Commentary

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Sources of Cell Lines

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Abstract

Animal cell cultures have become indispensible for several applications. Their utility for research and biotech industrial applications are growing exponentially and these support a parallel growth in the imaging, analytical and other related technologies. As with the increasing number of available cell lines, there is a tremendous ongoing progress in the fields of instrumentation, durables, consumables and supplements that make cells grown in vitro more efficient. Cell cultures have become integral for research in a wide range of areas and there is a constant evolution in the cell based assays/techniques. Sources of cell lines are important as they not only provide the required cell lines, they form cell line repositories and can provide authenticate information of the cell lines being supplied. This is critical to ensure consistent and reliable data from work involving cell lines. In this manuscript, various prominent sources of cell lines are presented including a brief description, their web site addresses and their contact details. It is hoped that this compilation of major sources of cell lines would be useful for many researchers as a reference.

Keywords : Cell lines, sources of cell lines, cell repositories

Introduction

Several established cell lines are available presently which are well characterized and reliable. Specific applications require a specific cell type for optimal output. There are a few national and international organizations which maintain cell repositories and supply researchers across the world, with a specific cell type for research purposes. Obtaining cells from such established organizations is advisable for conduct of any work involving cell lines. These organizations give organizations give detailed product information such as the origin, identifying/characteristic features and also culture methods. Usually, each of these organization have specific process for supplying the cell line that will include the statements of infrastructure available, intended use of a cell line, certificate of safety competence/accreditations of the requesting organization, etc. The details of such cell line repositories and suppliers along with their current contact information are given in this chapter.

Cell Line Repositories

1. The American Type Culture Collection (ATCC)

About the Organization

ATCC is a global non-profit bioresource centre and research organization that provides biological products, technical services and educational programs to private industry, government and academic organizations.

Their objective is to acquire, authenticate, preserve, develop and distribute biological materials, information, technology, intellectual property and standards for the advancement and application of scientific knowledge.

ATCC authenticates cell lines and microorganisms, manages logistics of long-term preservation and distributes cultures for the scientific community. ATCC supports the cultures it acquires and verifies with expert technical support, intellectual property management and characterization data.

Cell Repository Details

The ATCC Cell Biology Collection is the most comprehensive and diverse of its kind in the world, with a collection consisting of over 3,400 cell lines from over 80 different species. It holds over 950 cancer cell lines, 1,000 hybridomas and several special collections including stem cells.

Cell Line Procurement Details

An account must be established at the web-site and its number must be made available before ordering. There are three ways to order a cell line:

1) Online : Orders can be submitted electronically by using the shopping cart at the website

2) By fax: The fax order form can be downloaded, filled and faxed to the number- (703) 365-2750

3) By phone: Orders can be made by calling at the numbers mentioned below:

U.S/Puerto Rico- (800) 638-6597

Others- (703) 365-2700

ATCC ships products directly to all countries except those who have an authorized distributor or those restricted by the U.S. government. Customers can find the appropriate distributor for orders or inquiries by using the search box in the web-site.

Contact Information:

American Type Culture Collection (ATCC)
P.O. Box 1549
Manassas, VA 20108
USA

Main telephone number: (703) 365-2700

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Fax numbers:

- General: (703) 365-2701
- Accounting: (703) 365-2720
- Customer Service: (703) 365-2750
- Human Resources: (703) 365-2735

2. European Collection of Cell Cultures (ECACC)

About the Organization

The European Collection of Cell Cultures (ECACC) was established in 1984 as a cell culture collection to service the research community and provide an International Depository Authority recognized patent depository for Europe. Over the last 25 years ECACC has expanded and diversified to become one of the premier collections of authenticated cell cultures in the world and this remains the core of ECACC's business. The development and maintenance of such a diverse collection has inevitably produced a high level of specialist knowledge and this combined with the support of the Health Protection Agency, Porton Down has enabled ECACC to position itself as a centre of expertise in all aspects of cell culture. ECACC has developed a comprehensive range of cell culture services and diversified into new product areas such as high quality genomic DNA extracted from cell lines.

