

SAGE CROSSROADS
Interview with Thomas Miller
Personalized Medicine

KYLE JENSEN: Welcome to SAGE Crossroads, the premier online forum on the issues of human aging. These podcasts feature lively discussion with the experts on the ethical, political, economic, scientific, and societal implications of aging-related science. Thank you for listening.

I'm joined now with Mr. Thomas J. Miller. He is a member of the executive management board at Siemens Medical Solutions in Erlangen, Germany.

First question, Siemens Medical Solutions is focused on the delivery end of personalized medicine - are there any products in particular that excel in delivering the promise that personalized medicine holds?

THOMAS MILLER: I don't think that ultimately that personalized medicine will be based upon any single product rather than that it will be based upon a chain of products. What we like to think of is that we will be delivering the foundation of personalized medicine - that is, the things that allow you to characterize disease accurately and precisely. So we are the only diagnostics company in the world possessing in-vitro diagnostics, molecular imaging, morphological imaging, physiological imaging, and integrated information technologies. So therefore, we have all the bits-and-pieces to allow you to understand your particular disease in sufficient detail so that your therapy can be chosen appropriately.

KYLE JENSEN: Are there any technological setbacks that Siemens has identified to implementing these tests and diagnostics?

THOMAS MILLER: Technological setbacks, no. Technological challenges, there is a lot of them. Just like in healthcare where often healthcare is treated like a number of episodes, technology has been developed episodically as well. We will develop a molecule for an in-vitro diagnostic test or a separate molecule for a molecular imaging test or a separate MR scanner with some way of looking at physiology or morphology. So, our challenge is that we have to change that and develop a methodology to say now let's look at major depressive disorder, let's look at whether or not we can have in-vitro diagnostic tests, imaging tests, etc. all of which surround this disease and characterize it well. It changes how we think about developing things.

KYLE JENSEN: One of the big themes of this conference has been partnerships. Has Siemens partnered with any other diagnostic companies to tackle the challenges of personalized medicine?

THOMAS MILLER: Since we are the largest integrated diagnostics company, we often partner with ourselves. We also, of course, are not into genomics specifically, so we work with a number of different partners looking at genotypes and then we will go the

next step and look at the phenotypical expression or proteomic expression of that genotype. We also partner, of course, with many or most of the major academic institutions because most of the ideas and the validation of the ideas that we have will be taking place there.

KYLE JENSEN: In your opinion, what would be the one major diagnostic tool that would best benefit this field of medicine?

THOMAS MILLER: Information technology. The reason being it's the glue that will ultimately hold together the proliferation of the diagnostic tests. I mean the problem is not just that an individual disease may be difficult to characterize and may ultimately be characterized by a genotype with multiple snips, a phenotype with multiple proteins, changes in the morphological and physiological expression of that disease, location, severity, etc. That already will challenge anyone's brain. The problem is not characterizing that one disease but rather that the patients that we will see today will have three or four diseases simultaneously. The complexity is increasing, and if we are to characterize accurately, we are going to need help, and that help will come in the form of health information technology.

KYLE JENSEN: So, what's your outlook in transforming the field of information technology and diagnostics over the next five years?

THOMAS MILLER: Outlook is simultaneously wild optimism and practical "this is going to be hard to do." The challenges are easy to see. You have to build an IT infrastructure, and we are the only people in the last decade to bring out a new information technology infrastructure platform that is designed to handle the challenges of personalized health care. That's necessary but not sufficient for the solution. The solution will require that we find ways to integrate knowledge that will be happening all over the world into this platform to generate the tool that we need to enable personalized health care to take place.

KYLE JENSEN: So what would your one statement be to the scientists, policy makers, and consumers that make up the audience of SAGE Crossroads?

THOMAS MILLER: Think longitudinally. All of personalized health care is a journey across a disease from predisposition through therapy through care. Therefore if we continue to think in small blocks rather than longitudinally across the continuum of care, we won't make the progress that we need to.

KYLE JENSEN: Thank you for your time. On behalf of SAGE Crossroads, I'm Kyle Jensen.