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FINANCE AND TECHNOLOGY UNPACKED

N°3 JULY 2024 | CHF 9.- | WWW.SWISSQUOTE.COM

PORTRAIT
Zurich Insurance
reinvents itself

INDUSTRY
Relocation:
Swiss gains

E-COMMERCE
Temu, China's
addictive bazaar

DOSSIER

Is cancer's defeat near?

Breakthrough treatments
revolutionise oncology

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Preventions and cures

We all know someone who has suffered from cancer, whether a friend, colleague or family member. In Switzerland, more than one out of every five people is diagnosed with cancer before the age of 70. And cancer remains the second leading cause of death after cardiovascular problems. The eldest among us remembers that in the 1980s, receiving a cancer diagnosis was often a short-term death sentence. People close to the patient often saw an obituary a few months later, announcing their death “following a long illness”.

But today, a cancer diagnosis is not necessarily fatal. In Switzerland, 68% of patients are still alive five years after diagnosis and the number of cancer survivors – people living with or cured of the disease – has grown. There are currently 450,000 survivors in Switzerland, which is double what it was 20 years ago. Why is that? Oncology has made enormous strides with the development of treatments that are increasingly targeted and personalised, particularly immunotherapies. Developed about 15 years ago, immunotherapies use the patient’s immune system and are enormously successful, both medically and commercially.



And this cancer treatment revolution continues to improve. Companies such as Moderna and BioNTech, which became very relevant during the pandemic, are currently developing therapeutic vaccines that are highly promising in treating cancer. Such innovation, among many others, is hope that certain cancers might soon become chronic illnesses, similar to diabetes.

But the progress made with cancer treatments doesn’t negate the need for prevention. Too many avoidable cancers, particularly lung cancer, continue to kill. Making healthy decisions is still top priority. The second priority is to be screened regularly... Because the earlier a cancer is detected, the better the prognosis will be. In this field, companies such as Basel-based giant Roche are working on developing tests that can provide early detection of 50 cancers from a simple blood test. Another upcoming revolution that hopefully means less people will die “following a long illness”.

We hope you enjoy reading!

BY MARC BÜRKI,
CEO OF SWISSQUOTE

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impresum

Publisher
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Chemin de la Crétaux 33
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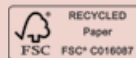
Photography
Alamy, AFP, Keystone,
Getty images, Istockphoto,
Shutterstock, Theisplot,
Unsplash

Printing, binding and distribution
Stämpfli Ltd.
Wöflistrasse 1
3001 Berne
www.staempfli.com

Translation
Acolad

Advertising
Infoplus AG
Traubenweg 51
CH-8700 Küsnacht
hans.otto@i-plus.ch

Wemf
REMP 2023: 86,795 ex
Print run: 110,000 ex



printed in
switzerland

SUBSCRIPTION
CHF 40 for 6 issues
www.swissquote.ch/magazine

Swissquote

RAW MATERIAL

Uranium, the new safe haven

In mid-May, a pound of uranium was worth almost \$72 on the spot markets, more than double the price in January 2021, when it was trading for \$30. This rise stems from the coup d'état in Niger in July 2023, which disrupted production in that country, and from sulphuric acid shortages from the Kazakhstani company Kazatomprom, the world's largest supplier. Prices are expected to increase further as a result of the US embargo on enriched uranium

imports, adopted on 14 May and set to take effect mid-August. Adding to that, demand is booming. The United States, United Kingdom, Japan and Sweden all have reactors under construction. China alone plans to build 150 new nuclear power stations over the next decade. Yellow Cake, a firm based in the Channel Island of Jersey that buys and sells uranium, saw its share price gain 70% over the year to mid-May.

→ YCA



Operated between 1978 and 2021 by the French group Areva, now Orano, the Cominak mine near Arlit in Niger produced 75,000 tonnes of uranium. The redevelopment of the site, polluted by radioactive waste, will cost 150 million euros and will last around ten years. Here, a worker photographed on site in March 2023.

RANKING

Five countries with the most women on boards (based on the percentage of women at large listed companies in the country in 2022)

- 1. NEW ZEALAND 46%
- 2. FRANCE 45.2%
- 3. ICELAND 44.8%
- 4. NORWAY 43.2%
- 5. ITALY 42.6%

Source : OECD

Top five most popular amusement/theme parks (based on attendance in 2022)

- 1. MAGIC KINGDOM, WALT DISNEY RESORT FLORIDA, USA 17.1 million
- 2. DISNEYLAND PARK CALIFORNIA, USA 16.9 million
- 3. UNIVERSAL STUDIOS OSAKA, JAPAN 12.35 million
- 4. TOKYO DISNEYLAND | JAPAN 12 million
- 5. UNIVERSAL'S ISLANDS OF ADVENTURE FLORIDA, USA 11 million

Source : Statista



A synthetic diamond on a Pandora ring.

JEWELLERY

Lab-grown diamonds resurgence in popularity

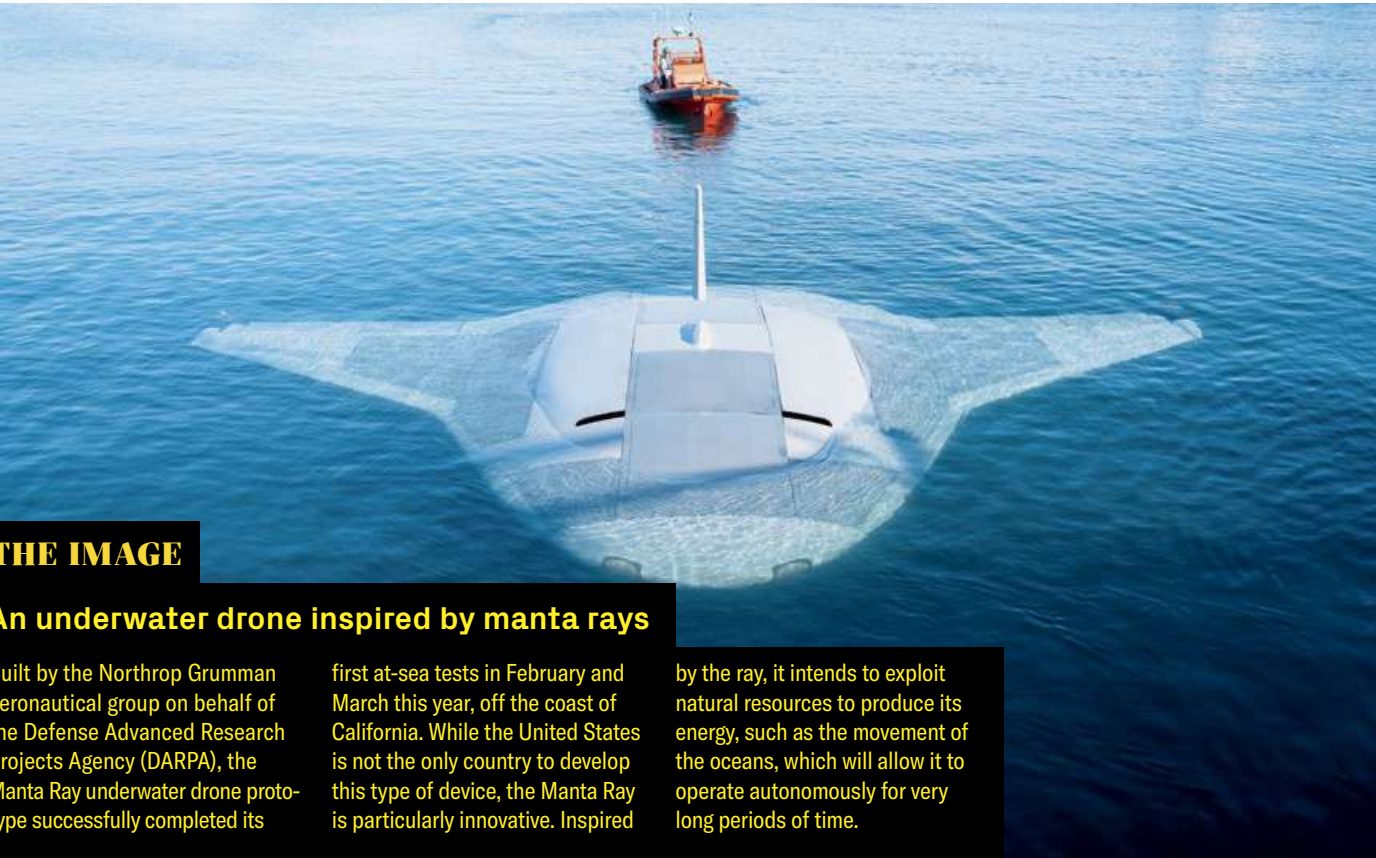
Gen Y and Z-ers are more likely to go for lab-grown diamonds than their elders. Not only do they appreciate the more attractive price – around a third of that of a natural diamond – but also prefer to avoid the ethical and environmental challenges surrounding gem extraction. This new mindset has boosted sales at Pandora, the first major jeweller to forgo natural diamonds in 2021. The Danish group almost

doubled its sales of diamonds made in a laboratory in the last quarter, which soared 87% to 63 million Danish kroner (8.3 million Swiss francs). In 2023, the jewellery manufacturer and retailer generated revenue from lab-grown diamonds of 265 million Danish kroner (34.9 million Swiss francs) and targets revenue from this segment of 1 billion Danish kroner (131.9 million Swiss francs) by 2026. → PNDORA



“If you look at the advance in core EV technology, they’re still years and years behind Tesla. [...] The engineering is very disappointing”

Peter Rawlinson, CEO of Lucid Motors.



THE IMAGE

An underwater drone inspired by manta rays

Built by the Northrop Grumman aeronautical group on behalf of the Defense Advanced Research Projects Agency (DARPA), the Manta Ray underwater drone prototype successfully completed its

first at-sea tests in February and March this year, off the coast of California. While the United States is not the only country to develop this type of device, the Manta Ray is particularly innovative. Inspired

by the ray, it intends to exploit natural resources to produce its energy, such as the movement of the oceans, which will allow it to operate autonomously for very long periods of time.

\$11 BN

Roughly how much Bayer has paid out so far to compensate 100,000 victims of Roundup, a pesticide blamed for causing cancer. The product was developed by Monsanto, a company bought by the German group in 2018 for \$63 billion. The final bill for the legal action could reach an additional €6 billion.



“We’re gonna do an exchange program [...]. A couple months in North Korea, nice-tasting flavored bark. See how you feel about that”

Palantir CEO Alex Karp, lashed out against pro-Palestinian protesters at US universities.

£39
M

Heineken's investment in the UK to breathe new life into more than 600 suburban pubs. Unlike city centre pubs, which are struggling to return to their pre-pandemic levels, pubs around housing estates are doing just fine, with more people working from home.

JUSTICE

As healthy as ever, Sandoz signs a peace agreement with Amgen

Sandoz has reached a settlement with Amgen, which accused it in US courts of infringing on its patent for denosumab, an osteoporosis antibody sold under the brand names Prolia and Xgeva. The agreement means that the company can launch two biosimilar versions to market as of June 2025. This segment is significantly boosting the results of the Swiss pharma company, which was recently spun off from Novartis. In the last quarter, Sandoz's total sales rose 6% (at constant exchange rates) to \$2.5 billion, but sales at its biosimilars business climbed 21%. These healthy results came from strong demand for Hyrimoz, a drug for inflammatory conditions recently launched in the United States, and from the acquisition of Cimerli, a treatment for macular degeneration. → SDZ



"We will keep fighting for your rights in the courts"

TikTok CEO **Shou Zi Chew**, after a law was passed in the United States to ban the social media platform.

© ON RUNNING / JAMP ARRIENS, AFP / NESTLÉ



On Running's collaboration with designer Loewe. The Swiss company is now multiplying this type of partnership for its clothing line.

FASHION

On Running: from running to the catwalk

On Running, the Swiss running shoe brand that attracted Roger Federer as an investor, was quickly embraced by runners when it was launched in 2010. But recently, On Running has gone interstellar, now a fashion accessory donned by stars such as Zendaya and Ryan Reynolds, riding the wave of gorpcore – the trend of wearing of outdoor gear as streetwear. This shift

was propelled by collaborations with the designer Loewe. The first On clothing collection, designed by Tim Coppens, is due for release this spring and is expected to further drive its popularity. In 2023, the brand's sales soared 46.6% to 1.79 billion Swiss francs. It now has 50 stores and will be opening three more, including one on the Champs-Élysées.

→ ONON

PHARMA

Anti-obesity drugs are booming

Semaglutide, an anti-obesity medication, provides 10% weight loss that can be sustained for at least four years. Now a blockbuster, the drug has driven the performance of Novo Nordisk, the Danish firm that sells it under the brand names Wegovy and Ozempic. And this trend is set to continue: a new study presented at a conference shows that semaglutide also helps to reduce the risk of heart attack and stroke, regardless of a person's weight. That puts Novo Nordisk a step ahead of the competition. Eli Lilly has its own anti-obesity treatment, Zepbound, whose efficacy is proven. Amgen, Pfizer, Boehringer Ingelheim, and the



An Ozempic pen injector, as used by those with excess weight to self-inject.

Chinese companies Sciwind Biosciences and Eccogene, all have clinical trials underway. Meanwhile, Roche has bought California-based Carmot Therapeutics for \$2.7 billion, to get its hands on three anti-obesity treatments. → NOVO-B

50,000

Number of chips that will be produced every month by a new factory that Tata Group is building in Gujarat for \$11 billion, a signal that India is setting its sights high in the semiconductor sector. As a comparison, the two new fabs being built by Taiwan's TSMC in Arizona will have a monthly production capacity of 25,000 chips each.

COFFEE

Nespresso moves into India

Nestlé is to open its first Nespresso boutique in New Delhi, India, by the end of the year. Additional stores will pop up in 2025 in other cities in the country. The Vevey-based group will also begin distributing its capsules and coffee machines on the subcontinent to personal home and professional customers via an e-commerce channel. It hopes to capitalise on the growing demand for premium coffee from new middle classes. The Nespresso system is currently sold in 81 markets. Launched in 1985, the brand has 800 shops in 76 countries.

→ NESN



The first packaging of Nespresso capsules, in 1985.

THE QUESTION

Farfetch recently sold, Matches Fashion no longer exists, and Net-a-Porter is lagging. Why is it so hard to sell luxury goods online?

These platforms made the mistake of not targeting customers with very high added value, instead focusing on a mainstream audience, who will treat themselves to a luxury item from time to time, especially if it is on sale. But that is not the segment that brings in the most cash. For luxury brands, multi-brand e-commerce websites have essentially become vehicles for disposing of their surplus stock or for reaching certain markets where they are not yet physically present. The online shopping experience also leaves much to be desired. Luxury ceases to be luxury when you receive your purchase on your doorstep in a crumpled brown envelope. E-commerce platforms will never be able to reproduce the effect of a visit to a luxury boutique, with its private lounges and sales assistants who know your tastes. And in the post-pandemic era, why deprive yourself? Worsening the situation, the cost-of-living crisis is squeezing middle-class incomes.

Thomai Serdari, associate professor of Marketing and Director of the Fashion & Luxury MBA at New York University's Stern School of Business

ACQUISITION

Richemont expands its jewellery division (again)

The Richemont group has acquired the Italian jewellery designer Vhernier. Known for its sculptural designs, Vhernier was founded in 1984 and has 16 mono-brand boutiques, including one in Geneva, and also owns the silversmith workshop De Vecchi Milano 1935. Vhernier will join the Swiss company's Jewellery Maisons business area, which is already home to Cartier, Van Cleef & Arpels and Buccellati.

Performance of this division has been particularly strong in recent years, regularly outpacing that of the watch and fashion divisions. For the year ended 31 March 2024, Richemont's Jewellery Maisons delivered a record operating margin of 33.1%, underpinned by a 6% rise in sales (12% at constant exchange rates) to more than €14 billion. Buccellati even recorded double-digit growth.

→ CFR



Arcades with the Vhernier boutique, now owned by Richemont, on rue du Rhône, in Geneva.

BUST

Peloton goes off the rails

During the pandemic, everyone wanted to own a Peloton connected exercise bike. The trend drove its share price up five-fold from its September 2019 level, just a few months before the COVID-19 outbreak. By early 2021, the share price peaked at \$170. But as soon as the lockdowns were lifted, the brand began a slow descent. Sales slowed, as people returned to fitness or chose to exercise outdoors. In the spring of 2023, Peloton had to recall 2.2 million bikes because of a defective seat post. Revenue reached \$595.5 million in its first quarter of 2024, down 8% from the same period last year. Peloton's shares were worth just \$3.65 on 10 June. → PTON

5,646

Number of aircraft on Boeing's order book, compared with 8,626 for its rival Airbus. This rough patch is due to safety problems with the 737 MAX. In January, one of these planes lost an emergency door mid-flight. The entire fleet had already been grounded for almost two years, following two fatal accidents in 2018 and 2019.



“We have increased our assets by \$2.5 trillion over the last 18 months while keeping our headcount the same, which we credit to productivity gains from technology advances, including AI”

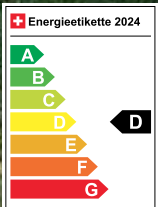
Larry Fink, CEO of BlackRock, on a conference call to present Q1 2024 earnings.

© DR



Quiet, impressive.

The all-electric Audi SQ8 e-tron.



Audi SQ8 e-tron quattro, 504 HP, 28,0-24,5 kWh/100 km, 0 g CO₂/km, category. D



“Freight rates have fallen [...] to an unsustainable level”

Maersk CEO **Vincent Clerc**, complaining about flagging demand in his industry.

THE IPO

Still in the red, Reddit takes a gamble

Putting an end to months of speculation, Reddit launched its IPO on the New York Stock Exchange at the end of March, reaching a valuation of \$6.4 billion. Since its launch in 2005, the social media platform has never turned a profit. Last year, it posted a loss of \$90.8 million. The challenge now is to monetise its 267 million weekly active users, who manage more than 100,000 subreddits. At the end of February, Reddit signed a financial agreement

with Google, authorising the tech giant to use its content to train its artificial intelligence models. In the last quarter, its revenue rose by 48% to \$243 million. But the platform's users are very sensitive to any attempt to commercialise “their” social network. Last year, they closed thousands of subreddits to protest against the decision to charge for access to the app's programming interface.

→ RDDT



Margherita Delle Valle, CEO of Vodafone, speaking on the future of European telecom operators at Mobile World Congress 2024 in Barcelona (26 February).

TELEPHONY

Vodafone in search of rebirth

At the turn of the century, Vodafone was worth \$152 billion and had an international telecommunications empire spanning five continents. But the company thought a little too big and made a series of poorly strategised acquisitions. It was also slower than its peers to create bundles combining telephone, broadband internet and streaming services. These setbacks have forced it to leave

the American, Chinese, French, Spanish, Japanese and New Zealand markets. It is now preparing to shed its Italian arm, sold to Swisscom for €8 billion, to concentrate its efforts on the UK and Germany. In its hopes to return to growth, Vodafone is also planning a merger with its rival Three. However, the deal is currently under investigation by the UK's Competition and Markets Authority. → VOD



Chinese biotechs under pressure from the US

A new front has opened up in the trade war between Washington and Beijing. After banning TikTok and blocking semiconductor exports to China, the US Congress has now proposed legislation that would prohibit contracting with certain biotechnology providers in China (Biosecure Act). This move would seriously affect the gene sequencing giant BGI, which sells a range of prenatal and postnatal care tests in the United States, as well as large pharmaceutical ingredient manufacturer Wuxi AppTec.

