



THESSALONIKI, Central Macedonia, Greece: People stand in front of an artwork illuminated in pink, "Umbrellas" by Greek sculptor George Zongolopoulos, part of a campaign to raise awareness and promote prevention and treatment of breast cancer, along the seaside of Thessaloniki yesterday. —AFP

'NEW DAY' IN LUNG CANCER AS MERCK DRUG SHINES

KEYTRUDA CUTS RISK OF DEATH 40% IN BIG LUNG CANCER STUDY

COPENHAGEN: Merck & Co scored a double hit yesterday with new clinical data showing its Keytruda immunotherapy offered big benefits in previously untreated lung cancer patients, either when given on its own or with chemotherapy. As a monotherapy, Keytruda halved the risk of disease progression and cut overall deaths by 40 percent compared to chemotherapy alone in pre-selected patients whose tumours had been tested using a biomarker.

And when given with two older chemotherapy drugs in non-selected patients, it was almost twice as likely to shrink tumours as chemotherapy alone. Another similar drug from Roche also demonstrated broad efficacy as a so-called second-line option in patients who had received prior treatment.

"Remember this day. It's a new day for lung cancer treatment," Stefan Zimmermann of Lausanne's University Hospital told reporters at the European Society for Medical Oncology (ESMO) congress as the results were presented. An editorial in the New England Journal of Medicine, where the Merck monotherapy results were published, said Keytruda could become "a new standard of care".

The various findings suggest that treating lung cancer - the biggest cancer killer globally - with powerful new immune system-boosting medicines is going to involve more permutations than some experts originally expected. Rival drugmaker Bristol-Myers Squibb had tried a catch-all approach with its Opdivo drug but it failed to help previously untreated patients when given on its own in a trial that included

people with low levels of a protein called PD-L1.

Keytruda, as a sole agent, was targeted only at patients with high PD-L1, making them more receptive to immunotherapy.

Lead researcher Martin Reck of Germany's Lung Clinic Grosshansdorf predicted that testing for the PD-L1 biomarker would now become standard "from today". US regulators are expected to decide whether to approve Keytruda for first-line non-small cell lung cancer, the most common type, by Dec. 24. Merck had already said in June that Keytruda worked in the trial but the scale of the benefit was only disclosed at ESMO.

COMBINATION THERAPY

The second trial, mixing Keytruda with chemotherapy, was much smaller but was notable because it was the first time that a combination of immunotherapy and chemotherapy has been shown to work in a randomised Phase II study. Many experts have been skeptical about this approach and investors' expectations, up until now, have been quite low. In the event, researchers reported that Merck's combination cut the risk of disease progression or death by 47 percent compared to chemotherapy alone after 10.6 months, while 55 percent of patients saw their tumours shrink versus 29 percent.

Patients in this trial were not selected by PD-L1 expression but the study did find that those with higher PD-L1 had a higher response. Roger Perlmutter, Merck's head of research, said both trials suggested Keytruda could offer a broad array of patients meaningful improvement over

standard platinum-based chemotherapy, which is now more than two decades old.

Drugs like Keytruda and Opdivo work by taking the brakes off the immune system and allowing the body's natural killer cells to home in on tumors. They are expected to sell tens of billions of dollars in the years ahead, with lung cancer the largest market. Up until now, Bristol has dominated the field but investors have started to shift their bets, with forecasts for Opdivo declining while those for Keytruda have risen.

The current consensus forecast among analysts is for Keytruda sales to reach \$8 billion in 2021, with Opdivo selling \$10.5 billion, according to Thomson Reuters data. Results of Bristol's failed Opdivo trial, which included patients with tumours testing only 5 percent or higher for PD-L1 against the 50 percent cut-off used by Merck, were also presented at ESMO.

These showed progression-free survival was 4.2 months with Opdivo and 5.9 months with chemotherapy, although the difference was not statistically significant. Overall survival was 14.4 months with Opdivo versus 13.2 months. The failure of Opdivo to work for "all comers" in lung cancer was first announced in August, without any details. It was a major setback for Bristol, wiping out around a quarter of the company's market value, and it has caused investors to rethink prospects for immunotherapy treatments. Many now believe that combination therapy is the way ahead, with Bristol and AstraZeneca working primarily on using two immunotherapies together, while Roche and Merck look at adding chemotherapy. — Reuters

AS ARABLE LAND DISAPPEARS, HERE COME VERTICAL FARMERS

WAREGEM, Belgium: As cities expand, eating up swathes of countryside in the process, agricultural pioneers are finding new ways to grow the fresh produce we need, in containers, empty buildings and any other spare space they can find to create new vertical farms.

