

Review of Research Programs  
Center for Biologics Evaluation and Research  
Food and Drug Administration  
Final Report

October 21, 1998

*Subcommittee for Review of CBER Research  
Science Board to the Food and Drug Administration*

## **INTRODUCTION**

The Center for Biologics Evaluation and Research (CBER) External Peer Review Committee was established as a subcommittee of the Science Board in December, 1997. The External Peer Review Committee's principal charge was to perform an upper-level, Center-wide program review of research at CBER. The roster of the Committee is presented in Appendix A, and the letter from Dr. Kathryn C. Zoon, Center Director, requesting participation in this peer review process is presented in Appendix B. Dr. Zoon envisioned that the global review of the research program at CBER would fulfill two major purposes. The primary objective was to provide external advice which will be used to set priorities for the allocation of resources among CBER research programs. The second objective was to use the review in evaluating a model of coordinated research for CBER as proposed in the Center's Strategic Plan for the Year 2004. In early January, 1998 the Committee Members were provided with six extensive notebooks containing: 1. Overall description of CBER activities, 2-5. Review of CBER research activities, organized by Administrative Offices, and 6. Previous site visit reports for individual CBER laboratories.

The 26-member CBER Review Committee met for four full days, February 3-6, 1998, in the CBER facilities on the NIH Campus. The full schedule for the review is attached as Appendix C.

It rapidly became apparent to the 26-members of the Review Committee during their four days at CBER, that in addition to fulfilling their responsibilities of reviewing and making recommendations concerning the individual divisions within CBER, there were a number of cross-cutting issues which should be addressed. It also became apparent to the Committee, which included outstanding scientists from academia, major pharmaceutical companies, the biotechnology industry, national health institutes (U.S.&U.K.), and research foundations, that it was necessary for the Committee to go beyond its specific charge and address the Committee's unanimous concern that inadequate funding for CBER, particularly the inadequate funding for laboratory research within CBER, would risk potential damage not only to the health of the population of the United States, but also the health of our economy, by affecting an industry that will expand rapidly in the 21st Century. Thus, in structuring its report, the Committee details within a Preamble our great concerns related to inadequate funding of CBER and recommends attention to this issue not only

by CBER and FDA leadership, but also by Congress, the Administration, the Department of Health and Human Services, as well as the Pharmaceutical and Biotechnology Industries and the public, whose health will be at risk. This Preamble is followed by a section to briefly provide the background and justification for the

Review Committee's recommendation in the Preamble for increased support for laboratory research within CBER. Appendix D contains a compilation of written comments of Review Committee members, arranged by topic, which were not directly used in the preparation of the Preamble, Background and Justification sections. Readers will find these comments valuable ~n further understanding the Committee's recommendation concerning the need for funding of laboratory research at CBER. The background and justification is followed by a section entitled "Cross-Cutting Issues" related to broad recommendations which go beyond the present individual CBER Divisions.

Finally, a brief summary assessment of each of the individual Divisions is presented in pages 10-12. More detailed evaluations of each Division were prepared as Appendices E -N.

Appendices E through N contain internal program reviews and in many cases contain evaluations of individual research scientists, therefore they will not be distributed outside of the FDA as part of the Committee's report. These Appendices were prepared for FDNCBER senior staff, and therefore, as much detailed information as the reviewers wished "to provide has been retained in the Appendices with only minimal editing. Appendices E-N do not follow a preset format and reflect the evaluations and concerns of the individual Committee members who prepared each section, as modified by the entire Committee, when each preliminary report was presented in closed session on February 6, and following distribution of the written text.

The Committee reviewed and provided comments and suggestions on two complete drafts of the report and forwarded this report to the FDA Science Board on May 19, 1998 with unanimous approval.

