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Stem-cell revolution grows

By David Lichtenger

Stem cells are tiny. In fact they are microscopic. Yet, they might prove to be the mighty engine not only for medical advances, but also for the ailing California economy.

The economic might of the little stem cell was boldly evident earlier this month when the California Institute for Regenerative Medicine (CIRM), the state's stem-cell agency, awarded \$271 million to 12 universities and research institutions to build new stem-cell laboratories. While that sum is significant, the real story is in the additional \$560 million committed by donors and these 12 research organizations to building labs. All told, the \$831 million will create nearly 800,000 square feet of new stem-cell research capacity over the next two years.

Rapid advances

Those donor and institutional commitments were made for many reasons, but two stand out as the most important. First, stem-cell science is moving forward at an unprecedented pace, giving hope to patients who may benefit from potential therapies. Second, CIRM's mandate provides a 10-year consistent source of funding for this research, giving donors and institutions the confidence they need to make this half-billion-dollar investment. Confidence is scarce these days as the National Institutes of Health has seen inflation erode its grant capacity as a result of five years of flat funding; only one in 20 first-time grant applicants gets funded.

California's investment in these new, dedicated stem-cell facilities is critical at this juncture. Most of the state's research campuses are running out of space to recruit new scientists. Also, a stem-cell research facility is significantly different from routine research space. Stem-cell researchers generally need more laboratory space to accommodate bio-containment hoods, incubators and powerful imaging systems.

Accelerating the delivery of cell-based therapies to patients also requires multidisciplinary teams and close working relationships between basic scientists and clinical researchers. And the CIRM grants expressly require these new facilities to foster these collaborations.

The Bay Area has long prospered based on the theory that intellectual capital tends to draw more intellectual capital, and this premise suggests that the CIRM-funded facilities will foster a laboratory building boom.

The four Bay Area institutions that received CIRM facilities grants - Stanford, the Buck Institute, UC-San Francisco and UC-Berkeley, will gain \$119.2 million in state support, and have committed another \$324 million in donor and institutional resources to build \$443.2 million in stem-cell research space.

The local business community should also take note of the well-known multiplier effect of these large investments as these institutions buy specialized equipment as well as day-to-day supplies and services needed to make these new labs operate.

Immediate benefits

CIRM's review of these grant requests began with meticulous scrutiny and analysis of the science and research planned for these facilities. That science encompasses a broad spectrum of research and development working toward therapies for the treatment of injury and disease, which is where the majority of the social and economic benefit to Californians will be derived from the lab building boom.

Therapies are some years away, but the economic gain of these construction projects is immediate. All of the projects are already in the design phase and have committed to expedited construction schedules that will have researchers working in labs within two years. Because of the way CIRM's 30-year bonds are structured, none of this construction cost will affect this year's state budget.

For both the short and long term, these new stem-cell research labs are an extremely smart investment for the citizens of California. Years from now, we are likely to look back on these grants as a catalyst of untold therapies and cures - and as the defining moment for the tiny stem cell.