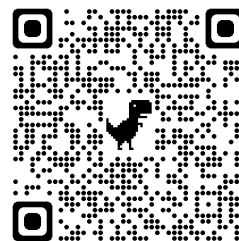


# CURRENT RESEARCH TOPICS IN PHARMACY:

*An Overview of Novelties in Cancer Treatment*

February 15<sup>th</sup>, 2024



## FIRST SESSION

10:00-11:30 AM

Moderator:

*Betül  
OKUYAN*

Welcome

*Prof. Hatice Kübra ELÇİOĞLU*

*Natural products mediated targeting  
of deregulated signaling pathways for  
chemoprevention of carcinogenesis  
and metastasis*

*Prof. Ahmed Ammad Farooqi*

Mesoporous silica nanoparticles: A  
smart tool for biomedical applications  
*Assoc. Prof. Fahima Dilnawaz*

Phytosomes: A Dynamic Innovation in  
Cancer Treatment  
*Assist. Prof. Dhanashree Sanap*

## SECOND SESSION

13:00-14:30 PM

Moderator:

*Ceyda EKENTOK  
ATICI*

Increased awareness of sex and  
gender as modulators of cancer risk  
and outcome is required among  
cancer researchers

*Assoc. Prof. Berna Özdemir*

*Management of oral chemotherapy-  
related problems in cancer patients*  
*Pharmacist Elif Aras Atik*

Cervical Cancer Treatment and HPV  
Vaccination: Preventive Priority for  
Future Generations

*Assist. Prof. Sneha Agrawal*

## THIRD SESSION

15:30-17:00 PM

Moderator:

*Esra TATAR*

Exploring new drug delivery avenues  
for targeted and localized cancer  
therapy through advanced  
nanotherapeutics  
*Assist. Prof. Monika Dwivedi*

Plectranthus: A Valuable Source of  
Bioactive Compounds for Therapeutic  
Applications

*Assoc. Prof. Patricia Rijo*

Targeted delivery of ligand-displaying  
exosomes using RNA  
nanotechnology for breast cancer  
*Dr. Burcu Üner*

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# INCREASED AWARENESS of SEX and GENDER AS MODULATORS of CANCER RISK and OUTCOME IS REQUIRED AMONG CANCER RESEARCHERS

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Both sex and gender affect cancer risk and survival. Sex refers to categorizing as male or female at birth based on biological characteristics such as reproductive organs, sex chromosomes, and hormones. Gender, on the other hand, refers to the perception of a person throughout their life (e.g., a woman or man) based on sociocultural roles and behaviors. Essentially, while all cells and animals have a sex, each person has a sex and a gender.

Sex differences in cancer risk and outcome have gained significant attention in clinical oncology [1]. Compared to females, globally, males show a greater cancer risk and mortality. The risk of experiencing toxicity from all classes of anticancer drugs is significantly higher in the female population [2].

It is, however, unknown to what extent cancer researchers consider sex as a biological variable for their research. We conducted an international survey among 1243 academic cancer researchers and collected quantitative and qualitative data. 62% of the participants indicated that the sex of the cell lines, animals, or human samples was important in their research. While most participants were aware of the sex of the animals (90%) and human samples (87%) used in their studies, nearly half (54%) did not know the sex of the cell lines in their experiments. Notably, 36 % of the researchers in our study felt that including cell lines of both sexes in their research was unnecessary, compared to 21% for animals and 12% for human samples.

In our qualitative thematic analysis, researchers indicated that it was not essential to study sex differences in every context of cancer research and that it did not need to be considered in all tumor types. Also, they gave various reasons why sex differences should not be studied in cell lines, including that they are too genetically altered for it to be necessary, but also that they are so well characterized that sex is not an important consideration.[3]

Our survey results highlight the need for increased awareness among cancer researchers regarding the potential impact of the sex of cell lines, animals, and human samples in their experiments.

**Keywords:** Sex differences; gender; cancer risk;cancer researchers.

## References

- [1] Özdemir BC, Oertelt-Prigione S, Adjei AA, Borchmann S, Haanen JB, Letsch A, Mir O, Quaas A, Verhoeven RHA, Wagner AD. Investigation of sex and gender differences in oncology gains momentum: ESMO announces the launch of a Gender Medicine Task Force. *Ann Oncol.* 2022;33(2):126-128. <https://doi.org/10.1016/j.annonc.2021.11.011>.
- [2] Unger JM, Vaidya R, Albain KS, LeBlanc M, Minasian LM, Gotay CC, Henry NL, Fisch MJ, Lee SM, Blanke CD, Hershman DL. Sex differences in risk of severe adverse events in patients receiving immunotherapy, targeted therapy, or chemotherapy in cancer clinical trials. *J Clin Oncol.* 2022;40(13):1474-1486. <https://doi.org/10.1200/jco.21.02377>.
- [3] Özdemir BC, Richters A, Espinosa da Silva C, Berner AM. Cancer researchers' perceptions of the importance of the sex of cell lines, animals, and human samples for cancer biology research. *iScience.* 2023;26(4):106212. <https://doi.org/10.1016/j.isci.2023.106212>.