

# ioSkeletal Myocytes

Human iPSC-derived skeletal myocytes

EA1200S; EA1200L

# ioSkeletal Myocytes

## Product Specifications

|                                   |   |
|-----------------------------------|---|
| Catalogue number                  | EA1200S & EA1200L   |
| Product is available in two sizes | EA1200S: Small – can plate a minimum 0.5 x 24-well plate ( $2.5 \times 10^6$ viable cells/vial)<br>EA1200L: Large – can plate a minimum of 1 x 24-well plate ( $5 \times 10^6$ viable cells/vial)             |
| Viability                         | >85%  |
| Seeding Density                   | 100,000 cells/cm <sup>2</sup>   |
| Seeding Compatibility             | 6-, 12-, 24-, 96- and 384-well compatible   |
| Quality Control                   | — Immunocytochemistry (MYOG, DESMIN, DMD, MF20)<br>— Gene expression analysis (MYOG, DMD, DESMIN, TNNT1, MYH2, MYH3, MYH8, OCT4, NANOG)   |
| Shipping info                     | Shipped on dry ice  |
| Storage instructions              | Store in liquid nitrogen  |
| Storage buffer                    | 90% CTS-KOSR / 10% DMSO   |
| Tested Applications               | High throughput screening<br>ICC/IF<br>Contraction assays<br>Western blot   |
| Product Applications              | Muscle research<br>Neuromuscular junction research<br>Metabolic research<br>Drug development<br>High-throughput screening<br>Genetic screening (e.g. CRISPR screening)<br>Contractions assays<br>3D coculture |

