

# M O N T A N A

美 國 蒙 大 拿 州

rmbio

Rocky Mountain Biologicals

Cell Culture Supplement  
Development & Production

細胞培養補充劑的開發與生產



我們為全球的研究室、生物加工及臨床診斷產業，提供細胞培養基和細胞培養基補充劑、血清及蛋白質分離產品



產品包括

- 血清

- 細胞培養補充劑

- 蛋白質分餾物

- 細胞培養基

- sera

- cell culture supplements

- protein fractions

- cell culture media

## 明星產品 Fetalgro EX®

Bovine Growth Serum (Premium FBS Replacement)



台灣代理商



富利瀚生物科技有限公司  
FoliBio Technology Co., Ltd.



# rmbio

RMBIO specializes in the development and production of cell culture media supplements, sera, and protein fractions for the global research, bioprocessing, and clinical diagnostic industries.

## Serum & Alternatives



FBS, bovine, equine, porcine,  
& serum alternatives

## Cholesterol Solutions



Porcine and bovine cholesterol  
concentrate

## Protein Fractions



BSA, thrombin, fibrinogen,  
& porcine trypsin

## Classical Media



DMEM, MEM, trypsin EDTA, & RPMI

## Balanced Salt Solutions



PBS, DPBS, & HBSS

## Custom Products



Custom media, buffers, filtration,  
& formulation assistance



## Serum

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All raw serum is sourced from USDA-approved suppliers and is processed in our cGMP-compliant and FDA-registered facility. RMBIO is one of 15 companies globally to have earned the International Serum Industry Association (ISIA) Certificate of Traceability after a rigorous, independent third-party audit.

### Fetal Bovine Serum

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- Dialyzed FBS
- IgG depleted FBS
- Stem cell qualified FBS
- Premium & standard grade FBS

### Other Bovine Serum

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- Newborn bovine calf serum
- Formula fed calf serum
- Iron fortified calf serum
- Adult bovine serum

### Other Serum

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- Donor equine serum
- Porcine serum

### Serum Treatments

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- Heat inactivation
- Gamma irradiation
- Dialysis

### Serum Alternatives

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- Fetalgro®
- Fetalgro EX®
- Lipogro®

### Custom Products

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Whether you're searching for biological filtration services, a manufacturing partner to produce a proprietary media or buffer product, seeking expert assistance to modify an existing formula, or the convenience of in-house quality testing capabilities, RMBIO is well equipped to meet your needs.

RMBIO's state of the art, FDA registered, and cGMP compliant facility is designed for sterile liquids manufacturing and packaging. Our high-volume production capacity allows us to regularly process lot sizes of 100L to thousands of liters. Automated bottle filling lines optimized for a variety of industry standard packaging formats, help minimize production time.

### Cholesterol Solutions

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- Bovine Cholesterol Concentrate
- Porcine Cholesterol Concentrate
- Lipogro Premium Bovine Cholesterol Concentrate

### Classical Media

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- DMEM
- MEM
- RPMI 1640
- Trypsin EDTA

### Transport Medium

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- Viral Transport Medium
- Liquid Amies

### Protein Fractions

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- Bovine Serum Albumin
- Bovine Thrombin
- Bovine Fibrinogen
- Porcine Trypsin

### Balanced Salt Solutions

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- PBS
- DPBS
- HBSS

# rmbio **serum**

For over 20 years, RMBIO has been a trusted supplier of the highest quality sera to the life science, research, and bioprocessing industries. Our commitment to quality is exemplified by our status as one of only 17 companies globally to earn the prestigious International Serum Industry Association (ISIA) Certificate of Traceability following a rigorous, independent third-party audit. Discover the exceptional quality of RMBIO's sera products and learn how they can enhance your research and bioprocessing results.

## Fetal Bovine Serum



## Newborn Bovine Calf Serum



## Formula Fed Bovine Calf Serum



## Iron Fortified Calf Serum



## Porcine Serum



## Equine Serum



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All RMBIO serum is sourced from USDA-approved suppliers and is processed in our cGMP-compliant and FDA-registered facility. Each lot is subject to strict processing protocols to ensure sterility, in-house and third-party testing to verify specification compliance, and is supported by a certificate of analysis.

