



Science Changing Life.



2023

A year in review

From all of us at **Scripps Research**, thank you to our generous community of dedicated advocates who understand the profound value of this work. The leading-edge science taking place at Scripps Research would not be possible without this support.

SCOTT SHOWALTER | CHIEF ADVANCEMENT OFFICER, SCRIPPS RESEARCH

Dear friends,

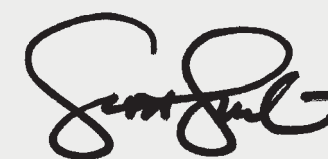
Scripps Research is made up of exceptional people doing transformative work. Whether it's scientists inventing new technologies, graduate students advancing science in the lab or staff pushing the institute's operations forward, our teams are dedicated to achieving scientific excellence and creating a healthier future for all of us. Our institute's supporters play a vital part in realizing this mission by ensuring our work continues without interruption. We are deeply grateful to everyone who fueled scientific advancement and training at Scripps Research during fiscal year 2023 (October 1, 2022 – September 30, 2023).

This annual report showcases a sampling of the exciting discoveries from our labs in fiscal year 2023. Our faculty continued to be recognized globally for their leadership in their respective scientific fields—most notably, in October 2022, K. Barry Sharpless was awarded his second Nobel Prize in Chemistry for his groundbreaking development of “click chemistry.” Additionally, the inaugural round of grants from the Collaborative Innovation Fund, created by Scripps Research board member Tom Daniel, MD, were awarded to three interdisciplinary teams, enabling novel innovative research with significant potential to reshape bioscience landscapes.

On the translational research side, Scripps Research continued to advance critical discoveries in foundational science into treatments and resources for patients. Calibr, our drug discovery division, was renamed the Calibr-Skaggs Institute for Innovative Medicines in honor of the tremendous support from the Skaggs family and The ALSAM Foundation, which greatly bolsters Calibr-Skaggs' impressive pipeline of life-changing therapeutics. What's more, the Scripps Research Translational Institute (SRTI) received two momentous awards to galvanize their efforts surrounding precision and digital medicine. Through the *All of Us* Research Program and other studies at the Digital Trials Center, SRTI is striving toward more individualized health care and redefining what clinical trials can look like to benefit participants.

Key to our vision for a healthier future, the Skaggs Graduate School of Chemical and Biological Sciences saw a record recruitment of 83 graduate students during this fiscal year. The generosity of our community empowers our ability to provide top-level training for these future scientific leaders. To help every student boldly explore, our leadership aims to fully endow the Skaggs Graduate School—and we are well on our way with 100 endowed fellowships committed.

Please enjoy these snapshots of an incredible year on the following pages.



