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*Scientist to Scientist Colloquium*  
Steering Committee Planning Session

August 9 and 10, 1996  
Keystone, Colorado

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SUMMARY REPORT OF THE PROCEEDINGS

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We would like to thank the following sponsors of The Keystone Center's *Scientist to Scientist Colloquium 1996* Steering Committee Planning Meeting:

U.S. Department of Energy  
Office of Energy Research

National Institutes of Health  
National Institute of Environmental Health Sciences

The Alfred P. Sloan Foundation

The Smart Family Foundation

Members of the Steering Committee are distinguished scientists, administrators, and members of the media. A full listing of current members (with affiliations and addresses) is attached. The following listing includes all of those who were in attendance at this strategic planning meeting:

Robert W. Craig, Presider

Thomas Appelquist, Ph.D.  
David Baltimore, Ph.D.  
James L. Bennett, Ph.D.  
Paul Berg, Ph.D.  
Theodore Bogosian  
Alice Huang, Ph.D.

Raymond Jeanloz, Ph.D.  
Raphael G. Kasper, Ph.D.  
Roy F. Schwitters, Ph.D.  
Maxine F. Singer, Ph.D.  
William G. Thilly, Ph.D.  
Barbara Valentino

Stephanie Barnhizer, Project Director

This report will be divided into three main areas of concern: purpose, funding, and outcome. Regarding the future of the Colloquium, please find a listing of suggested topics and speakers for 1997 toward the end of this report.

#### PURPOSE

The reason for holding a scientific colloquium of this nature is to bring together the most active scientific researchers for cross-disciplinary exchanges. As one scientist commented, "it is a way to compensate for over-specialization." As a scientist/administrator noted, it helps administrators to have access to high-level scientific information in a setting where they can "ask stupid questions." At a

meeting of between 80 and 100 people small group exchanges are possible, allowing more in-depth discussion. In five days of meetings, there are many opportunities for a great number of these exchanges. The Keystone Process facilitates intermingling across disciplines and encourages debate. Because this meeting is unlike discipline-specific meetings, presenters must write a talk specifically for an interdisciplinary audience, touching on various scientific and social implications of their work. They use this opportunity to practice addressing a broad audience which includes their peers from other fields, university administrators, industry executives, government officials, and members of the media who will help bring forefront scientific findings to the public. An aspect of this experience not to forget, as well, is the Colloquium's location of the Rocky Mountains. Participating scientists are rejuvenated through the exchanges as well as through the environment. All of the above mentioned elements are the essence of The Keystone Process and contribute to the Colloquium's uniqueness and success.

## FUNDING

The challenge facing the Colloquium is reduced availability of government funding for science. This impacts funding which has directly been given to The Keystone Center by government agencies and impacts the participation of scientists who receive government grants which allow them professional development opportunities. Members of the committee feel that participants who are established scientists and administrators can pay a portion of the expenses to attend the meeting. However, because it is crucial to bring young scientists to the meeting to encourage their participation in exchanges and possible collaborations with the older generation, funding sources must be found to fill the gap.

Several new sources of possible funding were mentioned and many members agreed to make contact with foundation board members and industry executives they know. With an increased number of participants covering at least some portion of their own expenses, the budget could be reduced by approximately \$50,000. Not including the costs of producing a radio broadcast and/or web page, the budget would be somewhere in the range of \$80,000 to \$95,000.

In at least two cases, government agencies have granted monies for the production of a summary report of the proceedings. However, all of the possible outcomes of the Colloquium, necessary for broader educational impact, cannot be produced unless a full Colloquium takes place. The meeting can have a multitude of products, but first there must be a meeting.

Creative funding ideas might become available if young pre-college scholars are included, or if teachers or members of industry play a more active role.

## OUTCOME

The mixing of scientists, administrators and others has achieved the above-stated purposes. Collaborative research is not widely reported back to us, but has occurred in a number of instances: between neuroscientists and physicists and between biologists and computer scientists. Much of this science is experimental and, whether it is short-lived or extends over a long period of time, it has not been one of our goals to expressly follow our past participants through their work.

Smaller scale, regional, Colloquia have been created following The Keystone Center's model. The University of Washington in Seattle, through the School of Public Health and Community Medicine has now held two such meetings. Yale University held one Colloquia in 1995. The University of California at Berkeley is preparing a meeting for 1997, and New York University is in discussion on the concept. There may be other small off-shoots of which we have no knowledge.

"Science at the Summit," a 30 minute magazine format radio show was aired in 1995 on at least a dozen National Public Radio stations across the United States. Bogosian Productions of Boston has contacts with WGBH station in Boston for future broadcasts, and a station in San Diego has some interest in adding our program to their science broadcasting.