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Conceived 85 years ago as an instrument watch with marine chronometer precision, the Portugieser has evolved into a timeless yet dynamic paragon of understated elegance. A slimmer case now makes the Portugieser Automatic 42 even more refined, while double-box glass sapphire crystals showcase the IWC-manufactured 52011 caliber with a power reserve of 7 days and the elaborately crafted dial in a new colour called Silver Moon.
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562 million crypto investors

Nearly 7% of the global population invests in cryptocurrencies, according to a recent report from the company Triple-A. Here are some highlights.

BY LUDOVIC CHAPPEX

Investing in cryptocurrencies is very quickly becoming more mainstream. This information was part of a report published in late May by the company Triple-A, based in Singapore, which specialises in digital currency payments and has published a yearly report for the past four years. The latest, which is free, is a compilation of research into who holds cryptocurrencies around the world in 2024. It appears that 562 million people invest in some form of cryptocurrency, compared to 420 million in 2023. In other words, 6.8% of the global population now invests in cryptocurrencies, which is a 33% increase in just one year.

In some countries, this number is even higher. In the United Arab Emirates, for example, 25.3% of the population invests in crypto-

currencies, which makes it a leader in terms of adoption, just ahead of Singapore (see the graphic opposite). Switzerland is ranked 15th globally, with 11.5% of the population investing in cryptocurrencies.

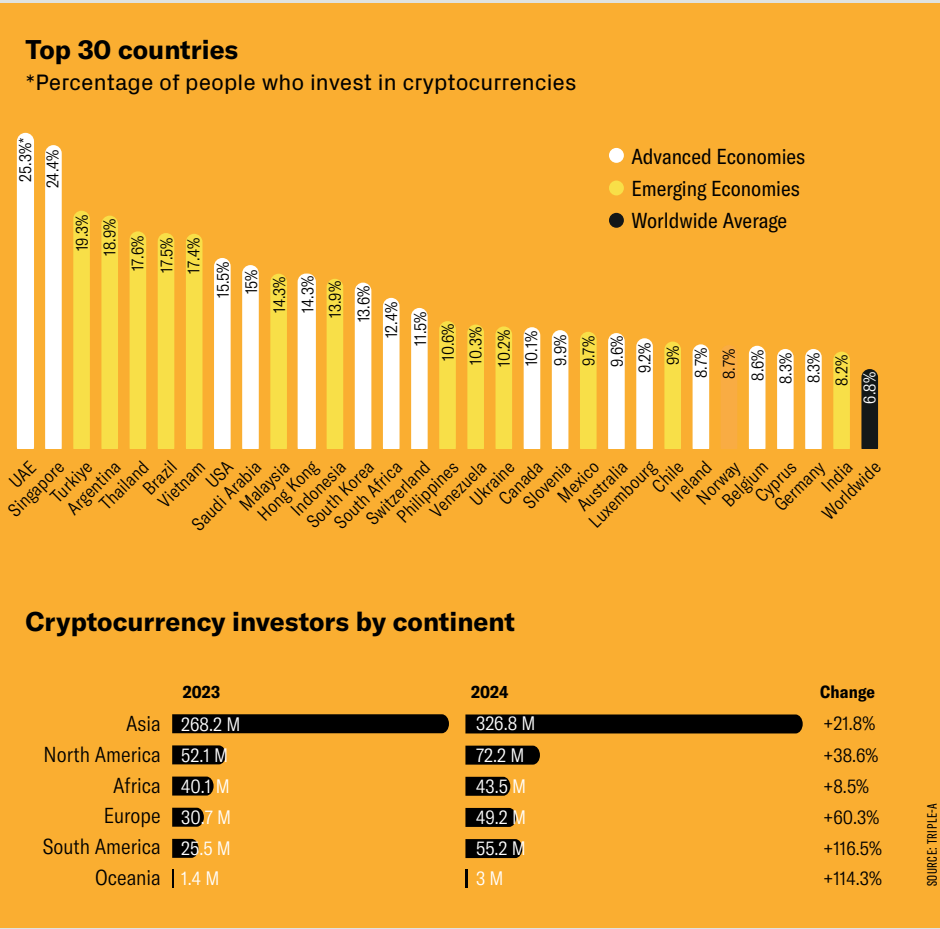
Switzerland is ranked 15th globally, with 11.5% of the population investing in cryptocurrencies

Globally, Asia has the largest number of crypto holders, with 326.8 million residents of Asian countries investing. Europe is naturally quite far behind, with 49.2 million people investing. Notably, growth has been substantial in Europe in the space of a year, with a 60.3% increase in the number of people who

invest in crypto. South America (+116.5%) and Oceania (+114.3%) also saw very strong increase in the past year.

More men than women invest The Triple-A report also shows that more men invest in cryptocurrencies than women (61% compared to 39%) and the 25-34 age range is the most popular (34% of investors), followed by the 35-44 age range (31%).

Another interesting finding is that the number of companies that accept payment via cryptocurrency continues to rise. In 2024, car manufacturer Ferrari and Malaysia-based car sharing company Grab both joined the club, which already includes Hublot, Tag Heuer, Air Baltic and Norwegian. ▲



crypto express

Donald Trump's crypto-friendly campaign

It was made official in late May: former president and leading Republican candidate Donald Trump is accepting cryptocurrency donations to finance his presidential campaign. The White House candidate announced in a press release that he was the “champion of freedom and American innovation” and that several cryptocurrencies can be donated

to a specific wallet via the service Coinbase Commerce. Bitcoin, ether, solana, USDC and Dogecoin are all accepted. On 5 June, the cryptowallet already contained more than \$30 million.

Ethereum's time to shine

Ethereum (ETH) has been attracting attention from traders for several weeks now. On 23

May, after months of suspense, the US market watchdog Securities and Exchange Commission (SEC) gave the green light to allow several spot ethereum ETFs on the market. These are exchange-traded funds (ETF) that allow investors to buy and sell ether without having to physically hold the cryptocurrency themselves. Issuers of these ETFs must have the counter-value of the amounts invested in their funds in ether in a physical wallet. This new milestone, which is expected

to result in a considerable amount of liquidity on the markets, has led to a flurry of optimistic predictions. UK-based bank Standard Chartered believes that the price of ether could rise to \$8,000 before the end of 2024 (or more than a 100% increase compared to its current price), and reach up to \$14,000 before the end of 2025. New York investment firm VanEck is predicting \$22,000 by 2030 as its benchmark price, and \$154,000 in the most optimistic scenario.

Bitcoin ETF: JPMorgan enters the ring

JPMorgan, the largest bank in the United States and historically conservative towards cryptocurrencies, is now investing in spot Bitcoin ETFs. These exchange-traded funds (ETF) follow the price of Bitcoin, which allows for investors to purchase shares representing the value of BTC without directly holding any of the cryptocurrency itself.

This is a sign that traditional financial institutions are becoming more interested in the crypto sector. This information was revealed after a document filed by JPMorgan to the Securities and Exchange Commission (SEC) was published in early May. JPMorgan holds shares in spot Bitcoin ETFs issued by large asset management firms, such as BlackRock, Grayscale and Fidelity. That said, JPMorgan's total amount invested, \$760,000, is still very small.

PORTRAIT

How Zurich Insurance prepares for the future

The Swiss insurer is facing a series of emerging risks, including global warming and cybercrime. But it is employing an arsenal of new AI-based tools to remain competitive.

BY JULIE ZAUGG

On 12 August 2015, the port of Tianjin, an industrial city in northern China, was rocked by a series of explosions, triggered by a container holding nitrocellulose, an explosive substance that overheated. The first explosion caused an even larger explosion, and 800 tonnes of ammonium nitrate caught fire. The fire lasted several days, causing 173 total deaths. Shockwaves from this catastrophe were felt 8,000 kilometres away at Zurich Insurance, on the bank of the Limmat River.

“Losses related to this incident were significant for the insurer,” said Vinit Malhotra, who covers the firm at Mediobanca. Zurich Insurance had to absorb claims totalling \$275 million. Shaken to its very foundations, the company endured several warnings about its earnings in the months that followed. In September 2015, it was forced to cancel the acquisition of UK-based insurer RSA, a transaction estimated at £5.6 billion. CEO Martin Senn stepped down during the chaos. A few months later, he was found dead by suicide at his chalet in Klosters.

Today, those dark days seem far in the past. In 2023, Zurich Insurance generated \$74 billion in operating profits, up 21%. The year before, the group was up 12%. It also made progress

on ambitious goals set for 2023-2025. “Just three months after this plan was announced, earnings per share grew more than 10%, higher than the 8% that was predicted,” said Malhotra.

These good results are primarily due to CEO Mario Greco, who came on in 2016. “He knew how to stabilise the company, which had grown too quickly and had burned through its reserves, and he put it back on a path to success,” said Simon Fössmeier, analyst at Vontobel. “And he did so without costly acquisitions.” Instead, the CEO focused on securing new insurance policies.

“Commercial insurance in the United States, which makes up 25% of operating profits, has proven to be particularly profitable,” said Michael Huttner, analyst at Berenberg. The combined ratio – or the claims and fees divided by the amount of the policies – is up to 90%, which results in extremely high margins.”

↑
An 1890 poster from the company, formerly known as “Zurich”, promoting liability insurance.

© ZURICH INSURANCE



Oligopoly

The Zurich-based group also benefits from its global presence. “Big conglomerates, such as Siemens and GE, look for an insurer that can cover their risks in all the markets where they do business,” said Simon Fössmeier of Vontobel. “And very few insurers are in the position to do so. There are only AXA, Allianz and AIG, along with Zurich Insurance, which has created an oligopoly with high barriers to entry.”

Another significant growth vertical for Zurich Insurance is the Farmers division,

which contributes approximately 30% of the group's operating profits. “Zurich Insurance partnered with US insurer Farmers to provide insurance services,” said Mediobanca's Vinit Malhotra. Unlike traditional insurance premiums, Zurich turns a profit from this partnership in the form of fees. This means that Zurich receives fixed payments for the services it provides rather than collect insurance premiums directly from the insured parties. This model is unique to the insurance industry and has the advantage of not needing to build financial reserves to cover potential losses. It guarantees Zurich a more attractive →

THREE FIGURES

210+

The number of countries and territories in which Zurich Insurance operates, serving 55 million clients.

8H

The time saved by Zurich Insurance when reviewing each medical claim, thanks to the use of an AI tool.

+130%

The average increase expected by 2050 of the costs associated with physical damage and business interruptions caused by climate change, compared to the costs in 2020.



↑
The devastating fire at the port of Tianjin in China in August 2015. This traumatic event caused severe losses for Zurich Insurance at the time.

“Coverage for climate risk has become incredibly expensive”

Michael Huttner, analyst at Berenberg

return on investment thanks to stable, predicted income.

It remains to be seen whether the Swiss firm can maintain this forward momentum in the future. “More than 90% of its revenue comes from the United States and Europe, which are mature markets,” said Simon Fössmeier. “The group is under-exposed to countries that have a strong growth potential, such as Indonesia, which has a young and under-insured population.” But in early 2024 it did acquire a 70% stake in the insurance division of the bank Kotak Mahindra, in India, another market with considerable potential. Shortly after, the Zurich insurer announced that it was expanding its offer in the Baltics.

Increasingly unpredictable risks

Like its competitors, Zurich Insurance must also absorb an increasing number of claims

in the coming years due to climate change. “Over the last three years, the risks associated with severe storms, floods, hurricanes, hail and forest fires have increased significantly,” said David Marlett, director of the Brantley Risk & Insurance Center at Appalachian State University in the US. “A decade ago, a storm in Illinois wouldn’t have caused that much damage. But now, it has the potential to generate claims of up to \$1 billion.”

Risk associated with climate events has also become less predictable and more complex to forecast, requiring insurers to maintain higher reserves. That’s in addition to the significant increase that reinsurers bill primary insurers such as Zurich Insurance. “Coverage for climate risk has become incredibly expensive,” said Michael Huttner of Berenberg. “Reinsurers are also more hesitant to cover middle-range events, such as hailstorms or forest fires.”

But primary insurers struggle to pass these increases on to their clients. “In the US, all rate hikes need to be approved by each state and often states deny the increases,” said Marlett.

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↑
Zurich Insurance CEO Mario Greco has been a key player in the company’s turnaround in recent years. Here, during an interview with Bloomberg Television in London, in 2018.

The Swiss company supplied ChatGPT with six years of data

As a result, Zurich Insurance is inclined to minimise the impact of climate change on its business, and has done so fairly successfully thus far: “The group has considerably limited its exposure to these types of risks in recent years, particularly by moving away from coastal regions in the United States and by refusing to provide new insurance policies,” said Michael Huttner. “Its costs associated with natural disasters only make up 3% of the claims paid out, compared to 3.2% in 2022 and 5% for its rival Allianz.”

With an eye to the future, Zurich was also one of the first insurers to announce this spring that it will no longer cover new oil and gas projects. This year, it also required 65 of its largest commercial clients to reduce their CO₂ emissions – and this number will increase to 450 by 2030. If these clients do not cooperate, they will no longer be insured by Zurich.



But another threat could trip up insurers: cybercrime. In late 2022, CEO Mario Greco even said that this risk had become “uninsurable” and called for the creation of public-private partnerships – such as those that exist in the United States to cover risks associated with terrorist attacks – in order to minimise the exposure that insurers have to this particular risk. In the meantime, Zurich Insurance seeks to limit its own risk. “It has barely entered this market, which for the moment is dominated by insurers in London and reinsurers,” said Simon Fössmeier. But in May, the Swiss insurer did partner with Malaysia-based online bank GXBank to create an insurance against cybercrime, for a period of 10 years.

The time is now for Artificial Intelligence

The group, founded in 1872, has several other tricks up its sleeve. It hopes to use artificial intelligence to better predict – and therefore avoid – various risks, to reduce costs and to improve productivity. In 2022, the company →

↑
The company’s Zurich campus, an architectural marriage of old and new.



↑ Ericson Chan, a renowned fintech expert, has been the Chief Information & Digital Officer of Zurich Insurance since 2022. Here at the Insurtech Insights conference, which brought together hundreds of industry professionals on 20 and 21 March.

poached Ericson Chan, now Zurich's chief information and digital officer, from Ping An, a Chinese insurer that was taking the lead in artificial intelligence.

In 2023, the Swiss company supplied ChatGPT with six years of data on the types of compensation claims received. "This process developed algorithms to automate reviewing insurance claims, paying out clients and catching any fraudulent claims," said Michael Huttner. "This approach should also improve how risks are modelled and allow the company to develop personalised marketing strategies."

A pilot project conducted in 2021 with an artificial intelligence solution from the start-up Sprout.ai shortened the process of declaring property damage from several days to less than 24 hours. The software, based on natural language processing and knowledge graphs, can replace a human employee and can read 10,000 words per microsecond. Another project, this time with startup expert.ai, automated the review of medical

claims and reduced the processing time by 58%.

Sid Mouncey, CEO of Irish company Blink Parametric, was tasked with improving Zurich Insurance's travel insurance product for the Asia-Pacific region. "The goal is to free the client from the claims process, which is often complex and has many exclusion clauses, by automatically paying out exactly what is due," he said.

The solution developed by the startup can automatically track flights that Zurich clients are on. "If a flight is more than three hours late, they receive a QR code that grants them access to a lounge," said Mouncey. In time, he hopes to be able to provide vouchers that can be used in the airport, a discount on a client's next flight, or refunds for lost baggage or cancelled flights. Deployed in February in Singapore, the solution will soon be available in other markets. ▲

ANALYST OPINIONS

"Shares are under valued"

An analyst at Berenberg, Michael Huttner is excited about the future of Zurich Insurance. "Its shares are under-valued," he said. "We have a price target of 529 Swiss francs (ed. note: on 10 June, it was valued at 476) and we think there's a growth potential of nearly 20%." He has issued a BUY recommendation. Vinit Malhotra, analyst at Mediobanca, highlights the company's solid balance sheet, its attractive dividends, which reached 26 Swiss francs per share this year, and its buyback programme, worth 1.1 billion Swiss francs. But he does say that Zurich Insurance's share price hasn't increased as much as its peers. "For the past several years, the company has focused more on insurance for individuals, which now makes up one-third of its premiums," he said. "This is less profitable than commercial insurance, which had an impact on the performance of the share price." The price was also impacted by the cancelled sale of part of a life insurance portfolio to the German company Viridium, valued at \$20 billion. The deal went south early this year. He has issued a HOLD recommendation. → ZURN

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Pour moi et pour toi.

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3 questions for
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Rendering of the division and
multiplication of cancer cells.



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D O S S I E R

A revolution in the fight against cancer

With the number of cancer patients on the rise and the availability of new therapeutic strategies, the global cancer treatment market is likely to more than double by 2032 to almost \$400 billion. BY BERTRAND BEAUTÉ

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eytruda. If there was a word to symbolise the revolution at hand in oncology, this is it. Developed by the US pharmaceutical company Merck, this anti-cancer drug captures two of the industry's current key trends: disruptive innovation and strong revenue growth. When it was launched in 2014, Keytruda was one of the pioneering drugs in immuno-oncology – a new way of treating cancer by restoring the immune system's capability to destroy cancer cells.

"Immunotherapy revolutionised cancer treatment," says Professor Olivier Michielin, chair of the Department of Oncology and the Precision Oncology Service at Geneva University Hospitals (HUG). "Although it doesn't work for all cancers or for all patients, immunotherapy can now be used to treat certain cancers that used to be synonymous with imminent death."

The result is that, in less than a decade, Keytruda has become the world's best-selling drug. In 2023, sales of the anti-cancer

"The use of mRNA vaccines against cancer is a fascinating new approach"

Rose Nguyen, investment manager of the Health Innovation strategy at Baillie Gifford

drug totalled \$25 billion. This year, sales will be much higher. In the first four months of 2024, Keytruda has already generated \$6.9 billion in sales, a 20% increase from 2023. Analysts forecast that its annual revenue will exceed \$30 billion by 2026, before its patent expires in

2028, when biosimilars are expected to hit the market.