## PREAMBLE

It is the general consensus of the Review Committee at the issues we are evaluating here have major health implications for the United States. Inadequate funding of CBER can be predicted to lead to a crisis in terms of health outcomes, as well as a crisis of confidence in the ability of our national regulatory authorities to maintain health since the therapeutic, prophylactic and diagnostic agents, about which CBER advises and regulates, affect all aspects of the well-being of our population. These areas of CBER concern include vaccines in all age groups, with particular concern for children and the elderly, the biologic diseases that are of great importance to us as a population, such as AIDS, the safety of the blood supply in this country, and identification of infectious agents that could contaminate various products that are distributed to large portions of our population. In addition, the Center for Biologics, at present, regulates the most rapidly expanding sector of our drug industry, facilitating the United States to be the leader in the development of new technologies and new products that relate to biologics. This industry is an important financial component of our economy. It is the consensus of the Review Committee that for our industry to receive prompt and appropriate regulatory reviews, as well as for the ability of our regulatory agency to respond to urgent needs, it is of utmost importance that the scientists in CBER have research capabilities at the cutting edge that allows them not only to understand the rapidly expanding methodologies to evaluate vaccines and biologics, but also so that CBER scientist/reviewers can interact with their colleagues in industry on a knowledgeable scientific and technologic basis so that the appropriate recommendations can be made. It is the consensus of the Committee that CBER requires a strong laboratory research focus and not a virtual science review process; otherwise, we risk the potential to damage not only the health of the population of the United States but also the health of our economy in terms of an industry that in the 21 st century will expand by leaps and bounds. Although the assignment of our committee was to focus exclusively on CBER, it is obvious that similar considerations and reasoning could and should apply to all the Centers and Divisions of the FDA that are involved in regulating new drug discovery and development.

The Committee recommends to the Congress, to the Administration, to the HHS, and to the Food and Drug Administration that it is of greatest importance to provide the adequate support and expanded funding so that cutting-edge research and cutting-edge scientists continue to be attracted to work in an Agency that is so central to both the health and the welfare of our economy.

We urge those reading this report to recognize that the cost-effectiveness of the products and functions regulated by FDA is enormous. There is no doubt that the major financial savings, which we will make in health economy, are in prevention, which is increasingly a primary objective of many new drugs being regulated by all FDA Centers and Divisions. For example, within CBER, the Food and Drug Administration regulates and approves vaccines, one of the leading contributors to preventive medicine.

Independent of the money allocated for the review process, this Committee Wlanimously believes that it is critically important that the funding for basic research within the Center be expanded to facilitate and allow CBER scientists to carry out the evaluative part of their mission.

## **BACKGROUND AND JUSTIFICATION OF THE REVIEW COMMITTEE'S RECOMMENDATION FOR INCREASED SUPPORT FOR LABORATORY RESEARCH WITHIN CBER**

It is the responsibility of CBER to regulate biological products, biological therapeutics and related products, in order to protect and enhance the public health. These biological products include vaccines, blood products, allergenic extracts, certain diagnostic products and other biological and biotechnology-derived products. Some of the products that CBER regulates, such as somatic cell and gene therapy are constantly evolving. In order to provide effective regulatory review of these biological products, CBER conducts active, mission-related research to maintain and expand its knowledge of fundamental biological processes.

The Review Committee, in expressing its strong support of the need for laboratory research in CBER, and other Centers in the FDA, recognizes that this position is contrary to the experience of the Agency and the Industry in the review and approval of drugs by CDER (Center for Drug Evaluation and Research). This position also differs from the perception of PHARMA and BIO in the recent renegotiation of the PDUFA (prescription Drug User Fee Act) authorization, who felt that the regulated industry should not pay for CBER research. It is important that each Center detail, as the Review Committee does here for CBER, those regulatory areas that require specific laboratory expertise, that only comes through active research programs. For example, biologicals tend to be high molecular weight substances which are often difficult to characterize completely by physicochemical processes. Therefore, product quality depends upon in-process control and process validation.

Manufacturing methods for stable therapeutic agents and devices can generally employ nonphysiological processing conditions which provide an effective barrier to product contamination by adventitious (accidentally arising from an external source) contaminants. For biologicals, the dependence of biological function on delicate physical structures usually prevents the use of harsh processing conditions. Thus, some biologicals have historically been associated with adverse reactions and death related to adventitious contaminants, particularly for those products with little opportunity for removal or inactivation of adventitious agents.

The Committee believes that a credible emergency response by CBER to adventitious agent problems associated with marketed biological products, including blood and blood products, requires immediate availability of a laboratory-based team of experts who understand both the potential adventitious agents involved in the scientific, manufacturing, control, and clinical aspects of the product.

