CNIC study named Nature PJ Imaging Article of the Year for 2024

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The study describes an innovative probe for the noninvasive detection of macrophages using PET technology

A study coordinated by Dr. Carlos Pérez Medina from the *Centro Nacional de Investigaciones Cardiovasculares* (CNIC) in Madrid has been named by the journal *npj Imaging* as its Article of the Year for 2024 (npj Imaging).

The article, 'Macrophage PET imaging in mouse models of cardiovascular disease and cancer with an apolipoprotein-inspired radiotracer', describes an innovative probe for the noninvasive detection of macrophages—immune cells that play a key role in the inflammatory response—by positron emission tomography (PET). The study, published in May 2024, was carried out by scientists at the CNIC and Mount Sinai Hospital in New York.

Explaining the findings, Dr. Pérez Medina, who leads the Nanomedicine and Molecular Imaging group at the CNIC, said, "The immune system plays an essential role in tissue repair and the defense against pathogens, and impaired immune function is associated with diseases with a high mortality, including cardiovascular disease and cancer. Clinicians need tools that would allow them to monitor immune function in real time, and this new probe represents a significant advance in this area."

The new probe is modeled on the chemical structure of the main protein component of HDL cholesterol, known as “good cholesterol”, and has been tested in animal models of myocardial infarction and melanoma.

“In mice with induced myocardial infarction, the probe allowed the detection of the inflammatory response in the damaged tissue, and in mice with melanoma it detected the accumulation of macrophages in the tumors,” explained Dr. Pérez Medina.

The study demonstrates the high specificity of the probe and its ability to provide precise quantitative measures, which could make it an invaluable tool for the diagnosis of inflammatory processes and for monitoring therapies that target macrophages.

This advance, added Dr. Pérez Medina, “opens new possibilities for the diagnosis and personalized treatment of inflammatory diseases and cancer, consolidating the use of PET technologies in medical and clinical research.”

npj Imaging, a journal in the *Nature Partner Journals* (NPJ) series, publishes innovative and high-quality research covering all aspects of biomedical imaging. Topics covered include magnetic resonance imaging, PET, optical imaging, and echocardiography, as well as innovative technologies at the vanguard of biomedical imaging. A primary focus of the journal is interdisciplinary studies exploring how these tools can improve the diagnosis, monitoring, and treatment of disease.

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- *Toner, Y.C., Prévot, G., van Leent, M.M.T. et al. Macrophage PET imaging in mouse models of cardiovascular disease and cancer with an apolipoprotein-inspired radiotracer. npj Imaging 2, 12 (2024). https://doi.org/10.1038/s44303-024-00009-3*