Meet the 2020 finalists for the $1 million Sanford Lorraine Cross Award honoring innovation in medical science

Mark Denison, MD, of Vanderbilt University, Carl June, MD, of the University of Pennsylvania, and Michael Welsh, MD, of the University of Iowa, are finalists for the nation's largest award in medicine given by a health system, which uses rigorous machine learning in its selection process

SIOUX FALLS, S.D., September 29, 2020 – Sanford Health, the largest provider of rural healthcare in the country, today announced the finalists for the biennial Sanford Lorraine Cross Award which honors life-changing breakthroughs and innovations in medical science.

The 2020 finalists are:

Mark Denison, MD
Director of Pediatric Infectious Diseases
Principle Investigator (Denison Lab)
Departments of Pediatrics and Pathology, Vanderbilt University

Carl June, MD
Director of the Center for Cellular Immunotherapies
Perelman School of Medicine, University of Pennsylvania

Michael Welsh, MD
Investigator (Howard Hughes Medical Institute)
Director (Pappajohn Biomedical Institute)
Carver College of Medicine, University of Iowa

Sanford Health is the only health system in the country to award a $1 million prize for achievements in the medical sciences. A winner will be selected at a special ceremony in Sioux Falls, South Dakota on Tuesday, December 8, 2020.

While traditional awards in the medical sciences focus on the significance of the contribution of a researcher or clinician, the Sanford Lorraine Cross Award celebrates the role that the award candidate has played in bringing a new emerging transformative medical innovation across the finish line to patients, and their efforts in overcoming challenges, forging collaborations, and ensuring a successful outcome.

Finalists for the Sanford Lorraine Cross Award are determined through a rigorous selection process that uses machine learning to identify innovative areas of discovery and breakthrough science. The candidate selection is then focused on the areas with the most promising transformative potential for patients. An interdisciplinary scientific advisory board narrowed down the top areas of innovation. The individuals who have made the greatest contribution in these three areas are then identified as the finalists.

"Sanford Health has a long history of relentlessly challenging the status quo to improve health care," said Kelby Krabbenhoft, CEO, Sanford Health. "The Sanford Lorraine Cross Award honors someone pioneering that change with a medical breakthrough, innovation or treatment to transform global health. It starts with a $1 million prize, and it continues with a life-changing impact for us all."

The award is named after the Cross of Lorraine, a global symbol first chosen as emblematic for those who took action against disease in 1902 at the International Tuberculosis Congress in Berlin. In recent history, Sanford Health has used it to symbolize profound innovation and progress in the medical sciences and also includes the image in its own institutional logo.

The Sanford Lorraine Cross Award is supported in perpetuity through an endowment established by donors to the Sanford Health Foundation. Donors who invest $1 million or more are honored as members of the Founders Circle, a distinguished group celebrated for its visionary generosity. These individuals are united by their passion for creating a better tomorrow, inspiring future generations of courageous innovators, and leaving a legacy of health and healing.

The December awards event will be livestreamed on Sanford Health's social media channels on *Twitter*, *Facebook* and *YouTube*, and regularly covered on *Sanford Health News.*

Here's a closer look at the 2020 Lorraine Cross finalists:

Mark Denison, MD

Dr. Mark Denison of Vanderbilt University has studied coronaviruses since the 1980s. In 2007, his lab discovered that coronaviruses have a protein that acts as a powerful proofreader during replication, meaning that the virus can self-correct errors in its RNA sequence.

This makes coronaviruses difficult to treat, but Dr. Denison and his team theorized that if they could slip past the proofreaders, they could prevent the virus from growing. Through a partnership with Gilead Sciences, they discovered Remdesivir, a drug that can evade the proofreading system and terminate the growth, thus killing the virus.

Though Remdesivir was shelved after failed attempts to treat hepatitis and Ebola, it has experienced a rebirth during today's COVID-19 pandemic and is undergoing clinical trials for treatment.

Since the spark of COVID-19, Dr. Denison's story is the world's story. His work on Remdesivir has received coverage from *The New Yorker*, *CNN*, *The New York Times* and others.

Without his early discovery of this proofreading mechanism, it is unlikely scientists would have been able to jump start therapeutic solutions for the current COVID-19 pandemic.

Carl June, MD

T cells are like the body's security guards, recognizing harmful intruders and triggering an immune response. Dr. Carl June of the University of Pennsylvania, working with colleague Dr. Bruce Levine, was able to reprogram selected T cells to recognize and destroy leukemia cancer cells.

This therapy is now named KYMRIAH by Novartis and is FDA-approved to treat acute lymphoblastic leukemia (ALL).

In 2010, June and Levine treated their first patient – a retired 65-year-old corrections officer named Bill Ludwig. After just a few infusions, Ludwig fell severely ill and spent a week in the ICU. Then, all of the sudden, he woke up and found the masses had disappeared.

A second patient, Emily Whitehead, had relapsed twice at the age of seven with an extremely aggressive form of leukemia. Like Ludwig, Whitehead got severely ill as the therapy tried to rid her of her cancer. However, this time Dr. June recalled an arthritis drug (from his daughter's struggle with juvenile arthritis) that could manage her side effects.

The story of Emma Whitehead was featured in a 2012 article in the *New York Times* and covered in *Forbes*, *PARENTS* Magazine and the PBS documentary "Cancer: The Emperor of All Maladies."

Michael Welsh, MD

Dr. Michael Welsh is a pulmonary physician who wanted to know how human airways work, particularly how salt ions move across the airway wall. This led him to study cystic fibrosis (CF), an inherited disease that causes lifelong vulnerability to destructive lung infections and an early death.

He discovered that the CFTR gene instructs the cell to make a channel for chloride. This was a monumental breakthrough because it linked the genetics and the lung infections. Importantly, it also clearly identified the target that needed repair.

He then discovered ways that different inherited mutations in the CFTR gene disrupt the chloride channel. That work provided the blueprint that has continued to guide therapeutic development. He demonstrated that the common CF mutation could be corrected in the lab, a discovery that ignited CF drug development and provided the confidence, knowledge and tools that ensured success. His work has been widely covered, including in the *The New York Times.*

The exciting advances arising from Dr. Welsh's research have dramatically changed the lives of people with CF. Today, 90% of CF patients have a highly effective therapy. His discoveries were instrumental in a recent finding, published with colleagues in the March 2019 journal Nature, that an approved drug normally used to treat fungal infections could also do the job of the CFTR channel. While additional treatments will also be developed, the fundamental properties required to treat the defect remain those defined by the pioneering work of Welsh.

About Sanford Health
Sanford Health, one of the largest health systems in the United States, is dedicated to the integrated delivery of health care, genomic medicine, senior care and services, global clinics, research and affordable insurance. Headquartered in Sioux Falls, South Dakota, the organization includes 46 hospitals, 1,400 physicians and more than 200 Good Samaritan Society senior care locations in 26 states and 10 countries. Learn more about Sanford Health's transformative work to improve the human condition at sanfordhealth.org or Sanford Health News.

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