Thorough and timely review of the safety, efficacy, and quality of a biological/product license application (BLA/PLA) requires experts with appropriate experience at CBER, including relevant laboratory techniques required to perform characterization, manufacturing, and control of the product. In the field of biotechnology, virtually every IND or BLA application raises new policy issues which are identified and addressed as part of the review process. It is incumbent upon the CBER reviewer to assess the potential merits of new technologies, to identify new risks or potential risks associated with these technologies and to develop methods for evaluating and controlling

these risks. Thus, the following are critical needs that require an intramural laboratory research program:

1. Regulators and policy makers require expert knowledge and first-hand experience with the latest technology being applied to biological products.
2. An intramural research program is required to assess risks of new therapies, to develop assays and new approaches to increase efficacy and safety, and reduce risks.
3. A strong well-maintained intramural research program provides the basis for a climate of science and scientific communication within CBER that enhances the ability of the Agency to recruit and retain high quality scientific staff.
4. The research program facilitates the ability of CBER to address existing regulatory issues and to anticipate future problems to keep pace with rapidly emerging and complex cutting-edge technology. It facilitates a response in a timely, flexible and competent way to new policy issues that require new 'Points to Consider' documents, that suggest approaches to companies preparing IND and BLA applications. The research program must be primarily staffed with full time, permanent personnel (rather than visiting and post-doctoral scholars) to capture the value of their research experience in regulatory submission reviews.
5. The existence of an extramural research program is necessary for CBER to launch a credible emergency response to adventitious agent problems with marketed biologics.
6. Research-based internal expertise enhances the ability of the agency to interact productively with sister agencies (both in the U.S. and internationally), academia and industry as a respected knowledgeable and impartial colleague. Since many emergency responses go beyond national boundaries, research-based internal expertise within CBER is very important for international scientific collaboration.

In summary, this Review Committee echoes the view of our predecessor FDA Science Board Subcommittee on FDA Research, that was convened and chaired by Dr. David Korn, by affirming that the FDA through a vigorous high quality intramural program of scientific research provides the essential foundation of sound regulatory policy and performance, and insures that the FDA is and will continue to be in the best position to carry out its statutory responsibilities to protect, promote, enhance and affirm the health of the American people.

In light of the need for a vigorous cutting edge modern research program the decrease in the Agency's (and particularly CBER's) budget in both dollars and full-time equivalent staff is a major concern. The Review Committee believes strongly that depleting the Agency's base of intramural scientific expertise must inevitably compromise the quality of review and regulatory activities, as well as potentially adversely affect the health of our population and our economy.

## CROSS-CUTTING ISSUES

In recommending support for a strong laboratory research focus in CBER, the Committee recognizes that this research must be mission-oriented and complementary to the laboratory research programs of the regulated industry, rather than duplicative of the research on-going within the industry.

It was recognized by the Committee that a laboratory research function of CBER which is critical to the maintenance of competence of agency scientists relates to analysis. Through the agents that CBER regulates and discovers in its own laboratories, this Agency has available a critical set of macromolecules for analysis and characterization. Both the world and the Agency are in a serious need of methods for characterizing, measuring, and monitoring these agents. Efforts to develop these methods are not what they should be at CBER, probably for budgetary reasons. We believe that CBER needs to be among the best regulatory agencies in the world and proactive in responding to the needs of society and of manufacturers. The Committee recommends that CBER create a new measurement science unit. This unit should be headed by a well-known senior scientist recruited from outside the Agency, preferably with a protein chemistry background (since this is a recognized weakness at present), a scientist with a record of excellence in macromolecular analysis and characterization who will assemble members of his/her team from among the very highly qualified people already in the Agency. This individual should be charged with the responsibility for developing strategies for the analysis and characterization of both the current and future products the Agency will regulate, be heavily involved in analytical aspects of regulation, and seek out and bring modern analytical methods to bear on a wide variety of problems within the Agency. As part of the package for the start-up of this cross-cutting analytical laboratory, the Agency needs to spend roughly one million dollars for the acquisition of new instrumentation, ranging from MALDI mass spectrometry to surface plasmon resonance. These are critical acquisitions for the Agency, necessary for CBER to continue to perform at a high level. The Committee suggests that measurement science be stressed as an important component in each of the Divisions. Such a focus will have a catalytic impact on the entire research program of CBER and facilitate the expeditious review and characterization of protein products.