Scott Showalter
Chief Advancement Officer, Scripps Research



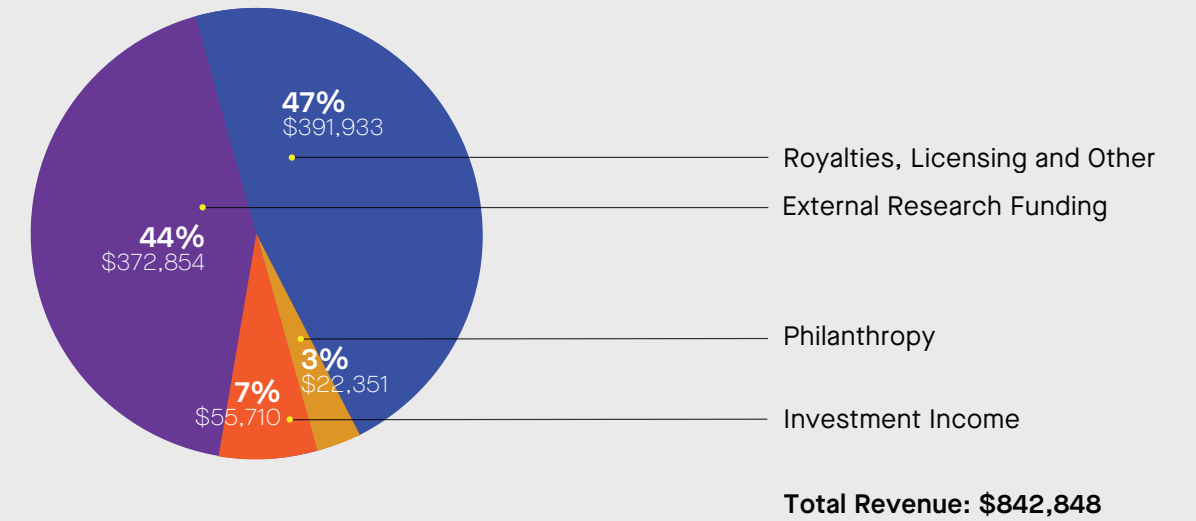
2023 by the numbers

Your continued generosity helped make fiscal year 2023 another monumental year of scientific achievement in our laboratories. Thank you for ensuring our researchers have the resources to seek—and create—novel therapies to combat our greatest disease challenges.

