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ACT Publishes First Report of Embryonic Stem Cell (ESC)-Derived Cells Transplanted Into Patients

Study in The Lancet Shows No Safety Concerns and Improved Vision in Patients with Macular Degeneration

MARLBOROUGH, Mass. – Jan. 23, 2012 – Advanced Cell Technology, Inc. ("ACT"; OTCBB: ACTC), a leader in the field of regenerative medicine, announced today that Phase 1/2 clinical data published in *The Lancet* as an early online publication demonstrate the safety of ACT's human embryonic stem cell (hESC)-derived retinal pigment epithelium (RPE) cells for the treatment of Stargardt's macular dystrophy (SMD) and dry age-related macular degeneration (dry AMD). Results were reported for two patients, the first in each of the Phase 1/2 clinical trials. In addition to showing no adverse safety issues, structural evidence confirmed that the hESC-derived cells survived and continued to persist during the study period reported. Both patients had measurable improvements in their vision that persisted for more than four months.

At four months following treatment, no hyperproliferation, tumorigenicity, ectopic tissue formation, or apparent rejection were observed in either patient at any time. Detailed clinical and diagnostic laboratory assessments were performed at multiple post-transplantation evaluations. Abnormal growth (or tumor formation) would be considered a significant safety concern for stem-cell based therapies, in particular those derived from hESCs due to their pluripotency; it is therefore critical to control the differentiation of hESCs. Results reported indicate that stem cell differentiation was well controlled in these patients. No adverse safety signals were detected.

Anatomic evidence of successful stem cell derived RPE transplantation was observed clinically and with high resolution imaging technology in the patient with SMD. This evidence included increasing pigmentation at the level of RPE, within the area of the transplant, beginning one week after transplantation and throughout the follow-up period. Transplanted stem cell derived RPE appeared to engraft in the proper location and assume normal RPE morphology. Engraftment and increasing pigmentation were not detected in the dry AMD patient. However, both patients showed some visual improvement at the four month follow-up period.

Measuring visual improvement in patients with very low vision is difficult, and no regulatory consensus exists regarding on how best to measure visual changes in these patients. As reported in *The Lancet*, the visual acuity of the Stargardt's patient improved from hand motions only to 20/800 vision. Before treatment, the patient was unable to read any letter on

the ETDRS visual acuity chart. However, by two weeks post-transplantation, she was able to start reading letters, which improved to five letters at one to three months in the treated eye.

“It has been over a decade since the discovery of human embryonic stem cells,” said Robert Lanza, M.D., chief scientific officer of ACT, and co-senior author of the paper. “This is the first report of hESC-derived cells transplanted into patients, and the safety and engraftment data to date look very encouraging. Although several new drugs are available for the treatment of the wet type of AMD, no proven treatments currently exist for either dry AMD or Stargardt’s disease. Despite the progressive nature of these conditions, the vision of both patients appears to have improved after transplantation of the cells, even at the lowest dosage. This is particularly important, since the ultimate goal of this therapy will be to treat patients earlier in the course of the disease where more significant results might potentially be expected. We would like to thank the patients for their willingness to participate in these safety studies. It has provided the scientific community with important data and experience that will help advance efforts in the regenerative medicine field.”

Human embryonic stem cells can provide a superior source of replacement tissue by producing an unlimited number of healthy “young” cells with potentially reduced immunogenicity. The eye is an immune privileged site due to the protection of the subretinal space by a blood-ocular barrier, and as a result only low and transient doses of immunosuppression were used. No signs of rejection or inflammation were observed in either patient, and doctors will continue to monitor both patients.

“We are extremely pleased with these first clinical results from our ongoing studies to determine the safety and tolerability of subretinal transplantation of hESC-derived RPE cells,” said Gary Rabin, chairman and CEO of ACT. “This represents an important milestone not only for ACT and UCLA’s Jules Stein Eye Institute but also for the field of regenerative medicine. The publication of these data in *The Lancet* demonstrates their quality and importance. We would like to thank the team, patients and principal investigator for their contributions to this study which have resulted in this outstanding publication. The data underscore the potential of stem cell therapies and regenerative medicine to realize the possibility repairing or replacing tissues damaged from disease. We are looking forward to the continuation of our clinical programs and the generation of additional data.”

