



## *Science Translational Medicine* Podcast

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### MUSIC

*Host – Kelly LaMarco*

Hello, everyone, and welcome to the *Science Translational Medicine* Podcast for May 23rd, 2012. I'm Kelly LaMarco, Senior Editor for the journal.

In this show, I'll be speaking with Dr. Elazer Edelman, Director of the Harvard-MIT Biomedical Engineering Center. He's also the Thomas D. and Virginia W. Cabot Professor of Health Sciences and Technology at the Massachusetts Institute of Technology and a Professor of Medicine at Harvard Medical School. But he's here today in his role as Chief Scientific Advisor of *Science Translational Medicine*, and we'll be discussing a new series of Commentary articles—authored by early-career clinician-investigators—that focuses on issues that surround the training of clinical and translational scientists.

For the new article series, early-career scientists serve as subjects of case studies that focus on specific training bottlenecks. Each scientist chooses a clinical- or translational-research mentor and interviews him or her with the goal of deciphering how one prepares to partake in translational medicine research.

Dr. Edelman is well acquainted with the diverse demands on the time of a clinician-investigator. In addition to running a broad research program, he's a Senior Physician at the Brigham and Women's Hospital in Boston, Massachusetts. Dr. Edelman has authored a Focus in the May 23rd, 2012 issue of *Science Translational Medicine* that introduces the new article series. And now, he's here on the line to discuss the careers of clinician-investigators.

*Interviewer – Kelly LaMarco*

Welcome, Elazer, and thank you for joining me.

*Interviewee – Elazer Edelman*

Thank you for having me.

*Interviewer – Kelly LaMarco*

So from your perspective as a physician who runs an active research program, how do you define clinician-investigator?

*Interviewee – Elazer Edelman*

The term is an interesting term that we use “clinician”—not just physician—and “investigator”—not just scientist—and that we hyphenate it. The hyphenation implies that it’s a single persona and not a split personality—someone who’s always and all times a clinician-investigator, not sometimes a clinician, not sometimes an investigator—but someone who uses clinical sciences to drive and explain investigation and investigation to explain clinical observations and then to provide therapies for them. There’s an important caveat in that this is not a person who’s using patients to advance research because that’s absolutely forbidden. What we’re talking about is the highest calling of recognizing that inherent in the care of patients is the responsibility to improve clinical outcomes by seeking at all times to ask the questions, “why” and “how,” not just “what.” Now, when I said it’s interesting to use the terms clinician—not just physician—and investigator—not just scientist—it is because we use the broadest definitions to be most inclusive. We use clinician as to all those who seek through contact with patients to improve the quality of people’s lives and investigators who try to harness the art of discovery and the science of investigation to do that.

*Interviewer – Kelly LaMarco*

So, in your article that introduces the Commentary series, you discuss several sources of tension in the careers of clinician-investigators. Can you describe these tensions and how they shape the career paths of these scientists?

*Interviewee – Elazer Edelman*

So, the tensions that exist are principally around “time commitment” on the one hand and “opportunity choices” on the other. And what I mean by that is, as we progress in the modern era of medicine, we recognize that it takes longer and longer to become clinically proficient, and it takes more and more resources to pursue excellence in investigation. So the question is that for the clinician-investigator there are two specific sets of tensions. One is how and when are you prepared to declare yourself excellent as a clinician, excellent as a scientist, prepared to take on the responsibility of making life decisions for people; and then, how do you maintain that in such a way as to never feel that you’re jeopardizing one for the other, or both, for the sake of doing the two simultaneously?

*Interviewer – Kelly LaMarco*

So do you think we need to alter the training of clinician-investigators to address the time demands?

*Interviewee – Elazer Edelman*

I think if you mean by “alter” should we make the training of clinician-investigators different than training of clinicians or investigators, yes. Should we make it more relevant to what they’re seeking to do? Yes. But if what we mean by that is make their training more focused or shorter, then we could potentially be paying a difficult price. So, more relevant is appealing because it recognizes that the clinician-investigator is a special person—a person who has this single persona I talked about. So a dedicated curriculum, a curriculum that provides a training that allows those people who want to be clinician-investigators to become clinician-investigators with excellence in science, with

excellence in clinical medicine—yes, I think the time has come to do that. The problem is that if we talk about focusing to increase efficiency or shorten time, then one of two things happens. We either preclude options of the trainee before they can consider all their options, or we shorten training in a way that makes them the incomplete investigator, or worse, incomplete clinician, and then we've destroyed the very essence that we're trying to build.

*Interviewer – Kelly LaMarco*

So what are two of the training issues that will be discussed in the article series?

*Interviewee – Elazer Edelman*

The first set of issues is how do you develop the persona of a clinician-investigator? And the second is the flip side of that, and that is, What are the challenges that a clinician-investigator has to overcome or avoid? And not to list everything in its entirety, but they are issues such as the lack of an identity, the lack of excellence in a specific field, running the risk of becoming a clinician to investigators and an investigator to clinicians, a jack of all trades but a master of none. Just how do you become a powerful persona in a field that needs powerful people?

*Interviewer – Kelly LaMarco*

So, do you think there'll be any surprises? Do you think any of these early career investigators will decide they don't actually want to be clinician-investigators?

*Interviewee – Elazer Edelman*

In an odd way, I hope so, but in a more profound way, I hope that it will help people understand what the life of a clinician-investigator is like and how to achieve that. And what I meant by "I hope so" is that not every clinician should be an investigator, though every clinician has a responsibility at all times to ask those questions I alluded to earlier. Every clinician must always ask, why is this happening, and what is going on, and how did this come to this point, as opposed to just defining what they see. We're not just historians, we're interventionalists; we're not just anthropologists, we actually must intercede in the process. And you can't intercede if you're just a photographer or a reporter. You actually have to understand what's going on. Hopefully, what people will see is that there are ways of being a great clinician by embracing science and a great scientist and investigator by understanding physiology and pathology, but not everyone needs to be the full fledged clinician-investigator.

*Interviewer – Kelly LaMarco*

You've served as a mentor for many students. What is the single most important piece of career advice you can give a young clinician-investigator?

*Interviewee – Elazer Edelman*

I always tell everyone the same thing, whether they're my kids or my students. There's a twofold message. There's the very general message of how you succeed in life, and then there's the very specific message to the clinician-investigator. The first admonition for young clinician-investigators is be a clinician-investigator, be a one persona. Don't be

the clinician who sometimes runs to his lab, or the laboratory scientist who sometimes sees her patients. It's always one thing—when you're seeing patients, you're trying to see if there's something you know about pathology, pathophysiology, about diagnostics and therapeutics that could improve that patient's life; and then, if there's something about the patient's clinical presentation that begs further investigation. And then, the second thing advice to any young person is you have to love what you do, you have to become passionate. If you're not passionate about what you do, you can't sustain this kind of existence because it's hard; it takes tremendous dedication and commitment. And if you're not in love with what you do, if you can't appreciate the beauty of nature and the honor of being able to take care of patients and investigate the essence of life, then you're in the wrong field.

*Interviewer – Kelly LaMarco*

Elazer, thank you so much for joining us today.

*Interviewee – Elazer Edelman*

My pleasure. Thank you, Kelly.

*Host – Kelly LaMarco*

That was Dr. Elazer Edelman, Chief Scientific Advisor of *Science Translational Medicine*. Check out Dr. Edelman's article, as well as the first Commentary in the clinician-investigator series, at the *Science Translational Medicine* Web site [stm.sciencemag.org](http://stm.sciencemag.org).

I'm Kelly LaMarco, thanks for listening.

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