

Secrets of the poet's daffodil revealed

The secrets of a flower known as the poet's daffodil fell to science.

The genetic code of the daffodil's chloroplast — the DNA responsible for photosynthesis — was mapped for the first time, BBC reported.



RODNEY LAY/RHS

Narcissus poeticus was one of the first daffodils to be cultivated and is linked to the Greek legend of Narcissus.

In Greek mythology, the flower that bears his name sprang up where he died.

Researchers from the UK's Royal Horticultural Society (RHS) and the University of Reading deciphered the genetic code of the chloroplast — where the energy from the light of the Sun is turned into food by photosynthesis.

Daffodils facts

Daffodils have long been considered

one of the heralds of spring. They can be planted in borders and containers. The Latin name of the plant family is *Narcissus*. Some species hybridize in the wild, and many horticultural crosses between species have resulted in a large range of colorful garden hybrids.

The research could solve the problem of how to make sure daffodil bulbs planted in bulk come up the same color.

There are more than 1,500 different varieties of daffodils, and their bulbs all look the same.

Gardeners are sometimes disappointed when the bulbs they have planted in autumn come up a different color the next spring.

John David, the head of horticultural taxonomy at the RHS, said chloroplast DNA is a good way of finding a marker that is specific to a particular cultivar (a plant variety that has been produced in cultivation by selective breeding).

"This is an exciting first step in identifying daffodil varieties at the point they are most popularly bought but when there is nothing to tell them apart," he said.

"With so many bulbs due to be planted this autumn it is a huge industry and we hope our work might avoid disappointment for professionals who plant en masse and gardeners who will often seek out their tried and tested favorites."

Sources: Apple cancels production boost for budget iPhone XR

Apple signaled disappointing demand for the new iPhone XR, telling its top smartphone assemblers Foxconn and Pegatron to halt plans for additional production lines dedicated to the relatively cost-effective model that hit shelves in late October, sources said.

"For the Foxconn side, it first prepared nearly 60 assembly lines for Apple's XR model, but recently uses only around 45 production lines as its top customer said it does not need to manufacture that many by now," a source familiar with the situation said, asia.nikkei.com reported.

That means Foxconn, the Taiwanese company traded as Hon Hai Precision Industry, would produce around 100,000 fewer units daily to reflect the new demand outlook — down 20 percent to 25 percent from the original optimistic outlook, this person said.

Fellow Taiwanese manufacturer Pegatron faces a similar situation, suspending plans to ramp up production and awaiting further instructions from Apple, a supply chain source said.

"The utilization for the XR production is not reaching its maximum capacity now," the source added.

Apple also had asked smaller iPhone assembler Wistron to stand by for rush orders, but supply chain sources said the company will receive no orders for the iPhone XR this holiday season.

Apple, the world's most profitable smartphone company, had great expectations that the iPhone XR would jumpstart shipments this year. This lower-cost model debuted alongside the iPhone XS and top-of-the-line XS Max.

Yet the California-based tech company instead is requesting more of the older iPhone 8 and iPhone 8 Plus models, which are up to 20 percent cheaper than the XR's starting price of \$749.

"Suppliers of iPhone 8 and iPhone 8 Plus are getting a combined order of around five million more units," one source said.

Apple previously planned 20 million units for the older iPhone models this quarter, but raised the figure to 25 million units, the individual said.

Foxconn is the main supplier for iPhone 8 Plus, while Pegatron is the key supplier for the smaller-screen iPhone 8.

Apple did not respond to Nikkei Asian Review's request for comment. Foxconn, Pegatron and Wistron also declined to comment.

The moves to add orders for year-old iPhone models while suspending extra production for the latest product illustrates Apple's lack of innovation and inability to energize consumers with such a pricing strategy. Last year, Apple gave rush orders for the iPhone 7 series following the launches of the iPhone 8 series and premium iPhone X.

Apple also faces a quickly maturing smartphone market. Worldwide shipments, which slipped 0.1 percent in 2017 for the first year-over-year decline, are expected to contract again in 2018, research company IDC said.

The Silicon Valley company prepared more cautiously for production this year, looking to avoid severe inventory corrections later. Apple asked suppliers to prepare 20 percent fewer components for this year's new iPhones compared with last year.

The company is now reviewing iPhone demand weekly to adjust orders quickly in response to the market, a source said.

Apple gave a lukewarm forecast for the holiday season on Thursday. The company also said it will cease disclosing unit shipments for iPhones, Macs and iPads beginning in the December quarter. The unexpected policy change raised concerns that the US tech giant is struggling to spur unit sales growth looking ahead.

"Apple's move will hamper the predictability of earnings," Jeff Pu, a Hong Kong-based analyst for GF Securities, told the Nikkei. The American company's reluctance to disclose shipment volumes also suggests that Apple faces the possibility of its first annual decline next year and wants the public to focus elsewhere, the analyst said.

China's Huawei Technologies snatched Apple's global No. 2 smartphone share for two straight quarters this year. IDC statistics show Apple's shipments trailed Huawei's during the quarter ended in September. Apple's combined iPhone shipments grew only 1.37 percent on the year over the first nine months, IDC's data showed.

