

'Tumor avatars' predict patients' response to immunotherapy

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Tumor fragments in the lab are able to predict whether the corresponding real-life patients will benefit from immunotherapy. "We've solved a major problem many scientists had been facing:

Preserving a tumor's original composition and structure outside of the patient in the lab," says cancer researcher Daniela Thommen from the Netherlands Cancer Institute. On 8 July, the results of her study are published in *Nature Medicine*.

While some [cancer](#) patients experience incredible results from immunotherapy, many others do not benefit from this treatment, which puts the patient's own immune systems to work. By treating tiny fragments of [tumor](#) tissue from real patients in the lab, Daniela Thommen aims to improve this situation. With this new platform, she tries to match the right treatment with the right patient. "We first cut patient tumor samples into small pieces and then treat these 'tumor avatars' outside the patient's body with different therapies, to see which one works."

The big question is: Does such a 'tumor avatar' in the lab really reflect how a patient responds to a treatment? The latest research from the Thommen and Schumacher research groups together with many NKI-clinicians, confirms that these tumor avatars' response to treatment in the lab predicts whether the the patient will respond to the treatment in real life. The researchers analyzed the reaction of the tumor avatars in the lab to the type of immunotherapy called PD-1 blockade, and linked this information to treatment responses from 38 patients with various cancer types.

"These results confirm that we have now a very powerful model system in place which we can use to develop new diagnostics, and in this way, personalize immunotherapy," says Thommen. "We also found some unknown predictors for response or resistance to [immunotherapy](#). We identified three different subgroups of tumors that do not respond, for example. And we saw that the tumors that did respond had been infiltrated by a specific type of immune cells and formed more immune cell niches in their tumor, the so-called tertiary lymphoid structures.

These different markers can now be further tested as predictive markers for treatment response, separately or in combination."

More information: An ex vivo tumor fragment platform to dissect response to PD-1 blockade in cancer, *Nature Medicine* (2021). [DOI: 10.1038/s41591-021-01398-3](https://doi.org/10.1038/s41591-021-01398-3) , www.nature.com/articles/s41591-021-01398-3

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