"Immunotherapy is a great success both medically and commercially. It appeared about 15 years ago and

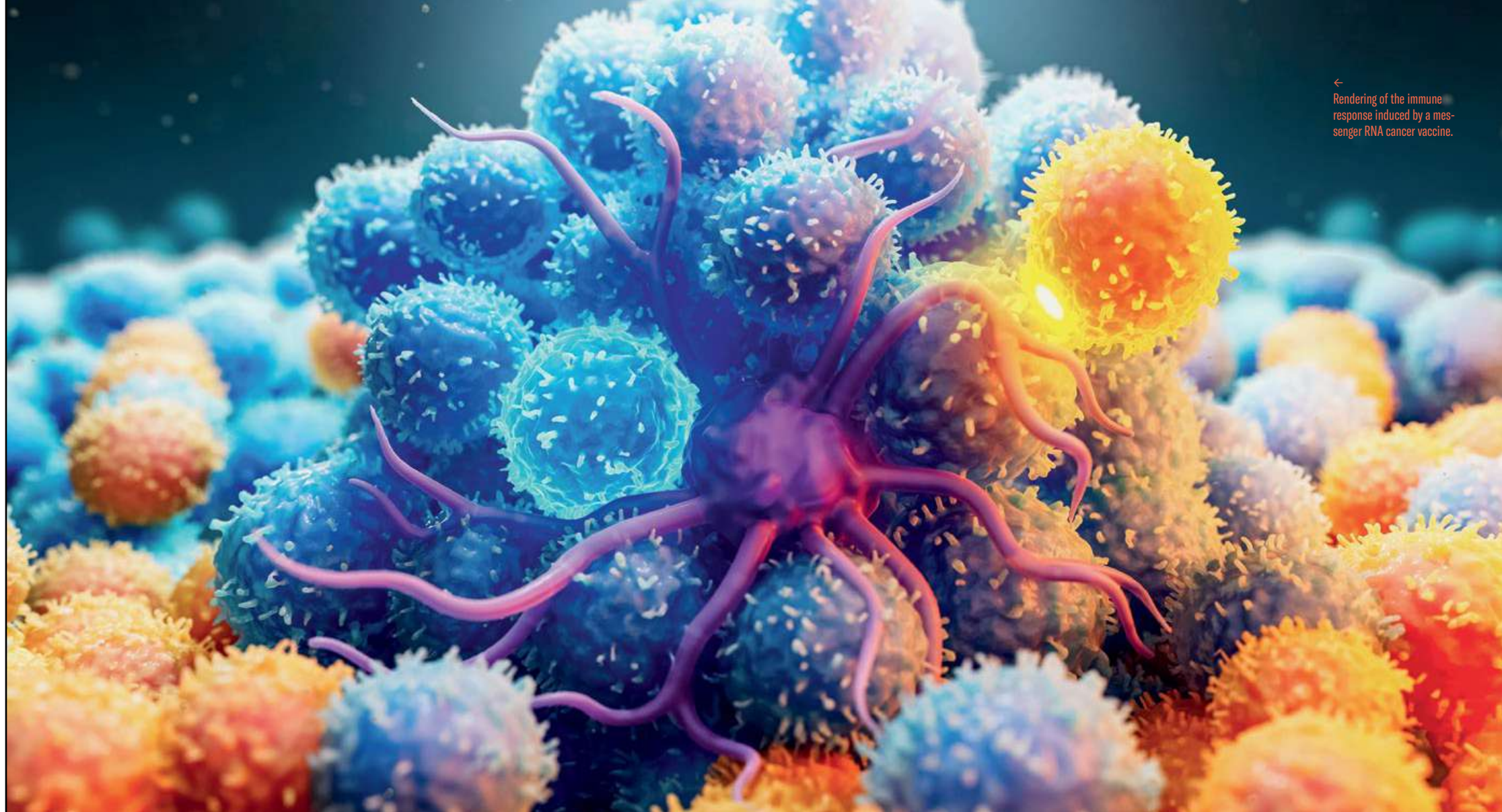
has become a standard treatment for many cancers. And it will continue to develop," says Vincent Meunier, a specialist in the pharmaceutical sector and managing director of the investment bank Bryan, Garnier & Co. It won't be the only one. Like immunotherapy in general,

and Keytruda in particular, other innovations in oncology are raising tremendous hopes for patients, and are likely to generate strong revenue growth over the next few years.

A Precedence Research report estimates that the global cancer treatment market will reach \$393.61 billion by 2032, up from \$164 billion in 2022, coming out to annual growth of 9.2% over the period. "For investors, oncology is a very attractive area because there are so many innovations coming on stream," says David Kägi, portfolio manager at Robeco. →

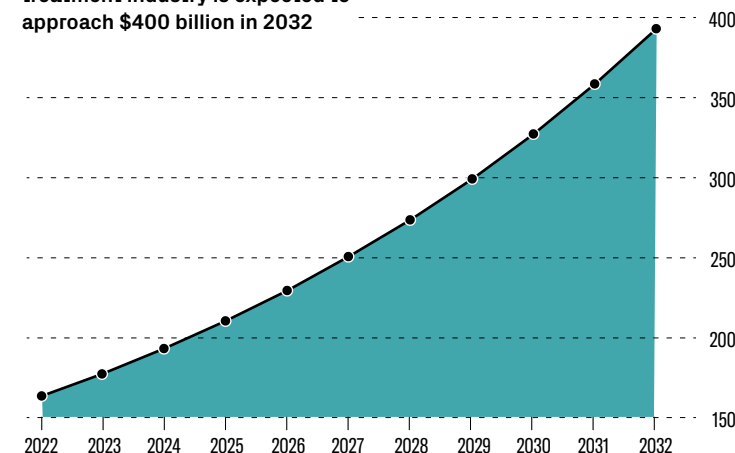
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← Rendering of the immune response induced by a messenger RNA cancer vaccine.



A fast-growing market

Revenue for the global cancer treatment industry is expected to approach \$400 billion in 2032





↑ On 22 March, 2024, Kate Middleton, Princess of Wales, revealed in a video that she had cancer. Here, the front pages of British newspapers on 23 March.

This view is shared by Vincent Meunier of Bryan, Garnier & Co. “Revenue generated by oncology will continue to grow considerably over the next few years. Unlike other more mature medical fields, such as cardiology – where most drugs are available as generics – oncology is known for its highly fertile research and development, with innovative treatments regularly introduced onto the market.” Plenty of examples confirm this (see article on p. 34): messenger RNA vaccines, targeted therapies, bispecific antibodies and

cell therapies are all new treatments or promising potential pathways for beating cancer, not to mention screening tests, an area also undergoing radical change (see article on p. 38).

Proof of this effervescence can be found in the astronomical sums involved in company takeovers. For example, in March 2023 the US pharmaceutical giant Pfizer bought the biotech company Seagen, which specialises in cancer therapies, for \$43 billion. A few months later, in November 2023, another American company, Abbvie, shelled out \$10.1 billion for

ImmunoGen, another biotech that develops cancer treatments. Meanwhile, the Swiss giant Novartis continues to strengthen its oncology portfolio, with back-to-back acquisitions of the German company MorphoSys for CHF 2.5 billion in February 2024, and the US firm Mariana Oncology for \$1 billion in May 2024.

So is this the right time for private investors to invest in promising oncology companies? “It’s difficult to generalise about the sector as a whole,” says pharmaceutical sector specialist, Vincent Meunier. “It’s vital

to identify innovative projects that offer a significant medical benefit, while trying to limit the binary risk associated with clinical trials.” Rose Nguyen, investment manager of the Health Innovation strategy at Baillie Gifford, agrees. “To reduce the risks, we prefer to invest in companies with platforms that can be used to develop treatments for several cancers or pathologies.”

“We can reasonably envision that, one day, several types of cancers will become chronic diseases”

Vincent Meunier, specialist in the pharmaceutical sector at Bryan, Garnier & Co

The US company Moderna, which became famous during the pandemic, is a case in point. As its CEO Stéphane Bancel explained to *Swissquote Magazine* in December 2022, “Moderna is not a COVID-based company,

but a technological platform.” While this platform produces vaccines against COVID, it also develops vaccines against influenza, respiratory syncytial virus (RSV) and even... cancer. “The use of mRNA vaccines against cancer is a fascinating new approach,” Nguyen adds. “For the time being, we’re only at the stage of clinical trials, but the initial results are very promising, particularly in terms of reducing the risk of recurrence. In fact, mRNA cancer vaccines could be on the market as early as 2025.”

Oncologists will then have a new weapon at their disposal.

“We now have an immense therapeutic arsenal against

cancer, which will broaden even further over the next few years,” says Professor Olivier Michielin of the HUG. “It’s a complete paradigm shift.” And the impact on patients is very positive. “For a long time, a cancer diagnosis →



One name, several diseases

The word cancer comes from the Latin word for crab. The word actually encompasses a wide range of diseases that share some common characteristics. All cancerous diseases are caused by an alteration in a cell’s genetic material. This cell then begins to proliferate in an uncontrolled manner until it forms a mass of cells called a malignant tumour. Cancer cells can also circulate in the blood or lymphatic system. When transported in the blood or lymph, cancer cells can form a new tumour in another part of the body. This is called metastasis. Cancers are generally named for the part of the body where they originate. A cancer that starts in the lung and spreads to the liver is lung cancer with liver metastasis. A patient’s prognosis is very different depending on the organ. Melanoma, for instance, has a high survival rate, while pancreatic cancer does not. Across all types of cancer, around one in five people worldwide develops the disease during their lifetime, and around one in nine men and one in 12 women die from it, according to figures from the International Agency for Research on Cancer (IARC), part of the WHO.

Oncology, speciality of the highest spending

	Global spending in billions of dollars in 2028	Average annual growth between 2024 and 2028 (CAGR, dollars at constant rates)
Oncology	440	14 to 17%
Immunology	192	2 to 5%
Diabetes	184	3 to 6%
Cardiovascular	126	2 to 5%
Central nervous system (CNS)	103	6 to 9%
Respiratory	99	3 to 6%
Mental health	81	9 to 12%
Infectious diseases	75	3 to 6%
Obesity	74	24 to 27%
Sexual health	62	3 to 6%

© MARK THOMAS - ALAMY

SOURCE: GLOBAL USE OF MEDICINE 2024, IQVIA INSTITUTE, DECEMBER 2023

meant a death sentence,” Vincent Meunier says. “Today, it no longer necessarily seals your fate, and we can reasonably envision that, one day, several types of cancers will become chronic diseases.”

“There is a long way to go. Too many people are still dying from cancer”

David Kägi, portfolio manager at Robeco

The figures are beginning to support this hope. The Swiss Federal

Statistical Office (OFS) reported that cancer-related mortality rates fell in Switzerland by 28% for women and by 39% for men between 1988 and 2017. That means that women’s current risk of dying from cancer is one-third lower than those of the same age 30 years ago.

Yet much remains to be done before we can say that we have beaten all cancers. “We still don’t fully understand why certain treatments are effective for certain patients or certain can-

cers and not for others,” Professor Michielin says. In Switzerland, over 68% of people stay alive five years after being diagnosed with cancer, but this overall rate masks a wide disparity. While 95% of melanoma sufferers in Switzerland are alive five years after diagnosis, the figure for pancreatic cancer is only 14% (see infographic on p. 32). “Very good progress has been made in cancer treatment, as shown by the improvement in survival rates in recent years,” says David Kägi, portfolio manager at Robeco. “But there’s still a long way to go. Too many people are still dying from this disease.” ▲

More and more patients

The WHO predicts that the number of new cancer cases will rise by 77% between now and 2050.

The numbers are chilling. According to the World Health Organization (WHO), the number of cancer patients will explode over the next few years, rising from 20 million new cases detected in a year worldwide in 2022 to more than 35 million in 2050, i.e., an expected increase of 77%. “The number of cancer cases is growing worldwide, including in Switzerland,” says Professor Olivier Michielin, chair of the Department of Oncology and the Precision Oncology Service at Geneva University Hospitals (HUG). Demographic change and an ageing population are the two main causes of this surge. “World population growth math-

ematically results in an increase in the number of cancers,” says Pierre-Alexis François, portfolio manager in charge of the Wellness strategy at Thematics Asset Management. “Ageing is also a very important factor, as the risk of developing cancer increases with age.” For example, in Switzerland the median age for a cancer diagnosis is 70 for men and 68 for women, reports the Swiss Federal Statistical Office (OFS).

But this does not explain everything, since cancer diagnoses are also rising among young people. A study published in September 2023 in the British Medical Journal (BMJ) *Oncology* sounded the alarm. Between 1990 and 2019, the number of early-onset cancers rose in people under 50 by 79.1% worldwide. Over the same period, the number of deaths linked to these early-onset cancers jumped by

27.7%, and Switzerland has not been spared.

“In people under-50, cancers used to be extremely rare. But now that’s changing... It’s an alarming sign,” Professor Solange Peters, chief of the Service of Medical Oncology at Lausanne University Hospital (CHUV) said in an interview with the newspaper *24 Heures*. “There are no clear explanations for this phenomenon,” Michielin adds. “We don’t know why certain cancers are developing earlier and earlier.” The professor does, however, put forward a number of possible theories, including a sedentary lifestyle, obesity, diet, alcohol, smoking and the environment. While these figures are alarming, they are also, from a more cynical stance, good news for oncology specialists. “The more cases there are, the more treatments drug companies sell,” Pierre-Alexis François says.

Cancer in Switzerland: key figures

Drop in the cancer mortality rate in Switzerland in the past 30 years, from 391 deaths per 100,000 people between 1991 and 1995 to 249 deaths per 100,000 between 2016 and 2020.

-36%

17,220

Number of people who died of cancer in Switzerland in 2022, making it the second leading cause of death behind cardiovascular disease.

75

Average age of people who die of cancer in Switzerland.

450,000

Number of cancer survivors living in Switzerland.

45,500

Average number of new cancer cases diagnosed each year in Switzerland between 2016 and 2020, compared with 38,500 per year between 2008 and 2012, an increase of more than 18%.

68%

Percentage of people with cancer who are still alive five years after diagnosis. In children, this rate is higher than 85%.

The most common cancers in Switzerland

Breast and prostate cancers are the most common cancers in women and men respectively, but lung cancer is the deadliest, accounting for 19% of all cancer deaths in Switzerland.

Number of new cases per year
(between 2016 and 2020)

Survival rate five years after
diagnosis

SKIN CANCER
(MELANOMA)

+3,200

95%

LUNG CANCER

+4,900

28%

LIVER CANCER

+950

23%

LEUKAEMIA

+1,200

54%

PANCREATIC CANCER

+1,650

14%

PROSTATE CANCER

+7,400

91%

KIDNEY CANCER

+1,090

71%

ORAL CAVITY AND
OROPHARYNGEAL
CANCER

+1,200

58%

NON-HODGKIN'S
LYMPHOMA

+1,700

74%

BREAST CANCER

+6,500

88%

STOMACH CANCER

+1,000

38%

COLON CANCER

+4,500

68%

BLADDER CANCER

+1,330

59%

5 promising therapies

Effective treatments, which are increasingly targeted and personalised, are emerging. We take a closer look. BY BERTRAND BEAUTÉ

Chemotherapy. Radiation therapy. Surgery. For a long time, all cancer patients received more or less the same treatment. However, “cancers develop as a result of genetic changes that are specific to each individual. All cancers are therefore different,” explains Pierre-Alexis François, portfolio manager at Thematics Asset Management. With the advent of sequencing technology, doctors can now analyse the genome of each patient’s cancer cells and adapt treatment accordingly.

“Our long-term goal is to achieve highly personalised treatment, especially with immunotherapy,” says Professor Olivier Michielin, Chair of the Department of Oncology and the Precision Oncology Service at Geneva University Hospitals (HUG).

A word of warning: these new, more personalised and targeted treatments do not replace the old methods. “Chemotherapy and radiotherapy are inescapable,” says Rose Nguyen, investment manager at Baillie Gifford. “New treatments, such as immunotherapy, are administered as a complement.”

3D representation of the PD-1 protein, a major target of immunotherapies.

2 Anti-PD-1 and anti-PD-L1 immunotherapy

AVAILABLE

Since 2011 (in the United States)

MAIN APPLICATIONS

Lymphoma, melanoma, colorectal and lung cancer

POTENTIAL

More than 4,000 clinical trials under way in 2021

In medical circles, oncologists often say that cancer cells are smart. That’s quite true. These invaders should be recognised and destroyed by the patient’s immune system, but they manage to escape the body’s defences and proliferate. “The real revolution in immunotherapy was finding out how cancer cells block the immune system, and then removing these

‘brakes,’” says HUG Professor Olivier Michielin. “This discovery earned James P. Allison and Tasuku Honjo the 2018 Nobel Prize in Medicine for their work in immunotherapy.”

Basically, how it works is that some cancer cells have a protein on their surface called PD-L1 (for Programmed Death-Ligand 1). This protein is able to bind to another protein called PD-1 (Programmed cell death protein 1) present on the surface of immune cells, T lymphocytes. “The binding of PD-1 and PD-L1 inactivates T lymphocytes, meaning the cancer cells can escape the immune system,” Olivier Michielin says. Pharmaceutical companies have therefore developed drugs that prevent PD-1 and PD-L1 proteins from binding, to restore T lymphocytes’ ability

to destroy cancer cells. Such approaches are referred to as anti-PD-1 or anti-PD-L1 immunotherapy. “These therapies have been shown to be effective in treating certain types of cancer, including lymphoma, melanoma, colorectal, lung and kidney cancer, and head and neck cancers,” Olivier Michielin says. “And clinical trials are under way to evaluate their efficacy in treating other tumours.” Many pharmaceutical companies have anti-PD-1 or anti-PD-L1 immunotherapy drugs in their portfolio, such as Merck & Co (with Keytruda) and Roche (Tecentriq). “Immunotherapy, which has been in use for around 10 years, is showing strong growth,” Rose Nguyen says. “And that trend is set to continue as it proves its effectiveness against more cancers.”

1 Messenger RNA vaccines

AVAILABLE

2025 at the earliest

POTENTIAL APPLICATIONS

Melanoma, pancreatic cancer and possibly other cancers

Moderna and BioNTech had their moment of glory during the war against COVID. But let’s not forget that, before that, the two biotech companies had made cancer their priority. In fact, it was almost by chance that the pandemic validated their technology, which uses

messenger RNA (mRNA) to stimulate the immune system. The modality basically works the same way, whether it is dealing with a virus or a tumour. With cancer, doctors take a biopsy of the tumour and then identify the specific proteins expressed by the cancer cells. Messenger RNA coding for these proteins is then produced and re-injected into the patient. The proteins trigger an immune response directed against the tumour.

And it seems to be working. In May 2023, the German company BioNTech published promising results in the journal *Nature* from a phase I trial, conducted with the Swiss firm Roche, of an mRNA vaccine targeting pancreatic cancer. Then in December 2023, Moderna announced that its vaccine, in combination with Merck’s blockbuster Keytruda, reduced the risk of recurrence by 44% and metastasis by 65% in melanoma cases. “These

results are extremely encouraging,” Olivier Michielin says. “Our immune system stays with us throughout our lives. If we can stimulate it to attack cancer, it will be working for us all the time. And therefore prevent the risk of relapse.” Moderna CEO Stéphane Bancel, stated that mRNA cancer vaccines could be on the market by 2025. Professor Michielin takes a more cautious stance, setting the timeline at four to five years.

© ALAMY

3

ADC chemotherapy

AVAILABLE
Since 2000 (in the United States)

MAIN APPLICATIONS
Breast cancer, urothelial carcinoma, multiple myeloma, lymphoma

POTENTIAL
In 2020, more than 110 ADC treatments were undergoing clinical trials

“Traditional chemotherapy causes a lot of side effects because it doesn’t only affect cancer cells. It also impacts healthy cells. ADC treatments are targeted therapies that destroy tumour cells while sparing healthy cells,” Professor Olivier Michielin, explains. “They have produced

impressive results, especially in treating breast cancer.” How does the technique work? Antibody-drug conjugate, or ADC, is composed of an antibody attached to a cytotoxic drug via a chemical linker. Once administered, the antibody recognises a target on cancer cells and attaches to it, so that the cytotoxic payload can then kill the cells. A Markets & Markets report estimates that the global ADC

market will reach \$19.8 billion by 2028, up from \$9.7 billion in 2023, for annual growth of 15.2% over the period. Leaders in the sector include Roche (with Kadcyla), AstraZeneca (Enhertu) and Pfizer (Padcev). “ADC treatments don’t work with all cancers,” Professor Michielin points out, “because we don’t have a target for all tumours. I think ADC applications will increase as new targets are identified.”

Image of T cells (purple) near cervical cancer cells (pink) taken under a scanning electron microscope. CAR-T cell therapy involves genetically modifying T cells to attack tumours.

4

CAR-T cells

AVAILABLE
Since 2017 (in the United States)

MAIN APPLICATIONS
Acute lymphoblastic leukaemia (ALL), lymphoma

POTENTIAL
Nearly 1,000 clinical trials with CAR-T cell therapy were in progress in 2023

Emily Whitehead has had an amazing journey. In 2012 as a young girl, she was diagnosed with leukaemia that was unresponsive to all conventional treatments. She would certainly

not survive. As a last resort, doctors at the Children’s Hospital of Philadelphia in the United States offered to enrol her in a clinical trial to receive CAR-T cells. Less than a month later, she was cancer-free. How does this miracle called CAR-T cell therapy work? “It involves taking T lymphocytes (ed. note: a type of white blood cell essential to the immune system) from the patient, then genetically modifying them so that they express a protein called CAR,” Olivier Michielin explains. “Once reinjected into the patient, the modified T lymphocytes become ‘CAR-T cells’ and multiply, hunting down and destroying

cancer cells, because the CAR protein acts like the homing head of a missile. Lymphocytes can then identify cancer cells and attach to them.” The consultancy firm Vision Research forecasts that the global market for CAR-T cell therapies could grow at a rate of nearly 30% per year between 2023 and 2032. In other words, it is expected to reach \$88.52 billion in 2032, up from \$8 billion today. The companies poised to benefit the most from this growth include California-based Kite Pharma, a subsidiary of Gilead Sciences, and Swiss giant Novartis.