The hESC-derived RPE cells underwent extensive safety studies prior to transplantation. The cells were confirmed to be free of animal and human pathogens, and a high sensitivity assay was performed to rule out the presence of any undifferentiated hESCs in the final product, a risk factor for tumor formation. Controlled hESC differentiation resulted in near-100 percent pure RPE. A central feature of hESCs is that the stage of *in vitro* differentiation can be controlled to maximize survival and functionality. The data here show that the extent of RPE maturity and pigmentation may dramatically impact subsequent attachment and growth of the cells after transplantation.

“It is an honor to initiate the translational research process as we begin to take stem cell biology out of the laboratory and into the operating room,” said Steven Schwartz, M.D., Ahmanson Professor of Ophthalmology at the David Geffen School of Medicine at UCLA and retina division chief at UCLA’s Jules Stein Eye Institute, principal investigator of the

study and author of the publication. “The scientific and regulatory teams, as well as the leadership at ACT have been exemplary. Recognizing that we are reporting positive preliminary safety data, and a functional signal that there may be a biological benefit to patients in terms of visual increase, makes this is an exciting time for ophthalmology and regenerative medicine.”

Both trials are prospective, open-label studies designed to determine the safety and tolerability of hESC-derived RPE cells following sub-retinal transplantation into patients with SMD and dry AMD at 12 months, the studies’ primary endpoint. Each trial will enroll 12 patients each, with cohorts of three patients each in an ascending dosage format. Both the SMD and dry AMD patient had subretinal transplantation of the smallest dose (50,000 cells) of fully-differentiated RPE cells derived from hESCs. In addition to the two clinical trials in the U.S., the company has obtained clearance from the U.K. Medicines and Healthcare products Regulatory Agency (MHRA) to begin treating patients as part of a Phase 1/2 clinical trial for SMD. Patient enrollment has begun and the first patient was treated at Moorfields Eye Hospital in London last Friday.

The paper’s other authors are Jean-Pierre Hubschman, Gad Heilwell, Valentina Franco-Cardenas, Carolyn K. Pan, and Rosaleen M Ostrick at UCLA and the Jules Stein Institute; and Edmund Mickunas, Roger Gay, and Irina Klimanskaya at ACT.

About Advanced Cell Technology, Inc.

Advanced Cell Technology, Inc. is a biotechnology company applying cellular technology in the field of regenerative medicine. For more information, visit <http://www.advancedcell.com>

About Jules Stein Eye Institute

The Jules Stein Eye Institute at UCLA is focused on teaching, research and patient care. For more information, visit <http://www.jsei.org/>

Forward-Looking Statements

Statements in this news release regarding future financial and operating results, future growth in research and development programs, potential applications of our technology, opportunities for the company and any other statements about the future expectations, beliefs, goals, plans, or prospects expressed by management constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Any statements that are not statements of historical fact (including statements containing the words “will,” “believes,” “plans,” “anticipates,” “expects,” “estimates,” and similar expressions) should also be considered to be forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from those indicated by such forward-looking statements, including: limited operating history, need for future capital, risks inherent in the development and commercialization of potential products, protection of our intellectual property, and economic conditions generally. Additional information on potential factors that could affect our results and other risks and uncertainties are detailed from time to time in the company’s periodic reports, including the report on Form 10-K for the year ended December 31, 2010. Forward-looking statements are based on the beliefs, opinions, and expectations of the company’s management at the time they are made, and the company does not assume any obligation to update its forward-looking statements if those beliefs, opinions, expectations, or other circumstances should change. Forward-looking statements are based on the beliefs, opinions, and expectations of the company’s management at the time they are made, and the company does not assume any obligation to update its forward-looking statements if those beliefs, opinions, expectations, or other

circumstances should change. There can be no assurance that the Company's clinical trials will be successful.

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