Behind the Breakthrough Podcast - University Health Network
Season 4 - Dr. Rama Khokha
Transcript
Episode Run Time: 34:50

BTB

Welcome to Behind the Breakthrough, the podcast all about groundbreaking medical research and the people behind it at Toronto's University Health Network, Canada's largest research and teaching hospital. I'm your host Christian Coté. Joining us on the podcast today Dr. Rama Khokha. Award winning senior scientist at UHN's Princess Margaret Cancer Center. Dr. Khokha's research in part focuses on breaking down the complex biology of cancer, one of the primary difficulties in treating the disease. In a world first, Dr. Khokha recently mapped the biology of pancreatic cancer tumors, advancing our understanding of their behaviors, and paving the way for precision targeted treatments. Dr. Rama Khokha Welcome to Behind the Breakthrough.

DR. RAMA KHOKHA

Hi, Christian. It's nice to be here today.

BTB

Thanks for being here. And before we dive in to this most recent research discovery of yours where you mapped the makeup or biology of pancreatic cancer called pancreatic ductal adenocarcinoma, first help us understand the scope and scale of this disease in Canada.

DR. RAMA KHOKHA

Christian, pancreatic cancer is also called PDAC, in short. It's one of the most aggressive unknown cancers, and it's really notorious for its poor survival and patient outcome. You know, although the pancreatic cancer incidence is low, because it ranks 11th most common cancer, but the high mortality of this cancer makes it the third leading cause of cancer death. And unfortunately, it's projected to become the second leading cause of cancer death by 2030.

BTB

And what's currently then on offer for cure or treatment of pancreatic ductal adenocarcinoma?

DR. RAMA KHOKHA

Currently, there is no cure for cancer and for pancreatic cancer treatments or aggressive combinations of chemotherapy. Essentially, there are two multi chemo drug cocktails that are used nowadays, one is more aggressive and is given to patients who can tolerate this more aggressive treatment. But there is

really no way to select which one is best for a given patient. And actually, often these treatments do not cure the patients.

BTB

So what's the prognosis then for patients who get this disease?

DR. RAMA KHOKHA

The prognosis for pancreatic cancer is 10% Patients are expected to live for more than five years on average. But the reality is that 20% patients live considerably longer. And the other 80% patients have a prognosis of only 3% survival over the five year period. So you can see the prognosis is pretty bad for PDAC.

BTB

Yeah, really poor outcomes. So the lack of effective treatments, big picture, why is that?

DR. RAMA KHOKHA

First of all, the cancer is diagnosed at a very advanced age, since the symptoms that bring patients to the clinic are unspecific, you know, you may have sudden weight loss or liver failure. And most patients have metastatic disease at the time of diagnosis. So it's already very advanced. And I think that plays into the poor outcomes for these patients when this tumor is very peculiar. And in that it has really this large swaths of stroma that surrounds the tumor cells. And in fact, it’s this tumor microenvironment that makes up the mass of the pancreatic cancer.

BTB

Okay, so then let's turn to your pioneering research, you and your team were successful in mapping the makeup of these pancreatic tumors, something known as the tumor microenvironment, you just mentioned, talk to us first about what is a tumor microenvironment?

DR. RAMA KHOKHA

Tumors do not only consist of tumor cells, tumor microenvironment is really the immediate vicinity of these tumor cells, or you can call them the neighborhood of the tumor cells. And that includes the surrounding blood vessels, immune cells, and these other cells called fibroblasts, the connective tissue in the tumor, as well as a lot of the biochemical signals that are contained within this neighborhood, and tumor constantly interacts with its microenvironment.

BTB

How well known was this tumor microenvironment, prior to your discovery?

DR. RAMA KHOKHA

The study of tumor microenvironment is well established field. And many groups have been working to figure out you know, how tumor microenvironment is co-opted by the cancer cells. And there's a lot of focus also on understanding tumor microenvironment of pancreatic cancer. But however, you know, understanding how heterogeneous this microenvironment is, or what are the precise function it serves, has been really challenging. Everyone talks about cancer cell heterogeneity, and what we find in our work is that the tumor microenvironment itself is also very heterogeneous. That is the mix of cells and the matrix is quite different in different regions within the tumor mass, especially for PDAC.

BTB

So we're going to dive into what you discovered, but just before maybe frame the narrative for us, because I found interesting when we talked before our podcast today that getting there for you was part of the journey in terms of how you found these tumor microenvironments and we're able to break them down. Because I remember you saying that you had to wade through a lot of noise to get there. Can you explain that?