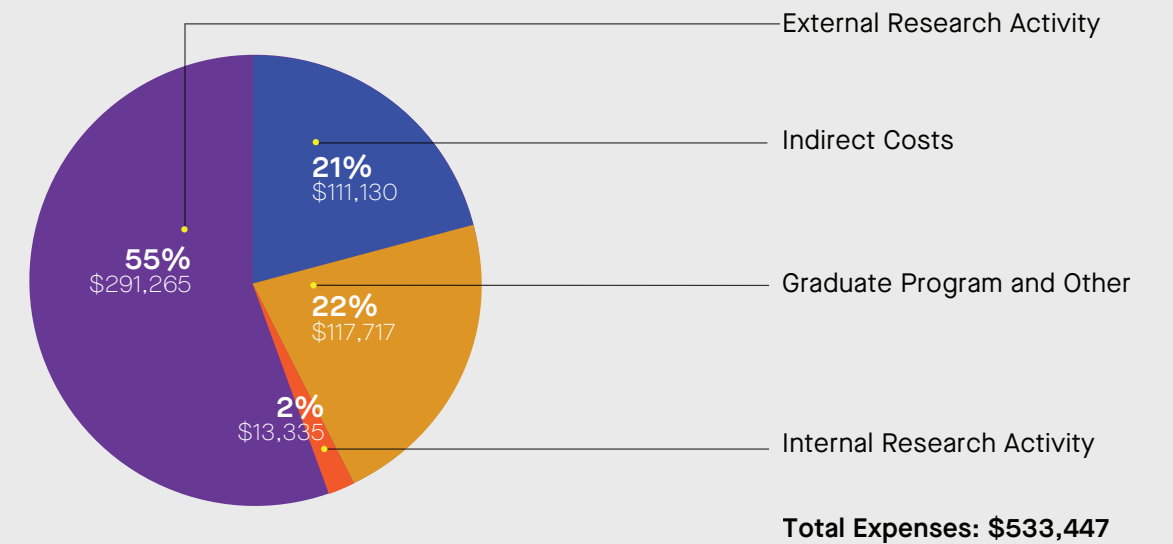
Scripps Research

October 1, 2022 to September 30, 2023

Revenues | Fiscal Year 2023*



Expenses | Fiscal Year 2023*



*in thousands

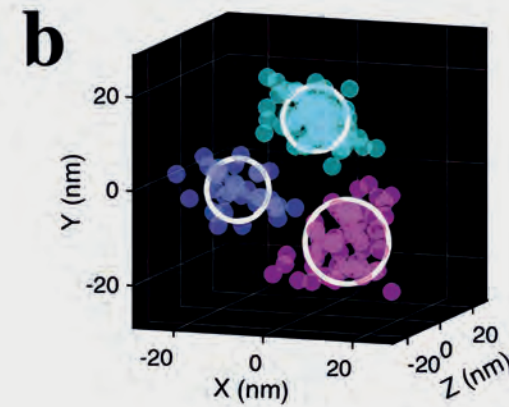
2023

Notable scientific discoveries

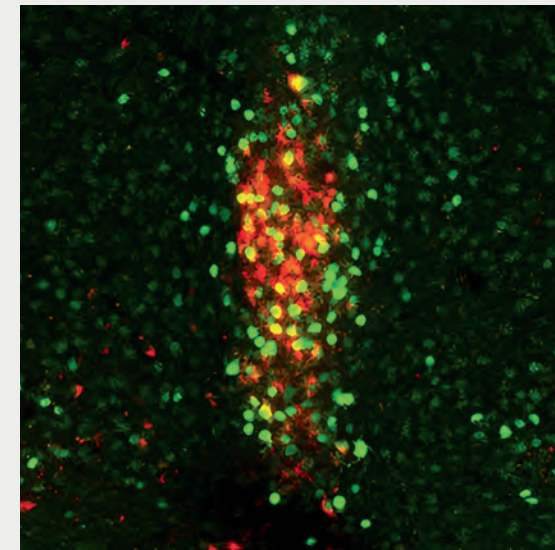
The pivotal discoveries made by Scripps Research scientists during fiscal year 2023 have expanded our understanding of human health and are paving the way for life-saving therapeutics.

As we enter this next century of scientific achievement, we are excited to build upon the work of our esteemed researchers and discover new breakthroughs leading to revolutionary treatments.

Neuroscience



In a breakthrough study, scientists in the lab of Nobel laureate Ardem Patapoutian, PhD, holder of the Presidential Endowed Chair in Neurobiology, used super-high-resolution fluorescence microscopy to **show how the sensory receptor PIEZO1 changes shape in response to mechanical stimuli while embedded in the cell's plasma membrane**. This finding could have future applications for screening drugs that might inhibit or activate PIEZO1 sensors. The lab also showed that the **receptor PIEZO2 in sensory neurons controls gut motility and transit time**, which are important for digestion and nutrient absorption.



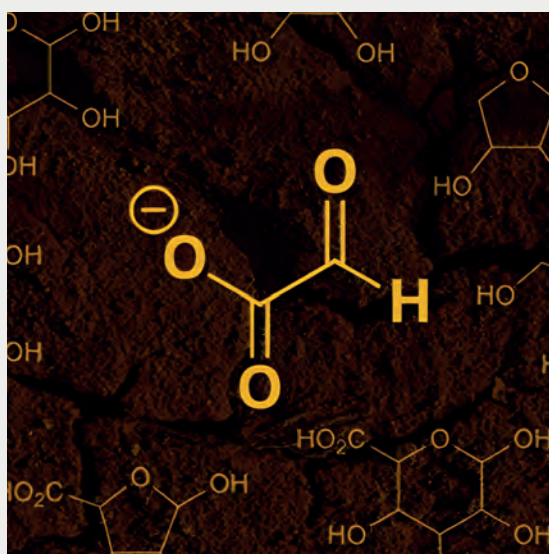
Neurons in the Xiphoid nucleus are activated by cold (green). A subset of this population (red) promotes the animal to eat more in the cold. Credit: Scripps Research

Li Ye, PhD, The Abide-Vividion Chair in Chemistry and Chemical Biology, and his laboratory team **identified brain circuits that make mammals want to eat more when they are exposed to cold temperatures**. The discovery could lead to new weight loss and metabolic health treatments.

Chemistry



Chemists in the lab of Jin-Quan Yu, the Bristol Myers Squibb Endowed Chair and the Frank and Bertha Hupp Professor in the Department of Chemistry, reported several significant achievements, including **development of a method for C-H activation of alcohols**, providing chemists a versatile new toolkit for making drugs and other valuable compounds; **introduction of an unprecedented “molecular editing” technique** that enables chemists to add new elements to organic molecules at locations that were previously out of reach; and **developing a relatively simple and controllable method for making benzocyclobutenes**, sought-after building blocks for drugs and valuable materials.

