

Welcome to the Biannual Bulletin from the Center for Addiction Research! The biannual bulletin contains news stories and summaries provided by CAR members about the great work they are doing. Thank you to those who shared stories for this edition! To have your work included in the next issue, coming in late July 2022, please send a brief summary/story accompanied by pictures or graphics (if available) to Jen Rowe (roweji@ucmail.uc.edu) any time prior to July 15th. Thank you.

## CAR Biannual Bulletin

January 2022

### Member Research Updates

**2022 Next Bulletin Release Dates:**  
- Late July

**2022 Deadline for Submitting Stories:**  
- July 15th

**Save the Dates! June 15, July 20, and August 17, 2022**  
**Center for Addiction Research Summer Speaker Series Returns**  
**Hosted by: Urban Health Pathway of Next Lives Here**

### Researcher seeks FDA approval for anti-cocaine antibody trials



The unique approach to treating cocaine addiction by **Andrew Norman, PhD**, is showing promise and has caught the attention of Ohio Lt. Gov. Jon Husted.

Norman, a professor in the Department of Pharmacology and Systems Physiology, is seeking Food and Drug Administration approval to proceed with first-in-human trials for his approach to treat cocaine addiction. While treatments have been developed to treat other addictions including alcohol, nicotine and opioids, a treatment for cocaine addiction has eluded scientists.

“There’s been a failure to find a treatment for cocaine abuse for more than 50 years despite the fact we know everything about the pharmacology of cocaine,” says Norman. “Clearly there’s something we don’t understand, some knowledge gap.”

More than 20 years of research funded by the National Institute on Drug Abuse, however, has led Norman to contend cocaine acts on parts of the brain that control stereotypical behavior, or repetition of habits. Thus, addicts don’t continue to take cocaine because they enjoy it. Rather, cocaine induces that repetitive behavior in users. Norman’s theory could help explain why attempts to treat cocaine addiction by targeting dopamine systems, which regulate pleasure, have been unsuccessful.

Taking a different approach, Norman and his team at UC and Cincinnati Children’s have developed a human-made protein that acts like a regular antibody in the immune system, called a monoclonal antibody, in an effort to treat cocaine addiction. The antibody binds to cocaine and prevents it from entering the brain. The aim is to decrease the probability of relapse by managing the effects of the drug.

“The complex of the antibody and cocaine is too large to get across the blood-brain barrier so it can’t get into the brain,” Norman said.

With the help of UC’s Office of Innovation, Norman has secured multiple patents for his research, and his technology is available for licensing

through the office's Tech Transfer team. Norman also has submitted an investigational new drug application to the FDA to get permission to proceed to first-in-human clinical trials that would test the antibody's safety in humans.

Husted invited Norman to present his findings last month at PITCH X: From Lab to Market, a series of short talks on a virtual stage that allows faculty at Ohio universities to share research that is being developed for commercialization.

[Click this link to watch Dr. Norman's PITCH X talk](#)

Read a similar story in UC News written by Kyle Shaner:

[https://www.uc.edu/news/articles/2021/uc-professor-develops-novel-approach-to-combat-addiction.html?utm\\_source=cerkl&utm\\_medium=email&utm\\_campaign=newsletter-01122022&cerkl\\_id=15074983&cerkl\\_ue=kCmEVekqxqlzXeJIOOo2ISPvv1zEJ7bNfaODjo9RtMQ%253D](https://www.uc.edu/news/articles/2021/uc-professor-develops-novel-approach-to-combat-addiction.html?utm_source=cerkl&utm_medium=email&utm_campaign=newsletter-01122022&cerkl_id=15074983&cerkl_ue=kCmEVekqxqlzXeJIOOo2ISPvv1zEJ7bNfaODjo9RtMQ%253D)

## Research stories behind the funds: Dr. Jennifer Brown



Associate Professor [Jennifer Brown, Ph.D.](#) is about as busy as they come. Along with teaching courses in psychology and mentoring undergraduate, graduate and medical student researchers, she serves as director of Clinical Training and co-director of Graduate Studies in the Department of Psychology. She also is an associate professor in the Department of Psychiatry and Behavioral Neuroscience.

