

The molecule of the origin of life is critical in research against cancer

- Researchers in Spain and Denmark have found a way to attack cancer cells by producing one of the molecules of the origin of life.
- Compounds that inhibit RNA production increase the efficiency of tumour cell death after radiotherapy.

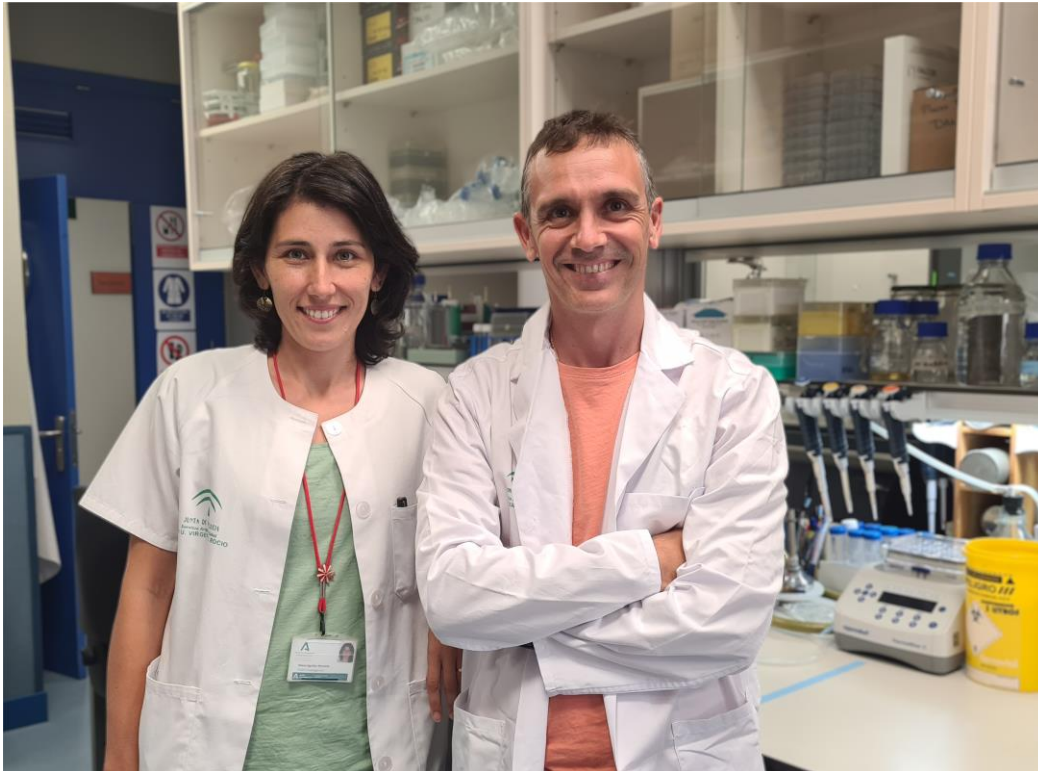
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A study by researchers from the Seville Institute of Biomedicine (IBiS) and the University of Seville, in collaboration with the Danish Cancer Center, reveals that inhibiting RNA synthesis after radiotherapy treatments facilitates the tumour cell death. The research has been published in the prestigious journal [Nature Communications](#).

The molecule that gave rise to life, RNA, is the key to repairing our genetic material and avoiding mutations that can lead to cancer. In addition, recent advances in research, such as the one published by the team of Dr. Daniel Gómez Cabello, propose this molecule as a therapeutic target for developing personalized strategies for cancer treatment.

The RNA-making machine in the cell, the enzyme RNA polymerase, is essential for repairing breaks in our DNA safely and reliably. RNA production is critical for normal cells, but especially for tumour cells that need more activity of this enzyme to grow uncontrollably.

The study reveals that inhibiting RNA synthesis by the THZ1 compound makes tumour cells much more sensitive to radiotherapy. "This study gives us clues on how to improve conventional therapies and achieve a higher success rate in treatments. Although there is still a long way to go before these RNA polymerase inhibitors can be used in the clinical setting, clinical trials are already being carried out today based on this enzyme for the treatment of cancer," explains the principal investigator, Dr. Daniel Gomez-Cabello. "Increasing knowledge about the use of these compounds in a safer and more personalized way will allow us to approach cancer treatment in the best possible way," added Dr. Diana Aguilar-Morante, coauthor of the study.



This research has been conducted at the Institute of Biomedicine of Seville and the University of Seville, in collaboration with the Danish Cancer Society, and published in the prestigious journal Nature Communications. Both researchers, who returned to Spain from Denmark, could continue their research thanks to contracts financed by Junta de Andalusia and the Spanish Association Against Cancer (AECC). 'Thanks to the AECC, it has been possible to continue with these studies and move this project forward,' explains the author.

Currently, these researchers continue to work on the mechanisms of how the original molecule that made life possible, RNA, can serve as a tool for the treatment of diseases. "Once we have observed that selective inhibition of RNA production would enhance the use of radiotherapy in cancer cells, it does not drastically affect the rest of the cells, it is time to start investigating it in different types of cancer, such as glioblastoma or pediatric neuroblastoma", comments Dr. Diana Aguilar-Morante. "From now on, our challenge will be to improve the efficiency of these new RNA production inhibitors and to reduce the side effects that can appear in cancer patients", notes Dr. Daniel Gómez-Cabello.

Article reference

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About IBiS

The Institute of Biomedicine of Seville (**IBiS**) is a multidisciplinary center whose objective is to carry out fundamental research on the causes and mechanisms of the most prevalent pathologies in the population and the development of new diagnostic and treatment methods for them.

IBiS is made up of 42 consolidated groups and 42 associated groups led by researchers from the University of Seville, the Spanish National Research Council (CSIC) and the Virgen del Rocío, Virgen Macarena and Virgen de Valme University Hospitals; organized around five thematic areas: Infectious Diseases and the Immune System, Neurosciences, Onco-hematology and Genetics, Cardiovascular and Respiratory Pathology / Other Systemic Diseases; and Liver, Digestive and Inflammatory Diseases.

IBiS institutionally depends on the Department of Health and consumer affairs of the Andalusian Government; the Andalusian Health Service (SAS); the Department of University, Research and Innovation of the Andalusian Government; the University of Seville and the Spanish National Research Council (CSIC).

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