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Memorial Sloan Kettering  
Cancer Center

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Dr. Michael Postow is a leader in checkpoint inhibitor therapy, a type of immunotherapy.

Immunotherapy is a method of treating cancer that uses drugs to empower the immune system to recognize and fight cancer. MSK has been a pioneer in developing immunotherapy. The approach has proven very effective in treating advanced melanoma.

There are several forms of immunotherapy. The immunotherapy drugs most commonly used to treat melanoma are called checkpoint inhibitors. [Checkpoint inhibitors](#) work by unleashing T cells (immune cells that seek out and destroy tumors). This therapy is sometimes called immune checkpoint blockade because the molecule that acts as a natural brake on T cells — the checkpoint — is blocked by the drug, thereby releasing the brake.

Three checkpoint inhibitor drugs are currently available to treat advanced melanoma. These are ipilimumab (Yervoy<sup>®</sup>), nivolumab (Opdivo<sup>®</sup>), and pembrolizumab (Keytruda<sup>®</sup>). Learn more about these drugs and MSK's role in their development below.

## Request an Appointment

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We're available 24 hours a day, 7 days a week

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## Ipilimumab for Advanced Melanoma

Ipilimumab (Yervoy®) can be effective for people with metastatic melanoma and stage III melanoma that cannot be removed completely with surgery. Ipilimumab works by blocking an immune molecule called CTLA-4.

In 2004, MSK patients were among the first in the world to receive ipilimumab treatment. MSK led the first clinical studies showing that ipilimumab could prolong the overall survival of people with metastatic melanoma. The US Food and Drug Administration approved the drug for general use in 2011. Clinical trials gave MSK patients the opportunity to receive ipilimumab years before the FDA approved it.

## Anti-PD-1 Therapy for Advanced Melanoma

Nivolumab (Opdivo®) and pembrolizumab (Keytruda®) belong to a class of drugs called PD-1 blockers. Both of these medications work by inhibiting the molecule PD-1. These drugs have proven very effective against metastatic melanoma and stage III melanoma that cannot be removed completely with surgery. Even people with stage III melanoma that can be removed with surgery may potentially benefit from treatment with anti-PD-1 immunotherapy.

Early clinical research into these drugs took place largely at MSK. Our patients have had access to nivolumab and pembrolizumab through clinical trials since 2010, approximately four years before approval by the US Food and Drug Administration.

We are still learning about anti-PD-1 therapies, since they have not been in use very long. So far, some MSK patients have benefited significantly from anti-PD-1 treatments. Many people who benefit from anti-PD-1 drugs can stop treatment and there is a low rate of the melanoma becoming active again. People whose disease gets worse after stopping anti-PD-1-based immunotherapy may respond to the therapy a second time.

## Combination Immunotherapy for Advanced Melanoma

Another approach to advanced melanoma treatment involves combining ipilimumab and nivolumab. The idea is that the two classes of drugs are more effective together than when used alone.

MSK was the first center to test this combination in patients. [We led the large phase II and phase III clinical trials that resulted in the US Food and Drug Administration's approval of this combination therapy in 2015.](#)

## Side Effects of Immunotherapy for Melanoma

Side effects are an important consideration when making decisions about immunotherapy treatment for melanoma. The combination therapy of ipilimumab plus nivolumab, for example, comes with more-severe side effects than when either drug is given alone. For some people, it may be better to take nivolumab or pembrolizumab alone rather than cope with the additional side effects of combination therapy.

MSK's immunotherapy experts are highly experienced in understanding who is at the greatest risk for side effects, as well as in managing them. We are also researching new ways to prevent and manage immunotherapy side effects.

People with melanoma should talk with their doctor about the benefits and risks before beginning any immunotherapy treatment.

## Immunotherapy Clinical Trials for Melanoma

At MSK, we are studying how immunotherapy can help more people with melanoma. For example, we are running clinical trials to test new combinations of immunotherapy treatments.

We are also exploring new drugs for people with melanoma that has not responded well to anti-PD-1 treatment.

MSK patients may be eligible to enroll in these and other clinical trials testing promising new approaches for melanoma treatment. [Browse our melanoma clinical trials.](#)

## Why choose to have immunotherapy at Memorial Sloan Kettering?

- MSK has a tradition of excellence in treating melanoma and developing new therapies.
- [Immunotherapy has been a focus at MSK since the late 1890s](#) , and we have been a part of every major immunotherapy advance throughout the history of cancer treatment.
- To treat melanoma in the best possible way, it takes a dedicated team of doctors, nurses, and quality-of-life experts. Our team of immunotherapy doctors is one of the largest and most experienced in the country.
- Our goal is not just to cure or control the cancer but to ensure that each person who comes to MSK for immunotherapy care has the best possible quality of life. That's why our medical oncologists consider every detail when making recommendations for immunotherapy.

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