



*The University of Massachusetts:
Removing Barriers to Educational
Excellence at the State's
Public Research University*

JUNE 2004

MTF

For their generous support of this report, the
Massachusetts Taxpayers Foundation wishes
to express its appreciation to:

Blue Cross Blue Shield of Massachusetts

Goodwin Procter LLP

**The Savings Bank Life Insurance Company of
Massachusetts**

The Massachusetts Taxpayers Foundation is a nationally recognized, nonprofit research organization working to promote the most effective use of tax dollars, improve the operations of state and local governments, and foster positive economic policies. Our credibility is based on independent, objective, and accurate analysis of state and local spending, taxes and the economy. The quality and impact of the Foundation's work is reflected in eight prestigious national awards recently earned for research on business costs, capital spending, state finances, MBTA restructuring, state government reform, and health care.

Founded in 1932, MTF ranks among the largest and most effective organizations of its kind in the country. Our reports and recommendations have resulted in new policies, new laws and other changes that have saved taxpayers hundreds of millions of dollars. We are supported by our employer members, representing virtually all sectors of the Massachusetts economy across the state.

**Massachusetts Taxpayers Foundation
333 Washington Street, Suite 853
Boston, MA 02108-5170**

**617-720-1000 Fax: 617-720-0799
E-mail: mtfinfo@masstaxpayers.org
Website: www.masstaxpayers.org**

For further information on the research underlying this report,
contact Cam Huff, MTF Senior Research Associate.

The University of Massachusetts: Removing Barriers to Educational Excellence at the State's Public Research University

Table of Contents

<i>Section</i>	<i>Page</i>
Introduction.....	1
Research Excellence at UMass	3
Barriers to Success	
Funding Inflexibility	4
Managerial Inflexibility	5
MTF Proposals	
Tuition Retention	9
Fund Carryover	12
Construction Management	13
Leasing	14
Faculty Assignments	15
Looking Beyond the Fiscal Crisis	16
Addendum: Building Excellence at the University of Massachusetts	19

Introduction

It may be obvious, but it is worth repeating: Ours is a knowledge-based economy. The Massachusetts economy is not built on coal, oil, or other natural resources, or on low-wage labor. The industries that thrive here—software, electronics, health care, pharmaceuticals, financial management, higher education—do so because Massachusetts, particularly the Boston area, is one of the best places in the country to hire a knowledge-based workforce.

Many of the jobs in this kind of knowledge-based economy require not only a college degree, but also an understanding of cutting edge science, engineering, finance, and management and an exposure to modern research—the kind of education offered at a *research university*. Increasingly, knowledge-based companies are looking for education beyond four years of college. Given this trend, first-rate research universities are critical to the state's long-term growth and prosperity.

For many residents of our state, the University of Massachusetts (UMass) offers the only affordable and practical means to achieve such an education. Over the last decade, an education at UMass has provided our residents the opportunity to participate in cutting edge research and help develop new technologies in fields as diverse as photovoltaics, marine science, and therapeutic cloning. Most of those who benefit from a UMass education are from—and remain in—the Commonwealth, forming the core of the knowledge-based workforce on which our future economic success depends.

The research excellence that UMass has achieved in the last decade has depended on its ability to compete successfully for research dollars, collaborate with business

The University of Massachusetts educates some 45,000 in-state students—38,000 undergraduates and 7,000 graduate students—at its campuses in Amherst, Boston, Dartmouth, Lowell, and Worcester. It attracts 12,000 out-of-state students, and a quarter of a billion dollars a year of federal research grants. In all, this amounts to close to half a billion dollars of outside funding, with a multiplier effect on jobs and state income. Over 90 percent of the university's research in Massachusetts takes place outside Route 128. Each of the four UMass campuses located beyond Boston is the largest university research center in its region—Lowell in the Merrimack Valley, Dartmouth in the south coast, Worcester in central Massachusetts, and Amherst in western Massachusetts.

and government agencies, and woo promising faculty. As the addendum to this report—entitled *Building Excellence at the University of Massachusetts*—documents in depth, the capacity to compete for research dollars, partnerships, and talent has played a crucial role in the university's successes in the 1990s.

Unfortunately, that ability has been seriously compromised by the deep cuts in campus budgets since the state fiscal crisis began. State support of the university has declined sharply in recent years, falling from a high of \$529 million in fiscal 2001 to \$447 million in fiscal 2003.¹ State appropriations

¹ Source: Annual Financial Report of the University of Massachusetts for the year ended June 30, 2003. For the purposes of the financial report, the budgetary appropriation for the University is adjusted in two ways: 1) tuition revenues remitted to the state

in 2003 (the last complete fiscal year) amounted to only 30 percent of the university's overall operating expenses of just under \$1.5 billion. While the decline in state revenues has ended, there is little likelihood that the Commonwealth will be able to restore university appropriations to their former growth track any time soon.

Equally problematic, however, is a series of longstanding statutory barriers to the university's success that fall into two main categories:

- Inflexible funding mechanisms that prevent the university from making the best use of the revenues that it has collected;
- Management constraints that impose cumbersome central controls on capital construction and leasing and outdated strictures on faculty assignments.

In the best of fiscal times, these provisions are overly burdensome; in the era of prolonged financial distress that is now upon the state, they cripple the university's efforts to compete for research dollars, business and government partnerships, and top faculty. Remarkably, while these bureaucratic barriers are enormously costly in terms of lost opportunities, they can be addressed without adding a single dollar to the university's appropriation.

In this paper, we focus on these barriers to research excellence and make specific proposals for eliminating them.

With these reforms, UMass has at least a fighting chance of competing successfully in the fast-paced race for research excellence.

The opportunity costs imposed on UMass by inflexible funding mechanisms and unnecessary management constraints are enormous—fortunately for the state treasury, these bureaucratic barriers can be addressed without adding a single dollar to the university's appropriation.

Without the reforms, the gains of the 1990s—and the university's ability to meet our state's current and future educational needs—are likely to slip slowly away.

At the same time, it is clear that future progress in our efforts to build a first-class public university will also depend on restoring at least some of the deep spending cuts that the university has sustained over the last four years. It will also depend on ensuring stability of annual state funding, which may well require new funding mechanisms—and a new financial relationship between the Commonwealth and the university—that go well beyond the proposals presented here.

The Dartmouth campus's School for Marine Science and Technology and its marine laboratory offer an excellent illustration of how innovative research enhances the university. The laboratory has a \$10 million annual budget. Of this, only \$1 million comes from the state appropriation; it receives \$8 million in federal research grants and \$1 million in contracts with state government agencies and local industry.

treasury are subtracted; 2) fringe benefits costs for university employees paid from state appropriations are added.

Research Excellence at UMass

Because Massachusetts is blessed with some of the best private universities in the world, there is a tendency to underestimate the importance—or even the necessity—of our state university. In fact, the University of Massachusetts plays a critical role in preparing our residents to contribute successfully to the state’s economic future.

UMass educates more Massachusetts residents than any other university. With its affordable costs, locations across the state, and emphasis on evening classes at its urban campuses, UMass offers a research-university education—graduate and undergraduate—to thousands of Massachusetts residents, at a total student cost roughly one-third that of elite private institutions like Harvard and MIT. These students include those who would not otherwise have access to such an opportunity, including many of the state’s

In the late 1990s, the university raised \$850,000 from a private donor, combined this with \$650,000 from a state matching fund, and created an endowed chair in engineering at Amherst. The professor who was hired with this money recently won a \$40 million Engineering Research Center grant for the Amherst campus.