The Committee strongly recommends that CBER institute an approach to quality assurance of control testing, and that CBER create and evaluate standards for measurements carried out within CBER research that are commensurate with what CBER expects to see for data that are submitted to the Agency by the regulated industry.

The Committee also noted that the statistical criteria which CBER scientists set for themselves are far below the standards that the Agency would require for the regulated industry. The Committee believes that it is important that CBER use appropriate statistical criteria in the evaluation of their own research data, and note a general lack of interaction of CBER laboratory scientists with their statistician colleagues. In the design of studies to validate assays and to analyze the results of animal model work, CBER scientists should have statistical input prior to carrying out the studies. The Committee believes that a small group of two or three statisticians should be dedicated to supporting the laboratory science presently on-going within CBER.

In concert with our recommendation that a strong laboratory research component is necessary within CBER that is complementary, and not duplicative of that of the regulated industry, the Committee is concerned that CBER research related to direct development of vaccine products, could potentially undercut the support of the Agency from those individuals who are being regulated. Such vaccine development programs could also potentially divert funds from other important priority issues. However, the Committee recognizes that in certain cases, there will be problem areas of vaccine development, or vaccine development needs in the United States and throughout the world that the scientists within the Agency can uniquely address. Prioritization within CBER should be sensitive to the counter-balancing issues raised here by the Committee in terms of vaccine development, as well as in all areas in which CBER pursues laboratory research.

The Committee believes that cell banking, tissue banking, and xenotransplantation are future growth areas. We anticipate that CBER will see applications and have expanded regulatory review responsibilities in these emerging areas. These areas do not appear to be adequately covered at present, and management must decide the most appropriate organization to ensure additional expertise in these areas so that they will be adequately covered.

The Committee perceives that there are greater communication problems within CBER than have been recognized by the senior administration. One aspect of this communication problem is the lack of recognition of duplication of research in different areas or at least recognition that different scientists working on the same projects are often not communicating. The Committee is also concerned about the esprit de corps of the group itself, although the Committee recognizes that some of this dispiriting attitude relates to financial cutbacks leading to FDA downsizing of science, at a time when the climate for strong support of science at NIH is markedly improving. The Committee notes the communication between and among regulators and scientist/regulators may be an Agency-wide issue. This concern has been identified in a number of the individual Division reports. The Committee makes no direct recommendations concerning reorganization, but believe that the communication may be improved either by co-locating laboratories or reorganization of certain scientists.

The Committee noted superb examples of leadership in several laboratory/divisional units, but this was lacking in others. Hallmarks of successful leadership are evident in the quality of skillful, interactive scientific guidance for the scientists in the group and substantial intellectual interface with scientists nationally. A program should be initiated that encourages the appropriate supportive role of leadership as a goal for all senior scientists.

The Committee recommends that the research budget be restored to at least the 1994 levels. In that year the CBER research budget was \$18.4MM of a total CBER operating budget of \$41.5MM, excluding salaries for full time equivalent scientists. (Corresponding figures for FY1998 are \$6.9MM and \$25.4MM, respectively.) In addition, new money will be needed for new initiatives, such as the measurement science unit recommended here, and new strategies, that can enhance the program as well as providing funds for special purposes.

Regarding whether there is adequate scientific input from the present CBER research laboratories to various aspects of the regulatory process, the Committee feels that the laboratories are often underutilized by Provisions which could benefit from greater interactions, as detailed in some of

the Division evaluations. Management should re-examine how the laboratories may best fulfill their function.

## **ASSESSMENTS OF INDIVIDUAL DIVISIONS**

Division of Allergenic Products and Parasitology--Overall Summary: This is a very diverse division representing different aspects of responsibility. The Division is generally characterized by good science, with the balance favoring positive evaluations. In each of the laboratories, important and relevant research is being carried out. In general, better interactions with the Laboratory of Biophysics and the Laboratory of Analytical Chemistry would facilitate the work of the Division. Most projects are relevant to the mission of the Division, but reevaluation of the priority of some projects should be undertaken. (For details see Appendix E).