Oh, and then there are her 11 active sponsored research projects, all associated with addressing health disparities in populations vulnerable to substance use, reproductive health issues and infectious diseases.

When Brown came to UC in 2015, she'd been working with populations living with HIV or at risk for HIV domestically and globally for several years. Her work had revealed gaps in patient care related to broader health issues, such as pregnancy prevention and substance use.

A Dayton-area native, Brown says taking the job at UC felt like a homecoming. UC has embraced and encouraged her work, including a partnership with Michael Lyons, M.D., an associate professor and director of the Early Intervention Program for Emergency Medicine at the UC College of Medicine. Together, the two have several active grants addressing the intersections between substance use, Hepatitis C Virus and HIV and the implementation of intervention approaches to improve outcomes in these populations.

One such project is the HEALing Communities Study, which is testing an integrated community-based approach to the opioid crisis across the nation, with a goal to decrease opioid overdose deaths in targeted areas by 40 percent in three years. The project is being directed by UC's Dr. T. John Winhusen. Brown and Lyons were chosen to oversee Ohio's effort to implement evidence-based practices and led the effort to bring in a \$15 million grant from the National Institute on Drug Abuse, a part of the National Institutes of Health supporting the effort.

Brown says she is grateful for the support for all of her ongoing projects, including an alcohol reduction intervention study with Russian women living with HIV and Hepatitis C and sexual health interventions for adolescent youth in South Africa, funded by the National Institutes of Health and the Anna and Harold W. Huffman Foundation, respectively.

The gift from the Huffman Foundation continues work that Brown started years ago in South Africa. Brown and her team are using what's known as Cultural Consensus Modeling to collect cultural perspectives

of South African adolescents on their understanding of sexual health and sexual health issues to inform future intervention and education. "At the core, I am really interested in how we develop culturally tailored interventions that improve health outcomes," Brown says. "But developing them is not enough—you also have to think about how they can be implemented in the real world."

Office of Research featuring Dr. Jennifer Brown

<https://research.uc.edu/news/2021/12/07/research-stories-behind-the-funds>

## Why Do Some Babies With Pre-Birth Drug Exposure Have Delayed Development? New Study Could Find An Answer.



**>> The story below was written by Terry DeMio in The Cincinnati Enquirer**

Christa Alvarez takes her son, Carl, 2, to a therapist because he has a speech delay. Carl was exposed to a medication his mother was prescribed for opioid use disorder while she was pregnant. But Carl's therapists and doctors don't know whether his speech delay is related to his pre-birth opioid exposure, says Alvarez, who lives in the Columbus suburb of Canal Winchester. "They keep telling me there's just not enough research on it and no way to really know."

An upcoming, groundbreaking national study that will include about 400 Cincinnati-area babies as they grow into children could help provide such answers – paving the way for new treatments or approaches for children with pre-birth exposures to medications or illicit drugs.

The Healthy Brain and Child Development Study, funded by the National Institutes of Health, is expected to get underway in the summer of 2022. It will include some babies exposed in utero to medications or other drugs, and some who were not. Specialists will periodically check the children's brain growth from birth to age 10 to see how they change. But the study won't focus exclusively on the children's exposure or lack of exposure to substances, said Dr. Stephanie Merhar, a lead researcher, from Cincinnati Children's Hospital Medical Center. It will also look at other variables that can impact a child's brain. "This study will be one of the largest and most detailed studies of early brain development in general that has been conducted in the US," said Merhar, a neonatologist attending doctor at Cincinnati Children's Perinatal Institute. "And certainly, one of the most detailed studies on the potential effects of substances during pregnancy on early brain development."

