

## OKLAHOMA BLOOD INSTITUTE

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### Oklahoma Blood Institute pioneers 'donor driven' blood-based cellular therapies

In a room filled with blood donors at the Oklahoma Blood Institute's (OBI) donation center, Jennifer Chain, Ph.D., pronounces some words that don't easily roll off the tongue. Allogeneic. Autologous. Apheresis.

Chain's audience includes me and a pair of colleagues from the Oklahoma Center for the Advancement of Science and Technology (OCAST). We are visiting OBI to learn about its cellular therapy program in which it is developing cell-based products for research and clinical use.

We learn that allogeneic is a blood donation from one person that can be used in different individuals. Autologous is a self-donation from one person for future use by that individual, say, for an upcoming surgery. And apheresis is a process in which a donor's blood components are separated by a centrifuge to collect platelets and plasma.

Along with Chain, Charles Mooney, OBI's Vice President for Quality Management and New Business Ventures explains the terminology to us.

"Most cell therapy drugs start out as autologous, where you are donating your own blood for the drug that is going to be made," Mooney said. "The goal is for them to be allogeneic-based so that somebody would be able to donate cells and a draw can be made from it just like a unit of blood."

It all begins at the OBI donor center and the hundreds of thousands of people who donate blood annually.

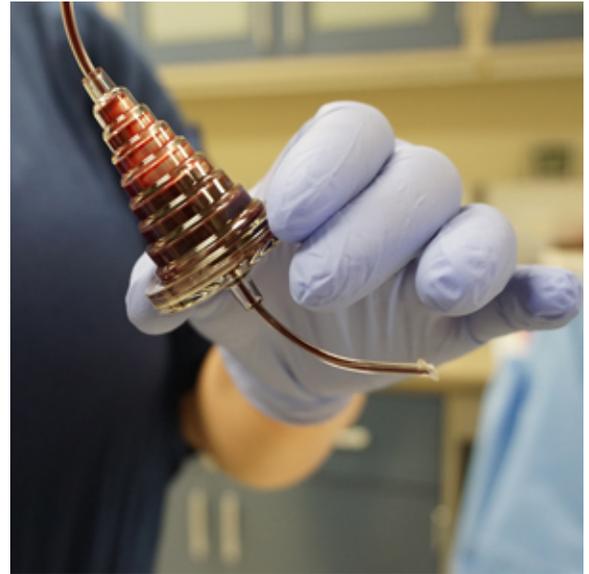
As OBI's Science Officer for Cellular Therapies, Chain is developing a process to standardize the way that white blood cells are collected, isolated and stored so that it is compliant with FDA regulations.

Chain holds up a small, clear-plastic vial that contains blood collected during the apheresis process. Normally, this vial, called an LRS chamber, is discarded along with the cells inside when the separation process is completed.

"There can be as many as a billion to 3 billion white cells in this LRS chamber," Chain said. "We can harvest those out of the LRS chamber and study their properties. Eventually, we want to use those cells to develop allogeneic therapies."

Chain is an immunologist who earned her Ph.D. at the University of Oklahoma Health Sciences Center. Her career took her to Colorado for a post-doctoral fellowship before she returned to Oklahoma. After working a short time for a company that does autoimmune diagnostic testing, she formed her own consulting company, which brought her to the blood institute.

Now she divides her time between research in her OBI laboratory and writing research grant proposals to support the work into the future.



“We see the future in donor-derived therapies for autoimmune diseases and cancers,” Chain said. “So, one person can donate a product or cells and then it can be used to develop a therapy that goes into another person.”

The blood institute is partnering with some of its counterparts nationwide to ensure the process is standardized.

It’s all about providing cell-based products on a scale that manufacturers can count on for widespread therapy use. So, OBI and blood collection agencies in Dallas, Florida and Illinois have formed an alliance to do just that.

“We are going to align our work together so we have one set of standard operating procedures and validations so we begin to get some capacity,” Mooney said. “So a drug manufacturer can say, ‘OK, I can use this entity right here and know that I’ve got a way to expand.’ ”

OBI has created an initiative called BioLinked in which it asks every blood donor if he or she would like to participate in research. It has built a database of 5,000 people who have said ‘yes’ to research participation.

However, many hurdles must be cleared before donor-derived therapies can become FDA-approved.

“Some of the hurdles would be understanding FDA regulations, getting the cells out of the LRS chamber in a way that is compliant with those regulations and preserves their properties that would make a good therapy,” Chain said. “We’re in the development phase.”

Another hurdle is that of funding to support the research. Chain is writing grant applications to a variety of private and public funders, including OCAST and its Oklahoma Applied Research Support program.

And she’s looking for research partnerships.

“I’m not just trying to connect with OCAST to apply for grants, but also to get partnerships going so other people who apply for OCAST grants can see what OBI can offer them,” she said.

There is a bottom line to the cell therapy research that advances the blood institute’s mission, Chain said.

“We believe in being good stewards of the blood that people give to us,” she said. “It’s really important to us as an organization to use every part of a blood donation to its full capacity.”

[Read the article in the 9-11-18 Oklahoman](#)

[Watch the video](#)

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