

Insights

THE QIAGEN MAGAZINE 2024



Fighting TB on the last frontier

Overcoming Alaska's
unique environmental
and societal challenges
to combat tuberculosis

The microbiome: One Health

A connection between
crops, amphibian
conservation, and
ancient oral health

New hope for lung cancer patients

A blood-based test could
revolutionize treatments for
late-stage lung cancer



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The microbiome:
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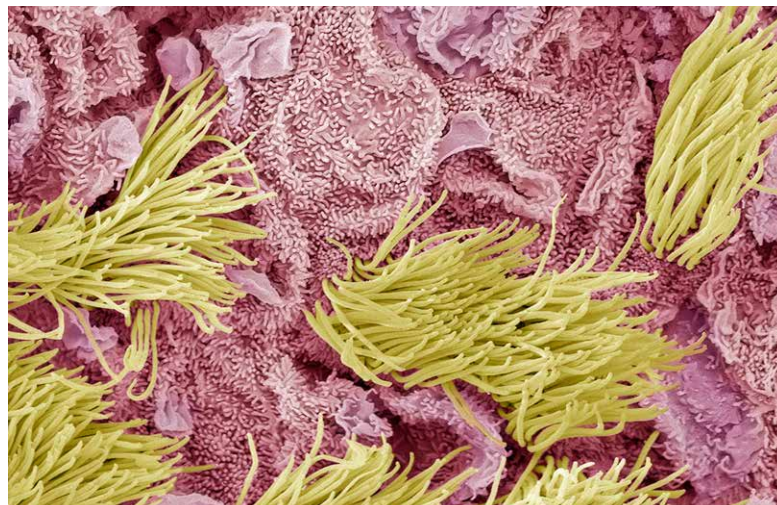


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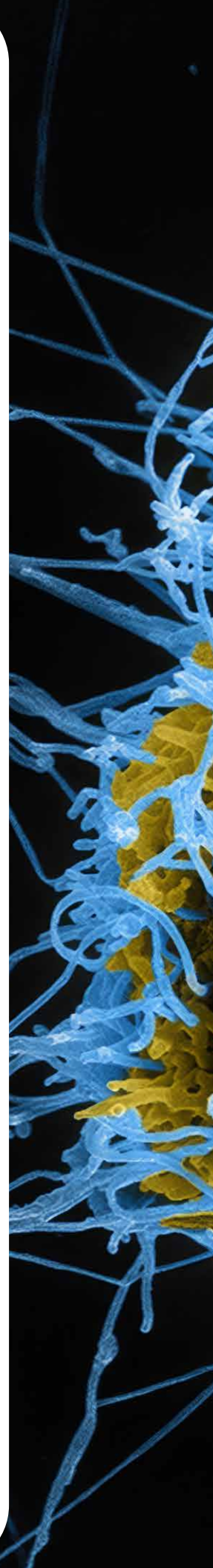
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QIAGEN at a glance

Sales 2023

\$1.97 billion

Highly recurring revenue

~88% Consumables and related revenues

~12% Instruments

Balanced customer markets

~50% ~50%

Molecular Diagnostics | Life Sciences

>35
Nobel Prizes

awarded to scientists who achieved innovative breakthroughs working with QIAGEN products

A global company with scale
Revenue distribution by region

~52% Americas

~32% EMEA

~16% Asia-Pacific/Japan

Shipping products to **>170** countries

~6,000
employees known as QIAGENers



~500,000
customers worldwide



Our Vision
What we want to achieve

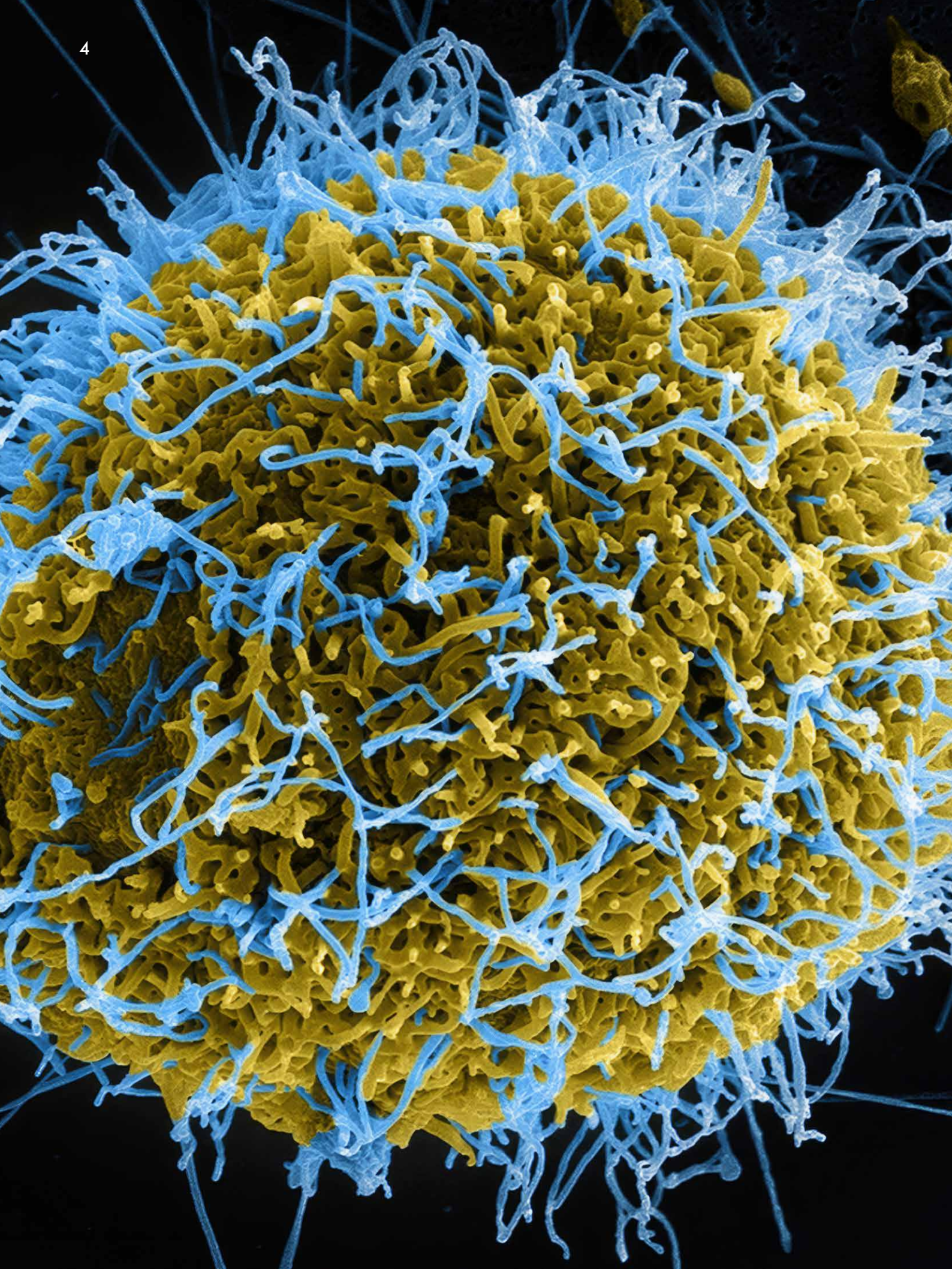
Our vision is truly powerful and conveys our ambition to make a difference: Making improvements in life possible.

