Seizing the Moment
Transforming the Future of World Health

“In the midst of every crisis lies opportunity.”
- Albert Einstein

This is a defining moment...

This is a defining moment for smell and taste research. Amidst the COVID-19 pandemic, Monell brings its half-century legacy of groundbreaking discovery science in the chemical senses to the vanguard of the global research effort to understand the link between COVID-19 infection and loss of smell and taste.

Monell science is paving the way for our safe return to our lives and livelihoods as the pandemic evolves, and beyond to an even healthier future. We quickly identified and pursued opportunities for real-world innovation that move the field of chemosensory research forward. SCENTinel, Monell’s rapid, large-scale, symptom-based screening tool for new-onset loss of smell could soon become an integral part of population monitoring for safe return to schools, workplaces, and society at large.

But our work is far from complete. Scientists estimate that in COVID-19’s wake, more than nine million people worldwide will have long-term or permanent loss of smell and five million will permanently lose their sense of taste. Our mission to improve human health and well-being by better understanding taste, smell, and related senses has never been more relevant, or more urgent.

Other research underway at Monell may soon bring us a simple saliva test that will help doctors determine whether a patient’s fever is caused by a bacterial infection that will respond to antibiotics, or a viral one like COVID-19, that won’t. What we’re learning about insulin’s role in regenerating olfactory sensory neurons points a promising way toward a nasal spray to treat anosmia. And our collaborations with partners in industry and academia are putting Monell science to work to help companies deliver healthier products that meet consumers’ demands for appealing flavors and fragrances.

As we navigate the challenges and opportunities in our external environment, internally we welcome new leadership perspectives among our Board of Directors and International Advisory Council (IAC). Paul Herzan, Judith Wellington, PhD, and Angela Nwaneri, Esq., bring diverse expertise to the Board; and, Diego Restrepo, PhD, Pamela Silberman, and Kazushige Touhara, PhD, lend fresh perspectives from industry and academia to the IAC. On behalf of both governing and advisory bodies, thank you for joining us in realizing our vision where our discoveries promote early disease detection, prevention and treatment, and assure healthy function of the essential senses of smell and taste throughout life.

We dedicate this 2020 – 2021 Annual Report to long-time champion of the Monell Center, Louise Slade, PhD, colleague, friend, and board member, who sadly passed away on October 8, 2021.

Thank you for being part of our remarkable journey. Together, we are Seizing the Moment and transforming the future of world health.
In 2020, Monell boldly stepped to the forefront of the global COVID-19 pandemic response. Today, the Center is leading the way with real-time public health innovations that set the stage for a healthier and safer post-pandemic future.

In the early days of the pandemic, as the world retreated into the safety of quarantine, Monell researchers quickly mobilized with colleagues to understand the connection between SARS CoV-2 and the loss of smell and taste. This was a tantalizing question that Monell’s researchers – building on their half-century of excellence in chemosensory research – were eager to explore, and confident in their ability to deliver important contributions to pandemic response in the near term, which could have an enduring, practice-changing impact in the post-COVID future.

Monell Associate Director and President-elect of the Association for Chemosensory Sciences Danielle Reed, PhD, and Valentina Parma, PhD (then working at Temple University, now a Monell faculty member) were among the nine-member international leadership team of a worldwide research effort, the Global Consortium for Chemosensory Research (GCCR). This grassroots group of more than 500 interdisciplinary scientists, clinicians, and advocates from 50 countries – including several Monell colleagues – convened virtually to study loss of smell and taste as early-warning signs of COVID-19 infection. Together, they published the first findings in a rapidly growing body of research about smell and taste loss in COVID-19.

As Monell suspended human subject research to protect public health and safety, this important work advanced virtually. Cognitive psychologist Pam Dalton, PhD, launched a remote study investigating whether COVID-19 infection affects the ability to smell more severely than other respiratory viruses. Study participants received a set of scratch-and-sniff odor cards in the mail with instructions to perform an at-home smell test and report their results to Monell. Based on the gold-standard NIH Toolbox Odor ID Test, Dalton’s study, along with others, formed the basis of SCENTinel, Monell’s rapid, inexpensive COVID-19 diagnostic tool currently in testing.
On the Road to the New Normal

As the pandemic began to ebb in late summer of 2020, Monell put in place strict safety protocols, opened its doors, and began a gradual return to in-person human subject research. It was time to validate SCENTinel and gauge its potential for supporting safe return to workplaces, schools, and society at large.

