

Horticultural News and Research Important to American Gardeners

RARE MINERAL FOUND ON ALPINE PLANTS

A rarely-occurring mineral that has potential pharmaceutical and industrial uses has been found on the leaves of a number of alpine plants in the saxifrage family. Three researchers from Cambridge University in the United Kingdom teamed up to study why vaterite, an unstable form of common calcite, is



Vaterite, a rare mineral with potential medical applications, was discovered on the leaves of certain alpine plants, such as *Saxifraga sempervivum*, shown above.

showing up as a component of a crusty white coating on the leaves of saxifrage plants in the university Botanic Garden's collection of European alpenes.

Because vaterite tends to quickly revert to calcite when exposed to the elements, naturally occurring vaterite is rare on Earth. Tiny quantities of the mineral have been found in some ocean and freshwater crustaceans, in bird's eggs, and in meteorites. According to Raymond Wightman, who is manager of the microscopy facility at the university's Sainsbury Laboratory, vaterite's instability may be why its presence has gone undetected on plants until now. "The alpine plants that we analyzed are largely protected from the weather, so that might be why the vaterite retains

its form," says Wightman, the lead researcher on the project.

Wightman and his colleagues at the university's Botanic Garden identified the vaterite as part of an ongoing research study that involves microscopic analysis of plants. Now, they will focus on why certain alpine plants are making the vaterite, and will try to identify additional species that may be producing the mineral.

"The fact that some plants make vaterite is remarkable in itself," says Wightman, but he went on to note that the discovery has even greater ramifications because vaterite "has been earmarked as a substance with the potential to deliver certain medicines to their sites of action in the human body."

To read more about the study, visit www.slcu.cam.ac.uk/news/vaterite-found-in-plants-for-first-time.

LANDSCAPE ARCHITECTS REVEAL MOST POPULAR DESIGN TRENDS

Each year, the American Society of Landscape Architects conducts a survey among its members across the country. This

year, for the first time, the survey included questions about landscaping trends at multi-resident facilities such as apartment complexes and nursing homes, in order to gain a more complete perspective on all types of projects. According to the feedback from some 800 practicing landscape architects, open spaces suitable for activities such as yoga and movie nights, along with charging facilities for mobile devices, are increasingly important to clients.

As for single-family residences, landscape architect Brooks Kolb from Seattle, Washington, says "outdoor dining and entertaining seem to be most important to clients," with features such as fire pits and fireplaces topping the list of desired design elements. Outdoor speakers and lighting continue to be popular.

The survey indicated that sustainability remains an important issue, but Kolb says that some of the interest in sustainable gardens "appears to be driven by cities, jurisdictions, and permitting agencies" rather than directly by clients.

Learn more about the results of the survey at www.asla.org.



This award-winning landscape design, "Padaro Lane" by Keith LeBlanc Landscape Architecture, displays on-trend use of permeable paving and plenty of open space for outdoor recreation.

PROGRESS ON MILDEW-RESISTANT IMPATIENS

Gardeners and nursery owners were caught by surprise in 2008 when a fungal disease called impatiens downy mildew decimated summer bedding impatiens (*Impatiens walleriana* and hybrids) all across the country. The highly infectious disease spreads rapidly and is almost impossible to eradicate from the soil once it is present. Researchers have spent the intervening years trying to breed powdery mildew-resistant impatiens with some success. Earlier this year, Ball Horticultural Company based in Chicago, Illinois, announced a major breakthrough: the sequencing of the entire *Impatiens walleriana* genome.

Matt Kramer, research director for Ball, says the genome sequencing project took a little more than two years, thanks to a collaboration with KeyGene, an international biotechnology company. “The intent was to create new knowledge about an important product while at the same time assisting in delivering a solution to a pressing disease problem impacting the entire industry,” Kramer says.



Fuzzy white growth on the undersides of impatiens foliage is a symptom of highly infectious impatiens downy mildew.

Don't head to the garden center just yet, though. While the mapping of the genome is already helping plant breeders identify promising genes to target, it will likely be a few years before gardeners can purchase disease-resistant bedding impatiens selections.

One line of impatiens is being developed by Ball's subsidiary, PanAmerican Seed, also headquartered in Chicago. According to Lisa Lacy, PanAmerican Seed's global products manager, the new impatiens are based on the company's Super Elfin® impatiens series, and will resemble that line in “plant vigor and size.”

