U.S. FOOD AND DRUG ADMINISTRATION

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SCIENCE BOARD TO THE FDA

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ADVISORY COMMITTEE MEETING

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FRIDAY
MAY 30, 2008

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The Advisory Committee convened at 8:00 a.m. at the Hilton Washington, DC North/Gaithersburg, Gaithersburg, Maryland, Barbara McNeil, M.D., Ph.D., Chair, presiding.

PRESENT:

BARBARA McNEIL, M.D., Ph.D., Chair
RHONA APPLEBAUM, Ph.D.
GAIL CASSELL, Ph.D.
LONNIE KING, D.V.M., M.P.A.
JOHN LINEHAN, Ph.D.
DAVID R. PARKINSON, M.D.
MARTIN PHILBERT, Ph.D.
LARRY SASICH, Pharm.D., M.P.H., F.A.S.H.P.
CATHERINE WOTEKI, Ph.D., R.D.

FDA PARTICIPANTS:

ANDREW von ESCHENBACH, M.D., Commissioner of Food and Drugs
NORRIS ALDERSON, Ph.D., Associate Associate Commissioner for Science

FDA PARTICIPANTS (CONTINUED):

BERNADETTE DUNHAM, D.V.M., Ph.D., Director, Center for Veterinary Medicine
MARGARET O'K. GLAVIN, Associate Commissioner for Regulatory Affairs
LARRY KESSLER, Sc.D., Director, Office of Science and Engineering Laboratories, Center for Devices and Radiological Health
CARLOS PEÑA, Ph.D., M.S., Executive Secretary
WILLIAM SLIKKER, Ph.D., Director, National Center for Toxicological Research
STEPHEN SUNDLOF, D.V.M., Ph.D., Director, Center for Food Safety and Applied Nutrition
DOUGLAS THROCKMORTON, M.D., Deputy Director, Center for Drug Evaluation and Research
FRANK M. TORTI, M.D., M.P.H., Deputy Commissioner and Chief Scientist
JANET WOODCOCK, M.D., Director, Center for Drug Evaluation and Research

T A B L E O F C O N T E N T S

P R O C E E D I N G S

8:08 a.m.

DR. McNEIL: I'd like to welcome all of you. It is a pleasure to be serving as your Chair for this very, very important group.

First thing I would like to do is welcome two of our new members who are here. And one is Dr. Rhona Applebaum, who is there. And the other one is Dr. Martin Philbert, who is next to her. Welcome.

And we have two other new members who are not here. One is Erik Hewlett and the other is Garret FitzGerald. And they will be here in the October meeting.

What I wanted to do is remind you -- or tell you actually that I think we have got a really terrific agenda today. And we will have a follow up -- which will include a follow up to this December report from the Subcommittee on Science and Technology, which is a report, which you may recall, we

discussed at length.

It was accepted on December 3rd, 2007. And it was transmitted to the Agency on January 22nd, 2008. It is important for you to know that the whole formal degree of writing, discussion, acceptance, and transmittal occurred for this very, very important report.

What I'd like to do now though since several of us are new to this particular group is go around and introduce ourselves to each other. And maybe say one sentence about where we are from.

So, Rhona, would you like to start?

DR. APPLEBAUM: Thank you, Rhona Applebaum, the Coco Cola Company, based in Atlanta. And my responsibilities for the company are Global Scientific and Regulatory Affairs, Health and Nutrition and Food Safety.

DR. PHILBERT: I'm Martin Philbert, Professor of Toxicology at the University of Michigan School of Public Health.

DR. LINEHAN: I'm Jack Linehan. I'm a Professor of Medicine and Biomedical Engineering at Northwestern University and Director of the Center for Translational Innovation. And my interests are moving clinical needs to a practical end of -- to do research to get them to the practical end.

DR. SASICH: Larry Sasich. I'm the consumer representative on the Science Board. I'm Chairman of the Department of Pharmacy Practice at the LECOM School of Pharmacy in Erie, Pennsylvania.

DR. WOTEKI: And I'm Cathy Woteki. I am Global Director of Scientific and Regulatory Affairs for Mars, Inc. My job description is similar to Rhona's except it also includes pet care, companion animals, dogs, cats, horses, birds, and fish as well as people.

DR. KING: Good morning. I'm Lonnie King. I'm Director of the National Center for Zoonotic, Vectorborne, and Enteric

Diseases at the CDC in Atlanta.

DR. PARKINSON: I'm David Parkinson. I'm a medical oncologist and drug developer. And currently I'm CEO of a start-up biotech company in San Francisco that is interested in characterized patient biology to inform on clinical decision-making for therapeutics in cancer.

DR. McNEIL: Go ahead, Frank.

DR. TORTI: My name is Frank Torti. I'm the Chief Scientist at the FDA.

DR. von ESCHENBACH: Good morning. I'm Andy von Eschenbach. I think Cathy Woteki already gave my job description. But the truth of the matter is I'm the guy at FDA who has most of the fun.

DR. McNEIL: And I'm Barbara McNeil and head of the Department of Health Policy at Harvard Medical School and a radiologist at the Brigham and Women's in Boston.

DR. PEÑA: Carlos Peña, Executive Secretary to the Science Board.

DR. ALDERSON: I'm Norris Alderson, Associate Commissioner for Science at FDA.

DR. SLIKKER: I'm Bill Slikker, the Director of the National Center for Toxicological Research, FDA, in Jefferson, Arkansas.

DR. DUNHAM: Good morning. I'm Bernadette Dunham, Director for the Center for Veterinary Medicine. Thank you.

DR. SUNDLOF: Good morning. I'm Steve Sundlof, Director for the Center for Food Safety and Applied Nutrition.

DR. KESSLER: Good morning. I am Larry Kessler. I'm the Director of the Office of Science and Engineering Laboratories in the Center for Devices and Radiological Health. I am representing Dan Schultz.

DR. THROCKMORTON: Good morning. I am Doug Throckmorton. I'm the Deputy Director in the Center for Drug Evaluation and Research at the FDA.

DR. McNEIL: So Carlos has a

statement to read before we start.

DR. PEÑA: Good morning to members of the Science Board, members of the public, and FDA staff. Welcome to this meeting.

The following announcement addresses the issue of conflict of interest with respect to this meeting and is made part of the public record to preclude even the appearance of such at the meeting.

The Science Board will hear about and discuss a Subcommittee Review of the National Center for Toxicological Research and Office of Regulatory Affairs.

The Science Board will discuss keeping pace with technical and scientific evolutions in the fields of regulatory science.

The Science Board will also hear about and discuss updates on a Subcommittee Review of the Agency's science programs and infrastructure from the June 14th, 2007 and December 3rd, 2007 Science Board meetings.

Based on the submitted agenda for the meeting and all financial interests reported by the committee participants, it has been determined that all interests in firms regulated by the Food and Drug Administration present no potential for an apparent of conflict of interest at this meeting.

We would like to note that Dr. Larry Sasich is participating as the consumer representative who is identified with consumer interests.

And in general, the committee participants are aware of the need to exclude themselves from involvement in discussions of topics if their interest would be effected and their exclusion would be noted for the record.

With respect to all other participants, we ask in the interest of fairness that they address any current or previous financial involvement with any firm relevant to a topic on the agenda or whose product they wish to comment upon.

We have one open public comment period scheduled for approximately 1:00 p.m. today.

I would just remind all to turn on your microphones when you speak so that the transcriber can pick everything up that you state and turn them off when you are not speaking. Also request all the meeting attendees to turn their cell phones and blackberries to silent mode.

Thank you.

DR. McNEIL: So I think I'd like now to move to the Commissioner's Report.

DR. von ESCHENBACH: Thank you, Barbara, and good morning. Can you hear me well enough?

First of all, let me begin by adding my personal welcome to Drs. Philbert and Applebaum for their willingness to serve on this very, very important committee. And to thank all of you for the incredible dedicated service that you continuously give

to the Food and Drug Administration.

