

Plenary 1: When sex matters for human and non-human species: the role of basic biology

How to be sure what sex your cells are: Cell DB with sex description

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June 18, 2018

(Jan. 2013)



U.S. Food and Drug Administration
Protecting and Promoting Your Health

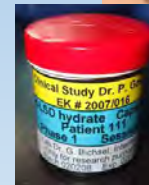
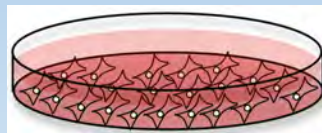
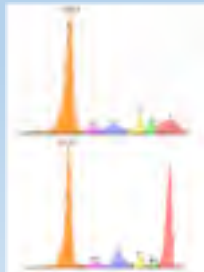
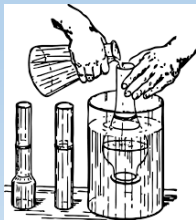
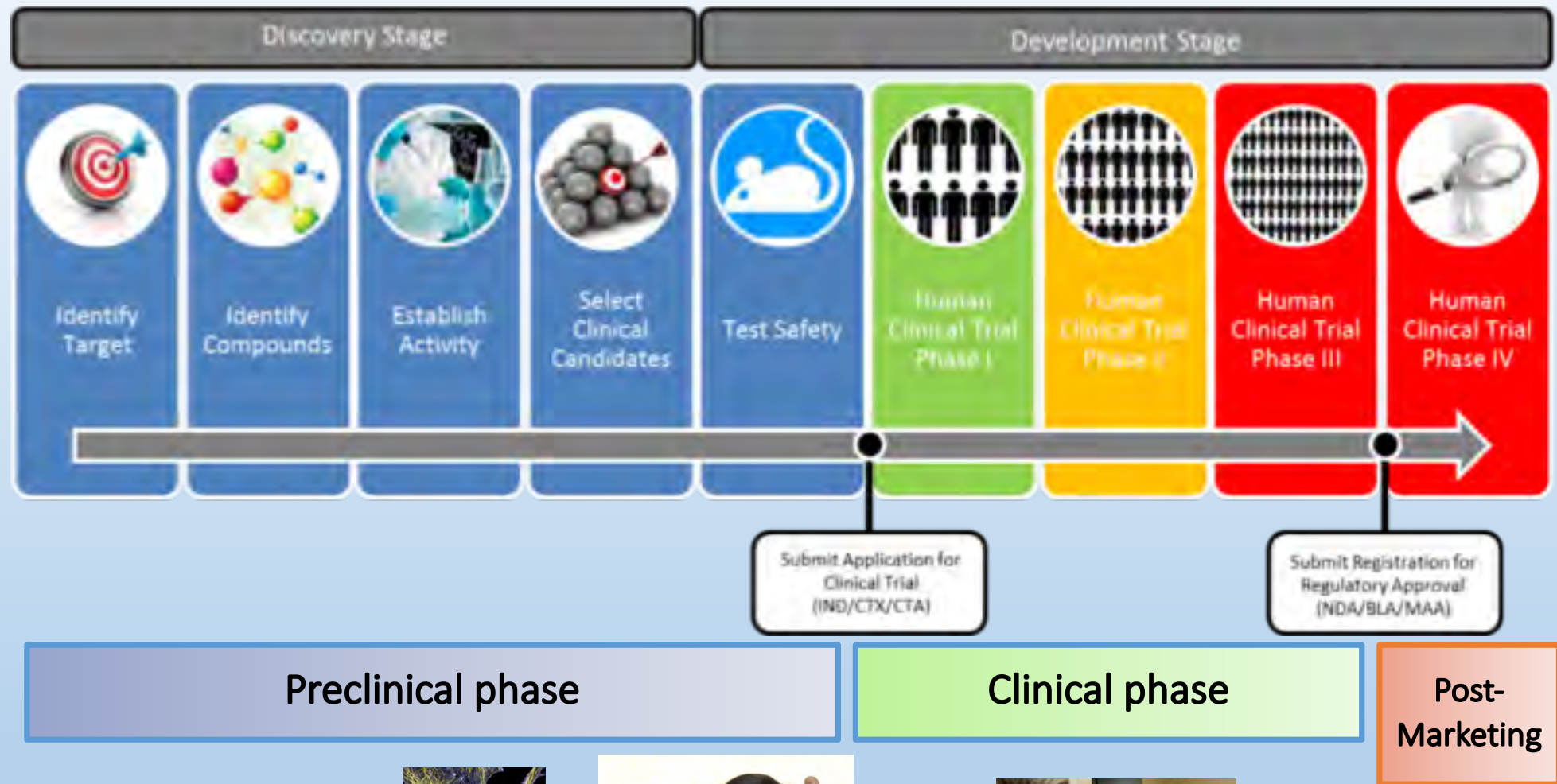
Drug Safety Communications

Risk of next-morning impairment after use of insomnia drugs; FDA requires lower recommended doses for certain drugs containing zolpidem (Ambien, Ambien CR, Edluar, and Zolpimist)

- FDA recommended manufacturers to reduce dose for women to $\frac{1}{2}$ of regular dose
- In clinical studies, after 8 hours of regular dose, women were **5 times** more likely, compared to men, not to be awake



