Transforming the University

Preliminary Recommendations of the College Design: Science/Engineering Task Force

Submitted on behalf of the Task Force by:

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Executive Summary

Mission: Advances in the biological sciences will transform the physical sciences, engineering, biomedical research, agriculture, and the environmental sciences. Critical to this transformation are strong connections between biology and the physical sciences, mathematics, and engineering. The University of Minnesota seeks to be a leader in promoting these new connections among the sciences, engineering, and related disciplines.

Deliverables

1) Recommendations regarding the optimal design, structure, and organization of the physical sciences, engineering, mathematics, biology and such related disciplines as biomedical research, agriculture, and the environmental sciences.
2) Recommendations regarding how to identify and take maximum academic advantage of important future directions at the interface of the core disciplines.
3) Recommendations regarding how to configure the sciences and engineering to best integrate and promote academic synergies, teaching, and research between academic units and across the Academic Health Center.
4) Recommendations for a plan to optimally position the University of Minnesota to achieve prominence in the sciences, engineering, and health-related disciplines, consistent with the University’s goal to become one of the top three public research universities in the world.
5) Recommendations regarding how to promote strengths in the core disciplines of the Biological Sciences (CBS) and the Institute of Technology (IT) and basic science within the Medical School (MS).
6) Recommendations regarding how science and engineering on campus also can be a model for the promotion of public engagement.

Summary of Findings and Recommendations:

This task force concluded that the sciences and engineering at the University of Minnesota have a unique structure that is progressive and ideally suited for greater collaboration across department boundaries. Therefore, we find no reason to recommend change to the current organizational structure of IT or CBS. The following is a summary of the recommendations:

• The University of Minnesota, in partnership with the State of Minnesota and the private sector, should seek funding for a Science and Technology Interdisciplinary Research (STIR) Institute based on research excellence, faculty competitiveness, and focused investments.
• Research collaborations among the sciences and engineering must be strengthened, in particular those between IT, CBS, and the AHC. The task force recommends focused investments in three intercollegiate areas: materials, energy, and environmental genomics. Faculty must take the lead in identifying research thrusts, organizing competitive teams, and orchestrating major proposals that draw on multi-disciplinary and, increasingly, multi-
institutional expertise. Disciplinary research must remain a priority with strategic initiatives providing continued support.

- The task force recommends maintaining strength in traditional departments, while encouraging greater interdisciplinary activities, especially among engineering and the medical sciences, through graduate education and the formation of research teams.
- The University of Minnesota must continue to establish and support centralized multi-user facilities based on competitive proposals that enhance the research infrastructure in the sciences and engineering.
- The University of Minnesota must take steps to increase research capacity through facilitating collaborative research and securing training grants, especially at the interface of engineering and biology. The University must develop more effective ways to establish institutionally sustainable, multi-disciplinary graduate training opportunities across the sciences and engineering.
- A key step towards integrating biology with the physical sciences and engineering is the creation of an undergraduate minor in biological engineering, jointly organized and administered by IT and CBS.
- The Office of the Vice President for Research should play a major role in articulating and implementing a vision for interdisciplinary research and facilitate associated funding initiatives. The Vice President for Research should actively participate in the development of research capabilities as part of the Office’s responsibility for creating university-wide research strategies.

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