I am extremely pleased that Barbara has been willing to accept the responsibility of carrying on the important work of this committee as its Chair. And I am really looking forward to the continued collaboration and close cooperation between the FDA and this very important body.

I want to thank those of you in the audience who have taken the time and trouble to be with us this morning for what will be a very, very important discussion and a very important beginning of a new phase of transformation within the FDA.

Carlos Peña and Norris Alderson deserve a very specific thanks not only for this meeting but for the ongoing, continued devotion to the work of this committee in between meeting and specifically for the tremendous effort that they personally put into, especially Norris, the development and response to the very important report from the

Science Board Advisory Committee. And you will hear much more about that later on this morning.

But I can't let the opportunity go by without personally complimenting them and expressing my gratitude.

And, Norris, you have done an enormous amount of heavy lifting. And we are grateful for that.

I stand at this podium and I can't help but reflect on the fact that less than 24 hours ago this room we reconfigured in a different way. And it was filled with FDA staff along with some of their families and many former FDA members as we had our annual awards ceremony.

And I was privileged to be joined by center Directors and leadership as we went about recognizing the contributions of so many important people at the FDA. And that award ceremony was a very vivid reminder to me of what we have discussed so many, many times in

the past.

And that is the greatness of this organization and this institution that rests not in its plans but it rests in its people. The skills, the talent, and most of importantly, the dedication and the commitment of the people at FDA is truly a gift not only to this country but to the world.

We were pleased to be joined by the head of the Drug Regulatory Agency in the Republic of Ireland and in the European Union as he flew over in the morning, arrived here to receive his Commissioner's Citation, and then immediately took a plane to fly back to Dublin. It meant that much to him to be so honored by the FDA.

And one of the messages he delivered in his brief remarks upon acceptance of his award was not only how honored he was by it but reflected how important this agency is to not just this nation but to every nation around the world. And how esteemed the

leadership of this agency is.

I share all that with you for two reasons; one, to begin my presentation to you this morning, once again being reminded that our first and foremost commitment is to nurture and to support the people of FDA, including the intellectual talent. And we will talk a little bit more about that as it relates to the future of this agency.

The second thing is to constantly remind us that what we do here not only effects millions of lives within this country but is really continuously looked upon by the rest of the world as the leading example of what we all must be doing to protect and promote the health of the citizens that we serve.

And so the work that this Committee is about could not be more important and it could not be more essential, especially at this critical time in the history of this agency. When I first arrived as Acting

Commissioner, I had one of my earliest and first meetings was with Ken Shine, the Chair of this committee.

And the importance of that was the fact that I viewed this committee that was responsible for addressing oversight of the scientific portfolio of the agency as probably being the most critical group that I, as Commissioner, would have the opportunity and responsibility of interacting with because as we have talked about on so many occasions, it is the science of this agency that is the foundation and the core. It is, as we describe it, the basis for all of our regulatory responsibility and activity.

We have always characterized the FDA as a science-based regulatory agency. But the conversation with Ken was to the point that number one, the agency could no longer simply be science based. But it also had to be science led because, as we have talked about on so many occasions, it was not only

science that would be the basis upon which we would make decisions today but we would need science and we would need the perspective of what was emerging in science as the light that would illuminate the pathway to our regulatory responsibility tomorrow.

And this committee had to play a critical and important role not only in providing consultation and oversight with regard to our current scientific endeavors but also importantly be able to help us illuminate and envision the science that was going to be necessary to do that tomorrow.

It was also important for me, as Commissioner, to share with Ken and express with you my own personal perspective on the role of advisory committees. I never believed that committees should simply be wallpaper or dressings that one used in your annual report or your prospectus.

The committees needed to be functional and engaged and have a meaningful

role as advisory committees. Otherwise, they were of no value to us. And we were insulting and offending you by simply wasting your time.

And that if we were going to have the Scientific Advisory Committee, it needed to be one that was dynamic, engaged, and that the FDA would welcome and be responsive to in terms of that interaction.

Many of you, I know from personal and collective conversations, had often wondered or often desired if there could not be a more dynamic and a more active role for this committee rather than simply reviewing reports. But more importantly to really truly get engaged in helping to think about, helping to envision, and helping to advise about a strategic future for science at FDA.

And following those early conversations about a more dynamic role for this Advisory Committee and those conversations about the critical importance of science as it relates to the future of FDA,

one of the requests that I made of this committee was that you take on the responsibility for a comprehensive assessment of our current scientific portfolio from the perspective of using that overview as a foundation as to how we could go about creating a strategic agenda for the future of science at FDA.

That review was to not only simply look at the science that was currently being conducted at FDA but to do it from the perspective of what we anticipate will be needed tomorrow, to look at in ways that we could find opportunities for integration and coordination of our science across our various centers because so much of that future of science would be integrated and interdependent.

Also, to look at it from the perspective of your vision and your knowledge and your understanding of the world around us and to wrap it in radical changes that were

occurring, that we nest this scientific portfolio in a larger agenda whether it was science that was being supported in NIH or in industry or in many, many other places around the world where we would have the benefit of not functioning or acting as if we were an island unto ourselves but part of a much larger continuum of progress in science.

I am deeply grateful to the Advisory Committee and for those who joined the Advisory Committee in that effort to provide that comprehensive overview. As you will hear later, we are committed to continuing that effort and that process with you as we continue to develop and evolve strategies to make certain this agency is both science based and science led today and tomorrow.

But if we are going to carry out that dynamic relationship, that ongoing effort to continue to imagine, envision, and

implement that scientific portfolio that is responsive to the challenges of tomorrow as well as today, it also became apparent to me that the Board itself would need to undergo transformation and change.

And so what I have commissioned is that we will now move forward with a different composition of the Board and a different schedule for the Board. First of all for the Board to be dynamically engaged in an ongoing iterative dialog and effort to continuously improve our scientific portfolio, I believe it must commit to four meetings a year as opposed to the traditional two meetings.

Frankly, I think two meetings, especially if one, unfortunately, misses a meeting and then is only present once a year, detaches you too far from the ongoing rapid and radical changes that we are experiencing to be able to provide any meaningful kind of informed insight into the efforts of the FDA as it relates to our science.

Four meetings a year, I think, provides a much greater opportunity for that ongoing dialogue, that ongoing awareness and understanding, and appreciation that you need in order to be able to be informed advisors.

I recognize that that is a serious commitment and a request on our part to ask that of you. But I do it based on my belief from knowing you, that you want very much to give and to commit to this agency something of value and of importance.

And in doing so, I hope that you will make the commitment and the sacrifice of more time. And I promise you in return that we will make the commitment to being certain that that time is well spent.

In addition to increasing the number of meetings, I believe we need to increase the number of members of the Board essentially to double the size of the Board to approximately 21 members.

This will be done for two reasons.

One, to increase the scale and scope of the expertise that each of you bring to this process. Our scientific portfolio is broad and diverse. And it's going to get even more broad and more diverse as we respond to some of the challenges that you have laid out in your Scientific Advisory Board Report.

And we need to expand those kinds of skill sets and those kinds of fields of knowledge and expertise as well as just continue to enrich the number of opportunities for input that we require if we are going to continue this process of continuously improving our scientific agenda and portfolio.

And so a much larger Board meeting much more frequently, I believe will be an important step to us creating that dynamic engagement and interaction that makes your input more meaningful and of greater impact. And it will enrich those of us here at FDA who are responsible for the conduct of that scientific agenda.

The reason why this commitment on both our parts is so important is that as I said to Ken, it is my core, fundamental belief that the only way this agency can meet its responsibility to protect and promote public health is to have its regulatory responsibilities embedded and based upon science and the scientific method.

But we all have recognized that this agency is immersed in a world that is rapidly and radically changing. As Cathy pointed out, the depth and breadth of the responsibilities of the kinds of products that this agency is responsible for making regulatory decisions about, the challenge of being able to address the complexity of the scale and scope of that portfolio is expanding exponentially.

