

Minutes*

**Senate Research Committee
Monday, November 19, 2012
2:15 - 4:00
238A Morrill Hall**

- Present: Linda Bearinger (chair), Jerry Cohen, Benjamin Fuller, Greg Haugstad, Brian Johnston, Seung-Ho Joo, Frances Lawrenz, Tucker LeBien, Richard Leppert, Timothy Mulcahy, Federico Ponce de Leon, Kathleen Thomas, Kyla Wahlstrom, Lynn Zentner
- Absent: Melissa Anderson, Arlene Carney, Robin Dittman, Mats Heimdahl, Hinh Ly, Karen-Sue Taussig, LaDora Thompson, Thomas Vaughan, Karen Williams
- Guests: Associate Vice President Pamela Webb (Sponsored Projects Administration); Cynthia Gillett (Research Animal Resources & IACUC); Cynthia McGill (Human Research Protection Program)
- Other: Debra Dykhuis (Human Research Protection Program)

[In these minutes: (1) emerging trends in research; (2) policy on Animal Care and Use; (3) policy on Activities Involving Recombinant and Synthetic Nucleic Acid Molecules or Other Potentially Hazardous Biological Agents]

1. Emerging Trends in Research

Professor Bearinger convened the meeting at 2:20 and said she would let Vice President Mulcahy wax eloquent about what he sees as emerging trends in research.

Vice President Mulcahy distributed copies of a handout to provide the Committee with an overview of the major trends he sees. He identified nine emerging issues.

One, regulation and accountability: Dr. Mulcahy predicted that universities are likely to see even more federal regulation as well as growing state regulation—and more accountability, which is not the same as regulation. Accountability is about performance and satisfying standards set by others (e.g., Congress and state legislatures). Universities have had less federal accountability in the past but it has grown in the last five years and there is an increased expectation by federal agencies that the research they fund will have an economic impact. The Obama administration has been very clear about its expectation that there will be an economic impact.

The State of Minnesota expects that the University will do things to benefit the state and its citizens, and that mainly means commercialization of its research discoveries, but also that the University will invest in faculty and research around issues important to the state (e.g., mining, biofuels, food, etc.). A percentage of the University's appropriation will be held back and released if the University meets three of five performance standards (which the University worked on with the state to develop). One of the performance standards is an increase in the number of faculty disclosures of intellectual property.

* These minutes reflect discussion and debate at a meeting of a committee of the University of Minnesota Senate; none of the comments, conclusions, or actions reported in these minutes represents the views of, nor are they binding on, the Senate, the Administration, or the Board of Regents.

What is also growing, and is the most troubling, is public accountability, Dr. Mulcahy said, although it is not surprising. With increased costs, and rising tuition, the public wants to know why it should send its kids to a research university. There is a mistaken belief that there is a link between research costs and tuition charges, but the result is that some in the public want to know why the state needs a research university.

Two, innovation and economic development: This has been a major push, at state levels and now also at the federal level, Dr. Mulcahy related. About 18 months ago the University joined with 134 of its peers in signing a letter to the Secretary of Commerce about research universities doing more for the nation's economy and committing them to innovation and a research agenda and being more entrepreneurial than they have been in the past. About six months ago, the Department of Commerce called each of those universities and asked what they had done to fulfill the commitment. The Department felt that the University of Minnesota was setting the bar for what research universities should do; President Kaler was asked to serve on a federal panel and attend a White House event to talk about what the University of Minnesota has done.

The universities have beat back an effort to require every PI to indicate what they would do to commercialize the research they are seeking to have funded. But the general pressure for innovation and economic development will not go away.

Three, big science: There has been an evolution to "big science" and the new approaches to science require teams. The benchmark is the CTSA [Clinical and Translational Science Award program] at NIH, which signaled NIH's decision to put a substantial amount of money into an endeavor to persuade medical schools to focus on translational research and get medicines to the bedside. If a university does not have a CTSA grant, it is closed out from funding opportunities. There is a growing emphasis on centers of excellence.

There are also new models of research, Dr. Mulcahy said. Not only is there a requirement for the participation of multiple institutions, there is also involvement of the private sector. There is a need to do more with business and industry.

Four, cost and competitiveness: All PIs recognize how difficult it is to compete for federal funding, Dr. Mulcahy observed. When he was submitting grant applications, perhaps 30% were funded; now about 10% of grants are. The mean age of those who receive their first NIH grant is now 41, which is scary. That situation may only get worse with the federal budget crisis.