Critical factors in the award were \$5 million in direct state support; close co-operation between the electrical engineering and computer science departments; and past investment by the engineering department in microwave remote sensing research. A key mission of the center is to commercialize its research, with obvious advantages to Massachusetts.

UMass gives priority to research on Massachusetts issues, while the state’s great private universities focus much of their attention on national or international issues. Unlike the Boston-based private institutions, UMass conducts almost all of its research at four major campuses outside greater Boston. Each of those campuses has ties to local industries that are important to the economic future of its region.

newer residents with few other avenues for upward mobility.

Research dollars, top faculty, and partnerships with business and with state and local government agencies are the mark of a great university, and distinguish a research university, like the University of Massachusetts, from a four-year college. By and large, the partnership of research, government, and business is not paid from state funds. The research dollars that make the universities of California, Michigan, and Wisconsin great universities—like the dollars that fund research at MIT, Harvard, and Johns Hopkins—come from federal research agencies and business partners.

Universities compete with each other for these funds—and for top faculty and graduate students. Federal agencies and businesses look for research excellence wherever they can find it. To excel, then, the University of Massachusetts must compete not only with the great state universities, such as California and Michigan, but also with MIT, Harvard, Stanford, and Johns Hopkins.

To compete effectively in this arena, a university needs a highly specific set of capabilities:

- The capacity to invest “seed money”—discretionary dollars in often

surprisingly modest amounts—to attract outstanding professors and build labs;

- The flexibility to acquire and modify space quickly in response to new opportunities;
- The ability to assign its faculty where it is most needed.

When these elements are combined successfully, the payoffs can be phenomenal. Examples of such successes include the School of Marine Science and Technology at the Dartmouth campus, the geobacter research center at Amherst's microbiology department, and the recently awarded \$40 million grant for an Engineering Research Center at the Amherst campus. So too are a host of collaborative research efforts that have produced significant advances in a variety of technologies that are already heading to the market. These and other competitive successes at UMass are described in detail in the addendum.

Barriers to Success

Sadly, the ability of UMass to repeat these successes—to compete effectively in the first rank of American universities—is seriously hampered by funding and management inflexibilities that have been cemented into state law and perpetuated in the annual budget.

Funding Inflexibility

Top-tier research and partnerships are not primarily funded from the annual appropriation that UMass receives from the state. To win these awards, however, the university needs seed money and the ability to be nimble, making quick decisions as opportunities arise, and especially the ability to adjust its laboratory, classroom, and other space as needed.

Cyagra, Inc., a biotechnology company, wanted to locate its research shop on or immediately adjacent to the Amherst campus, where it could work closely with university professors and students. A site was found, but it would have taken an investment by the university of at least \$100,000 to bring the building up to code. Because the university did not have the funding flexibility to move quickly enough to meet Cyagra's timetable, the company moved instead to the University of Connecticut campus at Storrs.

Unfortunately, the budget reductions in recent years have made it far more difficult—and to an increasing degree impossible—for campus chancellors to invest in the faculty and space required for new entrepreneurial ventures.

As it stands, university officials are hard pressed to pull together the funds needed to deal with dangerously delayed maintenance of existing facilities, much less build new ones to meet the demands of expanded research. Because of the many other critical investment priorities that the state must address with its limited bond funds, the university cannot realistically look to the Commonwealth's capital budget for any significant funding relief. This scarcity of funds is made much worse by budgetary practices that prevent the university from making the best use of the revenue it collects. Under provisions of the state's annual budget, the university is not allowed to use directly the tuition it collects from UMass students—some \$84 million in fiscal 2003—but must instead deposit those

revenues in the state's General Fund.² As a result, the funds are unavailable for use by the university to compete for research dollars and partnerships.

On its face, this is just a budgetary exercise—the state keeps \$84 million of tuition and, in theory at least, adjusts its appropriation upward accordingly. In the real world, however, the distinction is a critical one.

As matters now stand, the ability to use that portion of the state appropriation to compete in the fast-paced competition for research dollars is severely limited. Under state budgetary procedures, appropriated funds are usually unavailable for use for non-routine purposes for several months at the beginning of the fiscal year as agency spending plans await approval. Likewise, accounting timetables require that funds be committed almost two months before the fiscal year's end. On top of that, any unused appropriations expire on June 30, making it impossible to set aside money to respond to unanticipated opportunities.

It should be emphasized that the issue is not financial control as such: The university maintains stringent financial controls that are approved by the state comptroller, reports its financial activities as part of the Commonwealth's annual financial statements, and is subject to oversight by the state auditor as well as independent accountants. Instead, the concern is a cumbersome approach to the use of tuition revenues that forestalls valuable opportunities to win research and partnerships.

² For two years—fiscal 2004 and 2005—the Amherst campus has been allowed to retain tuition revenues (roughly \$25 million) paid by out-of-state students.

The practice of sending tuition dollars to the state treasury has another negative impact. Under current practice, there is little incentive for the university to recruit additional students (particularly non-residents) to generate new revenues that can be leveraged for research and partnerships. While the fees paid by an additional student are available for the university's use, the additional tuition paid by the student goes to the state. Since the state appropriation is not adjusted for the higher enrollment, the university incurs all of the additional cost of educating that extra student while receiving only a portion of the added revenue.

Managerial Inflexibility

Another key ingredient in sustaining UMass's competitive successes is the ability to acquire and maintain space to attract research faculty, to win research grants, to house promising programs, and to build partnerships with business.

Regrettably, the university faces huge obstacles in meeting its facility needs—creating difficulties that go far beyond a lack of research competitiveness. Gross under-maintenance of university buildings and the inability to modernize buildings and equipment are already affecting the quality of education the university can offer. The extreme delays in building facilities (ten years is not at all unusual) make it extraordinarily difficult to plan rationally or to expand university programs.

While part of the problem is a lack of funds for capital, the other critical piece is a thicket of burdensome state controls. Strictures on the university's ability to build buildings with state funds drastically increase the decision time and cost of construction. Except where it does so with non-state funds, the university is prohibited from managing its own construction and from making its own decisions on leasing

space. Although the Legislature has in the last two years taken the positive step of relaxing some of these controls, this flexibility is subject to year-to-year approval, negating the benefits of the change for any longer term planning.

Construction

Large UMass building projects financed from state appropriations are managed by the Division of Capital Asset Management (DCAM), the state's central construction management agency. Building projects financed from revenues earned by the university—from student fees or private grants, for example—are managed by the University of Massachusetts Building Authority (UMBA), which has the statutory authority to borrow funds and manage construction for the university.

In each of these cases, the individual campuses of the university, which ultimately must use the buildings, have not been in a position to make design decisions or manage construction by themselves. While the two construction agencies consult closely with the university, the separation between construction manager and ultimate user has all too often increased costs and produced long delays—in a way that seriously

The Marine Biology Center at Dartmouth was delayed for years because it took so long to complete its building in New Bedford. Design of the building began in 1988; by mid-1990, funding was in hand and the site was selected, but the building was not actually completed until 1997. The process took nine years; hiring a dean for the center was delayed five years while they waited for the state to complete construction.

Funding for the Engineering and Computer Science Building at Amherst was approved in 1995 and preliminary study completed in 1996. Phase 1 was built by DCAM under special statutory authority to use design/build (not normally allowed for state construction) and it was finished by 1999. Design of Phase 2 was delayed by funding constraints until 1998; the building will be occupied later this year. Total time for the project—nine years from conception to completion!

interferes with the development of the university and with its competitive position.

This problem has been particularly severe with projects managed by DCAM, in part because of the overly rigid statutory rules under which that agency must operate. In the case of UMBA, the potential for a closer, more productive relationship with UMass is much greater because of the structural ties between the two organizations: Although UMBA is statutorily distinct from the university, five of its eleven members must be UMass trustees. Because of links such as this one, the university can hold UMBA accountable for its performance in ways that are not possible with the state construction process administered by DCAM.

