

Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/dermconsult/exploring-the-emerging-role-of-genomics-in-dermatology/13657/>

ReachMD

www.reachmd.com
info@reachmd.com
(866) 423-7849

Exploring the Emerging Role of Genomics in Dermatology

Dr. Greenberg:

Advances in genetic understanding can help clinicians improve patient care, disease prevention, and even treatment. So, what exactly is genomics? And what role does it play in dermatology?

Welcome to *DermConsult* on ReachMD. I'm Dr. Michael Greenberg, and joining me to talk about genomics is Dr. Brook Brouha, a dermatologist and dermatopathologist at West Dermatology in San Diego, California. And Brook is actually a real doctor; he's got a PhD in genetics. Hey Brook, welcome to the program.

Dr. Brouha:

Hi, Mike. It's good to be here.

Dr. Greenberg:

So, Brook, to start us off, tell us what genomics is and why it matters when we think about moles and melanoma.

Dr. Brouha:

Well, Michael, genomics is the study of the entire human's genome, which is looking at the way all of the genetic elements interact at once in sort of a holistic way. And genomics is extremely important in studying cancer because what's happening when a cancer is occurring is that you have a little piece of you that is becoming its own organism. So, it is gaining a different set of genetics and a different genome. And as it becomes more and more independent from you, it has more and more mutations that change in its genome that allow it to do things like grow fast or live by itself in your brain or your lungs. And this evolution from your genome, which is what the cancer started out with, to the cancer genome, which is what the cancer ends up with, is a process that occurs over time and it's a Darwinistic situation where the fittest cancer cells tend to survive to reproduce and the more effectively they do this, the more effective a cancer it is. And melanoma is a particularly difficult cancer because we have tried to poison it, and cut it out, just like we do with most other cancers and up until recently we've been very unsuccessful in our ability to take down the enemy, melanoma. But in the past five or six years, we've had an incredible amount of progress. So, it's been a very exciting time to be interested in genomics and genetics.

Dr. Greenberg:

So also with genomics, not just taking the cancer down, but I understand finding it earlier?

Dr. Brouha:

Absolutely. So, if you can tune into the first few mutations that the cancer is making on its pathway towards success, you can get it before it becomes a more effective or more dangerous cancer.

Dr. Greenberg:

So, what are some of the big questions that genomics and genetics are answering in the field of dermatology?

Dr. Brouha:

So, what genomics does or expression genomics, in this case gene expression profiling, is it measures the amount of RNA for lots of different proteins. And it turns out that the cancer has a different agenda than your normal cells do. And you can actually see big differences in the expression profile, as compared to normal skin cells. And so this allows you to get some additional information into whether the cancer has got the ability to be dangerous or even whether a mole has got the ability to become cancer. And these are the biggest questions surrounding melanoma these days.

When you walk into the dermatologist's and you've got a spot on your arm and you're concerned about it, the dermatologist looks at it

and if he's concerned as well, or she's concerned as well, they'll say we can look at this and perhaps tell you. But sometimes it's tricky. So, in these cases, sometimes if we look at these different genomic profiles of expression, we can tell whether this thing looks like it's going to be a cancer or whether it's just going to be a benign lesion.

So, question number one is: the mole on your arm benign or malignant? And gene expression profiling by the company DermTech allows us to take a piece of tape and put it on your arm, pick up a bunch of mRNA, and send it to the lab and somehow it doesn't degrade, which is still incredible to me. But DermTech is able to measure the expression of different genes on the tape and tell you whether or not you need to worry about this spot on your arm being melanoma. So that's question number one.

Question number two is: if you have a melanoma, is it going to be a dangerous one or not? And so another company Castle is doing some work where they're able to basically look at your known melanoma and figure out whether it's going to be likely to behave aggressively or likely to be a melanoma that once you cut it out it's treated.

So those are the areas in melanoma that are important. But also, we're starting to use these technologies to ask the question about other inflammatory diseases in dermatology. So, we might be able to use this sticker, for example, to tell us whether the rash that you have was caused by a drug, or whether it's eczema caused by too much dry air or too much handwashing, or whether it's psoriasis caused by an upregulation in immune system. And so these all have different genetic expression profiles and we're able to potentially use this mRNA technology to answer these questions instead of having to poke holes in patients and use biopsies to answer them.

Dr. Greenberg:

For those just tuning in, you're listening to *DermConsult* on ReachMD. I'm Dr. Michael Greenberg, and I'm speaking with Dr. Brook Brouha about genomics in dermatology.