5

Bispecific antibodies

AVAILABLE
Since 2009 (in Europe)

MAIN APPLICATIONS
Ovarian cancer, lymphoma, bronchial cancer

POTENTIAL
More than a hundred clinical trials under way

Another form of immunotherapy, bispecific antibodies (BsAb or BsMAB, for bispecific monoclonal antibody) are a synthetic protein capable of attaching itself to cancer cells and lymphocytes at the same time, enabling the lymphocyte to kill the cancer cell. A number of bispecific antibodies are already on the market, including Blin-

cyto, developed by the US biotech company Amgen for the treatment of acute lymphoblastic leukaemia, and Rybrevant, from Johnson & Johnson subsidiary Janssen, authorised for the treatment of patients with non-small cell lung cancer (NSCLC). “Bispecific antibodies have produced noteworthy results in treating specific solid tumours and certain lymphomas,” Olivier Michielin says. “Their use could be extended to other tumours if we can identify targets on the cancer cells for the antibodies to bind to.”

AI-enhanced oncology

“A tsunami of useful information.” That is how Professor Olivier Michielin, Chair of the Department of Oncology and the Precision Oncology Service at the HUG, describes the situation doctors now face when studying a cancer case. “Data comes from medical imaging, but we also increasingly factor in each patient’s specific biological characteristics, in particular immune system properties, the genome of cancer cells, but also the environment in which the tumour proliferates,” the specialist adds. As a result, a cancer patient can represent more than two Terabytes of data. “Artificial intelligence has become a necessity to make sense of all this data. It helps us to identify the treatments best suited for each patient, whether immunotherapy or targeted therapies,” Olivier Michielin says. “AI is a decision-making tool for the medical profession.” But the specialist does not see AI replacing doctors when it comes to making diagnoses or deciding on treatment. “The future is AI-augmented medicine, not AI replacing doctors.”

Yet, in that very field of diagnostics, AI now seems to be on par with medical professionals. For example, a study published in August 2023 in the journal *The Lancet Oncology* showed that using AI to support the screen reading of mammograms resulted in a cancer detection rate similar to that of standard double reading by doctors, indicating that the use of AI in mammography screening is safe. It also shows that the screen-reading workload for radiologists can be reduced by 44% using AI.

Unlocking the potential of blood

Blood tests that can detect early-stage tumours, i.e., before the first symptoms appear, are hitting the market. They could revolutionise cancer screening. BY BERTRAND BEAUTÉ

Imagine a future in which we could have regular blood tests to find out if we have a deadly cancer growing inside our bodies? That is what a handful of biotech companies, including US firms Grail, Guardant Health and Exact Sciences (see company profiles on p. 42 to 52), are working on, aiming to revolutionise tumour screening and make traditional diagnostic procedures, such as biopsies, medical imaging and colonoscopies, a thing of the past.

This would change everything. “These days, most cancers are detected after the first symptoms appear, in other words, at a late stage,” says Pierre-Alexis François, portfolio manager at Thematics Asset Management. “But the earlier a cancer is detected, the greater the chances of curing it. The development of early detection tests is therefore

a real game changer in improving survival rates.”

“With liquid biopsy tests, a new era is beginning”

Rose Nguyen, investment manager at Baillie Gifford

“The main determinant of cure across diverse cancers remains the stage at diagnosis,” states the journal *Science* in an editorial published on 25 January. That is why the development of new tests to detect cancers early and simply is giving reason for hope. One example is the Galleri kit, launched in the United States by Grail in April 2021. The company says the test can detect more than 50 early-stage cancers in asymptomatic people from a simple blood draw. Others, such as the Swiss company Roche, are developing similar tests in this area referred to as

multi-cancer early detection (MCED).

So, how does it work? All cancers are caused by small changes in cell DNA. The cells release tiny pieces of DNA, called circulating tumour DNA (ctDNA), into the bloodstream. Thanks to advances in sequencing technology, this ctDNA can now be detected from a simple blood sample, a technique known as a “liquid biopsy”. “With

the development of liquid biopsy tests, a new era is beginning,” says Rose Nguyen, investment manager at Baillie Gifford. “This technology is truly promising,” David Kägi, portfolio manager at Robeco, agrees. He believes that “liquid biopsies are the major current trend that is completely changing the cancer screening industry.”

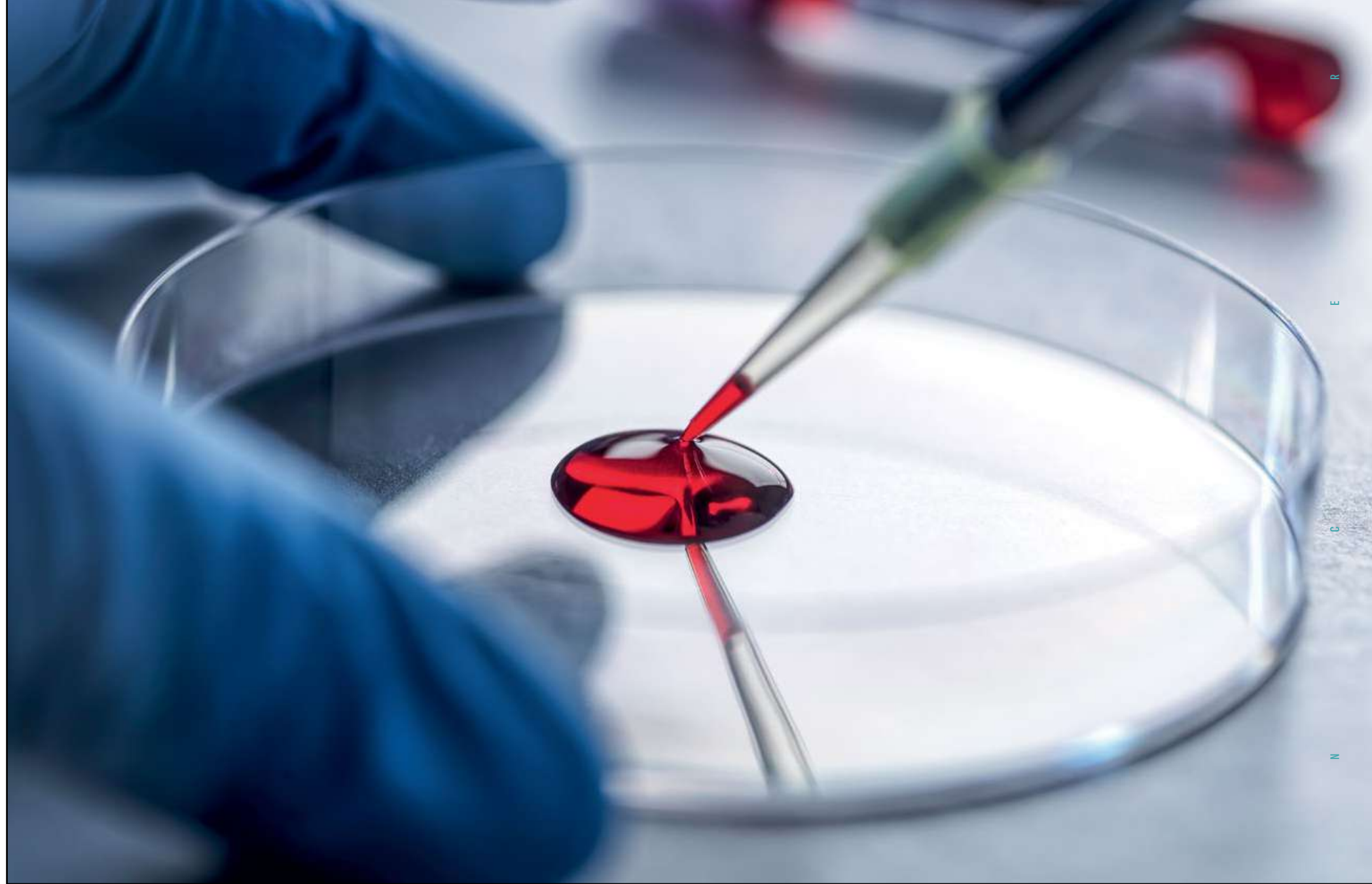
At the same time, they could open up a huge new market.

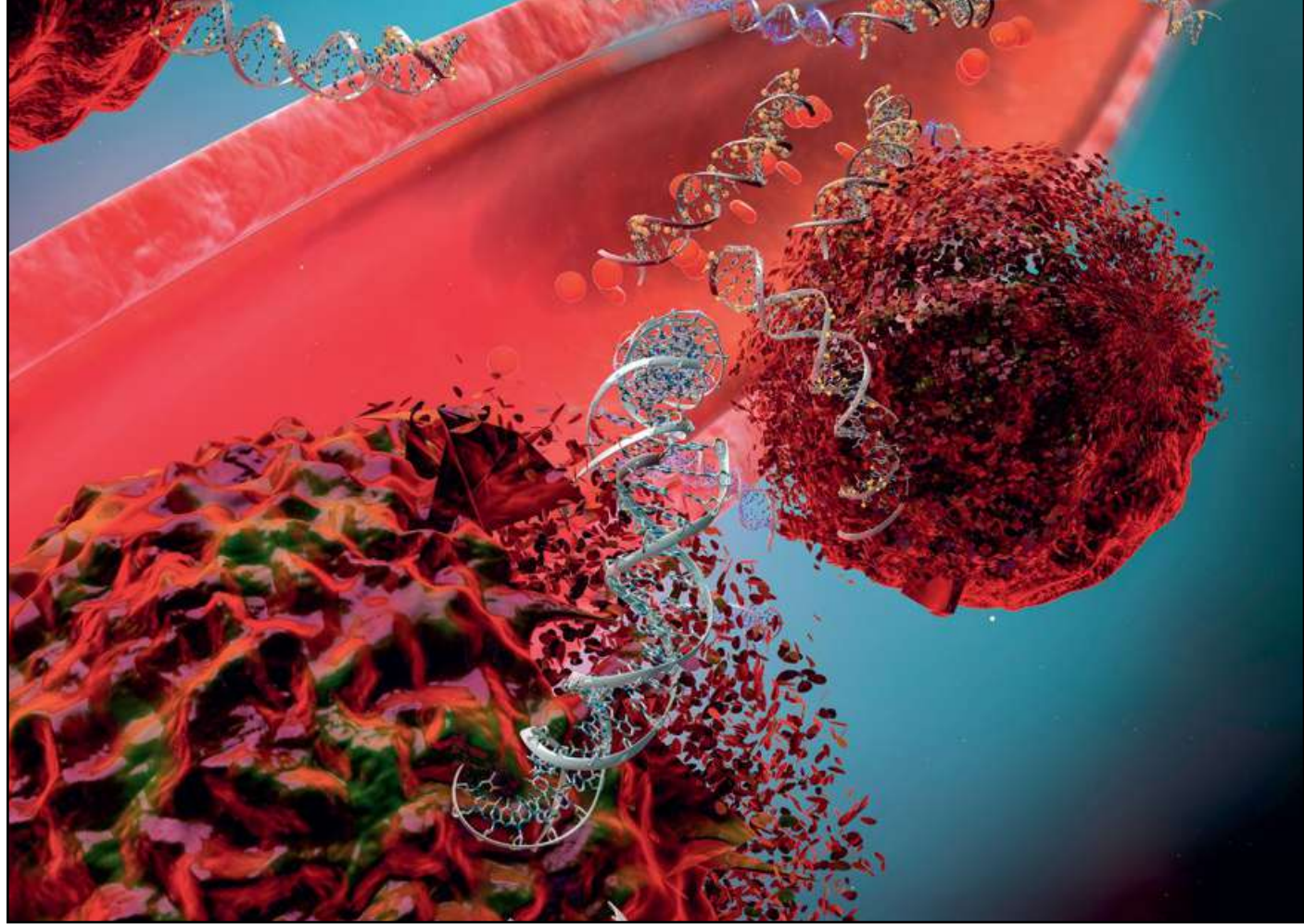
In its study published in April 2024, consulting firm Nova One Advisor projects that the global liquid biopsy market will reach \$32.54 billion by 2033, compared with the current market valuation of just \$10.85 billion, representing annual growth of 11.61%.

Improving reliability

But there’s a catch. Although it is already sold with a prescription in the United States for a list price of \$950, the Galleri test

is not yet approved by the US Food and Drug Administration (FDA) and is not reimbursed by health insurance. The reason: questionable reliability. As part of the Pathfinder study, 6,662 adults over age 50 took the test. The results, published in October 2023 in the scientific journal *The Lancet*, identified a cancer signal in 1.4% of participants. The problem was that additional examinations confirmed the presence of cancer in only →





0.5% of people. In other words, the Pathfinder study showed a false positive rate for the Galleri test – patients diagnosed by the test as having cancer but who did not actually have it – of 62%. That is far too high for widespread use of the test in its current version. False positives represent a major sticking point in medicine. First, they cause a great deal of stress for patients, who think they have a serious disease, and second, they lead to unnecessary medical examinations, or even potentially harmful invasive treatments (biopsy, surgery, chemotherapy).

But that's not enough reason to completely do away with MCED tests. "The PATHFINDER trial has given us a glimpse into the future of cancer, early detection and screening. It has shown us how a blood test for the early detection of several cancers

can have enormous potential with a beneficial impact on patients," says Charles McDonnell, a radiologist at Sutter Health, who took part in the study. But before that can happen, the tests need to be more reliable. To do that, "Grail is taking part in a major study in collaboration with the National Health Service (NHS) in the UK," Rose Nguyen reports. "The results of this study are eagerly awaited." The NHS-Galleri trial launched in 2020, which involves more than 140,000 participants aged 50 to 77 with no cancer symptoms, is currently under way and is expected to deliver its findings in 2026.

Less ambitious than Grail and its Galleri test, the biotech firm Exact Sciences is concentrat-

↑ Illustration of circulating tumor DNA – DNA found in the blood that comes from tumors or cancer cells. The presence of ctDNA in blood can be used to diagnose and monitor cancers.

ing on colorectal cancer with Cologuard. Approved by the FDA and reimbursed in the United States by Medicare and most health insurance companies, this stool-based test is used for early detection of colorectal cancer by looking for the presence of blood and abnormal DNA.

"The development of simple tests will allow for more regular screening"

Pierre-Alexis François of Thematics Asset Management

"From the age of 50, it is recommended that you undergo colorectal cancer screening every two years. But that requires a colonoscopy – an invasive examination that requires an appointment with a doctor. As a result, many people don't do it," says Pierre-Alexis François of Thematics Asset

Management. "Having a simple test like Cologuard from Exact Sciences changes everything. The company is therefore particularly well positioned." Based on the clinical trials, 13% of patients who did not actually have cancer received a positive result with Cologuard (false positives), while 8% of cancer patients

came out with a negative result (false negatives), which would then delay diagnosis and therefore the chances of survival.

In addition to primary screening, these new tests have another advantage, Pierre-Alexis François says: they prevent relapses. "Unfortunately, cancer

is a disease where recurrence is frequent. That means that cured patients need to be monitored for the rest of their lives. As a result, the development of simple tests will allow for more regular screening of these patients, earlier detection of relapse and therefore improved patient care." ▲

Screening remains underused

In the European Union, only one in two women over age 50 undergoes a mammogram to detect potential breast cancer. However, this examination is recommended and saves lives.

Several years ago, the health authorities introduced large-scale screening programmes for certain cancers. In Switzerland, for example, women are recommended to have a mammogram every two years starting at age 50. The examination is covered by health insurance in most cantons (see map). The same applies to colorectal cancer. But while they improve life expectancy, these programmes are not a cure-all

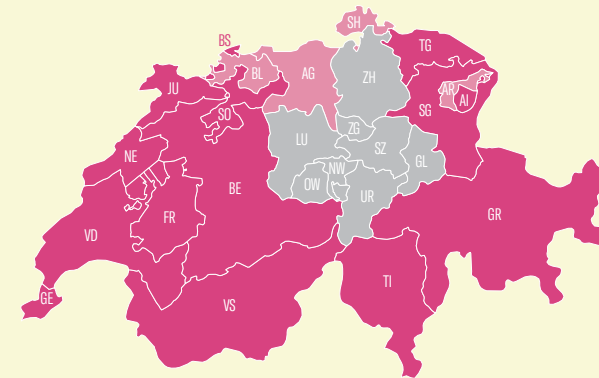
solution. First, they only cover a handful of diseases. For most cancers, patients only consult a doctor when symptoms appear, in other words, at a late stage. Second, these tests, which require consultation with a doctor, are still relatively uncommon, even though they are recommended and often reimbursed.

The European Cancer Organisation (ECO) estimates that only 54% of European women between age 50 and 74 underwent the recommended free breast cancer screening tests in 2022. Switzerland hardly sets a good example: the latest available data shows that 47% of women took

advantage of the test between 2016 and 2018. And the figures are even lower for colorectal cancer, with an EU screening rate of just 36%, as reported by the ECO. In a manifesto published in early 2024 entitled "Time to Accelerate: Together Against Cancer", the European Cancer Organisation urges EU countries to drastically increase their screening rates in order to save lives. Scientific studies reported by the Swiss Cancer League showed that for every 1,000 women who undergo regular mammography screening every two years from the age of 50, 16 will die of breast cancer in the following 20 years, compared to 20 in the absence of screening.

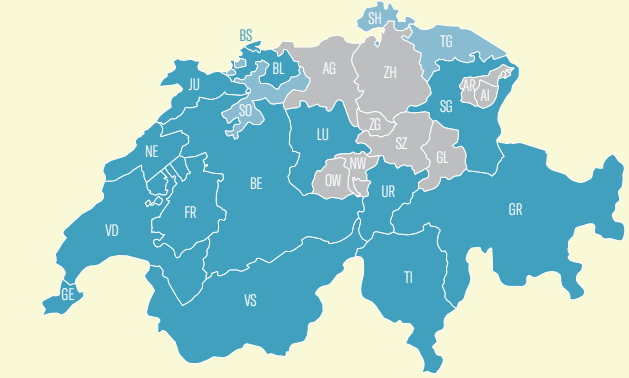
BREAST CANCER SCREENING

- Programme in place
- Planned programme
- Out-of programme screening



COLORECTAL CANCER SCREENING

- Programme in place
- Planned introduction
- Out-of-programme screening



9 companies targeting tumours

From big pharma to small biotech, companies of all sizes are joining the fight against cancer. We have hand-picked a few of them for you.

BY BERTRAND BEAUTÉ



BioNTech Back to oncology

When they founded BioNTech in 2008, oncologists Özlem Türeci and her husband Uğur Şahin intended to leverage their knowledge to develop individualised cancer immunotherapies. Then COVID came along. In January 2020, they decided to pour all of BioNTech's focus into engineering a coronavirus vaccine using the messenger RNA technology they had been

working on to fight cancer. The gamble paid off. By teaming up with the US pharma giant Pfizer, BioNTech designed the first COVID vaccine to be authorised in the United States, Europe and Switzerland in December 2020.