Drug Development Process

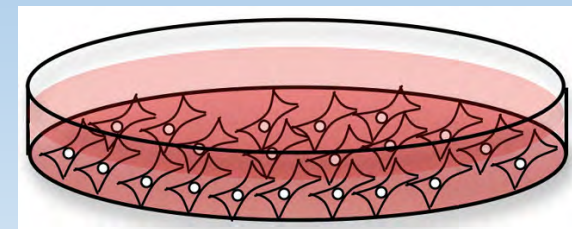
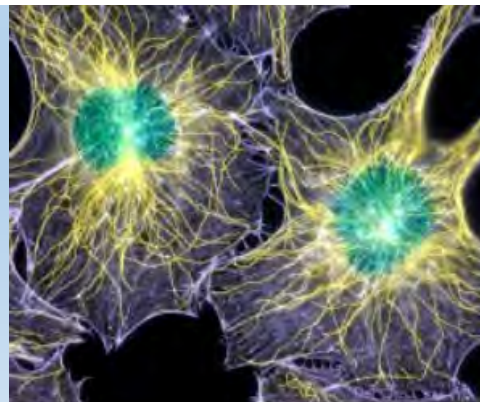
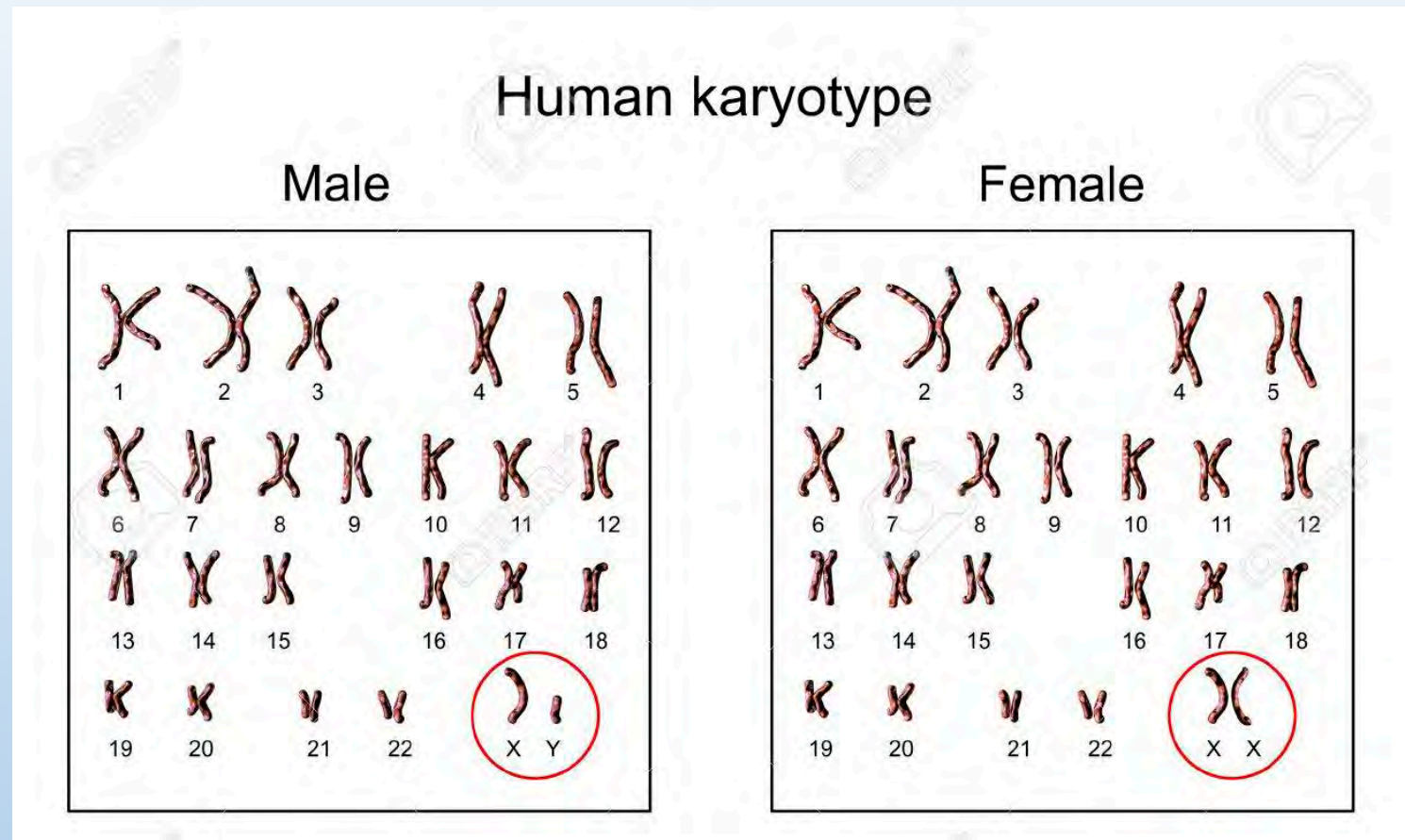


Important to know the sex of research subjects!

- In humans and whole **animals**:
relatively easy to identify sex



- How about sex of cells?



Does Sex of cells matter ? **YES!!**

- **“Sex Cell Matters”**

Pollitzer, *Nature*, Vol. 500, Aug 1, 2013

- Biological mechanisms and pathways found from studies using **cultured cells** are often the **basis** for the development of **new diagnostic and therapeutic** interventions in human medicine.
- Only **half** of the population have the same sex as the cells on which the diagnostic test or treatment was developed.

- Sex influences in **stem cells** & **primary cells**
 - Stem cells:
 - **Deasy** et al. *J. Cell Biol.* 2007.
 - Sex influences regeneration ability of muscle-derived stem cells
 - Primary Cells:

THE JOURNAL OF BIOLOGICAL CHEMISTRY
© 2004 by The American Society for Biochemistry and Molecular Biology, Inc. Vol. 279, No. 37, Issue of September 10, pp. 38563–38570, 2004
Printed in U.S.A.

Innate Gender-based Proclivity in Response to Cytotoxicity and Programmed Cell Death Pathway*

FEBS Letters 582 (2008) 635–642

Redox state and gender differences in vascular smooth muscle cells

Walter Malorni^{a,*}, Elisabetta Straface^{a,1}, Paola Matarrese^a, Barbara Ascione^a, Rita Coinu^b,

THE JOURNAL OF BIOLOGICAL CHEMISTRY VOL. 280, NO. 38, pp. 32609–32617, September 23, 2005
© 2005 by The American Society for Biochemistry and Molecular Biology, Inc. Printed in the U.S.A.

