

# Dr. Benjamin Greenberg

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[00:00:00] **Krissy Dilger:** Welcome to the "Community Meets Clinic" series, a collaborative podcast to introduce the clinicians, clinician-scientists, and healthcare personnel working directly with individuals and families facing a rare neuroimmune diagnosis. Hear directly from those in the clinic and connect with the individuals whose focus is promoting quality of life for those diagnosed with a rare neuroimmune disorder.

[00:00:29] SRNA is a non-profit focused on support, education, and research of rare neuroimmune disorders. You can learn more about us on our website at [wearesrna.org](https://wearesrna.org). "Community Meets Clinic" is sponsored in part by Amgen; Alexion, AstraZeneca Rare Disease; UCB; and Genentech.

[00:00:52] Hello and welcome. My name is Krissy Dilger and I moderated this episode. I would like to introduce our guest for today's episode, Dr. Benjamin Greenberg. Dr. Greenberg is a Professor in the Department of Neurology at University of Texas Southwestern Medical Center in Dallas, Texas.

[00:01:11] He currently serves as the Vice Chair of Translational Research and Strategic Initiatives for the Department of Neurology, and he is the Director of the Neurosciences Clinical Research Center. You can view his full bio in the podcast description.

[00:01:26] Thank you so much for joining me today, Dr. Greenberg. I'm glad to have you on the podcast and excited to learn a bit more about you as well as the clinics at University of Texas Southwestern Medical Center and Children's Medical Center. So, to start, can you tell me a little bit about yourself and what led you to neurology?

[00:01:48] **Dr. Benjamin Greenberg:** Absolutely. It's a pleasure to be here and be joining you. Thanks for hosting. So, my journey to neurology was a surprising one. When I was an undergraduate, I was a history major—actually, history of medicine and science. And it was during that period of time that I decided I wanted to go into medicine.

[00:02:09] And at the point that I made it to medical school, I had zero exposure to neurosciences or neurology, other than family experiences with diagnoses. Nothing in my academic career had prepared me for neurology, and it was really in the first two years of medical school, where we took our neurosciences course, that I really got very engaged and thought this was an exciting place to be.

[00:02:38] People have to remember back then, neurologists were often made fun of in medical school because we were a field, a discipline, where we could diagnose extremely well, but our therapeutic interventions were quite limited. So, my older brother's a physician and would tease me that I wanted to go into the "diagnose and adios" specialty.

[00:03:04] What I saw coming down the pipeline was a tremendous explosion in therapeutic potential. I really wanted to be part of that—not just enjoy having new tools but hopefully play a role in developing new tools and improving the outcomes for patients. It was the combination of an undiscovered territory, a lot of growth potential, and intellectually and clinically being fascinating to me that drew me to neurology in medical school.

[00:03:35] **Krissy Dilger:** We're lucky that you were drawn to it and have gone on to make such great strides in the field of neuroimmunology. And I'm glad it didn't deter you too much, the stigma back in medical school. So, what led you to focus specifically on the rare neuroimmune disorders, such as TM, NMOSD, MOGAD—all of the rare neuroimmune disorders?

[00:04:05] **Dr. Benjamin Greenberg:** Yeah, so much about our paths within medicine are driven by the patients that we have the privilege to work with and our mentors. And it was during my residency that I got drawn to neuroimmunology. Preceding this, before going to medical school, I had done a Master's at the Hopkins School of Public Health in Microbiology and Immunology.

[00:04:29] And so, coming into medical school, I had an interest in immunology, microbiology, and infections of the central nervous system. So, when I got to neurology, it was a natural fit for me to be interested, and I found myself in residency gravitating towards patients who were being evaluated for, or treated for, autoimmune disorders of the central nervous system. It was just when I started my residency that Doug Kerr opened the Myelitis Center at Hopkins.

[00:04:55] So, I really got to be there for the launch. And he was, and is, such a dynamic clinician, scientist, and mentor that we found a great working relationship and an opportunity for me to join in that effort relative to rare neuroimmunologic disorders.

[00:05:15] It was partly the preceding immunology interest, and then the patients and families. One of the things I really enjoyed about being part of a rare disease community is there really is a community. We get to know the individuals who have been touched in one way or another by these conditions in a very different way than other aspects of neurology. And so, all of it lined up to be a perfect fit for me and what I enjoy doing.

[00:05:47] **Krissy Dilger:** Great. Thank you so much for sharing. So, do you have any particular interest areas that you are working on in research?