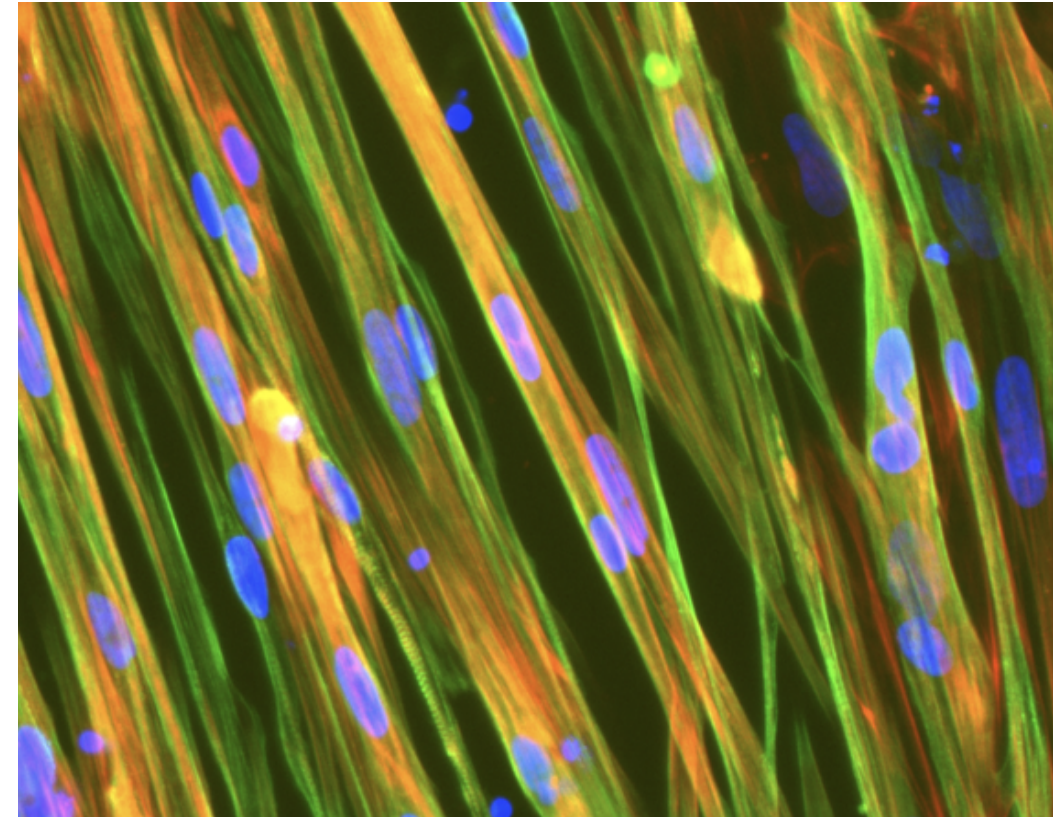




# Consistent and reliable human muscle cells for research, disease modelling and HTS

Generated from hiPSCs by MYOD driven opti-ox reprogramming

- Immunofluorescence staining at Day 10 post revival demonstrates robust expression of **components of the contractile apparatus** including Desmin, Dystrophin, and Myosin Heavy Chain, along with the muscle transcription factor Myogenin.
- Cells demonstrate expression of Troponin with **visible striated fibres, and multinucleation**.
- Following reprogramming, ioSkeletal Myocytes robustly downregulate expression of pluripotency markers SOX2 & OCT4A1 and begin to express **myosin heavy chain isoforms** MYH3 and MYH8.
- Through continued culture, cells demonstrate **expression of mature myosin isoforms** MYH7 and MYH1, along with **Desmin, Dystrophin, Myogenin and Titin**.
- Critically for metabolic studies, cells **express GLUT4** by Day 7 post revival.
- Cells are available at **scale, easy to culture** and ready for experiments **within days**.
- Cells exhibit **spontaneous contraction** in culture and demonstrate a strong **contractile response** upon the addition of acetylcholine.



Troponin/Phalloidin/DAPI

# Easy-to-use and ready for experimentation within days post-revival

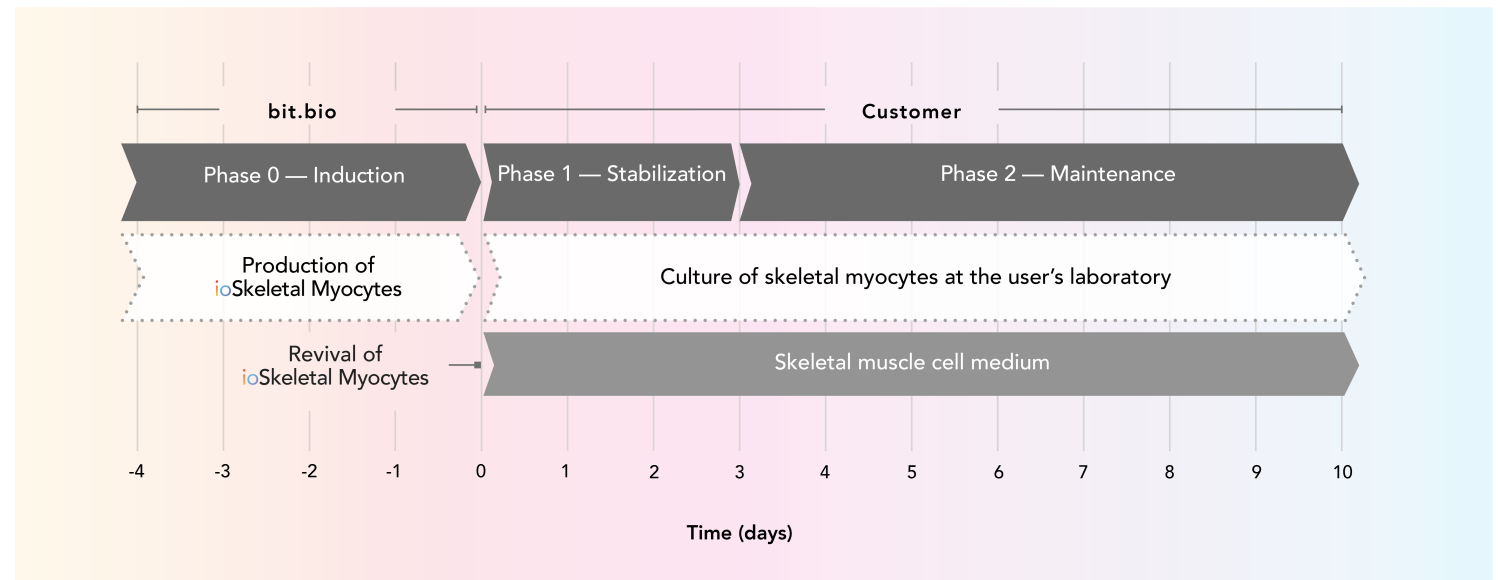
Programmed to rapidly mature upon revival in a simple two-step protocol

## RAPID MATURATION

- ioSkeletal Myocytes are delivered in a cryopreserved format and are programmed to rapidly mature upon revival in the recommended media.
- ioSkeletal Myocytes are ready for experiments as soon as day 2 post-revival and contractility can be assessed as early as 3 days post-revival.