This kind of accountability is a critical element in avoiding lengthy construction delays. It is fair to say that the state construction process triples or quadruples the time necessary to complete a building and can increase costs by as much as 50 percent. The campus center at the Boston campus was first conceived in 1987; in 1992, a feasibility study pegged the building's cost at \$38.9 million. It was officially opened this year, some **17 years** after it was first conceived and **12 years** after the first cost estimate. The final cost

was about \$80 million—more than double the first estimate. The state’s rigid construction process is designed to eliminate any conceivable corruption or malfeasance, but it does so at a cost—in dollars and delay—far out of proportion to any conceivable gain.

However, there are some striking success stories that illustrate how these delays can be overcome. For example, the Medical School’s new \$125 million research building on the Worcester campus (a far larger enterprise than the marine lab in New Bedford) was built outside the state construction process because it was not funded from state appropriations. The initial decision to build was made in January 1999, ground was broken in November 1999, and the university moved in two years later.

The university and UMBA have built several other buildings using this kind of accelerated process, usually when it can do so with non-governmental funds. These include the addition to the School of Management at Amherst and the new dormitories at Dartmouth, which were built using UMBA’s statutory authority to employ alternative methods of procurement of design and construction. These buildings took between two and three years from conception to occupancy.

A major difficulty is that the university—the party that is directly affected by the construction—does not actually control construction. The agency that does make construction choices and controls the paper flow is not directly affected by delay. All of this is compounded by problems in the state construction process previously documented by the Foundation³—the need to have two

architectural studies, the filed sub-bid law that means that general contractors cannot be held accountable for the overall quality and pace of work, and the difficulty in doing design-build and other modern construction methods that reduce completion times. As illustrated by projects undertaken using UMBA’s alternative procurement authority, these long delays can be dramatically reduced.

It is not only new construction that is affected by the state’s dysfunctional construction process. Because of the combination of procedural delays and inadequate state dollars for maintenance, several buildings on the Amherst campus are on the brink of forced closure, with roofs, elevators, and fire alarm systems about to fail.

Underspending on capital also affects the university’s ability to adapt to modern teaching styles. The Boston and Dartmouth campuses want to remodel classrooms away from the lecture-hall style (built for one-way communication from professors to students) in favor of architecture that facilitates electronic presentation and student participation. Currently, only 16 of 200 Boston classrooms have non-traditional capabilities; the chancellor’s goal is to increase this to 60 percent.

Leasing

Leasing space (instead of building it) could enable the campuses to add or reduce space quickly and therefore to work more closely with business partners. Here again, however, the decisions about leasing—and its timeliness—are controlled by other state agencies, not the university. For the last two years, the state budget has allowed the university this authority, which several campuses have used to good effect. However, they cannot plan ahead or discuss with potential partners lease arrangements

³ See MTF’s 1995 report, *A Taxpayer’s Look at a Sacred Cow: Public Sector Design in Massachusetts Two Decades after the Ward Commission*.

that might begin next summer, as the authority expires each July—unless renewed for another year.

Faculty assignment

Due to the diversity of its students, a modern university needs to schedule classes during the day for full-time students, in the evening for students who work, at employer work sites where this makes sense, and, increasingly, on-line. It needs the flexibility to assign its professors and its funds across all aspects of its educational program.

Particularly at the Boston, Lowell, and Dartmouth campuses, UMass wants to meet the needs of older students who are working and supporting a family but still managing to take one or two courses at night. If students find it easier to take courses on-line, or if the faculty finds certain subjects best taught with well-put-together, graphics- and number-intensive material, the university should put its resources into developing such courses.

Strictly speaking, this kind of flexibility is illegal in Massachusetts. An obscure state law requires that so-called continuing education courses—usually interpreted to mean those given at night as well as those in the continuing education program—be financially self-sufficient, and receive no state support. A corollary of this is that any professor hired for the day program is required to teach his or her entire academic load within the regular day program. Put another way, the university is prohibited from assigning a professor a workload that includes some day courses, some night courses, and some continuing education courses. Regular day professors may teach at night, but only if they do so in addition to their regular workload.

The evening and continuing education courses are taught almost entirely by adjunct

and part-time faculty, who do not have office hours and are unavailable for informal student support in the same way that full-time faculty are. The university should not be limited to such instructors; deans and department chairs should have the flexibility to assign faculty in the way that best meets all students' needs, not simply those in the regular day program.

The requirement is becoming increasingly cumbersome as the university moves toward more on-line courses, since these courses are defined as continuing education courses. As such, designing the courses or taking responsibility for students enrolled in them cannot be part of a professor's regular work assignment—even if the courses turn out to be the best way of offering certain material.

Increasingly, on-line courses are also a potential source of additional revenue. Once the investment in materials preparation is made, the courses can be offered at lower cost, giving campuses or schools that move in this direction the opportunity to raise additional funds. Those funds in turn can be used to add faculty, invest in new course materials, seed research projects, or maintain buildings—except, of course, for the present legal requirement that continuing education is to be financially separate from the regular education program.

MTF Proposals

We have seen that the ability of the University of Massachusetts to compete effectively in the first rank of American universities is limited by a lack of flexible funds and by managerial requirements that prevent it from controlling its own construction and limit its ability to best deploy its faculty.

Although the recent deep reductions in UMass's budget remain a matter of serious concern, the state will have little capacity to restore any meaningful portion of those cuts for years to come. Given that fiscal context—and the critical importance of research to the richness of education at the university and to the state's high-tech economy—it is imperative that the Governor and Legislature do all they can to enable the university to use the resources it does have

At 18 percent of undergraduates, non-resident enrollment at the Amherst campus is low by national standards—the universities of Colorado and Virginia, for example, have roughly one-third of their students from out-of-state. Closer to home, students from other states account for about 40 percent of enrollment at the universities of New Hampshire and Vermont. Non-resident enrollment is much less at the other UMass campuses—about 10 percent at Boston, Dartmouth, and Lowell.

The Amherst campus budget office calculates that the margin by which extra revenue exceeds extra cost for an additional out-of-state student is about \$5,000. Adding an additional 1,000 students could give the campus \$5 million a year to invest in research seed money and other areas.

as effectively as possible and to free it to compete for outside funding.

The Foundation's recommendations are intended to help in that effort. In a nutshell, MTF proposes that the university be given the opportunity to earn its own extra funds—so it can have seed money to start new ventures and address its deferred maintenance—and that it be given greater flexibility in accessing its state appropriation. We also recommend that UMass be given control of its own construction and space acquisition and full flexibility in deployment of its faculty.

None of these proposals to improve UMass's ability to function as a research university will require an increase in state funding. At the same time, however, it is clear that UMass's long-term success will require a continuity—and predictability—of state funding that has proved elusive over the years. While no specific recommendations about how to achieve that result are put forth in this paper, the range of options that will likely have to be considered go well beyond the modest changes presented here.

Funding Flexibility

Tuition Retention

The Foundation recommends that the university be given the authority to retain 100 percent of its tuition revenues and be able to expend them without state appropriation. By including an offsetting reduction in the university's appropriation, the proposal would have little or no cost impact on the state budget.

This change will have an immediate positive effect on the university's ability to respond rapidly to research opportunities, allowing it to commit "seed money" without the bureaucratic delays that now characterize the use of these funds and to free up dollars to address the deferred maintenance at campus facilities. It is worth noting that Massachusetts is one of only two states that do not allow tuition retention by its public university. In the other 48 states, tuition retention is the standard practice.

