

Send information for publication on this page to: Prof. K. E. Klein
DLR Institute for Aerospace Medicine
Linder Höhe
5000 Köln 90 GERMANY

SPACE MEDICINE BRANCH REPORT

A Message from the President

As incoming President for 1992-93, first of all, I would like to thank last year's officers and committee chairmen for their achievements during the past year. It is to their credit, particularly past Presidents, Dr. Jeff Davis and Dr. Richard Jennings, that I found an effective structure, on which basis I am trying to develop activities for the next year. In doing so, I will be supported by the following individuals: President Elect—James F. Bagian; Secretary Treasurer—Robin E. Dodge; and newly elected Executive Council Members (time expiring in 1995)—Tom McNish, Roberta Bondar, and (replacing Russell Rayman who resigned because of his new position with AsMA) Fred Guedry. We will have nine committees, again, chaired by individuals who through their experience in their particular fields will do their best, I am sure, to foster space medicine and the Space Medicine Branch (SMB).

For those who could not attend the SMB luncheon in Miami, I would like to provide a short report on some of the transpired events. The outgoing President, Richard Jennings, and the Executive Committee, which met during the morning of the same day, prepared the meeting excellently. The Hubertus-Strughold Award was given to our new Executive Council member, Roberta L. Bondar, who served as payload specialist aboard Discovery Space Shuttle Mission

STS-42 (IML-1), while the Young Investigator Award was presented to Dave Ward and certificates of achievement to Mike Barrett and Anne Lehr. John P. Marbarger, former editor of this journal, acting on behalf of the Historical Contributions Committee, gave an exciting "snapshot" of the early history of the Space Medicine Branch, which he plans to have published as a Branch Report. Another highlight was the address of astronaut Mike Mullane, who surprised the audience with a unique performance of an astronaut's dream before being launched into space. We are grateful, indeed, to all who worked on the program and the sponsors who helped to make it a reality.

Finally, I would like to make sure that you are aware of several pending actions from last year and others that have been recently initiated. To give the Branch a "home base," we asked the Wright State University Health Sciences Library to archive our documents (e.g., annual reports, financial statements, committee reports), thus enabling us to pull together in a single location the Branch's history and ongoing activities. With respect to dues, the Branch will institute a "discount" system, letting a member choose payment for 3 years instead of one. This would allow some saving for the member and protect him against dues increases during that time period. This will also decrease record keeping for the Branch. The Membership Committee is initiating a recruiting effort, which will be supported by the International Partners Committee, to increase international membership, which presently is only about 10%. In addition, the

International Partners Committee was asked to collaborate with the Program Committee to provide a panel on international cooperation in space life sciences for the next AsMA meeting in Toronto. It is expected that interesting results from missions like IML-1, D-2, and the cooperative projects France and Germany had in 1992 with the Russians can be presented.

International cooperation is a topic that I would also like to emphasize in a future SMB report. It seems to me that this aspect is of growing significance in a rapidly changing space scenario, where projects, in particular manned ones, are becoming so costly that budgetary constraints often do not allow implementation by only one nation. I have invited several experts to begin preparing data for presentation; however, I would like to encourage those of you who have pertinent information on programmatic aspects, research and technology projects, or milestone events in the history of space medicine, to let me have your ideas.

Let me close with a statement Jeffrey Davis made some time ago: "The Branch can be a dynamic force for the future in terms of space medicine policy, leadership in research and education, and encouragement of young investigators in the field. In this sense and with your support I hope to make the coming year an active and productive one."

Dr. Karl E. Klein
Space Medicine Branch President

NASA reports microgravity's effects on living cells

Human and animal cells exposed to the microgravity of space for only a few days show changes in function and structure, say NASA scientists.

Although the results are preliminary, the recent life sciences research on the Space Shuttle suggest alterations in metabolism, immune cell function, cell division, and cell attachment.

Dr. Gerald Sonnenfeld of the University of Louisville, KY, reports that after 9 days in space, human immune cells failed to differentiate into mature effector cells. The results of his investigation into how the stress of spaceflight affects immune system cells suggest that the stress of spaceflight can alter normal metabolic activities and important aspects of immune cell function.

Dr. Sonnenfeld said that "the failure of the body to produce mature, fully differentiated cells in space may lead to health prob-

lems, including impaired healing abilities and increased risk of infection."

Dr. Emily Morey-Holton (AsMA member) of NASA-Ames Research Center, said: "Bone-forming cells exposed to microgravity also show changes. Bone cells die if they can't attach to something. That we found so many unattached, dead cells may indicate that gravity is required to show the cells where to attach. This finding could be significant since many biological processes, both in single cells and in multicelled organisms, depend on cell attachment and recognition processes."

She added that the attached bone cells, although healthy, showed no signs of producing mineral. According to Dr. Morey-Holton, perhaps "bone cells don't need to form mineral to support themselves in microgravity."

Dr. Pauline J. Duke of the University of Texas Health Science Center in Houston also found differences between bone cells developed in space and on the ground. She said that the cells in microgravity showed changes in attachment.

"The surfaces of flight cells were smoother than those of ground-based controls, indicating that matrix production or

secretion is altered during spaceflight, probably as a direct result of microgravity exposure," she said. "Matrix forms the basic structure of bone."

Dr. Thora Halstead, Manager of NASA's Space Biology Program, is pleased with these results, but said that "we are just beginning to understand how cells function in space. A more thorough understanding will come only after much more research. We are looking to Space Station Freedom to give us the opportunities to conduct the long-term studies that ultimately may hold the key to this basic component of life."

Flight Instructor Handbook updated

The AOPA Air Safety Foundation has published the third edition of the "Flight Instructor Handbook." This 720-page volume is the standard text for the Flight Instructor Refresher Course conducted by the Air Safety Foundation. It is provided free to attendees of the course and is also available from the ASF headquarters, 421 Aviation Way, Frederick, MD 21701.