DR. RAMA KHOKHA

Yeah. You know, when Barbara Grunwald joined our lab, she's a postdoc in my lab. She's decided to take on the study of PDAC, because that's what she was. She worked in her PhD on as well. So, Dr. Barbara Grunwald then she reviewed a lot of slides of PDAC cancer with our pathologist, Dr. Sandra Fisher. And they noticed large regional variations in the appearance of PDAC in a microenvironment. In fact, the patterns they found were distributed throughout the tumor. So we extracted these regional microenvironments, and also the tumors that were residing within these you know, locations. And we then deconvoluted their molecular makeup, with our colleagues Dr. Thomas Kissinger, and several other folks within Dr. Steve Gallinger's PanCuRx group, and then we got a lot of molecular information. And Barbara put all of the cell and molecular information together to discover the distinctions in these sort of regional microenvironmental patterns.

BTB

Okay, so Rama, if you can walk us through the three tumor microenvironments, you were able to map in the pancreatic tumor cancer?

DR. RAMA KHOKHA

We call these deserted regions, reactive regions, or intermediate regions. One of these is very mostly connective tissue. And another region has a lot of inflammation, and active fibroblasts. So we profile

their cell composition, you know, using a set of marker proteins, we use up to 25 proteins to kind of uncover the precise makeup of these microenvironments. And we also purified these fibroblasts from these regional microenvironments. And we studied these fibroblasts individually. And also in combination with the pancreatic tumor cells to try and figure out exactly what their own makeup is and how they're contributing to the pancreatic tumor cell behavior.

BTB

Have you gained any insights into how many of these three tumor microenvironments a patient with this cancer might typically have?

DR. RAMA KHOKHA

You know, most patients show up, show at least two microenvironments. And these may be distributed differently throughout their tumors? And we find that having both types of microenvironment associates with the poor prognosis for the patient?

BTB

Okay, and do we know how aggressive each one is?

DR. RAMA KHOKHA

You know, the reactive microenvironment makes the tumor progress. And the other one, which we call deserted, protects them from chemotherapy. So both of these microenvironments are actually bad in their own way. And having them together is worse for the tumor and the patient eventually.

BTB

And you discovered that of the three the reactive microenvironment has a faster growing tumor cell. Do we know why that is?

DR. RAMA KHOKHA

Yeah, that's a very good question. And that's an important, you know, focus right now, we don't currently know the exact molecules that are contained within this reactive microenvironment that are making these tumor cells proliferate. But I speculate there are going to be multiple signals involved in the tumor in promoting the tumor cell growth, we are confident we'll get there with more work, just focusing on the active nature of the reactive tumor microenvironment.

BTB

And what I found so intriguing is the fact that these tumor microenvironments include healthy cells and blood vessels, healthy blood vessels, is that a common phenomenon?

DR. RAMA KHOKHA
The tumor microenvironment, it's not malignant in the sense that it doesn't have its own set of genetic mutations, but these cells are actually not normal also, you know, they acquire this unhealthy state, where they can actually now able to deliver specific signals back to the tumor promoting their growth.

BTB

And do I have this right that these healthy cells in the tumor microenvironment, you distinguished, can actually play a role and help the cancer tumor to spread and resist treatment?

DR. RAMA KHOKHA

Absolutely, because they then provide you specific signals that's going to alter the immune response within a tumor, you know, or dampen the immune response, or they can provide signals which will allow then the tumor cells to gain access in motility to enter the blood vessels. So this this new state, the tumor microenvironment, is not genetically mutated, but it also is not healthy. You know, they are normal cells, but they're not in a healthy state anymore.

BTB

Right. I'm just curious, like for a layperson, such as myself, it sounds counterintuitive that healthy cells are helping cancer growth. Was any of this discovery of yours a surprise to you?

DR. RAMA KHOKHA

The normal neighborhood nature, or you know, let's say the microenvironment that is not genetically altered, but it's supportive of tumors is known for a long time. So people always think of tumor cells co-opting these normal cells in order to promote their own growth and dissemination. So that part has been known for a very long time.

BTB

Okay, so in terms of translation then for patients with pancreatic ductal adenocarcinoma where it's determined they have a reactive tumor microenvironment, for example, the one with the faster growing tumor cells, could that now impact someone's course of treatment?