### **Study will examine several factors in brain development**

Merhar and Jennifer Vannest, an associate professor of communication sciences and disorders at the University of Cincinnati College of Allied Health will lead the Cincinnati area's part of the study, which is expected to include around 7,500 children across the country. Vannest, who has a Ph.D. in linguistics and postdoctoral training as a cognitive neuroscientist, said the variables outside of the drug exposure will help tell the story behind the children's brain development. "We will look at environmental exposures: economic, parental stress, parenting style, substance use disorder (in the family), financial stability, housing stability, enrichment environment, food insecurity and more." She said that even children's exposures to enrichment programs will be observed. "Most (studies) have not been able to control for all the other environmental factors," Merhar said.

### **Moms welcome 'landmark research'**

Several moms in Ohio and Kentucky whose children were exposed to opioids in utero welcome the research.

"We often get scared into thinking things are solely because of our meds,

when in fact it is typically other reasons," said Nathalie Nicole Hess of Independence, Kentucky. Her daughter, Emalynn, who is 5, has experienced no developmental delays though Hess took methadone medication for an opioid use disorder while she was pregnant. "I'm really glad to see that the study doesn't just revolve around medication-assisted treatment but all factors that could play a role in brain development," Hess said. "It just breaks my heart to see so many moms beat themselves up because they are treated like they are bad people and harmed their kids," she said, "when in reality, they did exactly what they were supposed to do and did the best thing possible for their babies and themselves."

Medication-assisted treatment is best practice for people with opioid use disorder, including pregnant women, for whom it may "ultimately improve outcomes for them and their babies," the U.S. Food and Drug Administration notes.

Kim Duncan of Erlanger said she was taking methadone medication for addiction while pregnant with her daughter, Brooklynn Michelle, who was born Aug. 26, 2018. She wanted to learn whatever she could about what her baby might face, she said, but she got few answers. "I wish I would've known more when I was pregnant and when she was a newborn," said Duncan. "And I wish there (were) more studies about the children when they are bigger – the long-term effects of medication-assisted treatment on them." Brooklynn, now 3, experienced opioid dependence at birth, her mother said, but her symptoms were not severe and she did not require medication for withdrawal. The little girl has had no developmental delays or behavioral issues, Duncan said.

Merhar has been at the forefront of research on babies who've had neonatal exposure to opioids. "I still don't know if opioids have any effect on brain development long term," she said. "We just don't know."

Could best medicine for newborns with opioid exposure be mom? Cincinnati hospitals try new approach. The researchers will do periodic MRIs and electroencephalograms (which test brain waves) to help detect changes in the brain, Vannest said. "Changes to the brain can be really subtle," she said. "Kids with prenatal exposures tend not to have gross brain injuries (or) traumatic disruptions."

Alvarez, who lives with her husband, Josh, and their two children, said she loves the idea of the upcoming research. "I think it's long overdue," she said. Her babies both had exposure to Subutex, the opioid medication she was prescribed while she was pregnant. Both babies were born without dependence problems, she said. Carl's speech delay, along with some other mild developmental delays, became apparent later, Alvarez said, adding his doctors don't know why he is experiencing the difficulties. "They've been hesitant to say whether his delays are associated with Subutex or not."

Merhar said the upcoming study said can fairly be described as landmark research. The study will include those who've been exposed in utero to drugs other than opioids, too, such as amphetamines and marijuana, she said.

The National Institutes of Health describes the brain development study as a way to help address "a critical gap in our knowledge of how environmental exposures, especially opioid and other drug use, affect infant and child brain development." "The things we find out from the study," said Merhar, "could very well change the way we treat in the future."

## UC health services researcher Ashley Merianos cited as expert on teen vaping habits. Fewer Teens Appear to Be Vaping. How Schools Can Keep the Momentum



A handful of studies suggest that adolescent e-cigarette use dropped substantially during the pandemic. That's good news for educators who were struggling to fight back a rise in vaping among middle and high schoolers. But how can K-12 educators maintain that momentum and head off another upswing?