## SIMPLE CULTURE

- Cells are kept in a single culture medium formulation from revival with fully disclosed composition allowing modifications to fit customer's bespoke experiments.

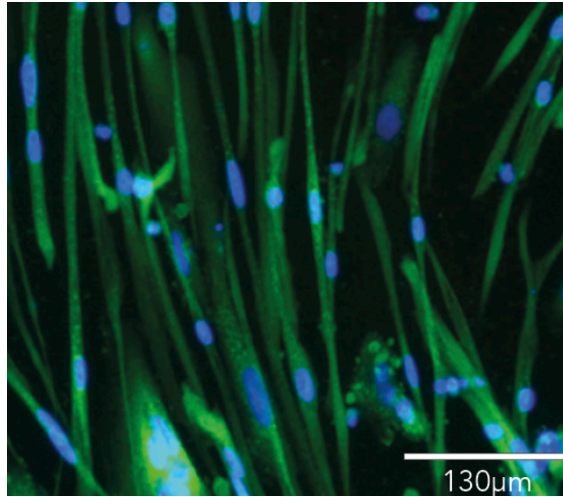




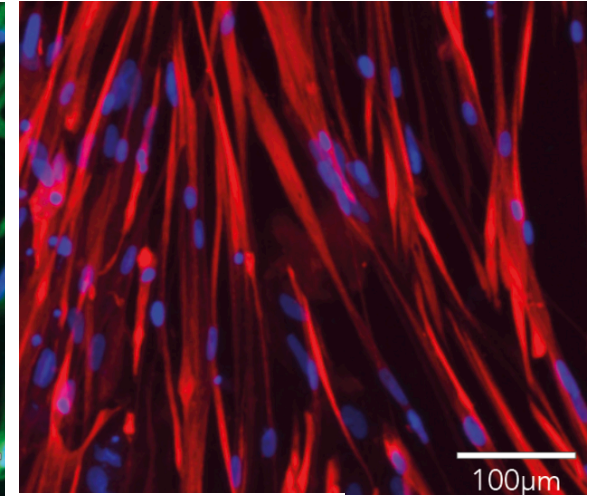
# High purity skeletal myocytes express myofilament proteins

## Form visible striated fibres and multinucleation

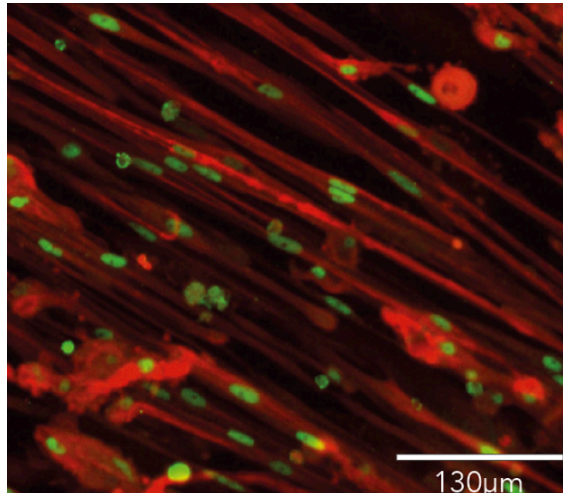
Immunofluorescence staining at day 10 post revival demonstrates robust expression of components of the contractile apparatus, including Desmin (A), Dystrophin (B), and Myosin Heavy Chain (C), along with the muscle transcription factor Myogenin (C). Cells also demonstrate expression of Troponin with visible striated fibres and multinucleation (D).