And that expansion and complexity is being driven by rapid and radical changes in the world around us in two major arenas. One, the impact of globalization.

And I won't diverge or spend any time in terms of delving into that particular aspect of change but as I reflected earlier in my conversation, this agency is no longer able to fulfill its mission if it simply looks at what is occurring within our own borders but has to recognize that FDA must go beyond our borders, engage in the full life cycle of the products from production to consumption if we are going to be able to assure to the people we serve our understanding of the risk and benefit, the safety and the effectiveness of those products.

Globalization, which is changing things from the perspective that nothing is anymore made in America or made anywhere else but rather assembled in America or someplace else, parts and pieces coming from all over the world almost instantaneously.

This agency is moving very aggressively and very rapidly in a broad front to address many of those challenges of

globalization. But the other critical factor that is driving this rapid and radical change is the incredible advances that are occurring in science and technology.

Science and technology is transforming the world we live in. And whether it is the fact that we all walk around with these benefits of electronics on our belts or in our purses or the incredible changes that are occurring in science and technology that are bringing new products, whether they are based on nanotechnology or fields that are opening up, such as regenerative medicine, this revolution, evolution in science and in technology is rapidly, radically changing the scale and scope of the responsibility of FDA.

And we must address those issues in the context that this agency must also change. And we have been engaged in a change process. It is a process. There will be no magic wand that tomorrow creates a different FDA. It

will be an ongoing, iterative process of transformation and maybe even metamorphosis in the sense that the FDA of the 21st century will be radically different than the FDA of the 20th century.

It will be different in a variety of ways but one of the ways it will be different is that the complexity and the scale and scope of our scientific portfolio will also change.

Your Board Report pointed out some of these new emerging areas of science. And pointed out our need to begin to address those.

We are engaged in a process of expanding the FDA workforce. It will be an expansion that will occur on multiple fronts but one of those important components of our expansion is to rebuild the base of our intellectual capital by launching a very aggressive effort at creating an agency-wide fellowship program.

That program is intended over a period of three to five years to be able to encompass 2,000 fellows. It will be a two-year program turning over 1,000 fellows a year. We expect to retain the top 20 percent of that group.

And so 200 individuals very early in their career development with career trajectories within the agency while others will go back into academia and also to industry as sons and daughters of FDA, capable and able to help define and develop a pathway for the development of these new products that is appropriate and aligned with the regulatory expectations that we will have.

Many have been working on the fellowship program in terms of creating its infrastructure and its relevance as it relates to our centers. But now we are very, very pleased that with Frank Torti joining us as our Chief Scientist and Principal Deputy Commissioner, over the next three to six

months we will be working very aggressively to launch the prospectus and first phases of that fellowship program and there will be more that we can discuss about that.

In addition to creating and nurturing a new generation of FDA regulatory scientists across a broad dimension of disciplines and skills, we must and will continue to find opportunities for career development and the nurturing of our current regulatory scientists.

And that will be much more complex as it relates to opportunities for them to be able to engage in educational activities as well as activities to continue to relate to their parent disciplines as they need to continue to evolve and develop in the radically changing world of science around us.

In addition to people, the infrastructure and tools that they will require must also change. We have been immersed in radical and rapid changes

occurring within our IT infrastructure.

I won't belabor you with all the details of that but beginning two years ago, we are about midway in a total modernization of our IT infrastructure as it relates to having modern equipment and most importantly to be able to redefine, recreate, and implement entirely new programs, bioinformatic programs that are responsive to the current needs of the organization and the agency including greater interoperability across our various centers and greater interoperability between us, our centers, our field, and other organizations with which we interact or relate to such as USDA, Customs and Border Protection, et cetera.

That IT infrastructure will be a critically important part of the support of our scientific program. And your report emphasized in great detail the urgent need to address our information technologies.

And that effort is underway. And

that effort has a significant commitment of resources and expertise to further implement and carry that out to completion by 2010, including the opening of our data center at White Oak in the first quarter of 2009.

White Oak brings me to the third part of our transformation of the infrastructure and that is our physical facilities, especially our laboratory facilities that must be modernized both within our centers and, most importantly, in our field. And bringing into play a continuous portfolio of developmental science, applied science, and analytical science across the agency as part of the overarching strategy.

We have moved NCTR into a role of being a core resource of developmental science for the entire agency. It mimic, to some degree, a model that has been utilized by General Electric where they can have a core developmental facility in a field such as nanotechnology so that when one of their

divisions, whether it is the aircraft division looking at the role of nanotechnology in turbines for jet engines or their appliance division looking at the role of nanotechnology of a liner for refrigerators to remove odors, they have the opportunity to go to a core developmental resource to help promote some of the development thinking for those applied scientific endeavors, given their individual products.

That model could serve, with some adaptation, the needs for the Food and Drug Administration by using NCTR and the incredible resource that exists and what Bill Slikker and his team have created there as a developmental core complementing and collaborating with the applied kind of sciences that are going on within the centers.

And at the same time, to give those centers the infrastructure of modern scientific laboratories and equipment and one only needs to go to White Oak and see some of

the things that Larry Kessler and the group at CDRH are doing and others are doing to appreciate what tomorrow can be like as that facility is completely filled and those laboratories are finally constructed.

And most importantly, the transformation that must occur in the field. The laboratories in the field require major overhaul, major overhaul in the context of having modern sophisticated equipment, of being able to move technology out into the field into the hands of our inspectors, as well as being able to create opportunities for analysis in laboratories that are equivalent and superior to what actually even exists now in other arenas such as industry.

Now quite frankly in my visits to our laboratories in the field, that transformation, refurbishment is long overdue. The Science Board will be extremely helpful and useful to helping us as we look at that kind of a transformation of where our

opportunities are to create centers of excellence, where our opportunities are to be able to focus on specific opportunities and needs such as has been done in the creation of our forensic laboratory, which has played an extremely important role as a center of excellence in many of the recent investigations of outbreaks.

We must engage in this process but recognize that it is one that will occur over time. As I indicated before, this is not going to be a single intervention. There will be no magic wand that suddenly makes it better.

It is going to be what I describe as a design build kind of an effort. And if any of you have ever gotten involved in building a house or something, you know there are a couple ways of doing it. One is you can sit back and do nothing but plan, and plan, and plan until you have every single in the blueprint working out. And then you go about

building it. We can't do that.

The other way of doing it is to set out your plans to the degree that you have enough specificity to know what it ultimately is intended to do or to be, not even necessarily what it will exactly look like. But you know what it is intended to accomplish. And with those parameters, you begin to build it and you continuously design it as you go.

I look to our Advisory Board Report as the foundation for a design build opportunity at FDA. But not was the final blueprint every single detail having been defined or worked out.

And I think you recognize along with me that many of the things that are in that report do require further development and further discussion before there would be further and final implementation if, for nothing else, in areas such regenerative medicine. And the role that sell therapies

are going to be playing as we see the fruits and benefits of those fields of science emerging, et cetera.

And so I end where I began with an invitation to build upon what we have already started, to build upon the relationship of assessing, evaluating the scientific portfolio of this agency, learning and understanding about that portfolio, making incremental and appropriate changes in that portfolio but constantly and continuously aware of the need to stay engaged in that ongoing dialogue in that iterative effort constantly searching for what the next best step will be.

So the news is the Scientific Advisory Board is not going away. It is not dismissed. It is this Board more expanded, meeting more frequently, and let's work and build the future of this agency together as it relates to its critical foundation of science.

I'm pleased to be able to introduce to you the person that I have asked to join

us. And he is someone who is an old friend who I have had the benefit and the privilege of working with on many occasions.