ECACC is one of the four collections which constitute the Health Protection Agency Culture Collections (HPA Culture Collections). As has been the case since its inception, ECACC continues to operate out of the Porton Down site, which is now the Centre for Emergency Preparedness and Response (CEPR), Health Protection Agency, UK.

Cell Repository Details

ECACC holds over 40,000 cell lines representing 45 different species, 50 tissue types, 300 HLA types, 450 monoclonal antibodies and at least 800 genetic disorders.

Cell Line Procurement Details

An account must be established at the web-site and its number must be made available before ordering. Following that the order can be submitted online, by fax or post.

Contact Details:
Health Protection Agency Culture Collections
Health Protection Agency
Centre for Emergency Preparedness and Response
Porton Down
Salisbury
SP4 0JG
UK

Sales & General Enquiries
Tel: +44 (0)1980 612512
Fax: +44 (0)1980 611315
Email: hpacultures@hpa.org.uk

Technical Support
Tel: +44 (0)1980 612684
Fax: +44 (0)1980 611315
Email: hpacultures.technical@hpa.org.uk

URL: http://www.hpacultures.org.uk/collections/ecacc.jsp

3. Coriell Cell Repositories (CCR)

About the Organization

The Coriell Cell Repositories provide essential research reagents to the scientific community by establishing, verifying, maintaining, and distributing cell cultures and DNA derived from cell cultures. These collections, supported by funds from the National Institutes of Health (NIH) and several foundations, are extensively utilized by research scientists around the world.

Cell Repository Details

Coriell stores more than a million vials of cells in liquid nitrogen. Cells that have been stored for nearly 40 years are still viable and available for research purposes today. The following services are offered by Coriell:

Establishment of cell lines

- EBV transformed lymphoblastoid cultures from human blood
- fibroblasts, endothelial, smooth muscle and epithelial cell cultures from appropriate tissue biopsies

Cell banking of public, private, or specialty collections

- cryopreservation of primary or transformed cell lines
- cryopreservation of peripheral blood mononuclear cells (buffy coats) and selected tissue biopsy material
- maintenance of seed and distribution stocks
- expansion of cell lines for molecular and cytogenetic analysis

Mycoplasma testing

- detection by PCR or microbiological assays
- identification of mycoplasma species by immunological or PCR methods

Remote Fail-Safe Storage

- cell lines
- DNA
- blood products and other biomaterials

Cell Line Procurement Details

Orders for cell lines can be made online at the web site for which registration at the site is mandatory.

Contact Details

John Pallies
CCR Business Manager
856-757-4826
jpallies@coriell.org

Contact address: 403 Haddon Avenue
Camden, New Jersey 08103, USA

Phone: 800-752-3805 in the United States

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856-757-4848 from other countries

Fax: 856-757-9737

E-mail: CCR@coriell.org

URL: http://ccr.coriell.org/Default.aspx

4. Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH (DSMZ)

[German Collection of Microorganisms and Cell Cultures (DSMZ)]

About the Organization

The DSMZ - Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH (German Collection of Microorganisms and Cell Cultures) is the most comprehensive Biological Resource Centre in Europe. The DSMZ is an independent, non-profit organisation and is a member of the following associations: World Federation for Culture Collections, Common Access to Biological Resources and Information, European Culture Collections' Organisation.

Cell Repository Details

The DSMZ administers, at present, more than 9000 strains of Bacteria and Archaea, 2300 filamentous fungi, and 410 yeasts of risk group 1 and 2, 280 plasmids, 80 bacteriophages, 890 plant cell cultures, 400 plant viruses, and 400 human and animal cell lines. The Human and Animal Cell Culture Collection was established in 1989.

Cell Line Procurement Details

The details are available at the website for procurement of cell lines at DSMZ. General information regarding orders, confirmation, shipping and prices may be obtained from the Secretary of customer services by telephone or via e-mail.

