INSTITUTIONAL PROFILE

Questions Still Roil the Waters As MBL Charts New Course

WOODS HOLE, MASSACHUSETTS—For more than a century, the Marine Biological Laboratory (MBL), the renowned scientific preserve located here, provided the nation's top biologists with a peaceful summer retreat where they were free to focus on high-intensity teaching and groundbreaking science. Early in this decade, however, that peace was shattered by a series of controversies—centering on spending decisions and alleged improprieties of then-director Harlyn Halvorson—that ultimately led to a complete management shake-up, including both a new director and a revamped governing board (*Science*, 6 August 1993, p. 672).

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Since then, life has been much quieter around Eel Pond, the picturesque inlet the lab encircles. But dangerous currents still swirl beneath the surface calm, and they may yet drag the lab down, say some of its supporters. MBL is still a long way from recapturing its past glories, they note, and in an era of intense competition for research dollars, it will need a fundamental transformation to become a research powerhouse like Cold Spring Harbor Laboratory or the Salk Institute for Biological Studies. "If the research environment continues to be as competitive as it is, MBL is not out of the woods," says Eric Davidson, a developmental geneticist at the California Institute of Technology (Caltech) in Pasadena who first came to the lab as a high school student in 1954 and spent more than 15 summers directing the famous advanced embryology course. To put itself back in the spotlight, he says, MBL "will need to develop new, high-profile scientific programs of great importance."

MBL director John Burris, credited with restoring calm at the lab, says that's exactly what he wants to do. But high-profile, critics point out, means high cost—especially if MBL wants to offer new recruits the same kind of financial safety net routinely provided by universities. And although MBL's endowment is at an all-time high and a recently announced $25 million fund-raising campaign has already brought in $11.2 million in pledges, much of that money is needed to meet other urgent needs, such as modernizing the lab's weather-beaten and antiquated seaside campus. Even the prestigious summer courses—long famous as a "boot camp for biologists," with 11 Nobel Prize winners among their alumni—are experiencing shortfalls. Last spring, for example, the National Institute of General Medical Sciences (NIGMS) slashed the funding it provides for the advanced physiology course. With such expenses looming, critics question whether enough will be left over from the fund-raising campaign to build new scientific programs.

Other questions about MBL's future relate only indirectly to money. One is the "vision thing": the contention among some MBL-affiliated researchers that Burris, while a deft administrator, isn't the kind of accomplished scientist or inspiring leader needed to position the lab competitively for the next century. "He doesn't have a vision for the science of the lab," says one MBL summer researcher. But Burris, who was reappointed to the directorship last week in a unanimous vote by MBL's board of trustees, feels otherwise: "We know where the MBL is going and are certain we will get there." It's just that the critics, he says, want to go somewhere else.

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Wind in its sails. Under director John Burris, MBL will focus on building up its three year-round research centers, including the Marine Resources Center *(above)*.

Tarnished silver. For MBL, a private corporation that has always eschewed direct government or university connections, money limitations are nothing new. At several points in the 1920s and 1930s, for example, the lab would have folded save for cash infusions from plumbing magnate Charles Crane, brother-in-law to one of the MBL's most legendary past directors, Frank Lillie.

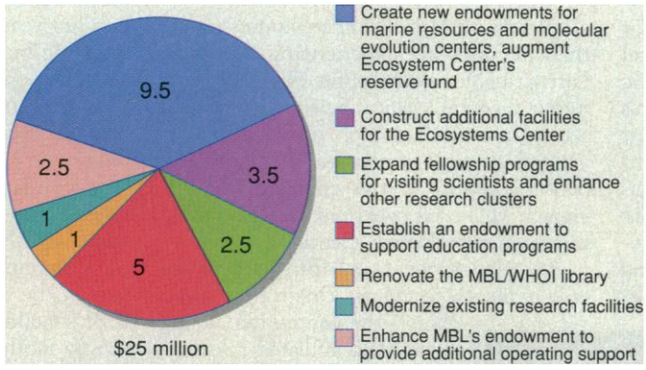
Times aren't quite so lean today: The lab finished 1996 with an operating surplus of $222,000 on an overall budget of just over $21 million, and bull markets plus donations solicited by Burris have boosted its investment portfolio, now worth $29.8 million, by a remarkable 53% since 1994. But even that is a relatively paltry amount for an institution of MBL's scientific significance. For comparison, the endowment of Cold Spring Harbor, across Long Island Sound, topped $130 million last year and generated $5.7 million in spending money, while MBL's endowment generated only $1.1 million.