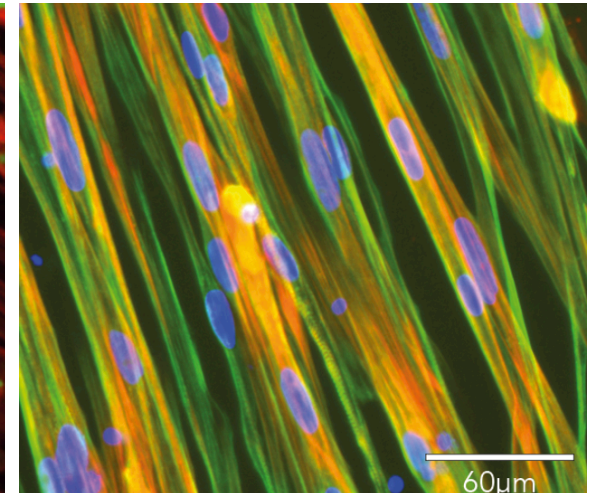
A. Desmin/DAPI



B. Dystrophin/DAPI



C. Myogenin/MHC



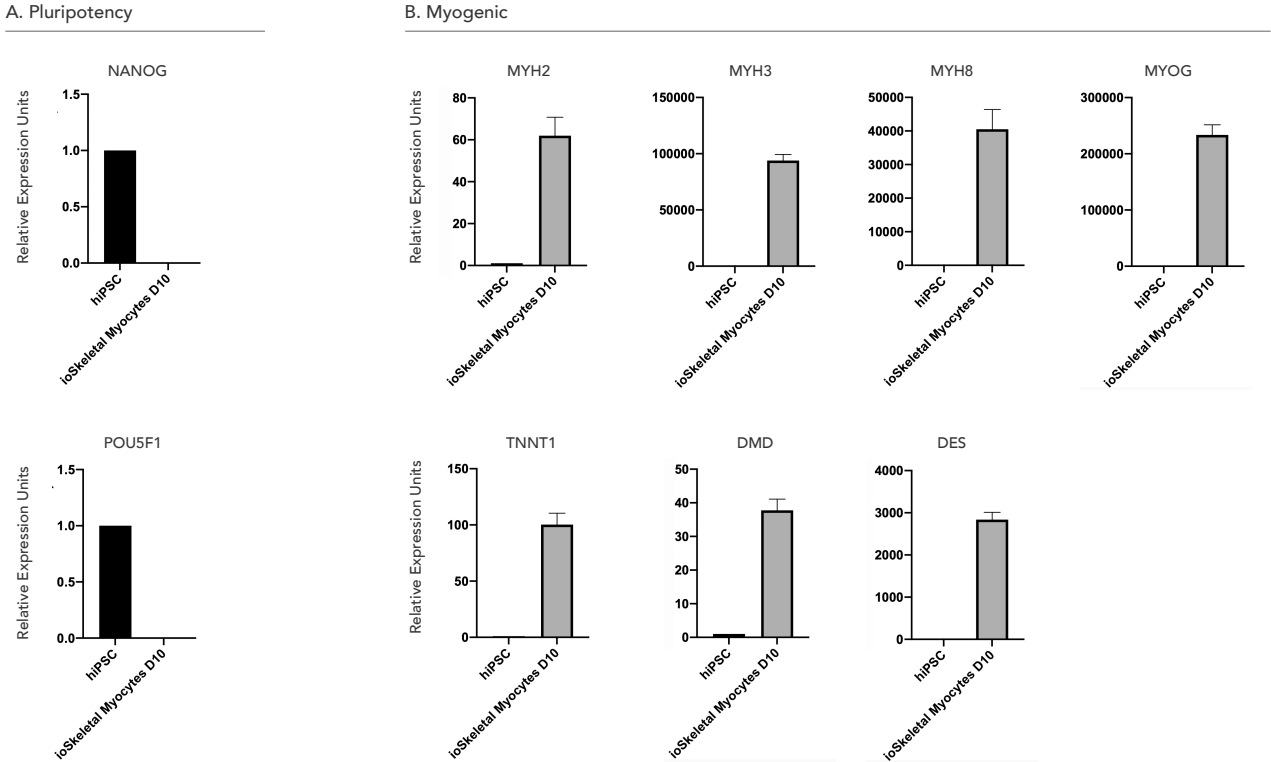
D. Troponin/Phalloidin/DAPI

# Cells demonstrate gene expression of key myogenic markers following reprogramming

Following reprogramming, ioSkeletal Myocytes downregulate expression of the pluripotency genes (A), whilst demonstrating robust expression of key myogenic markers (B).