Contact Details

Address: DSMZ - Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH Inhoffenstr. 7B, D - 38124 Braunschweig - Germany

Phone +49(0)531 26 16 - 161

Fax +49(0)531 26 16 - 150

Email: mutz@dsmz.de

URL: http://www.dsmz.de/

5. National Centre for Cell Science (NCCS)

About the Organization

NCCS functions as a national repository for cell lines or hybridomas. The repository at National Centre for Cell Science is the only repository that houses human and animal cells in India. The NCCS repository serves to receive, identify, maintain, store, cultivate and supply animal and human cell lines and hybridomas.

Cell Repository Details

The repository has procured cultures from various sources within the country and abroad from 35 animal species. A major bulk of the cell lines stocked in the repository has been procured from the American Type Culture Collection (ATCC) and the European Collection of Animal Cell Cultures (ECACC). At present, the total number of culture strains is 1127, of which about 300 are available for distribution to users on registration.

Cell Line Procurement Details

After identifying the cell line of interest, a registration form has to be filled and submitted. Orders are made as per the instructions detailed at the website. Cultures are supplied as flask cultures.

Contact Details

Address: National Centre for Cell Science

NCCS Complex, Ganeshkhind

Pune 411 007, Maharashtra, INDIA

URL: http://www.nccs.res.in

6. The Health Science Research Resources Bank (HSRRB)

About the Organization

The Health Science Research Resources Bank (abbreviated as HSRRB) was established in October 1995 with the support of the Ministry of Health and Welfare to be run by the foundation. Cells and genes collected and standardized by the Japanese Collection of Research Bioresources (JCRB) bank at the National Institute of Biomedical Innovation are supplied to research scientists in Japan and overseas at an appropriate fee.

Cell Repository Details

The cells available are mainly cells of human origin and cells derived from other mammalian sources, including experimental animals such as rats and mice. Normal cells as well as cells that originated under various disease conditions are available. Genes have been cloned from the cells of these animal species and the genes associated with various diseases and cDNA (EST, full-length) are available. In recent years, HSRRB has started to distribute about 2,000 samples of DNA purified from Japanese-origin B cell lines. These B cell lines were deposited by the Pharma SNP Consortium (PSC) and the Japan Biological Informatics Consortium (JBIC). These are important resources for gene analysis of the Japanese population.

Cell Line Procurement Details

The website offers step by step details of identifying and procuring the cell line of interest.

Contact Details

Fax: +81-72-641-9851
E-mail: cell@nibio.go.jp

URL: http://www.jhsf.or.jp/English/index_e.html

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It should be stressed that the use of cell lines on the problematic list does not automatically mean that a given cell line is being employed improperly. For example, the problematic list includes cases where a cell line is â€˜partially contaminatedâ€™, which does not affect cells purchased from, say, a stock center.Â To derive a dataset of reported cell lines from the general literature, we used text mining of the PubMed Central open access subset.Â We first considered the reporting of problematic cell lines as a function of the publication year (Figure 1). We did not take into account data prior to 1997, since there were very few papers in the open access PubMed Central corpus that contained cell lines (<25 per year) (See Figure 1â€”source data 1 for data including years prior to 1997). Many types of cell lines are used by researchers to study cell division and tumor growth. Finite and continuous cell lines are cultivated from cells of varied species. As the name suggests, finite cells don't live forever.Â Cellular biologists grow cells in their laboratory to unlock the secrets of normal and abnormal cell activity. Cells from humans, animals, plants and micro-organisms are isolated and cultivated to develop cell lines for research studies. Many types of cell line studies have great application to the field of medical science.Â These cookies allow us to count visits and traffic sources so we can measure and improve the performance of our site. They help us to know which pages are the most and least popular and see how visitors move around the site. Finite Cell Lines : The cells in culture divide only a limited number of times, before their growth rate declines and they eventually die.Â The stability of cell line with particular reference to cloning, generation of adequate stock and storage are important. 7. Phenotypic expression: ADVERTISEMENTS: It is important that the cell lines possess cells with the right phenotypic expression. Maintenance of Cell Cultures: For the routine and good maintenance of cell lines in culture (primary culture or subculture) the examination of cell morphology and the periodic change of medium are very important. Cell MorphologyÂ What are the different sources of air pollution? 0 Answers. Name the types of nitrogenous bases present in the RNA.