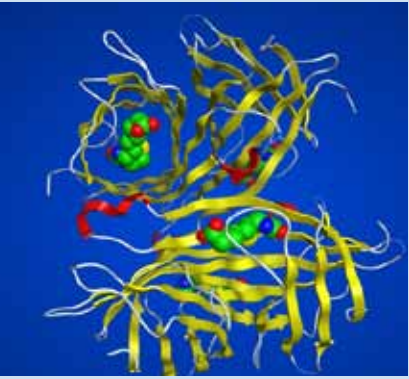


Yale West Campus



Shaping a Better Tomorrow



Yale University is one of the world's leading research institutions, a place dedicated to pushing back the boundaries of the possible and advancing knowledge in service to society.

To achieve these goals, Yale recruits the brightest scientists and scholars from around the globe and provides them with the resources to do transformative work.

The West Campus is one such resource.

Here, there is extensive laboratory space where experts from diverse disciplines are working side by side using innovative technologies to address important issues in health, energy, and the environment.

Here, too, scholars from Yale's libraries and museums are employing the latest digital imaging technology to conserve Yale's vast collections, while also revolutionizing the science of preservation.

In addition, West Campus is the new headquarters for the Yale School of Nursing, providing a modern space where the school can expand its mission of education, research, and clinical practice.

In reflecting upon the expansion of Yale to the West Campus, I often consider the analogy of the Louisiana Purchase. Had Jefferson not endeavored to acquire and explore such an expansive and mostly unknown territory, the United States would not be the nation that it is today.

I invite you to visit and learn more about Yale West Campus, where today's discoveries are helping to shape a healthier and more sustainable tomorrow.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Strobel', with a stylized flourish at the end.

Scott Strobel

Vice President, West Campus Planning and Program Development

An opportunity for unprecedented growth

Yale University was in the midst of a \$1 billion upgrade of its science and medical facilities in 2007 when it was presented with a unique opportunity: the 136-acre Bayer HealthCare campus, located seven miles from New Haven, became available for purchase for just \$109 million – a price that included seventeen buildings furnished and outfitted with office equipment and bioscience laboratories.

The benefits to the University were clear: the addition of a ready-made, state-of-the-art research campus would allow the growth of Yale’s science and medical facilities “to accelerate at an unprecedented level – potentially making it possible for Yale scientists to develop new discoveries, inventions, and cures years earlier,” said President Emeritus Richard C. Levin ’74 PH.D. when announcing Yale’s purchase of the Bayer complex.

Today that potential is being realized, and West Campus has become both a vital part of Yale and a hub for innovation and exploration. Furthermore, it has become a community, peopled with scientists, engineers, artists, scholars, and the administrative staff who support them.

As Levin noted in 2007, the West Campus purchase “has transformative potential . . . only some of which we can envision today. We have given our successors an opportunity to dream in ways we cannot imagine today.”

The interdisciplinary approach to innovation

West Campus is organized into research institutes and core facilities designed to promote collaboration and interdisciplinary dialogue.

The research institutes each focus on a particular area of study: from understanding the workings of a cell, to developing economically viable sources of sustainable energy, to harnessing the power of digital technology to preserve millennia-old art and cultural artifacts.

Each institute includes faculty and researchers from a wide range of academic departments and professional schools – or, in some cases, from Yale’s libraries and museums – who bring their collective knowledge and expertise to bear on a common problem. This mingling of different perspectives inevitably sparks new ideas that can transform the course of the research and inspire new discoveries.



“The West Campus is part of a future in which we learn more about our world, find solutions to problems, and improve people’s lives. It is an inspiring place where Yale faculty, students, and visiting researchers can collaborate in new ways, and push the boundaries of what is possible.”

