cyagen | OriCell

User Manual

OriCell™ Rat Dorsal Root Ganglion Neuron Cells

Catalog No. SDDRG-00001

We help you discover life

Introduction

Rat dorsal root ganglion (DRG) neurons are isolated from spinal dorsal root ganglia. Sensory neuroblasts extend axons in bundled formations that enter the dorsal aspect of the neural tube bilaterally. At this stage, the spinal ganglia are referred to as dorsal root ganglia (DRG). Neurons, the fundamental structural and functional units of the nervous system, vary greatly in size and morphology within the central nervous system. However, they universally possess a cell body (soma), dendrites, and an axon.

The cell body, also known as the perikaryon, contains neurofilaments, microtubules, endoplasmic reticulum, free ribosomes, and a nucleus with a prominent nucleolus. Dendrites and axons are neuronal processes responsible for transmitting electrical impulses between neurons. These processes vary in size and morphology, making it difficult to distinguish them clearly under conventional light microscopy.

The spinal dorsal root ganglion is a major component of the peripheral nervous system and serves as a primary relay station for sensory signal transmission. The isolation of DRG neurons is a technically demanding procedure, requiring the rapid dissection of dorsal root ganglion tissue under a stereomicroscope to obtain sufficient viable material within a limited time window.

OriCell™ Rat Dorsal Root Ganglion Neuron Cells are derived from Sprague-Dawley (SD) rats. They provide a valuable in vitro model for neuroscience research, including studies of peripheral nervous system myelination, neurotrophic factor function and receptor distribution, neuronal aging, gene therapy, and tissue engineering.

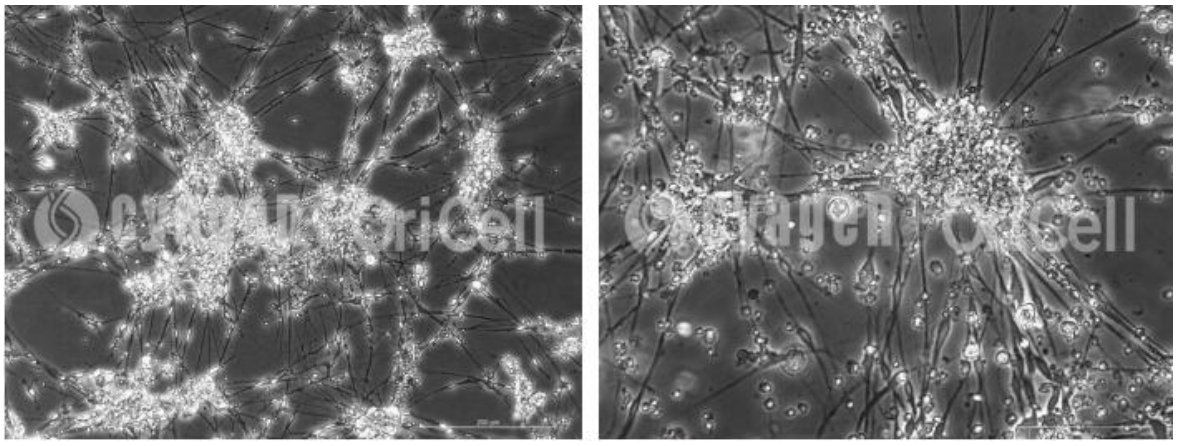
Note: **This product is intended for research use only and is not for diagnostic, therapeutic, clinical, household, or any other applications.**

When citing our products in academic publications, please use the following format: "OriCell™ [Product Name] + [Catalog Number], from Cyagen Biosciences."

Product Information

Product Name	OriCell™ Rat Dorsal Root Ganglion Neuron Cells
Catalog Number	SDDRG-00001
Amount of Cells	1×10^6 cells/vial
Passage Number	P0
Storage at	Liquid Nitrogen (-196 °C)

The Morphology of OriCell™ Rat Dorsal Root Ganglion Neuron Cells



QC

- Pass the detection of bacteria, fungi, mycoplasma, and endotoxins.
- Verified by cell recovery testing, with a post-thaw viability of > 50%.
- Verified by flow cytometry: Positive for β-tubulin III (> 70%).

Please refer to "COA" for details.

