

BIORESEARCH COMMITTEE MEETING

of

October 15, 1971

Washington, D. C.

MINUTES

A one day meeting of the Bioresearch Committee was held on Friday, October 15, 1971 at NASA Headquarters, Washington, D.C. The meeting agenda is attached (Attachment #1).

Members present: Dr. L. F. Dietlein, MSC
Dr. D. Winter, ARC
Dr. S. P. Vinograd, MMR (Chairman)

Item 1. FY 72 Program Reviews at Respective Centers

The following general concepts were derived:

- Bioresearch Division Program Reviews should be held at the respective Centers
- The Bioresearch Committee members are to be present at all Center program reviews.
- Target dates for the next program reviews are the first two weeks in December 1971; the first week at ARC and the second week at MSC.
- For the oral review, approximately 15 minutes should be allowed for presentation of each T-4 and each RTOP by their respective technical managers. Each presentation will cover approximately the same subject matter as the written material, but with more emphasis on the technical content. A period of time will be allowed during each 15-minute presentation for questions and answers.
- In establishing the format for the accompanying written material, the general philosophy should be to implement one which will serve most, if not all, progress reporting

requirements, in-house as well as out of house. Thus, the overall paper work load on Center technical personnel will be reduced.

- The format for the written material should include the following:
 - . Brief coverage of the scientific or technical content and progress
 - . Funding and schedule progress; what spent and where; what plan?
 - . FY 73 requirements by task and by RTOP
 - . Problems
 - . Program objectives; current year and future changes (particularly applicable to RTOP discussion)
 - . Reprogramming requests
 - . Schedules for hard bits of information and decision points, as applicable.
 - . Photographs and other visual material for congressional and similar requirements
 - . Copies of visual material used during oral presentations
- Contractor reports should be submitted to Headquarters routinely as received. Final copies of all contractor and grant reports and final write-ups of in-house material will be submitted to Headquarters in duplicate, one copy to be forwarded by Headquarters to the George Washington University Library, which will serve as a central repository.
- Utilizing the above inputs, MMR will finalize its own written program review format, incorporate the requirements of the other MM Divisions and Center in-house reporting needs, and set forth a final "all-purpose" format for Bioresearch Committee review and approval at the next meeting. (Action: Dr. Vinograd)

Item 2. Requirements for Additional Funding in FY 72

New proposals which were reviewed by the AIBS Medical Panel were discussed. Only those which received a rating of 2.4 or over were considered. Comments and conclusions were as follows:

- Maletskos and Nichols (Rating 1.4) -- Primary methodology is based on Nelp's work. Approximately 1½ years ago, Dr. Nelp had submitted an informal proposal of a similar nature. Review by the NAS resulted in the recommendation to fund Nelp for this work. Therefore, before considering funding Maletskos, determination must be made as to whether or not Dr. Nelp wishes to do this work under NASA auspices. If so, Nelp should be encouraged to submit a formal proposal as soon as possible, after which a final determination will be made. (Action: MSC/Dr. Dietlein)
- Pace (Rating 1.7) -- Excellent proposal, but similar work is being done currently at MSC using a scintillation counter instead of Dr. Pace's four π counter. Barnes and Benson at MSC to review proposal for its desirability as an adjunct to their work. (Action: MSC/Dr. Dietlein)
- Kelleher (Rating 1.8) -- ARC is interested in funding this proposal in the behavioral area.
- Epstein (Rating 2.4) -- This appears to be a valuable effort. MSC is to determine possible redundancy with ongoing efforts and the desirability of funding. (Action: MSC/Dr. Dietlein)
- Nichols and Hazlewood (Rating 2.4) -- This work is already funded by MSC.
- Mayhan and Hahn (Rating 2.4) -- This proposal is centered primarily upon the evaluation of potential biocompatible materials. It should, therefore, be considered for funding by the Bioengineering Division. (Consultation was obtained during the meeting with Dr. Deutsch and Major McKinney of MME who studied the proposal and determined that they wished to include it as a candidate for additional funding in the MME FY 72 program.)

