A Proposal to Support the Rescue of Biomedical Research Initiative

Background

For the past two and a half years, four of us (Bruce Alberts, Marc Kirschner, Shirley Tilghman, and Harold Varmus) have been working together to define, analyze, and recommend solutions for the many problems that currently afflict the biomedical research community.   The range of our findings has been broad---touching on science budgets, training programs, laboratory organization, career pathways, evaluation criteria, publication practices, and research topics---and we have reported on those problems and on our proposals for solving them in widely read reports, at national meetings, and on many campuses.   There has been widespread interest in (and general applause for) our efforts, which we now call the Rescuing Biomedical Research (RBR) project, and we are pursuing a variety of means and venues for continuing and expanding the enterprise.

Our manner of proceeding with the RBR project to date has been to meet on weekends at Harold Varmus's apartment in New York, to discuss the project on conference calls, and to pay for our own travel expenses, while also sharing the cost of website development and operation. This worked for the four founders, but in order to create a real movement we needed to expand the group of leaders willing to take ownership of the issues. We therefore recruited 12 additional scientists, university administrators and policy makers at various career stages to form an official "Steering Committee" (SC) that oversees and directs a professional website (http://rescuingbiomedicalresearch.org/). We hope to use this website as the epicenter of a vigorous reform movement. Now the hard work of formulating specific actions and advocating for change begins.

Our new mode of operation

The purpose of the expansion of the group of 4 to 16 is to broaden the base of people engaged in the efforts and to create a series of items that might be the basis for taking action on a multi-faceted dilemma. The goal is to catalyze widespread discussion within the community, build a consensus around the changes that will need to occur within the federal government (especially the NIH), university administrations, and most importantly within the scientific community itself, and then aggressively advocate for change. This won't happen overnight – no systemic change of such a complex ecosystem can be reformed in the blink of an eye.   The Steering Committee (SC), which meets monthly by conference call, has begun to identify potential areas of reform that could benefit from focused attention and to highlight changes that are already beginning to occur in the critical section of the website entitled "Progress on solutions" at http://rescuingbiomedicalresearch.org/progress-on-solutions.

Specific projects

We are currently working on several new projects (most are listed on the website), and we hope to have considerably more projects in motion soon. A few examples, presented to indicate how we plan to work in the future, follow:

1) Publication practices. SC members Ron Vale, Daniel Colón-Ramos, and Jessica Polka met together at Woods Hole, MA this summer; they have formed a working group on publication issues that Harold Varmus has also joined. This group is collecting the data needed to make a strong and convincing proposal to relieve current roadblocks to more efficient dissemination of research discoveries and to accelerate movement along the training pipeline.   The data, proposals, and events related to their adoption will be presented on the RBR website.   The proposals are likely to include promoting the use of a pre-print server for many biomedical fields.

2) Core facilities.   SC members Mary Beckerle, Shirley Tilghman, Tony Hyman and Jeremy Berg have formed a working group to collect data and produce a proposal that aims at connecting greatly expanded support for core facilities to both cost savings and career employment for staff scientists. To date, an examination of costs at the Max Planck Institute set up in Florida compared to the equivalent laboratories in Germany suggests major cost savings can be achieved in this way. But we need to collect more data to make a convincing case and create a strong proposal that the Steering Committee can agree on and advocate for with both universities and government agencies.

3) Collecting data on career trajectories in the biomedical sciences. SC members Jeremy Berg, Shirley Tilghman, and Joan Reede are consulting with experts to determine exactly what data should be collected by each institution and to generate a mechanism for collecting it. Their initial goal focuses on postdoctoral fellows. We plan to promote a requirement that institutions collect and disseminate data on past and current postdoctoral fellows. It has been shocking to learn how little we know about this important category of biomedical scientist.