BioNTech is currently conducting 11 clinical trials to prove the efficacy of its messenger RNA vaccines against various cancers

Now that the pandemic has passed, BioNTech is reuniting with its first passion: oncology. In this field, the company is currently conducting 11 clinical trials to prove the efficacy of its messenger RNA vaccines against various cancers (melanoma, prostate, head and neck, ovarian, lung, colorectal). The biotech firm is planning its first market launch in oncology in 2026 and hopes to obtain approvals for 10 of these cancer treatments by 2030. This should boost BioNTech's sales, which have been sluggish

↑ German Chancellor Olaf Scholz (left) and BioNTech CEO Uğur Şahin (right) at the company's largest factory in Marburg, Germany.

with the decline in coronavirus cases. In 2023, the company's revenue totalled €3.82 billion, down from €17.31 billion a year earlier. Most analysts recommend buying shares, which are currently trading at around \$100, compared with almost \$400 at its peak in 2021.

FOUNDED: 2009 HEADQUARTERS: MAINZ (DE)
EMPLOYEES: 6,300 2023 REVENUE: € 3.819 BN
→ BNTX

Novartis
The Swiss oncologist

The Basel-based giant continues to make acquisitions in oncology. Since the start of the year, Novartis has completed the acquisition of the German company MorphoSys for 2.5 billion Swiss francs in February, followed by the takeover of US biotech firm Mariana Oncology in May, for an upfront payment of \$1 billion and additional payments of up to \$750 million contingent on reaching set milestones. These two acquisitions broaden the Swiss company's already

strong portfolio in oncology – a therapeutic area that is central to the company's strategy.

Five of the top 10 drugs sold by Novartis come under the area of oncology

In 2023, oncology brought in \$13.59 billion for Novartis, out of a total revenue of \$45.4 billion, making it the group's most important core therapeutic specialisation, well ahead of immunology (\$7.8 billion),

cardio-renal and metabolic diseases (\$6.4 billion) and neuroscience (\$4 billion). Five of the top 10 drugs sold by Novartis come under the area of oncology. And there may be more on the way. At the 60th meeting of the American Society of Clinical Oncology (ASCO), held in Chicago from 31 May to 4 June, the Swiss giant presented impressive results for one of its drugs in development, Scemblix, for patients with chronic myeloid leukaemia (CML). Most analysts recommend holding Novartis stock.

FOUNDED: 1996 **HEADQUARTERS:** BASEL (CH)
EMPLOYEES: 78,400 **2023 REVENUE:** \$45.4 BN
→ NOVNI



© NOVARTIS / ROCHE

Guardant Health
A pioneer of liquid biopsy

Undergoing a colonoscopy starting at 50 years old is advised in order to screen for any possible colorectal cancers. But only one out of every three people follow this recommendation, including in countries where it is covered by medical insurance. Why is that? A colonoscopy is an invasive, anxiety-inducing exam that requires making an appointment with a doctor. To change the status quo, US biotech firm Guardant Health developed a test called Shield that can screen for colorectal cancers via a simple blood test that detects the presence of circulating tumour DNA.

Shield was able to correctly identify cancers in 83% of cases, with only 10% of false positives

According to the results of a large clinical trial published on 13 March in *The New England Journal of Medicine*, Shield was able to correctly identify cancers in 83% of cases, with only 10% of false positives. In theory, that's sufficient to become the first test of its kind to be authorised by the FDA and covered by Medicare in the United States. This news is attractive to analysts, who recommend buying shares. Especially considering that Guardant already has tests that are approved by the FDA, particularly the Guardant360 CDx, which identifies cancerous markers for breast cancer, allowing doctors to choose the most personalised treatment for each patient.

FOUNDED: 2012 **HEADQUARTERS:** PALO ALTO (US)
EMPLOYEES: 1,800 **2023 REVENUE:** \$336.9 M → GH



The Cobas 6000, from Roche Diagnostics, can be used for medical analyses in hospital and private biology laboratories, particularly important in oncology.

Roche
The diagnostics leader

The Swiss pharmaceutical giant is still trying to recover from the coronavirus. In 2023, Roche's revenue shed 7% to 58.72 billion Swiss francs (up 1% at constant exchange rates). The main cause: sales evaporated from the diagnostic kits that had helped to control the pandemic, and the COVID-19 division lost 4.3 billion Swiss francs compared with the previous year.

Oncology sales accounted for almost 40% of Roche's revenue

To make up for it, the company is focusing on oncology. Of Roche's 10 best-selling medicines in 2023, five are anti-cancer drugs (Perjeta, Tecentriq, Kadcyla, MabThera/Rituxan and Herceptin), and the company has around 60 clinical trials under way in the field, four of which could lead to a market launch in 2024.

In the first half of 2024, oncology sales accounted for almost 40% of Roche's revenue, at 5.7 billion out of a total of 14.4 billion Swiss francs. The only downside was the decline in sales of three of its flagship cancer drugs (MabThera/Rituxan, Herceptin and Avastin), due to their patent expiry and the introduction of biosimilars. But Roche also has its diagnostics division to offset this performance, which includes many small companies such as Grail, which develops blood tests for multi-cancer early detection (MCED). That's an advantage over the competition. "Roche, which is the world leader in diagnostics, remains extremely powerful," says Vincent Meunier of Bryan, Garnier & Co. "This company's ability to innovate, through both in-house expertise and targeted acquisitions, is how it maintains its competitive edge in diagnostics." Most analysts who follow the stock recommend holding Roche shares.

FOUNDED: 1896 **HEADQUARTERS:** BASEL (CH)
EMPLOYEES: 100,000 **2023 REVENUE:** CHF 58.72 BN
→ ROG

“Radiotherapy still has a role to play”

Californian company Accuray develops high-precision radiation therapy equipment. On a recent trip to Switzerland, CEO Suzanne Winter answered questions from *Swissquote Magazine*. BY BERTRAND BEAUTÉ

For the layman, there is something fascinating about Accuray's CyberKnife System. Like diving into the future or a science fiction book. Yet, the device is very real. More than 350 units of this robotic arm have been installed worldwide, delivering high-energy X-rays to destroy cancerous tumours with extreme precision. Five of those are in Switzerland: Lausanne University Hospital (CHUV), Geneva University Hospitals (HUG), Clinique de Genolier, Inselspital in Bern and Klinik Hirslanden in Zurich.

Developed by the American company Accuray, CyberKnife

can be used to treat tumours located in critical areas like the brain, or in organs that move during radiation, such as the lungs, liver and prostate. Featuring an imaging guidance system and artificial intelligence-driven Synchrony technology, the device continuously locates the position of the tumour and tracks it in real time. Between two radiation deliveries, the robot arm moves around the patient to find the best angles to reach the cancer cells. “When tumours are treated with radiation therapy, the goal is to destroy the malignant cells while sparing as much of the surrounding healthy cells as possible. This is a particularly sensitive point when dealing with critical organs such as the brain,” says Professor Oscar

Matzinger, head of Radiation Oncology Services at Clinique de Genolier. “CyberKnife significantly improves precision, which means fewer side effects.”

Is that enough to guarantee Accuray's success? Suzanne Winter, the American firm's CEO, firmly believes it is. The financial markets are much less certain. Introduced on the stock market in 2007 at \$20 per share, Accuray's shares have lost almost all their value and are now trading at around \$1.5. On a trip to Switzerland in April for the opening of Accuray's training centre at the Genolier Innovation Hub, Suzanne Winter passionately defended her company. She met with us for an interview.

← Suzanne Winter, President and CEO of Accuray, at the inauguration of Accuray's training centre at the Genolier Innovation Hub on Tuesday 16 April 2024.

Why did you choose to set up your training centre in the canton of Vaud, and what will it be used for?

In radiation therapy, training medical staff is crucial. Workers need to fully understand the radiotherapy equipment they use, so that they can provide patients with the best possible care. Until now, Accuray has had three training hubs around the world, in China, Japan and the United States. So we needed an equivalent facility for Europe, and we decided to set it up here in Genolier. Our projections predict that around 500 specialists from all over Europe will be trained here every year. As for the canton of Vaud, our relationship with the region goes back a long way. We set up our international headquarters in Morges in 2011 (ed. note: Accuray Incorporated is still in Sunnyvale, California). This is where we manage our business for the entire EIMEA (Europe, India, Middle East and Africa) region, which generates nearly 35% of our revenue. So it was logical for our European training centre to be located near Morges.

Accuray develops and sells radiation therapy systems for cancer treatment. How are they different from the products of your competitors?

We sell two radiotherapy systems, Radixact and CyberKnife. Radixact is an all-in-one system that combines CT imaging and helical delivery. This means that continuous 360-degree radiation is delivered to patients with extreme precision, and the doctor can use the imaging to adjust treatment in real time. Radixact is recommended for targeting and treating larger tumours anywhere in the body. CyberKnife is a fantastic and unique piece of equipment. Using its robotic arm, it accurately tracks tumours that can move and targets them with extreme precision in critical areas such as the lung or prostate.

“AI becomes a decision-making tool for doctors, so that they can adapt the treatment if necessary”

With both Radixact and CyberKnife, radiation exposure of healthy tissue is considerably reduced, and so are the side-effects associated with radiotherapy. As a result, higher doses can be delivered with each session, reducing the overall number of sessions. With these machines, a tumour can be treated in five sessions, compared with 30 to 40 with a conventional machine. More than 1,000 of our machines are installed worldwide. Device sales generate 55% of our revenue, while 45% comes from associated services (training, maintenance, etc).

How do you use artificial intelligence (AI)?

Our systems integrate AI to optimise the precision of radiotherapy, by synchronising and adapting treatments to tumour and patient movement in real time. For example, when a tumour is located on a lung, the patient breathes normally during radiotherapy. AI can be used to predict tumour motion caused by breathing, so that the X-ray beam is always directed at the cancer cells and spares healthy tissue. In addition, between two radiotherapy sessions, some tumours will change shape or size. AI recognises these changes and becomes a decision-making tool for doctors, so that they can adapt the treatment if necessary.

Despite revenue growth (4.1% for the 2023 financial year ended 30 June 2023), Accuray

is still making a loss and had to shed 6% of its workforce in October 2023. What is your response to analysts and investors who are sceptical about Accuray?

We are confident in our business model. The WHO forecasts 35 million

new cancer cases in 2050, a 77% increase from the current period. And 60% of these patients are likely to be treated with radiation therapy. Demand for our products is expected to be high in the future, especially as many governments are introducing anti-cancer plans to beat the disease.

It's true that we had to lay off part of our workforce last year, and we will do everything we can to avoid that. But this should enable us to be more efficient and to achieve profitability as early as our 2025 financial year (ed. note: the →



← The CyberKnife, pictured here at the Rudolf Virchow Hospital in Berlin.

2024 financial year will end on 30 June 2025). Our order book has never been as strong as it is now. So I'm very confident that we're going to create value for our shareholders over the next few years. We're in a good position in terms of fundamentals, and I think the markets will eventually notice that.

Radiotherapy machines are very expensive. How do you convince hospitals to trust a

small company like Accuray, rather than going to a giant like Siemens?

Convincing the medical community to use our equipment has been a challenge in the past. But today, Accuray is recognised because our machines give doctors capabilities that competitors' devices do not.

Might you be bought out by one of your major competitors?

If we were to receive such an offer, we would consider it. But for the time being, we plan to continue developing on our own.

The fight against cancer is in the midst of a revolution, with innovative treatments emerging such as immunotherapy and messenger RNA vaccines. Could these new treatments eventually replace radiotherapy?

No, I don't think so. Radiotherapy still has a role to play. Around 60% of cancer patients receive X-ray treatment. Chemotherapy and new drugs then round out radiation therapy. They don't replace radiation surgery – they complement it; they improve it. Plus, people are living longer with cancer, which opens up new opportunities for precision radiotherapy to treat recurrence. I truly believe in the future of this technology. ▲

© KEESTIME

Accuray Precision radiotherapy

Will it soon be time to shine? After difficult years marked by a chronic deficit, a redundancy plan in autumn 2023 and a share price under \$2 compared to \$20 during the 2007 IPO, California startup Accuray could begin to see light at the end of the tunnel. In the first quarter of 2024, the company saw its revenue reach \$101.1 million, up 14% compared

Accuray is focused on two radiotherapy devices: Radixact and CyberKnife, both seen as more precise than the competition

to Q1 2023. Its order book is growing as well (+21% over the first three months of the year, or \$89.1 million booked). According to Suzanne Winter, CEO of Accuray, the company will reach profitability in financial year 2025, which begins on 1 July 2025. All the analysts who cover

the company are intrigued and recommend purchasing shares. However, proceed with caution. "Radiotherapy as an industry is an uphill battle," said an analyst specialising in the pharmaceutical industry. "It is very difficult for small companies to break into the market because it requires significant investments."


Indeed, Accuray and its 850 employees are up against giants such as US-based GE Healthcare and Germany's Siemens Healthineers. To differentiate itself, Accuray is focused on two radiotherapy devices: Radixact and CyberKnife, which are seen as more precise than the competition. Currently, more than 1,000 of these devices are used around the world. As the number of in-use products increases, Accuray will grow its recurring revenue (maintenance and training), becoming less dependent on sales. In Q1 2024, services made up 51.2% of the company's revenue.

FOUNDED: 1990 **HEADQUARTERS:** SUNNYVALE (US)
EMPLOYEES: 850 **2023 REVENUE:** \$447.6 M → ARAY



Suzanne Winter, CEO of Accuray, and Xavier de Misouard, director of operations for Europe, pose in front of the Radixact radiotherapy system, during the inauguration of the company's training centre, in Genolier, 16 April, 2024.

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A Grail employee performing an analysis.

Illumina

The Google of genetics

It was the end of an imbroglio. On 3 June, Illumina, the world leader in genetic sequencing technology, announced that it would be spinning off its cancer diagnostics firm, Grail. But the separation is not by choice. Illumina snapped up Grail in 2021 for \$7.1 billion, without waiting for the green light from the EU's antitrust watchdog – serious mistake. Brussels ruled that the acquisition could jeopardise competition and ordered Illumina to unwind the deal. Now it's done. Grail is expected to start trading on the Nasdaq towards the end of June under the ticker symbol GRAL. In parallel, Illumina, also on the Nasdaq, will be going it alone.

Grail has developed the Galleri test, which sells in the United States for \$950 apiece

But even as separate companies, both will benefit from the booming oncology market. Grail has developed the Galleri test, which sells in the United States for \$950 apiece. The company says the test can de-

tect more than 50 cancers from a simple blood draw, by picking up on circulating tumour DNA (ctDNA) in the bloodstream. Although Galleri does not yet seem to have the necessary clout to make a name for itself, according to the experts we consulted, the development of this type of test could revolutionise cancer diagnosis. “The recent development of blood-based multi-cancer detection (MCD) assays, together with advances in imaging and artificial intelligence (AI) algorithms, have the potential to transform early cancer detection,” wrote the journal *Science* in a perspective article published on 25 January.

That will undoubtedly be good news for Illumina. All the MCD tests currently in development require sequencing machines to analyse circulating tumour DNA. And Illumina reigns unchallenged in the sector. That is why Brussels blocked the deal. By dominating the DNA sequencing market, Illumina could have easily deprived Grail's rivals of access to its machines. Most analysts recommend holding Illumina shares.

FOUNDED: 1998 HEADQUARTERS: SAN DIEGO (US)
EMPLOYEES: 9,250 2023 REVENUE: \$4.43 BN → ILMN

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Exact Sciences

The diagnostics gem

A 20% increase – Exact Sciences is growing fast. In 2023, the US midcap generated revenue sales of \$2.5 billion, compared with \$2.08 billion in 2022. And that's not all. The company forecasts at least \$2.8 billion in business in 2024, i.e., expected growth of almost 12%. Now that has caught analysts' attention, and most recommend buying shares. The company is behind Cologuard, an FDA-approved test used for early detection of


colorectal cancer by analysing blood and tumour DNA in the patient's stool – a much less invasive procedure than a colonoscopy.

Doctors can use the results to predict the likelihood that chemotherapy will be successful

In addition, Exact Sciences sells Oncotype DX, a test that analyses breast tumour biopsies to assess the expres-

sion, or activity, of 21 genes in cancer cells. Doctors can use the results to predict the likelihood that chemotherapy will be successful, as well as a patient's risk of recurrence. Exact Sciences also has in its development pipeline a multi-cancer early detection blood test (MCED), which, via a simple blood test, should be able to detect many cancers before the onset of symptoms.

FOUNDED: 1995 HEADQUARTERS: MADISON (US)
EMPLOYEES: 6,400 2023 REVENUE: \$2.50 BN → EXAS



The Exact Sciences precision oncology laboratory, in Redwood, United States.

Merck & Co

A giant buoyed by Keytruda

A consolation prize. In April 2023, US pharma lab Merck & Co. – known as MSD outside the United States and Canada so as not to be confused with German group Merck – acquired California biotech Prometheus Biosciences for \$10.8 billion. With this acquisition, Merck strengthens its capabilities in immunology, as Prometheus was developing a treatment for auto-immune disorders, such as Crohn's disease. But that wasn't the original plan.

The company remains extremely dependent on its flagship medication, the cancer drug Keytruda

At first, Merck wanted to bolster its portfolio in oncology with an acquisition offer for the start-up Seagen, which develops ADC chemotherapies (see p. 36). But the offer was rejected, and Pfizer picked it up instead for \$43 billion. Defeated, Merck decided to focus on Prometheus to ensure its future strategy. It was an urgent move. While the US lab generated \$60.1 billion in revenue in 2023, up 1% compared to 2022, it remains extremely dependent on its flagship medication, the cancer drug Keytruda, which is the best-selling treatment in the world with \$25 billion in sales in 2023. But the patent for Keytruda will expire in 2028, resulting in biosimilars that will eat into Merck's revenue. Most analysts recommend purchasing shares, as Merck will continue to benefit from strong sales of Keytruda in the coming years.

FOUNDED: 1891 HEADQUARTERS: KENILWORTH (US)
EMPLOYEES: 72,000 2023 REVENUE: \$60.1 BN → MRK

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Moderna RNA designer	approved Moderna's Respiratory Syncytial Virus (RSV) vaccine to enter the US market. This is only the second product from the company to be approved, after its COVID vaccine. Of course, this is a welcome key growth driver for the American firm. But, more importantly, it is Moderna's prospects in oncology that are attracting investors.	↑ Moderna's CEO, Stéphane Bancel, at the economic forum in Davos, Switzerland, in January 2023.	oped with US laboratory Merck & Co. to prevent relapse for melanoma patients. Administered as a complement to Merck's Keytruda, the world's best-selling drug, the vaccine reduced the risk of recurrence or death by 49% after three years, compared with patients taking Keytruda alone. Merck and Moderna have also launched clinical trials targeting other tumours, including lung, bladder and kidney cancer. Moderna's highly ambitious CEO Stéphane Bancel believes that the first therapeutic cancer vaccines will be on the market as early as 2025. If so, Moderna will be on the road to recovery as early as next year.
On paper, the numbers are worrying. In 2023, Moderna's revenue plummeted by almost 65%, from \$19.26 billion in 2022 to \$6.85 billion in 2023. And it continues to free fall. Moderna forecasts sales of \$4 billion in 2024. COVID is no longer a money-maker, and sales of Moderna's coronavirus vaccine are unlikely to pick up again. Despite all that, most analysts recommend buying Moderna shares, which are currently trading at about \$150, down from their peak of \$450 in 2021. Why such optimism? Experts predict that 2024 will be Moderna's low point before a rebound in 2025.	The vaccine reduced the risk of recurrence or death by 49% after three years		
The first part of the good news is that, on 31 May, the US Food and Drug Administration (FDA)	On Monday 3 June at ASCO, one of the world's top cancer research conferences, held in Chicago, Moderna presented promising results from its messenger RNA vaccine, co-devel-		

© KERSTINE

FOUNDED: 2010 HEADQUARTERS: CAMBRIDGE (US)
EMPLOYEES: 5,150 2023 REVENUE: \$6.85 BN
→ MRNA

“We’re privileged in Switzerland”

Professor Matti Aapro, board member of the Union for International Cancer Control (UICC), takes stock of the fight against cancer around the world. BY BERTRAND BEAUTÉ



Founded in 1933 and based in Geneva, the Union for International Cancer Control (UICC) is the oldest and largest organisation dedicated to the fight against cancer worldwide, with 1,180 members across 172 countries and territories.

from the disease because of late diagnosis and inadequate access to quality treatment. Even in the United States, the situation is not simple due to the lack of health insurance coverage. At UICC, we try to combat this inequality throughout the world.

our prevention messages. In one example from a few years ago, scientific articles found a correlation between grilled meat consumption and a higher risk of gastric cancer. I think it's counter-productive to scare people unnecessarily. A lot of cancers stem from excessive behaviour. Doing something unhealthy now and then is not serious.

