

#1 FETAL BOVINE SERUM

GLOBALLY TRUSTED BY RESEARCHERS

- ✓ High Purity & Low Endotoxin
- ✓ Certified Origin & Full Traceability
- ✓ Consistent Results, Every Batch



Featured in
**2012 Nobel
Prize-Winning
Stem Cell Research**

Yamanaka S. et al. (2007).
Cell, 131(5): 861–872.
<https://doi.org/10.1016/j.cell.2007.11.019>

“ For these studies we selected only the best supplements... Biowest FBS appeared equivalent in **promoting healthy looking cells that were largely neurosphere-free, and showed good proliferation** ”

— *Cell Medicine, Vol. 10, Human Cells Grown With or Without Substitutes for Fetal Bovine Serum*

NOW AVAILABLE

**BROWSE YOUR
FBS TODAY!**



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biowest
The Serum Specialist



#1 BEST SELLING FETAL BOVINE SERUM



ABOUT FETAL BOVINE SERUM (FBS)

Fetal Bovine Serum (FBS) is the liquid part of the blood depleted of the cellular fraction and coagulation factors. It is extracted after centrifugation of coagulated fetal bovine blood collected aseptically. Sterile FBS is obtained by triple filtration of 0.1µm.

FBS contains proteins and growth factors allowing maintenance and proliferation of eukaryote cells in vitro. It also contains attachment factors that create a “coating” effect on the plastic of the support, thus increasing cell adhesion. It is an essential product in cell culture because of the different components it provides.

All FBS batches are tested for endotoxin and mycoplasma levels, specific viruses testing (BVD), hemoglobin and total protein rates and cell culture performance.

Biowest FBS is collected or imported and processed in full compliance with European regulatory standards. The geographic origin of all serum is precisely documented and guaranteed by Biowest to ensure traceability and reproducibility in sensitive research applications.



PRODUCT SPECIFICATION

Volume	State	Storage	Shipping conditions
500 mL	Frozen	-18°C to -40°C	Gel pack, dry ice or refrigerated
Shelf life	Sterility	Application	
60 months	Sterile filtered	<ul style="list-style-type: none"> • Cell culture • Biotechnology research/ production • Vaccine manufacturing 	

Why Specialised FBS?

BECAUSE STANDARD FBS DOESN'T FIT EVERY CELL TYPE



Not all FBS is created equal.

Generic FBS may support basic cell growth – but for high-stakes research, it's **not enough**.

In highly sensitive research areas like **embryonic stem cells**, **exosome isolation**, or **regenerative medicine**, the quality of your serum can make or break your results.

Yet, in a landscape where low-cost options dominate, many researchers unknowingly compromise:



✗ Poor batch-to-batch consistency



✗ Hidden contaminants



✗ Lack of traceability or testing transparency

SPECIALISED FBS DESIGNED FOR SENSITIVE APPLICATIONS

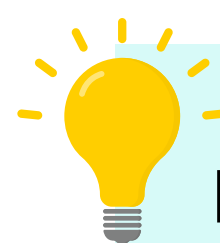
Traceable. Tested. Trusted.



Specialised FBS is designed for **sensitive, application-specific protocols** where reproducibility, purity, and batch performance are **non-negotiable**. In translational research and clinical innovation, there's no room for batch variability or contamination risks. Whether you're optimising a stem cell line, isolating extracellular vesicles, or preparing for scale-up – your serum must be tailored, traceable, and tested.

When should you switch to specialised FBS?

- Working with pluripotent or embryonic stem cells
- Studying extracellular vesicles or exosomes
- Running hormone-sensitive assays
- Using inducible gene expression systems
- Scaling up preclinical or translational studies



Did You Know?

Some of our customers report **>95%** cell viability in sensitive stem cell cultures using Biowest FBS products.

Your cells deserve the right environment. Specialised FBS ensures they get it.

FROM RESEARCH HURDLES TO RELIABLE RESULTS — WE'VE GOT THE SERA YOU NEED

Every breakthrough starts at the bench—but getting there often comes with hidden variables: inconsistent results, undefined components, and the constant struggle to match your experimental design with the right serum.

Whether you're working on sensitive stem cell assays, extracellular vesicle research, or hormone-driven pathways, your serum choice matters more than ever.

At Atlantis Bioscience, we understand the challenges of serum variability, reproducibility, and specialised assay demands. Here are some of our **most requested, high-performance specialised FBS products** designed to meet your evolving needs:



Fetal Bovine Serum (FBS) South America, Tetracycline Free

SKU: 181T-500

For inducible gene expression systems where even trace antibiotics can confound results.



