Memorandum

To: Faculty of the University of Vermont
From: Jane Knodell, Interim Provost and Senior Vice President
Domenico Grasso, Vice President for Research &
Dean of the Graduate College

Subject: Transdisciplinary Research Initiative - External Review Panel Summary
Opinions

We are happy to share the External Review Panel’s summary opinions (see below) of the
four Transdisciplinary Research Initiative (TRI) proposals that advanced to external
review (Biological & Bioengineering Sciences, Complex Systems, Food Systems,
and Neuroscience, Behavior, and Health). Our receipt of this report concludes the TRI
proposal evaluation process. We are encouraged by the consistency between the internal
and external phases of the review, and also by the indication that UVM has areas of
significant promise for which we can indeed vie for national distinction.

The next step in the TRI process is for our academic community to reflect on the results
of the entire review process and to think creatively about the possibilities before us. Over
the coming weeks, we will meet with each of the eight working groups to discuss the
review results and consider the options and strategies for the future of each proposal. We
will do the same with the Faculty Senate leadership, appropriate committees of the
Faculty Senate, the Council of Deans, and the Final Review Council.

We will announce the results of this consultative process to the campus community by the
middle of April. This announcement will identify the transdisciplinary research area or
areas in which the University will focus investments as part of a long-term strategy to use
our resources more effectively. It will also identify promising proposal ideas and
directions that surfaced during this process and that merit support, but will not initially be
identified as “spires of excellence.”

The transdisciplinary research initiative is a continuing process; we anticipate a second
“round” of proposal solicitation, development, and evaluation. The timing of this round
will be determined in concert with the Faculty Senate. It will include an open call for proposals from the faculty, and will be implemented with the Senate’s active participation.

We appreciate the extensive faculty participation in this initiative; your continued intellectual engagement and organizational creativity are essential to its success. We look forward to further dialogue in the coming weeks.

(Scroll down - External Panel Summary Opinions begin on page 3)
We congratulate UVM on the overall process. It is impressive. Bringing the campus together for these conversations to aspire to future excellence pays dividends regardless of the choices for investment. Each proposal we examined poses risk and the potential for significant payoff.

Although we recommend varying degrees of investment in these proposals, we want to emphasize that all have positive attributes and all are worth continued work.

As the investments are made, we suggest that funding emphasize investment in people first (faculty hiring, graduate student/post doc support, staff support) and secondarily on project costs, and then on facilities. It will be important to commit to long-term investment – in other words, don’t under-invest in order to spread the resources. We also recommend developing a reserve for bridging funds so that any initiative selected for investment does not find itself underwater before it can be more securely established.
Complex Systems

This proposal, to advance research and teaching in the area of Complex Systems at UVM, was well-received by the UVM “Spires” review team. One of the more notable characteristics of the proposal was the high quality and youth of the founding faculty. They were predominately early- to mid-career professors. This was simultaneously an advantage (in this relatively young field), and a disadvantage in that the group needs a seasoned leader to take the program to the next step in its evolution.

Certain advice was offered by the UVM “Spires” review team:

First, a senior level leader of the group should be hired who will, as one of his/her first duties, oversee the hiring over the next few years of three or four new faculty in the area. It will also be important that the complexity initiative link the social and natural systems from the beginning.

Second, an NSF IGERT proposal should be submitted, citing UVM support in this academic area (assuming this proposal is funded!). We suggest a seed fund on the order of 25% of the IGERT that would constitute a base budget even after IGER funding is received.

Third, future areas of study should be more carefully considered and focused. The proposal has to be tightened up. Rather than immediately develop a separate PhD, focus on tracts in existing PhD programs.

It may be valuable for this spire to appoint an external advisory committee to provide guidance and some national visibility

Many positive aspects of the proposal’s requests were noted:

1. Fifty faculty working in this area were identified, with fifty more involved in related research. Growth of the “Center,” the MITRE satellite office, and adequate computational capacity were noted.

2. The group received many requests for collaboration.

3. The group seems to understand that study tracks in CSYS have to be focused.

4. A robust faculty culture will develop with the right kinds of formal structure, e.g., a seminar program with prominent national and international speakers, graduate student support, including fellowships, faculty appointments that identify this area of expertise as an important part of their academic teaching and research.
Multi-scale Integrative Biosciences Review:

This proposal is addressing one of the most important and challenging issues facing modern biological sciences: how to integrate knowledge from the level of atoms to ecosystems. The goal is to overturn a century’s tradition of reducing biological systems to their component parts in order to make headway, and to begin to assemble the components back into “the whole”. That will take concerted efforts on the part of scientists from many disciplines to find productive ways to collaborate with one another.