Division of Bacterial Products--Overall Summary: Research in this Division has had a recent history of major accomplishments impacting on vaccine design, carried out by internationally recognized scientists. This Division addresses a number of very important areas for which there will be future needs in terms of advanced technology and understanding. Its present organizational structure does not meet those needs. It is the belief of the Committee that there needs to be a reorganization, reprioritization and restructuring of this Division to meet what are obviously some very important needs to reflect the more detailed recommendations found in Appendix F. It is recognized that like every other Division of CBER, Bacterial Products has an enormous regulatory burden, and much of it is not easy. (For details see Appendix F).

Division of Biostatistics and Epidemiology and the Division of Clinical Trial Design and Analysis--Overall Summary: The Committee was impressed with the very capable leadership and scientific expertise within these groups, although the groups are small for the work that they are presently required to do. There is very little interaction with many of the research divisions within CBER that could benefit greatly by statistical consultation and interactions. The organizational structure of DCTDA should be re-evaluated because there are a number of laboratory-based research projects within this Division that are not appropriate. The Committee believes that research carried out in biostatistics and epidemiology can be very cost-effective and that with adequate resources the Biostatistics and Epidemiology group would be of even greater benefit to the Center. (For details for each of these two Divisions see Appendix G).

Division of Cellular and Gene Therapy--Overall Summary: A group Representative of the best work that can be done within CBER. These studies have scientific relevance, the group is enthusiastic and concerned with their mission. A minor concern was noted in terms of some overlap with other areas that may reflect communication problems. (For details see Appendix H).

Division of Cytokine Biology--Overall Summary: This Division has very competent leadership in terms of its regulatory responsibility and is pursuing research projects that are directly related -to their responsibilities. However, the Division is very understaffed at the present time. The Committee believes that sponsor submissions in Cytokine Biology will markedly increase and that this Division will be overwhelmed unless adequate resources are allocated. The quality of science within the Division exhibits peaks and valleys of excellence and needs to be looked at carefully.

Work in the identification of signaling molecules represents research productivity that is outstanding, but in the HIV area, a reorganization of projects may be appropriate and a deficiency in the neurocytokine area needs to be addressed. In general the Division is doing a good job with the right kind of directed research but needs significantly more resources, since the Committee anticipates a larger number of submissions in this area. (For details see Appendix I).

Division of Hematologic Products--Overall Summary: This is a Division with some very strong science and very strong scientists, representing important areas of the responsibility of CBER, which must be supported. However, the Division is apparently undergoing extreme budget and personnel cutting and will have very great difficulty functioning and maintaining what the Committee views as very important scientific areas of research and regulation. The Division has been complimented, at least in certain areas, in terms of the leadership they provided to the industry in providing guidance and in their foresight as to problem areas which must be addressed in the future. However, even with the strong leadership of the Division Director, there seems to be some discontinuity in terms of what is the appropriate location of various subsets within this Division. Senior CBER management should review this possible need for reorganization. The cross-cutting issue of measurement science in meeting regulatory responsibilities is of particular importance in this Division, where many biological measures are emphasized. (For details see Appendix 1).

Division of Hematology--Overall Summary: This Division is carrying out good scientific investigations and they are, for the most part, doing important work. The Committee generally made strong positive comments concerning this Division. A critical element of CBER's emergency response team to viral contamination of blood and blood products is located within this Division. There are a few research projects that the Committee believes are of low priority because they are potentially duplicative. These include the cold storage of platelets, work with IgG and Ig class switching. HIV antigen work in monkeys, in its present form, is not state-of-the-art and could probably be improved with collaborative work. An area that does not seem to be adequately addressed is the prion relationship, and the prion-plasma derivatives question.

(For details see Appendix K).

Division of Monoclonal Antibodies-Overall Summary: A group of scientists not uniformly at the highest level but carrying out some very good science in an area that has potential for a great deal more applications and development in the future. However, the Committee is concerned that other studies are not relevant to the mission of the Division that some current and future needs are not being met, and therefore, there is insufficient expertise within this Division to allow adequate interaction with the industry and to move forward in generating specific recommendations in certain areas of emerging technology in monoclonals. (For details see Appendix L).

Division of Transfusion Transmitted Diseases-Overall Summary: The Committee viewed this Division a problem area. The Division has not adequately enunciated its mission and appears to not understand its mission. Some projects are mission-related, some work is of high quality but much is not of high quality. There appears to be a discontinuity between the various directions of this Division, which requires examination and prioritization by CBER leadership. (For details see Appendix M).