So, Brook, now that we have a much better understanding of what genomics is, can you tell us when you utilize it in your own practice?

Dr. Brouha:

So, for me, I'm very excited about the future here. But what I'm currently doing today is one of the main questions I'm answering and I realized that this was important because when my sister, who is an internal medicine doctor, came to visit me and she showed me a mole on her leg and asked me whether I was worried about it being melanoma. I took a closer look and my answer to her was this probably isn't melanoma, but there's a few characteristics that are a little funny here, so I can't exclude it with absolute certainty just looking at it with my eye. In the old days, this would be something that we would biopsy but with the understanding that maybe it's got an extremely low likelihood of being melanoma or because it's on a leg, maybe we would watch it closely. But I said, I've got this tape test that I've been playing with, I could put the piece of tape on this thing and we can just mail it off to this company DermTech and it will tell us whether or not you need to worry about this being a melanoma. And it dawned on me that since I try and tell people, at least, that I like to treat my patients like they're family, if this was the test that I was choosing on my very own sister, then I should be doing this test on my patients. And about five or six years ago I started doing this a lot and in the past five years, I've done close to 1,500 of these tests. And I have found that they are able to find melanomas and I've got pictures of these things where I would have not been as likely to predict that these lesions would've been melanoma, just only that there was something that was a little unusual about them.

And then the other area and a big question these people have who have Googled melanoma and are very scared is, is my melanoma going to be a dangerous one? Is it going to end up shortening my life? And it's very nice to be able to reassure people that their particular melanoma is not going to be one that is going to behave aggressively or if it looks like it's going to behave aggressively then potentially put some interventions in place and possibly make a big difference in the outcome. And there's a test by Castle that I use to answer this question. And obviously I'm doing this one much less frequently because this one's only done on diagnosed melanomas, but it's answering the question for me is this melanoma going to be a wolf in sheep's clothing or is it going to be one that I don't need to be too concerned about.

Dr. Greenberg:

OK. Any one particular story, when genomics really helped you out in practice?

Dr. Brouha:

I had an 11-year-old who came to see me whose father had had a melanoma and her grandfather had had a melanoma and she had this this spot on the back of her neck which I didn't like and I told the parents I'm concerned this is melanoma; I'd like to biopsy it and the parents said, oh she has gymnastics this evening and she's swimming tomorrow morning. You know, can't we just watch it. And this was the situation where I said, I'll tell you what, why don't we do this tape test and if it ends up being positive then I think we really want to interrupt this young woman's activities and biopsy this. But if it ends up being negative, I don't mind maybe following pictures of it. And it was a double-positive, which is the highest risk result that you could get with the DermTech test and when I was able to do the biopsy with that result, the parents were a little more amenable to it. The patient had a melanoma. And so this was an 11-year-old girl

with a melanoma, which is an unusual situation. But the thing was ugly. And so this is my most memorable case of when DermTech really helped me out.

Dr. Greenberg:

And before we come to a close on this fascinating subject, Brook, what does the future of genomics look like to you?

Dr. Brouha:

I think we're going to see genomics really being a very helpful aid to the clinician. This is going to be a very useful tool in situations both in tumors but also in inflammatory diseases when it's difficult to make a diagnosis, that would be number one. So, you've got a red rash that looks scaly and there's lots of different things on a list that it could be and it would be nice to be able to just put a sticker on it and have it tell you what it is. Also in types of cancer I think we have tests that will be coming up fairly soon that will allow us to figure out whether something is a basal cell or a squamous cell and when this is a little bump on your nose and you don't want to trade that bump for a divot, being able to use a piece of tape is a wonderful way to solve that problem.

So I think we're going to see genomics creeping into the clinical world and allowing us at the bedside or during a patient encounter to be able to do things much more easily and much more powerfully that will give us a result without the added downside of harming the patients somewhat by doing an invasive test.

Dr. Greenberg:

Well, it's been fascinating to hear about genomics and the role it can play in providing better care for our patients. I want to thank my guest, Dr. Brook Brouha, for sharing his insights on this advancement. Brook, it was a pleasure speaking with you today.

Dr. Brouha:

Michael, it was a wonderful experience for me, as well. I look forward to more discussions in the future, and I'm very passionate about this, so I appreciate you giving me the opportunity to share.

Dr. Greenberg:

For ReachMD, I'm Dr. Michael Greenberg. To access this episode and others from this series, visit ReachMD.com/DermConsult where you can Be Part of the Knowledge. We thank you for listening.