Since there were no additional FY 72 funding requirements in the Behavioral Program, the Committee then reviewed those of the Biology Program and concluded that the additional FY 72 funding requirements for Bioresearch should be ranked in the following order of priority:

1. Research contingency fund (as dictated by flight findings)	100K
2. Tobias	125K
3. Post	30K
4. Baily	30K
5. Schaefer	15K
6. Cockett	40K
7. Maletskos or Nelp	107K
8. Epstein	37K
9. Kelleher	25K
10. Lett	<u>50K</u>
TOTAL	559K

(Note: Mayhan and Hahn transferred to MME)

Item 3. Matrices

Countermeasures: The attached matrix, prepared by Dr. Vinograd and reviewed earlier by Dr. Dietlein and Dr. Winter, is approved by the Bioresearch Committee (Attachment #2). In view of the amount of work still to be done in this area and the finite time period remaining, Headquarters should expedite its determination of ARC funding for this RTOP. (Action: Dr. Vinograd)

Cardiovascular: The present matrix is far too detailed. The headings overlap. MSC and ARC are to devise cardiovascular matrices independently for submission and synthesis at the next Bioresearch Committee meeting. (Action: MSC/Dr. Dietlein and ARC/Dr. Winter)
An MMR vugraph prepared for an Office of Management and Budget presentation two weeks prior to the meeting was reviewed for possible matrix headings (Attachment #3).

Behavioral: The attached matrix, which was prepared by Dr. Belleville (MMR) met with Committee approval (Attachment #4).

Radiobiology: The attached matrix, which was prepared by Dr. Saunders (MMR) was tentatively approved by the Committee pending the results of the ongoing review by the Radiobiology Committee of the National Academy of Sciences (Attachment #5).

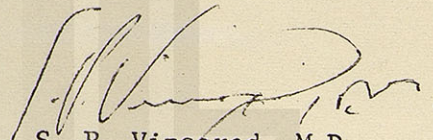
Item 4. Future Flight Experiments

The Bioresearch Committee reviewed the entire bioresearch program and identified those tasks which are likely to yield flight experiments. The establishment of requirements for future flight experiments in the medical, behavioral, and radiobiological areas was deferred until the next Bioresearch Committee meeting.

Item 5. Additional Discussion

The target date for the next meeting of the Bioresearch Committee is mid-November at ARC, the day after the next MSC contractor meeting at the U.S. Public Health Hospital in San Francisco. Dr. Dietlein will establish and coordinate both dates. (Action: MSC/Dietlein)

The primary objectives of the forthcoming meeting will be to establish flight experiment requirements (Item 4b in the Agenda), finalize the format and arrangements for the December Program Reviews, and discuss the results of the above action items.


S. P. Vinograd, M.D.
Chairman

BIOPRESEARCH COMMITTEE

MEETING OF OCTOBER 15, 1971

— WASHINGTON, D.C.

- AGENDA -

1. FY 72 program reviews at respective centers

Time & Format

2. Requirements for new starts in FY 72

Review AIBS Medical Panel Recommendations
Review Biological Program Recommendations
Review Radiobiology Programs
(Tobias, Baily, et al)
Review Behavioral Program Requirements

3. Review Matrices

Countermeasures (Proposed Actions)
Cardiovascular
Behavioral
Radiobiology

4. Experiments

- a. Identify candidates in FY 72 program
- b. Future Flight Experiment Requirements
-- Medical, Behavioral, & Radiobiological
(Medical emphasized at this meeting)