Division of Viral Products--Overall Summary: It is the general belief of the Committee that there are good quality individuals with strong research credentials in the viral products area. At the present time, the group has done important work in standardizing and regulating various products, such as vaccines for influenza and polio that have been important for the public health.

Due to limited resources, there is a concern that, in fact, this work could have been done more expeditiously and could have been of even better service. The Committee is concerned that because of the present funding structure, there could potentially be a major disaster related to viral products. This is a critical issue for public health, not only in the United States but in the world, and it needs to be supported. The Committee is concerned that research in this area should not be viewed as being product development-related. Although a justification was put forward that 'the best way to be able to learn about vaccines and how to regulate them was to do it yourself, the Committee believes that there are many important critical research areas that are not duplicative of development CBER, or at least this Division, should go back and prioritize its research program and attempt to anticipate how the research in this area, which is so critical, should be planned for the next decade. (For details see Appendix N).

Division of Product Quality--Overall Summary: The Committee believes that the three Laboratories within this Division are generally of high quality, but the Laboratories are often underutilized by divisions which could benefit from greater interactions. CBER Management should reexamine how the Laboratories may best fulfill their function. Comments concerning the three Laboratories within this Division are found in Appendices E (Laboratory of Analytical Chemistry), F (Laboratory of Standards and Testing) and N (Laboratory of Method Development).

Appendix A

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## Appendix B

DEPARTMENT OF HEALTH & HUMAN SERVICES  
Public Health Service  
Food and Drug Administration Rockville, MD 20852-1448

December 22, 1997

Dear Dr.

Thank you very much for your willingness to serve on a special subcommittee of the FDA Science Board. The subcommittee's principal charge is to perform an upper-level, Center-wide program review of research at the Center for Biologics Evaluation and Research (CBER). This is envisioned as an expedited evaluation of the Center's entire research program down to the Division level and is expected to require four days for completion.

A global review of the research programs at CBER will fulfill two major purposes. The primary objective is to provide external advice which will be used to set priorities for the allocation of resources among our research programs. In these times of continued shrinkage of the annual operating budget, and the heavy loss of the additional financial support to the research programs previously provided by PDUFA (Prescription Drug User Fee Act), more than ever before responsible scientific management is being called for as we must accommodate the mandated reduction of our research personnel. The second objective is part of our Strategic Plan for the Year 2004 in which we have proposed a model of coordinated research for CBER. Input from an external review committee is critical for validation of the model as well as implementation of its principles. It is anticipated that implementing this mechanism for justification and prioritization of individual research programs will become part of the annual budgetary process.

The two objectives listed above have in common the same desired conclusion: the evaluation of CBER's research programs for their scientific quality, mission-relevance, and scientific management and leadership. Also implicit in both goals is the need for the review to be performed by a committee of objective external peers who have both well-recognized scientific expertise and thorough understanding of the mission and needs of the Center. Functionally, this task can be carried out best by a subcommittee of the FDA Science Board, analogous to the Korn Committee which evaluated the importance of research across the Agency. The organization of the subcommittee will be a Chair and Co-chair chosen from within the membership of the FDA Science Board augmented by ad hoc members from academia, other government agencies, and industry with considerable experience and high professional stature in their field.

The makeup of this subcommittee reflects the major scientific disciplines within CBER, which includes: immunology, bacteriology, virology, cell biology (molecular biology and genetics), chemistry (biochemistry and biophysics), and clinical - design, epidemiology, statistics. You were contacted and selected having fulfilled all of the above criteria.

Background information about CBER and the research programs is enclosed to aid in the review process. This information package includes a description of the activities at the Center, Office and

Division levels, as well as comprehensive descriptions of the research programs that are carried out within Divisions. This material includes information on: organizational structure; personnel logistics; budgets and allocations; current and anticipated issues, responsibilities and needs; retrospective and prospective descriptions of research programs; and the current state o-f research prioritization.

