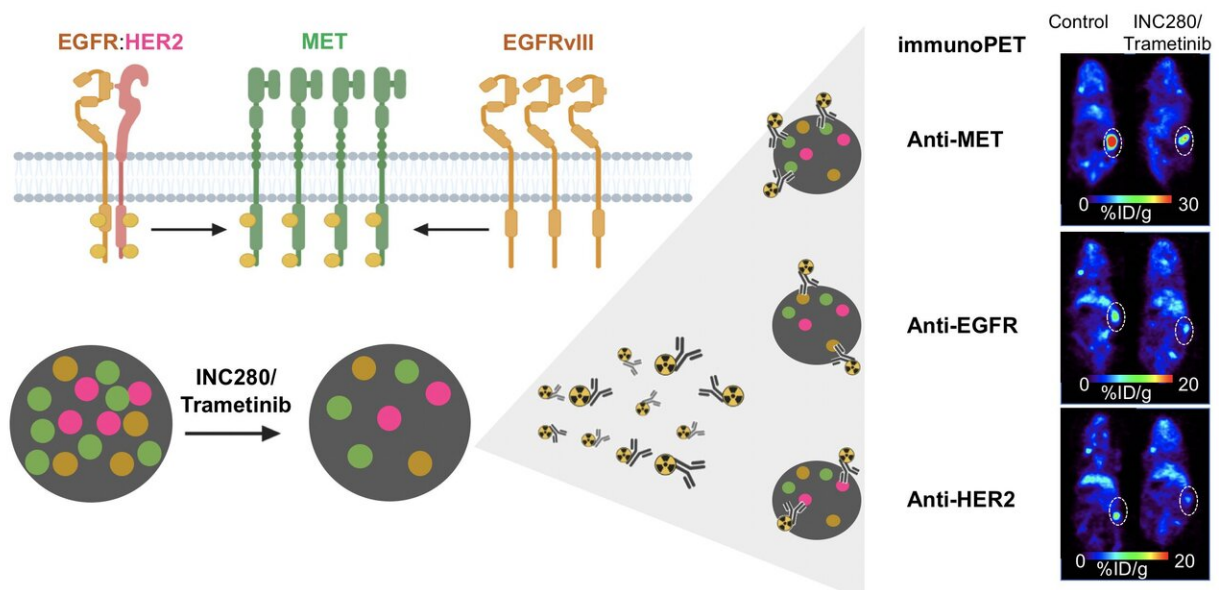


Immuno-PET can give physicians early insight into tumor response to targeted therapy

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Three receptor tyrosine kinases (RTKs)--EGFR (orange), HER2 (pink), and MET (green)--are imaged before and after the use of a MET-selective tyrosine kinase inhibitor (Trametinib), and trametinib, a mitogen activated protein kinase (MEK) inhibitor, showing its potential effectiveness for treating a tumor. Credit: Patricia Pereira, PhD, Research Associate at Memorial Sloan Kettering Cancer Center

Immuno-positron emission tomography (PET) imaging can provide early insight into a tumor's response to targeted therapy, allowing physicians to

select the most effective treatment for patients who have cancer. The new research was published in the March issue of *The Journal of Nuclear Medicine*.

The research showed that immuno-PET successfully visualizes changes in different [cancer](#) receptors (receptor tyrosine kinases, or RTKs) within tumors during targeted therapies. This gives physicians a tool that can be used to evaluate the effectiveness of a treatment soon after its administration.

"When healthy cells turn into cancer cells, there is a disruption in the RTK signaling. This makes RTKs a valuable therapeutic and imaging target," said Patricia Pereira, Ph.D., a research associate at Memorial Sloan Kettering Cancer Center in New York, New York. "Techniques that allow for real-time monitoring of RTK dynamics, such as immuno-PET, could be very beneficial in informing treatment choice and predicting response."

Immuno-PET uses a "tracer" to follow an antibody directed to a specific tumor. This allows physicians to obtain images of events happening at the tumor site and provides information into whether the tumor responds to the treatment. The [physician](#) can then visualize how the tumor is responding.

In this study, researchers used immuno-PET and three different antibodies to visualize three RTKs (MET, EGFR, and HER2) in a kidney tumor. Their results confirmed that immuno-PET visualizes RTKs in ways that determine the level of protein within a tumor. After administering a treatment, immuno-PET can detect changes in RTK levels that indicate whether a tumor is responsive to that treatment.

"Precision medicine involves the identification of certain gene mutations and expressions, as well as other features, that contribute individual

[tumor](#) signatures," noted Pereira. "Our study shows that immuno-PET is a powerful technique to document RTK changes and predict tumors' response to targeted therapies."

More information: Patricia M.R. Pereira et al, Immuno-PET Detects Changes in Multi-RTK Tumor Cell Expression Levels in Response to Targeted Kinase Inhibition, *Journal of Nuclear Medicine* (2020). [DOI: 10.2967/jnumed.120.244897](https://doi.org/10.2967/jnumed.120.244897)

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