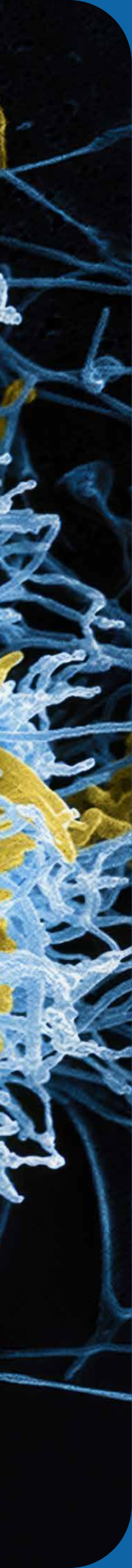
Our Identity
What we stand for

QIA – Quality, Ingenuity and Accessibility – is what we stand for. It captures our commitment to quality, our creative and inventive spirit, our openness and authenticity.

Our Mission
Why QIAGEN exists

Our mission is to offer Sample to Insight solutions: products and services that enable our customers to gain valuable insights from any biological sample.

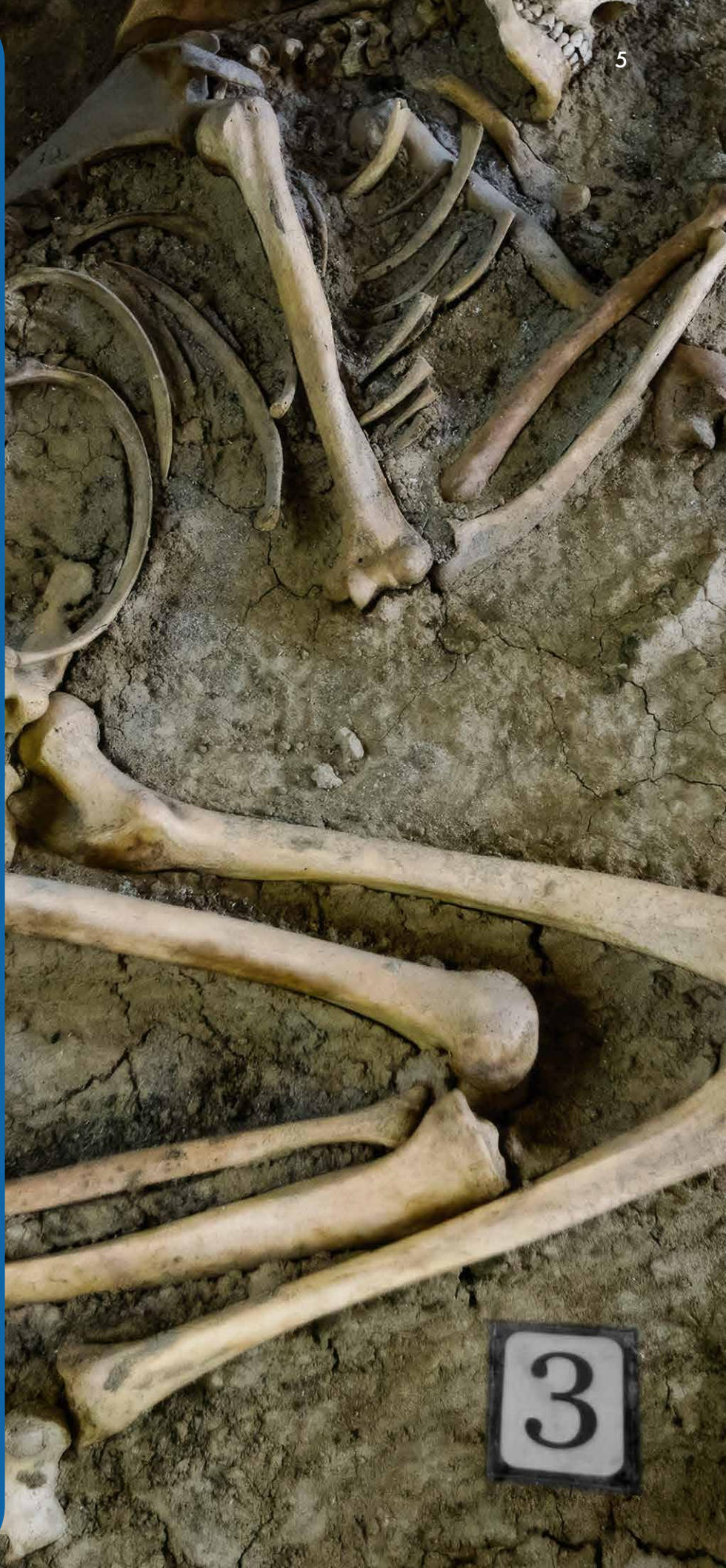




Viruses like Ebola replicate by invading host cells and hijacking their machinery to produce new virus particles. Through a process called budding, depicted here with advanced microscopy, filamentous viral particles (blue) emerge from the host cell (yellow), ready to infect more cells. Treatment strategies typically aim to disrupt this replication cycle.



The integration of archaeology with Human Identification (HID) methods such as DNA analysis, dental records, and forensic genetics is revolutionizing our understanding of ancient remains. These techniques allow for deep insights into genetic lineage, geographic origins, and connections to living relatives, while also illuminating broader historical narratives like migration patterns and social structures.