What should we do to reduce the number of new cancer cases?

Everyone knows that prevention must be improved! But in countries that lack resources, it's hard to get the prevention message across. Reduced smoking in many developed countries, including Switzerland, has led to a drop in lung cancer in men. We need to take similar measures to reduce alcohol consumption, fight obesity and improve our diet. What's more, we should remember that, when we combat cancer risk factors, we also help to reduce the onset of other diseases. For example, anti-smoking measures reduce not only cancer, but also cardiovascular disease.

That said, we need to be careful with how we present

Cancer treatment in Switzerland has made significant progress in recent years. What about the rest of the world?

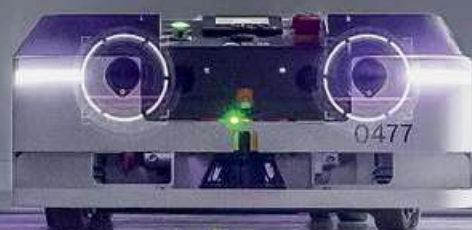
We're very privileged in Switzerland. We have access to all the latest innovations in cancer screening and treatment, as well as good health insurance. Unfortunately, in many regions, patients still do not have access to basic treatments such as chemotherapy, cancer surgery or radiotherapy. The WHO reports that women living in countries with a lower Human Development Index (HDI) are 50% less likely to be diagnosed with breast cancer than women living in high HDI countries. Yet they are far more likely to die

Won't the arrival of new, effective but expensive treatments exacerbate inequality between rich and poor countries?

Not necessarily. When a new treatment is launched, the industry has to make a return on its investment by selling it at a high price in countries that can afford it. After that, patents expire and prices fall, which, in theory, makes these innovations affordable worldwide. With the next World Cancer Congress to be held in Geneva in September 2024, the UICC is coordinating the efforts of several organisations and industries to improve access, namely through the Access to Oncology Medicines (ATOM) Coalition. ▲

INDUSTRY

Swiss companies benefit from relocation strategies



The mobile robot from the Swiss startup Sevensense, acquired in January by ABB. This kind of autonomous pallet, powered by AI, is used to transport loads in warehouses.

More and more industries are moving their factories closer to their main markets, particularly in Europe and the Americas. A number of Swiss warehousing, logistics and production companies have positioned their products and services to make the most of this relocation wave.

BY BLANDINE GUIGNIER

T

he forecasts are impressive. Over the next three years, some 1,300 multinationals are set to invest an estimated \$3.4 trillion in projects to bring production to neighbouring countries (nearshoring) or back to their home country (reshoring). According to the report by the consultancy firm Capgemini, that sum represents an average allocation of 8.7% of their revenue.

Companies surveyed plan to boost onshore production from 38% in 2021 to 49% by 2027

Remy Schraner, investment manager at Helvetic Trust, asserts, "The globalisation movement, where companies tried to find the cheapest country to produce in, regardless of the end market, is over."

Across Europe (France, Germany, Italy, the Netherlands, Scandinavian countries, Spain and the United Kingdom) and the United States, the companies in the Capgemini survey plan to boost onshore production from 38% in 2021 to 49% by 2027. The report cites examples such as French pharmaceutical company Sanofi, US athletic footwear manufacturer New Balance, and auto-makers Volvo (Sweden) and Ford (United States).

Nearshoring is also making headway, often combined with a relocation strategy. Several of the companies interviewed by the consultancy firm are set to increase this share from 27% to 34%. "Countries in Latin America and Eastern Europe, such as Poland, which is seeing record levels of foreign investment in its domestic operations, are some of the big winners in this shift," Remy Schraner says. The investment advisor points out that Northern Mexico is the world's fastest-growing economic region. "Even unskilled workers are now in high demand there. The trend is so strong that Mexico has already climbed to first place as a trading partner of the United States, ahead of China and Canada."

A supply issue

More than two-thirds of the multinationals surveyed by Capgemini single out supply chain resilience as the main driver of their nearshoring and reshoring strategy.

At first glance, this reindustrialisation wave has not seemed to affect Swiss companies. In fact, recent announcements of closures of Swiss production lines in the glass (Vetropack) and steel →

(Stahl Gerlafingen) sectors suggest that manufacturing jobs are losing ground. The reasons for this exodus include “high energy costs and a strong Swiss franc,” as stated by the trade union Unia in its March paper.

However, a number of companies listed on the Zurich stock exchange are comfortably positioned to help firms from around the world with their “big move”. “The robotics leader ABB comes to mind,” Remy Schraner says. “As do storage and logistics firms such as Kardex and Interroll.”

Jens Hardenacke, CEO of Kardex, confirms the surge in activity. “Since COVID and the war in Ukraine, many of our customers have started looking for ways to make their supply chain less vulnerable. They want to shift their focus, which is overly dependent on Asia. Their aim was not necessarily to relocate all their production close to their headquarters, but rather to regionalise their manufacturing lines, i.e., set them up as close as possible to the markets they serve. Increasingly, they are seeking to source their raw materials and manufacture in the region where they sell.” In these circumstances, Kardex, with its internal warehousing and logistics solutions, almost always comes out a winner, its director says. “As soon as you move your production from point A to point B, you will need equipment to store and move products. Most of our customers are currently planning moves and we expect to see a boost in sales over the next three to five years.”

ABB has noted a similar tendency. “In a 2022 study conducted for our Robotics & Discrete Automation segment, 74% of European companies and 70% of US companies surveyed said they were planning to relocate or

nearshore activities,” says ABB spokesperson Lukas Matt. They are therefore not only moving but also trying to enhance efficiency. “The growing demand for robotics worldwide reflects this trend, with a record 3.9 million operational robots in 2023 (an 11.4% increase on the previous year),” he adds.

“Most of our customers are planning moves and we expect to see a boost in sales over the next three to five years”

Jens Hardenacke, CEO of Kardex

Companies relocating their production also need to safeguard against potential labour shortages. “In the United States alone, forecasts estimate that 330,000 skilled welding professionals could be needed by 2028,” says Lukas Matt. ABB plans to help its customers in meeting this challenge with its quality control robot, which, it claims, can “spot-check and identify defects (...) at a speed 20 times faster than human”. The Swiss firm also believes it has gained a comparative advantage with its autonomous mobile robots. Developed by Sevensense, a spin-off from ETH Zurich acquired by ABB in January, these machines navigate to production cells and track stock levels. They work side by side with humans, “making operations faster and more efficient”, the Baden-based company argues. For example, the US car-maker Ford has installed them at its production sites in the United States.

Geopolitical rivalries

Initially, this industry reshuffle came about to serve geopolitical interests. Since 2018 and the trade tensions between China and the United States,

about a dozen regulations and programmes have encouraged moving production to local facilities or to friendly countries (“friendshoring”), especially in sectors deemed strategic, such as defence and energy. In the United States, these measures were implemented when Trump was president and then continued under the Biden administration. The European Union has taken similar steps. The Capgemini study estimates that half of all reindustrialisation strategies are motivated by these political decisions.

Amid the current resurgence of nationalism, Kardex’s US operations, for example, have been crucial to its development. “Faced with increased demand for products Made in USA, particularly from our government customers, our new US plant was commissioned successfully and produces 80% of the products we sell in the country.” The group now generates 21% of its revenue in the United States, compared with 72% in Europe and 7% in the rest of the world.

More than any other industry, reindustrialisation movements have affected semiconductors the most, as a result of the European Semiconductor Regulation and the US CHIPS and Science Act. Remy Schraner of Helvetic Trust closely follows developments in this area in Switzerland, namely at the Swiss group VAT (see also the interview with VAT’s CEO in the previous issue of *Swissquote Magazine*). He notes that “the industry is attracting a great deal of interest from both Swiss and foreign investors.”

Kardex expects the shift to impact a wide variety of areas. “Almost all sectors need to store

The Kardex company, based in Zurich, has established itself as a leader in storage and logistics devices. →

© KARDEX



goods, and the nearshoring/relocation phenomenon globally concerns all companies that are currently dependent on China and want to reduce their share of offshoring.”

The relocation phenomenon globally concerns all companies that are currently dependent on China

ABB fully agrees. “We supply solutions and products to customers all over the world, in sectors ranging from automotive, electronics, packaging and logistics to life sciences, health-care, and food and beverages,” its spokesperson says.

Carbon footprint

This wave of funds poured into reshoring and nearshoring projects is not about to stop, with investments planned over 10 to 20 years, Remy Schraner estimates. “In addition, financial products aimed at serving relocation or nearshoring are cropping up in Switzerland, led for example by the Zurich-based firm, The Singularity Group.” Sustainable finance is also interested in these projects to improve ecological performance. Capgemini states in its report, “Reindustrialization efforts contribute to climate goals by fostering shorter and more sustainable supply chains, consequently mitigating carbon emissions. Conversely, decarbonization serves as a catalyst for reindustrialization by spurring investments in climate technologies.” More than half of multinationals believe that reindustrialisation will help them meet their targets for reducing greenhouse gas emissions. ▲

PORTRAIT

Temu, China's addictive bazaar

Released two short years ago in 2022, the platform was an instant sensation with its unbeatable prices and gamified experience. Temu's success is so spectacular that even e-commerce giants are starting to tremble. BY JULIE ZAUGG

Twenty plastic ducks for CHF 1.89. Women's dungarees for CHF 12.99. A shower-cleaning tool for CHF 0.87. A garden gnome figurine for CHF 5.77. These are just some of the seemingly countless items you can find on Temu's Swiss website.

The retailer also features limited-time "lightning deals", where selected items are available for less than CHF 1. Consumers can also win coupons and discounts by taking part in online events, making group purchases or flaunting their purchases on social networks. Its slogan says it all: "shop like a billionaire".

Part of the Chinese group PDD Holdings, Temu was founded in 2015 by Colin Huang, a former Google engineer. His first foray into e-commerce was Pinduoduo, a website that

targeted Chinese consumers living in the country's smaller cities, who were on the lookout for good deals. In less than three years, the online retailer garnered 300 million users. In July 2018, PDD Holdings raised \$1.63 billion in its IPO on the Nasdaq.

Temu kicked off operations a mere two years ago, in September 2022. The retailer first moved into the US market, before expanding into Europe, Canada, Australia and a handful of countries in Latin America, the Middle East and Southeast Asia from March 2023. It now operates in 65 countries.

"We have a look when things are quiet, just to scroll through products on our screen"

Neil Saunders, an American retail analyst

Temu has enjoyed uninterrupted growth since its launch. The gross market value of goods sold totalled \$17 billion at the end of 2023, up from \$1 billion six months earlier, estimates Robert McKay, a China-based analyst who covers the firm for Blue Lotus. "For 2024, I expect – by extrapolating the first-quarter figures – the gross market value to climb to \$38 billion," he says. Some 40% of sales are in the United States. "But growth is particularly strong in France, the UK, Italy, Japan and Mexico," says Inès Durand, an e-commerce expert from the digital analysis company Similarweb. Switzerland is also one of the most buoyant markets. "Temu surpassed Amazon in the country just two months after its launch in the spring of 2023," she adds.

The platform owes this performance to a strategy focused on attracting new customers. "Over the past year, Temu has spent \$1.8 billion on advertising on Google's search engine alone," Durand says. It has become hard to escape the onslaught of adverts. In the United States, Temu also ran pricey commercials during the Super Bowl, the mega sporting event that demands a cool \$7 million for a 30-second spot.

Now headquartered in Dublin, Ireland, the Chinese group also sponsors more confidential events, such as the charity show "Les enfoirés" in France. "Additionally, Temu forges partnerships with micro-influencers, i.e. those with fewer than 10,000 followers," Durand says. They receive packages of goods that they unpack and promote in videos posted on TikTok or YouTube.

No middlemen or warehouses

Customers are mostly lured by the website's rock-bottom prices. "It sells only unbranded products and buys directly from factories in China, without going through intermediaries," Robert McKay points out. "Temu puts factories in competition with each other, choosing whichever one offers the lowest price." He says he has spoken to factory owners who are forced to sell their plastic sandals to Temu for 0.10 renminbi a pair, as opposed to the 10 to 15 renminbi they normally charge. →

IN NUMBERS

\$191.1 BN

Value achieved by PDD Holdings this spring, almost twice as much as a year ago.

75 M

Number of Temu's active monthly users in Europe. Worldwide, its app was downloaded 338 million times last year.

150,000

Number of suppliers with products for sale on Temu, as estimated by Marketplace Pulse.



Temu also saves on logistics costs. “The group does not operate its own network of warehouses and does not maintain inventory in the markets where its customers are located. It simply ships its goods as they’re ordered from China,” says Neil Saunders, an American retail analyst. An order can take up to 10 days to arrive. Another advantage of this fragmented shipping is that the company avoids import taxes in many countries, which only apply to orders over a certain value. For example, the threshold is set at \$800 in the United States.

But this does not mean that the online retailer is not taking care of its selection of goods. “It has developed algorithms that analyse what works best on TikTok, Instagram or Youtube,” Inès Durand of Similarweb explains. A team of designers translates these trends

Every day, Temu puts thousands of new goods online, creating a nearly infinite inflow of products

The Temu app pictured in the App Store in Washington in February 2023.

into products. “Temu then asks its factories to produce a small quantity of these items, which it tests on its platform,” says Ben Cavender, a director at China Market Research Group, a company based in Shanghai. “The ones that work best will be produced on a large scale, and the rest are dropped.”

The platform encourages repeat purchases. “We have a look when things are quiet, just to scroll through products on our screen, even when we’re not searching for anything specific,” Neil Saunders says. “It’s addictive.” Every day, Temu puts thousands of new goods online, creating a nearly infinite inflow of products.

This addictive effect is heightened by the many deals available for a limited time, online events and the points earned by opening the app at regular intervals or convincing a friend to download it. The market research firm eMarketer estimates that, by the end of 2023, the average Temu user was spending 18 minutes a day on the website, compared with 11 minutes for Amazon.

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Non-existent margins

Despite these successes, Temu has not yet managed to break even. “Its revenue mostly comes from a percentage of transactions made on the platform,” says American retail analyst Neil Saunders. “It also sells services to its suppliers, such as strategic placement on its website.” Prices are so low, and so many deals are offered, that margins are almost non-existent, or even negative. “PDD Holding keeps the earnings of its various entities under tight wraps, but I estimate that Temu must have lost 30 billion renminbi (3.85 billion Swiss francs) in 2023,” says China-based analyst Robert McKay. “Each order costs the company about \$8 on average.”

For the time being, these losses are being absorbed by the profits made by Pinduoduo in China. “The immediate goal is to gain as much market share as possible, even if that means giving up profitability,” Ben Cavender says. And on that front, the strategy has paid off: Temu has captured 17% of the market share in the US and 8% in France and Italy. It is beginning to divert

A Temu package.

traffic from Amazon, the undisputed giant of online shopping. “It’s making life difficult for individual sellers who don’t have a strong brand or high-quality products, but whose prices are higher,” says Ben Cavender.

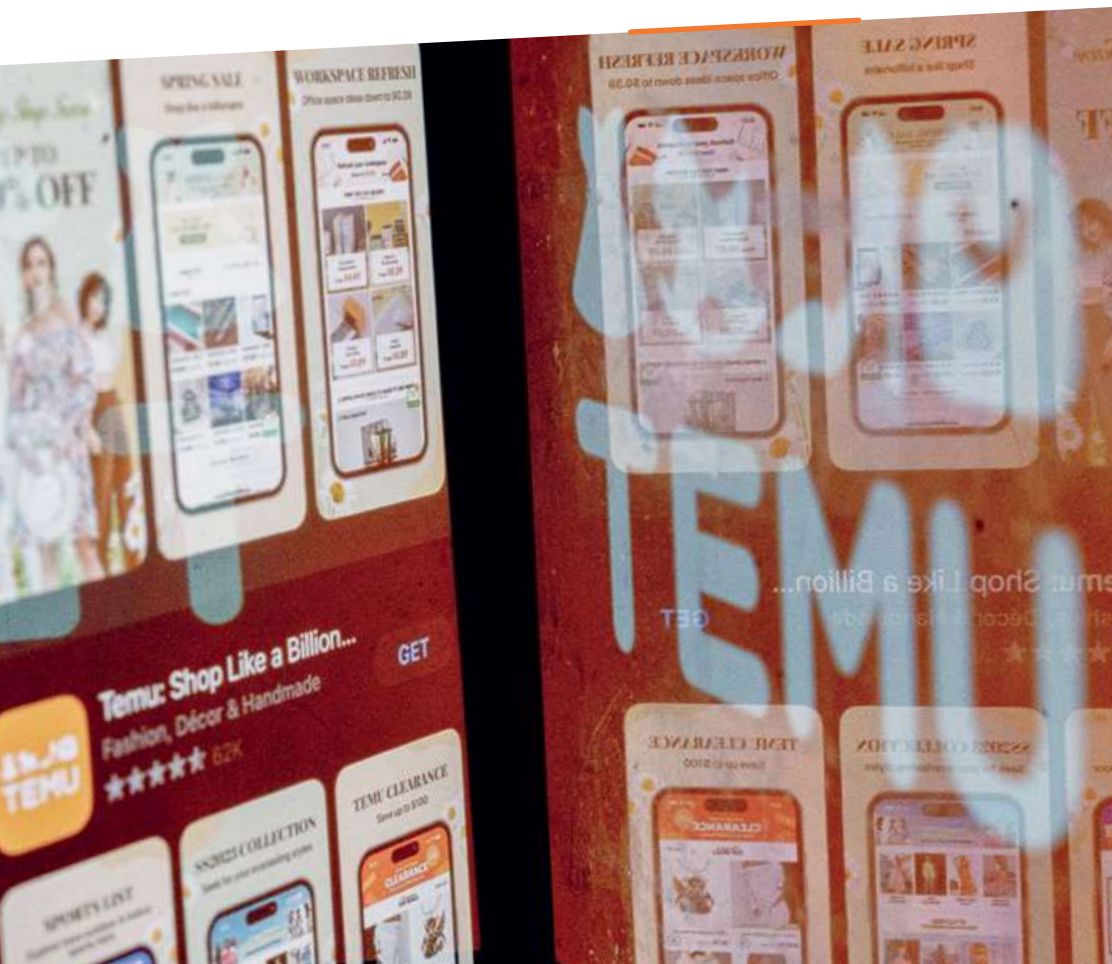
Etsy and eBay are also under threat with competition from Temu, especially for decorative items. “In the United States, the market share of the low-cost chains Family Dollar and Dollar Tree is also eroding,” says Shaun Reiner. The retailers recently announced the closure of 1,000 stores. In Europe, home and gardening stores such as Ikea are feeling the impact.

Even Shein, China’s other low-cost online retailer, is not above danger. “Its traffic has started to slow in the US as a result of Temu,”

“The immediate goal is to gain as much market share as possible, even if that means giving up profitability”

Ben Cavender, a director at China Market Research Group

Colin Huang, founder of PDD Holdings, pictured here in February 2017.



