



## **Elias A. Zerhouni, M.D.** ***Director, National Institutes of Health***

### **Questions Asked:**

1. How do you describe caBIG™?
2. What does caBIG™ mean for researchers?
3. What is the greatest accomplishment of caBIG™ to date?
4. How does caBIG™ transform the traditional silo structure of basic research and clinical research delivery?
5. What is the role for patients in connecting to caBIG™?
6. What does caBIG™ need to successfully expand internationally?
7. How will the biomedical research enterprise look five or ten years from now?

### **1. How do you describe caBIG™?**

I think caBIG™ is probably one of these examples of the way you will organize medical research in the future and it's really both an experiment and yet a transformation at the same time. Because to be able to manage the amount of data that we deal with now in cancer research or biomedical research in general, no single individual can do it, no single institution can do it. And it has to be almost online, real-time information that patients can use, doctors can use, agencies like ours can use. So it's creating a new community of research. That's what caBIG™ is; it's not just a technology; it's a cultural change.

caBIG™ is a means to better science. And caBIG™ has to be flexible and adapt itself and create a culture within its members that says there is something to be gained to the benefit of our patients, the benefit of our research but, in fact, not considering caBIG™ a project but considering caBIG™ a process.

### **2. What does caBIG™ mean for researchers?**

What happens to a researcher when they work with caBIG™ is that at the beginning it just makes their job easier. But then you start asking yourself new questions. And you actually can connect through that community that is now connected to this grid, this virtual grid. You can start maybe sharing questions and being able to answer questions and bring things together in a way that you wouldn't have imagined before.



That's what we're finding in scientific exploration today. It's a little bit like the internet. You remember when you had to dial up and to get one response to queue, ten minutes? And think about how you use the internet today. You're a lot more effective, a lot more efficient and, in fact, asking questions that you wouldn't have been able to ask when you were dialing up.

### **3. What is the greatest accomplishment of caBIG™ to date?**

I think the greatest accomplishment of caBIG™ is to be here because in science the greatest risk is to not take risk. And caBIG™ is a risky venture. I have to commend the National Cancer Institute for doing it. And many times we've learned in the past a lot of things that happen in cancer research ultimately end up being used in other fields of research.

So first, taking the risk in my view is the number one reason why I'm so supportive of caBIG™. Second, I think caBIG™, in a way, is opening new vistas into how to do research and how to truly extract more knowledge from what we're doing today.

No one knows how to do this in the complex world of medicine, cancer care, as well as basic research and translational research. And I think just taking a chance and learning in the process is what I think makes caBIG™ successful.

### **4. How does caBIG™ transform the traditional silo structure of basic research and clinical research delivery?**

The question of caBIG™ transforming the silo structure of science, the disciplinary structure of science is a very good question, and I often ask myself that question. And what I'm finding is that, in fact, scientists themselves realize the limitations of being in a box and realize that the scope and scale and complexity of the problems that we deal with require different perspectives, different types of disciplines coming together.

It's very hard to be a cancer biologist, a geneticist, a computational expert, a database guru, and then — you can't do this anymore. The complexity's too great. Well, at the end of the day there has to be a new "lingua franca", a new way of communicating that is not taxing on the individual that allows, in fact, these exchanges to occur. And caBIG™ obviously could be part of that answer, part of that solution to facilitate, in fact, cross silos communications.

I think it's also important to realize that there has to be an underlying culture change that has to occur. And caBIG™ is, in great part, a technological platform but also a cultural transformation platform. That, I think, is the key. Inter-disciplinary research is here to stay, but I don't think you can dictate that from the top. You can facilitate it, you can enhance it, you can allow people to break their barriers and go out of their box, and the more you do that, the more successful you'll be.



## **5. What is the role for patients in connecting to caBIG™?**

The medicine of the future is going to require patient participation. With cancer or any other disease, it's very simple. Medicine of the future will have to be more predictive and we will have to find out before the disease strikes the patient how to strike the disease ourselves. And to do that we have to be more predictive, understand who is at risk, do more screening, early detection. The treatment will have to be very personalized to that individual if we want to pre-empt the disease, which means the patients will have to participate.

It is much more important than it was in the past to have not an inactive, passive patient but an active, very involved patient.

## **6. What does caBIG™ need to successfully expand internationally?**

Science knows no borders. Today to really understand the cancer process, for example, we need international collaborations. Some of the basic discoveries in colon cancer genetics were made through collaborations with researchers in Finland and researchers here. So ipso facto, if you will, the success of caBIG™ can be measured actually by how much it's become an international platform—just like we've had other successes like GeneBank or Medline or PubMed Central. They became international engines of knowledge because they were so good. So I think this is two faces of the same coin. caBIG™ will be international if caBIG™ is successful in accomplishing its mission in the first place.

## **7. How will the biomedical research enterprise look five or ten years from now?**

If you asked me what I would see the biomedical research enterprise looking like in five, ten years from now, I would say the number one thing is we'll be better able to predict exactly who is at risk for a disease and who is likely to harbor a particular disease with biomarkers for example. In the cancer field I think we're going to be able to classify cancers differently because of their molecular signatures. We're already doing that. This will be done across diseases. I predict, for example, that we won't have just Type I and Type II diabetes; we might have fifteen types of diabetes in five, ten years from now. And fifteen different ways of personalizing the treatment depending on that molecular signature. So it's more predictive, more personalized, and hopefully we'll be able to intervene much earlier.

*For more information, please visit <http://cabig.cancer.gov>*