Every city possesses a distinctive microbiome, consisting of bacteria, viruses, fungi, and other microorganisms. Particularly within mass transit systems like subways, a city's microbiome can greatly influence human health. By mapping these microbiomes, researchers can identify the diverse species that exist and detect any changes resulting from emerging pathogens.



Parasites, including tapeworms, serve as both health challenges and natural ecosystem components. Although many can trigger severe health problems with symptoms resembling other illnesses, requiring prompt and accurate diagnosis, not all parasites are detrimental. Many exist harmlessly in our environments or bodies, and some even contribute positively to ecological stability.



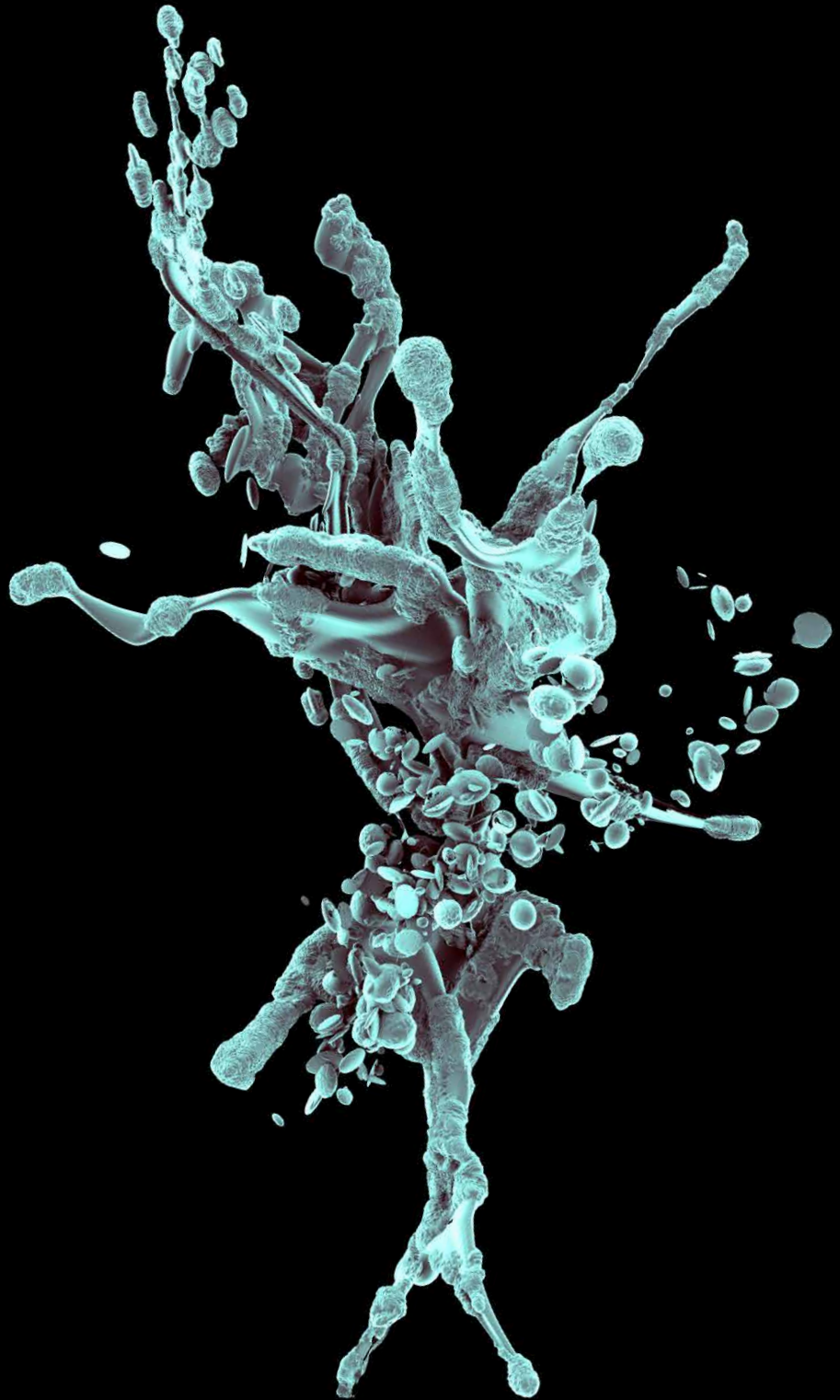




Dogs and humans share similar eye structures and genetics due to their extensive coevolution, leading to analogous diseases like Progressive Retinal Atrophy (PRA) in dogs and Retinitis Pigmentosa (RP) in humans. This genetic similarity has spurred cross-species research, with gene therapies for PRA in dogs offering potential treatments for RP in humans.



