

ANH Application Catalog

NK Production

NK Production

Natural killer (NK) cells are crucial immune cells that can recognize and kill tumors and virus infection. It is difficult to obtain the large numbers of NK cells *ex vivo* that are necessary for adoptive immunotherapy. Several methods of NK activation/expansion have been reported that use expansion medium plus various cytokines (e.g., IL-2, IL-7, and IL-15). However, these require further optimization by researchers.

ANH provides many products for supporting NK production starting from salt solutions and LSM (lymphocytes Separation Medium) in order to separate peripheral blood mononuclear cells (PBMCs) from whole blood. Secondly, NK Kit was provided for NK activation and activation which generates from PBMCs including the related products for activation and expansion of NK cells such as 225 cm² T-flask, cell culture bag, and media. For cryopreservation, there are freezing media, cryogenic vials, cryobox, and Coolcell (freezing container). Also, ANH provides LSE (Life Science Equipment) such as liquid handling equipment and compact centrifuge for enhancing workflow efficiency and advancing your research. In the case of NK cells study, we have NK cells from cell banks such as JCRB and Riken brand.

1. Blood Separation

In order to dilute blood samples and separate lymphocytes, ANH products provide salt solutions (HBSS and PBS) and LSM. The LSM (lymphocytes Separation Medium) was originally designed for the in vitro isolation of lymphocytes from diluted whole blood. It is a sterile, iso-osmotic polysucrose and diatrizoate solution with low viscosity and a density of 1.077-1.080 g/mL at 20°C.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|-----------|---|-----------|-------------|
| Corning | 21-021-CV | 500mL Hank's Balanced Salt Solution, 1X [-] calcium and magnesium | 1 Bot. | |
| Corning | 21-031-CV | 500mL Dulbecco's Phosphate-Buffered Saline, 1X [-] calcium and magnesium | 1 Bot. | |
| Corning | 21-040-CV | 500mL Phosphate-Buffered Saline, 1X [-] calcium and magnesium, pH 7.4 ± 0.1 | 1 Bot. | ✓ |
| Corning | 25-072-CV | 500mL LSM (Lymphocyte Separation Medium) | 1 Bot. | ✓ |
| Corning | 62-450-RF | 1g rhAlbumin | 1 Bot. | |

2. NK Production

The Corning Natural Killer Cell Serum-free Culture Kit II contains 1 vial of 1 mL coating medium, 1 bottle of 50 mL primary culture medium, 1 bottle of 1,000 mL expansion culture medium, and 1 permeable cell culture bag. The first two components are specially designed for NK cell primary culture, whereas the expansion medium and cell culture bag are utilized for NK cell expansion. Both NK primary medium and expansion medium are manufactured using high quality reagents and cGMP-grade raw materials. The only proteins present in the media are injectable levels of serum albumin and recombinant human insulin.



| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|------------|--|-----------|-------------|
| Corning | 88-571-KIT | Natural Killer Cell Serum-free Culture Kit II Kit includes: <ul style="list-style-type: none"> - Culture bag 640 cm² - Coating medium 1 mL (NKCC-3) - Primary culture medium 50 mL (NKCC-1) - Expansion culture medium 1,000 mL (NKCC-2) | 1 Set | |

| | | | | |
|---------|-----------|--|----------|---|
| Corning | 88-610-20 | Gas-permeable Suspension Cell Culture Bag | 10 Pcs | |
| Corning | 430641 | 75cm ² TC Flask, Vent Cap | 100/Case | ✓ |
| Corning | 431081 | 225cm ² Angled Neck Cell Culture Flask with Plug Seal Cap | 25 Pcs | ✓ |
| Corning | 431082 | 225cm ² Angled Neck Cell Culture Flask with Vent Cap | 25 Pcs | ✓ |
| Corning | 88-501-CV | 500mL, serum-free medium for NK activation medium, high IL-2 concentration | 1 Bot. | |
| Corning | 88-502-CM | 1000mL, KBM502, Serum-Free Culture Medium for Expansion of Activated Human NK Cell | 1 Bot. | |

3. Cells Harvesting

In order to harvest NK cells from cell culture flasks or Cell Culture Bag, centrifuge tubes can be used to fulfill your research in this step.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|--|-----------|-------------|
| Corning | 430776 | 250mL PP Centrifuge Tube with Plug Seal Cap, Sterile | 102 | |
| Corning | 431123 | 500mL PP Centrifuge Tube with Plug Seal Cap, Sterile | 36 | |

