2021 YEAR IN REVIEW

Cleveland Cord Blood CENTER

Save a cord. Save a life.

TAKING THE CORD BLOOD JOURNEY TO NEW LEVELS

In 2021, Cleveland Cord Blood Center (CCBC) contributions to the umbilical cord blood and cellular therapy fields rose to new levels, helping to support the exponential growth and advancement of lifesaving and health enhancing work by researchers and medical professionals around the globe.

With one of the most diverse, high quality cord blood inventories in the nation, CCBC's 2021 achievements included:

- The addition of Kaiser Permanente San Leandro Medical Center as our second California-based collections hospital. This sixth collection site expands the diversity and value of our cord blood inventory to help serve a more diverse range of patients.
- The Cleveland Cell Therapy Incubator's (CCTI) production and distribution programs extended Cleveland Cord Blood Center's expertise and resources to a broader community of researchers and developers – creating and expanding partnership and growth opportunities.
- Research scientists at our Research & Development Laboratory continue their advanced work in the development of umbilical cord-derived stem cell treatments for patients suffering from Parkinson's disease, diabetic retinopathy, graft versus host disease and wound healing.
- We continue to share our knowledge and experiences in cord blood banking, research and cellular therapy throughout the U.S. and globally with industry thought leaders, government agencies, the medical community and researchers.

Most importantly, we are grateful to the parents who so generously donate their babies' cord blood to our public bank, and to our staff, who worked tirelessly throughout the COVID-19 pandemic. It is through these contributions that the lifesaving and health enhancing cord blood journey is creating new avenues of healing and hope.

Marcie R. Finney, M.S., MBA
Executive Director

2021 in numbers

4,804 Cord blood units collected

32 Cord blood units distributed for transplant

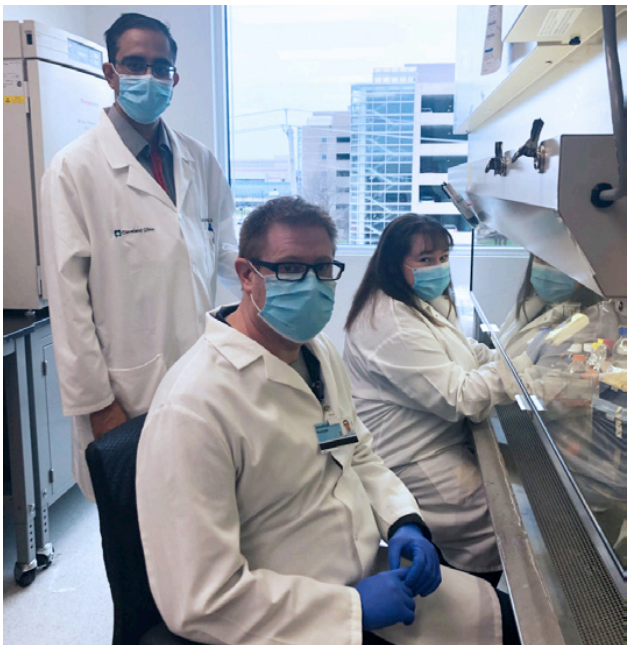
2,718 Cord blood units distributed for research

Utilization rate achieved an all-time high: **72%**

Digital communications NEW!
58% open rate among donors

SIGN UP to receive our enewsletter!

RESEARCH & DEVELOPMENT REACHES MAJOR GOALS



L-R: Satyabrata Sinha, Jonathan Kenyon, Heather Carey

In 2021, research scientists of the Cleveland Cord Blood Center's Research & Development Laboratory conducted proof-of-concept research in the development of umbilical cord-derived stem cell treatments to address unmet medical needs. Research projects explored treatments for patients with Parkinson's disease, graft versus host disease, diabetic retinopathy and those with wound healing issues, with the potential to broaden their applications in the future.

In a major development, Scientific Reports published CCBC's research into the expansion and manufacture of iTregulatory cells while maintaining the stability and unique properties that render them potent in cell therapy for the suppression of inflammatory conditions in autoimmune disorders. This project, with implications for inflammatory-related diseases such as graft versus host disease, diabetic retinopathy and macular degeneration, is currently in preclinical development. Lead researcher Jonathan Kenyon, Ph.D., Research Associate, is further exploring various conditions that may optimize the manufacture of iTreg cells during expansion.