T-cells, vital to the immune system, target cancer cells by identifying abnormal proteins on their surfaces. When activated, they release substances that rupture the cancer cell's membrane and initiate apoptosis, leading to the cell's fragmentation and removal by other immune cells (as pictured here). Techniques like CAR-T therapy and checkpoint inhibitors amplify this response, particularly in patients with compromised immune systems, providing a strengthened defense against cancer.



An espresso with Thierry



We met our CEO at the QIAGEN Coffee Bar in Hilden and asked him about his highlights in 2023, what challenges and opportunities he sees for 2024, and how QIAGEN is positioned to address them.

Thierry: Recapping 2023, was there any particular event or single experience that stood out for you?

I had many exciting encounters with customers, partners, investors and our QIAGENers over the course of the year. But if I have to single one out, it was my visit to the fine English town of Cambridge. I was invited to deliver a keynote on diagnostics and healthcare to more than 250 PhDs from around the world. It seemed like a good opportunity to ask the question: “Who among you has ever used a QIAGEN product, especially in the field of sample tech?” Every single hand in the room went up. Scientists might classify that as mere anecdotal evidence. Yet to me it also reflects the strength of our brand and how our company has democratized access to molecular solutions for thousands of labs across the globe. That’s an achievement that has taken four decades of hard work, and it’s something we can be very proud of.

How can QIAGEN build on that achievement?

With a mindset driven by balance and focus. Balance means spreading our activities equally between life sciences and clinical diagnostics, as well as our geographic presence to counter regional downturns or political volatility. And as a mid-cap company, we must focus our activities and invest only in areas where we can take leadership positions. That’s why in 2019 we came up with our Pillars of Growth strategy. In two of these areas – Sample Prep and latent TB testing – we are already number one. And in the others, we offer differentiated solutions for the very dynamic syndromic, digital PCR and PCR testing markets. This is balance and focus.



Thierry Bernard
Chief Executive Officer and Managing Director

How has COVID changed the industry, given the recent volatilities in the market?

While markets have faced headwinds as the industry has adapted to a post-COVID landscape, the fundamental trends are undebatable. To name but a few: an aging population; more chronic diseases, including HIV and some cancers; and the increasing threat of global infectious diseases. They all require more testing. I think that COVID-19 proved two things. One is clearly the relevance of diagnostics in the healthcare value chain. The second is the superiority of molecular testing in the diagnostic value chain. The markets we are operating in are very solid. And we are uniquely positioned to address them – with a leading offering from sample preparation to data interpretation, from life sciences to clinical.

Does that show in the results for 2023?

Absolutely. With 8% growth in non-Covid products and solid profitability, we ended up above market in the top-tier group of our industry. In a challenging environment, our teams delivered across our entire portfolio. And I believe that for 2024 and beyond, we are moving as a much stronger and more solid company to address the key market trends with the portfolio that we have built up over the years.

What are these trends?

Take emerging applications such as liquid biopsy and minimal residual disease as an example, which are pushing for more innovation in sample preparation. We are there. Or look at TB, now again the world's deadliest infectious disease that is killing 1.6 million people every year. We are there with our leading blood test QuantiFERON, and we are going to expand the technology into other infectious disease areas such as Lyme or Epstein-Barr. Pharma is adopting digital PCR for companion diagnostics, quality control testing, gene and cell therapy. We are there with our QIAcuity platform, which we are now also moving into clinical application. And so on. Let's also not forget the increas-

“The markets we are operating in are very solid. And we are uniquely positioned to address them – from preparing a sample through to data interpretation, from life sciences to clinical healthcare. Indeed, from Sample to Insight.”



ing role data analysis and interpretation play for biomarker discovery, drug development and clinical diagnostics, where we hold the clear number one position with our QDI bioinformatics offering.

Where do you see threats?

The main danger for a company like QIAGEN is spreading ourselves too thin. Once again, we are a mid-cap. We need to focus our investments, including the 9 – 10% of sales we are spending on R&D. And we cannot afford to become complacent. Take again our Bioinformatics business as an example, which is growing more than 10% per year. We are the only profitable company in that space. Yet for us this is not enough. I'm very convinced that this business – especially for pharma companies – still has a very significant untapped growth potential. This is why we decided to further invest here in R&D firepower, but also in sales, marketing and geographic presence.

And the overall economic and geopolitical environment?

We need to keep a cool head. Yes, our 2023 results were good, but – once again – we cannot be complacent in a world where uncharted waters and volatility have become “the new normal.” Our financial outlook for 2024 for at least \$2 billion in sales and \$2.10 in EPS combines ambition and realism. Achieving these goals will still require hard work, focus, tackling constant challenges, and agility in times of uncertainty. But I am convinced that we not only have the right portfolio, but also the right people to achieve these goals. Our 6,000 QIAGENers worldwide are key players in the perpetual improvement of our company. And in very challenging times we will further entrust and empower them to work with our customers to make improvements in millions of peoples' lives.

MICROBIOOME

ONE
HEALTH





The One Health Microbiome Center at Penn State is making significant strides in microbiome research across various fields, from agriculture and environmental conservation to human health. In the following stories, we take a closer look at the team's research, exploring their work and the unexpected influence of the microbiome on everything from plants and amphibians to human teeth.