Myelin Basic Protein-primed T Cells of Female but Not Male Mice Induce Nitric-oxide Synthase and Proinflammatory Cytokines

Journal of Surgical Research 173, e1–e10 (2012)
doi:10.1016/j.jss.2011.09.021

IMPLICATIONS
Received for publication
Subhajit D
From the School of
Lincoln, Nebraska

ASSOCIATION FOR ACADEMIC SURGERY

The Role of Estrogen Receptor α and β in Regulating Vascular Smooth Muscle Cell Proliferation is Based on Sex¹

Melissa E. ...
Qun Jiang
*Division of ...
Frederick, Maryland

Am J Physiol Heart Circ Physiol 298: H1146–H1154, 2010.
First published February 5, 2010; doi:10.1152/ajpheart.00252.2009.

Intrinsic sex-specific differences in microvascular endothelial cell phosphodiesterases

Jianjie Wang,^{1,2,3} Susan ...
¹Department of Biomedical ...
and Physiology, and ³National ...
Columbia, Missouri

ANN NEURO RESEARCH ARTICLE
ASAP FULL-TEXT EDITION: 10.1093/brain/aww032

Sex-specific activation of cell death signalling pathways in cerebellar granule neurons exposed to oxygen glucose deprivation followed by reoxygenation

Jaswinder Sharma^{1,2}, Geetha Nelluru^{1,2}, Mary Ann Wilson^{1,2}, Michael V Johnston^{1,2,3} and Mir Ahamed Hossain^{1,2}
¹Hugo W. Moser Research Institute at Kennedy Krieger, Baltimore, MD 21205, U.S.A.
²Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD 21205, U.S.A.
³Department of Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD 21205, U.S.A.
⁴Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD 21205, U.S.A.

- In most of preclinical studies, **cell lines** are used.
- Sex of cells used are rarely reported!
 - **Taylor et al. *Biology of Sex differences*, 2011**
 - Looked into the sex of cells in the papers published by 10 major journals
 - **50~100%** of papers did not report sex of cells.
 - None of the 101 studies reviewed used cells from only female animals
 - **Shah, McCormack, Bradbury. *Am J Physiol Cell Physiol*, 2014**
 - Randomly Selected 100 articles from papers published in *AJP-Cell Physiology* in 2013
 - Distribution of papers by sex of cells used
 - Male 20%
 - Female 5%
 - **Unspecified 75%**

Why sex of cell lines omitted in published articles?

- Sex of cells
 - May be **regarded irrelevant** because cells derived from male and female organisms display the similar general characteristics - organelles and functions.
 - May be **considered unnecessary** since others did not report sex of the cells in general.
 - May **not be known** to the investigators.



VIEWPOINT |

Insufficient sex description of cells supplied by commercial vendors

Mi-Na Park,¹ Ji Hyun Park,² Hee Young Paik,¹ and Suk Kyeong Lee³



American Type
Culture Collection
(n=3221)



European Collection of Cell Cultures
(n=3902)

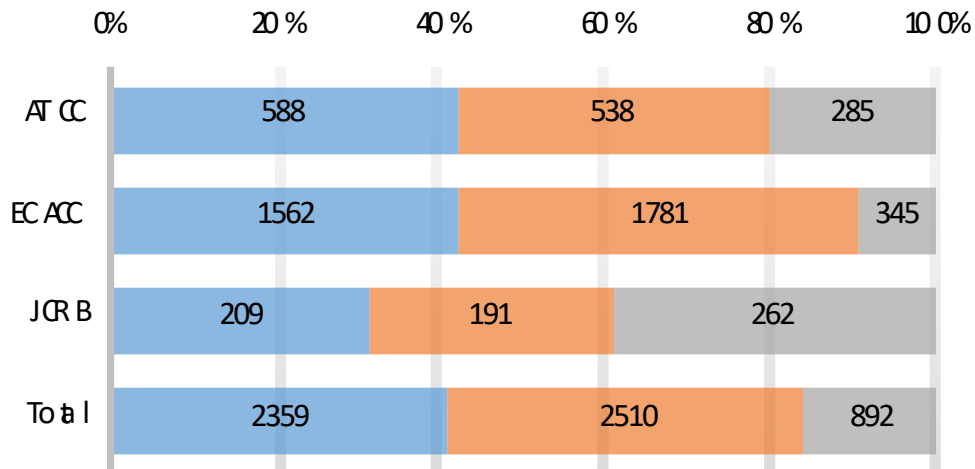


Japanese Collection of Research Bioresources
(n=1071)