And even if that money weren't needed to help pay MBL's operating expenses, it would only begin to cover the crucial items on the lab's wish list. One is a bigger "hard money" reserve to insure against the loss of grant income. Only one unit at MBL currently has such insurance: the Ecosystems Center, begun in the mid-1970s as a way of putting MBL's facilities, which until then had been mostly mothballed each winter, to gainful year-round use. The center's 1996 budget of $6.63 million, including bountiful grant support from the National Science Foundation and other agencies, funds the work of more than 50 senior scientists, postdocs, and research assistants on such high-profile problems such as greenhouse-gas emissions in the Amazon Basin and Arctic ice-cap melting. But no grant lasts forever, and the center's $4 million reserve fund, slowly built up from $1 million donated by major foundations in the 1970s, has provided a crucial cushion for researchers who are between awards, says John Hobbie, the center's co-director.

Burris says he has guaranteed 3 to 5 years of support to three researchers recently hired by the Ecosystems Center and to two outside the center. Most of MBL's 40 other senior investigators, however, live on "soft money"—corporate, philanthropic, and government grants that can evaporate at a moment's notice. "What the lab lacks, outside the Ecosystems Center, is any kind of guarantee that if your grant doesn't get funded, the lab will dip into its own funds and carry you," observes Roger Sloboda, a cell biologist at Dartmouth University in Hanover, New Hampshire, and a former member of the lab's executive committee. New research centers at MBL will require reserve funds at least as large as the Ecosystem Center's if they are to attract cutting-edge researchers, Sloboda says: Right now, "if you lose your grant, that's it, you're gone. Who in their right mind is going to leave a university position for that?"

MBL's out-of-date physical facilities are no enticement, either. The lab has already begun some renovations; the Lillie and Loeb buildings, for example, recently acquired air conditioning. But deionized water, essential for

benchwork, still isn't on tap in laboratories and must be hefted inside in carboys. Many labs lack gas lines. In several buildings used by summer researchers, window-mounted air conditioners help make up for the lack of central air conditioning, but this arrangement forces many laboratories to close their hallway doors, deterring communication. And the cottages inhabited by summer faculty and visiting scientists, most dating to the 1940s and 1950s, are dimly lit and lack such basics as grounded electrical outlets. The aging physical plant is "a tarnished bit of silver in the MBL platter," says Joan Ruderman, a molecular biologist at Harvard Medical School who oversees MBL's facilities as a member of its board of trustees. Without more renovations, it's "very hard to see [MBL] continuing to attract the best group of people in the summer," she says.



Treasure chest. How MBL plans to divvy up donations to its Discovery fund-raising campaign. (Figures are in millions of dollars.)

But while the summer education program hasn't lost its attraction so far—enrollment this year was the largest ever—MBL is finding that it can't depend on old sources of supplemental funding for the courses. In May, NIGMS cut its contribution to the physiology course from $126,000 to $50,000, even though course director Mark Mooseker of Yale University had asked for an increase to $134,000. NIGMS program officers "have had questions in recent years about the validity of doing this sort of thing," Mooseker says. Although some of the brightest lights in biology are graduates of the course, this legacy is "intangible, anecdotal," says Mooseker: "It's impossible to use the [National Institutes of Health] formula for documenting results." For now, MBL will dip into its own scarce funds to keep the physiology course alive. "We'll have to scramble" to make up the difference, Burris says, "but we will take care of it."

Conservative targets. Minimizing the need to scramble after every such setback is the goal of MBL's new "Discovery" fund-raising campaign, announced by Burris on 8 August at a festive street science fair complete with a live band and free hot dogs, soda, and ice cream bars. Burris surprised fairgoers with the news that $11.2 million has already been raised—including 10 gifts of $100,000 each from MBL scientists themselves. One-fifth of the $25 million will be used to create an endowment to support the summer courses, while another $2 million will go toward long-delayed renovations.