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## Fetal Bovine Serum

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Sourced from USDA-approved suppliers within the US and from USDA approved countries, RMBIO Fetal Bovine Serum (FBS) is processed under strict protocols to ensure sterility, quality, and excellent growth-promotion. Our product line includes premium, dialyzed, IgG depleted, gamma irradiated, heat inactivated, and stem cell qualified FBS.

- Average endotoxin level: < 1 EU/mL (specification =  $\leq$  10.0 EU/ml)
- Average hemoglobin level: < 15 mg/dL (specification = < 30 mg/dL)
- Total protein: 3.0-4.5 g/dL

## Newborn Bovine Calf Serum

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RMBIO's Newborn Bovine Calf Serum (NBS) is a high-quality supplement for use in cell culture media. Our NBS is manufactured and processed according to the highest standards and is carefully monitored to ensure product safety and performance. RMBIO offers heat inactivated and gamma irradiated NBS.

- Average endotoxin level: < 2 EU/ml (specification =  $\leq$  35 EU/ml)
- Average hemoglobin level: < 20 mg/dl (specification = < 30 mg/dL)



## Formula Fed Bovine Calf Serum

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RMBIO produces high-quality, low hemoglobin, US origin calf serum derived from animals 20 days to 12 months old. Bovine calf serum provides a foundation for successful cell growth at a fraction of the price of FBS. Our calf serum product line includes heat inactivated and gamma irradiated serum options.

- Average endotoxin level: < 2 EU/ml (specification =  $\leq$  10.0 EU/ml)
- Average hemoglobin level: < 15 mg/dL (specification = < 30 mg/dL)

## Iron Fortified Calf Serum

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Supplementing calf serum with iron increases iron concentrations and maximizes delivery of iron to proliferating cells by transferrin, enabling the serum to bind three to four times more iron than FBS. The result is cell growth rates comparable to FBS at a fraction of the cost. Our serum is 0.2 $\mu$ m sterile filtered and is offered with heat inactivation and gamma irradiation treatment options.

- Average endotoxin level: < 2 EU/ml (specification =  $\leq$  10.0 EU/ml)
- Average hemoglobin level: < 15 mg/dL (specification = < 30 mg/dL)



## Porcine Serum

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Porcine serum is ideal for use as a cell culture media especially in vaccine production. Sourced from USDA audited and approved suppliers, RMBIO pig serum is 0.2 $\mu$ m sterile filtered and features low hemoglobin levels. Our porcine serum product line includes heat inactivated and gamma irradiated treated serum.

- 0.2  $\mu$ m filtered
- 9CFR tested

## Equine Serum

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RMBIO obtains donor horse serum from closed herds that are carefully controlled and inspected by veterinarians. Horses are regularly tested for equine infectious anemia using Coggins tests. Before collection, donor horses are fasted to ensure lower lipid levels. Our product line includes heat inactivated and gamma irradiated treatment options.

- 0.2 $\mu$ m sterile filtered
- 9CFR tested

# Fetalgro EX®

FBS replacement for a broad range of cell lines with no adaptation needed.



- Fetalgro EX is designed to meet or exceed the cell growth promotion characteristics of FBS in a wide range of cell lines. It can be applied directly to cells previously cultured with FBS without adaptation and can be used as an inexpensive FBS replacement in manufacturing, research, and development.
- RMBIO is committed to the development of high-performance FBS alternatives, reducing the burden of the increasing cost and varying supply of FBS.

- Fetalgro EX® matched or outperformed FBS' cell growth capabilities in 9 out of 11 cell lines when tested in-house, and showed only minor differences in 2 cell lines.
- Fetalgro EX® cultures resulted in 150% more growth than FBS cultures in the NIH-3T3 cell line.
- In-house studies saw 110-150% more cell growth with Fetalgro EX® than FBS in the MDCK, HEK293T, 3T3-L1, and SK-OV-3 cell lines.
- In-house studies showed 90-109% greater cell growth with Fetalgro EX® than with FBS in the CHO-K1, C2C12, Vero, HeLa, PC-3, and Huh7 cell lines.
- Can be used as an alternative in broad cell lines where FBS was previously used, without adaptation.
- Raw materials sourced from the USA.
- Manufactured at our state-of-the-art, GMP compliant facility.
- Strict endotoxin specification of < 10 EU/mL and hemoglobin specification of < 30 mg/dL.
- 9CFR tested for mycoplasma, sterility, and viral contamination.