4) University-based experiments to foster RBR goals.   SC member Ron Daniels co-chairs a committee of university presidents belonging to the American Association of Universities with the aim of fostering RBR goals. In brief, the committee is working on a recommendation that the AAU raise innovation funds from a variety of philanthropic and government agencies to fund a competition among AAU universities for "experiments" to ameliorate the deleterious effects of hyper-competition that are emphasized on the RBR website. The cost of such experiments is likely to be several million dollars each.

5) Improving science demographics.   SC members Bruce Alberts and Tony Hyman met in Europe at the end of September to begin to flesh out a proposal for how to restore the number of investigators aged 36 or younger who receive NIH R01 grants .   (That number

was 2623 in 1983, and fell to around 660 in 2010, over a period of time when the total number of grants rose from ~14,500 to over 22,000.) What type of mechanisms might the SC support, given that any shift of funding to younger PIs will mean less funding for older PIs?

Coordination with the NIH

A subset of the SC has already met this year with Francis Collins to discuss the RBR effort, and we anticipate many more such meetings with him and his leadership group in the future. Deputy Director Larry Tabak and Institute Directors Tony Fauci and Jon Lorsch have been particularly attentive to our efforts. Lorsch heads the internal NIH leadership group that is currently meeting on these issues, and our strategy will focus on closely coordinating with him. As both a former NIH Director and a former Institute Director (NCI), Harold Varmus will be especially effective in guiding the SC in these efforts. The steps that NIH has already taken to address aspects of the problem identified by the RBR project have been compiled, and presented on our website.

The need for a full-time RBR staff member

To generate the momentum necessary to overcome the massive inertia preventing change, the RBR effort urgently needs to recruit one talented full-time staff member. This person would be situated in Shirley Tilghman's office at Princeton. His or her role would be essentially the same as that of a staff director for a study at the National Academies, and -- using our extensive connections with the National Academies to help identify outstanding candidates -- we would try to recruit an energetic individual with those same skills. The individuals hired by the National Academies are able to inspire and coordinate the work of the volunteers, who devote considerable time to these efforts because they can see tangible results arising from their work. Staff directors do not, however, determine what is finally done; that is the job of the volunteer leaders -- in our case the SC.

The new staff person for whom funding is requested would take up the day-to-day responsibility for coordinating the RBR project---administering the website, while soliciting and curating new submissions to the site that are approved by the SC and working closely with the SC to ensure that the schedule of meetings, phone calls, and projects is met. Most importantly, the staff member would support the efforts of our small working groups, such as those described above, by analyzing the growing commentary on the issues and by collecting as much quantitative data as possible on the policy and economic issues that inform each specific proposal for reform. This person would also organize biannual meetings of the SC and its monthly conference calls. And when important conferences, seminars and workshops dedicated to the topic occur, this person would ensure that the RBR effort is represented by at least one of its members.

This new staff member would also help to keep the Future of Research (FOR) effort

productive and coordinated with ours. FOR is an important effort of postdoctoral organizations in different parts of the US to make their views heard. (It started with the October 2014 meeting of 600 postdocs in Boston that one of our steering committee members, Jessica Polka, helped to organize — published as http://f1000research.com/articles/3-291/v2). A major focus of the RBR effort will be to give more prominence to the consensus views of the next generation of researchers, on whom our scientific future critically depends.

Budget for two years

We consider this initiative to be an experiment, and as such we are proposing a very modest budget for an initial two-year period. That budget would include:

Salary:	$180,000 ($90,000 per year)
Fringe benefits:	$61,920 (34.4%)
Research and travel:	$20,000
Website management:	$10,000
Working groups:	$100,000*
Total two-year budget:	$371,920

*Including paying experts to analyze data when necessary. (The working groups will do the majority of their work by video conferences, rather than holding in-person meetings; however, some working groups will need to meet in person).

N.B. There is a good chance that we will be able to attract funding from the Kavli Foundation for periodic meetings of the entire SC (plus other carefully selected individuals). The Foundation elected not to fund an individual in a staff position , but indicated an interest in funding such working meetings.