DR. RAMA KHOKHA

You know, remember, there are currently only two treatment options, right. And then we have two first line therapies. But they're really unselective. And currently, there's no way to select even which of these two tumor treatments is best for a given patient. So I think eventually, it's going to be really important to come up with new options.

BTB
Right.

DR. RAMA KHOKHA

To treat PDAC's. But we're currently exploring how our observations of reactive and deserted tumor microenvironment whether that can feed into the decision making process, or even these two first line treatments.

BTB

I wanted to ask you about that, because knowing that deserted regions of tumor microenvironment actually increase with chemotherapy, is that in any way cascading down into impacting treatment going forward?

DR. RAMA KHOKHA

Yeah, the nature of this deserted region, it's a very intriguing observation. And then we observe that these regions actually become enriched in PDAC tumors as patients undergo chemotherapy. And you know, this could be a mechanism of how the tumor cells actually acquire resistance to chemotherapy. So we are currently exploring this idea. And we're also trying to see whether one can use this information to flag patients that have more deserted tumor microenvironment as a way to predicting who's unlikely to respond to the treatment. So this is currently a focus for us. And we're taking that to the clinical translation.

BTB

What was the reaction to your discovery when you finally published?

DR. RAMA KHOKHA

Well the reactions been hugely positive? You know, when we first deposited our paper on Bio Archive, we got a really very huge positive feedback on Twitter. And then after publication and sell the study has been highlighted by several high impact journals. And then we recently attended the pancreatic cancer conference that's organized by the American Association of Cancer Research. And it was really rewarding to note that so many speakers incorporated our view of the PDAC regional tumor microenvironment into their presentations, both as a way forward to advancing an understanding of this tumor microenvironment. And also how this observation actually can feed into advancing treatment ideas on pancreatic cancers.

BTB

When you published, I remember reading an analysis that characterize what you've done, is to bring order to chaos. Can you explain that for us?

DR. RAMA KHOKHA
Our studies shows that the tumor complexity is eventually actually quite well ordered. You know, within the discrete regions that we have identified, there are actually unique cell communities that are self organizing themselves into functional units. So I think providing order to this chaos is like solving a puzzle, you know, while a lot of work has actually highlighted the complexity of the microenvironment. But we are trying to shed light on how repeated heterogeneity within the tumor microenvironment can also unlock a new picture of a pancreatic cancer ecosystem. And you know, how this ecosystem is then built to support both the survival of the tumor cells and the resistance to chemotherapy.

BTB

I'm curious with your discovery, is there now or will there do you think, be a way to test patients for these tumor microenvironment presence?

DR. RAMA KHOKHA

Our entry point was, you know, looking at routine histopathology slides of the PDAC right. And now we can take our observations back to those histology slides, which are actually collected for every patient that comes to the clinic. So where we started, because we started with a very simple idea on testing, looking at histology, we can go back to that histology and say, you know how this observation applies to histology, we can classify the patients coming into certain clinical trials and treatments and see, okay, this is what we would project from our tumor microenvironment. Now let’s see, what we project is testable. And, you know, translatable to the readout we get from the clinical trials.

BTB

And I'm wondering if there's another cascading effect of your research Rama in terms of the method that you went through to map the pancreatic tumor microenvironments. Could this become a template that can be applied to map the biology of other cancers?

DR. RAMA KHOKHA

Well that is a very good idea, and this is an important angle that we want to explore. We want to explore it further in PDAC but also see whether it is testable in the context of other solid cancers just like colorectal cancer or lung cancer. In fact, Barbara Grunwald, you know, who's building her own independent program, she's taking this on as a central theme to explore in the context of multiple human cancers.

BTB

What I find fascinating about your discovery, there's so many sort of cascading implications in terms of this template that can be created for discovering or mapping the biology of other cancers, the potential

to impact treatment, diagnostics. Where do you go next with this discovery, because there's so many avenues for you?

DR. RAMA KHOKHA

What we are trying to do, you know, we want to be focused not only on the basic research, like we want to see how these very cool observations, how do they actually apply back to the clinic. So we are fortunate to be within Toronto within a city where clinical trials are going on on PDAC cancer patients. And we have the opportunity now to work with our oncologists and pathologists to see in these new clinical trials, whether we can categorize patients upfront and see how that would relate to their expected outcome. Right. So I think this is a very good opportunity. We're also exploring other ideas with colleagues within the city, whether the information we are requiring on these tumor microenvironments, whether they can be picked up in imaging modality because that is another avenue where you can apply this in a non invasive fashion to advance understanding of this cancer. So we are very aware of we're reaching out to all our colleagues, or where we think it can be translated to the clinical scenario in the near future.