RMBIO earned the International Serum Industry Association (ISIA) Certificate of Traceability after a rigorous, independent third-party audit. The ISIA is the global leader for establishing, promoting and assuring compliance with uncompromising standards of excellence in the global animal serum and animal derived products supply industry. Certification demonstrates RMBIO's full compliance with ISIA traceability standards from abattoir to customer. RMBIO is honored to be a member of this prestigious association.

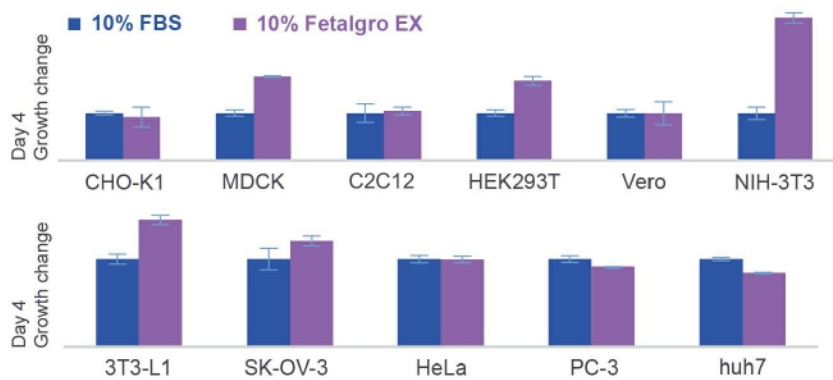
### Cell Growth Comparison of 10% Fetalgro EX® vs 10% FBS

Results of a four day CHO-K1 cell growth test comparing 10% Fetalgro EX® culture to the control (10% fetal bovine serum culture (FBS)).



Results comparing cell growth rate of 10% Fetalgro EX® to 10% FBS in 11 common cell lines.

Cell line	Cell growth
CHO-K1	+
MDCK	++
C2C12	+
HEK293T	++
Vero	+
NIH-3T3	+++
3T3-L1	++
SK-OV-3	++
HeLa	+
PC-3	+
Huh7	+

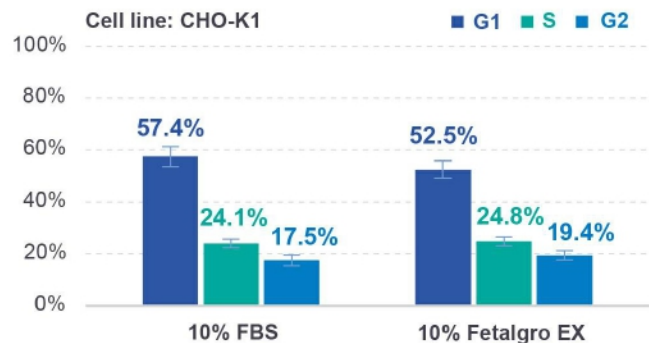


+ 90-109% cell growth compared to 10% FBS  
 ++ 110-150% cell growth compared to 10% FBS  
 +++ More than 150% cell growth compared to 10% FBS

### Cell Cycle Test

Cell cycle comparison of iron fortified bovine calf serum culture to control (10% FBS culture) using flow cytometry.

10% FBS	% AVG	% CV
G1 Phase	57.4%	3.7%
Synthesis	24.1%	1.6%
G2 Phase	17.5%	2.1%
10% Fetalgro EX®	% AVG	% CV
G1 Phase	52.5%	3.3%
Synthesis	24.8%	1.7%
G2 Phase	19.4%	1.8%



Performance comparison of FBS and Fetalgro EX® data provided by Welgene Inc. R&D, Oct. 2020.

**RMBIO Fetalgro EX® part numbers:**  
 FGX-BBT-5XM = 500ml, FGX-BBT-SMP = 50ml