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Stem-cell company in crisis

Financial woes threaten Advanced Cell Technology.

Heidi Ledford

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Advanced Cell Technology is running the only US trials of embryonic-stem-cell therapies.

Advanced Cell Technology (ACT), a biotechnology company based in Marlborough, Massachusetts, has long flirted with fame — and bankruptcy.

The company is running the only US Food and Drug Administration (FDA)-approved clinical trials of embryonic stem (ES)-cell therapies. Later this month, ACT plans to report preliminary results from three trials to test the safety of its treatment for two different forms of vision loss. If all goes well, it could be the first clinical demonstration of the safety — and perhaps also the therapeutic potential — of ES cells.

Yet a series of financial missteps could cost ACT the opportunity to see that potential become reality. On 22 January, the firm announced that its chief executive, Gary Rabin, was stepping down. The news came a month after ACT — which had US$5.5 million in cash on-hand as of 30 September 2013 — announced that it would pay $4 million to settle a Securities and Exchange Commission (SEC) charge alleging that the company had illegally sold billions of shares of stock.

“That’s a big hit for any biotechnology company,” says Gregory Bonfiglio, a venture capitalist with Proteus Venture Partners in Portola Valley, California. “This is a very painful time for them.”

ACT is accustomed to the pain: it has been running on fumes for years and has repeatedly skirted bankruptcy. The company announced this week that it aims to begin the next round of its clinical trials in the second half of 2014. But its last quarterly statement, which covered the period ending 30 September, revealed that the company had only enough funds to last into the second half of 2014. ACT spokesman David Schull says that the firm is exploring all financing options and plans to expand its clinical operations to accommodate the upcoming trials.

That financing may have to carry ACT through additional legal charges. The settlement with the Securities and Exchange Commission was just one of a string of cases ACT has handled over the past few years as it dealt with the legacy left by the fundraising schemes of its previous chief executive, William Caldwell. One such case is still pending, and the SEC has launched a separate investigation of Rabin for distributing stock without reporting it to the SEC “in a timely fashion”.

More recently, on 2 January, the Wisconsin Alumni Research Foundation (WARF) sued ACT for breach of contract. WARF, which handles patents and licensing for the University of Wisconsin, holds a number of key ES-cell patents, and ACT struck a licensing deal with the foundation in 2007. The case has been sealed, and lawyers representing WARF did not respond immediately to requests for comment.

Other trials underway

ACT may soon have company in the clinic. The London Project to Cure Blindness has been developing an ES cell–derived therapy to treat age-related macular degeneration, a leading form of vision loss in people aged 50 and older.

The project has gotten regulatory approval and the team is preparing cells for the trial, says a spokesman for Pfizer, the New York-based pharmaceutical giant which is backing the project.

Another trial, announced last year and led by ophthalmologist Masayo Takahashi of the RIKEN Center for Developmental Biology in Kobe, Japan, will use adult cells reprogrammed to take on an ES cell–like state. These cells, called induced pluripotent stem cells, have less of a risk of provoking an immune response because they can be derived from the patient’s own tissue.

Both Takahashi's trial and the London effort have an advantage over ACT's approach, says Stephen Rose, chief research officer of the Foundation Fighting Blindness in Columbia, Maryland. . All three trials aim to protect cells that make up a sheet over the retina. ACT's trial injects a bolus of such cells, called retinal pigment epithelium cells, into the eye. The other two groups have found ways to grow the cells and transplant them in sheets, more closely mimicking their natural state.

But Rose still hopes that ACT will be able to finish its trials, and says that the data on immune responses to the therapy will be invaluable. In the meantime, he is optimistic about what the year holds for the field. "These trials are going to be popping up like weeds," says Rose. "It's a very exciting time."

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