioengineered tissue modeling.

We have the industry's only standard catalog of human functional tissue assays to choose from, and we can customize projects to meet your specific needs. Having this insightful pre-clinical data early in discovery and development will help you to reduce the number of compounds that fail in the later stages.



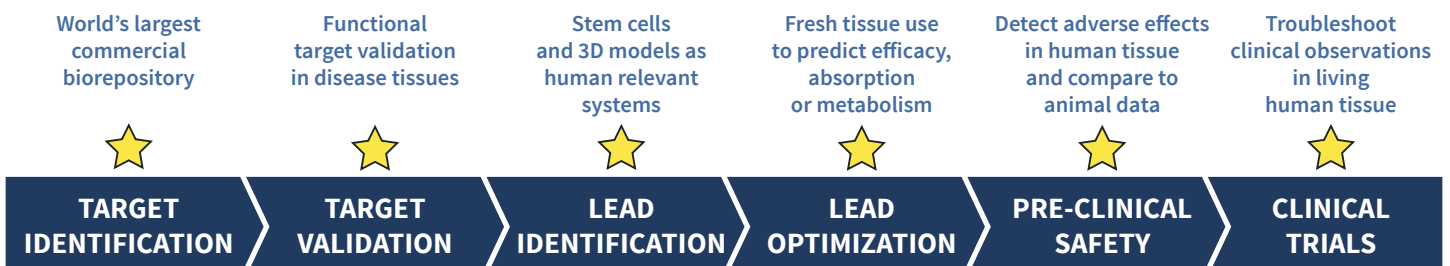
**REPROCELL's human tissue technology predicts clinical success by using the closest possible model of drug behavior in humans**



### Lab Testing Services include:

- Safety
- Efficacy
- ADME
- Comparative Pharmacology
- Clinical Biopsies
- Cardiac Assays
- Vascular Assays
- Respiratory Assays
- Gastrointestinal Assays
- Human Adsorption Assays
- Skin Assays / Skin Model Assays
- Genitourinary Assays
- Other

**REPROCELL's contract research services provide solutions across the entire drug discovery process.**



## REPROCELL Medical: Capabilities

The REPROCELL Medical business unit, newly formed in 2017, is leading the drive toward patient care and commercial support of the emerging regenerative medicine market. As basic research advances to translational medicine to pave the way for clinical testing in humans, the market needs are shifting toward regulatory compliant and high-grade chemical and biological materials. REPROCELL is developing a suite of reagents and services to meet the growing need for GMP-compliant clinical grade products and services that are appropriate for regenerative medicine in the Japan market.

In addition, REPROCELL labs offer diagnostic services for a variety of tests related to tissue compatibility, and other biomarkers. These diagnostic services are available only in the Japan market.

Finally REPROCELL, in partnership with Steminent Biotherapeutics (Taiwan), is preparing for clinical trials in Japan for the treatment of a rare form of a progressive neuro-degenerative disease (Spinocerebellar ataxia), using an enriched preparation of human mesenchymal stem cells (Stemchymal®) supplied by Steminent.

### Clinical Grade Products\*

- iPS cell culture medium
- iPS cryopreservation medium
- growth factors
- small molecules

### Clinical Grade Services\*

- iPS cell reprogramming

\* Some products & services in development

### Diagnostic Services

- HLA Identification (immuno)
- HLA Cross-match / Screening (immuno)
- HLA Typing (NGS)
- Tissue Rejection Exosome Assay

These ongoing efforts by REPROCELL Medical represent a shift in strategy from basic research toward precision medicine and clinical therapies. This is intended to support the emerging needs of the regenerative medicine commercial and medical market, and to propel REPROCELL into stem cell therapeutics in the coming years.



#### REPROCELL Europe Ltd

Thomson Pavillion,  
 Todd Campus,  
 West of Scotland Science Park,  
 Acre Road,  
 Glasgow G20 0XA, UK

**Tel:** +44 (0)141 465 3460  
**Email:** info-emea@reprocell.com

#### REPROCELL USA Inc

9000 Virginia Manor Road,  
 Suite 207  
 Beltsville,  
 MD 20705, USA

**Tel:** (301) 470 3362  
**Email:** info-us@reprocell.com

#### REPROCELL Inc (Japan)

KDX Shin-yokohama 381 Bldg9F  
 3-8-11, Shin-yokohama,  
 Kohoku-ku, Yokohama,  
 Kanagawa 222-0033,  
 Japan

**Tel:** +81 45 475 3887  
**Email:** info-asia@reprocell.com

reprocell.com