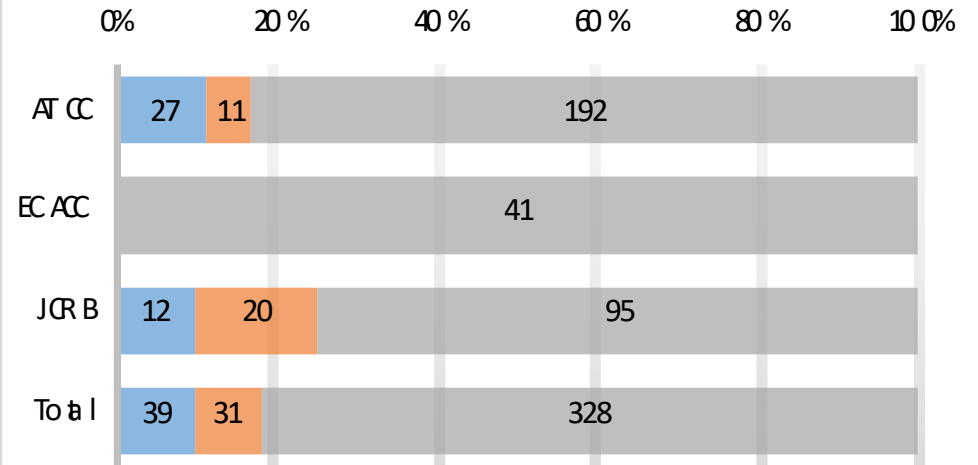
Sex of Cell lines and Hybridomas

Male Female Undefined

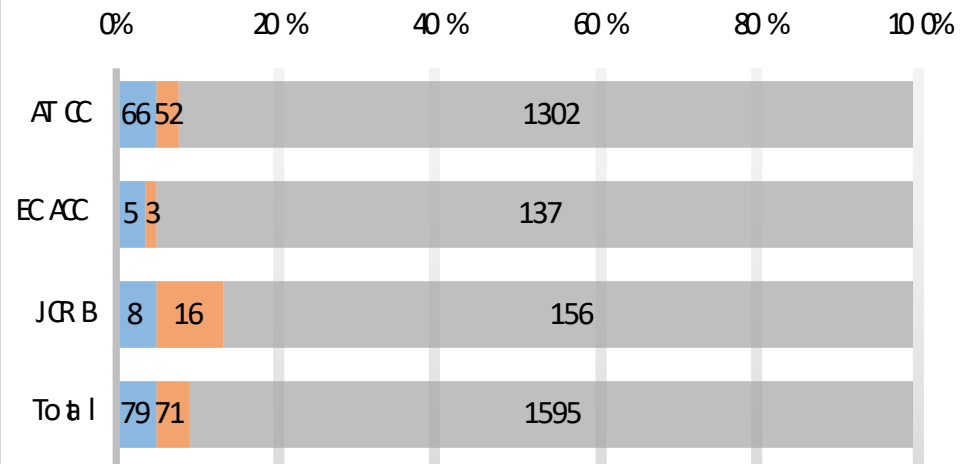
Human Cell Lines and Hybridomas



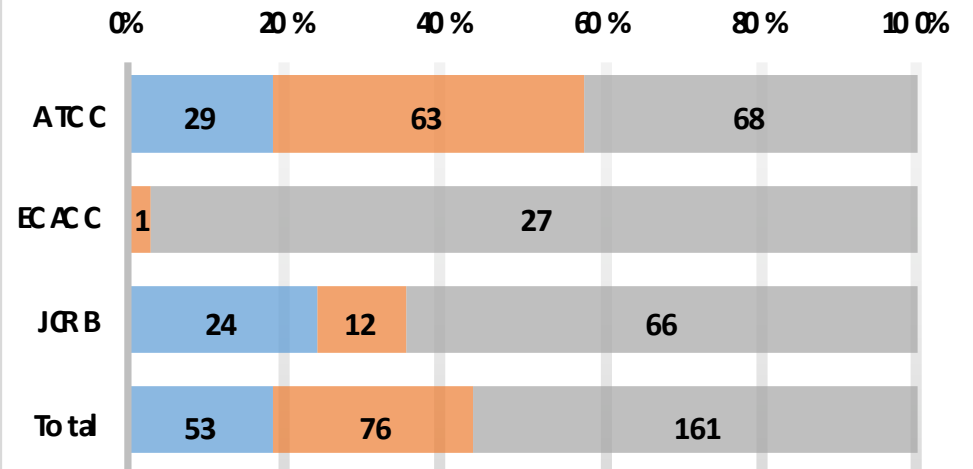
Rat Cell Lines



Mouse Cell Lines



Other Animal Cell lines

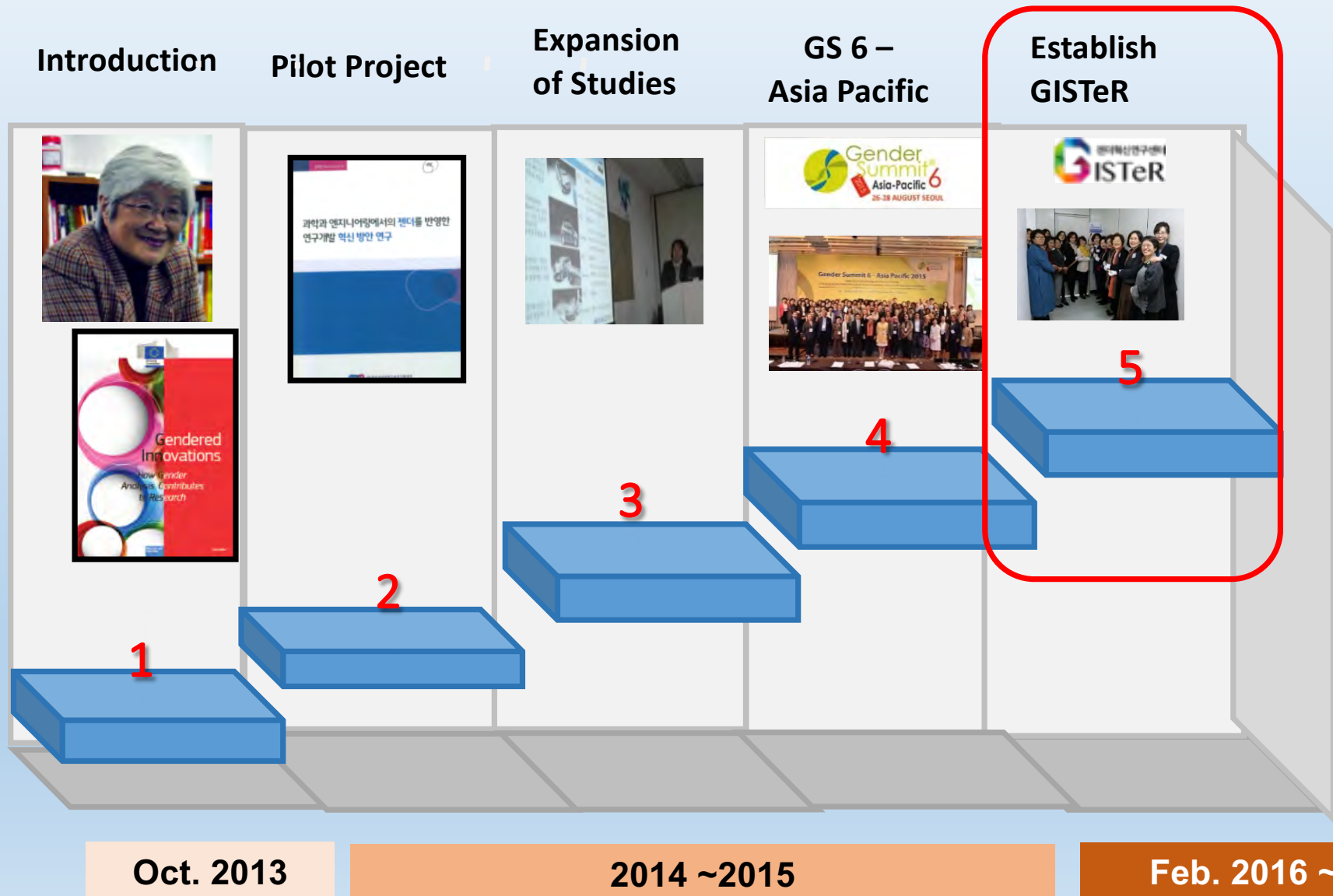


Problems

- Sex description is **not provided** for most of the animal cell lines sold by major global cell vendors.
- Vendors do not provide **sex-based search engines**
 - difficult for researchers to design experiments using a well-balanced sex distribution of cells, which is now required by granting agencies of many countries
- What can we do???