Enhancing crop resistance through plant microbiome manipulation

Francisco Dini-Andreote focuses on a critical challenge: combating the parasitic weed *Striga* that devastates crops across Sub-Saharan Africa. *Striga*'s stealthy nature allows it to attach to the roots of crops like maize and sorghum, siphoning off nutrients essential for their growth.

"*Striga* poses a significant threat to food security for millions, necessitating a novel approach to combat this parasite," says Dini-Andreote. By studying the complex ecosystem within the plant's root microbiome, his team aims to disrupt *Striga*'s life cycle without resorting to harmful chemicals. Utilizing advanced techniques such as laser ablation tomography, they examine how microbes in close association with plants induce changes in root anatomical traits with direct effects on suppressing *Striga* parasitism.

"The intricacies of the plant microbiome offer a treasure trove of solutions for sustainable agriculture," he explains. "By exploring the plant microbiome, we aim to enhance crop resilience against environmental stressors, thereby safeguarding food security and ecosystem health," Dini-Andreote explains.

His lab uses DNeasy Soil Pro Kits for preparing samples, and QIAquick Gel Extraction Kits for purifying them, ensuring high-quality data for their research. This work is not just about combating *Striga* but encompasses broader goals like soil health improvement and agriculture sustainability.

Dini-Andreote's team is also investigating how individual and multiple biotic and abiotic stressors affect plant-microbe interactions, demonstrating the importance of microbiome research in promoting sustainable agriculture in a constantly changing climate.

Francisco Dini-Andreote, PhD
Assistant Professor of Plant
Phytobiomes at Penn State University

◀
Francisco Dini-Andreote, PhD, Gordon Custer, PhD, Courtney Tharp and Joe Ono-Raphel (left to right) observe the visualization of nutrient deficiency symptoms on maize leaves caused by the parasitic weed *Striga*



Molly Bletz, PhD
Assistant Professor of Disease
Ecology at Penn State College
of Agricultural Sciences



Combating amphibian decline and probiotic treatments

Molly Bletz addresses the alarming decline in amphibian populations due to the Bd fungal disease, a pandemic causing unprecedented biodiversity loss.

Amphibians, including frogs, toads, salamanders, and newts, serve as key indicators of environmental health due to their sensitive skin, which readily absorbs toxins from their surroundings. This sensitivity makes them one of the first groups to respond to environmental changes, thereby signaling the health of ecosystems.

Furthermore, amphibians play an important role in the food web: They control insect populations, including those that spread diseases to humans (such as mosquitoes), and they themselves are a crucial food source for a variety of predators. Their unique life cycle, bridging aquatic and terrestrial ecosystems, also helps in nutrient cycling and the maintenance of water quality.

“Amphibians play crucial roles in ecosystems, and their loss signals a broader ecological crisis,” Bletz notes, emphasizing the urgency of her research. By understanding the amphibian skin microbiome, her team seeks to identify and harness beneficial microbes that can protect these animals from Bd.

“Our work is focused on identifying and applying protective microbial treatments to amphibians, aiming to reduce the devastating effects of Bd on global biodiversity,” says Bletz.

›

DNA extraction kits are used to identify various bacterial species



This involves not just laboratory research but also field-work, collecting and analyzing microbial samples from amphibians in diverse environments. “Our goal is to develop scalable, environmental probiotic treatments, marking a significant step towards amphibian conservation,” she states.

Utilizing the DNeasy DNA Extraction Kits, her team identifies bacterial species with antifungal properties from amphibian skin microbiomes.

Bletz’s research goes beyond the lab, as she explores how environmental conditions influence amphibian immunity and microbiomes. Her ultimate goal is to establish effective, environment-friendly probiotic treatments that can be applied on a large scale.

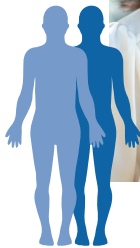


Interconnected research

The research conducted by Dini-Andreote, Bletz, and Weyrich embodies the One Health approach, highlighting the interconnectedness of microbiomes and emphasizing microbiome research’s potential to transform agriculture, conserve endangered species, and advance oral healthcare.



Laura Weyrich, PhD
Associate Professor of
Anthropology and Bio-
ethics at Penn State
College of Agricultural
Sciences



Advancing oral health through ancient microbiome studies

Laura Weyrich is exploring ancient oral microbiomes to tackle contemporary oral health issues like periodontal disease, a prevalent condition characterized by gum inflammation that can lead to tooth loss and has been linked to systemic health issues like heart disease and diabetes.

Interestingly, the evolutionary history of our microbial communities can inform future treatments. “Our ancestors’ oral microbiomes hold the key to understanding the evolution of microbial communities and their impact on health,” Weyrich explains. “By investigating ancient oral microbiomes, we’re uncovering how shifts in microbial communities through time can guide the development of novel treatments for oral diseases.”

By analyzing calcified dental plaque from ancient specimens, her team reconstructs the composition of past oral microbiomes, revealing shifts that coincide with dietary changes and historical pandemics. This research not only sheds light on the microbial basis of oral diseases but also explores the potential of oral microbiome transplants as a therapeutic avenue.

“Matching the evolutionary history of microbiomes with modern transplants could revolutionize oral health treatments,” Weyrich suggests, pointing towards a future where dental care is personalized based on microbiome analysis.

Using the QIAGEN’s PowerSoil Pro Kit, her team handles the challenges of studying ancient samples, such as contamination, ensuring reliable results. This research could help in developing oral microbiome transplant therapies, potentially transforming the way periodontal disease is treated. “QIAGEN’s PowerSoil Pro Kit is critical for our ability to extract usable DNA from modern dental calculus for comparison with ancient samples, allowing us to understand how microbiomes evolve across millennia with confidence,” she elaborates.