Gene expression levels assessed by RT-qPCR (data expressed relative to the parental hiPSC, normalised to HMBS).

Data represents Day 10 post-revival samples; n=7 biological replicates.



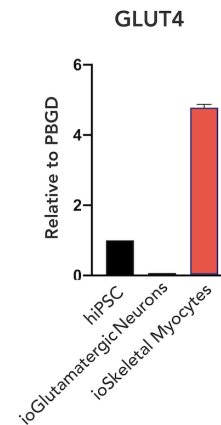
# Unique human muscle cell model for metabolic research

## Myocytes express the insulin-regulated glucose transporter GLUT4

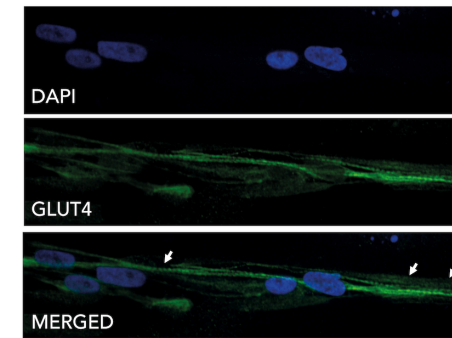
Critically for metabolic studies, data demonstrates expression of the insulin regulated glucose transporter GLUT4:

- (A) RT-qPCR at Day 10 post-revival demonstrating expression of GLUT4 in the Skeletal Myocytes, compared to undifferentiated hiPSCs and ioGlutamatergic Neurons.
- (B) Immunocytochemistry at Day 7 post-revival demonstrates expression of GLUT4 in peri-nuclear regions, and striations, in the ioSkeletal Myocytes\*.
- (C) Western blotting of differentiated 3T3-L1 adipocytes and maturing ioSkeletal Myocytes demonstrates GLUT4 expression in a time-dependent manner\*.

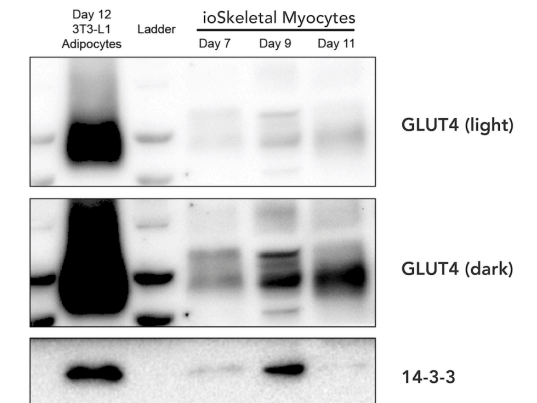
A. Gene expression



B. Immunocytochemistry



C. Western blotting



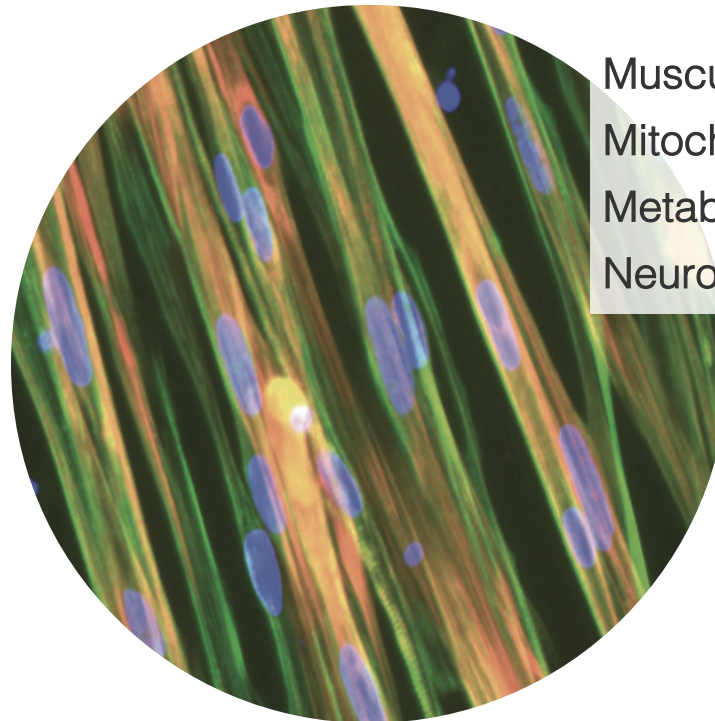
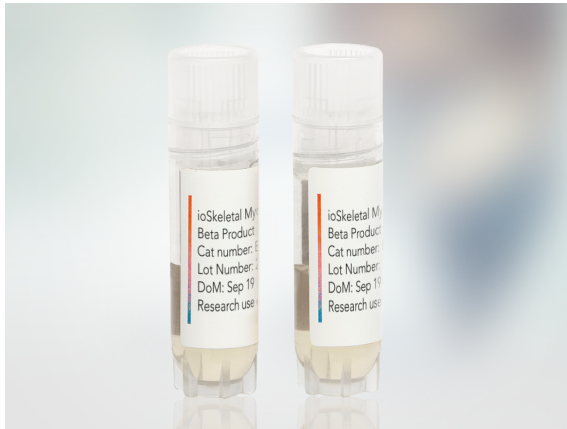
\* Dougall Norris & Daniel Fazakerley, Wellcome-MRC Institute of Metabolic Science