To assist in the review of CBER's research programs, I ask you to consider the following comprehensive questions:

1. In terms of current and future needs, do the existing programs adequately support CBER's mission to biological products? Is the scope of CBER's research appropriate? That is: are the existing research programs relevant; are additional programs needed?
2. What is the quality of the existing research programs? What are their strengths and weaknesses?
3. How can the culture of science and the scientific leadership in CBER be strengthened to ensure that high quality, relevant research is an integral part of regulatory decisions?
4. Are related research programs within the Center adequately coordinated to minimize duplication and omissions and to maximize productivity? If not, what are the barriers and how can they be better coordinated?
5. Based on identified research needs, is the Center providing adequate resources to meet the goals of those research programs? Are scientific disciplines (immunology, chemistry, etc.) and needed specialties (hematology, allergy, etc.) being adequately maintained?
6. Conceptually, is the proposed process outlined in the document-"Coordination of Research at CBER"-- for evaluating and prioritizing research programs appropriate?
7. Is there- adequate scientific input from the research laboratories into the various aspects of the regulatory process (for example, lot release testing and product review), and vice versa?

Although this current subcommittee will only be a one-time committee, i t may evolve into the "Center Scientific Review Panel" proposed by the Chief Scientist and the Office of Science of FDA to provide an ongoing advisory function to the Center Director.

Again, I appreciate your willingness to participate in this review, and I look forward to working with you.

Director - Center for Biologics Evaluation and Research

Appendix C

CENTER FOR BIOLOGICS EVALUATION and RESEARCH (CBER)  
EXTERNAL REVIEW OF GBER RESEARCH  
FEBRUARY 3, 4, 5 & 6, 1998  
MEETING of the SUBCOMMITTEE of the SCIENCE BOARD to the FOOD and. DRUG  
ADMINISTRATION  
Dr. Leslie Z. Benet, Chair  
Dr. Thomas A. Waldmann, M.D., Co-Chair  
BUILDING 29 B, NIH Campus  
Bethesda, Maryland  
AGENDA

Day 1 (Tuesday. Feb. 3. 1998 - Meeting in Room 115 of Building 29)

- 8:30 a.m. Opening and Administrative Remarks Dr. William Freas, Scientific Advisory Committee, CBER
- 8:35 a.m. Welcome and Introductory Comments Dr. Kathryn Zoon, Director, CBER, Dr. Leslie Benet, Chair
- 8:40 a.m. Center Perspective of CBER Research: presentations by Dr. Kathryn Zoon, Director, CBER, Dr. Neil Goldman, Assoc. Director for Research, CBER
- 9:00 a.m. Office Perspective of CBER, Research: presentations by Office of Vaccines Research and Review Dr. M. Carolyn Hardegree, Director, OVRR
- 9:30 a.m. Office of Blood Research and Review Dr. Jay Epstein, Director, OBRR
- 10:00 a.m. Break
- 10:15 a.m. Office of Therapeutics Research and Review Dr. Jay Siegel, Director, OTRR
- 10:45 a.m. Office of Establishment Licensing and Product' Surveillance Dr. Jerome Donlon, Director, OELPS
- 11 :00 a.m. Questions and discussion of presentations
- 11 :45 a.m. Agency Perspective and Comments: Dr. Elkan Blout, Senior Advisor for Science, FDA
- 11:50 a.m. Executive Session (closed)
- 12:10 p.m. Lunch

Day 1 (Tuesday, Feb~3, 1998 - Cont'd)

1:10 p.m. Division Perspective of CBER Research: presentations by

TWO SESSIONS

SESSION A: (Conference Room A/B), Division of Viral Products (DVP) and the Division of Product Quality Control-Laboratory of Method Development (DPQC-LMD) Dr. Peter Patriarca, Director, DVP Primary Reviewers: Drs. Hilleman & Schild

2:10p.m. Break

2:25 p.m. Resume presentations

3:40 p.m. Break

3:55 p.m. Questions and discussion of presentations)

4:40 p.m. Executive Session (closed)

5:00 p.m. Adjourn for the day

SESSION B: (Conference Room C), Division of Biostatistics and Epidemiology (DBE) and the Division of Clinical Trial Design and Analysis (DCTDA) Dr. Susan. Ellenberg, Director, DBE Dr. Karen Weiss, Director, DCTDA Primary Reviewers: Drs. Hoel & Ryan

