

Taking a Team Approach to Research: CTSI Scholar Veronika Bachanova's Translational Path

For years, Veronika Bachanova, MD, PhD, has treated patients suffering from blood cancers using all the latest tools available. But, like a lot of clinicians, she needs a bigger toolbox. With her patient-centered expertise to draw from, and with the help of the [Clinical and Translational Science Institute](#) (CTSI), Bachanova is taking a team approach to find better ways to fight these diseases.

“As a physician, I hear patients’ stories every day and see the devastation cancer causes; it is so tangible. There is a huge motivation to improve patients’ lives,” shared Bachanova, who wears the hats of hematologist, oncologist, researcher, and teacher as an assistant professor in the University of Minnesota’s Department of Medicine. “I want to make treatments more effective, durable, and safer.”



Bachanova works in the Medical School's Division of Hematology, Oncology and Transplantation

A career game plan

Research became a natural extension to the many years Bachanova has spent treating cancers, particularly leukemia and lymphoma, and she sought to grow her career as an investigator.

Bachanova applied for – and was accepted into – a [research career development](#) program at the University’s Clinical and Translational Science Institute (CTSI). The program, called the [KL2 Scholars Career Development Program](#), is an NIH-funded institutional training grant that supports University investigators who are relatively early in their research careers.

Upon joining the program, CTSI worked closely with Bachanova and her research mentor to develop a career development plan. The plan acts as a roadmap, complete with milestones, steps, and a timeline designed to help Bachanova establish herself as an investigator with strong funding and drive her research forward.

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“CTSI is helping me achieve the goal of becoming an effective independent researcher,” says Bachanova. “Its career development program forces me to think about the academic future in a systemic way. Importantly, with structured protected time, I can progressively build the knowledge, skills, and network I’ll need to get there.”

Sharpening skills

As a KL2 scholar, Bachanova attends weekly research career development seminars, which bring together junior investigators from across the University, from individual K awardees to scholars in CTSI, BIRCWH (Women's Health K12), and CHRCDA (Child Health K12) programs.

"These seminars offer the practical guidance and advice that investigators need to be navigate the path to academic success and independence," says Bachanova. "You don't have to learn as you go by making mistakes."

Seminars cover a range of topics, from grant-writing to time management, and give attendees a venue for developing and refining their skills. For example, Bachanova and other scholars were given two minutes to convey the importance of their research to a panel of community members, and received feedback on their pitch from panelists and fellow scholars.

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"The value of CTSI's weekly seminars goes beyond skill-building because they bring together such a diverse group of investigators, with different specialties and viewpoints," explains Bachanova. "The research principles are universal across disciplines. What often spins off these discussions is more refined and teased out to a core meaning."

Building a team

Bachanova's team science mindset goes back to her early days as a researcher. After spending years as a



Bachanova connects with a fellow University researcher at CTSI's annual Poster Session & Reception

clinician, she conducted basic research in basic immunology and natural killer cell biology, which gave her a deep appreciation for interdisciplinary research and its potential for real-world impact.

"Bench research opened my eyes to the biology behind what I was doing in the clinic. It's a beautiful observation, to see how powerful the immune system can be in curing cancer," said Bachanova. "And we're just scratching the surface, in terms of understanding how this can translate into new therapies."

Her interdisciplinary style continued when she became a University faculty member. For example, she co-founded UM leukemia tissue bank and collaborates with research teams from across the country to conduct multi-site clinical studies for lymphoma and leukemia.

She also assembles diverse teams for her own research projects. Her KL2 mentoring team includes basic researchers studying natural killer cells to counter-attack cancer, a molecular biologist designing novel

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molecules that deliver toxins or antibodies directly to cancer cells, statisticians from CTSI’s Biostatistical Design and Analysis Center to organize data, the Masonic Cancer Center Clinical Trials Office to help with clinical trial management and budgets, and, of course, herself to access and monitor patients.

“Creating a strong link between clinical and bench research is critical. When we combine the

observations gleaned from both patients and bench research, we can more completely understand the impact of the therapies we’re developing and advance more quickly toward better outcomes,” says Bachanova. “There are so many opportunities to learn; one person couldn’t possibly do it alone.”

Advancing to clinical trials

To Bachanova, one of the perks of CTSI’s KL2 Scholars program is that it helps ease two of the biggest pain points that investigators face: A lack of time and money. Bachanova and the other junior investigators in the program get the career jump-start they need, each annually receiving \$26,000 in research and travel funds as well as 75 percent of protected time for research, with salary support up to three years.

Bachanova uses these funds to explore the latest frontier in cancer research: Immunotherapy, which engages the body’s own mechanisms to fight cancer. More specifically, she’s trying to determine if natural killer cell immunotherapy can help treat lymphoma. Her mentor, Jeff Miller, MD, came up with the idea to use this type of therapy to treat patients with leukemia, and Bachanova’s trying to determine if this approach could work for lymphoma patients, too.

In this approach, a patient receives an infusion of immune cells called natural killer cells in combination with engineered monoclonal antibody and cytokine to keep natural killer cells alive. These cells target a surface protein on top of the cancer cells, while avoiding damage to other cells in the body. Unlike chemotherapy, which destroys healthy cells with the bad, immunotherapy can be very specific.

Bachanova and her team showed this could be successful in vitro, and their approach is now advancing to clinical trials.

“There’s mounting hope and evidence for immunotherapy, and we’re learning unprecedented lessons with every study,” says Bachanova. “Taking a smart, team-oriented approach to research is necessary to ensure the rapid translation of knowledge from bench to bedside, and to ultimately provide more effective and safer treatments that can help improve the lives of cancer patients.”

Learn more about CTSI’s career development programs at ctsi.umn.edu/education