– Peter Salovey ’86 PH.D.
President



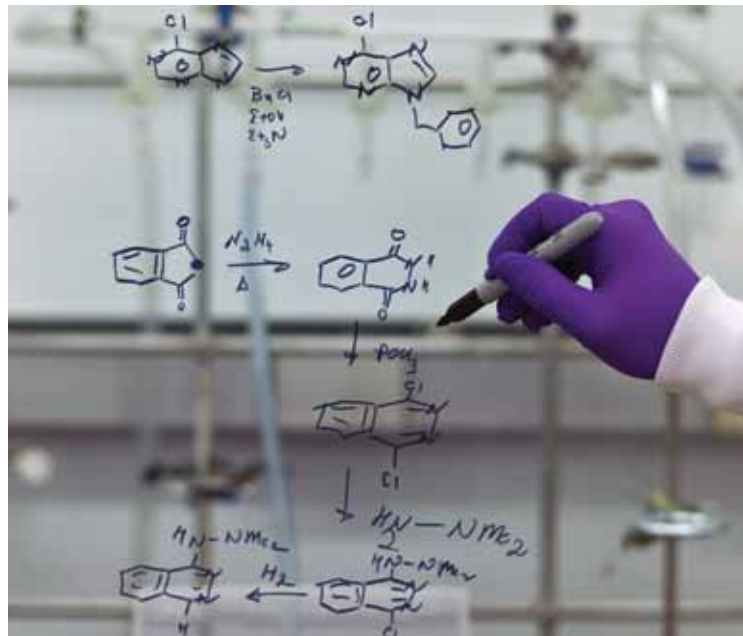
With over 1.6 million square feet of workspace, West Campus can readily accommodate the individual needs of these research institutes – from the design of laboratory and work areas, to room for equipment and new technologies.

The West Campus core facilities support the work of the institutes, offering researchers access to state-of-the-art technology, specialized laboratory equipment, and research services. The core facilities are also resources for the entire campus, and several offer services to outside institutions.

Together, the research institutes and core facilities provide an infrastructure that promotes new insights in the sciences and arts and gives researchers the freedom to grow and expand the scope of their work.

“Probably the single most productive, generative area for new ideas in broadly all scientific research is interdisciplinary work. The way we’ve gone about structuring the West Campus programs very much reflects that.”

– James Rothman ’71
Director, Yale Nanobiology Institute



“Yale has made a major commitment to be a global leader in science. By creating institutes and core facilities on the West Campus that enable interdisciplinary discovery, we have accelerated our efforts and are witnessing innovations every day.”

—Peter Salovey '86 PH.D.
President

Breaking new ground in the sciences

SCIENCE INSTITUTES

The six science research institutes bring together experts from Yale's top-ranking programs in the physical, biological, engineering, and medical disciplines, as well as other departments.

Chemical Biology Institute

Led by chemist Alanna Schepartz, the Chemical Biology Institute explores how to design and synthesize new molecules, taking advantage of cells' natural properties to create chemical compounds that treat developmental disorders, cancer, and neurodegenerative disease. Disciplines represented include chemistry, molecular biophysics and biochemistry, and molecular, cellular, and developmental biology.

Energy Sciences Institute

The Energy Sciences Institute is developing new ways to generate and store energy from renewable sources such as wind and sunlight. Its work builds upon the groundbreaking research by Yale scientists who are studying alternative energy solutions, including faculty from the Yale Solar Group. The acting director is Gary Brudvig of the chemistry and molecular biophysics and biochemistry departments. Disciplines represented include chemistry, materials science, engineering, and geology and geophysics.

Cancer Biology Institute

The work of the Cancer Biology Institute cuts across many University departments and units. Under the direction of Joseph Schlessinger, chair of pharmacology in the Yale School of Medicine, scientists at the institute seek to identify potential new drugs and perform early-stage development work on innovative cancer therapies. With the support of private companies like Gilead Sciences Inc., these drugs will ultimately be approved as treatments for patients at Smilow Cancer Hospital at Yale-New Haven.

The Cancer Biology Institute and the Center for Genome Analysis have partnered to analyze tumors from all patients at Smilow Cancer Hospital, providing doctors with crucial information to help them devise individual courses of treatment and investigators with insights into cancer's weaknesses.

Microbial Diversity Institute

The Microbial Diversity Institute is dedicated to exploring the still largely unknown world of microbes and how they govern processes that control the functions of all living creatures. The goal is to gain a better understanding of the impact the microbial world has on the environment and human health. Disciplines represented include ecology and evolutionary biology, geomicrobiology, and microbial pathogenesis.