And have watched his enormous skills and talents not only as a visionary with regard to the science of tomorrow but also from the point of view that he always had the perspective of knowing what the purpose of that progress was, that there were lives whose health and whose welfare was at stake, and that we should be passionate about the development of that science but equally passionate about the application of that science.

No better prescription could be written for this agency than someone like Frank Torti. For him to join us as our Chief Scientist and Principal Deputy at this moment in time with the benefit of our scientific Advisory Board Report, with the benefit of an Agency that is already immersed in an ongoing transformation gives us the opportunity for

someone with enormous skill sets, beginning with his M.D. degree, at Harvard, his masters of public health at Harvard, his ability to then move to oncology at Stanford, is directing a cancer center at Wake Forest, building multidisciplinary integrated teams of scientists and clinicians, his commitment to education by virtue of heading up important fellowship programs, including a national program to develop the intellectual capital of tomorrow.

And most importantly, someone who has been at the forefront of many fields of scientific development, including nanotechnology. And so from every dimension one could imagine, once again, this agency is blessed by the people who make it up.

And we are even incredibly blessed today by one of our newest members of the family, Frank Torti.

We'll answer questions first.

DR. McNEIL: You would like to

answer questions after both of you?

DR. von ESCHENBACH: Yes.

DR. McNEIL: Okay, fine. So Frank, you are on.

DR. TORTI: Well, Monday I will have been here three weeks. So -- and I have learned some things in the three weeks although some were a disappointment in a way, for example, when I came here, I thought a PDUFA was a Greek delicacy. So there is a lot yet to learn but I'm looking forward to working with the Science Board to develop the implementation as well as the vision of an FDA for tomorrow.

I want to say at the outset that I agree with each of the major findings of the Science Board. Some of that has been tough medicine. But we are willing and able to be engaged in the solutions to the issues that have been addressed in that report.

And as Andy alluded to, you know, I also have the Science Board's sense of urgency

about some of these issues. You know of all the things of Wake Forest that I miss and that were hardest, it was saying goodbye to my patients. And their sense of urgency is tactile. This is something that we have got to do and get on with.

So I want to pick up on what Andy has already mentioned in that the science of the FDA -- you can leave the lights on -- I just prefer to have them just as high as possible -- and there is the science that most of us around this table sort of know and know best, which is developmental science but at the FDA there is an extraordinary amount of important and innovative applied and analytic science that we need to deal with in this agency and has been alluded to in this report as well.

So science is complex and it is not only biological science. It is material science. It is physics, et cetera, that needs to be addressed when we speak of science.

So I can't really address the issues of talking about science at the FDA until I give you my sense of science in general. And I'm going to take a moment to do that now.

And I'm going to take a page from the January 6th, 1941 State of the Union of Franklin Roosevelt in which he outlined the four freedoms. And I'm going to give you what I think are the four freedoms of science.

The first one is the freedom to ask questions, to be unencumbered in what questions one asks and to be driven and motivated by those questions.

Second is the freedom to learn, to learn from your successes and to learn from your mistakes. Without that there is no science.

The freedom to communicate and to interact with others, with your peers in a way that you can learn from them as well as from your own experiments and by that I mean

experiments of all types.

Finally, the freedom to think and particularly the freedom to have the time to think, to have the time to be able to address the next set of issues, not what is on the calendar today. Without that, there is no science.

So the point I want to make here is that, you know, there are many pressing problems that have been addressed in the Science Board Report and those things such as genomics and nanotechnology.

But those are not going to be, for me, the toughest problem. The toughest problem is going to be the problem of building a culture, building a culture of inquisitiveness and building the culture of excellence. That is a tough job but one that I embraced and am excited to approach with you on the Science Board.

So this address really reflects my meetings now with all the center leadership,

with the Senior Science Counsel, as well in the FDA, with the Science Report, which I've read more than once, the IOM Report from 2006 on drug safety, and, of course, the statute which defines my job description quite precisely in the FDA.

So in all of those ways, I'm going to sort of try and weave together my initial thoughts about science in this agency.

So I want to give you the three principles that I have learned in my first three weeks here. But also I want to do more than that. I want to give you an implementation plan for the first 100 days regarding each of those principles. I want to get started. I sense the sense of urgency.

So Principle No. 1 is that the FDA cannot do it alone. The FDA partners now but the FDA needs to partner more and it needs to partner smarter. And it needs to partner around specific center-related questions at the FDA.

It has to enhance partnerships with Government and through mechanisms that we will talk about. It needs to partner with pharma, medical device, and the food industries to explore basic issues of mutual interest.

I think it should be better engaged with small biotech to tackle specific FDA-related problems. And we need to better engage academia in FDA-specific questions -- in FDA-specific questions.

So how are we going to do that? And before I tell you how to do that, a lot of this has already been done through and defined through the Critical Path which as been very complimentary reviewed in the Science Report, Rachel Berman and her team.

So what I'm going to tell you really builds on many things that have already been reflected on and thought of in the Critical Path Initiative.

So let's get started. FDA cannot do it alone. We need to constitute cross-

center teams to identify top priority scientific questions that cross centers and engage solutions.

So we need to that. We need to do that with other Government agencies where that expertise exists. And we can do that through interagency collaborations and other innovative mechanisms, some of which are already in place and some of which we want to develop.

In academia, we need to plan funding of targeted research at academic medical centers. I don't think, nor do I think based on the Science Report that we engage the skill set of academia well enough in terms of addressing some of the FDA-related problems.

And I specifically want to begin to explore with the FDA and with you around this table the idea that we should start to designate FDA regulatory science centers of excellence.

And my concept here, still in its early phases, but that there are areas of expertise in academia that could be identified and academia could compete to have such centers of excellence.

They could be in devices. They could be in drugs. They could be in a variety. And that a handful in each of the areas that the FDA regulates could be identified prospectively and competitively the very best.

And then there would be an opportunity for the FDA, through contract mechanisms or other mechanisms, to engage those groups in specific scientific questions where the FDA already knows that that expertise exists so that the FDA can move quickly and completely to get the answers it needs to problems that it defines.

We need to work better with pharma, with device, with bio, with the food industries as well. We need to identify

working groups, co-develop analytic approaches that would serve the needs of the FDA and these groups as well through public/private partnerships and other mechanisms.

And I think we have the opportunity to outsource specific technical issues where those solutions and that expertise exists in small companies in a way that could allow almost an entire company to focus on an FDA-related issue and get a world class answer quickly.

So I think there are ways that we can drive this process forward. So that is part of my 100-day plan. And I want to discuss this starting today with many of you.

We also need to facilitate the recruitment of FDA scientists whose job description will be to integrate across centers and engage in external partners, and I'm going to talk more about later in this presentation, but that is critical part of the adventure.

Principle No. 2 is that the FDA must maintain its core scientific expertise. The FDA, in areas where science is critical to the mission, substantive expertise must exist in house.

I think those skill sets are of two types and I want to discuss those and sort of go a little bit more deeply into this. There are those types where the skill itself, the technique itself, the scientific capability must be in house, okay?

And then there are skill sets where perhaps the capability, the technique doesn't need to be in house but the evaluative skill, the skill to evaluate that science needs to be in house.

You take the example of nanotechnology and certainly there are many aspects of nanotechnology that need to be in house but, you know, for carbon nanotubes, do you need a carbon oven to actually make your own nanotubes or do you need to have people

who can evaluate those issues, who have been trained in those issues, who perhaps have done that.

So I think we need, as we reflect on the issues that the Science Board has developed for us in terms of emerging science, to think about how we are going to approach that, whether we are going to be building an in house or we are going to be building an evaluative team.

So let me give you some examples of where we need additional -- not that we don't have it but where we need additional state-of-the-art capabilities, in my opinion. Okay, first is in the area of genomics, large database acquisition, evaluation, and interpretation. This has to do with biostatistics, informatics, and systems biology. We need more.

