

# Who will let you know the sex of the cells you use?

Mi-Na Park<sup>1</sup>, Ji Hyun Park<sup>2</sup>, Hee Young Paik<sup>1,3</sup>, and Suk Kyeong Lee<sup>4</sup>

<sup>1</sup>Department of Food and Nutrition, Seoul National University, Gwanak-ro Gwanak-gu, Seoul, 08826, Republic of Korea

<sup>2</sup>College of Pharmacy, Mokpo National University, 1666 Yeongsan-ro, Cheonggye-myeon, Muan-gun, Jonnam, 58554, Republic of Korea

<sup>3</sup>Center for Gendered Innovations in Science and Technology Research, Korea Federation of Women's Science and Technology Association, 7 Teheran-ro, Gangnam-gu, Seoul, 06130, Republic of Korea

<sup>4</sup>Department of Medical Lifescience, College of Medicine, The Catholic University of Korea, 222 Banpo-daero, Seocho-gu, Seoul, 06649, Republic of Korea

**Summary** Sex of the research subjects is an important biological variable. We found that significant portions of the commercially available cells are supplied without sex description. Commercial vendors can help researchers to evaluate sex as a biological variable by marking the sex of the cells.

## 1. Relevance

Recently, sex/gender of the research subjects began to be perceived as an important biological variable. Guidelines have been established requiring the inclusion of both sexes in clinical and preclinical studies. However, recognition that sex of the cells can also influence the experimental results remains significantly low. To prove or nullify sex of the cells as an experimental variable, knowing and reporting the sex of the cells should become a prerequisite in basic research.

## 2. Aims and objectives

We wanted to check how major cell banks which supply cells around the world describe the sex of the primary cells and cell lines to researchers.

## 3. Methods

We analyzed the homepages of American Type Culture Collection (ATCC, <http://www.atcc.org>), European Collection of Cell Cultures (ECACC, <http://www.phe-culturecollections.org.uk/collections/ecacc.aspx>), and Japanese Collection of Research Bioresources (JCRB, <https://cellbank.nibio.go.jp/english/>). We also compared the sex distribution of cells provided by these vendors based on their species and categories.

## 4. Results

Some cell vendors did not provide sex-based search engines for researchers. For significant portions of commercial cells sex description were not provided and less female cells were available than male cells in general.

## 5. Conclusions

The perception of sex/gender as an important biological variable and the efforts to integrate this perception into research can directly result in the precise understanding of the etiology of a disease, increasing the effectiveness of treatment, and minimizing any side effects. By describing the sexes of the cells they provide, the commercial vendors would help basic biomedical researchers to evaluate sex as a biological variable.

**6. Contact details:** Suk Kyeong Lee, [sukklee@catholic.ac.kr](mailto:sukklee@catholic.ac.kr)