Secondly, it will realign the financial impacts of enrollment growth so that the university has a stronger incentive to expand the number of in-state and out-of-state students it serves.

The importance of this change for Massachusetts residents is clear—since it is they who will need the affordable, research-university education that UMass can provide as our economy grows and becomes increasingly knowledge-based.

It may be less obvious that there is a strong educational argument—as well as a fiscal advantage—in adding out-of-state students. The broader range of backgrounds and experiences from these students enriches the university and the education it offers. Moreover, because they pay a substantially greater share of the costs of their education than do Massachusetts residents, out-of-state students produce additional revenue that can further enhance the education that UMass provides. For example, the extra professors supported by these additional students would expand the range of courses that can be offered and increase the number of departments that can reach critical mass for cutting-edge research.

It is important to emphasize that UMass's primary mission is to provide an affordable, high quality education for Massachusetts residents, with a particular focus on those

Because it does not retain the tuition it collects (as is done in 48 other states), UMass has a very confusing system for tuition and fees. In contrast to most other colleges and universities, total *fee* revenue at UMass—\$205 million in 2003—dwarfs *tuition*. Tuitions are set by the state's Board of Higher Education (unlike fees, which are set by the university) and have not kept up with costs.

The resulting imbalance between the two types of charges is not only unclear but works to the disadvantage of students as well. Students eligible for tuition waivers granted by the Legislature discover that only a small portion of the costs of their education will be covered. Workers whose employers reimburse tuition costs find themselves in a similar circumstance.

pursuing an undergraduate degree. Any efforts to expand enrollment of out-of-state students should be undertaken in order to strengthen the university's ability to fulfill that mission. We do not believe that the changes proposed here would in any way weaken UMass's commitment to the undergraduate education of Massachusetts residents—the impact of tuition retention on public universities in other states strongly suggests otherwise. All the same, it would be entirely appropriate for the state as part of this reform to obtain assurances from UMass that enrollment of in-state students would remain a priority. Of course, the most effective way for the state to encourage expanded enrollment of in-state students would be to provide stable, reliable funding for its share of the cost of educating those students.

Figure 1

Undergraduate Charges—Amherst

	In-State	Out-of-State
Tuition	\$1,714	\$9,937
Fees	6,518	7,648
Total Cost	\$8,232	\$17,585

The Foundation recommends that university trustees be given full authority to set tuition.

While control of tuition rates currently rests with the Board of Higher Education, the university trustees actually determine the ultimate cost for a student to attend UMass—the result of a critically important semantic distinction that renders the board’s control more nominal than real.

The Board of Higher Education sets what is called *tuition*, which is currently retained by the state. The university trustees have the right to set *fees*, which are retained by the university. As a result, at the Amherst campus, to name one example, actual tuition represents only 21 percent of undergraduate in-state student charges (excluding room and board) and 57 percent of non-resident charges.

The transfer of tuition-setting authority to the trustees will allow the university to restate tuition and fee rates (with no net change in total costs) to reflect the reality of the existing situation. This re-labeling will help hundreds of students who receive reimbursement for tuition costs from their employers. Typically, employers reimburse their employees only for what is labeled “tuition” and not for “fees.” As we have seen for the Amherst campus, this could mean that students receive only 21 percent of actual tuition from their employers (see Figure 1). For every 100 students (full-time equivalent) for whom this applies, some

\$650,000 in potential employer reimbursements are left uncollected. Similar arguments apply for foreign students who receive scholarship support from their governments.

Across the university system as a whole, students may lose millions of dollars. Worse, there may be hundreds or thousands of students who could afford the university with full tuition reimbursement, but choose not to go because they must bear 80 percent of the cost.

The Foundation recommends that the state continue to provide support for fringe benefits (health coverage, workers’ compensation, etc.) for UMass workers providing core education services who will, as a result of these recommendations, be paid from retained tuition revenues rather than the state appropriation.

Lawmakers could continue to treat employees paid from tuition retention as though they were paid from the university’s appropriation, providing for the costs of their fringe benefits with state dollars budgeted in the line items of the agencies providing those benefits. The Legislature has taken just this approach in the current experiment in allowing out-of-state tuition retention at the Amherst campus.

The Foundation recommends that any future expansion of the state’s tuition waiver program be paid for explicitly by the state.

Any plan for tuition retention needs to address the issues presented by tuition waivers adopted by the Legislature. Since tuition revenues currently go to the state and not to the university, the Commonwealth has borne the full cost of whatever waivers have been enacted. As a result, waivers were not of direct financial concern to the university.

Tuition waivers allow students who fall into legislatively defined categories to attend the state's public university or colleges at reduced or zero tuition cost. Over the years, the categories have been expanded to include veterans, the disabled, National Guard soldiers, foster children, and a number of other groups.

Once tuition is retained in full, however, this will no longer be the case.

To deal with this change, we recommend a zero-cost changeover, now and in the future. On the one hand, the state cannot afford to increase the university's appropriation to reflect the cost of current waivers. On the other hand, the university should not have to absorb the cost of any additional waivers enacted in the future.

Specifically, we propose that the university absorb the cost of the current waiver program, adjusted for inflation. Any waivers that raise costs above this level should be paid for explicitly with additional appropriations to the university. Since the state now waives "tuition" but not "fees," the existing waiver program covers only about 20 percent of the true tuition costs. Once tuition amounts are restated, as we recommend, to reflect actual costs, the state will need either to reduce the number of people receiving full tuition waivers or to make clear that the waivers apply only to a portion of tuition costs.

Fund Carryover

The Foundation recommends that the university be given authority to carry over into the next fiscal year any portion of its appropriations that are not spent in a given fiscal year and to spend the funds

in the next year without further state approval.

Running a successful research-based university requires long-term planning and commitment as well as short-term financial flexibility. Not all fiscal decisions can be squeezed neatly into a July-to-June fiscal year. Anyone who is familiar with state government knows that there is a rush each June to spend funds that would otherwise revert to the state treasury. As a practical matter, requiring that funds revert does not save the state money: The university—like most other state agencies—prides itself on the fact that it reverts only a small sum out of an appropriation of hundreds of millions of dollars.

This flexibility would give administrators an extra incentive to save as much money as possible during the year. It would also give them the opportunity to build up funds over time to be used for seed money for entrepreneurial projects, larger maintenance needs, or capital items.

Such a change would be very helpful for capital appropriations limited to a specific project. The Dartmouth campus, for example, earlier this year received a special appropriation for renovating classrooms. The appropriation, received in January of 2004, expires in June. But classes run through the end of May, giving the campus little time to do the work without disrupting classes. In the end, the campus will not get as much of the restorations done as it could have had it been able to spend the money throughout the summer.

A useful precedent for this change is found in the Chapter 70 funding formula for elementary and secondary schools. The 1993 reform law allows school districts to carry over up to five percent of their annual appropriation and to spend it in the subsequent year without need for further

legislative or town meeting action, and without corresponding reductions in state aid in the subsequent year.

Management Flexibility

Construction Management

The Foundation recommends that the responsibility for managing UMass construction projects built with state funds be transferred from DCAM to UMBA. Where individual campuses have demonstrated their ability to successfully manage projects, we further recommend that UMBA delegate construction management responsibility to the university—on a project-by-project basis—for buildings constructed with state funds or with funds borrowed against the university’s own revenues.

This is a strong recommendation, but it builds on the university’s successful track record with recent projects that have been similarly free of state red tape because they have been built with non-state funds. These accomplishments are in part due to the effective construction process that the university and UMBA have already developed, a process that incorporates open bidding and transparent reporting⁴ but avoids the delays and inefficiencies imposed by state construction regulations.