Nanobiology Institute

Established and directed by chair of cell biology and professor of chemistry James Rothman, the Nanobiology Institute focuses on the study of cell biology and biophysics, with the goal of designing new uses for living and synthetic materials at the nanoscale. By merging the principles of engineering and biology, its researchers are building nano-machines that can function inside living cells, producing new materials that can assist in tissue engineering, and even creating DNA "robots" to carry out programmed tasks. Disciplines represented include cell biology, molecular biophysics and biochemistry, and cellular and molecular physiology.

Systems Biology Institute

The Systems Biology Institute is based on the principle that understanding the networks of molecular interactions is essential to understanding biology and can serve as a model for advances in engineering design. Led by Andre Levchenko of the Biomedical Engineering department, the institute aims to find new ways to organize and analyze

the massive amounts of biological data now available to understand how life orchestrates thousands upon thousands of molecular events at lightning speed. Disciplines represented include physics, computer science, mathematics, engineering, biology, ecology and evolutionary biology, chemistry, cellular and molecular physiology, and molecular, cellular, and developmental biology.

CORE FACILITIES

Four core facilities power scientific research at West Campus and also serve the rest of the University.

Analytical Core

The Analytic Core supports various laboratories on campus by housing and maintaining a variety of high value instruments used for biological, chemical, or other research projects. The facility's mass spectrometers, superconducting NMR spectrometers, and flow cytometers are used by faculty members from a host of different disciplines to execute their research.

Yale Center for Genome Analysis

The Yale Center for Genome Analysis produces the equivalent of more than 3,000 complete human genome analyses per month, yielding information that drives research not only in human biology and medicine, but also in every area of the life sciences. This information has already sparked new insights into high blood pressure, cancer, autism,

and other neurodevelopmental disorders. The facility is equipped with thirteen high-throughput sequencers and a broad spectrum of specialized instruments to measure and analyze gene expression. The resource is open to both Yale and other non-profit organizations.

Yale Center for Molecular Discovery

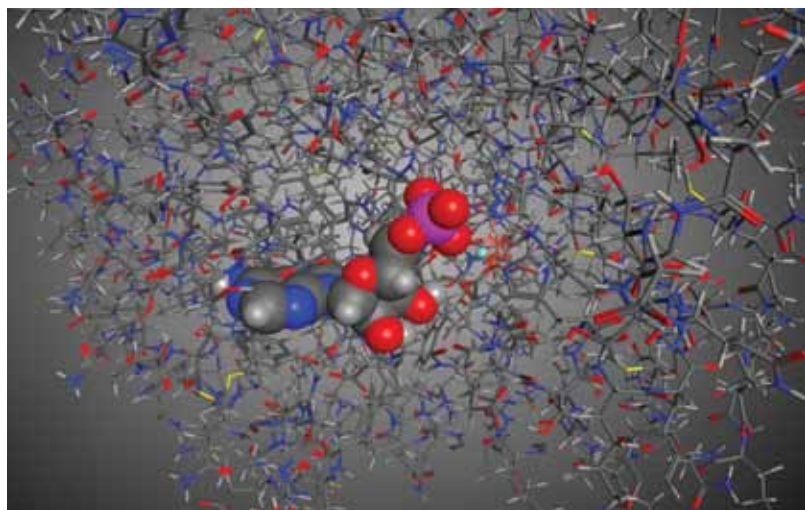
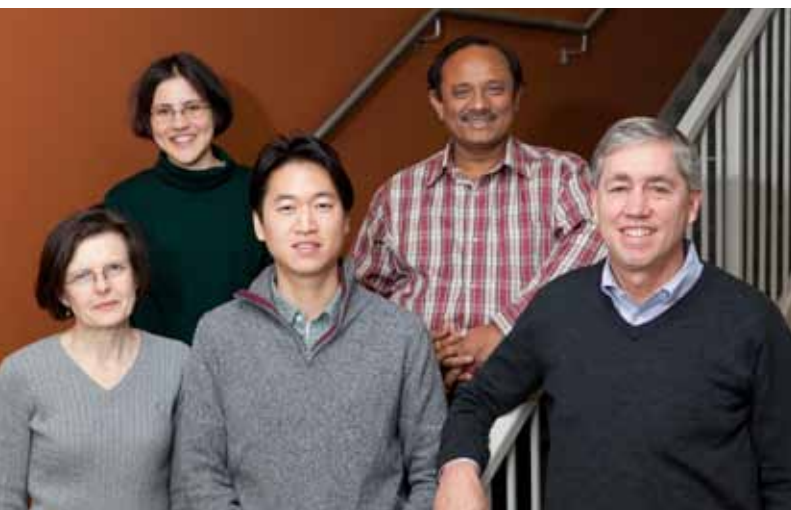
The Yale Center for Molecular Discovery is uniquely equipped for studies of how chemical compounds affect cells and their ability to regulate life processes on a molecular level. The facility offers access to high-throughput assays and other services and instruments to help study potential molecular interactions with genetic materials. These activities help bridge the gap between promising drug leads and the development of actual new drugs. This approach has already led to a series of collaborations between Yale and private companies such as Gilead Sciences and Johnson & Johnson.