Carey and Sinha Named Lead Researchers

The Research & Development Laboratory welcomed two new research associates, Heather Carey, Ph.D., and Satyabrata Sinha, Ph.D., to continue advancing the team's wound healing research and Parkinson's disease research respectively.

Carey's Wound Healing research is investigating how the topical application of umbilical cord blood monocytes and platelet rich plasma on a biomolecular scaffold enhances wound debridement, infection resolution, and new blood vessel formation – all processes required for healthy wound healing. By the end of 2021, Carey's research moved into its next phase, and she is currently testing this therapy in a diabetic wound healing model in mice for proof of concept and safety.

Satyabrata Sinha is leading CCBC's exploration of an innovative therapeutic approach using a dual stem cell therapy consisting of mesenchymal stem cells and hematopoietic stem cells derived from a single cord blood graft to treat the debilitating neurodegenerative Parkinson's disease.

"While we take individual responsibility for moving our research projects forward, using a team approach to collaborate, share ideas, critique experiments and review results is supporting the development of lifesaving therapies derived from cord blood," Kenyon said.

Donor Testimonial

SAMANTHA SALWASSER

HAPPY FOR THE CHANCE TO HELP OTHERS

Samantha Salwasser and her husband, Kyle, made the decision to donate their baby's cord blood while in the birthing unit of Kaiser Permanente San Leandro Medical Center. She didn't know at the time that she and her daughter, Sydney, would be making news with Sydney's delivery.

"In the delivery room for my daughter's birth this summer, I was surprised when a nurse coordinator entered the room and asked if I would be interested donating cord blood. I responded 'Definitely,'" Salwasser said.

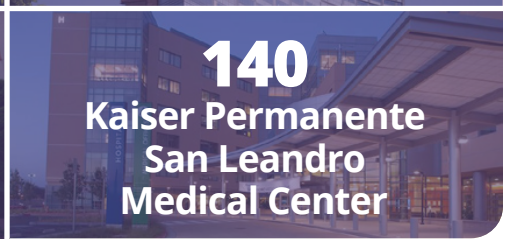
"Then they told me that I would be the very first to donate in the medical center's newly established cord blood collection program. I was quite excited."

According to Salwasser, the donation was very easy. "Two nurses explained the process. We completed some paperwork while we were waiting for our daughter's arrival, and they collected the cord blood unit after I delivered," Salwasser said.

Immediately after baby's arrival, Salwasser and Sydney were having their picture taken. The collection team brought them flowers. And in the weeks after, she participated in a Zoom meeting with the media covering the launch of Kaiser Permanente San Leandro Medical Center's cord blood collection program. "The Zoom meeting and a flower are now a part of Sydney's baby book," noted Salwasser. "It's a point of pride for our family and we can't wait to tell her when she gets older what a special baby she is.

"Donating your baby's cord blood is so easy – expecting moms and dads should feel comfortable making this decision when giving birth. I think about how we may be contributing to research through our cord blood donation. I hope we are saving someone's life," Salwasser concluded.

CORD BLOOD COLLECTIONS BY HOSPITAL



LIVING HER JOYFUL LIFE THROUGH CORD BLOOD TRANSPLANTATION

When Zach and Nina Miller's daughter, Josephine, experienced chronic motor disability that comes with cerebral palsy, the family researched promising therapeutic strategies that would help mitigate her disabilities. They hit many roadblocks until they contacted the Cleveland Cord Blood Center (CCBC) and spoke with Executive Director Marcie Finney, MS, MBA, about the possibility of a cord blood transplant and how that could positively impact Josephine's abilities.

"I spoke with Marcie and felt I was finally communicating with a person who truly cared and wanted to help," said Zach Miller. "Many organizations were unwilling to entertain the idea of mesenchymal stem cell infusion derived from umbilical cord blood, even though it had emerged as a promising therapeutic strategy."

