



## The ALBA Diversity Podcast

### Season 1- Episode 4

#### Prof Huda Zoghbi - Winner of the Brain Prize 2020

**Speaker Key:**

SM Shruti Muralidhar (Podcast host)

HZ Huda Zoghbi (Guest)

00:00:08

SM Hello, and welcome to the ALBA Diversity Podcast, an ALBA Network undertaking to profile and highlight diverse and immigrant neuroscientists. The ALBA Network aims to promote equity and diversity in the brain sciences. We talk to neuroscientists across positions, career paths, and backgrounds to better understand their personal journeys. We showcase the grit and determination it takes to overcome hurdles as part of underrepresented or minority groups. We talk about what keeps them going as individuals and as neuroscientists in today's world.

HZ My name is Huda Zoghbi. I'm a Professor at Baylor College of Medicine, and Director of the Jan and Duncan Neurological Research Institute in Houston. I study the brain, particularly brain diseases, trying to understand their causes, mechanism, and develop treatments.

00:01:12

SM Fantastic. Thank you so much for being here with us today. And I will start off our questions by maybe trying help you dig a little bit into nostalgia and cycle back a little bit in your time by asking, when was the first time you thought about the brain and neurons?

HZ So, the very, very first time I thought about it was when I was at the American University of Beirut, a medical student there. I had a phenomenal professor in neuroscience, two of them, neuroanatomy and neuroscience, and I really loved the course. So, that was the first time I thought about them. But I didn't think about them as a career back then. I finished medical school in paediatrics, and I was determined to become a paediatric cardiologist.

But while rotating as a resident, you have to rotate different specialities. While I was rotating on neurology, I started really becoming fascinated by the brain, and all the disorders of the brain that I encountered. And the thing that intrigued me the most is how logical the brain is. And if you see a person with a neurological problem, by just simply talking to them you can map the anatomy of their symptom. And I found that really very interesting. To me, it was always a puzzle to solve. And I needed the whole month.



My job was to try to talk to the patient or their family, and solve the anatomy of the problem without touching the patients first.

SM That is amazing.

HZ Just from history. That's how logical the brain is.

00:02:59

So, that's really when I became fascinated with neurology.

SM That's so old school. I don't even know if such people still exist, other than, maybe, psychologists or psychiatrists [overtalking].

HZ I'm very, very old school.

SM Yes. So, is it something you continued doing then? So, you finished your...

HZ I continued to do it. I have to say, my attending in neurology [?], that was my first, if you will, clinical mentor in neurology, he's the one who really made me appreciate neurology through his teaching. And I really loved it. So, when I became a neurology fellow, I always would sit, 80% of the time I can get the answer, get to the right diagnosis without even touching the patient. Just a good history to really map the anatomy. And I still do it to this day, when people come to me with a problem and they want me to help solve it, the first thing I do, take a good history.

SM It could be old school, but it works every time. Also, you will use your best tools at any given point of time.

HZ Yes. The exam will add a little bit, but eventually, the imaging, sometimes you have to do imaging... So, then, I really immersed myself in clinical neurology training as a fellow. And that's when I realised, this was in the mid-eighties to 1985 or something, I realised this is a very tough speciality. While it is really a puzzle and intriguing and interesting, but these are people who are affected with a devastating syndrome.

00:04:35

And the intrigue and the joy of solving puzzles was replaced by the pain of realising, these are all terrible diagnoses, and I couldn't do anything for them. Back then, we didn't even know the causes of most of the diseases we worked on. So we would tell the family, we're really sorry, your child has this diagnosis. And we think it can happen again. We think it's inherited, or genetic. And I found that extremely, extremely painful. And couple that with me encountering girls with Rett Syndrome, starting with Ashley, my first patient. I was really intrigued by her diagnosis, and how she was normal and lost her skill, but it wasn't degenerative.

So, it was all that combined, between encountering Ashley and wanting to understand this disease, and recognising the plight of neurological disorders and the lack of knowledge we had back then, I thought, you know what? As much as I love patients and love this speciality, I could probably do better if I go to the lab and learn how to become a researcher and maybe make a difference. And make some discoveries that will help these patients. So, I really, purely went into science inspired by the patients. And just the urge to do something that would help the



patients.