The cost of conducting research has gone through the roof, Dr. Mulcahy said. Moreover, institutions are expected to cost-share. To provide the needed infrastructure for research is becoming more difficult and some technological and physical infrastructure needs have astronomical costs, almost beyond the ability of any one institution to pay for them.

Five, infrastructure, facilities, capacity: The University has some very good facilities and some that are just barely hanging on, Dr. Mulcahy said.

Six, partnerships: They are seeing, more and more, increased federal stipulations that a research project must have X number of partners. The whole scientific investigator ecosystem has been built on the individual PI who obtains grants and does research. There is still money for those grants, but as

funding for other areas increases, and with no additional research funding, the amount of money available for individual PIs will shrink, Dr. Mulcahy predicted. He said he is afraid that individual grants may be sacrificed; while "big science" addresses important problems, it is often the individual PI with an R01 grant who has the eureka moments. He said he hopes the federal government keeps funding in balance between the two.

Seven, regional cooperation versus institutional competitiveness: Institutions need to work together more cooperatively, Dr. Mulcahy said, but up to now they want the credit for the work and say that they are better than the other institution. There is a culture of institutional competitiveness that flies in the face of what the institutions need to do. They have to get past that notion that "they are better" or "they are worse" than we are. Within the CIC [Committee on Institutional Cooperation, the Big Ten plus the University of Chicago] there are about eight of the top research universities in the country, but they have never massed their strength. California has a regional system of outstanding research universities within the state but the Midwestern universities have never worked together as effectively as they do.

Eight, the Lake Wobegon Syndrome: This is a University of Minnesota problem, Dr. Mulcahy commented. It is great that people think of the University like Lake Wobegon, "where all the women are strong, all the men are good looking, and all the children are above average," but when it is trying to recruit the best students and faculty in the world, the University cannot simply describe itself as "above average." This institution is incredibly strong, with incredible faculty, but it just can't bring itself to say that. The University is its own worst enemy when it talks about itself. It has to get used to saying that it is "damn good." It is the 8th-ranked university in the world in research volume.

Nine, strengths and strategic opportunities: All universities will need to address these, something they are not good at doing, Dr. Mulcahy said. They have to align their investments with their strengths and opportunities and admit where they are not good or competitive and cut funding in those areas.

There are opportunities for a Midwest research university consortia in key areas, for example energy, the CIC schools could be a powerhouse if they partnered on that field.

There is, as he noted, a state expectation of University-corporate partnerships to help economic development—and if the University does not work well with companies, all its innovation will go nowhere because the University makes no products and it must work with those who do. In addition, federal research funding is likely to be flat while corporate funding is increasing. The University is also sitting in the midst of significant number of Fortune 500 companies that do research; they should be able to work with their state university.

The state also has areas where it needs research done; the University has to align its priorities with the state's priorities so it can identify what it can do—before the state dictates what it should do. The University must recognize there will be accountability; the question is how to address state needs while maintaining its vision and values.

They are just starting a strategic planning process for research, something Dr. Lawrenz spoke recently about with the Committee, Dr. Mulcahy said.

Except for Lake Wobegon, these are opportunities and challenges that are not unique to Minnesota, Dr. Mulcahy concluded.

Professor Bearinger thanked Dr. Mulcahy for a very useful framework for the Committee. She asked him how challenging it will be for someone new to the academic world, a young faculty member, and how these trends will affect their success in the research enterprise. Has there been talk about that? Or about tenure requirements?

Dr. Mulcahy said that he is not involved in tenure discussions but that in a highly competitive world, departments might want to rethink their standards. There is disproportionate pressure in the health fields and it is, he repeated, scary that that average age for obtaining a first NIH grant is 41—and that there is not much relief in sight. There are possible solutions but all they would do is transfer the pain. One option would be to make more money available for younger investigators, which would mean less for more senior investigators. NIH could limit the number of grants per PI or could cap the total amount of funding to any one PI. Or, worse, it could cap the dollar amount (or percentage) of salary that one can draw from a grant. The solution to the young investigator problem is to introduce perturbations in the rest of the system, but none of the solutions is very appealing.

Professor Bearinger said she wondered if units are reconsidering requirements for faculty members to obtain grants.