We need to work more, and this is a particular skill set of the FDA, in rapid risk-based assessment. It is very different

as to whether you have the luxury of going back and working on a project for three to five years and coming back and getting an answer. Or whether you have to actually understand the science and develop that science and understand that risk in a matter of hours, days, or weeks. That is a science in its own right. And we need to be there.

We have many experts in clinical trial design and innovative critical trial design. Barbara and I have talked a little at breakfast about this but those skill sets need to be enlarged and improved so we are absolutely state of the art in these areas.

The lesson of lettuce and the FDA has just sort of imprinted, I think, on many of us the idea that there is a science in ecology and topology and aquaculture in environmental sciences that needs to reflect and be reflected in the FDA. For example, the issue of drainage in terms of contamination of lettuce, one has to understand in a very broad

way what the topology and ecology of those whole systems are in order to be able to address those in a scientific way prospectively.

The whole issue of wireless devices and the software, as you have pointed out to us, that is involved in many, many modern products is something where we need all the expertise and help we can get. It is a complicated area, particularly in the area of software.

Robotics, and, you know, as Dr. von Eschenbach has alluded to on many occasions, we need to be involved in the entire life cycle of a product. In order to do that, one has to understand the entire process of the development and synthesis of that product and where those points of greatest vulnerability lie in those manufacturing process. Well, that is an issue of engineering and engineering science. And we need to be involved in that as well.

And clearly in the area of risk communication and risk assessment, and they are slightly different things, there is an area where we need additional -- where we have expertise but I think there is an additional expertise that needs to be developed. What is the science between making a risk-benefit decision. And how do we do that? And how can we apply science to all of our decision?

Nanotechnology, medical imaging, regenerative medicine, cell-based products, combination products, these are all things that you have pointed out to us. So I've taken those eight emerging areas of science that you have mentioned and I have expanded those to some more as well where I think we can use your advice and your help.

So what is our plan? We need to build in-house teams in mission-critical science. We cannot contract out our core scientific expertise. There are many reasons for that. And we can talk about that in the

discussion.

So we need to begin in those areas where we need the seed corn to build new programs, we need to begin right now to start job descriptions with the centers and begin the hiring process for these new people.

Obviously there are resource issues here. Obviously those will impact on how much and how quickly we can do things. But we need to make the plans. We need to be ready to go.

We need to recruit scientists trained in critical cross-center missions, to lead, organize, and integrate emerging science. This is not so different from this IRIIS concept that has been proposed in the Science Board Report.

If there is one thing I have learned in the short time I have been here, you need to incorporate your concepts into budgets. And we need to be planning into the fiscal year 2010 budget and hopefully even before that in making sure that these concepts

and these programs actually become part of the FDA.

Andy has already alluded to, and I'm not going to go over it in detail, the wonderful opportunity to enrich the NCTR and use that as a way of interacting with the centers to ask questions and support center-related science.

This is, of course, already done. And you will hear from the report in just a few minutes as to how that is done. And many areas are done extraordinarily well. But we need to build and coordinate that even further.

Andy has alluded to the enormous effort and resource expenditures that are now ongoing in bioinformatics, okay? My job is going to be assured that the bioinformatics solutions serve the needs of FDA science.

And I am already on a number of the boards in bioinformatics at the FDA now, specifically to be sure that as these systems

develop, which are big, complex systems, that the science and the scientists, clinical, epidemiologic, statistical, engineering, et cetera, are served by this bioinformatics.

But mostly what I want to tell you here is I want to take ownership of this last one, okay. And that is that the scientists already here, the scientists already here, need a fair shake from small things like conferences and CME that we don't do well enough or we don't do enough of, to big things like what is professional development, how can we enhance it, how can we ensure that people are excited, that they have diverse experiences, varied experiences, whether that means a sabbatical from one center to another center or sabbatical from a center to academia or whatever that is, that over time there is growth, there is cross fertilization, there is excitement. Without that, we're not going to have the FDA science that I want to see. So that is very important to me.

Principle No. 3, the last principle, is that the FDA scientific strategy must be preemptive, must be preemptive, okay. There has to be an overall scientific vision for the agency, as you pointed out.

And I hope that this presentation today begins to give you a sense of that vision. But that vision must be incomplete at this point because it is not my vision. It is not Andy's vision. It is a shared vision.

So we are going to build, with the centers, that vision over time. We are going to do it quickly but we are going to build it and we are going to define it. But today, I hope I begin to give you the flavor of it.

The FDA must develop an overall scientific process for vetting these cross-country scientific issues. It is something that the Science Board alluded to but didn't say quite in that way. And we want to do that. We want a formal mechanism to look at science, okay.

If we do those two things, then we will be able to test scientific hypotheses about what we think is important prospectively, preemptively. And we can do those in the centers or, where necessary, we will engage the NCTR to help us do those.

But then we will be able, if we can have the first two bullet points, to be able to develop the hypothesis and test it. But being preemptive, to me, means not only looking forward but looking backwards.

And what do I mean by that? There are a whole bunch of devices, drugs, additives. Some of them have been grandfathered. Some of them were tested 20 years ago.

And occasionally, those will be reassessed, usually by someone in academia, and we will find new evidence, perhaps right, perhaps wrong, of some worry, some new toxicity that modern science has brought to those old agents.

I think it is very important for the FDA to do this ourselves. That is, we ought to use some risk-based analysis to say which of these compounds appear to be of highest risk.

And then we ought to drill down on those compounds with incredible intensity. We ought to get out all the literature. We ought to use meta analysis where that is appropriate, other kinds of analyses where that is appropriate and come up with a modern 2008, 2009 assessment of the risk of these compounds.

Perhaps we will conclude that they are just fine and just as safe as they always were. Perhaps we will conclude that they are not safe. Or perhaps there will be something in between where we need to alert ourselves and the American people that there may be some issue. And that further research, therefore, needs to be done.

We need to get on top of this, not

behind this. And I think that is part of being preemptive.

So what are we going to do? At the very heart, as Andy has already alluded to, of preemptive is the fellowship program. There is nothing more preemptive than the fellowship and I look forward to working with the Reagan-Udall Foundation as we develop this.

We need a team, an evaluative team. I call it the meta analysis team. But it certainly needs to be -- a better name needs to be thought of -- of skilled biostaticians and others who can help us in these areas.

We need more risk communication research and risk-benefit analysis research. And we need a team, a crosscutting team in this area as well.

We need to do, and I've worked with the press group already, to put out press releases. There are an extraordinary number of important and actually world class observations that FDA scientists in all areas

make. We need to make people aware of those things that we do well and where we are first and we are on top of things.

And we need to engage a whole series of science writers to come in and actually understand what we are doing, understand the science, and look in depth and be able to write in depth about some of the extraordinary achievements at the FDA. It is very important to do this.

I want to announce today that we are going to reestablish a number of intramural cross-center collaborative grants in the FDA that, for budget reasons, we had to slow down a few years ago and reestablish an annual scientific meeting.

I'd also like to explore in the first three months the opportunity to develop a new journal that would actually FDA scientists and people in industry and academia who are interested in regulatory science to actually have a forum to publish their

findings which I don't think actually exists to a large extent right now.

And, again, we need to get all of this into our budgetary recommendations.

So how can the Board help us in this? I have already alluded to a number of ways. But let me add some more. We need your help in drilling down on the areas of emerging science that you have identified. And Barbara is going to talk to you later about some ways, perhaps, to do that.

Now there were eight in your report. I have added at least another handful. So you have got your job defined for you.

But this report, and all reports, of course, are one moment in time. And where we really need your help is to look at multiple moments in time, to be involved with us as we make these changes and give us feedback on a continuing basis.

And this is why I'm so excited

about Dr. von Eschenbach's decision to go to a Board that meets more frequently because then you will actually be able to help us on an ongoing basis, not a retrospective basis, about what we are doing.

So often this Board has been used, and I want to continue to use it, as a sounding Board for those ideas that are controversial or just sort of out of the box so that we have a chance to talk about things broadly.