Monell became part of a multi-institutional National Institutes of Health (NIH)-funded initiative called the Rapid Acceleration of Diagnostic Radical program (RADx). Through RADx, the NIH invested $107 million at 43 institutions across the country to support technologies like SCENTinel to combat the pandemic and address future viral disease outbreaks.

In a study earlier this year to see whether SCENTinel is a practical means of testing for smell loss that would be useful in COVID-19 screening, the Monell team gave SCENTinel to a group of people with self-reported smell loss (anosmic), average smell ability (normosmic), and other smell disorders. They found that SCENTinel was 92 percent accurate in discriminating normosmic individuals from those with smell loss, potentially from COVID-19 infection. While further validation is needed across various age groups, SCENTinel will be an important population-based screening tool during and beyond the pandemic.

Current diagnostic testing for COVID-19 infection by viral swab is somewhat impractical for large-scale population screening. The tests are relatively costly, results can take time to obtain, and they can include up to 37 percent false negatives. On the other hand, symptom-based screening methods, such as SCENTinel, are inexpensive, quick to administer and can be used for mass efforts, such as entries to schools, workplaces, and public venues.
Our Research Aims

Monell’s interdisciplinary chemosensory science integrates disease prevention and diagnosis, sensory nutrition, regeneration of the senses and digitizing smell and taste. Our goal is to accelerate the translation of basic science on taste and smell into real improvements in human health and well-being.
Attacking Loss of Smell and Taste at the Molecular Level

Olfaction is, essentially, a complex conversation of molecular signaling between the nose and the brain. This year brought important advances in understanding olfaction at the molecular level and tantalizing clues for regenerating olfactory sensory neurons and restoring smell loss.

Can Insulin Treat Smell Loss?

Researchers have long known that insulin plays an important role in the growth and regeneration of certain neurons that relay sensory information, such as vision, to our brains. Akihito Kuboki, MD, a postdoctoral fellow in the lab of cell physiologist Johannes Reisert, PhD, led a series of experiments that demonstrate a similar regenerative role for insulin in the sense of smell and also shed light on why people with diabetes often suffer from smell loss.

The research team induced diabetes in mice to reduce levels of circulating insulin reaching olfactory sensory neurons (OSNs) in the nasal cavity. Next, they injured OSNs, which have a unique ability to regenerate in mammals, including humans. The reduced insulin interfered with the regeneration of injured OSNs and impaired the animals’ sense of smell. They found the OSNs required insulin to regenerate, and also that the immature neurons are highly susceptible to insulin deprivation-induced cell death eight to 13 days after injury. By applying insulin to the regenerating OSNs during this critical window of time, researchers were able to restore a mouse’s sense of smell more quickly. What’s more, they found a similar regeneration-enhancing effect of insulin on OSNs even in nondiabetic mice.

The work, done in collaboration with researchers from Jikei University School of Medicine and the University of Tokyo, lays a promising foundation for developing an insulin intranasal spray that could be used to treat smell loss from various causes, including head trauma and viral infection.
Attacking Loss of Smell and Taste at the Molecular Level

Tracking Loss of Smell and COVID-19

Recent research has shown that sudden loss of smell is the best predictor of COVID-19 infection, compared to other symptoms. However, reports of prevalence vary from study to study and range from five percent to 98 percent.

Seeking to understand this vast variation and its implications for COVID testing and treatment, Monell Associate Director Danielle Reed, PhD, postdoctoral fellow Mackenzie E. Hannum, PhD, and colleagues at the National Institutes of Health and the University of California, Merced reviewed the growing body of COVID-19-related olfaction research. Specifically, they compared studies using objective direct measures – such as having patients smell and report on actual odorants – to subjective self-report studies, which include data gathered through patient questionnaires, interviews, or health records, and reflect a person’s experience. The team found that with direct measures, 77 percent of COVID-19 patients had smell loss versus 44 percent of self-report patients. The findings suggest that subjective methodologies underestimate the true prevalence of loss of smell, and a direct measure – such as Monell’s SCENTinel test – may be an effective screening method for early COVID-19 detection.