SM Yes, that's amazingly inspiring. Not many people make that jump, except for MD, PhD students, but it's also such a hard jump to make because you don't know what you're exchanging for what. Personally, career-wise. But it's so inspiring that you ended up following something that really emotionally touched you.

00:06:33

HZ In fact, it was a tough decision. Because I finished, basically, ten years of training in core paediatrics and neurology ready to become a faculty member, and chose to go back to the lab, where I'm really lower than the graduate student. At least, the graduate student just graduated from college. I graduated from college ten years before [overtalking] happened. So, really, it's a huge demotion. And I knew that. I knew coming in that, one, I have no research skills. I have so much to learn. And two, I need to really accept that everyone in the lab is better than me. And I'm going to have to learn, make my way in.

SM And that sounds very daunting. After finishing a whole speciality, you're going to go back to start from scratch, that is really something.

HZ But I would do it over and over and over again. It was definitely the right decision.

SM That is wonderful to hear. That was a great glimpse, thank you. Not many people have this kind of career progression. So, it's so nice to hear a different story.

First of all, I have to congratulate you for the Brain Prize. I know 2020 is a strange year, but congratulations. So, can you tell us a little bit about the work that got you the prize?

HZ Sure. So, the Brain Prize specifically has been given to Adrian Bird and myself for our work on Rett Syndrome and methyl CpG binding protein 2. I discovered MECP2, we call it in my lab, as the cause of Rett Syndrome after years and years and years of searching for the mutations and the cause for Rett Syndrome. But Adrian has studied it before as a protein that binds methylated cytosine. So the two of us have really come to it from a totally different angle. He came from a fundamental basic science approach, that [inaudible] there's a methyl cytosine binding protein.

00:08:50

I came to it, I was searching for a cause for Rett Syndrome, systematically going down the X chromosome, and found it as the cause of Rett Syndrome. And we've both continued to work on it and we both contributed to various aspects of our understanding of the pathogenesis, reversibility, and eventually how we're going to think about ways for therapy. So, really, collectively, we share this award for that work.

SM Now we roll a little bit into the whole immigrant, minority part of the conversation. So, my question is do you consider yourself to be a part of an immigrant or a minority or an underrepresented group in science? And have there been times in your life, in your career, where you've faced covert or even overt discrimination because of this?



HZ I have, actually. I consider myself an immigrant. And I'm proud to be an immigrant. And proud to be an Arab-American, Lebanese-American, whichever way you want to categorise me. I'm really very proud of that. I never forget my heritage. I feel very fortunate that I grew up in Beirut, Lebanon, and the cultural experiences as well as the education I got there. Whether in school, or the American University of Beirut. I cherish it, it's who I am.

00:10:23

And I would have probably stayed there was it not for the war that forced me to leave, and I ended up here and not able to return back home. So, I'm definitely an immigrant. And these days have really made me reflect on those early days. Because I came to visit, just to escape the war. Just for the summer, thinking the war will be over with. Then things got worse and I couldn't return back home. So, I turned from a visitor to a refugee. And in the last couple of years, somebody like me would not have been able to stay.

That's the sad reality, is that so many immigrants who really could have contributed so much to this country, unfortunately didn't have that opportunity I had back in the late seventies. So, absolutely, I'm an immigrant. And among immigrants, I would say I'm probably from the less common ones. Lebanon is a very small country. And while there may be a lot of Lebanese-Americans, I would say the majority of them are in finance and business. For medicine, very few really are in science. So, this is why perhaps, my time of immigrant is less abundant.

So, I should give a little good part of the history. When I couldn't return to Lebanon due to the civil war, it was a difficult time. It was already October, and no medical school will take a transfer student. But one medical school, and one person at that medical school, the dean of the medical school, noticed that I was a good student and he gave me a chance. And that was Meharry Medical College. It's a historically African-American medical school in Nashville, Tennessee. They were the only school that was willing to consider me. Even though I had superb grades, nobody would want a late transfer student.

00:12:27

So, I ended up in Meharry Medical College. So I became a minority among minorities.

SM Yes, I can see that.

HZ And I had an excellent education there. But the only time, if you ask me if I ever faced discrimination, really the only time I faced discrimination was in that one transition from medical school to residencies. I think, because I wasn't African-American and went to a minority medical school, I was discriminated against by all the top programmes in the country. None of them wanted to really give me a chance for a residency.