Having said that, the proposal is vague on details of how Vermont will go about creating a fertile ground for multi-scale collaborations and interactions. The subject of multi-scale integrative biosciences is very broad, far too broad for a university to adopt without some further focus. The reviewers were not persuaded that hoping for champions to arise de novo was sufficient for an investment of this kind. Rather, you might consider focusing on one or two central questions or purposes for the integrative approach, i.e., effort should be placed into defining those central questions for which a "multiscale integrative" approach to the biosciences might be a pathway to secure new perspectives or new solutions to the very complex problems that we are confronting every day. At the presentation one of the members of the group described a compelling example in the area of muscle function, and it might make sense for the university to fund a pilot project in an area such as this to help identify the ingredients that are needed to foster interactions across atoms to ecosystems.

Because the review committee was not persuaded by the vision for how to go about creating interaction among multiple scales of biological inquiry, they could not endorse the idea of a PhD program in multi-scale biology. While it is the case that teaching together often provides a “glue” to hold interdisciplinary groups together, that is not a sufficient reason to create a graduate program. There is not yet a set of interdisciplinary underpinnings in multi-scale biology to justify a separate PhD program, as opposed to “tracks” within the cognate disciplines that could ensure that students are able to make the leap between levels of understanding.

We were encouraged that there will be opportunities for the faculty in this potential spire to join with other spires, particularly Neuroscience, Behavior and Health, and Complex Systems, which may provide opportunities to pursue the overall goal.

We recommend that UVM consider investment in a pilot project linking 5-7 disciplines to a single core question.
Food Systems

The basic premise of this proposal is extraordinarily important. Providing nourishment is a complex yet fundamental human activity that presents opportunities and challenges to human societies and cultures. The activity of the 20th century brought unprecedented developments in agriculture and food distribution, with impacts on family and community dynamics, health and the environment that extend globally. Today, many questions are being raised about our food systems, their infrastructure, economics and scale.

This proposal begins to touch on the importance and complexity of these questions, and the critical need to address these with an evidence-based approach. Of particular interest and opportunity is the assessment of the regional scale with respect to food systems. The University of Vermont as the proposal suggests is uniquely positioned to assess these questions, and to do so in a variety of creative ways. Because of the significant base of agriculture in the state the opportunity for engaged scholarship, and for experimentation on multiple scales exists.

The proposal’s strengths lie in this unique opportunity (Vermont as a natural food systems laboratory), and in the variety of resources that UVM can bring to bear on the questions. However, it is not clear in the proposal where the existing faculty strength lies or that additional investment in this area would make UVM a national leader as many of the specific areas cited are being pursued well elsewhere.

The proposal is vague about how this assessment of regional food systems will actually be pursued in an integrated rather than atomistic way. It does not develop the key questions that are of critical importance to local-regional food systems. The proposal is surprisingly silent on issues related to economics and finance of a regional food system; it does not address what might be the units of analysis (the farm, the region, an intersection of these) – and that omission is reflected in the lack of faculty with strength in the social sciences. An opportunity exists for strong linkage with CSYS but that is barely alluded to in the proposal (although the Complex systems proposal cites that opportunity for collaboration with Food systems.) Finally it is not clear how the work done in the “Vermont Laboratory” will translate to other regions in the US or elsewhere.

Given, however, the importance of this work to the state and potentially to the region, we recommend investment in an intellectual leader who can articulate a vision, serve as a catalyst and focus the resources already at UVM to realize the potential that appears to be there.
Neuroscience, Behavior and Health

The review panel agreed that the proposal, “Neuroscience Behavior, and Health,” represented an excellent investment for the University of Vermont. The area is an important one, and a priority for external and federal funding. Reviewers found the intellectual framework compelling, and the emphasis on health behavior at once distinctive and suited to strengths at UVM. One reviewer commented that the initiative gives UVM the opportunity to “leap-frog” other institutions by linking strengths in the social, behavioral, and health sciences. Still it will be important to differentiate what UVM will do from that which others are doing.

Reviewers agreed that a particular strength of the proposal was the way in which it brought together the College of Arts and Sciences with the medical school, linking psychology and psychiatry.

Reviewers also were impressed with the proposal’s sense of organizing structure for the initiative. It did not only describe what the proposers wanted to do but what kinds of organization were important in creating and sustaining links among faculty in different disciplines and areas of the university.

Reviewers felt that the Ph.D. track was well-conceived. By making the graduate program a track, the proposal maintained the strong disciplinary grounding of the students, while it broadened their experience through rotations and joint classes.

Reviewers felt that the most important investments for the initiative were the three faculty lines seen as most essential and the supporting staff for the MRI. The initiative will also need what we were calling “glue money” to support the activities that will build the community of researchers.

The one change reviewers wish to encourage is to limit the number of areas of emphasis to two or three. The six illustrative areas presented to the panel seemed too many to build distinctive and focused excellence.

The panel supports moving ahead with this proposal.

Respectfully submitted March 10, 2010

Catherine P. Koshland, Chair
Vice Provost
University of California, Berkeley

Carol T. Christ
President
Smith College

Michael M. Crow
President
Arizona State University

James Duderstadt
President Emeritus
University of Michigan

David Skorton
President
Cornell University

Shirley Tilghman
President
Princeton University

Larry N. Vanderhoef
Chancellor Emeritus
University of California, Davis