

## IT TAKES CASH TO KEEP IDEAS FLOWING

By Richard C. Atkinson  
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Economists tell us the U.S. is entering a new economy, one in which the capacity to innovate will play a dominant role in determining which countries prosper in the global marketplace. Succeeding in the new economy requires more than sufficient venture capital and shrewd entrepreneurs. It demands public investment in knowledge on an entirely new scale.

Why can't innovation be left entirely to the private sector? First, because the era of the great industrial laboratories--the AT&Ts and IBMs of the world--is over. Despite the sterling quality of their research, these laboratories were too expensive and too centralized for today's fast-paced and fiercely competitive marketplace. Second, the center of economic gravity is shifting toward small and mid-sized companies that need a constant flow of ideas and discoveries that can be translated into new products, processes, and technologies. Keeping that flow of ideas at full tide is a public benefit for all of us: it creates the jobs and businesses essential to a good life for our citizens. This is especially true in California, which has one of the most knowledge-intensive economies in the world.

Universities, as a source of educated people and basic research, are playing a catalytic role in the new economy. They are forging partnerships to stimulate innovation in both the short and long term--partnerships with government, with industry, and with other segments of education. We have at least four opportunities to make these partnerships more productive:

- *Bolster federal support for basic research at California's universities.* The 50-year partnership between research universities and the federal government has given us the laser, protease inhibitors, and bioengineering, among many other benefits. California's superb research universities have led the way in this remarkable--and remarkably cost-effective--voyage of discovery. The overall federal investment in basic research needs to grow, but there is one step the powerful California congressional delegation can take now that will help this state: work to end pork-barreling of federal contracts and grants. When quality is the criterion, faculty from California's universities are the most competitive in the nation. I intend to work with other research university presidents to urge Congress to insist on scientific merit as the only basis for federal support.

- *Increase the state's investment in California's ability to innovate.* The state of California has its own partnership role, but until recently has been hobbled by the recessionary storms of the early 1990s. The governor and the legislature just approved a budget that demonstrates a recognition of universities' importance as the seedbed of twenty-first century industries, just as they created the biotechnology industry in the 1970s. Now that surpluses have replaced deficits, increasing the state's contribution to California's capacity to innovate should be high on the agenda of our next governor. There is lots of room to grow: California state government's per capita funding for R&D is well below the average of other leading R&D states.

- *Expand industry-university partnerships.* From San Francisco to San Diego, companies are recognizing that partnerships with universities leverage their research dollars. A UC San Diego study of companies in the area found that 119 high-tech companies were nurtured by UCSD research; together they employ more than 15,000 people and generate annual revenues of nearly \$2 billion. Yet evidence also indicates that California industry's research expenditures at universities are surprisingly meager--below similar industry investments in other R&D states like Massachusetts and Texas. The good news is that tremendous potential exists to foster industry-university collaborative research, as UC is doing with its Industry-University Cooperative Research program, now in its third year.

- *Accelerate efforts to improve K-12 science education.* California's universities have a long history of involvement in the K-12 schools, but the knowledge economy's demand for skilled people and the growing diversity of our state's population have endowed this partnership with renewed urgency. Innovative collaborations are springing up not only between K-12 schools and UC but also between UC and other institutions of higher education. UC and the California State University, for example, are stepping up their teacher-training efforts to address a major K-12 teacher shortage. Such partnerships are key to expanding our supply of scientists and engineers and to ensuring that all our young people thrive in the economy of the next century.

The lesson of the new economy is clear: public investment, coupled with private initiative, can yield tremendous dividends for California. The challenge is to embrace our opportunities.

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*(This is a slightly edited version of the piece that appeared in the **Los Angeles Times** on September 25, 1998.)*