



EMBARGO LIFTS: Thursday, Nov. 14 at 10:00 a.m. ET

Media Contact: Monica McDonald

Office: (404) 365-2162

Email: mmcdonald@rheumatology.org

Research at ACR's Annual Meeting Aims to Advance More Precise, Safer, and Scalable T Cell Therapies

WASHINGTON, D.C. – Chimeric antigen receptor, or CAR, T cell therapies have successfully treated B cell cancers since they received FDA approval in 2017. In recent trials, CAR-T cell therapy has also shown promise for long-term remission in systemic [lupus erythematosus \(SLE\)](#), myositis, and other B cell-driven autoimmune diseases. Although groundbreaking and exciting, current CAR-T cell therapies are complicated to manufacture, expensive to administer, and carry a risk of severe adverse events like opportunistic infection and cytokine-related toxicities. At the Johns Hopkins University School of Medicine, Maximilian F. Konig, MD and colleagues are developing next-generation cellular and bispecific T cell-engaging antibody treatments that aim to be much more precise, safer, and less costly than conventional B cell-targeted CAR-T cell therapies.

Dr. Konig, assistant professor of medicine and director of the Cellular Therapy Program for Autoimmune Diseases at Johns Hopkins, will discuss these emerging advances as well as the evolution of conventional CAR-T cell therapy on Nov. 18 at [ACR Convergence 2024](#), the American College of Rheumatology's annual meeting.

"Autologous CAR-T cells are created by removing some of a patient's white blood cells, including T cells, and genetically altering them in a lab," Konig says. "The modifications allow the patient's T cells, after they are expanded and infused back, to recognize desired antigens on the target cell surface and destroy them."

He goes on to say that immune effector cell therapy for autoimmune diseases is evolving rapidly, and clinical trials of cellular therapies are underway that promise to improve the safety profile and scalability of these transformative treatments. For example, researchers are studying the benefits of healthy donor-derived T and NK cells that can be manufactured ahead of time and used "off-the-shelf" for any patient. This would cut the time and expense involved in manufacturing a patient's own cells and open the door for more patients to receive CAR-T/NK cell therapies.

Likewise immune effector cell therapies that do not require cell engineering, such as bispecific T cell-engaging antibodies targeting B cell antigens, are entering clinical trials across a spectrum of rheumatic diseases. These therapies, while similarly potent to CAR-T cells, do not require conditioning therapy, are available off-the-shelf, and carry no hypothetical risk of secondary T cell cancers.

Beyond the rapid pace at which these therapies are repurposed from oncology, Konig believes the future of the field is in precision immunotherapies. "Our over-arching goal is to develop

precision treatments that selectively eliminate the drivers of autoimmune damage while leaving the protective immune response intact,” Dr. Konig says. His group [previously](#) developed chimeric autoantigen-T cell receptor (CATCR)-T cells, a precision cellular therapy which is being advanced for antiphospholipid syndrome and other rheumatic diseases at Johns Hopkins.

These re-engineered T cells selectively seek out, bind to, and kill the self-reactive B cells that drive an autoimmune disease without depleting healthy B cells. Maintaining these normal immune cells eliminates the risk of serious infections – a limitation inherent in all existing treatments for autoimmune diseases.

“Cellular and bispecific antibody therapies will revolutionize rheumatology in the next decade,” he says. “They will become commonplace and much less toxic, allowing them to be used beyond severe and refractory disease in the outpatient setting. The costs of immune effector cell therapies should come down dramatically, and we will be able to combine the potential for long-standing remission with therapies that do not cause infection. We need to advocate that insurance adopts these therapies as they can be cost effective in the long run.”

###

About ACR Convergence

ACR Convergence, the annual meeting of the American College of Rheumatology, is where rheumatology meets to collaborate, celebrate, congregate, and learn. With hundreds of sessions and thousands of abstracts, it offers a superior combination of basic science, clinical science, business education and interactive discussions to improve patient care. For more information about the meeting, visit the [ACR Convergence page](#), or join the conversation on X by following the official hashtag (#ACR24).

About the American College of Rheumatology

Founded in 1934, the American College of Rheumatology (ACR) is a not-for-profit, professional association committed to advancing the specialty of rheumatology that serves nearly 9,600 physicians, health professionals, researchers and scientists worldwide. In doing so, the ACR offers education, research, advocacy and practice management support to help its members continue their innovative work and provide quality patient care. Rheumatology professionals are experts in the diagnosis, management and treatment of more than 100 different types of arthritis and rheumatic diseases. For more information, visit rheumatology.org.