One person told me, what can I do to get you here? And that was who I consider my hero in life. You asked if I had mentors or people who are special, well, Ralph Feigin was my mentor who looked me in the eye when every medical school was rejecting me for residency despite being an Alpha Omega Alpha top student, he said, what can I do to get you here? Him giving me that chance was a life changer



for me. Because I was able to go to a first rate top paediatrics programme at Baylor College of Medicine. And of course, he was my first clinical mentor.

He was one of the most valuable paediatricians this country has seen in the last hundred years. He's really phenomenal. Everybody knows who he is. But to have him as my teacher and mentor... From there on, all the discrimination disappeared. Once that one person gave me a chance.

00:14:23

And I share this story with you because it shows the power of a small decision for someone, how it could either be damaging or how it could be promoting. And by him giving me the chance, that was a life changer. And really, growing up here, in my residency, I asked Ralph, all other programme directors rejected me. Why did you accept me? Because they said, I'm not a minority. I went to Meharry, and so and so. And he told me, him being Jewish, he in the past has faced such discrimination. And who better to look at the person and promote that person?

SM Wow. That gave me chills. So, the takeaway that I get from this is that you need to have faced a little bit of discrimination to understand what discriminated groups feel like. And like you said, the power of the smallest decision, where instead of choosing to judge somebody by their looks or anything else, you judge them by their skill set. And it seems like it made a huge difference for you.

HZ And so, from there on, I really sailed and felt very loved, very appreciated. And people ask me, why don't you ever leave Baylor College of Medicine? I did my residency here, fellowship, research, been faculty. And it's really simple. It is a place where I felt welcome, and given the best opportunity of my life. And I feel a loyalty to Ralph Feigin to give back to the community here. That's one. And of course, it's a highly collaborative, fantastic science, genetics, neuroscience place which fits exactly my interest.

00:16:18

So, it's a combination of superb academics with a very generous environment that gave me a chance and nurtured me. And I want to do it again and again and again for others.

SM That's as fantastic a reason as any. You've given a personal reason, you've given real reasons, you've given professional reasons and science reasons. What more do you need to stay and give back to a place that has given you so much? So, one of the things that I would like to segue our conversation into is also, including you, there are only six women out of a total of 34 prize winners from 2011 to 2020 that result in this kind of discrimination and this kind of minority groups like women, being consistently overlooked for big prizes like this.

HZ I think there's a variety of factors. I can tell you from my own experience, I was really totally shocked and surprised. We never say, please nominate me for this prize or that prize. Or, please, can you do this or that? We don't do that. So, it's by the grace of those who know us [overtalking].

SM Absolutely. It's by your network and people who know you and know your work well.



HZ I still don't know who it is, but somebody was very generous to nominate us. So, I think that's part of it. Women don't self-promote as much. To me, at least, it's odd to do that, to ask anybody to nominate me for anything. It would be very odd. So I think that's part of it. There may be many qualified women, but we don't know about them and it doesn't always happen. I think that that's a big part of it. And there are multiple factors.

00:18:22

We haven't had as many women. But now, we do have plenty. And I think the biggest factor now is recognising who they are, and everybody fights to nominate them and bring them in. This is the step I see now holds women back, more than anything else. Not that we don't have any more successful women in science. But I think what's holding it back, we don't self-promote, and somehow we need...

SM *Just more visibility, I guess, right? We need more people to speak up for...*

HZ And recognise that it's important to do that. The reason it's really important, to be honest with you, I'm always shy and humbled when something like this happens. In fact, I will tell you something, when somebody calls me and says, I'm going to nominate you for this or that. I say, no, no, nominate other people. It's fine. I really have been honoured, etc. etc. Because I feel, really, a little bit embarrassed to get any other award or something. So you feel bad.

But I also realise there is a value in winning an award as a woman, because I can be a role model.

SM *Absolutely.*

HZ I was brought to tears after the Breakthrough prize, when so many girls, little schoolgirls wrote hundreds of e-mails telling me... Two types of people wrote to me. And those were very emotional. Immigrants, and young people. Those two probably thought [?], if you could make it, I can make it.

00:20:18

SM *It's so important to see somebody like you doing the thing that you never thought you could do.*

HZ So, I consider these awards really, more as a way for me to, one, advance research, science, and mentorship. This is what I use these awards for. But the other side is to really inspire young people. So, in addition to the value of the awards that you can put toward good causes, I think the prestige and the honour of the award, you can put it to inspire young people.