Prior to 2020, the number of teens vaping had been on an alarming rise—doubling between 2017 and 2019, according to a survey by [Monitoring the Future](#), which is funded by the federal government and administered by the University of Michigan. In that survey, 16 percent of 8th graders, 30 percent of 10th graders, and 35 percent of 12th graders reported vaping 2019.

Another annual survey of teens, the federal [National Youth Tobacco Survey](#), also found in 2019 that more than a quarter of teens vaped in the 30 days prior to taking the survey. Even for teens who didn't use e-cigarettes, vaping was still a part of their daily lives as they watched peers do it or were inundated with [images of vaping on social media](#), a 2019 survey from Common Sense Media found. This year, however, 11 percent of high school students and 2.8 percent of middle school students reported currently using e-cigarettes in the [National Youth Tobacco Survey](#). That marks a significant drop from peak use in 2019 and from 2020 when the survey found that nearly [20 percent of high schoolers and 5 percent of middle schoolers were vaping](#). The survey was conducted fully online this year for the first time in order to include students learning from home. Because of that change, the Centers for Disease Control and Prevention cautioned that this year's results shouldn't be used as a one-to-one comparison with previous years. That said, some outside experts still see promise in these findings. Dr. Nance Rigotti of Harvard University, who was not involved in the CDC's research, told the [Associated Press](#): "They found a dramatic drop from last year, and it's hard to imagine that doesn't represent a real decrease in use among high school and middle school students."

While the 2021 data show an encouraging decline, said Ashley Merianos, an associate professor at the University of Cincinnati who specializes in adolescent substance use prevention, education, and counseling, there are still reasons for concern. "The frequency of e-cigarette use patterns are less encouraging," she said.

Among [high schoolers who said they currently use e-cigarettes](#), 43 percent said they vaped as many as 20 out of the past 30 days and 1 in 4 reported vaping daily, which Merianos said are similar to 2020 trends. "Therefore, e-cigarette cessation efforts are critically needed to decrease high frequency use patterns among youth e-cigarette users," she said.

Other studies have also found declines in e-cigarette use among adolescents. A national survey of 13- to 24-year-olds found that over half of them [changed their vaping habits in 2020](#)—35 percent reduced their nicotine use and 32 percent reported quitting altogether. [E-cigarette use among adolescents](#) in Northern California participating in a study by researchers from the University of California, San Francisco and Stanford University also dropped significantly in the latter part of 2019 and in early 2020. So, why the decline?

Stay at home orders and remote learning may have made it harder for students to obtain e-cigarettes and vape undetected. Another possibility is that messaging around the potential dangers of vaping are getting

through to adolescents. The 2020 Monitoring the Future survey of 8th, 10th, and 12th graders found that [adolescents' views of the dangers of vaping](#) had increased significantly in 2020, as did their disapproval of vaping nicotine. That same year the survey saw a leveling off of e-cigarette use.

These are all good signs, but still more than 2 million middle and high school students reported vaping in 2021, according to the National Youth Tobacco Survey. That behavior can have serious consequences for their health. There are toxic chemicals and metals in many e-cigarettes, and nicotine is far more concentrated in e-cigarettes than in traditional ones, which health experts worry will have long-term negative effects of on students' developing brains. Researchers from Stanford have found that teens who used [e-cigarettes were at greater risk of getting sick from the coronavirus](#), likely because vaping damaged their lungs. Other research has found that e-cigarette use can lead to smoking traditional cigarettes.

What can schools do to prevent students from vaping? “One crucial way schools can keep up the momentum of these declining trends is to continue to educate youth, their parents and families, and school personnel on the harmful health effects these products can have on youth development,” said Merianos.

Here are tips that experts and school leaders have shared with Education Week on how to educate school communities on the harms of e-cigarettes, prevent students from vaping, and intervene for students who already do.

