IMMUNE Regulatory T Cells:

A Nobel-Winning Revolution in Medicine

BY RAYNA CARRUTHERS

Last October, the Nobel Assembly at the Karolinska Institute awarded the 2025 **Nobel Prize in Physiology or Medicine** to Mary E. Brunkow, Fred Ramsdell, and Shimon Sakaguchi.

Their collective work has deciphered a fundamental aspect of our **immune system**:

The critical function of
regulatory T cells (Tregs)

This discovery is reshaping our approach to **autoimmune** diseases, cancer, and beyond.

formed following activation of helper or cytotoxic T cells

Premise

Our immune system relies on **T cells** to act as soldiers, identifying and eliminating threats like viruses.[1]

But every powerful army needs a strict command structure to prevent friendly fire. This control center largely resides in the **thymus**, a gland in the chest where T cells are rigorously programmed into functional cells after being produced by bone marrow stem cells.[2]

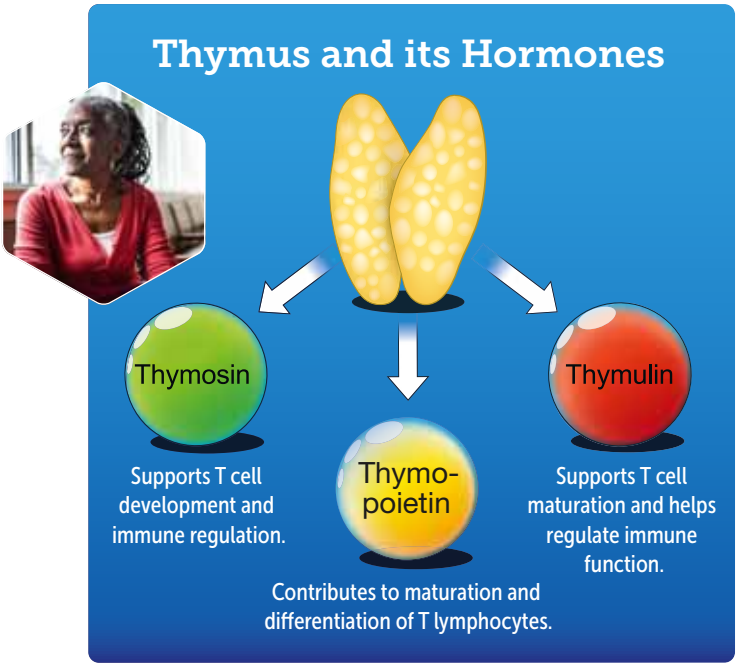
One challenge is that our **thymus gland** shrivels as we age, with functional thymic epithelial tissue being progressively replaced by adipose tissue, so that by age 55 very little **structural thymic** tissue remains.[3]

Nevertheless, even in individuals over 55 years of age, some functional **thymic tissue** remains capable of producing a limited number of new T cells. This residual activity is important for maintaining immune diversity and resilience, but it is far less robust than in youth.[3]

Function of Regulatory T cells

Nobel Prize winners Shimon Sakaguchi, Mary E. Brunkow, and Fred Ramsdell discovered that a special class of T cells graduates from thymic training with a unique mission.[4,5]

Known as **Regulatory T cells** (Tregs), they are the immune system's dedicated "peacekeepers" helping protect against immune cell attack on healthy tissues.[6,7]



In a landmark experiment, Sakaguchi showed that mice deprived of their Tregs developed severe autoimmune disease, while reconstituting these **cells** prevented the autoimmune disease from developing. The conclusion was clear:[7]

Tregs calm other T cells that mistakenly attack healthy tissue, preventing a destructive civil war within the body.

The story deepened with the work of Mary E. Brunkow and Fred Ramsdell, who identified the gene responsible for the *scurfy* mutation in mice.[8] This genetic defect cripples the development of Tregs, causing the immune system to spiral into a fatal "mutiny."[9] Their work provided the genetic blueprint for how this peacekeeping force is built, transforming Tregs from an observation into a defined biological pathway.