I think you can help us dialogue with all the FDA stakeholders. Certainly the FDA dialogues with all the stakeholders. But your interposition there and your dialogue there could help us quite a bit.

I think there are many opportunities to look into industry and to academia to areas where technology is developing. This is a changing field.

And to give us your vision and your microscope as well. Vision and microscope as

to what is happening in those that we serve so that we can bring that into the FDA so that the use of this group in that regard will be absolutely important. What is going on in industry? What are they doing? What will they need from a regulatory standpoint?

And I'd like to put you to work identifying experiences for FDA scientists in academia, their sabbaticals and other kinds of things. Who better to do that than the Board and maybe a subcommittee of the Board?

And I certainly want your help in recruiting the absolutely top scientists to the FDA. So this is, again, something that you can do with us and help us enormously.

Werner Heisenberg in 1926 developed a theory in which he noted that when he measured with photons and atom their momentum actually changed so this is sort of conventionally thought of as an idea when you measure something it already changes.

And you will see when you hear from

the center Directors this afternoon that your report has actually already begun to change how we all think about science at the FDA. And I think that is always a very exciting and interesting phenomenon that you will see.

But you I gave this talk to a group of our senior scientists yesterday to get their input and feedback, the Senior Scientific Counsel at the FDA. They said to me, Dr. Torti, you know, you ought to end this report where you began it.

And that is what the FDA needs most of all is the culture of inquisitiveness and the culture of excellence. If we have that, then everything else will follow. So I want to leave you with that thought.

Thanks for your attention.

(Applause.)

DR. McNEIL: Thanks very much, Frank. That was a terrific introduction for your first three weeks. And we'll look forward to the next 100 days and longer.

I wonder if there are any questions. I'm sure there are actually for either him or for the Commissioner.

Well, let me start. Oh, I'm sorry. You had one, David?

DR. PARKINSON: One of the aspects of the report related to sort of the scientific organization to identify and one of the recommendations related to a science czar, which I think might be you. Scary thought, Frank, but -- and then how you would coordinate actually with the individual centers.

And could you comment on that? Any thoughts on that? Or maybe from the center Directors after the first three weeks?

DR. TORTI: So we've been discussing this and we haven't come to a final conclusion. I mean I think everyone endorses the idea that we have to have this inter-center coordination and prioritization of science. We also endorse the idea that the

centers know best what they need in terms of the detail of that.

The very first thing that I think we want to do is begin to develop a team of people who will be experts in specific areas, whether they be genomics or whatever, not to do the genomics for the centers but to integrate and make sure that the full resources of the FDA can be brought to bear on any question in a specific center.

That is a group of people. I think it is a handful of people to be able to do that.

Now the last thing I want to do is build another bureaucracy so I want to be careful. And we have not sort of completed our thinking about how to organize and interact the science in the centers and the science in the Chief Scientist's Office.

But many of the centers have already designated or are planning to designate a Head Scientific Officer. And so

much of the discussion that you have had in the Science Board Report will happen. I'm not sure it will necessarily always mean new recruitment of new people but some kind of organization similar to what you have discussed is what we want to do.

My sense is that what my office ought to be doing is not building a little empire on its own but actually, you know, serving the needs of the centers through dialogue, through sort of integrated activities. And where we need additional crosscutting staff or where there is an opportunity in a center to bring someone on who then would interact very closely with me or with Norris' group, then we are going to do that.

And exactly how to implement that probably is something we are going to develop over the next months.

DR. McNEIL: Frank, could I ask you a question? You were talking about the

intramural -- the RFAs for intramural cross-center collaborative projects. And I wonder if you could say a little bit more about the rationale for that and what you hope that those cross-center collaborative projects will achieve in what particular areas?

DR. TORTI: You mean the RFAs?

DR. McNEIL: The RFAs, yes.

DR. TORTI: That's a great question.

So I think what we want to do, and there are examples of this having already been done so this is not something that I have invented before, of where there were FDA-wide RFAs to develop projects based on critical center-related issues in science. And they weren't for that much money in the scheme of things actually.

But out of those, I've heard some stories of some extraordinary new discoveries that have then been applied in the various FDA centers. And that gives FDA scientists an

opportunity to actually work together, to write and develop proposals, and then to have those peer reviewed in order to do something that is mission critical. And, you know, the criteria will not be is it cute but is it mission critical?

So these are the kind of pilot grants we use in other venues all the time to stimulate new ideas, new crosscutting thinking. And I just think that is a wonderful way to generate new ideas that may not have been there before.

It is done in cancer centers all the time very successfully.

DR. APPLEBAUM: I enjoyed both your presentations but I have question. And I am assuming that it is embedded in the risk communication focus that you laid out. But since it wasn't called out, I would just like to hear your comments on the importance of behavioral science within FDA as it relates to consumer empowerment.

DR. TORTI: Yes, there is a real need there. It was pointed out in the report. It is an area that I have great respect for. And, in fact, it is something that we built in relation to cancer at Wake Forest because we put it as a high priority.

I think people don't always appreciate what a science that is in all aspects of it. Even the multicultural communications that are necessary to actually communicate to a constituency is a science.

And so we -- and that is why, as one of my sort of groups that I think we need to put together, is that scientific group. And that scientific expertise to add to what already exists at the FDA.

DR. von ESCHENBACH: Let me just add a comment because I think the question surfaces a very important issue. We tend to drift sometimes in our thinking of when we use a word like science as something that occurs in a laboratory. So it is laboratory science.

That is obviously a critical part of the portfolio.

But there are so many other critical parts of the portfolio. And when I refer to the diversity of FDA's responsibility, we have to be positioned across that full portfolio of scientific disciplines. Some of them will be laboratory disciplines. Some of them are going to be behavioral.

Some of them are going to be areas that I think, for example, we have used the term now science of safety. But in the launching of our sentinel initiative just a week or so ago, one of the critically important parts of building that infrastructure for post-market surveillance and being able to access large databases is to build the comparable body of science that is going to be essential for us to be able to have the ability to analyze that data in a scientific way that gets from it information

that is accurate and correct from which we can then draw and make regulatory decisions about those products.

Just getting a lot of data from doing a lot of data mining is not going to be the scientific foundation for our regulatory decisions applying science.

Now we have to have some of that capability in house. We obviously need to partner with areas of academia and other sectors that have developed that science of being able to analyze those kinds of large databases and separate signal from noise, et cetera.

So I think your question really surfaces a couple of very important issues. And we are looking across and what the role of the Chief Scientist is is to not dictate what kind of science is being done but to be constantly helping to facilitate the fact that we, as an agency, are covering the full dimension, there is as much interoperability

and cross fertilization and communication so that the whole becomes greater than the sum of its parts.

But no, Dave, there won't be any czar. We don't need any more czars. The richness is in the people who are actually doing the work.

The role and responsibility that we have in the Office of the Commissioner is to nurture and facilitate that, not dictate that.

DR. McNEIL: Lonnie, you had a question? Then Cathy.

DR. KING: Thanks very much. They are great presentations. I really appreciated it.

If you would maybe talk just a little bit more about your concept of regulatory science, kind of the definition, what does that really mean. I understand, you know, the different disciplines and their importance but I think this is almost foundational as part of changing the mindset

and inculcating a culture I think where you are coming from.

And I also see the need that perhaps that is something across Government agencies, not just in FDA, where there is a real need. And is there a possibility that there be a combination effect to do that?

DR. von ESCHENBACH: You know that is a really profound question for which I'm not sure there is a profound answer at least not from me. Because I think it means different things under different settings and in different circumstances.

Simplistically, the way I think of regulatory science is that we are developing a body of knowledge based on a scientific method that is giving us the kind of knowledge that is required for us to make a regulatory decision.

It is applied to the decision-making process. And as such, that science becomes a tool to be utilized in making those

decisions scientifically.