High-Performance Computing Center

The High-Performance Computing Center is a state-of-the-art computer storage hub, which powers a range of research initiatives led by Yale professors and graduate students across the University. It is one of Yale's six high-performance computing clusters, otherwise known as "supercomputers," and can process terabytes of massive datasets daily, accelerating the rate of research.

A LIFE-SAVING DISCOVERY

In 2010, doctors in Ankara, Turkey, were stumped by a case of chronic dehydration in a five-month-old baby boy, and turned to Yale for help. A team led by Richard Lifton (pictured opposite, far right), chair of genetics, was able to analyze samples of the baby's DNA at the Center for Genome Analysis and use emerging techniques to quickly and completely map the boy's genome. Within ten days, the team was able to determine that the baby had a rare mutation that caused an underlying intestinal disorder. With this information, the doctors were able to tailor a personalized treatment, leading to the boy's recovery.





“This is the promise of the West Campus; those now conducting research, teaching, and studying across the disciplines of the Sciences, Arts, and Humanities now have an important new forum and facilities within which to exercise their imaginations and creativity together.”

– Jock Reynolds
Henry J. Heinz II Director, Yale University Art Gallery



The science of art: taking conservation to the next level

YALE COLLECTION STUDIES CENTER

Inside the 400,000-square-foot Yale Collection Studies Center, researchers from the University's libraries and museums are using sophisticated technologies to preserve Yale's vast art, cultural heritage, and natural history collections, while also advancing the science of art conservation.

Institute for the Preservation of Cultural Heritage

The center's Institute for the Preservation of Cultural Heritage, established by a transformational gift from Lisbet Rausing and Peter Baldwin '78, is dedicated to improving the science and practice of art conservation around the world through the use of digital and other technologies. These include employing nanotechnology to slow the decay of artworks; creating specialized, computerized tools to care for ancient mosaics; and utilizing 3-D technology to digitize and study collections. The institute hosts seminars, conferences, and visiting scholars from around the world, and its researchers and artists collaborate closely with staff from the University's libraries and museums to care for the University's collections and treasures.

Two core facilities in the Yale Collection Studies Center support the work of the institute:

The Center for Conservation and Preservation

The Center for Conservation and Preservation promotes the study of the materials and preservation techniques of cultural artifacts – from understanding the nature of deterioration of various materials to developing techniques to counteract decay using microscopic analysis and forensic sciences.

The Yale Digital Collections Center

The Yale Digital Collections Center is working to make Yale's cultural heritage and natural history collections digitally accessible to the world. The facility serves as a centralized home for the University's digital collections, providing digital analyses, support for cross-disciplinary research, and collections management. It houses a state-of-the-art shared imaging lab for large-scale art and specimens.