[00:05:58] **Dr. Benjamin Greenberg:** My research really spans either the human side—looking at biomarkers and samples that come from our partners in research, our patients and families who take part—and then the application of that into interventions.

[00:06:13] And so, I spend a lot of time with first-in-human studies. We'll be talking in the future about our stem cell program that's ongoing, and we've got immune remodeling therapies for NMO patients to try and get them off their longstanding immunosuppression. And so, my research can be summarized as that translation: if there's something that's ready to move from the bench to the bedside and actually into humans, that's where I've been spending most of my focus.

[00:06:42] Thankfully, we have a rich environment for a lot of different options to move into patients, which has made us busier than ever, but for all good reasons, because we are studying a much broader number of interventions to try and prevent damage or reverse damage that's been done.

[00:07:03] **Krissy Dilger:** That's all very interesting, and we always look forward to seeing what kind of research and results come out of the clinic and the research team at UT Southwestern. So, thank you for sharing. One

of the things we'd like to do on "Community Meets Clinic" is highlight our centers, especially our Centers of Excellence, which UT Southwestern and Children's Medical Center are.

[00:07:31] And I would say, two of the original Centers of Excellence. Can you share more about your multidisciplinary clinic team? What specialists might a new patient expect to see if they have an appointment with you? And how does a new patient typically get connected?

[00:07:52] **Dr. Benjamin Greenberg:** It's quite variable, both in terms of how people get connected and then what people experience as they get into clinic. So, in terms of getting connected, we will have clinicians refer patients to see us, or patients self-refer. And the process is slightly different on the adult and the pediatric side in terms of the intake and getting connected with one of our practitioners. But in general, it's reaching out to the department, reaching out to the institution, and then going through our process.

[00:08:23] One of the things I remind families, particularly when there are acute new situations occurring—either new diagnoses or relapses—and they want us to get involved, is we don't see every referral that comes to us through a digital or old-version fax machine. And so, having your clinician reach out to myself or a colleague personally through a phone call or email, if there's an urgent issue, goes a long way to help us triage.

[00:08:51] If we know that somebody is having an urgent issue, we can try and help facilitate the referral process. Because the process isn't perfect, and don't ever be afraid to ask your clinician, "Do you mind reaching out and asking them to expedite this?" We always have ways to get people in faster once people come to us.

[00:09:09] The experience is a little different on the pediatric and the adult side. On the adult side, the multidisciplinary care exists at UT Southwestern but exists in independent clinics. And so, when patients come to see us, besides seeing the neurologist and getting eye testing and lab work, if there are needs for urology, or physiatry, or physical therapy, those appointments have to be set up in parallel or in series.

[00:09:33] And so, unfortunately, we can't order them until someone sees us for the first time, and then we get them set up for that multidisciplinary care. On the children's side, we've invested in a complex clinic, but it's paid off, we think, for families because so many of our families were coming from a distance. When they come to clinic, they see us, they see social work, neuropsychology, a school liaison. If we need ophthalmology, or urology, or physical medicine and rehabilitation, we can do it all on the same day in the same clinic.

[00:10:06] And so, it really is tailored to the individual patient, and family needs, to try and get as many resources in on the same day. It makes for a very long day—we recommend people bring snacks—but it's a way to try and move through things efficiently, particularly for families who are often coming from a distance.

[00:10:25] **Krissy Dilger:** That sounds great. Thank you for explaining that, and in great detail. So, I can imagine as a clinician that you deal with a lot of unknowns on a regular basis, and it can sometimes be heavy. So, how do you take care of yourself emotionally, and what do you do in your free time that helps you relax or reset?

[00:10:46] **Dr. Benjamin Greenberg:** Yeah, my kids have found new ways to make fun of me over the years. Time with family—we enjoy traveling and doing different things. My wife, Kim and our collective children between us—the four kids—always family time is a great enjoyment of mine and a way to take a break from work.

[00:11:14] I am a kitchen person, so I'm the chef-cook of the family. And so, I enjoy time there, and partly because of that, and as my daughters will point out, my advancing age, another hobby had to be found. So, I've gotten into, over the last couple of years, gardening—vegetable gardening—and trying different ways of growing what we eat.

[00:11:36] And they're teasing me that I keep lab notebooks of different approaches to how to get those tomatoes just right. But it's a fun way to merge a little bit of science, but with something fun to do.

[00:11:51] **Krissy Dilger:** That's really special. I love that you keep notes, and I think, hey, if it works.

[00:11:58] **Dr. Benjamin Greenberg:** You've got to find out just the right time and way to prune tomato plants to increase yields. So, this year, I have a randomization of different plants. We're going to do different pruning strategies and we're going to see what the yields are. I'm happy to report back next year.