The university’s positive performance is consistent with the experience of comparable public universities in other states. Without exception, the several universities that we contacted reported that they were able to put up buildings in anywhere from 18 months to three years.

⁴ In addition to detailed project reporting, UMBA’s finances are included in UMass’s audited annual financial statements.

Recently, UMass Dartmouth and Tufts University were awarded a five-year \$25 million NIH research grant on botulism; Dartmouth’s share is \$10 million, or \$2 million a year, including a \$500,000 annual capital allowance. The chief researcher needs—and can pay for—10,000 square feet of lab space to fulfill his research obligation. Because it cannot manage construction itself, the university cannot build this space in the 18 months required by the grant—causing the researcher to wonder if he will need to leave UMass to complete his research.

Indeed, the Worcester Medical Research Building (built by the university itself with private funds) was built in 2½ years. But it is not unusual for University of Massachusetts buildings built by DCAM or the University Building Authority to take *ten years—four times as long as competing universities in other states*—if they use the statutorily prescribed traditional construction procurement methods including the use of filed sub-bids. Although the construction reform proposal now being debated in the Legislature might lighten at least some of the burden of the state’s traditional construction process, DCAM would still be operating under rules that are significantly more restrictive than those in other states. Unfortunately, as currently written, the proposal would actually take a major step backward by eliminating UMBA’s existing ability to employ alternative procurement methods.

As the authority has demonstrated, alternative methods of procurement can reduce construction times to 18 months to three years, avoiding the huge delays and additional costs imposed by state construction rules that the Foundation has been working for years to change.

In addition, the separation of decision-making authority from the ultimate user can itself be a serious problem under the current system. However, since UMBA undertakes projects only at the request of the university and—in the case of projects it finances—holds title to and must insure the facilities it constructs, both it and the university have a strong incentive to make sure the buildings are built well, completed on time, and maintained properly.

UMBA has functioned effectively as the agency to borrow construction funds for buildings, like dormitories, which are financed from the university's own revenues, and we recommend that it continue in that role. While transferring all construction management responsibilities to the campuses would eliminate the separation between decision-maker and user, not all campuses have the capacity to manage projects—especially the larger ones—well. However, we believe that certain of the university campuses, such as the Medical School and the Amherst campus, have the in-house expertise to manage construction projects as well as, and perhaps better than, UMBA. Therefore, we propose that campuses with proven construction management capability be given the primary responsibility to manage appropriate projects on their campuses.⁵

If these recommendations are to produce their intended benefits, it is crucial that UMBA's existing authority to use alternative procurement methods be preserved. Ideally, that authority would also be expanded to allow use of alternative

⁵ Currently, the university is authorized to manage projects worth up to \$1 million across the system as a whole, and on a temporary basis up to \$5 million for the Amherst campus. These amounts are far below what major buildings cost; the Worcester Medical Research Building, for example, cost \$125 million.

procurement for state-funded UMass construction projects, which—under our recommendations—would be managed by UMBA or qualified campuses rather than DCAM. Without the flexibility to use alternative procurement, especially on larger projects, the potential savings in both time and money would be dramatically reduced.

Leasing

The Foundation recommends that the university be given permanent authority to sign leases without further state government approval—both to acquire off-campus space quickly and to lease space on-campus to business partners.

Leasing authority along these lines is important because some facility needs are best met with existing space. When a campus lands a major new research grant, it may need to add lab space immediately—something best done by leasing existing space. Or campuses may find that leasing space on campus opens the way to research partnerships with business that would otherwise not be possible. North Carolina State, for example, has been very successful in helping new companies by leasing on-campus space to young startups that have close ties to university research.

For the past two years, the Legislature has given the university authority to sign leases without state government approval. Unfortunately, this authority has been granted in the state budget and expires at the end of each fiscal year. While this has been helpful in particular deals during this time, it is no substitute for permanent authority. To compete effectively as a first-rate university, UMass must be able to plan ahead; it cannot do this with authority that expires every June 30.

Faculty Assignments

The Foundation recommends that the statutory distinctions between day and night classes be eliminated, in particular those that limit the assignment of faculty.

At a time when the state has been forced to cut back its financial support so dramatically, university deans need the flexibility to assign their faculty in ways that better meet student needs and support their efforts to foster research.

Because of the artificial barrier that the current law erects between day and night programs, students who study at night—often students who are working and supporting their families and putting themselves through college the hard way—are in effect second-class citizens. In reality, many of these students are taking the same courses toward the same degrees as their regular-day counterparts.

Particularly in an economy like that of Massachusetts, where traditional, high-paying, moderate-skill manufacturing jobs are disappearing and being replaced by higher-skill jobs in engineering, marketing, finance, and research, we want to encourage—not discourage—workers who go back to university to get an extra degree.

Looking Beyond the Fiscal Crisis

Our emphasis in this paper has been on structural changes in the university's relationship with the state, changes that will allow it to use its resources as well as possible—both in the extreme circumstances of the current fiscal crisis and over the longer term. Because of the state's financial difficulties, we have tried to separate the issue of structural reform from the overall level of support. The changes put forth here can be made with no additional costs—and take on added importance precisely because state support cannot be restored to previous levels any time soon.

In the short term (that is, the next two to three years), we are confident that the proposed changes can have a significant impact on UMass's ability to sustain itself as a research-based university—but only if there are no further cuts to the already sharply reduced support it receives from the state. As the Foundation has previously documented, state spending for higher education has been slashed by 27 percent over the last three years, with almost half of those reductions occurring at the University of Massachusetts (see Figure 2).

It will be equally important that the university not be fiscally punished for the success it may have in using these new tools. Cutting the university's state appropriation—just because it succeeded in raising additional revenues—would negate the benefit of these recommendations. Looking beyond the fiscal crisis, the state faces major financial challenges in providing both the stable operating support and capital resources that the university will need in the future.

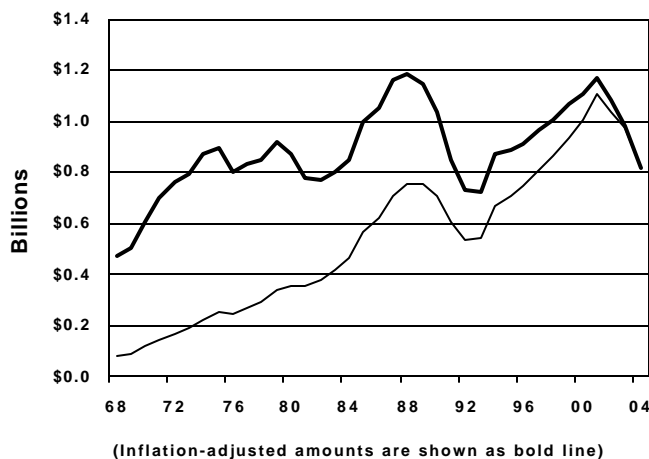
It is clear that the university must—at a minimum—be able to count on a secure

base of state funding for annual operations that will grow with inflation and enrollment of in-state students. Over the last 25 years, the state's support for the university—and for the state and community colleges—has fluctuated wildly in response to the Commonwealth's fiscal situation. This funding policy has disrupted the educational plans of students and their families, demoralized faculty and staff, and periodically wiped out years of hard-won academic progress. Whether the recent funding reductions can be restored—and we would argue the state should establish a funding schedule that would restore most of those cuts over time—the longer-term success of the university will depend upon a much more predictable state funding effort.