Weyrich envisions a future where treatments are tailored to the individual’s microbial and evolutionary background, promising a more effective approach to oral health.



Ancient teeth reveal
clues about historical
oral bacteria



One Health:

Microbial connections

The One Health concept highlights how interconnected microbial communities influence human, environmental, and agricultural health.

Everything is connected. For instance, antibiotic-resistant bacteria from livestock can spread to humans and ecosystems through contaminated manure, emphasizing the necessity for integrated health management. Additionally, pathogens like the avian influenza virus can transfer from wild birds to poultry farms, threatening food security and public health.

The connections are so delicate that even disrupting a bee's microbiome can cause a larger ripple effect. Changes in bee gut microbiomes can compromise their immune systems and reduce their populations, which disrupts pollination critical for crop production and biodiversity, ultimately affecting broader ecosystems.

Entire cities have vast microbiomes, each with a unique microbiotic signature. These can shift as people move through urban areas, transporting microbes on their clothes and skin. For example, a subway system can become a conduit for microbial exchange across different neighborhoods, influencing public health monitoring and response strategies.

Recognizing these connections and the importance of collaborations across various fields helps maintain planetary health and the well-being of all species.

What exactly is a microbiome?

Microbes and their collective genetic material, known as the microbiome, are ubiquitous on Earth – found from the ocean depths to mountain peaks, and from deserts to polar regions. They are also present inside us, playing integral roles in our health and the environment.

Interestingly, the collective behavior and interdependencies of these microbes often allow the microbiome to function as a single entity, almost akin to a whole organism in itself.

Animal health

Microbiomes can aid animals with digestion, strengthen immunity, and shape their health.

Microbiomes supporting ruminant digestion influence methane emissions in cattle, affecting climate.

Amphibians' skin microbiomes protect against pathogens and toxins, crucial for ecosystem stability.

Probiotics in poultry microbiomes can control avian influenza, enhancing global food security.



ONE
HEALTH

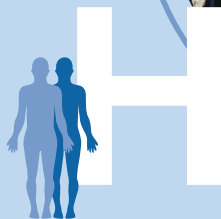


Human health

The human microbiome, comprising diverse bacteria, viruses, and fungi, contains about 3 million genes – 150 times more than the human genome.

Weighing approximately 1.5 kg (3.3 lbs), the human microbiome matches the weight of the human brain.

Gut microbes like Lactobacillus and Bifidobacterium influence emotions and food choices, affecting conditions such as depression and anxiety.



Environmental health

The environmental microbiome, spanning soil, air, and ocean, enhances plant nutrient uptake, reduces pathogens, and improves soil health, particularly in the rhizosphere.

Environmental microbiomes play a crucial role in mitigating damage by breaking down pollutants, such as during the Deepwater Horizon oil spill cleanup.

Bacteria like Pseudomonas in the atmosphere can influence local climates by inducing cloud formation.



Hummingbird
Diagnostics

New hope for lung cancer patients

Can RNA biomarkers detect lung cancer early? Hummingbird Diagnostics' blood tests identify the disease in its silent stages and guide treatment across all phases, offering hope for comprehensive care.

Millions of people are diagnosed with lung cancer every year – 10 to 20% of whom are non-smokers. Lung cancer also claims more lives worldwide than any other cancer. This is mainly because it is often detected late, with the disease remaining asymptomatic in its early stages, silently progressing without warning signs.

"Advanced stage lung cancer is, unfortunately, a devastating condition. However, recently, new therapies have been developed, particularly immunotherapies which are beginning to make a difference," says Timothy Rajakumar, Vice President of Medical Sciences at Hummingbird Diagnostics, a biotechnology company based in Heidelberg, Germany.

Despite this progress however, existing tools to match precision treatments to patients need further development.



"By identifying the right therapy, we may be able to increase the life expectancy of these very sick patients."

Timothy Rajakumar
PhD, Vice President
of Medical Sciences
at Hummingbird
Diagnostics



"Only about 30% of patients with late-stage lung cancer will achieve a positive response to immunotherapy. And amongst the other 70%, some may even come to harm through hyper-progression," Rajakumar explains, emphasizing the need for better predictive tools.

"So it's really critical that we can predict which patient should get immunotherapy versus which patient may be better off with a different combination," he continues.

To address this shortfall, Hummingbird is using a novel liquid biopsy strategy.

Liquid biopsy is a cutting-edge technique that involves analyzing non-solid biological tissue, primarily blood, to detect cancer via biomarkers. It's a less invasive method compared to traditional biopsies, making it a promising tool for early detection and monitoring of diseases. >



What makes Hummingbird unique, however, is that they are not just looking at indicators of cancer, but also at the immune response. Their aim is not just to detect cancers early, but to also develop a complementary diagnostic tool for advanced stage non-small cell lung cancer (NSCLC), a subtype accounting for 75 to 85% of all lung cancers.

This has the potential to empower oncologists to not only refine their selection of advanced stage lung cancer patients who stand to benefit from immunotherapy alone but also identify individuals who may respond more favorably to alternative combinations of therapies.

“By identifying the right therapy, we may be able to increase the life expectancy of these very sick patients,” adds Rajakumar.

Making early detection possible with small RNAs

Hummingbird’s innovative diagnostic strategy centers on measuring levels of specific microRNAs (miRNAs) in the bloodstream, a subclass of small RNAs (sRNAs) approximately 22 nucleotides long. These sRNAs are crucial biomarkers that have revolutionized the early detection of cancer, enabling scientists to identify cancerous changes through blood tests.