The Cleveland Cord Blood Center helped the Millers enroll in a cord blood trial in South Korea in 2014. "Not only did Marcie listen to us, CCBC put a lot of time, resources and compassion into helping us achieve our goal," Miller said.

Today, Josephine is a strong nine year old. While she still has challenges, the cord blood transplant has helped her make great strides towards living a happy and fulfilling life. Go-cart driving? Amusement park rides? Boating? Josephine and her family are all in.

ABOUT 2021 CORD BLOOD RECIPIENTS

Recipients ranged in age from under 1 to 73

Race of units distributed for transplant:
69% Caucasian; 13% African American; 13% Multi-racial; 6% Asian

Units distributed: U.S – 80%; internationally – 20%

Units distributed have treated a variety of diseases including:

- Acute lymphoblastic leukemia (ALL)
- Acute myelogenous leukemia (AML)
- Non-Hodgkin's lymphoma
- Myelodysplastic/ myeloproliferative disorders
- Disorders of the immune system
- Inherited disorders of metabolism
- Severe aplastic anemia

NEW COLLECTION SITE EXPANDS DIVERSE COLLECTIONS

Cleveland Cord Blood Center's (CCBC) newest collection site at the Kaiser Permanente San Leandro Medical Center was selected to enhance the diversity of the CCBC cord blood inventory. From its launch in June 2021 through year-end, 140 umbilical cord blood units were collected and stored as a result of the generous and thoughtful parents who chose to donate their baby's umbilical cord blood.

The launch of the program has contributed to the overall diversity of CCBC's bank with the collection of cord blood units from those of African American/Black, Asian American/ Pacific Islander and Hispanic/Latino descent.

"The addition of Kaiser Permanente San Leandro Medical Center as our sixth collection site strengthens our ability to serve, both nationally and internationally, the unmet needs of minority groups and patients of mixed heritage," said Kathy Bobik-Kurz, Collection Site Manager. "It's all about saving and enriching lives through cord blood collections, research and supporting the advancement of cord blood cell therapy treatments, one birth at a time."