During this weekend's committee meeting Bogosian Productions arranged for us to bring *interdisciplinarity* to the public through a live broadcast from Keystone to New York on Ira Flatow's NPR program "Science Friday." The two-hour program featured one hour of interviews with David Baltimore and Alice Huang, with phone lines open for callers, and with an on-line chat room through America On Line that was active for internet users during the broadcast. The estimated audience for the broadcast was 2 million listeners and there were about a dozen telephone calls in to Drs. Baltimore and Huang. The Scientist to Scientist Colloquium was highlighted because of its impact on how scientists share information about their work to their peers in other disciplines and how that may impact research and education. Finally, the subject is of importance to the public because of the difficulties inherent in communicating complex scientific processes in ways that lay citizens can understand, and apply to their own decision-making, which calls upon a large number of scientific concepts at once.

Funding for all of the radio production to date has been provided by a three year grant given by the Alfred P. Sloan Foundation.

The development of a web page for the Colloquium was discussed. All those members present felt that this would be a significant step in bringing the meeting to a larger number of scientists, as well as the best public outreach mechanism. Ted Bogosian presented to the group a proposal for a web page which would have the following components:

- Be connected to the WGBH web site because a large number of people already visit that site (other sites may be considered);
- Have audio from previous radio broadcasts to provide background on the Colloquium;
- A sample presentation, edited by the speaker(s) and producers for simplicity and clarity;
- Visuals from the presentation and other relevant visuals;
- Biography of the speaker(s);
- A contact person who would be able to address questions related to the topic (either the speaker, or someone who can screen requests first);
- A list of topics (which were presented at previous Colloquia) for which a good summary/abstract is written and which is accompanied by visual material;
- Information on replica colloquia being held at universities;
- Information on The Keystone Center and its programs.

The question of funding this site is still up for discussion. Mr. Bogosian suggested a budget of between \$20,000 and \$30,000. Other smaller scale versions of this may need to be discussed at the start.

Outreach from the Colloquium has come a long way over the past couple of years, thanks to the efforts of Bogosian Productions and the grant provided by the Alfred P. Sloan Foundation.

#### THE FUTURE

Over the two days, four committee members each gave a 45 minute presentation on a topic in their field of expertise. Maxine Singer presented an overview of various active areas of plant biology, highlighting plant genetics and medicinal applications. Raymond Jeanloz updated the group about the status of research on the rotation of the earth's core. William Thilly presented findings from his group's research at MIT on how certain mutagens might be activated and what the correlation might be, if any, between mutations and disease. Roy Schwitters presented an update on projects following the Superconducting Supercollider (he was formerly director of that project) and the various collaborations taking place in particle physics.

From these presentations, from previously suggested topics, and from notes sent in from absent committee members, the group discussed the topics most appropriate and exciting for the 1997 Colloquium. The preliminary list agreed upon is as follows:

Topic	Suggested Speakers
Prions	Stanley Prusiner Carl Weismann
Photons	
Quantum Cryptography	Charles Bennett
	Jeff Kimball (IBM)
Bose-Einstein Condensation	Carl Weiman
	Eric Cornell
Optical Computing	David Miller
Wavelets	Ingrid Daubechies
	Heidi Nepf
Plant Development	Sharon Long
	Joanne Chury
	Eliot Meyerowitz
	Chris Sommerville
Genetics of Behavior	Tim Tully (CSH)
Obesity	Jeff Friedman (Rockefeller)
	Eric Kandel
Circadian Rhythms	Michael Rosbash
Instrumentation	
NMR	Alex Pines
EM	Roger Kornberg
Microelectromechanical Systems (MEMS)	Sussane Arney (Bell Labs)
Oceanography	
	Colleen Cavanaugh (MIT)
	Rita Caldwell (UMD)
	Robert Gagosian (WHOI)
Environmental Remediation	
	John Wilson

Two co-chairs will be chosen to lead the final program planning, and all members of the committee (and others they choose) will assist with inviting scientists to speak. If

the first-choice speaker is not available and a second excellent speaker is not known, the topic will be dropped and an alternate topic chosen.

Speakers will be asked for their recommendations for audience members. Invitations will also be extended to past speakers and participants, and others who have been suggested by past participants.

In summary, the Steering Committee meeting was a success. This group of scientists is extremely dedicated to the Scientist to Scientist Colloquium, as it is envisioned and as it is realized. That people who are very busy in their professional careers are so giving of what little time they have to spare speaks to how significant this meeting is to them. The Keystone Center owes a debt of gratitude to each and every one.

The overall program planning for the 1997 Colloquium will be managed by Stephanie Barnhizer, under the direction of Robert Craig, and in conjunction with the Steering Committee.

We are pleased to present to our funders these notes and thank you, again, for supporting The Keystone Center's work.

Sincerely,

Robert W. Craig  
President

Stephanie Barnhizer  
Program Director

**THE KEYSTONE CENTER**  
**August 9 & 10, 1996**  
**Scientist to Scientist Colloquium**  
**Steering Committee Planning Meeting**

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