Gendered Innovations Activities in Korea: Major Roles of WISSET, KOFWST, and now **GISTeR**



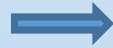
Major Activities of GISTeR

**Policy Research
Team**

**Development of GI Policy
and Guidelines**



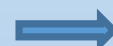
- Proposal for legal basis
- Research funding policy
- Guideline development and dissemination for researchers and journals
- Curriculum development for higher education



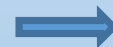
Amendment of Framework Act on Science and Technology (Moved by Hon. Rep. S.M. Lee)



Policy recommendations to NRF (Research Fund)



Guidelines for researchers and experts



Policy recommendation to KOFST (Journals)



Graduate course in Gender-based Medicine



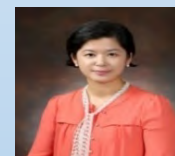
Case Study Team

18 case studies in four areas
(2 are international cooperative studies)

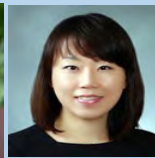
Basic Science



Health/ Nutrition



Engineering/ Technology



Architecture/ Environment



WELCOME

to the Center for Gendered Innovations in Science and Technology Research (GISTeR)

GISTeR aims to develop research cases in various fields where **sex** and **gender** analysis can be introduced and to **spread the Gendered Innovations** based on these cases.

GENDERED INNOVATIONS [DB SEARCH](#)

 Literature DB

 Resource DB

Literature DB

**Env. chemical
DB**

**Cell DB with sex
description**

**Gender and
Diet-disease
studies**

**Blog big data
and gender**

<http://gister.re.kr/#!/main>

Establishing Cell DB with sex description



<http://gister.re.kr>

Sources:



American Type Culture Collection
(<http://www.atcc.org>)



(<https://www.phe-culturecollections.org.uk>)



(<http://cellbank.snu.ac.kr>)



(<http://cellbank.nibiohn.go.jp>)

Information entered for each cell

Species

- | | |
|--------------------------------|---------------------------------|
| ☐ Human | ☐ Rat |
| ☐ Mouse | ☐ Others |

Sex/Gender

- | | |
|--|---------------------------------|
| ☐ Male | ☐ Female |
| ☐ Unknown | |
| ☐ Mixed (Male&Female) | |

Category

- | | |
|---------------------------------------|------------------------------------|
| ☐ Cell line | ☐ Hybridoma |
| ☐ Primary cell | ☐ Stem cell |

Disease

- | | |
|--|---------------------------------|
| ☐ Normal | ☐ Cancer |
| ☐ Genetic disease | ☐ Others |

Tissue of origin

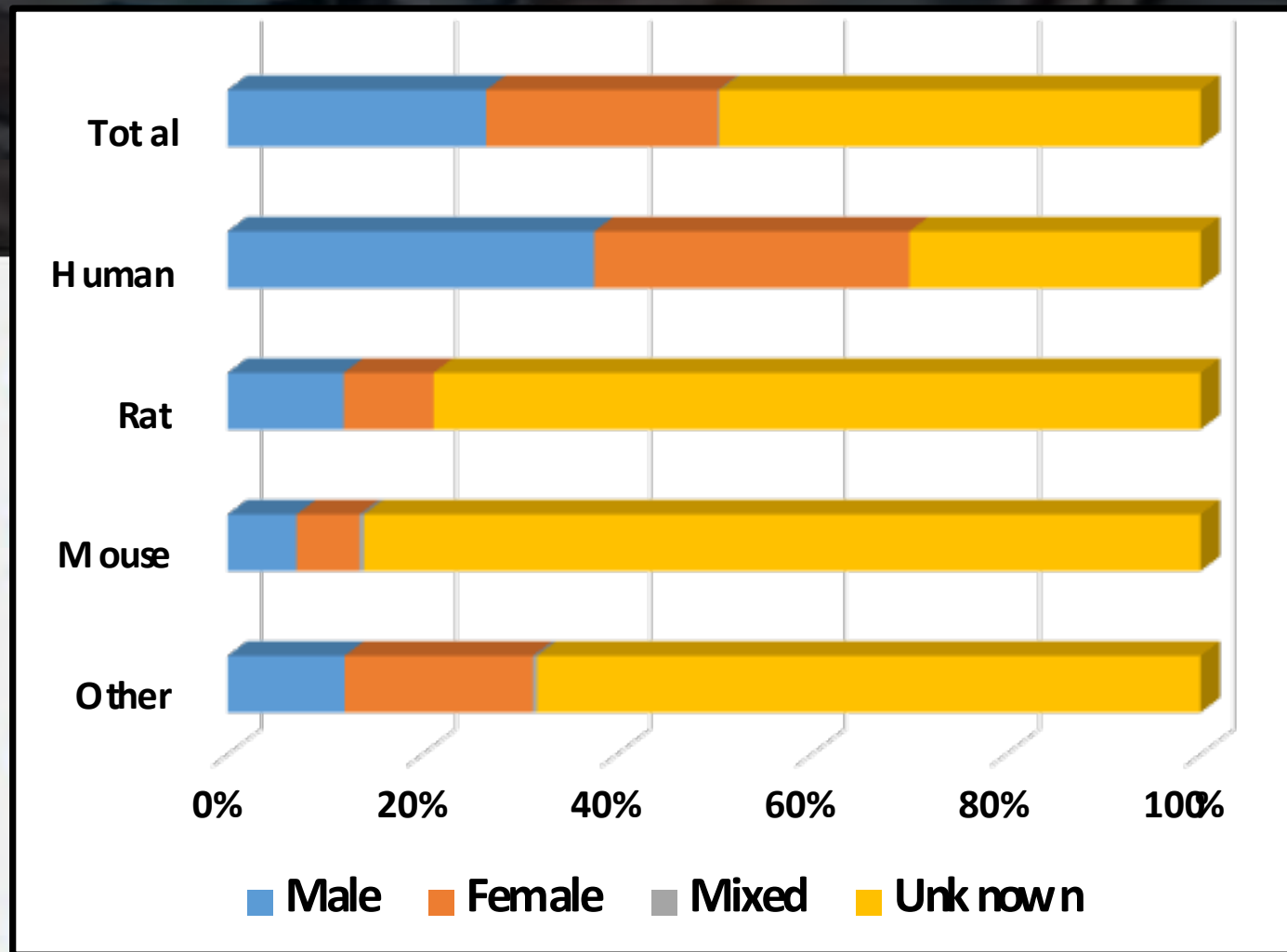
- | | |
|--|--|
| ☐ Lung | ☐ Colon |
| ☐ Cecum | ☐ Pancreas |
| ☐ Tongue | ☐ Skin |
| ☐ Mammary gland | ☐ Liver |
| ☐ Kidney | ☐ Stomach |
| ☐ Cervices | ☐ Testis |
| ☐ Lymphoma | ☐ Leukemia |
| ☐ Melanoma | ☐ Brain |
| ☐ Bone | ☐ Ovarian |
| ☐ Bladder | ☐ Head and Neck |
| ☐ Soft tissue Sarcoma | |
| ☐ Others | |