Dean LeBien said he has been at the University a long time and has watched biomedical research change from a myriad faculty largely working on their own to the present day where collaborative interactions are the norm. From the perspective of the Medical School, at least, what has not changed in the recruitment of new faculty is the expectation that they will develop an independent research identity with the standards of course being peer-reviewed papers and grants. Many are successful but some are not, and those who are successful certainly collaborate, but a premium is placed on demonstrating that one's own laboratory can dominate the accomplishment. Upon becoming a tenured associate professor, there is no longer any safety net since they lose "new faculty" status in the eyes of most funding agencies and must compete with the top individuals in their field. For those individuals who don't function in a collaborative manner, they become at risk for future funding because of the profound emphasis placed on this approach by literally all major funding agencies. So on the one hand the Medical School has a promotion system (particularly promotion to associate professor and acquisition of tenure) in place that emphasizes individual accomplishment, juxtaposed with the reality of collaborative/interdisciplinary research as the modus operandi for scientific accomplishment and acquisition of funding likely for the rest of their career.

Is that related to the tenure clock, Professor Leppert asked?

Dean LeBien said that about ten years ago the Medical School felt that the seven-year probationary model (six years of probation and one terminal year if tenure is not granted) model with essentially five years for research was too fast and they wanted more flexibility. So there are two models in the Medical School: seven years for the basic sciences and nine years for the clinical faculty. At the same time, those who take longer are generally not viewed as favorably as those who take less time. He said he would like to have the perspective of other colleges.

Dr. Mulcahy pointed out that departments and colleges were all asked to evaluate their 7.12 statements; he said he did not know of any that extended the probationary period. They do not, they just demand more of probationary faculty, Professor Thomas said.

Professor Leppert said that the reason he asked is because in some of the CLA disciplines there has been a diminution in the number of journals, so there are fewer places to be published—but still more demand that faculty members be published. Academic presses are also pinched, so it is more difficult to get a book published. In addition, funding for the arts, humanities, and social sciences is scarce, so the question of tenure is a very real one.

It is true that more money is needed in the sciences, Professor Cohen said, but that is always true. With respect to the percentage of grants that are funded, when an application is turned down but complimented, the PI will resubmit it. The payoff rate is one component, but the water is muddy. With respect to demands from the state, faculty members are not hired by his office, Professor Cohen pointed out to Vice President Mulcahy. There are two areas that the University is almost completely out of—photosynthesis and cell walls—that are essential foundations for work in biofuels. The College of Biological Sciences and the College of Food, Agricultural, and Natural Resource Sciences have cluster hires but they do nothing to address these high priority state needs. How is the University to make the transition to hiring to meet such needs? To be strong in the Midwest, the University needs strength in those fields, but departments in the two colleges may have other hiring priorities. He said he could see Dr. Mulcahy's view but wondered how his office could affect individual hires.

Vice President Mulcahy responded that no vice president can do more than suggest what is needed in the disciplines and subdisciplines but the University may need to change how it does things. There have been efforts at assessing the needs of Minnesota that indicate it needs strengths in this or that area. They need to hear the voices to determine if those strengths are aligned with the University, and if so, to follow up. President Kaler has identified in the biennial request four areas of research that the University will pursue if they are funded: mining, food, environmental remediation, and biofuels. If the state funds the request, the University will hire on those areas.

Professor Cohen said he understood that, that there will be people to work directly on aspects of biofuels, because it is applied, but there is no one doing work in the basic science that is needed. The U.S. spent a lot of money on research on cell walls in the 1970s and 1980s, the support dropped in the 1990s, and Minnesota was never a player in the field. There is an expectation that the University hire applied researchers, but it needs a range, from basic research to applied.

Dr. Mulcahy said he has voiced his concern: If the federal science profile shifts to applied research and big science, it will undermine individual innovation. The University needs to change its culture appropriate to its mission; it has been all individually focused, or on the department or college, and needs to be more focused on the big picture of what is going on and have less independent action. What changed during his eight years at Minnesota is that it must have an institutional consciousness around the question. The Vice President for Research was not a strategic position when he took office; now it is. But the vice president cannot do it alone; he will need to work with colleges and departments on opportunities. The culture has to change to one that is more collaborative.

Professor Bearinger asked about the extent to which these concerns should be incorporated in the compact process.

Dr. Mulcahy said he sees changes coming. The Council of Research Associate Deans talks collectively; there are more questions in the budget process. There were a number of independent requests from colleges to support research in an area—and they were not aware of the others' requests.

The administration said it would not fund the request from each college but said it would make a pool of funds available if they would develop a program.

