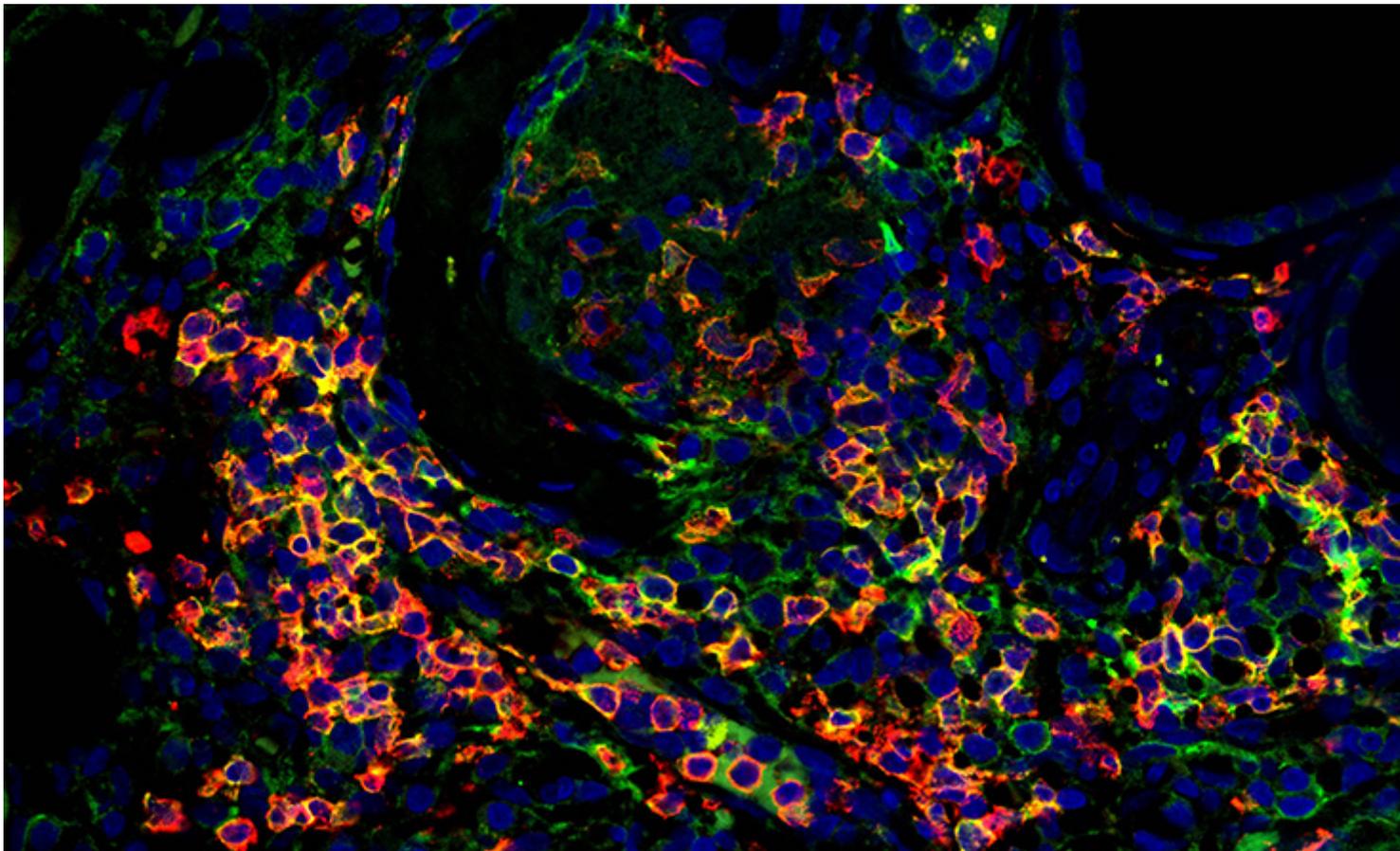


Autoimmunity, transplantation and inflammatory disease research at Novartis ^[1]

Discovery of medicines to improve the lives of the many patients suffering from immune-mediated and inflammatory diseases.

Our immune defense is essential for protecting us against dangerous pathogens. But in millions of people, the same defenses switch allegiance and mistakenly attack healthy tissue and organs, causing debilitating and sometimes lethal illness. Autoimmune and inflammatory diseases are treated often with broadly immune-suppressing steroids that are only partially effective, can have troubling side effects, and increase the risk for infection.

The autoimmunity, transplantation and inflammatory (ATI) diseases group is developing transformative therapies, including small molecules and biotherapeutics, that target the root cause of these diseases by modulating the immune system to restore health.



B-cells expressing CD40 in a kidney biopsy. Image credit Grazyna Wieczorek.

Led by Christian Bruns, a group of more than 200 scientists collaborates with clinical

researchers and uses cutting-edge analytical and computational tools and technologies to probe molecular disease pathways in tissue samples from affected patients. This approach allows us to stratify individuals based on treatment response and identify dysregulated immune pathways and novel molecular targets in disease pathology.

Our researchers have pioneered groundbreaking treatments for multiple sclerosis, organ transplantation, arthritis and inflammatory skin diseases as well as rare genetic diseases. The group's research focuses on these priority areas:

- **Immune tolerance:** Our goal is to develop therapies able to restore immunological tolerance to the body's own tissues while preserving protective immunity against harmful pathogens. If successful, this approach could potentially lead to cures for patients with autoimmune conditions such as multiple sclerosis and Type 1 diabetes.
- **Immuno-dermatology:** Our mission is to increase the molecular understanding of autoimmune and inflammatory skin diseases to enable the discovery of innovative therapies. Our research focuses on atopic dermatitis, hidradenitis suppurativa, inflammatory acne, psoriasis and vitiligo.
- **Immune regulation:** We are focusing on immune sensing pathways in innate and adaptive immunity that mediate chronic inflammatory autoimmune diseases, such as rheumatologic autoinflammatory conditions.
- **Immuno-nephrology** [2]: Our mission is to discover innovative treatments for patients with acute and chronic kidney disease, end stage renal disease and transplantation.
- **Inflammasome** [3]: Our goal is to establish a leading portfolio of inflammasome inhibitors. The inflammasome is a key signaling node of the innate immune system. Our research addresses different aspects of inflammasome activation aiming at effective and differentiated new therapies.

In an advanced project, our scientists are developing a monoclonal antibody targeting CD40, a cell surface receptor of pivotal importance in the regulation of immune response. In the context of kidney and liver transplantation, the anti-CD40 treatment has the potential to provide a therapeutic breakthrough: organ transplants that last a lifetime [4].



Discovery [5]

Toward improving the health and longevity of transplanted organs [4]

"Our ultimate goal is to develop transformative therapies resulting in cure," Bruns says. "That's a very high ambition, but we have access to state-of-the-art technologies, and a high

level of expertise and experience both within our group and among our external collaborators that's allowing us to come up with novel innovative and transformative options for patients."

Reimagine medicine with Novartis

[Learn about opportunities to join our team](#) [6]

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Links

[1] <https://www.novartis.com/our-science/research-disease-areas/autoimmunity-transplantation-inflammatory-disease>

[2] <https://www.novartis.com/stories/discovery/new-hope-treating-inflammatory-diseases-kidney>

[3] <https://www.novartis.com/stories/discovery/breaking-vicious-cycle-inflammation>

[4] <https://www.novartis.com/stories/discovery/toward-improving-health-and-longevity-transplanted-organs>

[5] <https://www.novartis.com/stories/discovery>

[6] <https://www.novartis.com/careers/career-search#division=NIBR&keyword=ATI>