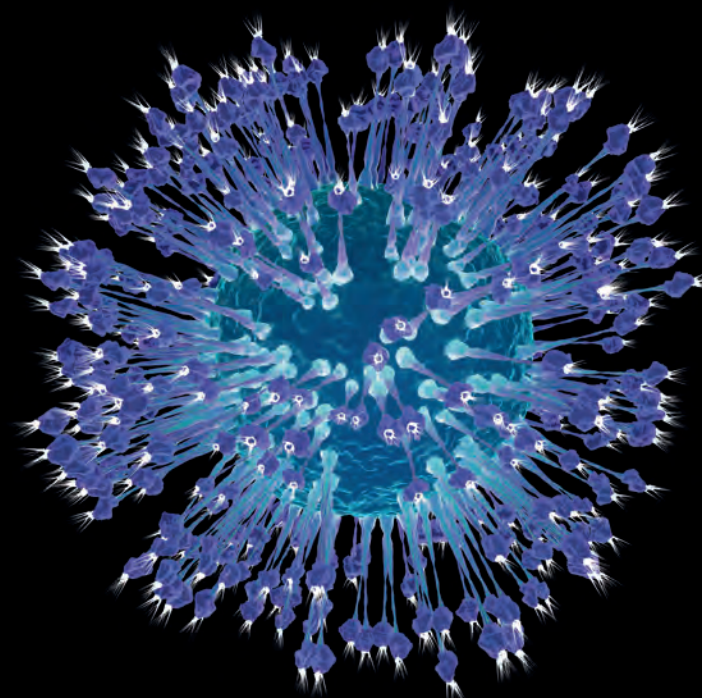


In a collaborative study, prominent origin-of-life chemist Ramanarayanan Krishnamurthy, PhD, published a new hypothesis for **how the first sugars—necessary for life to evolve—arose on the early Earth**.

Immunology and Microbiology

William Schief, PhD, and collaborators revealed encouraging findings in a first-in-human clinical trial evaluating their **novel vaccine design strategy targeting HIV**: a stepwise approach that produces antibodies capable of targeting a wide range of HIV variants. In a different approach, a new HIV vaccine designed in the lab of Jiang Zhu, PhD, showed a **significantly improved ability to neutralize the virus in preclinical trials**, and is headed for further study in healthy people who volunteer to participate in clinical trials.

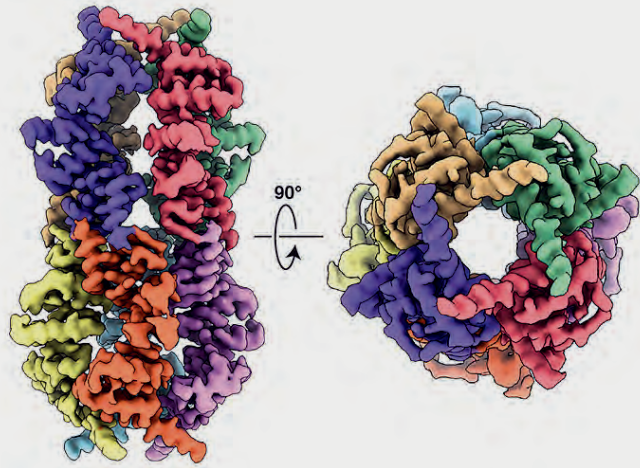
A team of scientists, including Gabriel Lander, PhD, and Andrew Ward, PhD, **mapped, at high resolution, critical proteins that stud the surface of the hepatitis C virus (HCV) and enable it to enter host cells**. The discovery points the way toward an effective HCV vaccine.