5. Miscellaneous Items

COUNTERMEASURES

<u>Candidate Techniques</u>	<u>FY 72 Tasks to Investigate</u>	<u>Notes</u>
1. Exercise:		
Isometric	21-17-02, 21-17-05	Needs: whole body vs local; inertial vs. resistive; devices; influence of timing and schedule.
Isotonic	21-17-05	
2. LBNP (C-V only)	51-17-01	--
3. Gradient Pos. Press. (C-V only)	Will be proposed by V. Blockley	Probably ARC; Funds will be made available for FY 72 start.
4. Double Trampoline	21-17-01	Variations (pogo stick, jumping bag, etc.) to be explored later
5. Programmed Valsalva Maneuver (C-V only)	--	To be initiated later if in- dicated. Data (J. Henry) on Pos. Press. breathing cast doubt on valve.
6. Medications & Dietary Regimens		
Steroids (C-V only)	51-17-02	--
Amphetamines (C-V only)	21-17-04	--
Isuprel (C-V only)	21-17-04	--
Diet (Fluids & Electrolytes, High Ca & P Intake)	51-17-01, 21-16-01	--
EHDP (Musc-Skel. only)	51-17-02	--

COUNTERMEASURES
(Cont'd)

<u>Candidate Techniques</u>	<u>FY 72 Tasks to Investigate</u>	<u>Notes</u>
7. Bone Stressor (Musc-Skel. only)	21-17-03, 51-17-02	--
8. On-Board Centrifuge	--	No additional work planned in FY 72; past work adequate for present
9. Spacecraft Rotation	--	In Bioengineering Program (NAA-LaRC effort)
10. g Suit (Protective Device) (C-V only)	51-17-01	--

Future Plans: Refinements and combinations of the above will be explored based on the effectiveness of these techniques as demonstrated by current investigations.

SUGGESTED CARDIOVASCULAR MATRIX HEADINGS

- . ALTERATIONS OF CIRCULATORY MECHANICS, CARDIAC OUTPUT CHANGES AND MECHANISMS
- . CHANGES IN PERIPHERAL VASCULAR DYNAMICS, VENOUS COMPLIANCE, VASCULAR STRUCTURE AND PERMEABILITY, ARTERIAL PRESSURE CONTROL
- . BODY FLUID VOLUME SHIFTS, ROLE OF RENIN-ANGIOTENSIN-ALDOSTERONE CONTROLS, ROLE OF GAUER-HENRY REFLEX AND ADH
- . CHANGES IN TISSUE AND CELLULAR PERMEABILITY TO FLUIDS AND ELECTROLYTES

ENVIRONMENTAL FACTORS	DEPENDENT VARIABLES	Boredom/Fatigue	Communication	Emotional Factors/ Autonomic Behavior	General Performance	Group Interaction/ Adaptation	Habitat Utilization/ Territoriality	Intellectual Function	Physiological Factors/ Rhythms	Psychomotor Performance	Sensory Function
Crew Structure/ Selection	21-03		51-05 51-06 51-07	21-03 51-05 51-06 51-07	21-03 51-06 51-07	21-03 51-07	51-04 51-05	21-03 51-05 51-06	21-03	51-06	
Habitat/ Environment	21-01 21-03 21-04 51-09	51-08 51-11	21-01 21-04 51-06 51-07 51-08 51-09	21-01 21-03 51-06 51-07 51-09 51-10 51-11	21-03 21-04 51-05 51-07 51-08 51-09 51-10	21-03 51-07 51-08	51-11	21-03 51-06	21-03 51-11	21-01 51-06	
Hazards			51-07	51-07 51-10	51-07 51-10	51-07	51-04				
Motivation/ Reinforcement	21-03 21-04		21-04 51-06	21-02 21-03 21-07 51-06	21-03 21-04 51-03	21-03	21-02 21-06 21-07	21-02 21-03 21-06 51-06	21-03	51-06	
Situational Stresses	21-03 21-04 51-09	51-08 51-11	21-04 51-05 51-06 51-07 51-08 51-09	21-03 21-07 51-05 51-06 51-07 51-08 51-09 51-11	21-03 21-04 51-06 51-07 51-08 51-09	21-03 51-07 51-08	21-07 51-04 51-05 51-11	21-03 51-05 51-06	21-03 51-11	51-06	
Task Requirements	21-03 21-04	51-11	21-04	21-02 21-03 51-11	21-03 21-04	21-03	21-02 21-06 51-04 51-11	21-02 21-03 21-06	21-03 51-11		

NASA RADIATION BIOLOGY PROGRAM

LEVEL OF BIOLOGIC ORGANIZATION