BTB

You're listening to Behind the Breakthrough, the podcast all about groundbreaking medical research and the people behind it at Toronto's University Health Network, Canada's largest research and teaching hospital. I'm your host, Christine Coté. And we're speaking with Dr. Rama Khokha. Award winning senior scientist at UHN's Princess Margaret Cancer Center. Dr. Khokha recently mapped the biology of pancreatic ductal adenocarcinoma tumors, a first that advances our understanding of their behaviors and paves the way for the pursuit of precision targeted treatments. So Rama, you were born in Amritsar, in the Punjab, you grew up in Delhi, take us back to your teen years, and your early exposure to science.

DR. RAMA KHOKHA

As a young girl, I liked science subjects, and I liked it in the elementary school and high school. And you know, I was always quite interested in becoming an independent working girl. So that was always on my horizon. And, you know, when I was growing up, Indira Gandhi was the Prime Minister. So there was never really a shortage of established successful women as role models, but just having them, you know, in the society sort of elevated our horizon, you know, we never thought we couldn't do something. So I wanted to work as a young girl. And I think science inspired me. So that was the way to move forward, I guess.

BTB

So you take your BSc and masters in India, and then at just 21 years old, you pick up and leave your home and family to pursue a PhD in biochemistry at the University of Western Ontario in London, Ontario. What's the backstory there that motivated you to move halfway around the world to start over in a new country?

DR. RAMA KHOKHA
Well, when I was finishing my master's in nutrition, one of the way to do was do a PhD in biochemistry, because our nutrition was very enriched in biochemistry related subjects. So when the opportunity came to move to Canada, you know, I was lucky to be admitted to the Department of Biochemistry for the Ph. D. program at Western University within two weeks of arrival. And I had a lot of family support during this time. So it wasn't, in a way, not a heroic effort. But the opportunity came along, I worked hard, and made the best of what was in front of me, tried to do best in my coursework, and I ended up getting a couple of coveted studentships up front and that sort of helped me pave the path for it.

BTB

I'm curious though, coming to a new country, that's not always easy. Talk to us about the challenges of the transition you encountered moving to Canada?

DR. RAMA KHOKHA

When you take on a challenge like that you're very concerned of failure, you know, what if I fail a course, or if my presentation is not up to the mark, but this urges you to prove like this urge to prove that you're good enough and it takes up a lot of space in your mind. And this made me put in a ton of hours, which sometimes translated into a sort of a travel award or a scientific recognition, giving you this positive feedback basically, you know, to keep moving in this direction. But I can totally relate to all the insecurities and the uncertainties that come on it taking a big step like that.

BTB

Would you have advice for young students or fellows that are here now, or are about to embark on the same journey as you now?

DR. RAMA KHOKHA

I think my advice is, if you're passionate about science, and if you enjoy it, I think it's certainly for you. I think building an effective communication with your supervisor, your advisors and the broader scientific colleagues around you, is very fruitful. And I think the important thing is to not work in isolation, and also standing up for yourself without fear. You know, I think this is one thing I've kind of worked well for my journey in science, because overall, it's a tough discipline, you know, being in science, but it also provides you really wonderful opportunities to pursue your independent ideas. So I think science is very rewarding. And it's well worth your pursuit.

BTB

I just want to cue in on something you said, where you encourage people to stand up for themselves - is that a challenge?

DR. RAMA KHOKHA
It definitely is. It's always a challenge, you know, because sometimes standing up for yourself can mean unanticipated consequences, right? What if you get fired with that, you know, what if somebody takes offense to it, but you have to remember you cannot always please everybody. You have to stay with who you are. But I think making a conscious effort to stand up for yourself when the first time you're challenged, not the fifth time, you know that that helps.

BTB

So in your educational journey, was there an ah-ha moment for you when you knew you really connected with science?

