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BayBio: Despite Economic Challenges, Calif. Must Make Bold Bets to Grow Life-Sci Sector

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By Alex Philippidis

California, facing its toughest economic outlook since the Great Depression, must spend more to develop and launch programs to train professionals needed to fill jobs in two fast-growing life-sciences specialties, state-certified lab scientists and medical lab technicians.

The state, which is also facing a daunting budget deficit for the current and coming fiscal years, must also create new economic incentives to continue growing its US-leading life-sci cluster, an industry group has recommended.

BayBio, the life-sciences industry group for the San Francisco Bay Area and northern California, said the state's \$42 billion budget shortfall this fiscal year and next should not stop officials from improving existing programs and developing new ones designed to train California-certified laboratory scientists and medical lab technicians, among several priorities it identified in a report released last week.

The organization did not project the cost of those actions, and BayBio President and CEO Matthew Gardner acknowledged in an interview that the state's current fiscal crunch will complicate efforts to wring more funding for life-sci workforce training.

Indeed, last week the University of California Board of Regents voted to cut undergraduate enrollment system-wide by 2,300 students, and froze the salaries of 285 top administrators.

Yet despite these challenges, California must spend more on academic programs if its life-sci industry is to find the quantity and quality of professionals needed to staff its labs and carry out the next wave of research and technology commercialization, Gardner told *BioRegion News* last week.

He said boosting state spending on life-sci workforce-training programs will be a top priority for BayBio in the coming year. The training issue was among a potpourri of policy recommendations BayBio offered in its annual report on the life-sci industry,

[Impact 2009: Innovation Fuels the Golden State — Does California Have What it Takes?](#)

The report, like the group's ongoing effort to lobby state officials, is among several tools BayBio is using to prevent the state from revisiting its decision three years ago to eliminate funding for an academic life-sci program.

As part of that move, state officials stopped subsidizing a San Jose State University program that trained students for careers as California-certified laboratory scientists. That program was revived only after area hospitals agreed to share the cost.

At the same time, BayBio called for a series of new tax incentives to aid the life-sci industry — many of them ideas the group had sought last year [[BRN, Jan. 14, 2008](#)].

The proposals include:

- Allowing net operating losses to be transferrable from emerging to established companies;
- Creating an early-stage investment incentive for life-sciences bets deemed "of strategic value both to the State's priority needs in healthcare reform and to areas of unmet medical need;"
- Creating corporate tax incentives for "major" investments by life-sci employers in California;
- Converting California's R&D Tax Credit into a tax rebate, a change BayBio said would benefit early-stage life-sciences companies; and
- Spending \$150 million over the next 10 years to create training centers of excellence.

California by the Numbers

Statistical highlights of northern California's life sciences industry, from BayBio's report *Impact 2009: Innovation Fuels the Golden State — Does California Have What it Takes?* The report was released last week:

• **Employment:** 250,000 employees in northern California's life sciences industry. An average 9,000 jobs added annually.

• **Therapeutic products:** California life sciences companies market 1,278 marketed therapeutic products, with another 210 having potential to reach the market over the next five to 10 years. Companies are projected to spend between \$85 billion and \$170 billion to develop these 210 treatments.

• **Total pipeline:** A total 738 new treatments, diagnostics, and technologies could reach patients within 15 years.

These centers should be run, BayBio advocated, by public-private partnerships consisting of the California State University system and private partners that demonstrate an ability to respond to future areas of "acute" industry need.

One suitable location for one such center would be near the University of California, Berkeley, which lacks its own incubator for startups, Gardner said.

BayBio's report also includes four proposals geared to speeding up development of new facilities, including:

- Establishing a new California Science & Technology Trust to be headed by a state cabinet-level state science advisor. The trust would generate revenue by licensing intellectual property and leasing out commercial and industrial land to early-stage companies. The trust would also support the state Council on Science & Technology and oversee state-funded incubators, centers of excellence, and the science fellows program.
- Enabling municipalities to tap the California Infrastructure and Economic Development Bank for loans to cover the costs of infrastructure preparation and other pre-development work carried out before adoption of environmental impact reports on sites "of high potential" for life-sciences expansion.
- Creating incentives for local communities to zone biotech regions in their master planning documents, and to set aside areas as research parks where life sciences companies may expand into new clusters in close proximity to growing housing areas.
- Creating a new incentive for investment in bioprocessing and biomanufacturing projects, with offsetting costs for production plant investments, capital equipment, facility construction, long-term employee training, and infrastructure.

Uphill Shortfall

BayBio "expect[s] ... to continue talking to our elected leaders about things that would make very promising long-term investments," Gardner said. "And whether [these investments] happen in one particular year or the next isn't so important as making sure that we help the state understand what the priority needs of [the life-science] industry are."

Gardner acknowledged that the group's lobbying efforts in Sacramento will likely face a chilly reception. Gov. Arnold Schwarzenegger and state legislative leaders remain deadlocked over how to balance the \$42 billion budget shortfall California faces for fiscal 2009, which began July 1, 2008, and fiscal 2010. Embattled recommendations call for borrowing part of the shortfall or raising taxes, both efforts favored by most state Democrats and spurned by their Republican rivals.