Figure 2

State Spending for Higher Education

Inflation-Adjusted and Nominal



It is clear that under-investment in the university's facilities and equipment is a further, serious threat to its long-term viability. The university is dependent for its academic capital needs on the annual legislative appropriation cycle—and on the amount that can be afforded under the state's bonding cap. While our recommendations give the university more flexibility in managing the funds appropriated to it, they do not directly

address the question of adequate and dependable capital investment.

In recent years, the university's allocation of new capital spending under the administration's five-year capital plan has averaged \$25 to \$30 million a year, a level that could decline in the future because of other pressures on the state's capital budget. To put this in perspective, the chancellor at the Amherst campus has just proposed a \$430 million program to help deal with the worst deferred maintenance problems on his campus. It is beyond the scope of this paper to come up with detailed capital needs projections. However, it is not unreasonable to suppose that the university needs to spend \$1-2 billion on capital improvements over the next decade.

Both of these challenges—adequate and predictable annual operating support, and a much greater level of investment in capital—may well be impossible to meet within the framework of the state's existing financial relationship with the university. We believe that the Governor, the Legislature, and the university need to begin a wide-ranging discussion of potential options for addressing the university's financial needs while preserving its fundamental goals. That may involve granting the university a degree of financial autonomy that has not yet been considered in this state.

The squeeze on state support is not unique to Massachusetts, of course. The proposals set forth in this paper are circulating in many state capitals, and we expect that more and more legislatures will be giving additional flexibility in place of the funds they are unable to supply. This means our competitors will also become more entrepreneurial.

Other states are also exploring—and in some cases have already acted on—major changes

in their financial relationships with their public universities. The University of Virginia, Virginia Tech, and the College of William and Mary—three of the oldest and most distinguished public institutions in the country—have proposed formal autonomy tied to a specific agreement about the long-term public policy goals they must pursue. The University of Michigan—another leading public institution—has been transformed into a self-governing nonprofit organization. It receives state support and is publicly accountable, but is not in any way a part of state government and is free to receive and spend funds without state controls.

One possibility for stabilizing UMass's finances would be a tax sharing arrangement that would in effect dedicate a portion of the state's tax base to the university for expenditure without further appropriation. Like the current state support, this revenue stream would meet only a portion of UMass's financial needs. Beyond it, the university would have to raise its own funds, balance its own budget, and borrow for its capital program.

A less marked departure from the status quo would be to reach an agreement on a long-term funding arrangement that, although still subject to the annual appropriation process, would offer much greater stability of funding for the state's share of the university's operating and capital needs.

In the case of the operating budget, this change could be tied to some rational mechanism that related the funding levels to enrollment and inflation. While it is impossible to design a funding mechanism that can account for every possible contingency, an explicit formula might serve a useful purpose in establishing a floor for annual state support. A formula of this type could be linked to specific agreements to

hold in-state tuition increases to the rate of inflation. In some more prosperous time, the state might want to increase its funding commitment in order to reduce tuitions—as the Weld administration did in the 1990s.

A long-term funding agreement could open up other possibilities, including putting the university in charge of all aspects of its capital program. With a state commitment to a set dollar amount for partial support of the university's capital construction, UMass could add funds it raises itself; the University Building Authority could borrow against the combined stream of revenues; and the university could then set its own priorities and manage its own capital budget. Freed from current delays and cost increases, it could construct more buildings—and do so more quickly—than under current arrangements.

For all of these options, the university's basic mission and policy goals—and its level of financial support—would continue to be set by the Governor and the Legislature. In our view, even the most far-reaching of the possibilities discussed here would—like the specific proposals for additional flexibility that we recommend in this report—preserve the authority of state officials both to set the broad policy goals of the university and to oversee the university's efforts to meet those goals. Indeed, we are struck by the extent to which the state's current controls are almost totally disconnected from broad policy considerations and from the ultimate goals of the university.

The Foundation firmly believes that Massachusetts will have a far better university if it allows UMass to manage much more of its own affairs—not only day-to-day hiring of staff, but also multi-year management of its building plans and the freedom to initiate programs to attract new

students or new research grants, including investments in dorms, labs, and professors. The recommendations in this paper are modest, but important, steps in that direction.

Addendum: Building Excellence at the University of Massachusetts

What distinguishes a modern university from a four-year teaching college is its research function and its relationship with the broader world of science, government, and industry. This research is integrally linked to the education experience the university offers both its graduate and undergraduate students. It can also be a major asset to the economy of the communities around the university.

This research and entrepreneurial function of a first-rate university is not funded primarily from state tax dollars. Rather, it supports itself with research grants, in large part from federal agencies, and with contract support from businesses and state or local government agencies. These entrepreneurial dollars substantially expand the faculty and professional staff of the university and, most importantly, the educational and research opportunities available to its students. In a high-tech state like Massachusetts, this research “enterprise” is a critical part of preparing students to participate in the local economy.

Research Excellence at UMass: Dartmouth’s Marine Biology Center

While there are countless examples of this across the five campuses of the University of Massachusetts, the Dartmouth campus’s School for Marine Science and Technology and its marine laboratory offer an excellent illustration of how entrepreneurial research enriches the university.

The laboratory has a \$10 million annual budget. Of this, only \$1 million comes from the state appropriation; it receives \$8 million in federal research grants and \$1 million in contracts with state government agencies and local industry. The center has 41 researchers, including nine tenure-track faculty and 20 graduate students. These faculty members, supported primarily with federal research

dollars, hold joint appointments with various academic departments at Dartmouth, including physics, chemistry/biochemistry, electrical and computer engineering, and biology—where they teach undergraduate as well as graduate courses.

The marine laboratory is located in New Bedford, where it has a close research partnership with the local fishing fleet. The fishing industry provides boats, local vendors provide fuel and supplies, and the university provides researchers. University researchers were able to produce data that convinced federal regulators that the previously planned closure of local scallop grounds was unnecessary; over three years, this saved a \$100 million local scallop industry. Under contract with the federal EPA, the state Department of Environmental Protection, and local governments, the university (with the participation of its students) does water quality monitoring in estuaries around the state. In so

The geobacter research center at Amherst’s microbiology department studies microorganisms that can convert hazardous and/or radioactive wastes to harmless carbon dioxide and use these wastes to generate energy. The state pays the salary of the professor who directs the center, who brings in \$5 million a year in outside research funds. He supports a staff of 60 (with a payroll of almost \$2 million in funds that would not otherwise come to Massachusetts), including 17 undergraduates, nine graduate students and 30 postdoctoral fellows (some of whom teach courses and all of whom mentor undergraduates). The return on the state’s dollars is more than 30 to 1! The center clearly enhances undergraduate education as well as advancing science.

doing, it provides research experience for its students and useful service to these agencies.

To build up this level of federal support, the program needed seed money. Each year, the chancellor gave the dean one year's salary for a new professor. After each professor's first year, the program was expected to support that professor with outside funds. This cycle will be complete when the program reaches its goal of ten tenure-track professors. A small amount of university support and university seed money has generated a major increase in faculty, substantial outside research, new graduate student research opportunities (with grant-financed student support), expanded classroom and research experiences for undergraduates, and critical support to local industry. This initiative makes the difference between an ordinary science program and a true university science experience for Dartmouth students.

Research Excellence Across the Entire University

Outside research grants and joint projects with government and business are a critically important part of the University of Massachusetts. Leaving aside self-supporting auxiliary operations like dorms and dining halls and the extensive network of services provided by the UMass Medical School to state human services agencies, the core budget of the university in fiscal 2003 was just over \$1.2 billion (see Figure 3). Of this total, only 36 percent was funded by the state appropriation. In fact, the combined total of federal grants (primarily for research), service contracts with state and local governments, and contracts with businesses is almost as large as the state appropriation!