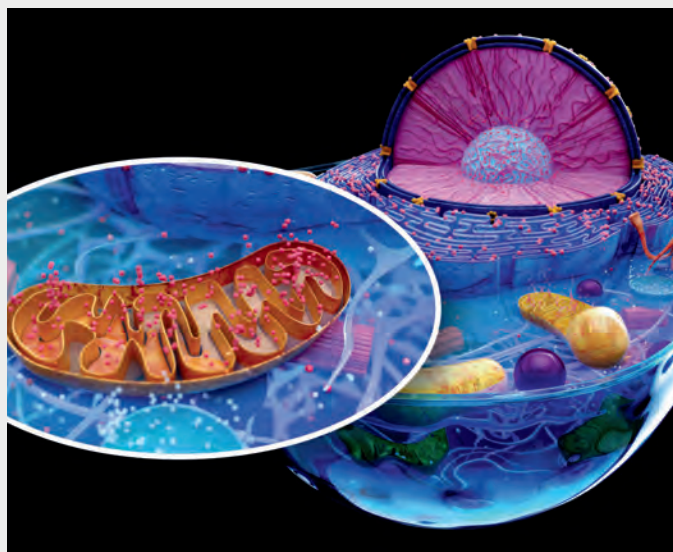
2023



Molecular and Cellular Biology



In a collaborative study, the labs of Gabriel Lander, PhD, and Luke Wiseman, PhD, discovered a “spider-like” **mitochondrial structure that initiates cell-wide stress response** and could have implications in age-related diseases driven by neurodegeneration.



Danielle Grotjahn, PhD, and her team developed **a new technique for studying mitochondria**, the “powerhouses” of cells. The advancement offers a new way of investigating diseases—including Alzheimer’s, Parkinson’s and different cancers—where mitochondria are disrupted.

2023

“We now have a powerful new toolkit for detecting and quantifying structural, and thus functional, differences in mitochondria—for example, in diseased versus healthy states.”

DANIELLE GROTJAHN, PHD

Institute accolades

Jeffery Kelly, PhD, Lita Annenberg Hazen Professor of Chemistry at Scripps Research, was **elected to the National Academy of Sciences**, one of the highest honors awarded to scientists. The current number of institute faculty memberships in the National Academies of Sciences, Engineering, and Medicine is 30.

Hollis Cline, PhD, became an **elected member of the American Academy of Arts and Sciences**, one of the world's most prestigious honor societies. Cline's election brings the number of institute faculty memberships to the academy to 23.

Scripps Research saw **13 scientists named to 2022's Highly Cited Researchers List** published by Web of Science, the world's largest publisher-neutral citation index. Researchers on the list are among the top one percent of citations in their field over the last decade.

Scripps Research announced the **inaugural winners of the Collaborative Innovation Fund** in January 2023, and three multidisciplinary teams received funding to launch highly innovative research that can transform our understanding of diseases and drug development efficacy.

The Skaggs Graduate School of Chemical and Biological Sciences held its 31st commencement in May 2023, **awarding doctoral degrees to 41 students**. Scripps Research Board Chair John Diekman, PhD, delivered the commencement address and received an honorary degree from the graduate school.

Some of the most **brilliant minds** in the world join forces with Scripps Research:



Scientists here have won **6 Nobel Prizes**

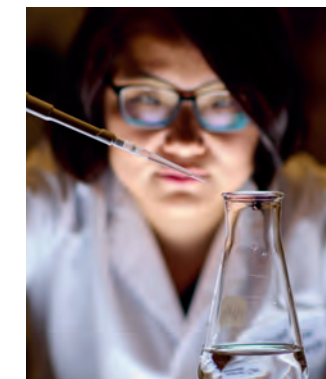
The faculty currently includes **2 MacArthur Fellows**

Chemists at Scripps Research have won **6 Wolf Prizes**

30 memberships in the National Academies of Sciences, Engineering, and Medicine

Scientific teams collaborate across disciplines to improve human health:

125+ active faculty working to advance scientific knowledge across 6 departments



Our drug discovery division, Calibr-Skaggs Institute for Innovative Medicines, has in its pipeline

50+ potential medicines

15+ FDA-approved drugs and vaccines have arisen from our discoveries



The Skaggs Graduate School of Chemical and Biological Sciences at Scripps Research is consistently ranked among the **10 best graduate programs** of its kind in the nation by *U.S. News and World Report*