"The chance for Apple to revise upward its production for iPhone XR and iPhone XS during this Christmas holiday season is very thin, given the forecast provided by the company and our supply chains check," Pu said.

Demand for the most premium iPhone XS Max is only slightly better than that for the other two new models, the analyst said.



REUTERS

Scottish researchers create 'crystal maze' for light



CHANNEL 4

Researchers at Heriot-Watt University in Edinburgh created a 'crystal maze' to control how light spreads.

However, unlike the Channel 4 TV game show, this one is telling scientists more about how light can be manipulated, BBC reported.

It could also lead to new and better devices in fields like healthcare and telecommunications.

This is part of the fledgling field of topological photonics, which has developed as a result of the drive to understand more about how matter behaves.

In 2016 Bearsden-born David J. Thouless shared the Nobel physics prize with Duncan Haldane and Michael Kosterlitz for their work on topological phases of matter.

This field had emerged from mathematical theory.

Topology looks at entities whose properties are maintained even when they undergo continuous deformation.

They can be stretched, bent or twisted while still maintaining their fundamental properties.

Cutting, tearing and sticking back together are not allowed under these rules.

If that is still a bit of a stretch to understand, why not have a mug of coffee?

Because a classic example is to imagine a coffee mug. Imagine a bit more, that the mug is made of bendy, stretchy stuff like modeling clay.

If you deform the mug enough you can make it into the shape of a doughnut.

But in topological terms its properties have been preserved. It is still a single lump of stuff with a single hole in it.

Topological photonics has taken these concepts into the world of light — photons being the individual packets of energy from which light is made.

Its new techniques have led to new ways in which light behaves and can be manipulated: Bent, twisted but not cut or glued.

At Heriot-Watt, Professor Robert Thomson and Dr. Seabrat Mukherjee have created a new kind of crystal to control the spread of light.

Writing in the journal *Nature Communications*, they said they did it using an ultrafast laser which "wrote" the crystal into glass.

Ultrafast in this context is a laser that can emit light pulses just one-trillionth of a second long.

Then they put the crystal into an optical cavity to trap the light. This meant it was continually recycled so they could capture how the light's topological state evolved.

It was the photonic equivalent of our doughnut and coffee mug.

A deeper understanding

Thomson and Mukherjee designed a new ultrafast imaging technique to capture and film the evolution of light inside the crystal.

In effect they were able to

watch light as it formed.

Mukherjee hoped the new technique will help a wide range of scientists in fields like optics, photonics and condensed matter physics, opening the door to "a deeper understanding of fundamental physics".

Thomson said it will help researchers understand exactly how these new topological photonic systems work — and what their limitations and advantages are.

He said, "Once we understand these, a range of new potential applications could be enabled, including new more powerful lasers and new types of endoscope."

The team said it could transform current light technologies like fiber optics and the telecommunications industry.

It is 45 years since Arthur C. Clarke produced his Third Law: "Any sufficiently advanced technology is indistinguishable from magic."

Technology could be about to advance yet again.

Amazon drops free shipping minimum in tussle for holiday sales

Amazon.com Inc. said on Monday it would offer free shipping with no purchase minimum for the first time this holiday season, heating up the competition with Walmart Inc. and other rivals vying for customers' Christmas shopping spree.

The US-only promotion, effective from November 5, waives the \$25 minimum that customers outside Amazon's loyalty club Prime must hit for free shipping, Reuters reported.

The deal lasts until Amazon can no longer promise items in time for Christmas with free delivery, which typically takes five to eight business days.

The announcement could help Amazon sustain its rapid sales growth. Shares of the world's largest online retailer were hammered last month after it forecast the slowest rise in revenue at least since the start of 2016. The current quarter typically is Amazon's biggest.

Amazon cut its order minimum

for free shipping to \$25 from \$35 indefinitely in May 2017.

away at Amazon's lead with their own offers of free two-day ship-



PASCAL ROSSIGNOL/REUTERS
The logo of Amazon is seen at the company logistics center in Boves, France, on August 8, 2018.

Monday's news will pile pressure on Walmart and Target Corp., which in recent years have chipped

ping. While Walmart has maintained its \$35 order threshold this holiday, Target has scrapped its

minimum until December 22.

Just over half of all US households have a Prime subscription, analysts estimate. Prime remains the cornerstone of Amazon's business because shoppers buy more from the retailer once they pay \$119 for the year-long membership. Perks include same-day shipping and video streaming.

Amazon is now courting those outside the club, hoping its brand and wider selection will set it apart. Free shipping can apply to hundreds of millions of items on Amazon, versus hundreds of thousands on Target. Target promises to deliver the items faster, however.

It was unclear how free delivery on small-ticket items would impact net income for Amazon, which last month touted improvements in efficiency.

According to the Seattle company's latest annual filing, shipping costs nearly doubled from 2015 to 2017, reaching \$21.7 billion.