“Could be banned in the US, like TikTok”

Ben Cavender, a director at China Market Research Group

says analyst Robert McKay. In the future, the website will compete to gain favour from Generation Z with TikTok Shop, currently only available in the US, the UK and a few Asian countries.

Unexpectedly, a significant proportion of Temu’s customers are older. “The 35 to 44 age group accounts for 36% of customers, compared with 17% for the under-25s,” Inès Durand says. Earnest Analytics reports that growth is also strong for the 55 to 64 age segment (up 271% between March 2023 and 2024).

Dangerous or counterfeit product

Temu’s immense popularity is not without risks for consumers, however. Product quality can be questionable. “Because items don’t go through customs controls, they’re not subject to the same inspections and safety standards as other goods sold in the markets where their customers are based,” says Neil Saunders, American retail analyst.

Fears have also emerged about what the platform does with the user data that it collects. In China, Pinduoduo’s app was accused of using malware that collected information on calls made and messages sent from its customers’ smartphones. Then, in the UK, the website recently began offering £50 vouchers in exchange for the right to use the recipients’ photo, name, voice, online publications and biographical information.

The Israeli business intelligence firm Ultra Information Solutions discovered at least 10 products sold on Temu – including sunglasses, sieves and bath mats – that had been manufactured by companies based in Xinjiang, a region known for its forced labour camps filled with Uighur prisoners.

Moreover, counterfeit products are not uncommon. Elizabeth Harbour, an illustrator living in Kent, experienced a bitter episode of this. “One of my customers told me that her daughter had seen some of my work on Temu,” she says. She then discovered that six of her most popular illustrations, normally

© REUTERS / DR

sold as wooden figurines on Etsy, were put up for sale at half the price. “The colours were wrong and there were chips,” she says. “Apart from the loss of income, it devalued my work.”

Shocked and angry, she immediately contacted Temu, which took them off the website. “But I don’t know how many pieces were sold or whether any of my creations have been stolen,” she said. “The six pieces I discovered had over 1,000 online reviews from verified buyers.”

These issues have caused some analysts to question Temu’s long-term viability. “It could be banned in the US, like TikTok,” says Ben Cavender. “The risk is all the greater in an election year.” Two Republican senators, Marco Rubio and Tom Cotton, have already asked President Joe Biden to open an investigation into Temu because of its links with Xinjiang and its violations of intellectual property law.

Elsewhere, the tariff exemptions enjoyed by goods imported by the retailer could soon be abolished. “The tax authorities in the coun-

tries where these products are sold are not benefiting from the business,” Robert McKay says. “Complaints are starting to be heard in Europe, South Korea and Japan.”

In the European Union, Temu has recently acquired the status of a “very large online platform” because it has surpassed the 45 million user mark, forcing it to introduce measures to combat counterfeiting and protect its customers’ privacy rights. On top of that is consumers’ growing hostility to cheap, disposable products, which end up in piles of waste.

Robert McKay believes that these obstacles will force Temu to “normalise” its operations. “The retailer will probably follow a similar path to that of Pinduoduo in China. It will start to sell slightly more expensive and better quality products, sometimes with brands,” he says. In March, for the first time it opened its website to merchants who store their goods in the United States, as a way of reducing delivery times. A similar service will soon be available in Europe. ▲

ANALYST OPINION

“The share has an attractive valuation”

In 2023, PDD Holdings posted revenues of 247.6 billion renminbi (31.7 billion Swiss francs), i.e., a 90% increase. Between mid-May 2023 and 2024, its share price rose by 112%, from \$66.07 to \$140.52. Robert McKay, who covers the firm at Blue Lotus, believes it will be able to maintain this strong performance in the short term. In China, the weak economy, mainly due to the flailing property market, is “encouraging the consumption of low-cost goods,” such as items sold on Pinduoduo, he believes. Around the rest of the world, Temu enjoys a competitive advantage over its rivals. Its “innovative model” allows it to slash prices by doing away with intermediaries and managing cross-border shipments in-house, he continues. The analyst has issued a Buy recommendation. He believes that the share still has an attractive valuation, even with the strong growth of PDD Holdings. → PDD

Employees of Pinduoduo, the cash cow of the PDD Holdings group, photographed at the company’s headquarters in Shanghai in July 2018. ↓



← Seventeen European consumer defense associations – including Altroconsumo in Italy, UFC-Que Choisir in France and ULC in Luxembourg – filed a complaint against Temu with the European Commission on 16 May, 2024. The Chinese e-commerce site is accused of manipulating internet users and violating the EU regulation on digital services.

Mini

Big little car

A British icon, the original Mini was designed 65 years ago for middle-class families, before becoming a favourite of rally drivers and pop stars. Today, BMW is capitalising on the car's illustrious past.

BY BLANDINE GUIGNIER

M

ini's new, all-electric model, unveiled at the end of April, is sure to make the brand's die-hard fans crack a smile. The Aceman urban SUV, with its compact size (4.07 metres), has little to do with the first Mini to leave the factory 65 years ago. For a bit of history, that was when the Suez Canal crisis spurred a fuel shortage in the United Kingdom. British Motor Corporation then came up with the idea of building an ultra-compact, fuel-efficient car for middle-class households. Designer Alec Issigonis's innovation was to position the engine crosswise at the front, above the gearbox, leaving 80% of the car's volume for passengers and luggage.

At first, the four-seater's tiny size (3 metres long, 1.4 metres wide and 620 kg) disconcerted families, the automaker's target audience. They also thought it was too expensive. Not until the 1960s did sales begin to soar. Then engineer and racing car builder John Cooper got his hands on the small city car. The Mini Cooper S (S for Sport) embraced its 70 horsepower (!) to win the Monte Carlo Rally three times. Decked out in flashy colours, the Union Jack and original decorative motifs, the Mini also became the symbol of swinging London's cultural effervescence of the 1960s. Loads of mega stars of the day were driving one, including the Beatles, Brigitte Bardot, Enzo Ferrari and Steve McQueen.

So British

The fun and sporty little car rapidly adapted to other needs with estate and pick-up versions. The "original" 1959 model and its many variations were manufactured in the UK, between Cowley (near Oxford) and Longbridge. Foreign iterations were also produced, assembled for example in Italy and Spain. In 1969, Mini became a brand in its own right and the property of British Leyland, a new conglomerate formed out of the merger of several British manufacturers. By 1972, three million units had been sold.

↑
Vintage
1960s model.

© ALAMY



Older models have become collector's items

So British, the Mini thrived in the glory days of the British car industry but also lived through its collapse. In 1973, the oil crisis hit, bringing rough times and endless strikes. Meanwhile, British Leyland had management problems and faced growing competition from Japanese cars in Europe. On the verge of bankruptcy, the conglomerate was partially nationalised in 1975 and refocused on the British Isles. In 1986, it finally changed its name to Rover Group. That year, more than 5 million Minis were sold, but production

slowed. The last models of the original Mini were produced in the late 1990s.

New era

In the meantime, BMW acquired the Rover Group. From this 1994 takeover, Mini was the only brand that the Bavarian auto manufacturer retained. And it had big plans. The company began tinkering to come up with a completely revamped, updated version of the car, which left the Cowley factory in 2001. About 40,000 models were sold that year.

While the brand continues to ride on its funky aesthetic and promise "go-kart handling", the modern Mini is hardly the micro-compact car of yesteryear. Its weight has more than doubled, with its latest electric version at more than 1,600 kg. Moreover, the Mini

KEY DATES

1959

The first Mini produced by the British Motor Corporation.

1994

BMW's acquisition of the Rover Group, which owned Mini at the time.

2020

Launch of the first all-electric Mini, the Mini Cooper SE.

2024

Launch of the Aceman electric SUV, an all-new model in the Mini line-up.

Cooper's starting price is currently around 26,000 Swiss francs excluding tax. An extra 15,000 Swiss francs will get you the new Aceman model. In parallel, older models have become collector's items. "For older generation Minis (1959-2000), a standard model costs between €12,000 and €16,000, while a Cooper can go for up to €25,000," says Xavier Audiau, editor-in-chief of the French magazines *Autoretro* and *Rétroviseur*, himself the owner of several Minis. "It's no longer a car for broke college students," he laughs.

Going electric

These days, the Mini brand is expanding internationally, with sustained growth for example in Southeast Asia and North and South America. In 2019, BMW signed a partnership with the Chinese firm Great Wall Motor to build its electric Minis. The first 100% electric model, the Mini Cooper SE, was unveiled in 2020. Despite all that development, the United Kingdom remains an important bastion for the brand, accounting for more than 10% of sales. BMW will be investing a hefty €700 million, including €87 million from the UK government, into the factory near Oxford to bring some of the electric production back to Europe.

Its electric models, with an annual increase of 3.5%, are boosting Mini's car sales, which were up 0.9% to 295,474 units in 2023. EVs in all shapes and forms are turning in a healthy performance at BMW. Matthew Fine, portfolio manager at the US investment firm Third Avenue Management, believes that the German group will survive the automotive industry's perilous transition to electric vehicles. It can rely on its engineering expertise, strong brand and profit margins, which have enabled it to invest in new technologies. ▲ →BMW



Swisspod

Ultra-fast transport

NUMBER
OF EMPLOYEES
20

HEAD OFFICE
MONTHHEY (VS)

FOUNDED
2019

Between 2016 and 2018, a team from EPFL successfully took part in the annual Hyperloop Pod competitions organised by SpaceX. The aim of these competitions was to promote the Hyperloop system as a transport alternative that is cleaner than planes and faster than trains. The Swiss team's success led to the creation of Swisspod in 2019. The spin-off is working to

develop and commercialise this high-speed vacuum transport system (1,200 km/h), including the required infrastructure and transport pods.

In the autumn of 2023, EPFL and Swisspod finished building a test track measuring 120 metres long and 40 metres in diameter on campus (EPFLoop), a first in Europe. At the end of April of this year, Swisspod completed the longest Hyperloop mission in Europe, lasting around five and a half minutes. The startup, based in Monthey, in the Chablais region of Valais, has already raised 15 million Swiss francs and is cur-

rently in a Series C funding round to raise a further €7 million.

Even with this progress, CEO and founder Denis Tudor insists on the importance of government backing: "Our technology will be operational as of 2027 for goods and 2030 for passenger transport, but without government support, the necessary infrastructure will be difficult to put in place." Swisspod could find solutions outside Switzerland and has signed an agreement with TuTr Hyperloop, which has been endorsed by the Swiss and Indian governments, to accelerate the development of a Hyperloop system in India.



Isochronic

Streamlining production

NUMBER
OF EMPLOYEES
13

HEAD OFFICE
DENGES (VD)

FOUNDED
2020

Optimise production lines by transporting more products simultaneously, and faster, while maximising floor space in factories. That is what this EPFL spin-off aims to do. It is developing Pick&Place, software-driven robotic systems for parts transport, designed to speed up automated operations, especially in the packaging, laser cutting and

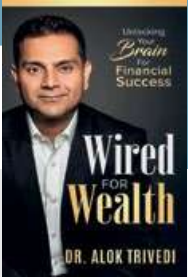
sheet metal processing industries. What is unique about this system is that it is based on four transfer arms mounted on two crossbars, to handle several objects simultaneously (isochronously), unlike traditional systems which operate individually and sequentially. For the same operation, Isochronic's system is twice as fast on average as a traditional system (165 seconds instead of 322 seconds).

Since its creation in 2020, the startup has benefited from the support of various organisations, including EPFL, Lausanne

University of Art and Design (ECAL), School of Business and Engineering Vaud (HEIG-VD) and Serpentes Ventures, and raised CHF 3.5 million to date. Its first test system was sold in 2022 and is currently being delivered to a test customer in northern Germany. CEO Melvin Haas will be attending Venturelab's 2024 roadshow in Silicon Valley, where he hopes to find new partners with complementary skills (production, assembly, sales or service) and meet with potential investors for the Series A funding round planned for the first quarter of 2025.

Swiss startups in this edition

BY GREGOIRE NICOLET



R E A D

Wired For Wealth

Unlocking Your Brain
For Financial Success

BY ALOK TRIVEDI
GAME CHANGER PUBLISHING
2023

This book explores the complex mechanics of the brain and how it affects our financial habits, while providing practical tools and tips. A psychologist and expert in financial advice, Alok Trivedi examines the various attitudes we harbour towards money, which are often rooted in past experiences and family beliefs. Teaming up with other experts, the author developed innovative approaches to understanding and treating dysfunctional financial behaviour. Based on the latest neuroscience, he demonstrates and provides examples of how our brain is conditioned to react to financial problems and how it can be rewired. The book includes exercises to identify and change harmful thought patterns and achieve financial success. The concepts described are complex but accessible to all readers.

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L I S T E N

Re:Thinking

TED AUDIO COLLECTIVE

Through interviews with big-name guests, *Re:Thinking* explores new concepts and ideas in a variety of fields, from technology to psychology to politics. The podcast is created and hosted by Adam Grant, a true proponent of popular science who is also a professor at the Wharton School of the University of Pennsylvania. Each episode is expertly crafted, and the programme is frequently applauded for the wide range of topics covered.

PODCASTS.APPLE.COM/FR/PODCAST/RETHINKING/ID1554567118



F O L L O W

Scott Galloway

@profgalloway
Product of big government @ucla @ucberkeley, Prof Marketing @NYUStern, Right of Center-Left, #ProfGPod @PivotPod, Strategy Sprint @section_school

X (TWITTER) 0 FOLLOWING 576K FOLLOWERS

Best-selling author Scott Galloway is professor of marketing at New York University's Stern School of Business. A serial entrepreneur who has served on several boards, he is known for being outspoken. His political leanings are, in his own words, "right of centre left". On X, his feed is brimming with articles and retweets, along with his daily positioning on topical issues, especially in the tech sector.



D O W N L O A D

Voidpet Garden: Mental Health

Virtual pets to relieve stress

Featuring in the psychology section, this unusual app combines a multiplayer game with meditation activities. Users nurture virtual creatures called Voidpets, which represent emotions. By interacting with the creatures, they complete wellness activities in real life. These challenges take the form of daily meditation or mood-tracking exercises, inspired by techniques such as mindfulness. Gardening is another facet of the app, where users are meant to care for plants and water them. Voidpet Garden is different from other similar apps in its gaming approach to mental health and interactive features.

APP STORE, GOOGLE PLAY,
FREE, IN-APP PURCHASES

“Our range is much wider than you think”

Additional mobile plans, new debit cards, cryptocurrency payments, and more. Swissquote provides an ever broader range of banking services. Simon Pelletier, Head of Product Strategy Banking, tells us more.

It's a busy time for Swissquote, which has added several new banking products and services. What has prompted all these changes?

Historically, we've often been viewed as an investment platform. We wanted to expand our range of services to position ourselves clearly as a universal bank. Today, Swissquote can act as a one-stop bank for any customer in Switzerland, providing all the services needed for everyday life. In and from your account, you can receive your salary, make payments via eBill, use a debit card, or take advantage of the various mobile services, such as Apple Pay, Google Pay, Samsung Pay and Twint. But we offer one huge advantage over a traditional bank. Through that same account, you have immediate access to our entire investment universe. If an investment opportunity arises, you don't have to transfer any funds. The capital is available instantly.

We also offer our customers Lombard loans. These loans are granted against the pledge of financial securities (stocks, bonds, cryptocurrencies, etc.) as collateral. That gives you access to a credit line based on your portfolio by mobilising your assets, which is much more advantageous than a conventional loan.

What other advantages do your banking services offer?

We are the only bank in the world offering a debit card that can be used to pay in cryptocurrencies (ed. note: see inset opposite). We also allow customers to use 13 different currencies with a single IBAN. So, for example, you can make and receive payments in euro. Another advantage is that every time customers pay with their card, they receive “Trading Credit” that automatically covers fees generated from future trades. These are innovative products, but let's not forget that we also provide more traditional services, such as mortgages, with some of the lowest rates on the market. Few banks can boast of such a wide range of services.

How do you support your customers who want to invest in the stock market or in cryptocurrencies?

Our goal has always been to democratise access to the financial market. And that's the case now more than ever. For instance, people who are unfamiliar with this environment can opt for our Invest Easy offering. This investment and savings solution is designed to be very accessible. Customers can choose from a range of predefined strategies, based on their risk tolerance. On our website, we also offer webinars to help customers to better understand how the markets and specific products work.

What kinds of expectations do customers have?

They are very interested in “made in Swissquote” banking services. More and more of them are using our platform for all their banking transactions, especially the new generation, who are attracted specifically by our unique cryptocurrency offering. Also, our mobile app is becoming the main channel for activities and interactions.



The ultimate debit card

Choose between a physical card or 100% virtual, and benefit from a multi-currency, crypto-friendly, digital wallet-compatible debit card.

Find out more:

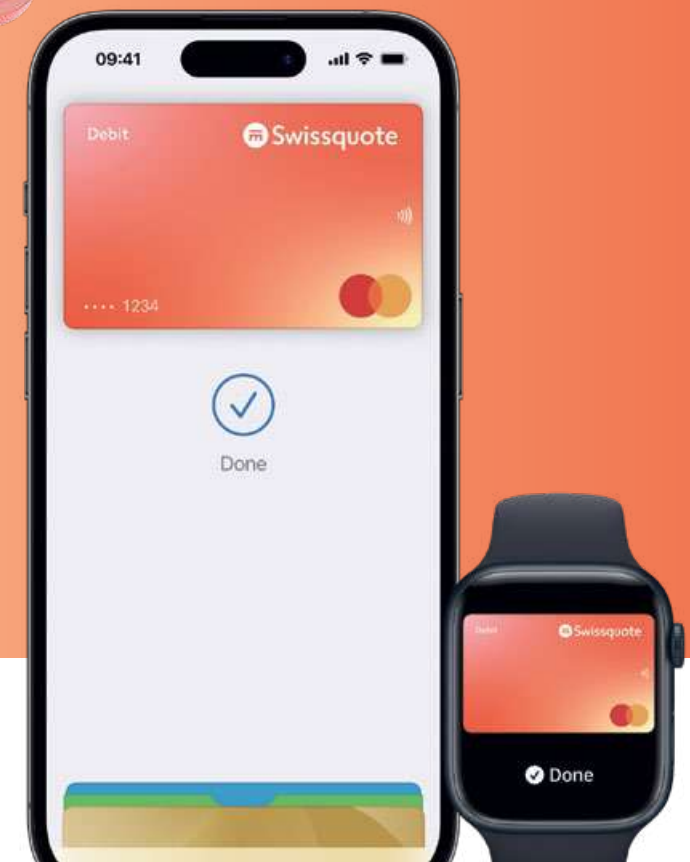
[Swissquote.com/debit-card](https://www.swissquote.com/debit-card)

We're investing heavily in this technology, particularly in the banking services available through the app.

Is Swissquote trying to compete with neobanks?

As it turns out, we are uniquely positioned, which means we can offer the best of neobanks and the best of traditional banks. Our terms are definitely competitive compared with those of new players, for example in currency exchange. But we are also firmly established with a Swiss banking licence, which sets us apart from many newcomers. We offer the security and stability that only the Swiss banking system can provide. ▲

Simon Pelletier
Head of Product Strategy Banking



The free spirit

In its twin electric motor version, Volvo's small SUV is the fastest car in the Swedish carmaker's history. But this Chinese-Swedish collab has charm that lasts well beyond its nimble acceleration.