STANA – Anosmia’s Voice

What began as a conversation among a small group gathered in the home of Marjorie Rosner in 2019 to learn about Monell’s anosmia research, blossomed last December into North America’s first smell and taste patient advocacy group. STANA, the Smell and Taste Association of North America, provides a voice for people with smell and taste disorders, collaborates with healthcare professionals and research institutions such as Monell to find new treatments for those living with chemosensory disorders, advocates for expanded research, and builds awareness for smell and taste disorders. Katie Boateng, Pamela Silberman, and Marjorie Rosner – each of whom connected with Monell through their own experiences of smell loss – are STANA’s founders. Pamela Silberman also serves on Monell’s International Advisory Committee, bringing the patient voice to the heart of the Center’s work. Monell Vice President and Associate Director Nancy Rawson, PhD, and Director of Development Jenifer Trachtman serve as advisors to the group.
Linking Taste and Smell to Health and Disease

With the new Preti Research Core Facility for Analytical Chemistry, Monell researchers are advancing new technologies to monitor changes in body chemicals that signal disease - and develop powerful new diagnostic tools.

Deciphering the Chemical Signature of Fever

Close to three million Americans will acquire an antibiotic-resistant infection this year, according to the U.S. Centers for Disease Control and Prevention. This is due, in part, to doctors over-prescribing antibiotics to treat fever. What if we could develop a simple diagnostic test to quickly pinpoint the cause of fever – whether a bacterial pathogen likely to yield to antibiotics, or a virus, against which they are useless?

In January, Monell received a two-year, $890,000 grant from the Robert J. Kleberg, Jr. and Helen C. Kleberg Foundation to address this very question. Led by Monell chemical ecologist Bruce A. Kimball, PhD, the research team is taking the innovative approach of classifying fever-inducing diseases based on their distinctive signatures of volatile compounds in urine and saliva. In preliminary animal studies, the team found that viruses and gram-negative bacteria uniquely altered the pattern of airborne chemicals observed in urine. The volatile signals also distinguished gram-positive bacterial infection from gram-negative and viral infections.

With the Kleberg funding, the team will use human cell lines stimulated with specific bacterial and viral pathogens to identify and quantify volatile products. Working with colleagues at the Children’s Hospital of Philadelphia, researchers will then evaluate urine and saliva samples collected from febrile patients using these target biomarkers. Chemical and statistical analyses of the volatile metabolites in the samples will identify distinctive signatures for bacterial or viral disease agents. With this information, the team aims to develop an accurate, rapid, and low-cost diagnostic test, which would guide therapy and limit unnecessary prescription of antibiotics.
The George Preti Research Support Core for Analytical Chemistry

Humans are made up of approximately 25,000 genes, 400,000 or so proteins, and more than 40,000 lipids and other small metabolites. Understanding how these chemicals are regulated in healthy people - and go awry in injury or illness - is fundamental to advancing the work of the Monell Center. This is the focus of the newest research core facility.

Launched in 2021 with philanthropic gifts from James J. Albrecht, Gail Seygal and numerous other individuals, the Preti Core brings to life the legacy of the late George Preti, PhD, a world-renowned analytical chemist and expert on the chemistry of human body odors, whose scientific contributions over his 50-year research career were central to Monell's legacy of excellence as a global leader in groundbreaking chemosensory research.

Under the leadership of Core Director Bruce Kimball, PhD, and Senior Research Associate Michael P. Napolitano, PhD, the Preti Core extends the use of analytical chemistry across the entire Monell enterprise of researchers and collaborators. The Core is equipped with a state-of-the-art mass spectrometry facility, and provides research support and expertise in the analysis of small molecules, including volatiles, lipids, fatty acids and metabolites that stimulate taste, odor, and irritant receptors found throughout the body.

Mission StorySlam!