You saw my history, I came from a small country, went to a small medical school here. And then, transitioned careers. Really, it wasn't a straight path.

SM *I think these are important things. And one of the things that, for me, what you just said, it really struck a chord with me. Because not a lot of people, especially big prize winners, not a lot of them talk about using the prize and using the culture around the prize. And the movement, the emotions around the prize, and channel that to improve science as a whole.*





HZ Yes.

SM So, one thing is using it to improve your science. So, using it to do better science on your topic of choice, Rett Syndrome, or MECP2, or others. But another thing is to improve the culture of science. And I feel like you made a wonderful point there, because it's not something you hear very often. And along with the fact that visibility of women needs to be promoted.

00:21:56

So it all ties into it, for me. Because it's all related to how we do science as human beings. And it makes perfect sense. What do you think could be some good practices that communities and institutions can adopt, so we don't have this problem of bias or overlooking all of these underrepresented groups?

HZ Well, the most important thing one has to recognise is the value of... It is a gift for me to have a diverse lab. It's not [?] me making an opportunity for people who are from a diverse background, it's really a gift for me. I discover day after day that the diverse lab I have is the lab that teaches me the most. It's the lab that really inspires me the most. So, by having a diverse environment, the thinking, the creativity, the complementarity, the cultural richness on top of the academic and scientific richness, all of that makes us much better scientists. Makes us much more creative scientists.

So, the first thing I want to say is that's why it's so important for all of us to really know the value of that. Having said that, I feel really strongly that we need to give opportunities to people who are overlooked. For people who come from underrepresented backgrounds, it is very similar. They don't feel good enough. We talked about women, but this is even worse, this is multiplied. They don't realise they can compete. It's up to us to say, you can. You can. You've had negative experiences, but you are wonderful. I am here to mentor you. I am here to hire you to work on the project of your dreams. And I'll be here for you.

00:24:03

So, I feel it's really important that we do the work. I do recognise that sometimes some students may not have been as prepared, may not have had all the privilege that other students may have had. So, it is important that we acknowledge that and we help them as needed. And I feel the best help we can do is to continue to move earlier and earlier in helping underrepresented groups. Start in middle school. We don't even think about how underprivileged kids have access to so much less [overtalking] their schools, and their middle school and high school, than other kids.

So, of course, when they come to a career in science, they have not had the same experience. They have not been as prepared. So, the best thing we can do is recognise them, recruit them, mentor them. But more importantly, recognise that we also have to start early. And this is why, in my institute now, my faculty and trainees are adopting classes in our community, to really help students in middle school and high school learn about the importance of science. Be interested in science. And have an advocate, have someone.

If they have needs in their classroom, whether it's computers, whether it's supplies,



we can provide that. We'll find a way to provide that. So it's really important to do it at every stage, because the systematic negligence of the minority community has been around for so long, and there's so much we have to do.

SM Yes, as a scientist, I always think, oh, if you define a problem very well, you can fix it. Or you can find a solution. But I feel like everything is so interconnected in things like this that it's so hard to know where to start.

00:26:14

And it sounds like your group and you, you've found a very good nodal point.

HZ Absolutely. And when school lockdown [unclear], I would talk to some of my colleagues here who work in the institute and who come from underrepresented groups, and I would say, is your child taking online classes? Unfortunately, we don't have a computer for my child. Or, unfortunately, we don't have this. So this is how we discovered that and we really mobilised the troops to help in every possible way.

SM Wow, that is wonderful. Thank you, on behalf of everybody, on behalf of all the children. I don't know if you've managed to speak to them, but thank you so much for doing this for them. I'm sure your actions will have very long-lived repercussions.

HZ Oh, we hope so. I think, as scientists, we're really privileged. And we need to make sure, because we do wonderful work, because we're doing work that's going to help us understand so many things about us, about the environment, about health, we have the opportunity to bring the smartest people to work. And that anyone who really has the potential should be given that potential.

SM Absolutely. Thank you for listening to this episode of the ALBA Diversity Podcast. To know more about the ALBA Network and its activities to promote equity and diversity in the brain sciences, please visit [alba.network](http://alba.network). You can also register as a member for free and take full advantage of the network's resources. For more details, follow the Twitter handle [@network\\_alba](https://twitter.com/network_alba), or AlbaNetBrain on Facebook.

00:28:01