BY RAPHAËL LEUBA

ENGINE
TWIN ENGINES: 115 KW AND 200 KW (428 HP), 543 NM

BATTERY
400 V LITHIUM-ION BATTERY, CAPACITY 69 KWH (NOMINAL)

PERFORMANCE
0-100 KM/H IN 3.6 SECONDS, TOP SPEED 180 KM/H

PRICE
CORE STARTING AT CHF 47,950 (ULTRA TEST CAR WITH OPTIONS CHF 54,720)

The youngest in the Volvo family, short and stocky (4.23 m long and 1.84 m wide), is patiently waiting for us on the beautiful showroom floor of the Illnau-Effretikon dealership, kept on a leash at its charge point. A product of the Geely group, this Made-in-China EX30 makes us wonder: is it really a Volvo – as the styling and the emblem suggest – or rather an fake electric version dressed up to look Scandinavian? By the time we get the keys (a cube with no buttons) in our hands and check the clock to make sure we can dash out ahead of Zurich's traffic jams, our scepticism has vanished. The Volvo greets its host with a subtle show of cascading LED lights as it unfolds its wing mirrors. The beast has got rizz.

The exterior entices with its elegance, and the interior is practically refreshing. With blue as the dominant shade, the innovative fixtures are showcased by the light filtering in through the (fixed) bay window. There's a cup-holder drawer in the armrest, a secret glove box, slender vents and a hi-fi speaker bar that stretches across the entire width of the windscreen. With the exception of the graceful stainless steel door handles, everything is synthetic, but the materials have a robust feel. As do the fabric and vinyl upholstery. Consistent with good Volvo tradition, these thick, multi-way power-adjustable seats offer top-notch comfort. At the rear, the passengers are granted a less enviable fate due to a lack of legroom. The boot is not very

spacious either (318 litres), but it makes up for it with regular shapes and a double floor. In any case, part of the job is done by the front bonnet, which contains a storage box for the charging cable.

Instead of an instrument cluster behind the oblong steering wheel, you will find a tiny red eye that stares back at you, bringing you into line when your attention wanders too far to the right. And you might find yourself doing that often, because the speed and other information can be read off the central tablet, the nerve centre of all functions. That is also where you can adjust the mirrors and open the glove box! The panel and its selection menu take some getting used to before you can enjoy life on board, but the whole system is responsive and intuitive. True to Scandinavian simplicity, there are no parking brake controls or start buttons. The D and P positions on the selector – the stalk on the right – suffice.

Once you get the hang of these peculiarities, you discover a smooth, consistent car that slices across the road in stunning silence. The broad, 245 mm, 20-inch diameter tyres are virtually silent, with very little vibration. Proof of excellent damping. At this level of the range – a base price of less than 50,000 Swiss francs – you would have a hard time finding a better chassis. Especially one that handles the zeal of the twin engines so marvellously. Because when it comes to power, the EX30 Twin Motor is at the top of the game, with 428 hp spread over all four wheels. Here again, not many equivalent models fall within this price range, except for the Smart #1 and #3 from the same brood. The little Volvo SUV offers a smooth drive at a leisurely pace and literally pins you into the driver's seat when accelerating, unfazed by its weight (1.9 tonnes) or any road surface irregularities. Of course, the EX30 does not have

VOLVO EX30

TWIN MOTOR

the tight grip of a sports car when cornering, but its balanced handling and flawless traction make it trustworthy.

The 64 kWh net capacity battery – with maximum DC charging power of 153 kW – delivers a WLTP range of up to 445 km. But that power melts away if you choose to ride the engine's quantum leaps. After test-driving the vehicle over a few days, covering a variety of trips and no restrictions on use, we ended up with consumption of 20 kWh/100 km, for a range of roughly 320 km. But it could be better. It's worth noting that the standard version is fitted with a heat pump for the heating-climate control unit and “one pedal drive” that increases energy regeneration and the deceleration that goes with it. This latter function makes the EX30 very comfortable when driving through town, as do the adjustable steering wheel and tight turning radius. Finally, its peripheral cameras compensate for poor rear visibility.

Backed with a 5-year warranty, free servicing for up to 10 years or 150,000 km and a full range of assistance services, the EX30 is definitely in line with the codes and values of the Swedish brand. And just enough over-the-top madness to boot. ▲



T R A V E L PORTUGAL

WALK THROUGH THE DOURO VALLEY

Less well known than the country's southern region, the north of Portugal is brimming with medieval towns, steep hillside vineyards and plenty of hiking trails. All that can be enjoyed with a diverse range of hearty gastronomic dishes. Take a walk on the hedonistic side. BY JULIE ZAUGG

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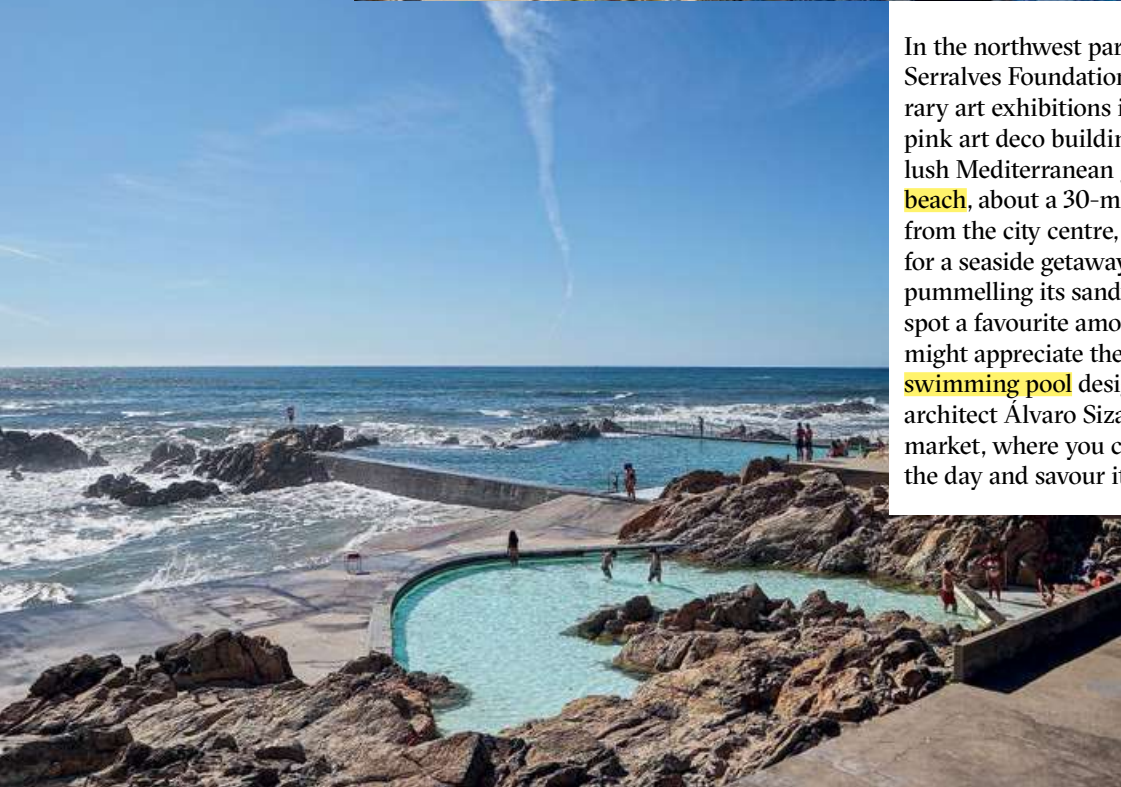
he sun begins to sink over the horizon. **Porto's** red terracotta rooftops glisten with a stunning orange hue. Winding through the city, **the Douro River** resembles a tongue of fire dotted with wooden boats. Back in the day, these boats would transport barrels of wine and port from the Douro Valley to the cellars of this urban hub. Along the river banks, restaurants and bars have set out long tables garnished with sheep's milk cheese, codfish croquettes and grilled sardines. More adventurous travellers try one of two local specialities, a *francesinha*, a ham and steak sandwich smothered in a cheese and beer sauce, or a stew of tripe, white beans, carrots and onions. →



Located in the north of Portugal on the Atlantic Ocean, the city of Porto is where the country's independence movement started. It is also the birthplace of Portugal's first great explorer, Prince Henry the Navigator, who launched the Age of Discovery in the 15th century. A UNESCO World Heritage Site, the city centre showcases this rich history, featuring some of Portugal's most beautiful buildings covered in blue and white tiles, including the **Capela das Almas church** and São Bento railway station. Nearby, the Bolhão covered market is housed in a spacious building packed with stands of colourful vegetables, seafood, and the famous egg yolk and cream pastries, allowing you to sample the region's fresh produce.



In the northwest part of the city, the Serralves Foundation hosts contemporary art exhibitions in a collection of pink art deco buildings surrounded by lush Mediterranean gardens. **Matosinhos beach**, about a 30-minute tram ride from the city centre, is the perfect place for a seaside getaway. The huge waves pummeling its sandy beach make the spot a favourite among surfers. Others might appreciate the rock-lined **saltwater swimming pool** designed by the famous architect Álvaro Siza Vieira or the fish market, where you can select a catch of the day and savour it on the spot.

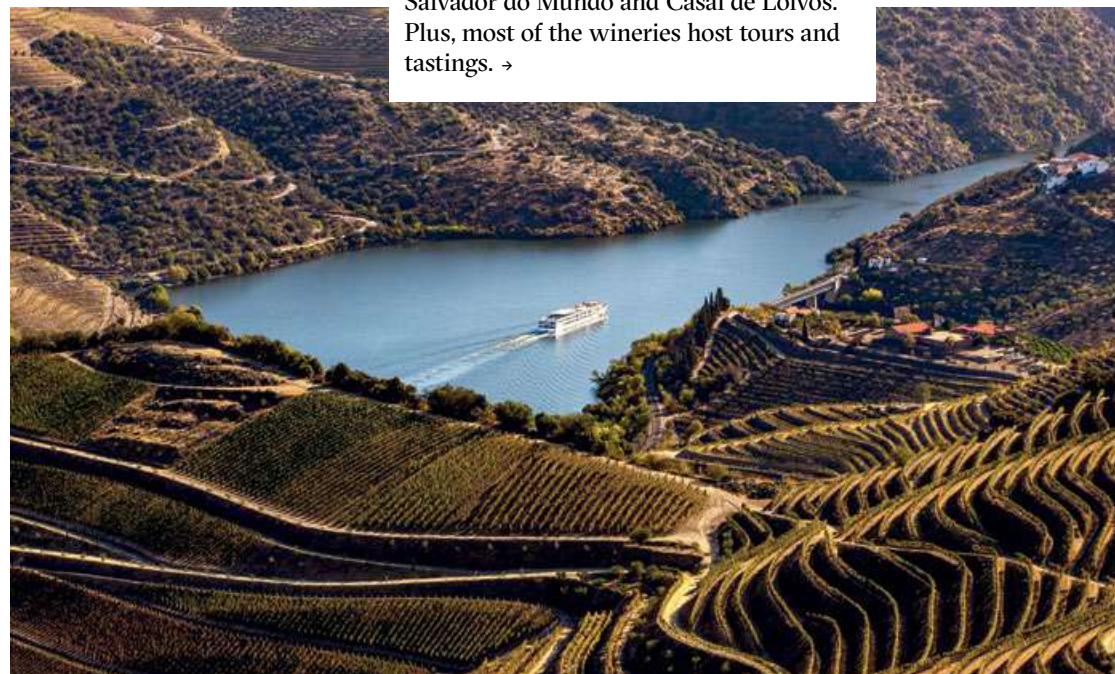


© ISTOCK / IN THESE MOMENTS STUDIO
MARTIN THOMAS, ALAMY



Now it is time to leave the coast and venture inland to explore the Douro Valley, home to Portugal's aromatic wines and – especially – the region's most famous export: port, a red wine fortified with brandy. The small town of **Pinhão** is located in the heart of this wine-growing region. It is also the departure point for the many Douro **River cruises**. This is a great way to discover the area, winding along on the river through terraced vineyards while sipping a glass of port.

You can also explore the Douro Valley by bike. Several routes guide you through the valley, including Peso da Régua and Foz Côa on the N222, considered one of the most beautiful roads in the world. You can admire the terraced vineyards from the many viewpoints, for example São Salvador do Mundo and Casal de Loivos. Plus, most of the wineries host tours and tastings. →



TOP SPOTS

Euskalduna Studio, Porto

This Michelin-starred restaurant is the brainchild of chef Vasco Coelho Santos, who blends traditional Portuguese ingredients with modern cooking methods to create a Japanese izakaya-style menu of bite-sized delicacies.

Torel Palace, Porto

This boutique hotel is housed in a pink 19th-century palace with ceilings covered in ornate mouldings. Its gorgeous swimming pool is sheltered behind an ivy-covered wall.

Taberna Lusitana, Matosinhos

Located inside the Matosinhos fish market, this restaurant lets you bring your fish and seafood bought from the market stalls, which a chef then prepares into an exquisite dish accompanied with potatoes and vegetables.

Six Senses, Douro Valley

This 19th-century hilltop manor house in the heart of the Douro Valley offers luxurious suites and villas, as well as a five-star spa surrounded by a beautifully groomed garden.

Hotel Agrinho Suites & Spa, Gerês

Offering stunning views of the lake below, this hotel features an indoor and outdoor swimming pool and spacious rooms with kitchenettes. The national park is a 15-minute drive away.

GETTING THERE

EasyJet, TAP and Swiss operate several daily flights to Porto from Geneva and Zurich.

Next stop: the medieval city of Braga. This small town has retained its authentic character, far off the typical tourist circuits. On Sundays, the main square in the centre is the meeting place for the city's pensioners, playing folk tunes on the violin accompanied by castanets or performing traditional dance steps, while families nibble cream puffs shaped like a tibia bone, a pastry invented in Braga's convents.

Strolling through the historic centre is like travelling through time. The cathedral dates from 1089 alongside Roman ruins and the archbishop's medieval palace. Just outside the city, you can take the funicular and climb a spectacular Baroque staircase to reach **Bom Jesus do Monte sanctuary**. This hilltop pilgrimage site is surrounded by manicured gardens, ponds and artificial caves.



Now for some nature. On the border with Spain, **the Peneda-Gerês National Park** spans more than 700 sq. km of mountainous terrain. You can explore it via numerous hikes, lasting from two hours to several days. Amid the pink and silver granite massifs, you might encounter long-horned cows, wild horses, Iberian ibex, other goats and salamanders.

The park contains a sprawling web of deep ravines, waterfalls plunging into natural turquoise pools where you can swim in summer, and oak and pine forests. In spring, the expanse is covered in flowers and heather blooming in a variety of colours. From time to time, you come across a stone village, where time seems to stand still. This is also one of the best places to sample the robust mountain dishes made with pork or veal from livestock bred in northern Portugal. Let us not forget to taste *vinho verde*, a fresh, floral, slightly sparkling white wine from the vineyards along the coast. ▲

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 **Swissquote**

All investments carry a degree of risk.

Biometric earbuds

Sennheiser has unveiled its new earbuds optimised for athletes and fitness enthusiasts. With built-in biometric sensors, the Momentum Sport earbuds measure heart rate and body temperature, while benefiting from the data analysis ecosystem of the Polar Flow training app. Special attention has been paid to sound quality, with a setting to reduce distracting noises such as footsteps and breathing.

sennheiser-hearing.com
CHF 339.90



Innovation for barbecues

A must-have for summer barbecues, the Beer Box from German company Höfats is a beer crate that can be transformed into a fire basket. Made of Corten steel and renowned for its fire-retardant, protective rust patina, this stackable crate has an inbuilt bottle opener and can hold both fresh lagers and a nice prime rib to grill. Practical and stylish, it can also be used as a seat with its removable wooden lid.

hofats.com
CHF 149.-

For modern explorers

Designed by two young French engineers who are keen backpackers, the 3-in-1 cape from the startup Trail Hoppers does more than just protect you from inclement weather. With a twist of the wrist, the 100% waterproof poncho can be converted into a hammock with its ingenious suspension system, or into a tarp using the six stakes included in the pack. Weighing just 630 grams (including accessories), the poncho takes up the space of a water bottle when folded. Ideal for camping in the great outdoors.

trailhoppers.com
CHF 139.90



Sustainable swimming

In its commitment to protect the oceans, the Zurich-based brand Pater et Filius has designed swimming trunks made from recycled fishing nets. Not only does it contribute to combating plastic pollution, the material is light and comfortable, dries quickly and offers UPF 50 sun protection. Delivered in a monogrammed waterproof pouch that can be taken to the beach to carry your phone, keys or wallet, these simple and stylish shorts are available in four solid colours and four prints.

paterfilius.com
CHF 165.-

4K cinema on the go

LG's CineBeam Q portable projector is sleek in design and ultralight in weight (1.49 kg), while offering native 4K resolution. Set up is quick and easy, and screen alignment is automatically calibrated. Another special feature is the 360-degree rotating handle, which not only makes it easy to carry, but also serves as a stand to project high-resolution content onto a variety of surfaces, such as walls, screens or ceilings.

lg.com
CHF 1,453.-



Surfing in a limited edition

Patek Philippe celebrates summer with the "Morning on the Beach" Calatrava wristwatch. Part of the new Rare Handcrafts 2024 collection, this limited edition – only 10 were made – features a surfer carrying his board, waiting for a wave on the California coast. Framed in a white gold case, the dial, a true masterpiece of marquetry, required the cutting and assembly of 100 pieces and 75 inlays representing 23 types of wood with varying colours, textures and grains.

patek.com
Price upon request

h o u t i q u e

A LOOK
INSIDE
THE
LAB

Energy from evaporation

Researchers at EPFL have developed devices that can harvest electricity from the evaporation of fluids. The team will soon be carrying out a full-scale trial in Lake Geneva. BY JULIE ZAUGG

Evaporation occurs everywhere, in a variety of humidities, even at night. In 2017, this prompted EPFL researchers to begin exploring how to generate electricity from this ubiquitous process using the hydrovoltaic (HV) effect. “The principle is that a fluid produces an electrostatic effect when it interacts with a solid,” says Giulia Tagliabue, head of the Laboratory of Nanoscience for Energy Technology (LNET) at EPFL’s School of Engineering. “By making the liquid flow through a nanodevice, a miniature device made up of nanochannels, we can harvest current and voltage.”

This operation generally requires an external power source. However, by using the natural movement of evaporation, induced by solar energy, such a source becomes superfluous. “This passive pumping mechanism can also be seen in plants, where water is transported into the micro-capillaries by natural evaporation from the surface of the leaves,” the researcher explains. She is studying this phenomenon with her PhD student Tarique Anwar.

Over the course of their research, the two scientists stumbled upon a major discovery. “Until now, we thought that nanodevices could only be optimised by using purified water, with a low concentration of ions,” Tagliabue says. “But we have found a way of adapting it so that it can be supplied with tap or seawater.”

To achieve this, they determined the ideal shape, size and configuration of the nanodevice. “We created a hexagonal network

of precisely spaced silicon nanopillars – between 300 and 400 nanometres,” Tagliabue says. These spaces form channels for the liquid to evaporate.

Measuring 2 cm², the device tested in the laboratory can be connected to a capacitor to collect and store energy. For now, the nanodevice produces only a tiny amount of energy, but it could eventually be enlarged. “We could also install dozens of them side by side, like photovoltaic cells in a solar panel,” Tarique Anwar adds.

The research duo recently received a five-year grant from the Swiss National Science Foundation to carry out a full-scale trial in Lake Geneva. They will develop a device measuring around 10 cm² that will float on the water’s surface. “We have to make sure that it can withstand real environmental conditions, such as waves and currents,” the PhD student explains.

Ultimately, they hope to develop a structure that can generate enough electricity to power sensors for devices not connected to the electricity grid that currently require batteries. This would be possible even without a body of water nearby. “The evaporation of dew could be enough,” Giulia Tagliabue says.

Deployed on a larger scale alongside a floating photovoltaic plant, these devices could act as a relay during periods of inadequate sunlight, including at night. Theoretically able to operate anywhere there is moisture, such as sweat, they could also power portable health and fitness wearables. ▲

↑ Image of silicon nanopillars using a scanning electron microscope.

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