General Handling Principles

1. Maintain strict aseptic technique. Ensure complete sterility throughout all procedures, particularly within the laminar flow hood and incubator.
2. Follow standardized protocols. Adhere strictly to the product manual. Implement rigorous control over experimental variables and include appropriate parallel controls.
3. Use high-quality consumables and reagents. This product requires culture vessels suitable for adherent growth, and the reuse of these vessels is not recommended. The reagents used must be validated for reliability, cell compatibility, and batch-to-batch consistency.
4. Optimize seeding density and subculture. The recommended seeding density for OriCell™ Rat Dorsal Root Ganglion Neuron Cells is $(2-3) \times 10^5$ live cells/cm^2. Since cell growth is highly dependent on donor characteristics and culture conditions, we recommend adjusting the split ratios based on the actual performance of each specific lot and passage.

Note: **The cryopreservation medium of this product contains DMSO, which has potential risks. Please handle it carefully.**

Preparation of Culture Vessels (PLL & Laminin Coating)

Materials Required

- OriCell™ Phosphate-Buffered Saline Solution (1X) (Cat. No.: PBS-10001)
- 24-well Cell Culture Plate
- OriCell™ Poly-L-lysine Solution (Cat. No.: PLLY-10001)
- Laminin

Steps

1. Prepare PLL/Laminin-coated culture vessels at least one day before initiating the experiment.
2. Dilute Poly-L-lysine (PLL) with ultrapure water or Water for Injection (WFI) to a final concentration of 15 μg/mL (PLL working solution).
3. Add 0.5 mL of the PLL working solution to each well of a 24-well plate, ensuring the entire bottom surface is evenly covered.
4. Incubate at room temperature for at least 30 minutes.
5. Aspirate the PLL solution and gently wash each well once with 1 mL of ultrapure water or WFI.
6. Dilute Laminin with PBS to a final concentration of 15 μg/mL (Laminin working solution).
7. Add 0.5 mL of the Laminin working solution to each well, ensuring the entire bottom surface is evenly covered. Seal the plate with parafilm and incubate at 4 °C overnight.

   Note:

   (1) **Ensure that no air bubbles remain on the bottom surface of the wells during PLL or Laminin coating.**

   (2) **Laminin-coated culture plates may be stored at 4 °C for up to one week and should be used within this period.**

8. Before cell seeding, aspirate the Laminin solution, wash each well once with PBS, and allow the plate to air dry.

Thawing and Culturing of Cells

Materials Required

- OriCell™ Rat Dorsal Root Ganglion Neuron Cells (Cat. No.: SDDRG-00001)
- OriCell™ Complete Medium For Rat Dorsal Root Ganglion Neuron Cells (Cat. No.: RADRG-90011)

Steps

Note: **If thawing is planned within 24 hours of receipt, store the cells in an ultra-low temperature freezer at -80 °C. For long-term storage (>24 hours) , keep them in liquid nitrogen. Before thawing, transfer the cells from liquid nitrogen to -80 °C and hold them there for 10 minutes. This will allow any residual liquid nitrogen to evaporate and prevent vial explosion.**

1. Pre-warm the water bath to 37 °C.
2. Warm the complete medium to 37 °C.
3. Add at least 5 mL of pre-warmed complete medium to a 15 mL centrifuge tube for subsequent use.
4. Remove the cryovial containing cells from the −80 °C freezer, immerse it in the 37 °C water bath, and gently and quickly swirl to thaw the cryopreservation medium.

   Note:

   (1) Gently swirl the cryovial during thawing to ensure rapid and uniform thawing.

   (2) Avoid submerging the cap in water to prevent contamination.

   (3) Stop thawing in the water bath when only a single ice crystal (approximately 2 mm in diameter) remains, then continue gently swirling the vial until it is completely thawed.

5. Wipe the outer surface of the cryovial with 75% ethanol.
6. Open the cryovial inside a biosafety cabinet. Use a pipette to take a small volume (approximately 0.5 mL) of complete medium (Cat. No.: RADRG-90011), add it dropwise to the cryovial, and gently pipet up and down several times.
7. Transfer the entire cell suspension dropwise into a centrifuge tube containing 2 mL of complete medium. Gently pipette up and down several times.

   Note: **Pipetting must be performed gently and without generating bubbles, as bubbles may damage the cells.**

8. After cell counting, seed the cells onto the PLL/Laminin-coated culture vessels at a density of

(2–3) × 10^5 viable cells/cm^2. Add an adequate volume of complete medium, ensuring the total volume is no less than 0.5 mL per well for a 24-well plate.

9. Gently pipet to mix the cells evenly, then place them into a humidified incubator at 37°C with 5% CO_2.
10. At 6 hours post-thaw, gently replace the medium with fresh complete medium.
11. Thereafter, perform half-medium changes every 2 days (i.e., aspirate 250 µL of medium and replace it with 250 µL of fresh medium). If an excessive amount of cell death is observed, daily medium changes are recommended.