Clinical Case Histories

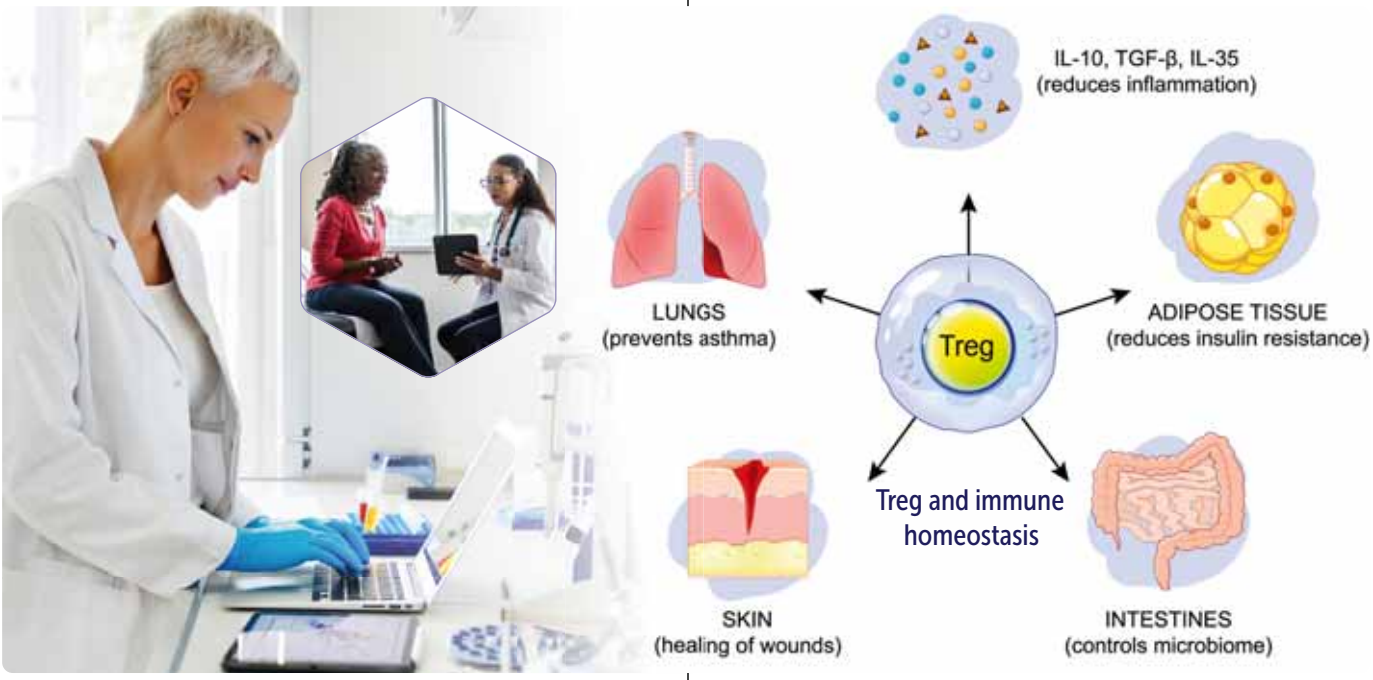
For the millions living with conditions like multiple sclerosis, rheumatoid arthritis, or type 1 diabetes, this Nobel-winning science is not abstract; it is the foundation of a new therapeutic paradigm.

The goal is no longer just to broadly suppress immunity, but to precisely enhance its natural peacekeeping force. This approach is called personalized precision immunotherapy.

Personalized precision immunotherapy is a pioneering treatment developed by Dr. Dipnarine Maharaj at The Maharaj Institute in Boynton Beach, Florida.

Dr. Maharaj, a stem cell transplant immunologist, first used this Treg modulating treatment in a patient named Gale, a former law enforcement officer battling **scleroderma**, **Raynaud's,** and **Madelung's disease.** After years of decline, she began treatment with Dr. Maharaj. She was told that she would need a feeding tube because of the severe contraction of her esophagus caused by the scar tissue formed by this **autoimmune** disease. Her other option was a side-effect-prone bone marrow transplant, risking often deadly *graft versus host* disease.

By measuring her T cells, including her Tregs, which were severely reduced, and correcting these with non-toxic cytokines which the body normally produces, Gale achieved a complete remission which persists today. "It's been something that my husband and I could not even have imagined," Gale says. "I can sleep lying down



again, and I can enjoy my favorite foods. It gave me my life back."

Other developmental approaches to utilizing Tregs include cellular therapies, where a patient's own stored Tregs or a donor's, are isolated, multiplied into billions in the lab, and reinfused as a living, targeted treatment to restore immune balance.

Utilizing personalized precision immunotherapy since 2008, many patients with autoimmune diseases have been helped at the Maharaj Institute.

One of those patients, Linda B., recalls being told that nothing could stop her Parkinson's-like illness from progressing. "Instead, I chose to try adult stem cell treatment in Florida. IT WORKED," she says. "Exactly two weeks into treatment I woke up feeling great. I felt like myself."

She describes her recovery in simple, powerful terms: "I could do little things that we all take for granted—like rummaging in my purse with my left hand, drying my back with both hands, walking normally again. I don't want anyone out there to think there is not a treatment. There is."

Another patient, Linda S., was diagnosed with Corticobasal Degeneration (CBD) — a rare and fatal neurodegenerative disease. Her husband, Jerry, remembers the devastating moment of diagnosis: "We were basically told that there was no hope."