4. Cryopreservation

4.1. Freezing Medium

For freezing cells after harvest of NK cells, KM Banker II was developed for cryopreservation of lymphoid cells. To improve the viability after cell-thawing, KBM Banker II is supplemented with human albumin. Cryopreservation of activated human lymphocytes is particularly recommended. Other cells cultured in a suspension form are also cryopreserved in KM Banker II. These cells include Daudi cells, Raji cells, K562 cells, Molt-4F cells, and CTLL-2 cells.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|-----------|---|-----------|-------------|
| Corning | 88-702-CB | 120mL, cell culture freezing medium Banker II, especially for lymphocytes | 1 Bot. | |

4.2. Cryogenic Vials

Cryogenic vials are manufactured from polypropylene to withstand temperatures down to -196°C. There are 2 types of cryogenic vials which are different cap styles: external thread and internal thread. The external threads have a silicone washer for a secure seal and the internal threads have an o-ring for a secure seal.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|--|-----------|-------------|
| Corning | 430487 | 1.2mL Internal Threaded Polypropylene Cryogenic Vial, Self-Standing with Conical Bottom, Sterile, Bulk | 500 Pcs | ✓ |
| Corning | 430658 | 1.2mL External Threaded Polypropylene Cryogenic Vial, Self-Standing with Conical Bottom, Sterile | 500 Pcs | |
| Corning | 430488 | 2mL Internal Threaded Polypropylene Cryogenic Vial, Self-Standing with Round Bottom, Sterile | 500 Pcs | ✓ |

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|---------|--------|--|---------|---|
| Corning | 430659 | 2mL External Threaded Polypropylene Cryogenic Vial, Self-Standing with Round Bottom, Sterile | 500 Pcs | ✓ |
| Corning | 430490 | 4mL Internal Threaded Polypropylene Cryogenic Vial with Round Bottom, Steril | 500 Pcs | |
| Corning | 430491 | 4mL Internal Threaded Polypropylene Cryogenic Vial, Self-Standing with Round Bottom, Sterile | 500 Pcs | |
| Corning | 430662 | 4mL External Threaded Polypropylene Cryogenic Vial, Self-Standing with Round Bottom, Sterile | 500 Pcs | |
| Corning | 430492 | 5mL Internal Threaded Polypropylene Cryogenic Vial with Round Bottom, Sterile | 500 Pcs | |
| Corning | 430656 | 5mL Internal Threaded Polypropylene Cryogenic Vial, Self-Standing with Round Bottom | 500 Pcs | |
| Corning | 430499 | Assorted Polypropylene Cryogenic Vial Cap Inserts | 500 Pcs | |

4.3. Coolcell

Corning CoolCell alcohol-free cell freezing containers ensure standardized controlled-rate $-1^{\circ}\text{C}/\text{minute}$ cell freezing in a -80°C freezer without alcohol or any fluids. Proven for use with a variety of cell types including stem cells, primary cells, PBMC cell lines, insect cells, yeast and others.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|--|-----------|-------------|
| Corning | 432000 | CoolCell Cell Freezing Vial Container, for 12 x 1mL or 2mL Cryogenic Vials, Purple | 1 Unit | |
| Corning | 432001 | CoolCell LX, Cell Freezing Container, for 12 x 1mL or 2mL Cryogenic Vials, Purple | 1 Unit | |

| | | | | |
|---------|--------|---|--------|--|
| Corning | 432002 | CoolCell LX, Cell Freezing Container, for 12 x 1mL or 2mL Cryogenic Vials, Green | 1 Unit | |
| Corning | 432003 | CoolCell LX, Cell Freezing Container, for 12 x 1mL or 2mL Cryogenic Vials, Orange | 1 Unit | |
| Corning | 432004 | CoolCell LX, Cell Freezing Container, for 12 x 1mL or 2mL Cryogenic Vials, Pink | 1 Unit | |
| Corning | 432005 | CoolCell 5mL LX, Cell Freezing Container, for 12 x 3.5mL to 5mL Cryogenic Vials, Purple | 1 Unit | |
| Corning | 432006 | CoolCell FTS30, Freezing Container, for 30 x 1mL or 2mL Cryogenic Vials, Purple | 1 Unit | |
| Corning | 432007 | CoolCell FTS30, Freezing Container, for 30 x 1mL or 2mL Cryogenic Vials, Orange | 1 Unit | |
| Corning | 432008 | CoolCell FTS30, Freezing Container, for 30 x 1mL or 2mL Cryogenic Vials, Green | 1 Unit | |
| Corning | 432009 | CoolCell FTS30, Freezing Container, for 30 x 1mL or 2mL Cryogenic Vials, Pink | 1 Unit | |
| Corning | 432136 | Cryogenic Vial Grippers, Assorted Colors | 5 Pcs | |