DR. RAMA KHOKHA

I enjoyed science in high school. And then when the opportunities came to do a PhD, I was totally enjoying that. And I enjoyed my postdoc. But the aha moment for me really came when I had to work in Germany. So one of the negative in my career was that I did my PhD, and my first postdoc in the same city being London, Ontario. And it's not really looked upon as a positive if you stay in the same city. So I was always advised to go to a different country for my second postdoc. So it was very stressful to move to Heidelberg. It required a lot of planning for this short postdoc, I was going to do at the EMBL, for which I had received a very well known highly competitive scholarship. So I ended up at EMBL. This was the real aha moment for me, I experienced the high caliber science, their innovation, their very well funded scientific programs. And I saw how that translated into successes, and in groundbreaking discoveries. And this really lit an excitement in my heart that carries me to this day. And it also helped me develop my own philosophy in science. You know, we continuously apply for firms, we spend them on most exciting and challenging ideas, enabling our students and postdoc fellows as much as you can, right with the latest technologies and resources. And I think that then cascades into good successes, and sometimes really important, groundbreaking observations.

BTB

Talk to us about mentorship, and how that has helped shape your career trajectory.

DR. RAMA KHOKHA

Mentorship has been very important for my success, I received very good advice, at many decision making points in my career. For example, I got very good advice as to where to do my first and second postdocs within the circumstances I had. And also, I got good advice as to you know, how to build my own network within the scientific landscape. This is something I had to work more mindfully. And also, I got a lot of advice on how to improve my grant writing skills, which is, you know, crucial part of having a successful career. And I wouldn't have, you know, been successful, if so many of mentors hadn't spent their valuable time in hearing me out. And, you know, telling me what they thought I needed to do as the next steps.

BTB
And you know, play the role of mentor, what advice do you give young scientists in your lab?

DR. RAMA KHOKHA

Each situation is unique. And one advice doesn't really fit all. So what I do is I try and be open in sharing my own experiences with my lab, folks. You know, I share my failures and successes. And I also take an active role in helping them move to their next stage. And that next stage could be quite different for a student, could be different for a postdoc, could be different for a young faculty member, you know, who's joined our institute. And the other thing you have to tell when you're giving this advice is that they don't have to take it because how we receive some advice and what our interpretation of that is, and then how we apply to our scenario is very important. So you have to always sometimes hear people out when they are mentoring you, and you being a mentee, and then select what works for you.

BTB

I read where Elizabeth Blackburn, a Nobel Prize winner was asked about the qualities of a successful scientist and she said, resilience and persistence, as well as being opportunistic and creative. Does that resonate with you?

DR. RAMA KHOKHA

While I think Dr. Blackburn summarize these essential traits very well, resilience and persistence, for me translates into having a thick skin, and not to be easily daunted by others opinions. I think that's really important. I also believe, though, that I'm willing to listen to learn from the most hardest critiques is also helped, because there's always nuggets of good advice, hidden within that criticism that you can apply. But what I've really been inspired lately is Dr. Carolyn Bertozzi. She's one of the recent recipients of Nobel Prize in Chemistry. And I've become an instant fan of hers. You know, she has such a remarkable honesty and clarity in delivering her message. I loved watching her presentations on YouTube and Twitter, post Nobel Prize award. And you know, you can really see, I mean, she's inspired so many people, and yet she speaks, so simply, she simplifies the scientific concepts beautifully, and tells you how that applies to your discipline. And I think this is a remarkable opportunity to just watch and absorb from her.

BTB

It's crucial for audiences out there to understand that we need to make accessible the intertwining of science with everyday healthcare. Another quality that I'm wondering about is this notion of being able to tolerate uncertainty, is that something that you experience as a scientist?

DR. RAMA KHOKHA

Yeah, uncertainty is certainly part of science. And the scientific journey, as you know, is very arduous. What is fascinating for me, and in a way inspiring is to see how different personalities tolerate this uncertainty, you know, we all are different people. And we bring our own way of handling this uncertainty. And that brings really nuances to how you handle or whether you're successful or not successful in the scientific journey. I mean, within Princess Margaret, we've had a lot of new recruits, the scientific recruits over the past decade, and I've been part of the recruitment process. And for me, it's really fascinating to appreciate and see how their scientific programs are developing despite the uncertainty in the funding situations. And I think this comes from the unique philosophy of each of these investigators, you know, and how they translate their philosophy, despite the hurdles into obtaining a certain scientific trajectory.

BTB

Now, you're a pure scientist investigator. I'm curious, how do you keep patients and the urgency of their needs top of mind?

DR. RAMA KHOKHA

You're right, you know, I'm a basic scientist for a long time. But I've been also inspired by the needs that I thought were unmet. So my program has often been driven by questions that we believe are under studied from the perspective of patients needs. And actually, this is one of the main reasons we devoted quite a bit of effort in building a new program on osteosarcoma. For a number of years, about a decade ago, we started to commit to studying the bone cancer. And we actually eventually discovered a number of key genes in this area, and also came up with a supposed potential therapy for treatment and prevention of osteosarcoma. So that was very much driven, and inspired by the Terry Fox cancer actually. And then for the past number of years now, we've been very motivated to put our efforts towards studying ideas about breast cancer prevention. This is again, a very understudied area. And we kind of motivated by the challenging, these two challenging areas, and they've become a priority in the lab, along with our work on PDAC.