Cell type

- | | |
|--|--|
| ☐ Epithelial | ☐ Fibroblast |
| ☐ lymphocyte | ☐ B-Lymphoblast |
| ☐ T-lymphoblast | ☐ Monocyte |
| ☐ Melanoma | ☐ Neuronal |
| ☐ Glial | ☐ Keratinocyte |
| ☐ Embryonic | ☐ Hybridoma |
| ☐ Others | |

Vendor

- | | |
|-------------------------------|--------------------------------|
| ☐ ATCC | ☐ ECACC |
| ☐ JCRB | ☐ KCLB |



Total No. of Cells:
6,247

Search results 6247

[More Information](#)

[More Information](#)

[More Information](#)

[More Information](#)

[More Information](#)

☐ Normal ☐ Cancer
☐ Genetic disease ☐ Others

Tissue of origin

☐ Lung ☐ Colon

☐ Go Je
Human unknown | Female | skin | Genetic disease

Search Example 1:

Human Colon Cancer Cell Line

Species

- ☒ Human
 ☐ Rat
☐ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☐ Lung
 ☒ Colon
☐ Cecum
 ☐ Pancreas
☐ Tongue
 ☐ Skin
☐ Mammary gland
 ☐ Liver

Human colon cancer cell lines: **134**

Search results 134

☐ ALL

☐ GP50

Human Caucasian | Unknown | colon | Cancer

[More Information](#)

☐ MDST8

Human unknown | Unknown | colon | Cancer

[More Information](#)

☐ HCA-46

Human unknown | Female | colon | Cancer

[More Information](#)

☐ HCA-24

Human unknown | Male | colon | Cancer

[More Information](#)

☐ HCA-2

Human unknown | Female | colon | Cancer

[More Information](#)

☐ HCA-7

Human unknown | Female | colon | Cancer

Species

- ☒ Human ☐ Rat
☐ Mouse ☐ Others

Sex/Gender

- ☐ Male ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line ☐ Hybridoma
☐ Primary cell ☐ Stem cell

Disease

- ☐ Normal ☒ Cancer
☐ Genetic disease ☐ Others

Tissue of origin

- ☐ Lung ☒ Colon
☐ Cecum ☐ Pancreas
☐ Tongue ☐ Skin
☐ Mammary gland ☐ Liver

GP5d

Species	Human Caucasian
Sex & Gender	Unknown
Age	unknown
Category	Cell line
Disease	Cancer
Tissue of origin	colon
Cell type	epithelial
Culture properties	Adherent
Vendor	- ECACC Source Link

List

Species

- ☒ Human
 ☐ Rat
☐ Mouse
 ☐ Others

Sex/Gender

- ☒ Male
 ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☐ Lung
 ☒ Colon
☐ Cecum
 ☐ Pancreas
☐ Tongue
 ☐ Skin
☐ Mammary gland
 ☐ Liver
☐ Kidney
 ☐ Stomach

Human colon cancer cell lines, **Male:**

51

Search results 51

☐ HCT 116
 Human unknown | Male | colon | Cancer

[More Information](#)

☐ CACO-2
 Human Caucasian | Male | colon | Cancer

[More Information](#)

☐ SW 620
 Human Caucasian | Male | colon | Cancer

[More Information](#)

☐ HCT 116
 Human unknown | Male | colon | Cancer

[More Information](#)

☐ COLO 206F
 Human unknown | Male | colon | Cancer

[More Information](#)

☐ C10
 Human unknown | Male | colon | Cancer

[More Information](#)

Species

- ☒ Human
 ☐ Rat
☐ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☒ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☐ Lung
 ☒ Colon
☐ Cecum
 ☐ Pancreas
☐ Tongue
 ☐ Skin
☐ Mammary gland
 ☐ Liver
☐ Kidney
 ☐ Stomach
☐ Cervix
 ☐ Testis
☐ Lymphoma
 ☐ Leukemia

Human colon cancer cell lines, Female:

49

Search results 49

☐ **HCA-46**
 Human unknown | Female | colon | Cancer

[More Information](#)

☐ **HCA-2**
 Human unknown | Female | colon | Cancer

[More Information](#)

☐ **HCA-7**
 Human unknown | Female | colon | Cancer

[More Information](#)

☐ **HT29/219**
 Human Caucasian | Female | colon | Cancer

[More Information](#)