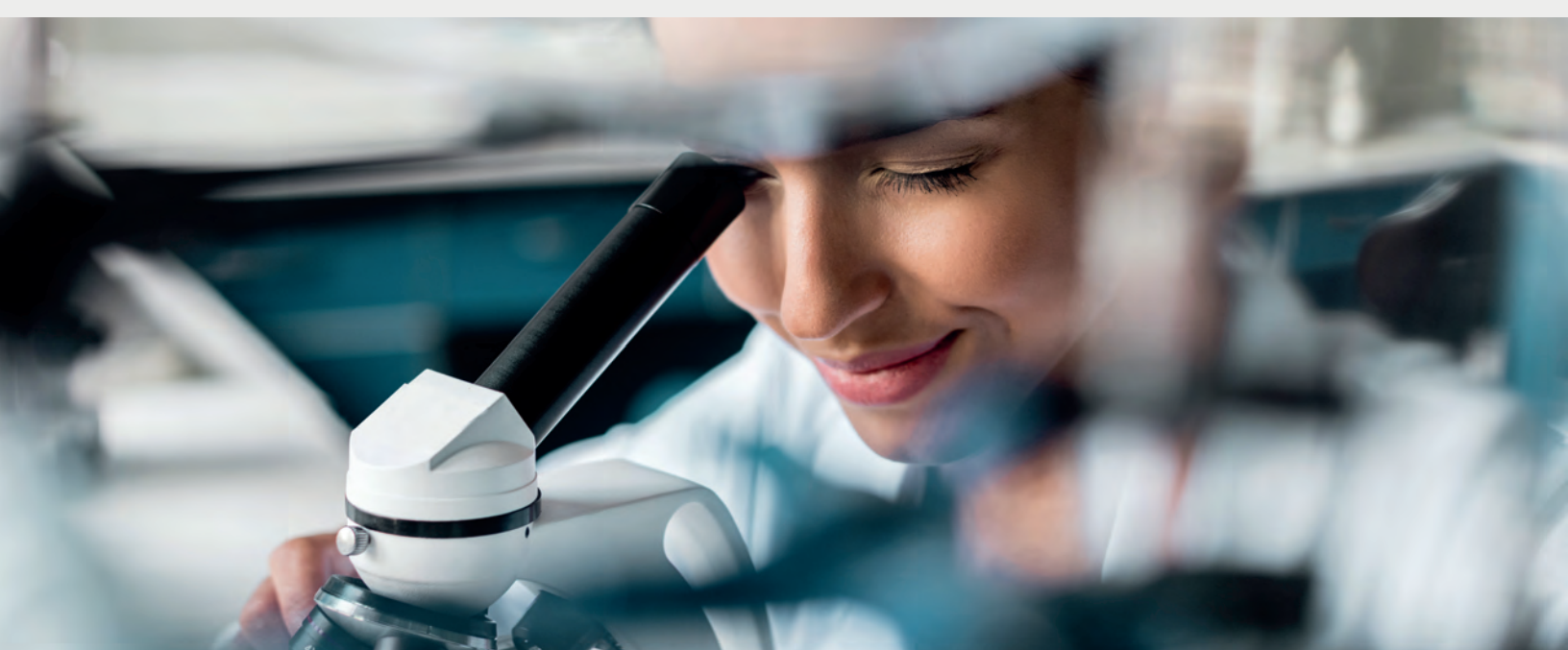
Every day, Scripps Research makes an impact nationally...

50+ active spin-off companies **1,100+** U.S. patents

...as well as **globally**

nature INDEX

Ranked in the top 5 for its impact on innovation



What can I do?

As a leading nonprofit biomedical research institution, Scripps Research is paving the future of human health. Every day, our labs are conducting world-class research to translate into new medicines and treatments. For the last century, we have spearheaded life-changing scientific discoveries—and we'd love for you to join us as we enter our next 100 years.

Make a gift

Our groundbreaking research doesn't happen without your support and advocacy. Philanthropic gifts allow our institute to focus its efforts on the next scientific discovery. Make your gift online at give.scripps.edu or reach out to our Office of Philanthropy.

Learn more

Take a virtual peek inside our labs, hear from our researchers and learn about our latest findings at scripps.edu/news. Through our website, podcast and magazine, you'll meet our dedicated faculty members and research teams and explore the science happening across the institute. You can stay up to date with our research by subscribing to our newsletter.



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Be sure to follow Scripps Research on your favorite social media platform, where you can learn about our work, hear from our scientists and share our highlights with your family, friends and colleagues.



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Hahn Professor of Neuroscience

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