As the marine science example makes clear, research excellence is not just about the faculty's efforts to expand the bounds of knowledge, but also a richer range of educational, business, and research

experiences for UMass students. A significant portion of the federal research dollars goes to support graduate students. The business "incubators" at the Dartmouth campus involve students working directly with start-up companies, with funding provided in part by contracts with participating businesses.

The impact of this broad effort is even more apparent when we look at how the university funds its faculty and other professional positions (including deans, counselors, computer technicians, and laboratory directors and technicians). Some 45 percent of these positions are funded outside the state appropriation—from research grants, contracts with private companies and state agencies, gifts, and tuition and fees (see Figure 4).

Competing for Outside Funds

Research, contracts, and business partnerships are largely (although not entirely) self-funding—at the University of Massachusetts and at all major research universities. Most of the funds come from federal research grants or business partnerships, not from state legislatures.

Figure 3

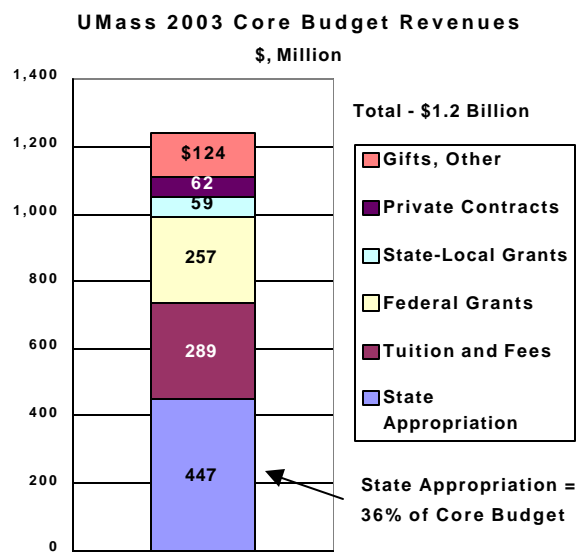
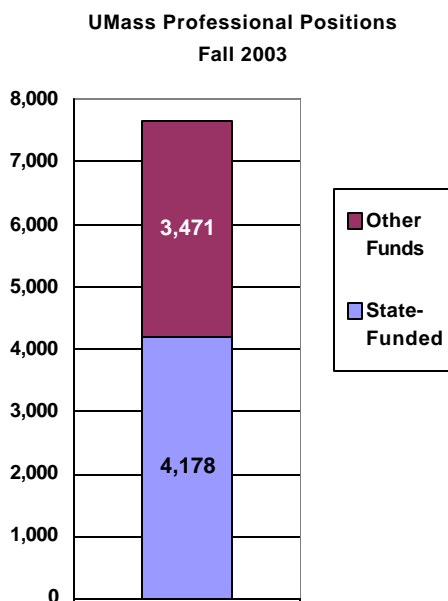


Figure 4



These funds are awarded competitively. To win these funds, the university must compete not only with the premier public universities but also with MIT, Harvard, and the great private research universities. The competition for federal research dollars is based on peer reviews of research proposals by leading professors in each field. As a result, funds are awarded to the most capable institution—public or private, wherever it is in the country.

To win funding, university researchers must demonstrate research excellence to their peers. They must be up to date on the major developments in their field and know how their work relates. They must also demonstrate a high likelihood of successfully completing the work—including laboratory facilities, graduate students, and a critical mass of colleagues.

The University of Massachusetts competes with other research universities on three fronts—directly for research grants or business partnerships, for outstanding faculty researchers who actually write grant proposals and conduct research, and for top students (particularly the graduate students who are the

hands-on researchers at all universities). There are three areas in particular where state budget cuts and excessive state controls impinge on UMass’s competitive position: seed money, faculty retention, and space acquisition.

Seed Money

Seed money is critical to successful competition for research funds. A university usually has to put some money up front if it expects to make a plausible case for funding. The Lowell campus, for example, earmarked \$1 million of its own money to help start its advanced materials lab; this was matched by a \$4 million gift of equipment from GTE. Today the lab attracts \$500,000 to \$750,000 of outside research money annually and supports ten research assistants. The campus itself spends about \$400,000. The Dartmouth chancellor’s investment in first-year salaries for one new research professor each year for nine years is another good example.

Many states around the country understand the importance of seed money in attracting federal research grants and encourage their universities to use state funds to attract top researchers, to support the initial research

Konarka is a Lowell firm based on research ideas developed on the UMass Lowell campus—research funded by some \$6 million from the Army and the Navy. It has attracted \$21 million in venture capital for its promising lightweight, low-cost photovoltaic cells that can be incorporated into clothing and thereby make it convenient and inexpensive to power portable phones and other personal electronic tools. The company currently employs 28 people. The university holds a seven percent equity share in the company, reflecting the university-developed technology in its products.

efforts of promising younger faculty, or to build labs and buy equipment. Some states provide appropriations specifically for seed money to make these kinds of investments.

The budget cuts of recent years have forced UMass to cut programs across the board and to reduce the size of its faculty. In this environment, it becomes almost impossible for campus chancellors to come up with seed money for promising initiatives within their regular budgets.

Seed money is important in several ways, including attracting research faculty, and building (and equipping) research facilities; these are discussed separately below. When university research produces promising ideas, seed money is necessary to invest in acquiring patent protection and in marketing the idea to

The Dartmouth campus invests \$50,000 a year of campus money in its Center for Rehabilitation Engineering; the center raises \$150,000 on its own. It does R&D work to help people with severe disabilities communicate their needs and interact with others, including developing machines that allow someone who can only move a finger to communicate in person or over the Internet. It scrounges for used equipment and finds ways to convert that equipment to life-support systems. Student interns do much of the work. To grow, the center needs a building and a topnotch technology transfer person. With a little extra money, they could seek gifts of modern equipment, forge partnerships with major firms, make a major contribution in the field, and create additional opportunities for students.

firms that can license and use the technology.⁶ Commercialization of university research can pay big dividends, including royalties to the university, valuable new products, and increased local employment. All told, UMass has 170 licenses in effect, generating \$20 million in licensing revenue in 2003—up from only 10 licenses and half a million dollars only seven years earlier.

Examples of UMass technology include contributions to the anti-allergy medicine Clarinex (the Medical School at Worcester), therapeutic cloning techniques that helped launch the Worcester-based firm Advanced Cell Technology (Amherst), and gene silencing technology that is leading to new treatments for diabetes and obesity, leased to a Massachusetts-based startup (Worcester).

Seed money can pay professors to develop on-line curricula; the Lowell campus gives summer stipends to faculty for this purpose. In courses where graphics plays a major role—calculus, physics, chemistry, anatomy—having some of the instruction on-line is educationally preferable and more convenient for students. The Lowell campus gives 35,000 credit hours of instruction on-line—and 80 percent of the students taking these courses live within commuting distance of the campus. On-line courses also represent a major profit opportunity for the university.

Research Faculty/Lab Space

Obviously, a campus cannot attract research grants without a solid research faculty. Developing such a faculty can more than pay for itself in the long run, as the marine science example at Dartmouth illustrates. But it costs money up front. The Medical School at

⁶ For 20 years, federal policy has encouraged universities to commercialize research. To this end, universities retain ownership of the intellectual capital that arises from federally funded research on their campuses.

The School of Management at the Amherst campus has invested funds it raises from its own sources to expand two key areas of student support. It added three people to its placement office, so the school itself now helps place 40 percent of its undergraduate students—twice the national average. The school created a diversity office to find ways to recruit additional minority students and to make sure they were able to succeed at the school. This has raised minority enrollment from two percent of the total to 16 percent.