Fetal Bovine Serum (FBS) South America, Charcoal stripped

SKU: S181F-500

Ideal for hormone-sensitive assays and receptor biology, free from endogenous steroids and lipophilic factors.



Fetal Bovine Serum (FBS) South America, E.V. Depleted

SKU: S181M-500

Optimised for extracellular vesicle and exosome research to ensure purity and signal clarity.



Fetal Bovine Serum (FBS) South America, Embryonic Stem Cell Tested

SKU: S181S-500

Ideal for embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs).



Fetal Bovine Serum (FBS) South America, Dialysed

SKU: S181D-500

For metabolic studies where nutrient control is critical.



Fetal Bovine Serum (FBS) South America, Lipid Depleted

SKU: S181L-500

A refined serum ideal for exosome studies, autophagy research, and lipid-sensitive applications.

YOUR ONE-STOP SERA PROVIDER — SUPPORTING YOU FROM BENCH TO BEDSIDE

Need guidance choosing the right sera for your model system? Reach out to our [technical team](#) and we'll help you find the best fit for your protocol.



WHY BIOWEST FBS



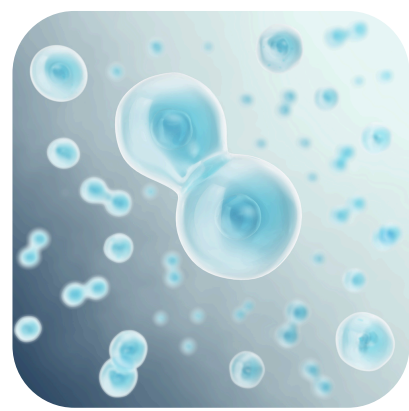
BATCH-TO-BATCH CONSISTENCY

Every bottle is fully traceable to source—ensuring reproducible results with every lot.



PURITY YOU CAN TRUST

Low endotoxin (≤ 10 EU/mL), low hemoglobin (≤ 25 mg/dL), Mycoplasma & virus free and debris-free



VALIDATED PERFORMANCE

Tested across gold-standard cell lines (HELA, L929, SP2/0-AG14, MRC-5) for optimal growth, plating, and cloning efficiency.



GLOBALLY CERTIFIED PRODUCTION

Manufactured in ISO 9001:2008 and ISO 13485:2012 certified facilities.

GLOBALLY TRUSTED BY RESEARCHERS



Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors

Kazutoshi Takahashi,¹ Koji Tanabe,¹ Mami Ohnuki,¹ Megumi Narita,^{1,2} Tomoko Ichisaka,^{1,3} and Shinya Yamanaka^{1,4,5}

SUMMARY
Successful reprogramming of differentiated human somatic cells into a pluripotent state would allow creation of patient- and disease-specific stem cells. We previously reported generation of induced pluripotent stem (iPS) cells, capable of germline transmission, from mouse somatic cells by transduction of four defined transcription factors. Here, we demonstrate the generation of iPS cells from adult human dermal fibroblasts with the same four factors: Oct3/4, Sox2, Klf4, and c-Myc. Human iPS cells were similar to human embryonic stem (ES) cells in morphology, proliferation, surface antigens, gene expression, epigenetic status of pluripotent cell-specific genes, and telomerase activity. Furthermore, these cells could differentiate into cell types of the three germ layers in vitro and in teratomas. These findings demonstrate that iPS cells can be generated from adult human fibroblasts.

INTRODUCTION
Embryonic stem (ES) cells, derived from the inner cell mass of mammalian blastocysts, have the ability to grow indefinitely while maintaining pluripotency (Gunn and Kaufman, 1981; Martin, 1981). These properties have led to expectations that human ES cells might be useful to understand disease mechanisms, to screen effective and safe drugs, and to treat patients of various diseases and injuries, such as juvenile diabetes and spinal cord injury (Thomson et al., 1998). Use of human embryos, however, faces ethical controversies that hinder the applications of human ES cells. In addition, it is difficult to generate patient- or disease-specific ES cells, which are required for their effective application. One way to circumvent these

issues is to induce pluripotent status in somatic cells by direct reprogramming (Tanabe et al., 2007). We showed that induced pluripotent stem (iPS) cells can be generated from mouse embryonic fibroblasts (MEF) and adult mouse tail tip fibroblasts by the non-viral-mediated transfection of four transcription factors, namely Oct3/4, Sox2, c-Myc, and Klf4 (Takahashi and Yamanaka, 2006). Mouse iPS cells are indistinguishable from ES cells in morphology, proliferation, gene expression, and teratoma formation. Furthermore, when transplanted into diabetogenic mice, mouse iPS cells can give rise to adult pancreas, which are competent for germline transmission (Bhargava et al., 2007; Okita et al., 2007; Wang et al., 2007). These results are proof of principle that pluripotent stem cells can be generated from somatic cells by the combination of a small number of factors.