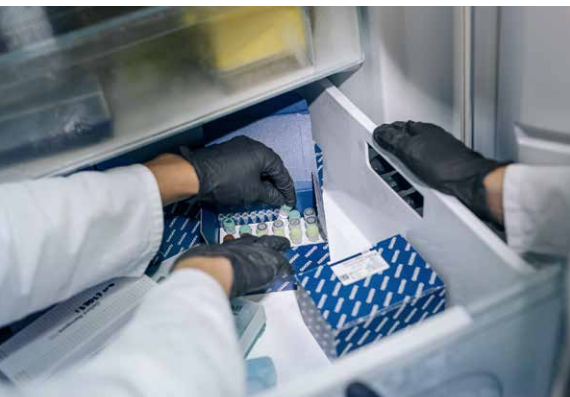
Company research has identified altered levels of specific sRNAs in people with lung cancer. “We focus on whole blood because it’s the most common source for liquid biopsy,” explains Rastislav Horos, DVM, PhD, Chief Technology Officer of Hummingbird Diagnostics.

“And small RNAs can be used to detect a disease or a condition in human beings by just measuring the expression of those small RNAs in a biological specimen,” continues Horos.



“We focus on whole blood because it’s the most common source for liquid biopsy.”

Rastislav Horos
PhD, Chief Technology
Officer at Hummingbird
Diagnostics



←
QIAseq miRNA Library
Kits are used for RNA
sequencing to prepare
DNA libraries



The QIAcuity system is used to detect low-abundance RNA biomarkers in blood



Hummingbird chose to focus on small RNAs because “we have found them to be very powerful biomarkers for the detection of cancer,” says Rajakumar. “They have a longer half-life in the blood compared to other RNAs, their levels fluctuate, and small changes can have big implications for disease,” he adds.

“We have sRNAs reflecting the immune system, and we have sRNAs clearly from the tumor,” explains Jochen Kohlhaas, Chief Executive Officer of Hummingbird. “We are looking at both, and this is boosting our performance. This is what differentiates us from others,” explains Kohlhaas.

“Most of the blood tests depend on material which is released by tumors and that limits their accuracy in early lung cancer detection. Whereas we are not only looking at this material, but at the immune response, too,” says Kohlhaas.

There is more information encoded in an RNA molecule than there may be in a similar DNA molecule, Rajakumar adds. “That is extra information that makes it easier to detect cancer. That’s the important and unique aspect of our approach.”

Mind-blowing results

Hummingbird is applying their technology to the early detection of lung cancer through development of a blood-based screening test, miLung. At the same time, a second test is under development to address advanced stage disease at the other end of the lung cancer spectrum, and the question as to what the ideal therapeutic treatment may be.

For this complementary diagnostic test, the company has identified a signature of 5 microRNAs in

“We have sRNAs reflecting the immune system, and we have sRNAs clearly from the tumor. We are looking at both.”

Jochen Kohlhaas,
founder and Chief
Executive Officer
of Hummingbird
Diagnostics



the blood of patients with advanced stage non-small cell lung cancer that can be used to assign patients a risk score, miRisk.

The goal of miRisk is to more accurately identify advanced stage lung cancer patients who would most benefit from adding chemotherapy to immunotherapy treatment while sparing others the toxic side effects of drugs that would not be effective against their cancer anyway.

Clinical validation studies for both tests are underway. Hummingbird is transferring their design and protocols for both tests to QIAcuity dPCR machines to enable decentralized testing. “Not only does dPCR provide the sensitivity we need,” says Horos, “but it also enables decentralized testing to serve the widest patient communities and advance our fight against the deadliest cancers.”

“One of our top RNA biomarkers that we have identified in early cancer signature is not highly expressed,” says Horos. “QIAcuity essentially gave us this 1000-fold sensitivity boost that we needed.”

Looking back, Rajakumar is amazed at what he and the Hummingbird team have accomplished in such a short amount of time.

“We initially started discussing the problem of how one predicts which drug is best to give to a late-stage lung cancer patient. We were just brainstorming. We set out with a small study and stumbled upon this amazing signature that could distinguish patients. That blew my mind, and it’s something that I’m really passionate about developing.” •

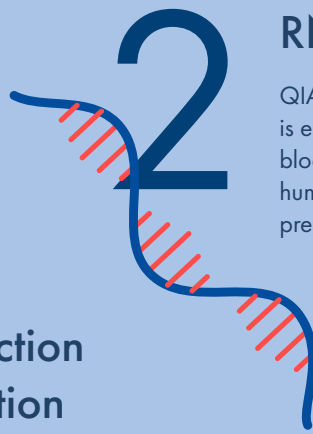
Workflow for biomarker

QIAGEN tools facilitate every step of this workflow, aimed at identifying biomarkers and determining patient responses to specific cancer treatments.



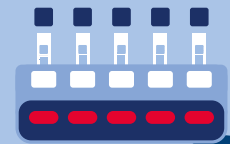
1 Sample collection and stabilization

PAXgene Blood RNA Tubes by PreAnalytiX are used for blood collection. These tubes contain reagents that stabilize nucleic acids by destroying enzymes that degrade RNA and DNA, and maintaining a low pH to hinder further degradation.



2 RNA extraction

QIASymphony automated extraction robot is employed to extract small RNAs from the blood samples. This automation minimizes human error and ensures consistent sample preparation.



3 Small RNA profiling using next-generation sequencing (NGS)

For small RNA profiling, Hummingbird uses the QIAseq miRNA Library Kit, which is well suited for biofluids by eliminating highly abundant, non-informative RNAs that clutter up the sample. To further enhance the specificity and efficiency of NGS, the FastSelect RNA Removal Kit is used to remove any additional unwanted RNAs.

analysis



4

Data analysis for discovery

Analysis of NGS data enables the identification of specific small RNAs that are predictive of lung cancer with high accuracy. This step involves sophisticated bioinformatics tools and expertise to interpret the complex data generated from sequencing.