4.4. Cryogenic Vial Storage Box

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|---|-----------|-------------|
| Corning | 431119 | Polycarbonate 1 - 2mL Cryogenic Vial Storage Box, Holds 81 Vials | 10 Pcs | |
| Corning | 431120 | Polycarbonate 4 - 5mL Cryogenic Vial Storage Box, Holds 81 Vials | 10 Pcs | |
| Corning | 431121 | Polycarbonate 1 - 2mL Cryogenic Vial Storage Box, Holds 100 Vials | 10 Pcs | |

5. Cells

ANH distributes several types of cells including NK-Cell for testing cytotoxic activity and differentiation from JCRB (Japanese Cancer Research Resources Bank) and Riken cell bank.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|-------|----------|---|-----------|-------------|
| Riken | RCB1165 | YAC-1 (DSMZ no.:ACC 96), Natural killer cell-sensitive mouse lymphoma established by inoculation of the Moloney leukemia virus (MLV) into a newborn A/Sn mouse; cells were described in the literature to be sensitive to the cytotoxic activity of natural killer (NK) cells and are therefore often used as target cells in NK assays | 1 Vial | |
| JCRB | JCRB0156 | KHYG-1, Human natural killer cell line with a p53 point mutation as a model for p53-associated leukemogenesis and a model for differentiation of NK/T cells. | 1 Vial | |

6. Liquid Handling

Corning Liquid handling products are manufactured under strict process controls guaranteeing consistent product performance. All Corning Life Science plastics manufacturing facilities are ISO 9011 registered.

6.1. Centrifuge Tube

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|---|-----------|-------------|
| Corning | 430052 | 15mL PP Centrifuge Tube, Rack Packed with Plug Seal Cap, Sterile | 500 Pcs | ✓ |
| Corning | 430790 | 15mL PP Centrifuge Tube, Rack Packed with CentriStar Cap, Sterile | 500 Pcs | ✓ |
| Corning | 430290 | 50mL PP Centrifuge Tube, Conical Bottom with Plug Seal Cap, Rack Packed, Sterile | 500 Pcs | ✓ |
| Corning | 430828 | 50mL PP Centrifuge Tube, Conical Bottom with CentriStar Cap, Rack Packed, Sterile | 500 Pcs | ✓ |

6.2. Pipet Tip

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|--|-----------|-------------|
| Corning | 4114 | DeckWorks 1000uL Pipet Tip (max working volume 1250uL), Graduated, Natural, Non-Sterile, Polypropylene | 7680 Pcs | |
| Corning | 4119 | DeckWorks 1000uL Pipet Tip (max working volume 1250uL), Graduated, Hinged Racks, Natural, Non-Sterile, Polypropylene | 3072 Pcs | |

6.3. Stripette Serological Pipet

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|---|-----------|-------------|
| Corning | 4485 | 1mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 1000 Pcs | ✓ |
| Corning | 4486 | 2mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 1000 Pcs | ✓ |
| Corning | 4487 | 5mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 200 Pcs | ✓ |
| Corning | 4488 | 10mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 200 Pcs | ✓ |
| Corning | 4489 | 25mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 200 Pcs | ✓ |
| Corning | 4490 | 50mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 100 Pcs | |
| Corning | 4491 | 100mL Stripette Serological Pipet, Polystyrene, Individually Paper/Plastic Wrapped, Sterile | 100 Pcs | |

7. LSE (Life Science Equipment)

LSE (Life Science Equipment) such as liquid handling equipment and compact centrifuge for enhancing workflow efficiency and advancing your research.

| Brand | Cat. No | Description | Unit/Case | Stock Items |
|---------|---------|---|-----------|-------------|
| Corning | 4099 | Stripettor Ultra Pipet Controller | 1 Unit | |
| Corning | 6056 | 100-1000 uL Lambda EliteTouch Single-Channel Pipettor | 1 Unit | |
| Corning | 6759 | Compact Centrifuge, 230V | 1 Unit | |
| Corning | 480137 | LSE 12x15 mL Fixed Angle Rotor | 1 Unit | |

Find out more at <https://www.anhsci.com/product-tag/nk-production/>

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