First Person Arts invited Monell’s Director of Development Jenifer Trachtman to join other members of Philadelphia’s nonprofit community to share a five-minute mission story on the theme of “What’s Next?” For her Mission StorySlam, Trachtman addressed how the COVID-19 pandemic has shed new light on the importance of smell and taste for understanding human health and well-being.

So, what’s next? The day when getting a smell test in your doctor’s office becomes as commonplace as checking your hearing, eyesight and blood pressure, thanks to SCENTinel, a new rapid smell test in development at Monell.

WATCH MONELL’S MISSION STORYSLAM
Sensory Nutrition for a Healthier World

We know that excess salt, sugar, and fat in our diet are significant risk factors that adversely impact health. We also know that removing one or more of these sensory drivers typically leads to rejection of products by consumers. Monell’s work in sensory nutrition has the potential to solve major challenges facing industry, creating solutions with real-world impact. With millions of people expected to sustain permanent loss of taste and smell after COVID-19 infection, the need is even more urgent.

Advancing our Understanding of Sour Taste

Sour taste varies from person to person, with some of us finding slightly sour foods, such as yogurt or lemon juice, quite tasty, while highly sour foods, such as spoiled milk, repulsive. Researchers believe this finely tuned sour detection has evolved to enable animals to choose nutritious and reject unhealthy food sources. But how do animals tell the difference between low- and high-acid concentrations in food?

Working with fruit flies, Monell neuroscientist and geneticist Yali Zhang, PhD, and colleagues discovered that flies use two distinct types of gustatory receptor neurons (GRNs) – which are analogous to human taste receptor cells – to distinguish slightly from highly sour foods. One type of GRN is activated by low acidity and the other by high acidity. When flies taste an acidic food, their brains evaluate the activation of both neuron populations and decide whether to choose or reject the acidic food, based on which type of neuron wins. This binary sour-taste system explains why many animals, including humans, are attracted to low but repulsed by high concentrations of acids in foods.

Zhang, who was named the Morley R. Kare Research Fellow for 2020 to 2022, also identified a fly protein called Otopetrin-like (OtopLa) as a sour-taste receptor. Flies lacking OtopLa – which has an analogous counterpart in mammals – are averse to low concentrations of acid and repulsed by high acidity. By establishing that OtopLa is a bona fide taste receptor for acid in flies, the team’s findings overturn the long-standing view that insects and mammals use fundamentally different classes of taste receptors and advance our understanding of sour taste in mammals, including humans.
On the Origins of Sweet Tooth

Many of us eat too much sugar, which can lead to a host of health problems. Having a better understanding of how sweet taste works is key to limiting sugar consumption and improving nutritional health. This year, two new studies advance a seminal discovery Monell scientists made on the origins of the sweet tooth.

The pathway to sweet consumption starts with detection by taste receptors in the tongue, then mouth-to-brain nerve transmission, and finally a gut-to-brain axis based on pleasure and energy. In 2001, Monell Distinguished Member and Director Gary Beauchamp, PhD, Monell Associate Director Danielle Reed, PhD, and colleagues discovered that, in mice, the TAS1R3 gene, which encodes the third member of the T1R family of taste receptors, is partly responsible for mammals’ ability to taste sweet.

Fast forward 20 years. In two recently published papers, the team showed that several other genetic regions not associated with TAS1R3 also influence a mouse’s sweet tooth. The researchers also explored several portions of the mouse genome that control sucrose intake, comparing sucrose consumption and taste-nerve activity among different mouse strains. It turns out that many other genes are involved, potentially including those in brain cells involved in modulating the detection of energy value in food and the pleasure or reward pathway associated with sweetness. They found that while the origins of sweet-liking in mammals involve taste nerves in the mouth, it also has much to do with how sugar is absorbed and used. Their findings put together more pieces in the puzzle of sweetness, which advances our understanding of human metabolism, and ultimately healthier living.

Harnessing the Health Benefits of Olive Oil

In 2005, Monell researchers identified an anti-inflammatory compound called oleocanthal that is believed to contribute to the health benefits of extra virgin olive oil (EVOO), but which also is responsible for the oil’s strong throat pungency, which can turn some people off. This year, another Monell team may have found a way to suppress EVOO’s less desirable sensory qualities.