So we need to gain the insight about the product, about the product's application to specific populations, about the things that are influencing the outcome. So in one case it may be learning more about the science of microbial contamination of produce because we have to make regulatory decisions around ensuring the safety of that produce. It maybe science helping us to understand and have knowledge and insight into software that is now being incorporated into medical devices because we need that knowledge and that scientific infrastructure and basis upon which to make regulatory decisions about that product.

And so it is not something that you can, I think, define in a way that its definition is applicable across the full portfolio. But it is having the core infrastructure of knowledge that is developed in the appropriate way that enables us to

effectively carry out our mission.

DR. WOTEKI: Commissioner, I can understand why you said let's wait and take questions together after both presentations because they really do fit together as a plan and a roadmap for the future.

And I wanted to specifically address your challenge of stepping up the number of meetings of this group and expanding the membership. I absolutely agree. To get the kind of engagement that you are going to need, the kind of advice, we are going to definitely have to move to a more frequent schedule.

And I'd like to endorse the idea of expanding the representation from a disciplinary perspective in this group. So both very good ideas.

And then kind of picking up on Lonnie's question and reflecting on my past experience in another regulatory agency in USDA, this whole question of finding the

funding and finding the leverage in order to get other federal research agencies attention to FDA's question is a big agenda to tackle.

And I wondered if you or Dr. Torti could address that question now having had an opportunity to reflect on this Board's report about how you might gain that leverage to enter into the partnerships that you described.

DR. von ESCHENBACH: Let me try to address that in a couple of ways because it really is a practical, real world question. It is a nice idea. How do you actually do it?

Frank and I both come from backgrounds where we probably spent most of our life trying to make that happen on a day-to-day basis.

And there are different tools that you need to be able to leverage that kind of partnership because at the end of the day, the question is always what is in this for me? And I don't mean that in a negative way but

for people to engage and cooperate and collaborate, it has to truly be a partnership. Both sides have to be gaining from that.

So our responsibility is to help do that deal. One of the things that you need to do that is resources that can attract that partner to that process. But I don't think it is just resources. I actually believe that the really most compelling attracter to bring someone to that table is that what you offer to them will help them accomplish their mission, their vision of what they want to do. They see you have value to add.

Basically what Frank is talking about in terms of building our culture of science and the expertise that is unique and extraordinary, that must always be in the FDA, you can't buy it or get it someplace else, can actually be of great value to others who are engaged in discovery and development because we have the science that brings that discovery and development to actual delivery of a

product.

And aligning that can become an important element in that partnership. And we are seeing that, I think, a lot even in some of the spin off of PDUFA where our ability to provide consultative services in the early phases of discovery and development by our knowledge of the regulatory science and issues that are going to applicable to Lonnie's point of making that regulatory decision becomes of great value to them.

It actually, to some of them, is translated into economic value because it may shorten the duration of the time of development. And that becomes a pipeline issue which is important to us because we want to be the bridge.

So it is very complicated. It is not a matter of oh, if we had more money, we could offer them a grant or something and they will come to the table. That's true. That will work. But I don't think that is the

whole answer.

And I think we are looking at some of these other parts and pieces of that. And the partnerships are really, I think, of great opportunity, especially in academia.

Frank mentioned our need to reach out to academia and look at centers of excellence of regulatory science. I mean we all are well aware of the issue of natural products and traditional Chinese medicine and things of that sort that most cancer patients are engaged in some form of complementary medicine.

Well, there is a whole wave that we can see beginning to evolve and the University of Mississippi has an extraordinary program in natural products. So we, as a regulatory agency, would be finding a way to enhance that collaboration with that one particular place.

And I think there is a whole catalogue of those kinds of opportunities. And we need leadership, such as Frank, working

with the centers to identify the appropriate places where we want to partner.

And then be smart enough to figure out how to do the deal in terms of what do we bring to the table that is of value to them, what do they bring to the table that is of value to us, and how can two, you know, one plus one equal three. That is the strategy.

Do we need some resources in that mix? Yes. But that is not the whole story.

DR. McNEIL: So we have time for a few more questions. So I have Jim, and then Larry, and Gail.

Yes, John?

DR. LINEHAN: Thank you. That was a really great talk. And it really took probably a lot of courage to lay out a plan like that for 100 days, knowing that we will all be coming back again soon to see what the results are. It is quite an ambitious program.

I was thinking of, I reflecting on

your comments relative to how the agency might partner with other federal agencies and just thinking the timing of that comment in relationship to the recent announcement of new clinical and translational centers in academics.

It just came out a day or so ago. And there are now approximately 35 universities that have very major programs in clinical and translation sciences. And how that might interact with the FDA.

It seems like the word translation is consistent with the FDA's mission. And when you are talking about trying to engage the brain power of a large number of first-rate institutions, it would seem that this would be something to immediately try to talk to the folks at NIH about, how that might happen.

And as usual, even when there's a 30 billion agency like the NIH and all these translational centers, no one will have any

money. But my guess is that if the idea is a good enough idea and it does relate to getting science to the patient, that there ought to be a way of leveraging it somewhere.

So I would really appreciate you adding that to your very ambitious plans for the next 100 days.

DR. TORTI: Absolutely, you know, and it raises the point that, you know, how do you engage people to mutually sort of develop questions around themes. And Andy has already alluded to this but I want to come back to it in a way.

You need resources. There is no question about that. But the way that you actually do it, the way you do it in a cancer where, you know, you are not the boss of everyone, the faculty are in various departments, and et cetera, et cetera, is you engage them around concepts and ideas.

And the surprising thing is that works. You wouldn't think it would work but

it does work. That people are actually engaged when the problem is laid out for them in a compelling way.

And you are right. There are, in CTSAs there are absolutely natural sort of cross-cutting issues that are going to relate to the FDA and they are there. And we need to seek them out.

We also need to seek out the NIH and the NCI in terms of major translational initiatives that are ongoing that involve Government and academia already. In the NCI, there is a major translational initiative that has very much to do with issues that are going to relate to FDA science.

So I think that those are opportunities. And we will make those contacts and begin that dialogue.

DR. McNEIL: You may recall -- you were not on the review panel for the report were you, John?

DR. LINEHAN: I arrived when the

report was being presented.

DR. McNEIL: Okay. So Barbara Alving and Rob Califf were both active participants in that review. And I believe they are both co-chairs of a steering committee for the CTSAs, if I am correct, Gail.

And they, at the time we were doing the review, were very anxious to expand the CTSA involved in the FDA. So you hit it on the nose.

DR. SASICH: Thank you very much. A quick comment and a question. I would like to strongly support Cathy's comments about doubling the number of meetings that the Science Board would have per year. At one time, I used to think I knew quite a bit about the agency.

Since I have been on the Board and have had the opportunity to interact with people from the agency, I've got a lot to learn. It is a steep learning curve. And I

think the value of the Board to the FDA will be increased by having more meetings and more interactions.

And my question, I guess, is for both of you. And this has to do with the fellowship program. And I'm thinking specifically about funding fellows, particularly fellows who may be interested from small academic institutions or from public interests organizations.

Do you view this as a fellow having to come with part of a salary, all of their salary, or will the program be able to fund individuals under those circumstances?

DR. von ESCHENBACH: No, the business model that we are developing for the fellowship program is it is an FDA-supported fellowship program. But having said that, we are looking at a lot of different models that would enable that to occur.

One important model is the Reagan-Udall Foundation has a basis or the place in

which the fellowship would be developed and nested. And it would be funded through a mechanism that would come through that independent foundation whose mission it is is to support our mission. But in a totally, completely independent fashion.

So that is one mechanism. There is also the part that we would be playing in terms of FDA itself through our own appropriations, creating and building the infrastructure that is required to support that kind of a fellowship program of that dimension, its curriculum, its curriculum development, the support of the mentors, because this becomes an important part of the responsibility of faculty and, in this case, FDA regulatory staff.