After traveling from Las Vegas to meet Dr. Maharaj, Linda S. began a novel immune-focused treatment that slowed her disease progression and restored significant cognitive and motor function. "You can look at photos from a few years back and see how the life had been drained out of her," Jerry says. "The treatment Dr. Maharaj administered brought her back to life. I see her motor skills and her ability to think and communicate clearly improving every day."

That transformation is echoed by Tony, a retired United States Coast Guard officer, who accompanied his wife for treatment at the Maharaj Institute.

"The entire medical staff was the utmost professional, and their ongoing care was nothing short of outstanding," he says. His wife, who was near the point of needing a permanent feeding tube, showed "significant positive changes" within three months. *"Using your own immune system to assist in dealing with illness and disease certainly is the way to go*," he adds. "I predict that stem cell mobilization is the treatment of the future."

Others, like Aniko and Paul, highlight how the same principles can address chronic inflammatory and autoimmune conditions. Aniko, suffering from psoriasis, and Paul, living with Crohn's disease, both sought treatment at the Maharaj Institute after conventional therapies had failed to bring lasting relief.

Through the Institute's personalized precision immune therapy, the goal was to restore immune balance and re-induce self-tolerance, targeting the root of their autoimmune activity rather than merely masking symptoms. Their cases illustrate the broader potential of immune restoration to improve quality of life across a wide spectrum of chronic immune-related diseases.

Advancing the Science of Immunology

This **2025 Nobel Prize** helps validate a path that the Maharaj Institute of Immune Regenerative Medicine has been pioneering for over a decade. Since 2008, Dr. Dipnarine Maharaj has been at the forefront of personalized precision immunotherapy, leveraging advanced analysis of patients' peripheral blood immune systems, including their Tregs, to guide treatment for autoimmune diseases.

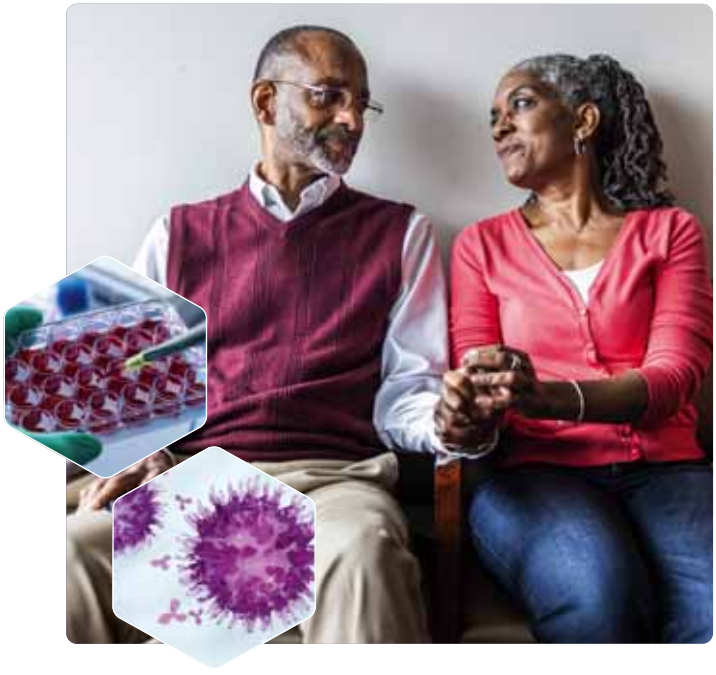
The laureates' work provides the fundamental blueprint, and the Maharaj Institute is building upon it. This prestigious recognition emboldens Dr. Maharaj's commitment to advancing the understanding of **immune regulation** and developing the innovative, life-changing treatments of tomorrow.

The Nobel Prize does not just honor past discovery—it accelerates the future of medicine, and the Maharaj Institute is proud to be part of that journey. ■

Important notes:

In preparing this update, **Life Extension** staff interviewed all the patients quoted in this article to corroborate their favorable and durable responses to treatments.

Because Dr. Maharaj's treatments are not yet recognized by the medical mainstream, private insurance and Medicare do not cover them. This results in high out-of-pocket expenses for those who choose to participate.



To engage in these treatments at the Maharaj Institute, travel to South Florida is required several times for advanced blood testing, personalized treatments, and follow-up.

Dr. Maharaj is a member of the *Life Extension Magazine*® Scientific Advisory Board. He is the founder and chief medical officer of South Florida Bone Marrow / Stem Cell Transplant Institute and its affiliate Stem Cell Cryobank—where individuals can store their stem cells for future use. He also maintains the Advanced Stem Cell Education Program for individuals wishing to learn more about the health benefits of stem cells. If you or a loved one would like to measure your immune system from a comprehensive blood test and see how your Tregs are affecting your immune system, please contact Dr. Maharaj at 561-752-5522 or the Maharaj Institute in Boynton Beach at **https://maharajinstitute.com/meet-dr-maharaj/**

If you have any questions on the scientific content of this article, please call a **Life Extension** Wellness Specialist at 1-866-864-3027.

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