ANCIENT MOSAIC RESTORED FOR PUBLIC VIEWING

From 1928 to 1934, Yale sponsored excavations at Gerasa, Jordan, in collaboration with the British School of Archaeology at Jerusalem and the American Schools of Oriental Research. Founded in the Hellenistic period, Gerasa became part of the Roman province of Arabia in 90 CE. Later, under Byzantine rule (ca. 400–600 CE), many Christian churches—and even a Jewish synagogue—were built throughout the city, adorned with rich mosaic decorations. During its excavations, Yale acquired the mosaic floor from one of these churches, putting it on display at the Yale University Art Gallery. However, the weight of its concrete and steel mounting—5,000 pounds—was causing damage to the mosaic itself, and the work of art had to be placed in storage. It remained there for sixty-nine years, until 2009, when space to work on the mural became available at West Campus. Using new precision cutting technology, conservators carefully removed the original mounting, and refitted the mosaic with a lighter-weight composite backing—the same material used in wind turbines today. In 2012, the Gerasa mosaic—now down to 1,296 pounds—was installed in the newly renovated Yale University Art Gallery for the first time in seventy-five years.



“As the first academic program entirely at West Campus, we have an opportunity to help shape what happens on campus and create inter-professional collaborations.”

– Margaret Grey
Dean, School of Nursing



A new space for nursing research, scholarship, and practice

The mission of Yale School of Nursing (YSN) is to promote better health care through scholarship, practice, and research – a goal that makes it a natural fit for West Campus, which became its headquarters in 2013.

Established in 1923, YSN was the world’s first nursing school based at a major university. Today, the school offers master’s and doctoral degree programs, as well as joint degree programs with Yale’s Schools of Divinity and Public Health. The school also has a long-standing tradition of community outreach and sponsors numerous health care education and clinical practice programs in New Haven and elsewhere in Connecticut.

Research is a major focus at YSN. Faculty and students are developing strategies to address the most pressing global health care problems, such as diabetes, sleep disorders, cancer, heart disease, HIV-AIDS, and mental health. YSN researchers are also exploring new ways to manage chronic illness; pursuing biobehavioral research; and working to improve health for vulnerable populations.

The school’s new headquarters on West Campus, which is approximately 5,000 square feet larger than its previous facility, allows YSN to greatly expand its educational, research, and clinical care programs. In turn, the arrival of the school’s 350 students and 85 faculty and staff can only strengthen and expand the collaborative work already underway at West Campus.

RESPONDING TO AN EVOLVING FIELD

Today the field of nursing is changing. Nurses continue to care for patients at hospitals and in the community, but they also contribute original research, shape policy, and have an undeniable impact on the future of health care. They are valued for their expertise in the most complex social issues, from childhood obesity and infectious diseases to the holistic management of chronic pain. And they make powerful contributions to global health. As the nation’s population ages and more people see the personal and professional impact they can have by choosing nursing, the demand for nurse leaders continues to grow. The Yale School of Nursing’s new home at Yale West Campus provides the ideal setting to respond to this growing need.



Inside the West Campus community

The West Campus community is characterized by lively intellectual interactions and initiatives involving faculty, staff, and students from a variety of departments and disciplines.

The campus regularly hosts conferences, symposia, and talks by visiting experts, and its popular brown bag series features speakers from both business and academic enterprises. West Campus' hiking trails and open spaces serve as a laboratory where students from local schools can study nature and observe wildlife. In addition, the Yale Peabody Museum holds community education classes for adults on the campus.

Facts about Yale West Campus:

- The campus is just seven miles from New Haven, and spans the Orange and West Haven town lines.
- It has 136 acres, 17 buildings, and 2,750 parking spaces.
- A state-of-the-art conference center is available for the Yale community, complete with five conference rooms, a 260-seat auditorium, video conferencing facilities, a game room, and lounge areas.

- A campus shuttle between West Campus and both the Central and Medical campuses arrives every 30 minutes.
- A fitness center – complete with cardio and resistance training equipment, yoga and fitness classes, and show-ering facilities – is free for all community members.
- Bright Horizons, a full-service childcare facility, is located on West Campus.
- Yale Dining has created a full-service dining hall. The newly renovated facility has the capacity to hold nearly 300 people – and serves 600 meals every week.
- A West Haven rail station opened in 2013.
- A community farm has been created by the Yale Farm and Sustainable Food Project.

