Legislative Audit Division

Performance Audit Summary

Montana University System Research and Development
November 2006

Introduction

A performance audit of management of research and development (R&D) activities within the Montana University System (MUS) was prioritized by the Legislative Audit Committee. Our audit work addressed the policies and procedures adopted by the Montana universities in relation to R&D, assessed the effectiveness of research administration, evaluated the security of intellectual property assets, reviewed the economic benefits of these activities, and compared the management within the MUS with peer institutions around the nation. We assessed R&D activities at the three main MUS research universities; MSU, UM, and Montana Tech.

Research and Development Activities

Universities conduct a substantial portion of the nation's research. Research and development is the process of conducting research and identifying practical applications for the results. The research process at MUS universities consists of both research and technology transfer activities. Technology transfer refers to the process of converting findings from academic research into products, processes, or ideas useful commercially. Increasingly, universities are recognizing the economic benefits of commercializing research through the process of technology transfer.

The level of research funding for the MUS has been increasing steadily over the past decade. MSU more than doubled its research expenditures from $38.7 million in 1996 to $98.5 in 2005 and UM almost tripled its research expenditures from $22.0 million in 1996 to $61.6 in 2005. Montana Tech research expenditures have grown from $3.5 million in 1996 to $7.0 in 2005. In the last ten years, as a system, MUS research activity more than doubled from $64.2 in 1996 to $167.1 in 2005.

MUS Competitive and Could Improve

Overall, performance audit findings show MUS universities are adapting to handle the growing volumes of funding for research and related technology transfer activities. The state's university system has become increasingly competitive at the national level in terms of attracting funding for research. MUS universities have also become more active in their approach to technology transfer and have shown an increasing awareness of the commercial potential inherent in R&D activities.

However, the Montana University System could make improvements to fully meet the potential of its research and development efforts. These areas for improvement relate primarily to the administration of research, the effectiveness of technology transfer functions, and the role of the Board of Regents (BOR) in university R&D activities.

Ensure Consistent Reporting of Research Data

Consistency in the types of data reported and the compilation methods used is important for governing entities such as the BOR. We determined universities are using different types of measurements or quantifying data in different ways. This makes it challenging for BOR to provide effective oversight of research activities. As the overall level of funding for research increases, the university system faces more demands for consistent reporting on these activities. ***To discharge its responsibility fully, the Board should require relevant and consistent reporting on research activities from all campuses.***

Coordinate Use of Information Systems

Universities with large volumes of research funding increasingly rely on information systems to manage workload associated with grants/contracts and to provide accurate reporting. MUS universities vary in the way information systems are used. Coordination of the information systems provides benefits. These benefits include elimination of costs associated with maintaining a duplicate system and improved security and stability. There would also be additional improvements in functionality and reporting capabilities. ***The Board of Regents through the Office of the Commissioner of Higher Education should coordinate the use of information systems within research administration functions.***

UM Assign Pre-Award Staff by Specialization

The UM Grant Accounting Office (post-award functions) assigns its staff to specific departments for grant administration and management. This allows staff members to become familiar with Principal Investigators (PIs) within the department and also, the policies and procedures. However, Office of Sponsored Programs (OSP) staff (pre-award functions) at UM are not assigned to specific departments within the university, but may work on various departments' proposals and budgets. As the volume of research has grown over the years, the importance of specialized know-

ledge has increased. By moving towards departmental specialization in the OSP, UM could ensure a greater level of consistency in its own administration of sponsored programs, and between other MUS and peer universities.

Mandatory Training Addressing Core Elements of Research and Additional Training Opportunities

MUS universities offer research training sessions to PIs. However, faculty and staff are presented with large volumes of information on diverse topics, some of which may not be immediately relevant to their role in research programs. Training in issues relating to research is important because PIs are responsible for many aspects of grant administration and federal policies and procedures are becoming more comprehensive than in the past.

We identified two areas for improvement relative to PI training programs. Attendance at training has not been mandatory across all units of the system. In addition, the current training model may be too broad in nature and may not serve the specific needs of different faculty. ***In developing training courses for both the mandatory and optional elements, MUS universities could work cooperatively to define content, while ensuring a degree of consistency in training provisions across the system.***

Board of Regents' Role in the Process of Direct Congressional Appropriations

When universities apply for federal research grants and contracts, they compete against various universities around the nation. The peer review process ensures research proposals are funded based on merit as determined by expert reviewers. Earmark requests (direct Congressional appropriations) do not compete against multiple universities around the nation nor are they subject to a peer review process. This does not mean earmark requests have no merit, but it does mean these proposals are judged on a different basis from most other externally-funded research.

Recent growth in earmark funding emphasizes the importance of administrators of the university system identifying information relevant to earmark funding and understanding these funding proposals. ***The involvement of the Board of Regents in reviewing and understanding earmark proposals would provide additional opportunities to assess their viability and suitability.***

Board of Regents Revise Timeframes for Policy Number 401.2

Policy 401.2 states once a PI supplies the Technology Transfer Office with an invention disclosure, the office has 60 days to conduct a preliminary patent search or release the discovery to the PI. It also states the office has eight months to file a patent following a disclosure. The current timeframes established in BOR policy are not consistent with actual practice. Where these timeframes are based on the actual experiences of universities, they should serve as a more reliable means of assessing the timeliness of the technology transfer process.

Review Methodologies for Capitalizing Intellectual Property as Intangible Assets

Intellectual property (IP) assets held by units of the university system have the potential to deliver significant revenues to universities through licensing agreements and other forms of commercial development. Misstatements in financial reporting are less likely where there is established and standardized methodology for capitalizing these assets. ***The Office of the Commissioner of Higher Education should work with universities to review and refine methodologies for capitalizing IP as intangible assets.***

Ensure Technology Transfer Issues Receive Sufficient Emphasis in Training

MUS universities are responsible for ensuring faculty and staff performing federally-funded research have an awareness of their responsibilities under applicable federal laws. Responses to our survey of research staff showed generally low levels of awareness among MUS faculty and staff of technology transfer functions and issues relating to IP. ***Regardless of the level of interest shown by faculty and staff relative to technology transfer, these issues need to be directly and specifically addressed in mandatory training sessions. In addition, university technology transfer functions should develop in-depth training content in this area and make efforts to publicize these training opportunities and promote attendance.***

Board of Regents Develop A System-wide Approach to Technology Transfer Issues

Individual university units have not been required to develop objective and comparable means of measuring their technology transfer successes. Currently, MUS lacks a comprehensive and consistent means of quantifying technology transfer activities across all the units. Improvements are needed in the ability of the MUS to plan strategically for technology transfer activities and assess its progress in meeting established goals for all units.

These improvements should involve the requirement that universities incorporate the prioritization of technology transfer activities in their strategic planning or similar long-range planning initiatives. ***The BOR should work with universities to develop standardized, objective criteria for measuring progress in meeting technology transfer goals.***

For a complete copy of the report (06P-05) or for further information contact the Legislative Audit Division at 406-444-3122; e-mail to lad@mt.gov; or check the web site at http://leg.mt.gov/audit.