

UAB first in US with cell-processing workstation

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The University of Alabama at Birmingham has taken a significant step toward making sophisticated cell therapy a part of patient care with its acquisition of the first cell-processing workstation (CPWS) from SANYO North America Corporation (SANYO) in the United States.

Richard Marchase, Ph.D., vice president for Research and Economic Development at UAB, says "UAB has a rich history of breaking ground in the [cell-therapy](#) arena. We are thrilled that we were able to be the first in the United States to use SANYO's CPWS. This will add to our world-class abilities to translate basic science into clinical medicine."

"The CPWS puts us beyond the state-of-the-art for cell manufacturing," says Larry Lamb, Ph.D., associate professor of medicine and pediatrics in the UAB School of Medicine and director of UAB's Cell Therapy Lab.

The CPWS, a piece of equipment about the size of a small car, contains all the necessary equipment required to manufacture cells for cell therapy in a sterile environment. It is, Lamb says, "like a clean room in a box. It provides bio-containment that's ideal for keeping a cell product sterile and stable, which is especially important if the cells need to be cultured for a long period of time or require several manipulations."

A major project put to use in the CPWS will be the manufacturing of induced pluripotent stem (iPS) cells for curing sickle-cell disease. In 2007 Tim Townes, Ph.D., published in the journal Science a paper

outlining how his group took [skin cells](#) from sickle cell mice, transformed them into iPS cells, replaced the [defective gene](#) with a normal gene, then manufactured [blood cells](#) that, when placed back into the mice, cured them of the disease.

"The CPWS is the tool that allows us to translate basic science into clinical medicine as safely as possible," says Townes, professor and chair of UAB's Department of Biochemistry and [Molecular Genetics](#) and Director of the UAB Stem Cell Institute.

UAB sees perhaps the largest population of patients with sickle-cell disease in the world, more than 1,500 adults and children. Townes and his colleagues have perfected the process of turning human skin cells from sickle cell patients into iPS cells, and, in vitro, correcting defective genes. Once FDA approval is secured, the CPWS will enable his lab to actually follow through and transplant the corrected cells back into patients and cure the disease.

"Everything we now do in the lab we'll do in the CPWS," says Townes. "We could do it in a clean room, but it would not be as safe as doing it with the CPWS."

UAB also has a long-standing project focused on the use gamma delta T cells, a small component of the immune system, as treatment for various cancers. Lamb's basic research has shown these cells, when present in large numbers, will increase survival for patients with leukaemia. Another project will include work by Fred Goldman, M.D, professor of pediatrics at UAB and director of the Lowder Blood and Marrow Transplant Program at the Children's Hospital of Alabama, using iPS [cells](#) for dyskeratosis and other non-malignant blood disorders.

According to SANYO, the CPWS is considered the industry's first integrated, stand-alone solution for good manufacturing practice-

compliant processing and manufacture of regenerative stem cell and cell therapies for research applications. The workstation provides the required class-100 aseptic environment in a compact footprint and at a lower cost than a traditional cleanroom. The CPWS installed at UAB is a positive pressure system.

Marchase says the CPWS will enable the university to expand its biotechnology portfolio with other institutions and with private industry.

Christine Stannard, SANYO's vice president of the Biomedical Solutions Division, says, "In order for the cell therapy market to grow, research of stem cell and cell therapies will become a critical step, and SANYO is providing a practical solution for biotech and pharmaceutical customers to advance their research."

"UAB will have the latest technology available," Stannard says.

"The ability to change the entire system in 90 minutes permits multiple cell products to be produced in a single CPWS," says Lamb. "The Cell Therapy Laboratory and the UAB Stem Cell Institute envision a variety of therapies that can be derived from iPSc. We anticipate that the CPWS will serve this need well into the future."

Provided by University of Alabama at Birmingham

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