**Don't rely on scare tactics or discipline.** Over-the-top scare tactics and strict disciplinary measures without an education component don't work. Instead of being scared straight, students are more likely to stop taking educators seriously. Some districts have found that even suspending students over vaping on campus didn't seem to effect students' behavior—and there is the risk that students may vape even more when they are out of school and unsupervised.

**Take an educational approach.** Education programs for students shouldn't just focus on the dangers of vaping, but also on how students can spot slick marketing campaigns aimed at them. Some schools even recruit students to help convey these messages. School nurses are good resources for tailoring grade-level appropriate messages and materials for elementary, middle, and high school students.

**Educate the adults, too.** Educational efforts should also focus on parents and caregivers, as well as school-based personnel such as teachers, counselors, and nurses. For parents, informational letters explaining the prevalence of vaping are a good start, as parents may not be aware of the full scope of the issue. Educators should also encourage families to talk with children about the issue regularly, instead of just a one-off lecture. Teachers, school nurses, and school counselors can all benefit from professional development that addresses current vaping trends, the health effects of vaping, and guidelines for referring students for treatment.

**Have clear policies and plans.** Schools must have clear policies about e-cigarette use on campus and the consequences for violating those policies. Policies should be shared with students and families. Schools should also outline a plan for screening and addressing students who are already addicted to e-cigarettes. This may mean developing their own programs or referring students to external programs or treatment centers.

**Create a community-wide approach.** In Colorado, at the peak of national teen e-cigarette use, the Boulder Valley School District developed a coordinated response to its student vaping problem. It included education programs for students; informational parent nights with local medical experts and law enforcement; encouraging family doctors to ask screening questions during regular check-up appointments; and backing a series of citywide policies aimed at cutting back on e-cigarette use.

“There are freely available resources that schools can use,” said Merianos, such as free prevention materials—[like posters](#) and messages to [share on social media](#)—from the U.S. Food and Drug Administration. She also recommends lessons and activities for grades 6 through 12 [developed by the FDA and Scholastic](#). Schools and communities have become increasingly creative in how they approach this problem, including installing devices in bathrooms that detect vaping and, in the case of the city of Salem, Mass., even instituting an [e-cigarette buy-back program](#). Through a program launched in early 2020, students who turned in their e-cigarettes to the Teen Center based at Salem High School and participated in a four-part smoking cessation program got a \$50 gift card.

Finally, several school districts, from Boulder, Colo., to Los Angeles, to Peoria, Ill., have opted to raise the legal stakes over the vaping crisis by [filing lawsuits against the companies](#) that make, and the [stores that carry](#), e-cigarettes.

Access the article from Education Week linked below:

<https://www.edweek.org/leadership/fewer-teens-appear-to-be-vaping-how-schools-can-keep-the-momentum/2021/11>

## CAR Member Recognition

UC Office of Research annually recognizes the university’s top externally sponsored researchers. Among those being honored include the below members of the CAR. Congratulations!



T. John Winhusen, PhD



Jason Blackard, PhD



Michael Lyons, MD



Andrew Norman, PhD

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Dr. T. John Winhusen**

CAR Mission

To accelerate scientific progress in the prevention and treatment of substance use disorders and their consequences by fostering research collaborations across:

- UC departments, colleges, and centers including Cincinnati Children’s Hospital Medical Center

*Changing outcomes,  
saving lives through  
work on opioid,  
stimulant, cannabis,  
and alcohol use  
disorders*



- Local, regional, and state community and governmental partners
- Other academic institutions and industry

**The CAR includes three research concentrations (cores):**

- Addiction Treatment Development and Testing (ATT)
- Perinatal Addiction/Developmental-consequences (PAD)
- Population Health and Health Services (PHHS)

**Find out more about the CAR using the website link below:** <https://med.uc.edu/institutes/CAR/home>

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