But the biggest chunk of the new funds, $9.5 million, will be used to "build to MBL's strengths," in Burris's words. That means focusing the money on a handful of year-round research centers. The existing Ecosystem Center, for one, will get cash to augment its reserve fund. Hard money reserves will also be created for the 5-year-old Marine Resources Center (MRC)—dedicated to the development of marine species as model organisms for biomedical research—and the Bay Paul Center for Comparative Molecular Biology and Evolution, headed by molecular biologist Mitchell Sogin.

Ecosystems science is "a bright spot" at MBL, agree observers such as Caltech's Davidson. But Burris's overall lineup of research centers "will mean a tremendous change of focus away from the cell biology, neuroscience, and evolutionary biology" for which MBL has always been known, Davidson says. One area where MBL might be able to compete more effectively, he suggests, is the expanding ground shared by evolutionary and developmental biology.

And while the Discovery campaign is "a step in the right direction," in Sloboda's words, $25 million doesn't go as far as it used to, he and others point out. "It's a nice, conservative target, but it will be entirely inadequate for bringing centers of ongoing scientific excellence of the magnitude required," says Davidson. Generating a modest $1 million per year in hard money would require a $20 million endowment for each new center, he notes.

MBL officials acknowledge that the sum doesn't represent the lab's true needs. For example, Ruderman estimates that maintenance and repairs repeatedly deferred by the lab over the past quarter-century would alone eat up a significant portion of the $25 million. Instead, that goal is merely the amount fund-raising consultants advised MBL that it can realistically expect to collect, officials say. "It's not enough money to do everything that needs to be done," Ruderman concedes. But she adds, "It's very important to establish a goal that you feel confident you can reach."

If the Discovery campaign's goals are conservative, so is Burris himself, some say. MBL's board hired Burris, a former marine biologist who at the time headed the National Research Council's Commission on Life Sciences, in 1992 because he was "just what we needed," says Ruderman: in essence, a capable, uncontroversial, Gerald Ford figure who could restore calm after Halvorson's Nixonian fall and lay the groundwork for the capital campaign. But now that the Discovery campaign is under way, a number of MBL scientists speaking on condition of anonymity say that what the lab needs to reassert itself in the top ranks of biological research institutions is a director more like Cold Spring Harbor President James D. Watson—a dynamic leader with outstanding scientific credentials and an eye for the hot fields of the future.

Burris "has done what the committee had in mind when he was hired: to even things out," says a member of the search committee that hired him. "But knowing what area of science is going to be hot, where the lab should focus its resources—John just doesn't have that, because he hasn't been in the trenches for the last 15 years or so."

Some critics feel, for example, that Burris was too ready to compromise when it came to hiring a director for the MRC. The lab's offer to its first-choice candidate was immediately outbid by the candidate's home institution, one MBL insider recounts. "Burris failed to go to the trustees and ask 'Can you do something to match this offer?' Instead, he took the next person down on the list. He didn't know real excellence, and that's been a general feature of his administration."

Burris counters that MBL "raised the ante two times" during negotiations with the first-choice candidate for MRC director, but ultimately couldn't afford him. While "our critics would have preferred that we appoint a molecular biologist," Burris says, Roger Hanlon, the marine biologist who got the job, was "clearly superior to all other candidates" in many crucial respects.

And Burris's defenders vehemently reject the criticisms. "John has done a first-rate job," says Yale's Mooseker, who points out that he has established key initiatives such as setting up a scientific advisory panel, including heavy hitters such as National Academy of Sciences President Bruce Alberts and Harvard Medical School biologist Marc Kirschner, to make up for his own lack of "science in the trenches" experience.

Burris acknowledges, however, that because many MBL-affiliated scientists aren't part of the three disciplines—ecosystems, marine organisms, and molecular evolution—where the lab will focus its resources in the future, some choppiness around Eel Pond is probably to be expected. "My vision is commitment to excellence in a few areas," he summarizes, "not to an institution that is all things to all people."

–Wade Roush