# Consistent and reliable human muscle cells for research, disease modelling and HTS

First of its kind human iPSC-derived skeletal myocytes

## ioSkeletal Myocytes



Muscular Dystrophy  
Mitochondrial diseases  
Metabolic diseases  
Neuromuscular junction

- Striated and multinucleated myofibers
- Express Dystrophin and GLUT4 glucose transporter
- Contract in response to acetylcholine
- Easy to use and ready for experiments within days

### Applications:

- Target validation & drug screening in pharmaceutical R&D
- High-throughput screening
- Genetic screening (e.g. CRISPR)
- Contractility assays
- 3D cocultures

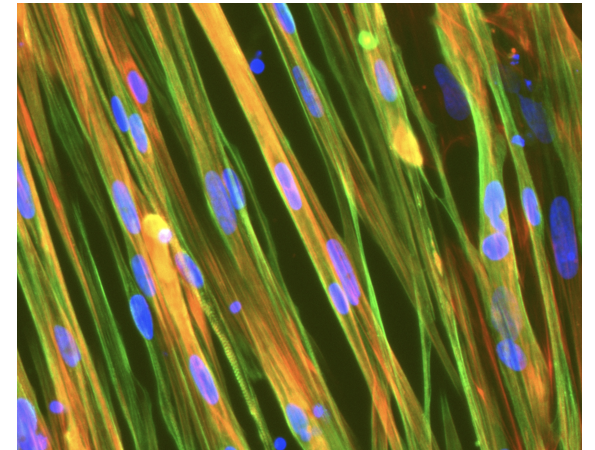
# Consistent at scale, easy-to-use and highly-defined

Enabled by **opti-ox**

## Cell characteristics that inspire confidence

- **First of its kind**, iPSC derived muscle cells provide a **physiologically relevant model** for research of muscle, neuromuscular and associated metabolic diseases.
- **Rapid maturity** – ready for experimentation **within days post-revival**, compared to classical differentiation that take weeks to achieve similar results.
- **Defined cell identity** – characterized by ICC and gene expression.
- **Batch to batch reproducibility** and homogeneity create a stable human model for research and drug development.
- **Industrial scale quantities** at a price point that allows the cells to be used from research to screening scale.
- **Cost-effective** – starting at £11.65/cm<sup>2</sup> for non-profit and £28.00/cm<sup>2</sup> for industry.
- **Ready-to-culture** cells are easy to use – one open-sourced medium required in a **simple two-step protocol**.
- **Available in two vial sizes**, tailored to suit your experimental needs with minimal waste.

## ioSkeletal Myocytes



# Get in touch

**bit.bio**

The Dorothy Hodgkin Building  
Babraham Research Campus  
Cambridge CB22 3FH  
United Kingdom



 @bitbio  bit.bio [info@bit.bio](mailto:info@bit.bio) [www.bit.bio](http://www.bit.bio)