"We are just trying to imitate nature. It's not as futuristic as it might sound," insists a smiling Maarten Vandecruys, the youthful founder of Urban Crops, a new Belgian company specialising in indoor growing systems with the help of LED (light emitting diodes) lamps. Behind him, in a spooky, futuristic purple halo of light, stand rows of shelves dedicated to horticulture. It is a closed environment with no natural light. The purple glow is the result of red and blue lamps and is believed to provide the optimal growing conditions. Vandecruys prides himself on the completely automated agro-system he has set up in Waregem, in eastern Belgium. At the Urban Crops lab, a conveyor belt circulates containers of germinated plants which are placed in a special substrate, using no earth to reduce the risks of disease linked to animal-life and other external factors.

The containers are introduced to a closed room, the walls of which are lined with shelves. Under the artificial light the plants develop in a controlled environment, fed through a hydroponic system-water laced with the ideal mix of mineral salts and essential nutrients. No pesticides are required in this much more sterile environment and, as the LED lamps don't heat up, they can be placed close to the plants, allowing for tight layers of plants.

Evolution not revolution

According to Vandecruys the future of vertical farming is to expand to an industrial scale. "It's just an evolution," not an agro-industrial revolution, he says, a natural progression from fields to greenhouses, then from greenhouses to vertical farms.

With his system, a 50 square-metre space (540 square feet) can be transformed into 500 square metres of usable "land". And the plants grow two to three times

faster than outdoors, further increasing yields. In the Urban Crops laboratory, up to 220 mature lettuce plants are produced each day in a 30-square-metre room using just five percent of the water required in traditional agriculture.

However for Samuel Colasse, a teacher and researcher at the Carah agronomic research centre in Hainaut, eastern Belgium, the concept of urban farming is "currently not very convincing" in countries like France and Belgium where the distances between the fields and the towns "aren't enormous".

But in a highly urban environment like New York "there are projects which work pretty well," he says. And in hostile climatic conditions, or in some military or refugee camp situations such "somewhat futuristic" ideas could be envisioned, Colasse adds. His own laboratory has produced everything from bananas to rhododendrons.

Endless uses

For Urban Crops the uses of its vertical farming technology are virtually boundless. The company can foresee its products being used in pharmaceutical labs to produce plants with medicinal qualities, in supermarkets which could sell their own hyper-fresh produce-and at the same time cut out the transport costs-or in isolated communities in Scandinavia and elsewhere.

For now its clients have more modest ambitions. A top restaurant, for example, wants to experiment with the flavor, texture, size and color of its ingredients through subtle changes to the light, temperature and nutrients during the growing process. Urban Foods claims to have produced a type of salad rocket the taste of which "explodes" at the back of the throat.

And for the domestic goddesses, or gods, there are individual shelving and lighting set ups to grow-your-own herbs or cherry tomatoes. Swedish furniture giant IKEA has already jumped vertically onto the home-farming bandwagon, launching its own range of assemble-yourself vegetable kits. — AFP



Lettuce is grown within an automated internal agricultural system with violet LED lighting at Urban Crops in Waregem. —AFP

S AFRICA BASKS IN CONTINENT'S FIRST SOLAR-POWERED AIRPORT

GEORGE, South Africa: At first glance there's nothing out of the ordinary about the regional airport in George, a town of just 150,000 residents on South Africa's south coast. In fact though, the small site is Africa's first "green" airport to be powered by the sun. The control tower, escalators, check-in desks, baggage carousels, restaurants and ATMs-every service here depends on a small solar power station, located a few hundred metres away in a field of dandelions next to a runway.

Its 2,000 solar panels produce up to 750 kW every day, easily surpassing the 400 kW needed to run the airport. The excess is fed back into the municipal power grid, and a computer screen in the terminal informs passengers: "Within this month (September), 274 households were supplied through this system with green electricity."

For environmentally-conscious travellers keen to reduce their carbon footprint, it's a welcome development. "Planes have such a big carbon print," said passenger Brent Petersen, 33, in George. "If we compensate, that's cool."