RESULTS
Optimization of Retroviral Transduction for Generating Human iPS Cells
Induction of iPS cells from mouse fibroblasts requires retroviruses with high transduction efficiencies (Takahashi and Yamanaka, 2006). We, therefore, optimized transduction methods in adult human dermal fibroblasts (HDF). We first introduced green fluorescent protein (GFP) into adult HDF with an electroporation protocol in PLAT-A packaging cells. As a control, we introduced GFP to mouse embryonic fibroblasts (MEF) with electroporation protocol in PLAT-E packaging cells (Morita et al., 2005). In MEF, more than 80% of cells expressed GFP (Figure 3). In contrast, less than 20% of HDF expressed

Cell 131, 861–872, November 30, 2007 ©2007 Elsevier Inc. 861

FEATURED IN NOBEL PRIZE-WINNING STEM CELL RESEARCH

Biowest FBS was used in the embryonic stem cell study that led to the **2012 Nobel Prize in Medicine and Physiology**



FEATURED IN PEER-REVIEWED STUDIES

"For these studies we selected only the **best supplement...** Biowest FBS was **debris-free.**"

Cells, Vol. 12, Issue 3



Peptides, Vol. 155, Issue 1



scientific reports



Takahashi, K., Tanabe, K., Ohnuki, M., Narita, M., Ichisaka, T., Tomoda, K., & Yamanaka, S. (2007). Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors. *Cell*, 131(5), 861–872. <https://doi.org/10.1016/j.cell.2007.11.019>

Scientific Reports, Vol. 13, Issue 1

Cell Medicine, Vol. 10.

VIEW OUR FBS CATALOG

Type	Catalogue #
Fetal Bovine Serum (FBS), South America	S1810
Fetal Bovine Serum (FBS) South America, Biopharm grade	S181A
Fetal Bovine Serum (FBS) South America, Premium	S181B
Fetal Bovine Serum (FBS) South America, Dialysed	S181D
Fetal Bovine Serum (FBS) South America, Charcoal stripped	S181F
Fetal Bovine Serum (FBS) South America, Iron Supplemented	S181G
Fetal Bovine Serum (FBS) South America, Heat Inactivated	S181H
Fetal Bovine Serum (FBS) South America, Ultra-Low IgG	S181I
Fetal Bovine Serum (FBS) South America, Lipid Depleted	S181L
Fetal Bovine Serum (FBS) South America, E.V. Depleted	S181M
Fetal Bovine Serum (FBS) South America, Gamma Irradiated	S181R
Fetal Bovine Serum (FBS) South America, Embryonic Stem Cell Tested	S181S
Fetal Bovine Serum (FBS) South America, Tetracycline Free	S181T
Fetal Bovine Serum (FBS) South America, Ultra-low Endotoxin	S1860
Fetal Bovine Serum (FBS) EU, USDA approved	S1400
Fetal Bovine Serum (FBS) EU, Premium	S140B
Fetal Bovine Serum (FBS), USA	S1520
Fetal Bovine Serum (FBS) USDA Approved Origin	S1620
Fetal Bovine Serum (FBS) Chile, USDA approved	S1560
Fetal Bovine Serum (FBS) Uruguay	S1580
Fetal Bovine Serum (FBS) Central America, USDA approved	S1600
Fetal Bovine Serum (FBS) Mexico, USDA approved	S1650
Fetal Bovine Serum (FBS) Oceania, USDA approved	S1700
Fetal Bovine Serum (FBS) South Africa	S1300
Mixed Fetal Bovine Serum (FBS) (African Origin)	S1000
Mixed Fetal Bovine Serum (FBS) (American Origin)	S1010
Mixed Fetal Bovine Serum (FBS) (European Origin)	S1020

ABOUT ATLANTIS BIOSCIENCE

Atlantis Bioscience is the master distributor of Biowest products in Southeast Asia, delivering premium cell culture reagents and certified sera from our Singapore hub to empower researchers across the region. As a dedicated life science distributor, we support our customers in discovering the right solutions for their scientific needs. Our global distribution network spans Southeast Asia, China, and beyond—ensuring scientists have access to high-performance tools that drive innovation from lab to life.

'Providing the finest bench-to-bed support to power you in making a difference.'

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