☐ **WiDr**
 Human unknown | Female | colon | Cancer

[More Information](#)

☐ **LS180**
 Human Caucasian | Female | colon | Cancer

[More Information](#)

☐ **LS174T**
 Human Caucasian | Female | colon | Cancer

Cell DB Search



Search

Species

- ☒ Human ☐ Rat
☐ Mouse ☐ Others

Sex/Gender

- ☐ Male ☐ Female
☒ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line ☐ Hybridoma
☐ Primary cell ☐ Stem cell

Disease

- ☐ Normal ☒ Cancer
☐ Genetic disease ☐ Others

Tissue of origin

Human colon cancer cell lines,
Unknown: 34

Search results 34

Human Caucasian | Unknown | colon | Cancer

More Information



MDST8

Human unknown | Unknown | colon | Cancer

More Information



HCA-7 Colony 29

Human unknown | Unknown | colon | Cancer

More Information



HT29 gluc C1

Human Caucasian | Unknown | colon | Cancer

More Information



HT115

Human unknown | Unknown | colon | Cancer

More Information

- ☐ Cecum
 ☐ Pancreas
- ☐ Tongue
 ☐ Skin
- ☐ Mammary gland
 ☐ Liver
- ☐ Kidney
 ☐ Stomach
- ☐ Cervix
 ☐ Testis
- ☐ Lymphoma
 ☐ Leukemia
- ☐ Melanoma
 ☐ Brain
- ☐ Bone
 ☐ Ovarian
- ☐ Bladder
 ☐ Head and Neck
- ☐ Soft tissue Sarcoma
- ☐ Others

Cell type

- ☒ Epithelial
 ☐ Fibroblast
- ☐ lymphocyte
 ☐ B-Lymphoblast
- ☐ T-lymphoblast
 ☐ Monocyte
- ☐ Melanoma
 ☐ Neuronal
- ☐ Glial
 ☐ Keratinocyte
- ☐ Embryonic
 ☐ Hybridoma
- ☐ Others

Vendor

- ☐ ATCC
 ☐ ECACC
- ☐ JCRB
 ☐ KCLB

SW 1417
 Human Caucasian
 | Female
 | colon
 | Cancer

[More Information](#)

☐ SW 403
 Human Caucasian
 | Female
 | colon
 | Cancer

[More Information](#)

☐ SW 1417
 Human unknown
 | Female
 | colon
 | Cancer

[More Information](#)

☐ SW 948
 Human Caucasian
 | Female
 | colon
 | Cancer

[More Information](#)

☐ HT29
 Human Caucasian
 | Female
 | colon
 | Cancer

[More Information](#)
[Download](#)

Species

- ☒ Human
 ☐ Rat
☐ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☒ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☐ Lung
 ☒ Colon
☐ Cecum
 ☐ Pancreas

Human colon cancer cell lines, Female,
Epithelial: 41



Search results 41

☐ ALL

☐ HCA-46

Human unknown | Female | colon | Cancer

[More Information](#)
☐ HCA-2

Human unknown | Female | colon | Cancer

[More Information](#)
☐ HCA-7

Human unknown | Female | colon | Cancer

[More Information](#)
☐ HT29/219

Human Caucasian | Female | colon | Cancer

[More Information](#)
☐ WiDr

Human unknown | Female | colon | Cancer

[More Information](#)
☐ LS174T

- ☐ Mammary gland
- ☐ Kidney
- ☐ Cervix
- ☐ Lymphoma
- ☐ Melanoma
- ☐ Bone
- ☐ Bladder
- ☐ Soft tissue Sarcoma
- ☐ Others
- ☐ Liver
- ☐ Stomach
- ☐ Testis
- ☐ Leukemia
- ☐ Brain
- ☐ Ovarian
- ☐ Head and Neck

Cell type

- ☒ Epithelial
- ☐ lymphocyte
- ☐ T-lymphoblast
- ☐ Melanoma
- ☐ Glial
- ☐ Embryonic
- ☐ Others
- ☐ Fibroblast
- ☐ B-Lymphoblast
- ☐ Monocyte
- ☐ Neuronal
- ☐ Keratinocyte
- ☐ Hybridoma

Vendor

- ☐ ATCC
- ☒ JCRB
- ☒ ECACC
- ☐ KCLB

Q Search

More Information

☐ C70

Human unknown | Female | colon | Cancer

More Information

☐ SW 48

Human Caucasian | Female | colon | Cancer

More Information

☐ HT29/219

Human Caucasian | Female | colon | Cancer

More Information

☐ LS174T

Human Caucasian | Female | colon | Cancer

More Information

Download

Species

- ☒ Human
 ☐ Rat
☐ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☒ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☐ Lung
 ☒ Colon
☐ Cecum
 ☐ Pancreas

☐ ALL

Human colon cancer cell lines, Female,
Epithelial, ECACC: 18

Search results 18

☐ HCA-46

Human unknown | Female | colon | Cancer

[More Information](#)
☐ HCA-2

Human unknown | Female | colon | Cancer

[More Information](#)
☐ HCA-7

Human unknown | Female | colon | Cancer

[More Information](#)
☐ GP2d

Human Caucasian | Female | colon | Cancer

[More Information](#)
☐ C106

Human unknown | Female | colon | Cancer

[More Information](#)
☐ C32 (colon)

Cell DB Search

human, colon cancer, female, ecacc

Search

Species

- ☐ Human ☐ Rat
☐ Mouse ☐ Others

Sex/Gender

- ☐ Male ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☐ Cell line ☐ Hybridoma
☐ Primary cell ☐ Stem cell

Disease

- ☐ Normal ☐ Cancer
☐ Genetic disease ☐ Others

Tissue of origin

☐ ALL

Search results 22

☐ C32 (colon)

Human unknown | Female | colon | Cancer

More Information

☐ GP2d

Human Caucasian | Female | colon | Cancer

More Information

☐ C106

Human unknown | Female | colon | Cancer

More Information

☐ C70

Human unknown | Female | colon | Cancer

More Information

☐ HCA-46

Human unknown | Female | colon | Cancer

More Information

Search Example 2:

Mouse Lung Cancer Cell Line

Species

- ☐ Human
 ☐ Rat
☒ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☒ Lung
 ☐ Colon
☐ Cecum
 ☐ Pancreas

☐ ALL

Mouse Lung cancer cell lines: 18

Search results 18

☐

CMT64/61

Mouse C57BL/ICRF | Unknown | lung | Cancer

[More Information](#)

☐

LL/2 (LLC1)

Mouse C57BL | Unknown | lung | Cancer

[More Information](#)

☐

KLN 205

Mouse DBA/2 | Unknown | lung | Cancer

[More Information](#)

☐

CMT 64

Mouse C57BL/lcrf | Unknown | lung | Cancer

[More Information](#)

☐

AB1

Mouse BALB/c | Female | lung | Cancer

[More Information](#)

☐

AB12

Species

- ☐ Human
 ☐ Rat
☒ Mouse
 ☐ Others

Sex/Gender

- ☒ Male
 ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☒ Lung
 ☐ Colon
☐ Cecum
 ☐ Pancreas

☐ ALL

Mouse Lung cancer cell lines,
Male: 0

Search results 0

Download

Species

- ☐ Human
 ☐ Rat
☒ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☒ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☒ Lung
 ☐ Colon
☐ Cecum
 ☐ Pancreas

Mouse Lung cancer cell lines,
Female: 5

☐ ALL

Search results 5

☐ **AB1**

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ **AB12**

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ **AB22**

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ **AC29**

Mouse CBA | Female | lung | Cancer

[More Information](#)
☐ **AE17**

Mouse C57BL/6J | Female | lung | Cancer

[More Information](#)
[Download](#)

Species

- ☐ Human
 ☐ Rat
☒ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☐ Female
☒ Unknown
☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
☐ Genetic disease
 ☐ Others

Tissue of origin

- ☒ Lung
 ☐ Colon
☐ Cecum
 ☐ Pancreas

Mouse Lung cancer cell lines,
Unknown: 13

Search results 13

☐ ALL

☐ CMT64/61

Mouse C57BL/ICRF | Unknown | lung | Cancer

More Information

☐ LL/2 (LLC1)

Mouse C57BL | Unknown | lung | Cancer

More Information

☐ KLN 205

Mouse DBA/2 | Unknown | lung | Cancer

More Information

☐ CMT 64

Mouse C57BL/lcrf | Unknown | lung | Cancer

More Information

☐ LL/2(LLc1)

Mouse C57BL Lewis | Unknown | lung | Cancer

More Information

☐ LA-4

Mouse A/He | Unknown | lung | Cancer

- ☐ Cervices
 ☐ Testis
- ☐ Lymphoma
 ☐ Leukemia
- ☐ Melanoma
 ☐ Brain
- ☐ Bone
 ☐ Ovarian
- ☐ Bladder
 ☐ Head and Neck
- ☐ Soft tissue Sarcoma
- ☐ Others

Cell type

- ☐ Epithelial
 ☐ Fibroblast
- ☐ lymphocyte
 ☐ B-Lymphoblast
- ☐ T-lymphoblast
 ☐ Monocyte
- ☐ Melanoma
 ☐ Neuronal
- ☐ Glial
 ☐ Keratinocyte
- ☐ Embryonic
 ☐ Hybridoma
- ☐ Others

Vendor

- ☐ ATCC
 ☒ ECACC
- ☐ JCRB
 ☐ KCLB

☐ **KLN 205**
 Mouse DBA/2 | Unknown | lung | Cancer

[More Information](#)

☐ **LA-4**
 Mouse A/He | Unknown | lung | Cancer

[More Information](#)
[Download](#)

Species

- ☐ Human
 ☐ Rat
- ☒ Mouse
 ☐ Others

Sex/Gender

- ☐ Male
 ☒ Female
- ☐ Unknown
- ☐ Mixed (Male&Female)

Category

- ☒ Cell line
 ☐ Hybridoma
- ☐ Primary cell
 ☐ Stem cell

Disease

- ☐ Normal
 ☒ Cancer
- ☐ Genetic disease
 ☐ Others

Tissue of origin

- ☒ Lung
 ☐ Colon
- ☐ Cecum
 ☐ Pancreas

Mouse Lung cancer cell lines,
Female, ECACC:5

☐ ALL

Search results 5

☐ AB1

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ AB12

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ AB22

Mouse BALB/c | Female | lung | Cancer

[More Information](#)
☐ AC29

Mouse CBA | Female | lung | Cancer

[More Information](#)
☐ AE17

Mouse C57BL/6J | Female | lung | Cancer

[More Information](#)

Cell DB Search

mouse, cell line, lung, cancer, female, ecacc

Search

Species

- ☐ Human ☐ Rat
☐ Mouse ☐ Others

Sex/Gender

- ☐ Male ☐ Female
☐ Unknown
☐ Mixed (Male&Female)

Category

- ☐ Cell line ☐ Hybridoma
☐ Primary cell ☐ Stem cell

Disease

- ☐ Normal ☐ Cancer
☐ Genetic disease ☐ Others

Tissue of origin

☐ ALL

Search results 5

☐ AC29

Mouse CBA | Female | lung | Cancer

More Information

☐ AB1

Mouse BALB/c | Female | lung | Cancer

More Information

☐ AB12

Mouse BALB/c | Female | lung | Cancer

More Information

☐ AB22

Mouse BALB/c | Female | lung | Cancer

More Information

☐ AE17

Mouse C57BL/6J | Female | lung | Cancer

More Information

- **Total 6,247 cells** sold by major global vendors - ATCC, ECACC, JCRB, KCLB - are registered (as of 2018.6.7): Human : 3,812 / Mouse : 1,367 / Rat : 411 / Others : 657
- Easy and quick search by clicking menu lists or entering information desired (Cell name, Species, Sex, Category, Disease, Tissue of origin, Cell type, Vendor)
- Unique - no other known cell DBs providing similar service world wide
- It is a new DB, please send us your suggestions and ideas!
 - on website (<http://gister.re.kr>) or by e-mail (gister@kofwst.org)