Despite a growing body of evidence for the cancer and cardiovascular disease-fighting qualities of EVOO as part of the well-known Mediterranean Diet, Americans have been slow to incorporate it into their everyday meals. Scientists suspect this may be partly due to EVOO’s bitter taste and pungency.

Monell senior research associate Catherine Peyrot des Gachons, PhD, and colleagues conducted experiments showing that the presence of certain food proteins, like those found in egg yolks or whey proteins, suppressed the oil’s strong, pungent sensation. The team combined EVOO and egg yolk into a mayonnaise-like mixture that sensory study participants were asked to evaluate. While participants judged EVOO consumed alone to be highly pungent and bitter, the sensations vanished when they sampled the EVOO-egg yolk mayonnaise. Similar mixtures containing whey protein yielded similar sensory suppression. Researchers believe the food proteins interact with the pungent oleocanthal and bitter-tasting compounds, not allowing participants’ sensory receptors to activate. They continue to explore the implications of those interactions for health and disease. Knowing that EVOO can be comfortably consumed when mixed with other foods may encourage people to eat more of it, potentially reaping more of its healthful benefits.
Monell biopsychologist Julie A. Mennella, PhD, was recognized by the Association for Chemoreception Sciences with the 2020 Max Mozell Award for Outstanding Achievement in the Chemical Senses, and presented a lecture at its virtual annual meeting in April 2021. This lifetime career award honors the accomplishments of a senior scientist whose research record provides evidence of excellence and contributions that have had a major impact on the field.

Julie A. Mennella, PhD, is the fourth female scientist and third Monell investigator to receive this distinguished recognition since the award’s inception in 1998, following Gary Beauchamp, PhD, and Robert Margolskee, MD, PhD.
Dr. Joseph Brand, an internationally recognized neuroscientist whose research focused on the sense of taste in humans and animals, died in December 2020 after a long battle with Parkinson’s disease.

Over his 50-year career as a researcher and associate director at the Monell Center, he studied many aspects of the biology of taste, in many different species, to advance our understanding of chemosensory-directed behavior. He is perhaps best known for discovering, in 2005, that domestic cats are unable to taste sweetness. He found this by sequencing the gene for a defective sweet taste receptor. Scientists and cat lovers everywhere were equally astonished.

Describing his own work as “asking a behavioral question and looking for a molecular answer,” Brand was known as an outstanding and dedicated mentor who inspired many former students to pursue their own scientific careers. He is remembered by all who knew him as a thoughtful and collaborative investigator who cared deeply about his colleagues and their work together.

Family, friends and colleagues joined together to honor Brand’s life and legacy by funding in his name a student in the 2021 Class of the Monell Summer Apprentice Program (MSAP). The mission of the decades-old MSAP is to stimulate in young people an interest in pursuing biomedical science as a career, particularly for those students who are traditionally underrepresented in the life sciences.

As we mourn his passing, we celebrate a life well led.
The Shape of Smells to Come

Monell scientists are developing large-scale, machine-learning models to explore the borders of olfactory space and predict the quality and intensity of odorants based on their structure. Engaging commercial partners in this work brings Monell closer to realizing its vision of delivering odors, tastes, and sensations instantaneously to consumers with new technologies and devices – some as familiar as your smartphone.

How many molecules can a human smell? While there is debate among the scientific community about the “size” of odor space - the range of odorants we can detect - current estimates settle on about 10,000 odorants. Monell neuroscientist Joel Mainland, PhD, and sensory scientist Emily Mayhew, PhD, now an assistant professor at Michigan State University, have developed a machine-learning olfaction model that predicts more than 40 billion possible molecular compounds are odorous, a number six orders of magnitude greater than that.

Fundamentally, a molecule must have certain structural features to travel from its source in the environment to olfactory receptors in the nose. It must be light enough to be carried through the air and enter the nasal passages. There, it must be hydrophilic, or water-soluble, enough for the mucus membranes to absorb it, yet hydrophobic, or greasy, enough to enter an olfactory receptor binding pocket. Finally, the molecule must activate at least one olfactory receptor.

