hCK-MDCK Cell Bank Availability through BEI Resources

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ABSTRACT

BEI Resources serves as a vital centralized repository of quality-assured organisms, reagents, tools, services, and information related to the NIAID research portfolio. Infectious diseases supported by BEI Resources include Category A, B, and C priority pathogens, emerging infectious diseases, HIV, and non-pathogenic microbes. Reagents from BEI Resources are available free of charge to qualified registrants and can be requested through the online BEI Resources catalog. Registration with the BEI Resources program is open to all experienced researchers affiliated with institutions with the appropriate facilities and safety programs in place.

Humanized Madin-Darby Canine Kidney (hCK-MDCK) cells are being made available through BEI Resources to enable rapid production of influenza virus strains, facilitating evaluation of vaccines and therapeutics in new pre-clinical studies and trials. A pre-MCB version will be available for use by all BEI registrants. A cGMP MCB version will be available to a subset of BEI registrants approved by NIAID for work requiring the cell line produced and stored under cGMP.

hCK-MDCK CELL LINE DEVELOPMENT

The humanized Madin-Darby Canine Kidney (hCK-MDCK) cell bank is a continuous cell line developed by altering the expression levels of α-2,6-sialoglycans and α-2,3-sialoglycans of the host cell making them more suitable for human influenza virus isolation and propagation. IDT Biologika adapted the cell line from the adherent serum-dependent hCK cell line to a serum-free suspension cell line without altering its engineered characteristics.

hCK-MDCK
- Requires serum, adherent

hCK-MDCK SF
- Serum-free, adherent
- +9 passages

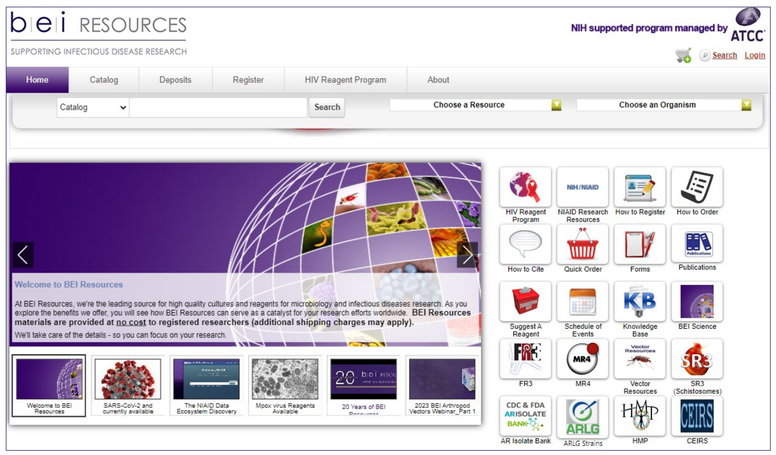
hCK-MDCK SFsus
- Serum-free, suspension
- +69 passages

hCK-MDCK Pre-Master Cell Bank (MCB)
- Serum-free, suspension
- +3 passages
- **(NR-59896)**

hCK-MDCK Master Cell Bank (MCB)
- Serum-free, suspension
- +4 passages
- **(NR-59897)**

Process diagram of the development of serum-free suspension hCK-MDCK cell line from serum-dependent, adherent cells.

hCK-MDCK CELL BANKS IN BEI RESOURCES



Two hCK-MDCK cell banks will be offered through BEI Resources:

BEI catalog #	Description	Availability
NR-59896	Pre-Master Cell Bank	BEI registrants
NR-59897	Master Cell Bank (cGMP)	BEI registrants approved by NIAID

Product details:

- Each vial contains approximately 1 mL of cell culture suspension frozen in growth medium supplemented with 7.5% dimethyl sulfoxide (DMSO)
- Growth medium formulation:
  - Serum-free conditioned medium (BHK21; 46.25%)
  - Fresh serum-free medium (46.25%)
  - Glutamine (1%)
- Sufficient cells are provided to initiate at least one new culture.

The following QC testing was performed for the hCK-MDCK MCB:

Testing	
Microbial Contamination	Sterility
	Mycoplasma
Cell Line Identity	DNA Barcoding
Virus testing	Adventitious Agent testing
	Transmission Electron Microscopy
Cell line testing	Osmolality
	Post-thaw viability
	Total cell count

BEI RESOURCES REGISTRATION

BEI Resources allows public users to search our web catalog; however, only approved registrants may request reagents from BEI Resources.

Access to these cell lines requires a Level 1 registration with BEI Resources. Instructions and a link to the application are available on our website (www.beiresources.org).

After your registration application has been approved by NIAID and ATCC, you will receive a login name and password to use to order reagents from the web catalog.

Access to the cGMP cell bank will require pre-approval by NIAID and is intended for manufacturers requiring cGMP material for their work.

SUMMARY

The hCK-MDCK cell line bank has been developed for human influenza virus isolation and propagation. A pre-master cell bank and master cell bank (cGMP) will be made available to the research community through the NIH-supported BEI Resources program. To access these reagents, researchers should be registered with BEI Resources and can order through the BEI Resources web catalog, www.beiresources.org.

ACKNOWLEDGEMENTS

Images were obtained from the Public Health Image Library (PHIL), CDC and Shutterstock.

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References: Takada et al. 2019. A humanized MDCK cell line for the efficient isolation and propagation of human influenza viruses. Nature Microbiology 4: 1268-1273.

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