Professor Cohen said that an effort to change will never be driven from the bottom when there is no one in a field at the University; there are no faculty members to recommend hires. To build an area that the University is not now good in must be through means other than the traditional source of budget proposals. That is why he said the culture must change, Dr. Mulcahy responded. It cannot be driven from the grass roots—but it also cannot be driven from the top. There must be some other way to change. Professor Cohen suggested that Dr. Mulcahy's office or the administration could provide incentives.

Professor Leppert asked for a clarification: In that nationally there has been a significant transfer from private/corporate research and development to universities, has there been a significant diminution of basic research at this university in favor of applied research? He assumed that might be the case, given that Minnesota, like most other public research universities, makes its case to the legislature principally in terms of direct beneficial economic outcomes to what it does.

Dr. Mulcahy said that the University makes the best case it can to the legislature, and in doing so, it looks at the state's economy. Even at the federal level, the CTSA focus is translational. But no one is advocating doing less basic research, one just wants to be sure it is not dead-end research. He has learned that there are as many faculty interested in translation as in research but he agreed that the University has promoted applied research more than it has in the past. As do federal agencies, he noted.

His last word, Dr. Mulcahy said, is in terms of all the things that have been talked about: If one looks at them from an historical standpoint, the University was founded as a land-grant institution, to provide education to farmers and mechanics. The other part of being a land-grant institution, however, was to provide economic development. The land-grant mission always had development as part of it. One can fast-forward to the 21st Century and understand that translational and applied research are part of the mission. But, he reiterated, he would never say that there should be less basic research done.

Dean Ponce de León pointed out that there are about 120 research faculty FTEs in his college (CFANS), and of those, about one-third are dedicated to basic research, about one-third to dealing in the intersection of basic and applied research, and one-third in purely applied research. So about 40 research faculty FTEs are working in basic research; with this number plus a 10% retirement rate each year, one can imagine that it is very difficult to attend to all areas of research. Moreover, it is the federal government that sets the research agenda for the nation as determined by federal funding priorities. When they hire, they must attend to all needs, including the capacity for development of an extramural research funding program. It is difficult to support faculty members in areas that are badly needed if there are no competitive research funds available. This situation will be true for any of the colleges at the University.

Professor Bearinger again thanked Vice President Mulcahy for his perspectives. Dr. Mulcahy said he would share the outline of issues with his successor; Professor Bearinger said that Dr. Herman, Dr. Mulcahy's successor, would be invited to join the Committee as soon as possible.

2. Policy on Animal Care and Use

Professor Bearinger welcomed Dr. Gillett and Ms. McGill to the meeting to discuss proposed changes to two Board of Regents policies; she began with the policy Animal Care and Use. She asked what prompted the revisions and what they aim to accomplish.

Dr. Gillett explained that the impetus for the review was simply the routine review of Regents' policies. The Animal Care and Use policy was largely fine as it stood; the biggest change proposed is to call out more clearly the role of Institutional Official and the Attending Veterinarian and identify more clearly their authority, obligations, and training. Dr. Mulcahy said the University wants to be clear on their authority so it is not questioned.

Professor Leppert pointed out that one of the proposed amendments to existing policy language would have exactly the opposite effect from what was intended. Dr. Gillett concurred and said the proposed amendment would be deleted.

With little further discussion, the Committee voted unanimously to endorse the changes.

3. Policy on Activities Involving Recombinant and Synthetic Nucleic Acid Molecules or Other Potentially Hazardous Biological Agents

Ms. McGill said that this policy also came up in the normal cycle of reviews. The one change of significance is how the policy refers to rDNA, which is now both recombinant and synthetic nucleic acids. They have added a definition, which they took directly from NIH guidelines. This change harmonizes University policy with revised NIH guidelines, Dr. Mulcahy affirmed.

Professor Cohen asked if the policy would cover study of DNA for chemical properties; there is much nucleic acid chemistry that is not of biological interest, but this policy could slow down such research. Ms. McGill said that some Chemistry faculty and AHC faculty might want to read the regulations. Dr. Mulcahy said that the regulations focus on replicating material; his advice is to have what the University must in its policy and then have individual researchers work with the committee on application of the regulations. Professor Cohen said that from the standpoint of burden on faculty members, it would be a good idea if they could spell out when a research would not need to come to the committee for approval—so they don't have to fill out all the forms for no reason.

Ms. McGill agreed.

The Committee endorsed the policy changes unanimously.

Professor Bearinger thanked Dr. Gillett and Ms. McGill and adjourned the meeting at 3:40.

-- Gary Engstrand