The Monell team classified a chemically diverse dataset of 1,900 molecules as odorous or odorless through testing in part by human study participants, chemical analysis, and literature search. They trained models on this data using machine-learning algorithms, ultimately developing a highly accurate predictive model that classifies molecules as odorous or odorless based only on these three structural transport features.

Consider this: the number of volatile molecules present in foods alone represents less than 0.000002 percent of all the molecules we can smell. The new Monell model gives researchers a map to navigate the vast unknown regions of odor space and a means to systematically sample it.
Partners in Transforming the Future of World Health

For more than 50 years, Monell’s culture of collaboration with diverse partners in academia and industry has been a hallmark of its success as a global leader in chemosensory research. Through these robust relationships, the Center and its partners translate new knowledge about taste and smell into consumer products that enable healthier diets and safer environments, in turn guiding public policy for a healthier world. And through collaborations like the Monell Science Apprenticeship Program, the Center invests in the next rising generation of scientists, advancing the legacy of leadership to the future.

Corporate Partnership Program

Monell has over 50 years’ experience partnering with industry, and currently interacts with over 1,200 individuals – 330 of whom were new contacts this year – in 36 companies on five continents. Close to 500 industry representatives attended virtual partner conferences. The value we provide to our corporate partners is reflected in an average length of Monell membership of 21 years.
Companies from a wide range of industry sectors and trade associations gain broad value from Monell science. Recent advances in sensory nutrition research – for example, greater understanding of sweet taste and bitter suppression – are engaging new food and beverage industry partners. Consumer product manufacturers find avenues toward innovation and competitive advantage through Monell’s tools and expertise.

Monell and Motif: A Partnership in Global Sustainability

Sustainable eating is about choosing foods that are not only nutritious but also are produced in ways that are not adversely affecting the environment. Research has shown that a global shift toward more plant-based foods is essential to feed the world’s growing population and reduce environmental stresses contributing to climate change. Monell’s newest corporate partner, Motif Foods, is a leading innovator in the development of plant-based foods that overcome many challenges in flavor and texture that can be off-putting to consumers.

Companies like Motif can leverage Monell’s research and expertise to better understand and mitigate bitter taste, define and model interactions between taste, aroma and mouthfeel, and unravel the basic biology underlying texture and other oral sensations. Discoveries in these areas will support their ability to develop sustainable foods, flavors, and ingredients that deliver the sensory impact customers demand.
A Unique and Evolving Industry Partnership Model

Monell welcomes potential partnership opportunities to put its science to work with companies interested in leveraging the Center’s expertise to solve problems with real-world impact. In this spirit, Monell has expanded its unique partnership model to include a mechanism to make partnership accessible for small and mid-size companies, and nonprofit associations.

Using this novel partnership model, new industry partner Aryballe, a digital olfaction pioneer, has shared its NeOse Advance platform with Monell scientists to offset membership fees. NeOse combines biochemical sensors, advanced silicon photonics, and machine learning to collect, display, and analyze odor data. Monell scientists will explore the potential of this new technology to aid in characterizing odor stimuli for research and will evaluate the relationship between data derived from the instrument with that from human noses.

Food Allergy Science Initiative

Food allergies are a severe public health threat faced by millions worldwide, but we still know little about the science behind this disorder, and diagnostics and treatments remain rudimentary. Monell is exploring research opportunities with the Food Science Allergy Initiative (FASI), based at The Broad Institute in Cambridge, Massachusetts, to address these issues.

Monell hosted a symposium with FASI in late 2020, and in turn, was invited to attend their 3rd Annual Food Allergy Science Initiative Symposium in early 2021. These interactions sparked new ideas about the role of chemosensory receptors in food allergies. One of the pillars of sensory nutrition is learning how taste and smell receptors function in places outside the tongue and nose and how they contribute to human health. Through future collaborations with FASI, Monell hopes to advance our understanding of why some people are allergic to or otherwise cannot tolerate specific types of healthy foods, answering important questions in the evolution of personalized medicine.
Scent Mapping: Monell at the 2021 Philadelphia Flower Show

Monell and academic affiliate Rowan University partnered this spring for a sensory exploration and public engagement project at the 2021 Pennsylvania Horticultural Society Philadelphia Flower Show. Due to COVID-19 restrictions on indoor gatherings, the Flower Show was held outdoors for the first time in its history, with organizers transforming Philadelphia’s FDR Park into a spectacular exhibition themed “HABITAT: Nature’s Masterpiece.”