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Michael Marsland: cover; page 7, bottom left; page 10, top left

Yale Office of Public Affairs: page 8, middle

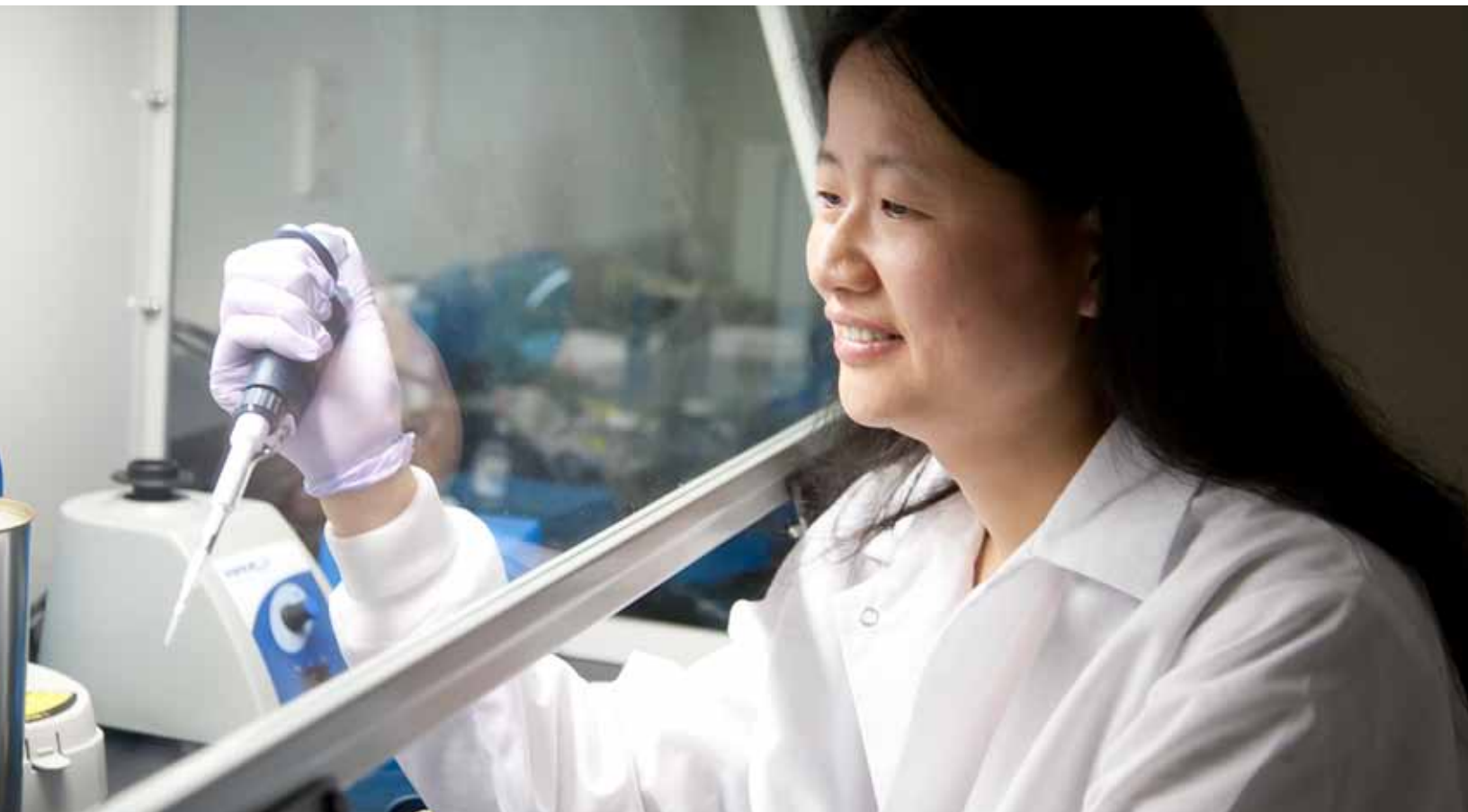
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