1:10 p.m. DBE perspective of CBER Research

2:10p.m. Questions and discussion of OBE presentations

2:40 p.m. Break

2:55 p.m. DCTDA perspective of CBER Research

4:10 p.m. Questions and discussion of DCTOA presentations

4:40 p.m. Break

5:00 p.m. Executive Session (closed)

MEETING of the SUBCOMMITTEE of the  
SCIENCE BOARD to the FOOD and DRUG ADMINISTRATION  
AGENDA (Continued)

.Day 2 (Wednesday February 4, 1998)

8:30 a.m. Division Perspective of CBER Research: presentations by TWO SESSIONS

SESSION A: (Conference Room A/B), Division of Hematology (DH) Dr. Mark Weinstein,  
Director, DH Primary: Reviewers: Drs. Bohach & Lubiniecki

SESSION 8: (Conference Room C), Division of Cellular and Gene Therapy (DCGT) Dr.  
Philip Noguchi, Director, DCGT Primary Reviewers: Drs. Anderson & Carter

9:30 a.m. Break

9:45 a.m. Resume presentations

10:45 a.m. Break

11:00 a.m. Questions and discussion of presentations

11:50 a.m. Executive Session (closed)

12:10 p.m. Lunch

1:10 p.m. Division Perspective of CBER Research: presentations by TWO SESSIONS

SESSION A: (Conference Room A/B), Division of Bacterial Products (DBP) and  
the Division of Product Quality Control-Laboratory of Standards and Testing  
(DPQC-LST) Or. Drusilla Burns, Acting Director, DBP Primary Reviewers: Drs.  
Gotschlich & Apicella

Day 2 (Wednesday, Feb. 4, 1998 - Cont'd)

SESSION B: (Conference Room C), Division of Monoclonal Antibodies (DMA) Dr.  
Kathryn Stein, Director, DMA Primary Reviewers: Drs. Waldmann

2:10p.m. Break

2:25 p.m. Resume presentations

3:40 p.m. Break

3:55 p.m. Questions and discussion of presentations

4:40 p.m. Executive Session (closed)

5:00 p.m. Adjourn for the day

MEETING of the SUBCOMMITTEE of the  
SCIENCE BOARD to the FOOD and DRUG ADMINISTRATION  
AGENDA

Day 3 (Thursday, February 5, 1998)

8:30 a.m. Division Perspective of CBER Research: presentations by TWO SESSIONS

SESSION A: (Conference Room A/B), Division of Cytokine Biology (DC B) Dr. David Finbloom, Director, DCB Primary Reviewers: Drs. Vogel & Hamilton

SESSION B: (Conference Room C), Division of Transfusion and Transmitted Disease\$ (OTTO) Dr. Edward Tabor, Director, OTTO Primary Reviewers: Drs. Griffin & Parks

9:30 a.m. Break

9:45 a.m. Resume presentations

10:45 a.m. Break

11.:00 a.m. Questions and discussion of presentations

11 50 a.m. Executive Session (closed)

12:10 p.m. Lunch

1:10 p.m. Division Perspective of CBER Research: presentations by TWO SESSIONS

SESSION A: (Conference Room A1B), Division of Hematologic Products (DHP) Dr. Giovanna Tosato, Director, DHP Primary Reviewers: Drs. Lane & Kramer

Day 3 (Thursday, February 5, 1998 - Continued)

SESSION B: (Conference Room C), Division of Allergenic Products and Parasitology (DAPP) and the Division of Product Quality Control-Laboratory of Analytical Chemistry (DPQC-LAC) Dr. Thomas Hoffman, Acting Director, DAPP  
Primary Reviewers: Drs. Regnier & Wang

2:10p.m.	Break
2:25 p.m.	Resume presentations
3:40 p.m.	Break
3:55 p.m.	Questions and discussion of presentations
4:40 p.m.	Executive Session (closed)
5:00 p.m.	Adjourn for the day

MEETING of the SUBCOMMITTEE of the  
SCIENCE BOARD to the FOOD and DRUG ADMINISTRATION  
AGENDA (Continued)

Day 4 (Friday February 6, 1998-Meeting in Conference Room A/B of Building 29B)

8:30 a.m. Discussion and Preparation of Draft Report

12:00 noon Lunch

1:00 p.m. Oral Summary of Progress on Draft Report

3:00 p.m. Adjourn External Review Meeting