Monell seized the opportunity of this unique moment in time to heighten awareness of smell as an integral part of our habitat inside our homes and outside in nature. Outreach staff partnered with Jennifer Kitson, PhD, an assistant professor in the departments of Art and Geography, Planning and Sustainability at Rowan, to develop a sensory exploration of the Flower Show.
Monell Science Apprenticeship Program

Celebrating over four decades of diversity and inclusion in training the next generation of scientists and STEM professionals.

The Monell Science Apprenticeship Program (MSAP) is an eight-week summer internship that inspires young people to pursue careers in the biomedical sciences by giving apprentices high quality, hands-on, fully-paid learning experiences in Monell’s laboratories, mentored by Monell scientists. Now entering its fifth decade, the mission of this competitive internship is to provide Philadelphia-area high school and college undergraduate students – especially those from groups that are underrepresented in the sciences – with opportunities to engage in biomedical research, technical training, science education and academic mentorship.
Financials

Strategic investment in the research enterprise – our people, technologies, and infrastructure – enables Monell to rapidly and responsibly align financial resources to meet the needs arising from a changing environment. Sound fiscal stewardship positions Monell as a global leader in chemosensory science.

The Monell Chemical Senses Center receives support for its work from three primary sources. The largest source is government funding, consisting chiefly of competitive federal grants with the National Institutes of Health (NIH); this stream has been a source of growth over the past three years. Additional funds come from industry membership fees and industry-sponsored basic and translational research. Finally, the Center receives significant support from generous gifts, grants, and bequests from private individuals and philanthropic foundations.

In 2020-2021, despite many pandemic-related challenges, Monell was able to increase revenue by 17 percent. This was principally the result of a nearly 50 percent increase in federal funding and a strong return on investments. These federal grants and continuing support from industry partners, foundations, and individuals enabled the Center to begin increasing its research activities. The Center is most grateful for the continued generosity of all of its supporters, particularly the Ambrose Monell Foundation, a Center founding funder and largest private donor.
Meet Our Supporters
The 2020 – 2021 Honor Roll of Donors

This was not only a phenomenal fundraising year, it also marked the successful conclusion of Monell’s multi-year campaign, Sensing the Future. Our greatest pleasure is to THANK YOU – the friends, alumni, employees, foundations, and businesses – whose gifts and grants made this possible. Without a doubt, your support tells us that this is a defining moment in history for taste and smell research.

Below, we gratefully recognize donors of $1,000 or more during the academic year (July 1, 2020 to June 30, 2021).

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Meet Our Supporters

Robert Bedoukian
“My company, Bedoukian Research, supports the Monell Center because we have a shared appreciation for the science behind the senses of taste and smell.”

John and Teresa Hickey
“We did a great deal of research before investing in Monell. When we visited, we knew we had found a group of scientists committed to seeking causes and treatments for smell loss. We have made the Center one of our philanthropic priorities, giving consistently over many years, because we know that our contributions are making a real difference for all who are experiencing life without smell.”

Shawn Marcel
“Supporting the Monell Science Apprenticeship Program is a great way for me, as a member of Monell’s International Advisory Council, to show my support of the Center’s important science while also intersecting with another philanthropic interest I have in educational programs.”

Jay D. Sandler
“When I heard a Monell scientist speak at Neshaminy Manor where I volunteer, it piqued my curiosity because I have very little sense of smell and I love being involved with the cutting edge of science. Later my wife and I decided to make an annual gift in memory of our daughter Rose to support young people at Monell doing olfactory research. It seemed fitting for Rose. After all, she is named for a flower with a distinct and widely appreciated scent.”