On Jan. 6, Schwarzenegger vetoed a budget bill supported by Democratic state legislative leaders that would have generated \$9.3 billion in taxes and fee hikes by replacing the state gasoline tax with a gas "fee" set aside for transportation projects; a 0.75-percentage-point increase in the state sales tax; a 2.5-percent increase in personal income taxes; and a 3-percent income tax-withholding duty on independent contractors and companies that extract oil from California.

While Gardner and BayBio call for more state spending, the head of a San Francisco-based, National Science Foundation-funded program that trains skilled technicians told *BRN* last week Sacramento could best be helpful by lifting the state's heavy regulatory hand.

Elaine Johnson, director of the National Advanced Technological Education Center of Excellence in Biotechnology, also known as Bio-Link, said last week that California lags behind neighboring states in producing certified lab scientist and medical lab technician graduates because it has stricter rules for state-specific CLSs and MLTs than other states.

"There are not enough training facilities or licensed internship sites. And that is the problem, especially since the need for these people is increasing dramatically as companies are moving into diagnostics for personalized medicine, an area that is increasing in this region," Johnson told *BRN*. "It has become a very serious issue, and something that we're definitely looking at."

Gardner said California's certification requirements contributed to the current shortage of CLSs and MLTs, but disagreed that it was the primary factor. He cited a 2005 report issued by the US Department of Health and Human Services that identified a nationwide shortage of CLSs, as well as studies over several years by HHS and others identifying a similar shortage in California.

In 2005, California's ratio of CLS professionals — 74 percent of the national CLS-to-population ratio — is the seventh-lowest in the United States, according to a report by the US Department of Health and Human Services called [*The Clinical Laboratory Workforce: The Changing Picture of Supply, Demand, Education, and Practice*](#).

That rank is expected to skid further over the next decade, according to the American Association for Clinical Chemistry, as lab techs born in the Baby Boom years retire. Their average age is now over 50.

Gardner said BayBio also wants California to add to its current 13 state-certified lab technician-training programs — nine of which are run by hospitals, and the remainder by academic institutions. Average class sizes for those programs in 2007 ranged from two to 30 CLS trainees, according to figures from the University of California San Francisco Center for the Health Professions.

According to the center, California schools produced 119 CLS graduates statewide in 2007, a far cry from the roughly 800 needed to meet demand by life-sci employers and hospitals, according to an estimate that year by the Campaign for College Opportunity.

But in California, as in the nation, seven CLSs leave the profession for every two that enter, causing the shortage BayBio cites in its Impact 2009 report.

"If you quadrupled the output of San Jose State or San Francisco State [University] programs, you would then begin to meet the demand that hospitals have for hiring those new CLSs," Gardner told *BRN*.

"Not only have we not begun to meet the current hospital demand, but we haven't even begun to anticipate the industry demand for those positions," as the field of personalized medicine takes off in the next decade and advances new therapies to clinical-stage trials, he added.

As a result, according to the BayBio report, "more organizations are diagnosing blood samples, tissue samples and running genomic tests, thus requiring more CLSs and MLTs to complete these essential tasks."

California's CLS-population ratio is one of several statistics highlighted by BayBio in detailing the state's dismal national standing in science, technology, and mathematics, or "STEM" disciplines. Another is the Golden State's national 48th place rank in eighth-grade science education in 2007, according to the US Department of Education.

BayBio blames that poor showing on local schools strengthening their programs in language arts and mathematics — two areas where students are periodically tested under the US No Child Left Behind Act — at the expense of science, an area not subject to NCLB testing.

"California can improve efficiency of existing lab professional training programs and should consider creating new programs to increase the number of laboratory professionals," the report recommended.

Improving efficiency, Gardner said, would mean speeding up the time frame for developing and adopting new curricula. That reform, he added, need not change the current process, in which advisory panels of professionals participate by making recommendations to the boards of individual schools within the state's two higher-education systems, the University of California and California State University.

"This is the intersection of a whole bunch of issues related to inadequate planning for investment at the state university level, to a range of disconnects between how long it takes to adopt curriculum, and industry response," said Gardner. "When the system is told it needs to add a new program, it can take the system three years or more to adjust

to that. It's a challenge, at times, to marry up the medium range vision of the industry's needs with the amount of time it takes to add classrooms and faculty to new programs."

One option for the state could be scrounging for a share of the funding expected to be made available as part of President Barack Obama's \$825 billion, two-year economic-stimulus measure, introduced in Congress last week with the goal of creating at least 3 million jobs.

Asked about that possibility, Gardner would only say, "We hope both the administration and Congressional leaders recognize the potential for the life science industry to create enough jobs to get the economy moving again this year."

California is not alone among states in coping with a shortage of CLSs and MLTs. As of 2006, the nation had 167,000 practicing CLSs and a projected need for 21,000 by 2016. Also, between 1975 and 2005, the nation's number of CLS programs plunged from 709 with 6,121 graduates to 232 programs and 2,079 graduates.

In its 2005 report, HHS identified an annual gap between the 13,700 new professionals needed each year nationwide, and the 4,000 or so who graduate each year from CLS training programs.