CLEVELAND CORD BLOOD CENTER 2008 TO 2021

12,787
Units banked for transplant

737
Cord blood units distributed for transplant

16,263
Cord blood units for research

17.6
Average cord blood units donated per day

21
Countries reached

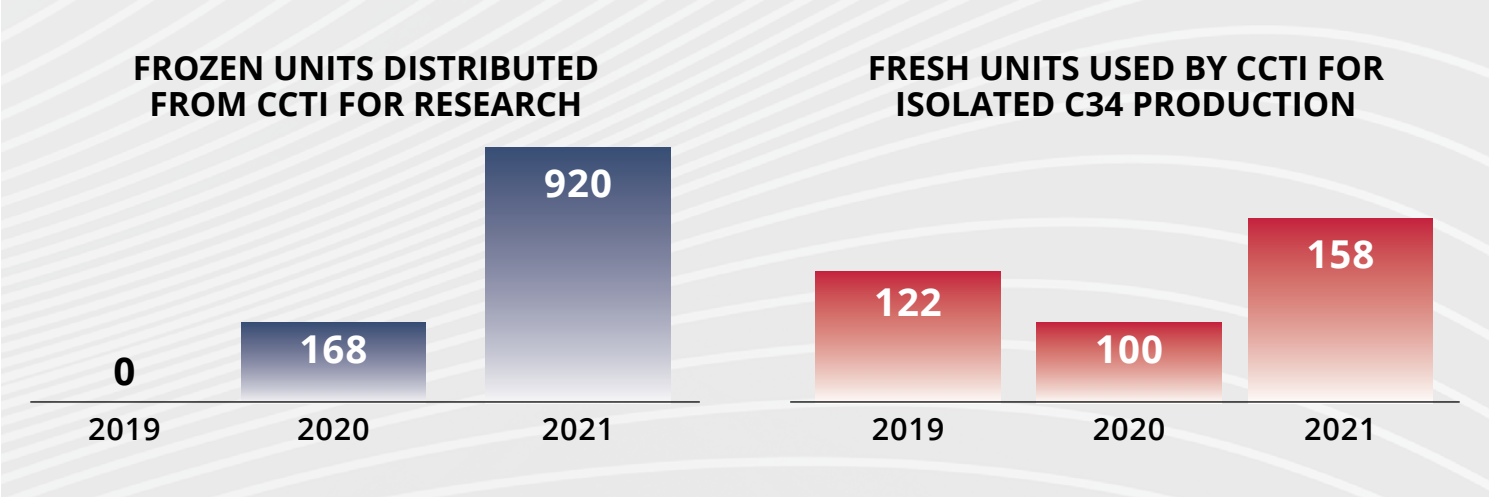
32
States reached

CCTI LAUNCHES NEW INITIATIVES

Established originally as a department within the Cleveland Cord Blood Center (CCBC), the Cleveland Cell Therapy Incubator (CCTI), is a separate social enterprise owned by the Cleveland Cord Blood Center. CCTI provides cord blood units and services in support of high-specialty programs for the developers of new cell therapy technologies and products using cord blood.

"CCTI is well into the execution phase of what I informally call Tier 1 business, that is, the supply of well-characterized frozen or fresh cord blood units that meet client specifications," said Wouter Van't Hof, Director of CCBC's Cord Blood Bank and Chief Executive Officer of CCTI. "We began 2021 with one partner and we've grown that to six partners, including academic laboratories, biotechnology organizations and cell therapy service providers. By the end of 2021, CCTI delivered more than 900 viable cord blood units to its partners."

"The distribution of these unused or underused cord blood units enables CCBC to make room for updated inventory mix through new cord blood collection and successfully creates a revenue stream for us," noted Van't Hof.

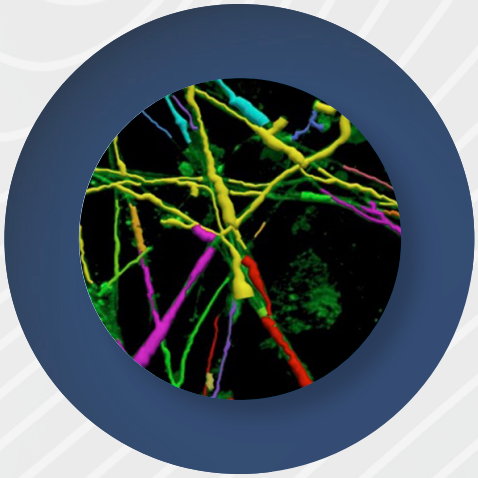


CCTI's Tier 2 strategic initiative also made significant strides in 2021. Results are promising for manufacturing runs of isolated CD34+ cells. "We received 158 cord blood units from CCBC," said Sara Shields, Associate Director of CCTI's laboratory, "and from those cord blood units, we produced roughly 200 vials of isolated CD34+ stem cells." These cells are cryogenically frozen and stored in the vapor phase of liquid nitrogen and then used by research clients.

"We are using our cord blood knowledge for the manufacture of new clinical grade cell therapy products. Recently, CCTI was selected by a partner on the west coast to provide a production line to create and freeze specific immune cells derived from CD34+ hematopoietic stem cells in cord blood," said Van't Hof.

Execution of the contract included technology transfer through a visit to the client's west coast laboratories to view their operations and undergo training. "CCTI's own laboratory facilities have been enhanced with upgraded utilities and new equipment, so that we can move this initiative forward in 2022," said Shields.

"In some ways, we are still in the explorative phase of development in cell therapy. In the next two to five years, we foresee a variety of new opportunities aligned with the right combination of resources and capabilities relevant to the advancement of regenerative medicine," said Van't Hof.



WE NEED YOUR HELP

To contribute, contact:

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OUR MISSION, VISION, VALUES FOR A NEXT GENERATION OF LIFESAVING WORK

Mission: We are advancing umbilical cord blood cell therapy treatments: saving lives, enhancing health, and expanding knowledge one birth at a time.

Vision: A world in which cord blood therapies enhance quality of life for all.

Values: Quality. Collaboration. Innovation. Leadership. Compassion. Integrity.

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