Lewis S. Somers, 4th
“My parents were deeply involved with Monell and demonstrated how giving to science can increase discovery and knowledge about our health and well-being. My wife, Christine Sweeney, and I have been happy to support Monell, especially now when Monell is doing research that is vital during this pandemic.”

Yoshiko Yokomukai-Wada
“I have a long history with Monell as an alumna of the Center and a representative over many years for Kirin, a corporate partner. Currently, I am teaching at the university level. My support recognizes Monell’s important work in taste and nutrition, one of my scientific pursuits, and our shared interest in training the next generation of sensory scientists.”
Sensing the Future: The Campaign for Monell at 50 is a Success!

Over the last several years, Monell set out to raise $12 million to improve health and well-being by advancing the scientific understanding of taste, smell, and related senses.

We are pleased to report that the campaign, Sensing the Future, is now complete, having exceeded its goal.

Great science requires both talented researchers and powerful research tools. The campaign contributed robustly to both. Donors made it possible to establish the Preti Analytical Core, which brings analytical chemistry technology to the whole of the Center to improve scientific output. The campaign also resulted in important new faculty recruits including Amber Alhadeff, PhD, Valentina Parma, PhD, and Bruce Kimball, PhD, who recently joined Monell full-time after years of working jointly for the United States Department of Agriculture and the Center. And, the campaign supported our training mission as evidenced by new funding for postdoctoral fellows.

In short, the campaign has truly made it possible to propel forward our four scientific aims: improving nutritional health, diagnosing and treating disease, attacking the loss of smell and taste, and digitizing smells and tastes.

YOUR SUPPORT OF THE SENSING THE FUTURE CAMPAIGN AT A GLANCE:

62% GROWTH IN PHILANTHROPIC DOLLARS
48% INCREASE IN NUMBER OF DONORS TO MONELL
58% INCREASE IN INDIVIDUAL GIVING TO MONELL

The success of the campaign demonstrates to us, and to the world, how much our research touches your life and your health. Many thanks!

We will be celebrating all of our Sensing the Future donors in the coming months.
Our People

Morley Kare founded Monell in 1968 as a bold experiment, breaking down the traditional academic structure of the time to collaborate freely and richly across disciplines. That deeply rooted culture of collaboration is what distinguishes Monell as a global leader in improving health and well-being by advancing the scientific understanding of taste, smell and related senses.

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Monell Director and President Announces Plans for Stepping Down

In June, The Monell Chemical Senses Center announced that Director and President Robert F. Margolskee, MD, PhD, will be stepping down as Director by June 30th, 2022, after which he will remain as a part-time faculty member to complete several research projects in progress.

“It has been my honor and pleasure to serve as Monell’s Director for the past six-plus years,” Dr. Margolskee said. “I am proud to have guided the Center through some highly challenging times, including the current COVID-19 pandemic.”

Dr. Margolskee became the Center’s third Director in 2014, having joined its faculty in 2009. Throughout his tenure, Monell has maintained and grown its reputation as a global leader in taste and smell research and how these senses are integral to human health.

His seminal discovery in 1992 of gustducin, a signaling protein expressed selectively in taste cells, launched molecular biological approaches to the study of taste and provided the critical knowledge to explain how taste receptors detect sweet, bitter, and savory taste molecules. His current research focuses on sweet taste and the function of taste receptors throughout the body.

As Director, Dr. Margolskee led Monell through a highly successful fiftieth anniversary fundraising campaign; coalesced research aims to concentrate on translating basic science to clinical applications; recruited outstanding faculty and administrators; and most recently, guided research and day-to-day operations through an historic pandemic – one that thrust the Center and the importance of the senses of smell and taste into wide public awareness.

He attributes his success to all Monellians: “We are in a better place to face the future because of the Monell family and the dedication and creativity everyone brings to their work.”
OUR MISSION

Monell’s mission is to improve health and well-being by advancing the scientific understanding of taste, smell and related senses.

OUR VALUES

COMMUNICATION
We view basic science as the foundation of discovery.

MENTORSHIP
We train the next generation of chemosensory scientists to assure a bright future.

OPEN COMMUNICATION
We share our knowledge widely to impact global health and well-being.

BROAD IMPACT
We work across sectors to advance science that solves problems.