Meanwhile, Syngenta Flowers, based in the Netherlands, recently released a disease-resistant impatiens series named Imara® to some European markets, but there's no word yet on whether this line will be available in North America.

For more information about the genome sequencing breakthrough, visit www.ballseed.com.

DAFFODIL EXTRACT MAY YIELD CANCER TREATMENT DRUG

A natural alkaloid called haemanthamine (abbreviated HAE) found in daffodils holds promise as an anticancer agent, according to a report published in March by an international research team. “HAE, which is extracted from daffodil bulbs—in this case from *Narcissus* ‘King Alfred’—could be

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PEOPLE and PLACES in the NEWS

2018 SCOTT MEDAL AND AWARD WINNER

Paul W. Meyer, the F. Otto Haas Executive Director of the Morris Arboretum at the University of Pennsylvania, is the 2018 recipient of the Scott Medal and



Award. The prestigious award from the Scott Arboretum of Swarthmore College, also in Pennsylvania, recognizes individuals who have made outstanding national contributions to the science and art of gardening.

In the course of his four-decade career at the Morris Arboretum, Meyer has led the arboretum's sustainability efforts, including the construction of its LEED-certified Horticulture Center, which includes a geothermal heating system, solar power, and a green roof. A founding member of the North

America-China Plant Exploration Consortium, Meyer has participated in dozens of plant hunting expeditions in Asia and Europe and is known for fostering collaborative partnerships with international colleagues. His previous honors include the Liberty Hyde Bailey Award from the American Horticultural Society in 2014, and the Award of Merit from the American Public Gardens Association in 2013.

For more on the Scott Medal and Award, visit www.scottarboretum.org/learn/scott-medal-award.

LANDSCAPE DESIGNER OF THE YEAR

The Association of Professional Landscape Designers (APLD) has named **Margie Grace** its 2018 Landscape Designer of the Year. Grace, the principal of Grace Design Associates in Montecito, California, also won the APLD's Gold Award for the redesign of her Sycamore Canyon office and home in Montecito.



An accomplished landscape contractor who has been featured in major publications and has completed projects worldwide, Grace transformed Sycamore Canyon from what one judge described as "a dreary and uninviting space" into a miniature version of the renowned Lotusland garden in Santa Barbara. "The design is an homage to Lotusland's creator, Madame Ganna Walska," says Grace.

"The garden blooms in shades of pink and features dramatic potted plants and reproduction grotesques from Lotusland itself."

For more information on the organization's award program, visit www.apld.org.

THE GARDEN CLUB OF AMERICA 2018 MEDAL OF HONOR RECIPIENT

This year's Garden Club of America Medal of Honor winner is Hawaiian horticultural leader **Charles R. "Chipper" Wichman**, who currently serves as the chief executive officer, president, and director of the National



Tropical Botanical Garden (NTBG) based in Kaua'i. Wichman has contributed decades of service to the stewardship of native plants and tropical ecosystems in Kaua'i's Limahuli Valley. He also coordinated the first World Conservation Congress held in Hawaii in 2016, and led the construction of the Juliet Rice Wichman Botanical Research Center on Kaua'i, among many other achievements.

For more information on the GCA Medal of Honor, visit www.gcamerica.org/medals.

used to preferentially kill cancerous cells at a concentration that would leave normal cells unaffected," says Denis L.J. Lafontaine, the study's leader and a professor at the Université Libre de Bruxelles, Belgium.

"Haemanthamine may be important for curing cancer because it inhibits both the production and the function of ribosomes," Lafontaine says. Ribosomes, Lafontaine explains, are the "nanomachines" in our cells that make all needed cell proteins. Cancer cells rely on ribosomes



Daffodils contain a compound that helps destroy cancer cells at low concentrations.

to fuel their growth and spread, so the researchers posit that HAE's ability to block both the function and ongoing production of ribosomes may help kill off cancerous cells.

According to Lafontaine, the medicinal properties of daffodils have been of great interest since ancient Greek and Roman times, but scientists are only now starting to understand the benefits and intricacies of the compounds responsible for the medicinal effects.

Moving forward, Lafontaine and his collaborators will now test the anticancer potential of other alkaloids related to HAE in order to identify which is the most effective in battling cancer cells. For more on the study, published in the March 6 issue of the journal *Structure*, visit www.lafontainelab.com.

News written by Editorial Intern Mackenzie Nichols.