Product sheet

CHO Cells | 603479

General information

Description	Chinese hamster ovary (CHO) cells are a cornerstone in the field of biotechnology and are heavily utilized in the process of CHO cell line development for the manufacture of biopharmaceuticals. These include monoclonal antibodies, recombinant antibody expression, and vaccines. The many advantages of CHO cells underscore their popularity in biomanufacturing, positioning them as a robust and versatile animal cell line with a proven track record in genetics, molecular biology, toxicity screening, nutrition, and gene expression studies. The contribution of CHO cells to the biopharmaceutical industry is immense, with their role in the development of recombinant antibodies and monoclonal antibody production being particularly significant. Nearly 50 biotherapeutics developed using these cells have been approved in the USA and EU, which speaks to the efficacy of CHO cells and their integral role in antibody development. Their hamster origin contributes to lower susceptibility to viruses, enhancing biosafety in biomanufacturing settings and reducing batch-to-batch variation. CHO cells are well-suited to produce proteins that undergo post-translational modifications, which is critical for therapeutic protein production. The versatility of the Chinese Hamster Ovary-derived cells is further highlighted by their fast proliferation rates and high protein expression rates of 1-5 grams per liter of culture. The ease of cultivating CHO cells and their ability to be genetically modified makes CHO cells an optimal choice for both transient and stable expression studies. The CHO-K1 cell line, a derivative of the original Chinese hamster ovary (CHO) cells is frequently utilized in expressing recombinant proteins, especially for the production of therapeutic proteins and recombinant antibodies. They excel in producing therapeutic proteins and antibodies due to efficient post-translational modification, notably glycosylation. Researchers modify CHO-K1 cells to enhance protein expression and tailor glycosylation for specific therapies, crucial in biomedicine. In conclusion, the Chinese hamster ovary cell line, known for its remarkable ability to mimic human post-translational modifications, is an invaluable scientific resource. Whether overcoming the difficulty of expressing challenging proteins or monoclonal antibody production, CHO cells have revolutionized the development and production of recombinant protein therapeutics. They remain pivotal in modern medicine, serving as a cornerstone for biopharmaceutical production and reflecting the advancements in biotechnology.
Organism	Hamster
Tissue	Ovary
Applications	This cell line is an optimal choice for toxicology, industrial biotechnology and bioproduction.
Synonyms	Chinese Hamster Ovary, CHO-ori

Characteristics

Age	Adult
Gender	Female

Morphology	Epithelial-like
Growth properties	Monolayer, adherent

Identifiers / Biosafety / Citation

Citation	CHO (Cytion catalog number 603479)
Biosafety level	1

Expression / Mutation

Handling

Culture Medium	DMEM:Ham's F12, w: 3.1 g/L Glucose, w: 1.6 mM L-Glutamine, w: 15 mM HEPES, w: 1.0 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)
Medium supplements	Supplement the medium with 10% FBS
Passaging solution	Accutase
Subculturing	Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.
Split ratio	A ratio of 1:4 to 1:8 is recommended
Seeding density	1 x 10^4 cells/cm^2 will yield in a confluent layer in about 4 days
Fluid renewal	2 to 3 times per week
Freezing recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)
Handling of cryopreserved cultures	CHO cells are shipped in a deep-frozen state on dry ice. Upon receipt, confirm that the vial remains frozen. For storage, place the cryovial immediately at temperatures below -150 degrees. If you plan to culture the cells immediately, swiftly thaw the vial by shaking it in a 37 degrees water bath with clean water and an antimicrobial agent for 40-60 seconds. Remove the vial once a small ice clump persists, ensuring it remains cold. Proceed with all subsequent steps under aseptic conditions. In a sterile flow hood, disinfect the cryovial with 70% ethanol. Then, gently open the vial and transfer the cell suspension into a 15 ml centrifuge tube pre-filled with 8 ml of room temperature culture medium. Gently mix the cells. For cell separation, centrifuge at 300 x g for 3 minutes and dispose of the supernatant. Skipping centrifugation is optional, although any residual freezing medium should be removed after 24 hours. Resuspend the pellet gently in 10 ml of fresh culture medium and divide between two T25 culture flasks. Follow the subculture protocol for subsequent steps.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contamination is rigorously excluded using both PCR-based assays and luminescence-based mycoplasma detection methods. To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.