George Airport was originally built in apartheid-era South Africa in 1977 to make getting home easier for PW Botha, a government minister at the time and later president. It now serves as a transit hub for shipments of homegrown flowers and oysters, as well as golfers visiting one of the region's many courses. Some 700,000 passengers pass through its doors each year. The solar plant, launched in September 2015, is the second solar-run airport in the world after Cochin airport in southern India. Nestled between the Indian Ocean on one side and the majestic Outeniqua Mountains on the other, George was a surprising location for the first attempt at a solar-powered airport in South Africa.

Ambitious project

The town's weather is unpredictable: in the space of half an hour, the temperature can plummet by 10 degrees celsius, the blue skies quickly replaced by a steady drizzle. But so far, so good: even on overcast days, the plant still produces some power. At night or when necessary, the system automatically switches over to the traditional power grid.

"The thinking was if we put (the solar

system) in the worst unpredictable weather, it will absolutely work in any other airport in the country," the airport's maintenance director Marclen Stellenberg told AFP.

The environmental value of the ambitious project is already evident. Since solar became the airport's main source of power, the hub has reduced its carbon dioxide emissions by 1,229 tonnes-the equivalent of 103,934 litres of fuel. The electricity bill has been cut by 40 percent in the space of a year, "which is a plus for me on the budget," said airport manager Brenda Voster. Voster says it will take another five to 10 years to pay off the initial 16-million rand (\$1.2 million) cost. Meanwhile, regular power cuts, which in recent years have plagued Africa's most developed economy, are a thing of the past, she adds.

Heavily dependent on coal, which is the source of 90 percent of the country's electricity, South Africa is looking to diversify its options to avoid power cuts.

Robyn Spence, who works at Dollar car hire company at the airport, said they "had to replace quite a few computers" fried by electricity surges caused by power cuts last year-no longer an issue with the solar system.

Untapped potential

But not all the retailers at the airport are feeling the benefits yet.

Lelona Madlingozi, a kitchen manager at Illy restaurant in the main terminal, said they had two power cuts lasting about three hours each just a month earlier. "We could not sell anything in the shop," she said. Restaurants, said the airport, are not one of the essential services prioritised during power cuts.

Expanding the use of renewable energy is a key focus for management firm, Airports Company South Africa, said its president Skhumbuzo Macozoma. The company's goal is to achieve "carbon neutrality", or net zero carbon emissions, by 2030. In a country with an estimated average of 8.5 hours of sunshine a day throughout the year, solar's untapped potential looks huge. After the success in George, the airports in Kimberley-South Africa's diamond capital-and Upington near the Namibian border have also gone green, with three other regional airports next in line. — AFP



In this photo provided by the United States Geological Survey (USGS), walrus gather to rest on the shores of the Chukchi Sea near the coastal village of Point Lay, Alaska. Pacific walrus are beginning to come ashore near the remote community on Alaska's northwest coast in what's become a marine mammal phenomenon caused by a warming climate. — AP

WALRUS BEGIN ARRIVING NEAR ALASKA VILLAGE IN ANNUAL EVENT

ANCHORAGE, Alaska: Pacific walrus are beginning to come ashore near a remote community on Alaska's northwest coast in what's become an annual marine mammal phenomenon caused by a warming climate. The massive animals have gathered by the thousands each fall on a barrier island near the Inupiat Eskimo village of Point Lay in recent years. Last year, 35,000 walrus hauled out on the rocky beach.

Villagers notified the US Fish and Wildlife Service Friday that the walrus have begun arriving and that about 1,000 are gathered on the island so far, said spokeswoman Andrea Medeiros.

Walrus prefer resting on sea ice to look out for predators such as polar bears. But in 2007, they began coming ashore on the northwest Alaska coast because of receding summer sea ice as Arctic temperatures have warmed. Walrus are considered a major subsistence food for Point Lay residents.

Many worry that disturbances at the hauling site, such as the presence of airplanes overhead or visitors, could panic the walrus into stampedes that kill the smallest animals, Medeiros said. "They're caretakers of those animals," she said. "They want to ensure that those animals are not disturbed while they're on shore." Medeiros

said the village is working with the agency on an outreach program to discourage people from visiting the animals' gathering site.

In a statement, the village tribal council asked that people leave the walrus alone. The council wrote it is concerned about the animals because they are subject to stampedes that can kill the youngest walrus. It also said the village depends on the animals for food and wants to protect its traditions and culture. Only Alaska Natives who live in the state are allowed to hunt walrus. Point Lay is a community of about 270 people. It is 700 miles northwest of Anchorage and 300 miles southwest of Barrow. —AP