[00:12:12] **Krissy Dilger:** Ever the scientist. I look forward to the results. So, is there anything you'd like to share for people with these disorders who are considering your clinic for care?

[00:12:25] **Dr. Benjamin Greenberg:** So, one of the things when it comes to us is we're happy to serve in any way that's helpful. We have some patients who come to us who want to receive their long-term primary neurology care with us, which is fine.

[00:12:36] We have other patients who come, and they're teamed up with a great group, and they want a second opinion from us to just comment on whether we agree or disagree, or have other suggestions, or be evaluated or plugged in for future research potential. But I will also stress to the community that we're very lucky in this community to have a network of physicians who are happy to do remote consultations to other clinicians.

[00:13:03] So, unfortunately, our medical licenses will not allow us to give direct recommendations to an individual we haven't seen as a patient, but we are allowed to liaise with other clinicians. So, if you don't live near one of the centers, but you want us to weigh in on your care, if you have a clinician—it doesn't have to be a neurologist.

[00:13:23] It can be a pediatrician, it can be an internist or a physiatrist. If they want to reach out to us, we're happy to get on the phone or exchange emails in any way that's helpful to give advice even from afar via your primary clinician. And it's not just me. I've got colleagues in California, and Baltimore, and Colorado, and across the country who are willing to engage in this process. Never assume that you just have to wait to be seen. You can also make use of us in any way that's helpful.

[00:13:57] **Krissy Dilger:** Great. Thank you for sharing. And we at SRNA are also happy to facilitate that kind of conversation. If you don't know how to begin, we can help you through the steps of getting your physician to engage in a consult. So, thank you for sharing. I always like to end the podcast on a hopeful note. So, can you tell us what you are hopeful for in the future of rare neuroimmune disorders?

[00:14:28] **Dr. Benjamin Greenberg:** I think there's actually two major areas of hope that are short-term in the pipeline. So, one is the diversity of programs around repair of the nervous system that have exploded in these couple of years is significant. Now, a lot of them are preclinical, making their way to clinical. Some of them are in clinical trials now, but they're no longer in the design stage or the science fiction stage.

[00:14:52] There are humans receiving these therapies as part of trials, and so I think we're going to steadily chip away at different strategies for improving a person's function after one of these inflammatory events. But secondly, for individuals who have long-term risks of recurrences, we're now using a word that we never used when I was in training, and that's "curative therapies."

[00:15:17] We're exploring ways to do one-and-done treatments to remodel the immune system so that people lose the risk of future events once and for all. And that's something we would've never conceptualized when I was getting trained. And so, those are two huge areas that I think we're going to see big changes over the next two to 10 years, with hopefully lots of exciting announcements coming.

[00:15:40] **Krissy Dilger:** I look forward to that and to see where we are, like you said, in the next five or 10 years, and having more conversations about new therapies and all the new research that will hopefully lead to results.

[00:15:56] **Dr. Benjamin Greenberg:** Yeah, and I will say the continued partnership with the community via SRNA has been huge. And I hope everyone within the community stays engaged. I know at times it can seem like things move at a glacial speed, but one of the things that's attracted investment in therapies or interventions for our community is the fact that a community exists.

[00:16:23] As we show a level of engagement from our patient and family partners with the SRNA and with the greater ecosystem, it attracts more and more attention and more and more investment. Staying engaged, staying involved makes a big difference.

[00:16:41] **Krissy Dilger:** Great. Thank you so much for joining me today, Dr. Greenberg. It was a pleasure to talk to you and learn more about you, as well as the clinic at UT Southwestern and Children's Medical.

[00:16:53] **Dr. Benjamin Greenberg:** I appreciate it. Thanks, Krissy. Thanks for everything.

[00:16:58] **Krissy Dilger:** Thank you to our "Community Meets Clinic" sponsors: Amgen; Alexion, AstraZeneca Rare Disease; UCB; and Genentech. Amgen is focused on the discovery, development, and commercialization of medicines that address critical needs for people impacted by rare, autoimmune, and severe inflammatory diseases. They apply scientific expertise and courage to bring clinically meaningful therapies to patients. Amgen believes science and compassion must work together to transform lives.

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[00:18:20] Founded more than 40 years ago, Genentech is a leading biotechnology company that discovers, develops, manufactures, and commercializes medicines to treat patients with serious and life-threatening medical conditions. The company, a member of the Roche Group, has headquarters in South San Francisco, California. For additional information about the company, please visit [www.gene.com](http://www.gene.com).