Worcester took \$600,000 in state appropriations, hired five top psychiatrists, and now the department has a \$20 million budget supported primarily by outside research funds.

A superstar researcher can bring in hundreds of thousands of dollars a year of research grants and support several colleagues, research assistants, and graduate students. But to attract him or her to campus, the university needs to offer lab space and equipment, the researcher's own salary, and perhaps a year or two of support for an assistant. Because they are self-supporting in the long run, such professors are in high demand and can virtually write their own ticket. They certainly will not move to a campus that cannot provide them adequate lab space and equipment or offer a promising group of graduate students with whom they can work. (The reality of modern research is that graduate students do much of the hands-on lab work so a campus's appeal to senior researchers is closely tied to the quality of the students it attracts.)

Seed money is also important in recruiting junior faculty. Campuses hire promising young researchers in the hope that they will eventually attract grants to support their labs and graduate students. But the labs have to be up and running before the researchers can gain

federal funds. Given this reality, and the competition between universities, promising young scientists and engineers can expect an equipment package of as much as \$250,000. The necessary lab renovations and upgrades can bring the total cost to \$500,000.

Research requires lab space—more space per student than traditional classes—with ventilation, water, power, and whatever it takes to accommodate modern research. In addition, the availability of space to complete research is an important factor in winning federal research funding. Partnerships with businesses may also involve space—space on campus for business partners or for new university employees. And the competition between universities is such that promising researchers—whether well established or just starting out—can insist on adequate lab space as a condition of employment.

In the 1990s, the university was able more often than not to pull together the equipment, facilities, and space needed to compete successfully for outside funds; because of the recent budget cuts, it has become almost impossible to secure the generally modest resources that are required.

Massachusetts Taxpayers Foundation

OFFICERS

Chair
Robert Mudge

Vice Chair
Edward H. Ladd

Vice Chair
Nancy L. Leaming

President & Secretary
Michael J. Widmer

Treasurer
Karen Kruck

EXECUTIVE COMMITTEE

Maura O. Banta
Corporate Community Relations Manager
IBM Corporation

James F. Conway III
Chairman, President and CEO
Courier Corporation

Michael J. Costello
Managing Partner
PricewaterhouseCoopers LLP

John W. Delaney, Esq.
Senior Partner
Hale and Dorr LLP

Sandra L. Fenwick
Chief Operating Officer
Children's Hospital

Kevin B. Harrington
President
Issues Management, Inc.

Karen Kruck
Senior Vice President
State Street Corporation

Edward H. Ladd
Chairman
Standish Mellon Asset Management LLC

Nancy L. Leaming
President and CEO
Tufts Health Plan

Stanley J. Lukowski
Chairman, CEO
Eastern Bank

James E. Mahoney
Director of Public Policy
Bank of America

Thomas E. Moloney
Senior Executive Vice President, CFO
John Hancock Financial Services Inc.

Robert Mudge
Senior Vice President - Northeast
Verizon

Thomas L. P. O'Donnell, Esq.
Of Counsel
Ropes & Gray

Kirk Sykes
President
Primary Group, Inc.

David C Weinstein
Executive Vice President
Fidelity Investments

Michael J. Widmer
President
Massachusetts Taxpayers Foundation

Susan R. Windham-Bannister
Managing Vice President
Abt Associates Inc.

BOARD OF TRUSTEES

W. Gerald Austen, M.D.
Surgeon-in-Chief, Emeritus
Massachusetts General Hospital

Dennis G. Austin
Director - State Government Relations
Raytheon Company

Donald J. Barry, Jr.
Senior Vice President, Counsel
Citizens Bank of Massachusetts

Jan F. Binda
Massachusetts Public Affairs Manager
Sun Microsystems, Inc.

Christopher W. Bramley
State President, CEO
Banknorth Massachusetts

Bruce M. Bullen
Chief Operating Officer
Harvard Pilgrim Health Care

Ann Carter
Executive Vice President, COO
The Rasky/Baerlein Group, Inc.

Elizabeth Chace-Marino
Director - Government and Corporate Affairs
The Stop & Shop Supermarket Co., Inc.

Kenneth A. Cohen, Esq.
Partner
Goodwin Procter LLP

Thomas R. Creed
Vice President, Corporate Development
OmniGlow Corporation

Donna C. Cupelo
Region President – MA/RI
Verizon

David S. Davenport
Partner
Testa, Hurwitz & Thibault, LLP

Geri Denterlein
President
Denterlein Worldwide

Michael DiBiase
Senior Vice President
Fidelity Investments

William S. English
Chief Executive Officer
Sturtevant, Inc.

Nancy Fitzpatrick
President
Red Lion Inn

Patricia M. Flynn
Trustee Professor of Economics & Mgt.
McCallum Graduate School of Business
Bentley College

John W. Gillespie
Chief Financial Officer
The MENTOR Network

Cynthia L. Gordan
Vice President, General Counsel
Quaker Fabric Corporation

Daniel A. Grady
Vice President - Finance, CFO
BOSE Corporation

C. Jeffrey Grogan
Partner
Monitor Group, LP

Stephen A. Hoffman
Vice President - Tax
The Gillette Company

William S. Hogan, Jr.
President, CEO
Easthampton Savings Bank

Robert E. Hunter, D.M.D.
President, CEO
DentaQuest Ventures, Inc.

Ann S. Hurd
Manager - Public Affairs
Intel Massachusetts Inc.

Han Jansen
Senior Vice President
Philips Medical Systems

Joanne Y. Jaxtimer
First Vice President
Mellon New England

Michael Jesanis
President, COO
National Grid U.S.A.

James J. Judge
Senior Vice President, CFO and Treasurer
NSTAR

Amrit Kanwal
Senior Managing Director, CFO
Putnam Investments

Michael Kirkwood
Vice President, Managing Director
Mirant New England, Inc.

Kerry Kuhlman
President, COO
Western Massachusetts Electric Company

Mary M. Lassen
President, CEO
The Women's Union

Stephen R. Levy
General Partner
Levy Venture Partners, L.P.

Stanley J. Lukowski
Chairman and CEO
Eastern Bank

Christopher C. Mansfield
Senior Vice President, General Counsel
Liberty Mutual Insurance Company

Keith C. McLean-Shinaman
Senior Vice President - Finance, Treasurer
Baystate Health System, Inc.

Peter Meade
Executive V.P. - Corporate Affairs
Blue Cross Blue Shield of Massachusetts, Inc.

Sylvia Metayer
Executive Vice President, COO
Houghton Mifflin Company

Richard A. Moore
President
Rizzo Associates, Inc.

Karen Morrissey
Vice President - Corporate Affairs
Cabot Corporation

William J. O'Brien, Esq.
Associate General Counsel
Hewlett-Packard Company

Paul O'Connor
Vice President - Taxes
Millipore Corporation

M. Robert Rose
Executive Vice President
Sovereign Bank

Paul Severino
Founder, Former Chairman
Bay Networks, Inc.

Shirley Singleton
President and CEO
Edgewater Technology

Margaret Sperry
Senior V.P., Chief Compliance Officer
Mass. Mutual Life Insurance Company

Nickolas Stavropoulos
President
KeySpan Energy Delivery New England

Kirk Sykes
President
Primary Group, Inc.

E. Randolph Tucker, Esq.
Piper Rudnick LLP

Peter T. White
President
J.F. White Contracting Company

Thomas Wroe, Jr.
Senior Vice President
Texas Instruments Inc.

James W. Zilinski
Chairman, President and CEO
Berkshire Life Insurance Co. of America



Massachusetts Taxpayers Foundation

333 WASHINGTON STREET, SUITE 853

BOSTON MA 02108