So there is a part of the business model that is built within the organization, as part of our appropriations. There is a part of the business model that relates to the support of the individual fellow. There is a

legal construct that frames all this.

So there is some complexity to it. But the business plan does not simply look at a fellowship program in terms somebody having the ability to support themselves. This is our fellowship.

DR. CASSELL: I apologize for having come in late. I am coming in from overseas. But I would be -- and if you have already covered this, that's fine.

But I would be particularly interested in your thoughts about the recommendation of the Science Board on the appointment of a Board of external advisors for each center.

This was one area that we spent a lot of time talking about, that we felt very strongly about, so that there is ongoing, constant exchange between external, internal, and review of programs, and everything rather than just every four years.

And I appreciate what you are

saying about increasing the frequency of this meeting and doubling the size but I personally feel that that is not enough in terms of what we would envision an external Board per center could do.

And also to basically keep -- so that you build advocacy but you also inform the external community more about the activities of the agency and what the needs are. And also to have people trying to help bring things to your attention.

And at any rate, I would just be interested. Are you going to do this or not? And if not, why not?

DR. von ESCHENBACH: Well, let me go back to a couple points I made and I appreciate the fact that you had to fly in from overseas and I actually asked Barbara because I knew how deeply invested you were in what Frank and I were going to share this morning. And I'm sorry that you weren't able to be here, Gail, because you have done so

much to help this agency in this effort.

Let me go back to a few quick points. I indicated in my opening remarks that this was going to be what I call a design build kind of effort. This was going to go on over a period of time.

We're not going to do everything today. And there are some things that I think we need to implement first. And then readdress some of these other things as we then see what that infrastructure looks like.

So, the point, the philosophy of engaging in much more of an interactive process with advisors is something that we are exactly on the same wave length about.

I want to begin with the Board and begin with the expansion of this Board, the expansion of its numbers significantly. And its frequency of meetings.

The Board itself has always had the ability to create sub-advisory committees for specific issues that arise. And that effort

will still go on.

Before getting to another structural change of creating a whole group of other advisory boards within each of the centers, I think it is important we get this done first.

So I'm not saying no. I'm saying no now. And I'm not saying that that isn't something that we wouldn't do as it becomes important and necessary as a next phase.

But I don't see it as being a step that we can take today until we have first got this Board in place because those opportunities can go on as things exist in the current group. There is nothing that stops us from there being a need for a focused advisory Board to something that is being considered in one of the centers.

But I don't want to put that into structure. I will be candid with you. We will not always agree on some of the things that are in the report. This may be one of

them.

My approach to organizational management begins with vision. What is it that we want to accomplish? Then it addresses function. What do we need to do to be able to accomplish that?

Frank has laid out a whole series of things that we believe we need to do. Third comes structure. What kind of structure do you need to have in place to be able to carry out those functions to achieve that vision or that mission?

We've already made some structural changes that I committed to this morning. And we are making others. But until we build those out, I think we need to reserve those next structural changes until we have some more of this functionality worked out.

And, you know, we may disagree on the timing. I don't think we disagree on the philosophy. And I'm not even saying no, that it isn't something we will eventually not do.

But I just don't think it is something we want to start with today. I think we need to do some other things first in the design build concept.

And this Board will be constantly engaged in that. And you will, I know because of our personal relationship, I know you will be constantly committed to observing, watching, and advising. And there will be a point when we need to readdress this.

DR. McNEIL: Well, thank you, Dr. von Eschenbach and Dr. Torti. We very much appreciate your remarks.

I think that we are scheduled to have a break now which I would like to do. I think we can have time for questions perhaps. I know Frank will be around. I doubt you can stay. But we can perhaps grab Frank for further questions.

I'd like you to take a quick seventh inning stretch and be back at ten o'clock so we can go right on to Larry's

report on NCTR if that is okay. Thank you.

(Whereupon, the foregoing matter went off the record at 9:53 a.m. and went back on the record at 10:05 a.m.)

DR. McNEIL: All right. Our next section is a report of the Scientific Board Subcommittee Review of the NCTR. And Larry Sasich, who will present the report on behalf of Allen Roses, who had been the Chair of that committee, but Larry was a member of it as well.

So he has a number of slides that we will look forward to seeing. So, Larry, you are on.

DR. SASICH: Thank you very much. And good morning everyone.

Riding back from dinner last night with Rhona Applebaum, she said something that made me extraordinarily happy. And she was explaining that at least within the private sector, that the quality of PowerPoint presentations no longer depend on animation

and things that move back and forth. Something that I have never been able to master. So my slides are dichromatic, nothing moves. And I suppose if you live long enough, that you always come back in style.

And with that, the people on this slide that are the ones that are largely responsible for putting together our report. Myself and Jack Linehan officially constitute the subcommittee.

I do have some thanks to say. Allen Roses, in particular, he was invaluable in drafting the report largely because of his experience in a worldwide science-based organization. And his insights were extremely helpful in how a large scientific organization could be managed.

Jack Linehan, the input that he had on the types of software and what is available for individual employees or members of staffs of large organizations to communicate with each other was equally appreciated.

Jim Riviere, former Science Board member, provided historical context for us.

As always, Carlos Peña, who is always there when you need something, the people that we met with from the FDA product centers, who were extremely forthcoming and open with us in our discussions.

Bill Slikker, who is a marvelous host and showed us Little Rock, Arkansas, and contrastingly, Jefferson, Arkansas. And I think you would all have to visit there at least once in a lifetime.

Likewise, the NCTR scientists, it was a very productive day that we spent with them in Jefferson getting their input.

And special thanks to Monica Spence from the FDA. She is the person that arranges travel and hotel reservations. And she is extremely helpful. And she is always willing to go the extra mile for you to make sure that things fit into your schedule.

Our subcommittee's charge was to

review the coordination between NCTR and FDA product centers with an eye on prioritization of joint project and the efficient utilization of agency resources.

The process involved visits to NCTR. We went to Jefferson, Arkansas on March 12th of this year. We spent a day in Rockville with FDA product centers' senior scientists. And thanks to Allen's efforts, we had weekly conference calls where we kind of hammered out what we wanted to say.

A couple of general observations before I get into a comparison of what our findings were. NCTR's central purpose is science and science in the broadest sense with the caveat that it is there to support the regulatory mission of the Food and Drug Administration.

It is a well run organization. It has unique expertise and the individuals that we interacted with are strongly committed to supporting the roles, the regulatory roles and

missions of FDA product centers.

On the FDA side, I think one thing that struck us almost immediately is that each of the product centers is unique. Each has its own set of unique products that it must regulate with its own set of laws and regulations that it must follow.

We found staff from the FDA centers to be extraordinary in their efforts to meet their missions, their public health missions. Of course, with less than adequate resources.

Both staff from NCTR and FDA expressed need to increase communications. And by a couple of ways, information technology and direct contact. The Science Forum, which is saw on Frank's slide, might be back on the table again. It had been suspended for several years largely because of budgetary concerns. But staff from both NCTR and FDA said how important this PAN-FDA conference was for communications.

And we understand that there is a

smaller set of symposia that are going on within the FDA. I don't know if those will continue or not. But those were also extremely valuable.

We found that some joint projects originate from direct collaborations. And this could be viewed as a negative and not as being very efficient.

But I think we viewed it as being a positive to be encouraged largely because of two things that are so important to the scientific process. And that is individual creativity and serendipity, which has always played an important role in advancing science.

We saw from both NCTR and FDA the possible negative effects on the prioritization process, such things as special interest legislation, legislative micro management, advocacy organization pressure, and earmarks.

And I think Dr. Torti and the Commissioner are both absolutely right that

the agency needs to be run by science. And where the nexus between science and politics, it should be clearly delineated.

This is a quick overview of what the NCTR reporting structure was like. This is a very fluid time with the enactment of the Food and Drug Administration Amendments Acts of 2007, the creation of Dr. Torti's position.