BTB

Given the urgency, you obviously understand that the urgency of patient needs for new treatments cures, how do you reconcile the patient need with the fact that science takes time?

DR. RAMA KHOKHA

You've said it well, science takes time. That is no doubt about it, translating basic discoveries into the clinic, we have to do it purposefully. But what I believe is important and requires prioritization in our health systems is the development of a framework right? That promotes the seamless clinical translation. For this you know, you require building scientific networking, build bridges with the oncologist with the other stakeholders who are committed to progress in cancer. So within PDAC, like

within pancreatic cancer, we're very fortunate to be well connected within Toronto, you know, to be able to translate some of our ideas to explore their applicability in the near future. But similarly, for other cancers like breast cancer prevention, we have built networks with our international colleagues, and work from my lab has helped initiate couple of breast cancer prevention, clinical trials, which is also very inspiring for us, and in a way satisfying to see the some of the ideas of moving forward in that clinical translational space.

BTB

Do you ever feel pressure in your work?

DR. RAMA KHOKHA

I certainly do, tremendous amount of pressure, some of this pressure is healthy, it keeps you focused on your goals. And on the other hand, I mean, there is constant pressure of attracting sufficient funding, if you want to do the cutting-edge science, you know, if you want to apply the latest methods to your discoveries, and not having that accessibility to funds is a challenge. I mean, Canadian government simply does not invest sufficiently in health research. And I think a lot of burden falls on the charitable foundations that are expected to pick up the responsibility of funding, research and innovation. Frankly, we are far behind USA. US has seen a tremendous increase in NIH funding. And we need to really see that big bonus of funding coming into Canadian health research as well.

BTB

Hear, hear. I'm curious Rama about when you come up against roadblocks and failure - how do you learn to navigate these challenges, because it's not like it's something we've been taught in school?

DR. RAMA KHOKHA

I think one of the lessons I sort of learned earlier, from my PhD studies to postdoc transition was to really observe how team science and teamwork is helpful in advancing your ideas. So really, I mean, most of the challenges we face, I think we tackled through our teamwork and team science. Now this is a really crucial part of my program. Everybody who joins my lab is made to understand that we work as a team, that's important to us. But also we've had truly amazing and excellent collaborators. And these collaborators have helped really move our program and help us tackle these challenges. They've been very generous with their advice and resources. So we leverage their contributions. And also similarly give back from my program, you know, when their need arises. So you know, that is our way of tackling scientific challenges. But on top of this, I think constant family support has played for me, a very essential part in helping me navigate and overcome these challenges. My husband, and my three children are super supportive of our endeavors right from the beginning. So I think without their support, I wouldn't have been able to put this much effort into my program.

BTB

When you reflect on that courageous move you made to leave home at just 21 years of age, what do you make of that decision today?

DR. RAMA KHOKHA
Well, I think the decision was very good. And I feel fortunate to be in Canada, I think Canada has presented me with opportunities, many opportunities have come my way. And these opportunities have evolved for me into a successful path. And not only for me for the subsequent trainees who came through my lab, men and women who have gone on to build their successful careers in academia, as doctors, as clinicians, as health researchers, and some of my students even went on to start up very successful startup companies. So I think seeing the successes of others has also been very rewarding to me. Yeah, overall, I think the decision was fantastic. And I encourage other folks who come from other countries, and I encourage that in my group as well, to come do science in Canada and grow their successful careers and contribute back to science.

BTB

Dr. Rama Khokha, award winning senior scientist at UHN's Princess Margaret Cancer Center. Thanks for sharing your groundbreaking research with us and continued success.

DR. RAMA KHOKHA

Thank you, Christian, thank you for the opportunity.

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For more on Dr. Khokha's work and the podcast go to you, uhn.ca or www.behindthebreakthrough.ca. And please let us know what you think. We love your feedback. That's a wrap for this edition of Behind the Breakthrough, the podcast all about groundbreaking medical research and the people behind it at the University Health Network in Toronto, Canada's largest research and teaching hospital. I'm your host, Christian Coté. Thanks for listening.

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