Digital Insights (QDI) software can be used for an advanced layer of data analysis. QDI provides a comprehensive platform for deeper analysis and interpretation of genomic data, aiding in the discovery of novel biomarkers and enhancing the understanding of lung cancer biology. This tool can significantly bolster the derivation of actionable insights for personalized medicine strategies.

5

Validation using digital PCR (dPCR)

To validate the findings from NGS and enhance sensitivity, Hummingbird employs QIAcuity, QIAGEN's dPCR system. This technology offers a significant sensitivity boost, crucial for detecting low-abundance biomarkers in early cancer stages. The identified biomarkers and associated researched tests undergo extensive clinical validation studies to confirm their efficacy and reliability.

Once validated, these tests will be implemented in clinical settings to provide rapid, accurate, and personalized diagnostics for lung cancer patients.

Fighting TB

on the last frontier

At 586,000 square miles, Alaska is the largest state in the US. It also has the highest rate of tuberculosis (TB), partially because of the unique living environment of the local and indigenous population. An exciting new partnership with QIAGEN is trying to address the issue – despite the physical challenges in one of the most geographically diverse US states.



“I knew the incidence rates going in, but the Alaskan people – that’s what captured my heart.”

Doreen Williams, Clinical Science Consultant at QIAGEN, and nurse educator for the US West Coast

“When you are feet on the ground, immersed in the culture and talking to the residents, you can’t help but want to help. You just get engaged.”

The numbers she’s referring to are the incredibly high rates of tuberculosis (TB) in Alaska. In 2022, the state had the highest rate of new cases in the entire US, at 13.1 per 100,000 population – almost double the next highest figure, Hawaii’s 7 per 100,000, and nearly three times higher than California, which came third at 4.7 per 100,000 (1). In some rural areas, however, the incidence rate can be as high as 135 per 100,000, she points out. “I was in Anchorage in July 2022 and had the opportunity to meet local public health nurses and listen to their stories. When I left I thought, ‘We need to do something. We need to help.’” It’s a problem that has roots going back hundreds of years, explains the Alaska TB program’s Bruce Chandler, MD, a highly respected physician who’s been involved in the state’s fight against TB for decades. “Until the late 1700s Alaska Native communities were isolated, then they started to see the arrival

of outsiders – explorers, hunters, fishermen, fur sealers, settlers – and some came from areas with high rates of TB,” he says.

“They introduced tuberculosis into this population where there were very isolated villages and a very harsh environment. People tended to stay indoors in very crowded conditions – ideal for transmitting TB.”

Until the 1940s, TB was Alaska’s number one cause of death, he points out, with “astronomical rates” in Western and Northern Alaska. “There were surveys with tuberculin skin testing around 1950 where 90% of eight-year-olds in Western Alaska were infected,” says Chandler.

Traumatic history

But how do you go about tackling the disease in the face of the unique physical challenges posed by such a vast – and frequently inhospitable – area? “In the Yukon-Kuskokwim region there are 49 separate villages, and almost all have no road system,” Chandler states. “And then there’s the weather.” >

(1) Statista, ‘Cases of tuberculosis in the U.S. in 2022, by state’, Statista [website], 2023, accessed May 2024, <https://www.statista.com/statistics/697126/cases-of-tuberculosis-in-the-us-by-state>



Watch the video for this story

Public health nurses sent to the villages can easily be snowed in for days, which means having to rely on air transportation or even snowmobiles to move medical and public health personnel, as well as patients. It's not just the extreme physical challenges that have hampered the fight against TB in Alaska. There's the stigma surrounding the disease that still deters people across the world from seeking medical help, and the attitudes they can face from friends, family and colleagues once they've been diagnosed and started treatment.

In Alaska, this is further compounded by the state's often traumatic history of fighting the disease: With no effective medicines available until the 1940s and '50s, Alaska – like many other places – had residential facilities for people with active TB, but the sheer size of the state meant that these could be far away from people's homes. "Even children were taken away from their families and moved thousands of miles to a facility," says Chandler. "Some of those people never came home, and their families never knew what happened to them. Some people died in the sanatorium, and there was no system to notify people of what happened. Those experiences have long-lasting effects," explains Chandler. "I think ongoing education is the key, especially for the residents in these communities," he says. "To learn about the symptoms, how it's diagnosed and treated, and to understand that – while it's not easy treatment – for most people it's very safe, and they can cure themselves if they take the medicine for the prescribed amount of time."

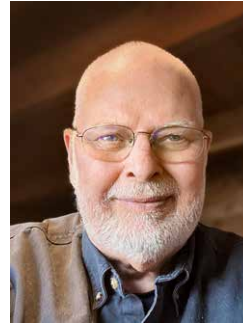
Educating the public

One consequence of people not finishing their treatment, of course, is the risk of drug-resistant TB. "We fortunately don't see a lot of multi-drug-resistant TB, but in some communities in Western Alaska we've seen single-drug resistance," says Chandler.

In his work with the Alaska TB Program, he provides recommendations for public health nurses and confers with medical providers around the state. The number one priority is finding new active TB cases in high-risk populations, he says, and treating those people to cure their disease and prevent transmission to others. Key to this is a major new partnership with QIAGEN. "It's going well," he states. "We're working hard on different programs to increase education for people residing in many of these communities." It's a project that's highly collaborative, says Williams.

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Chest X-ray of a patient with tuberculosis showing reticulonodular opacity

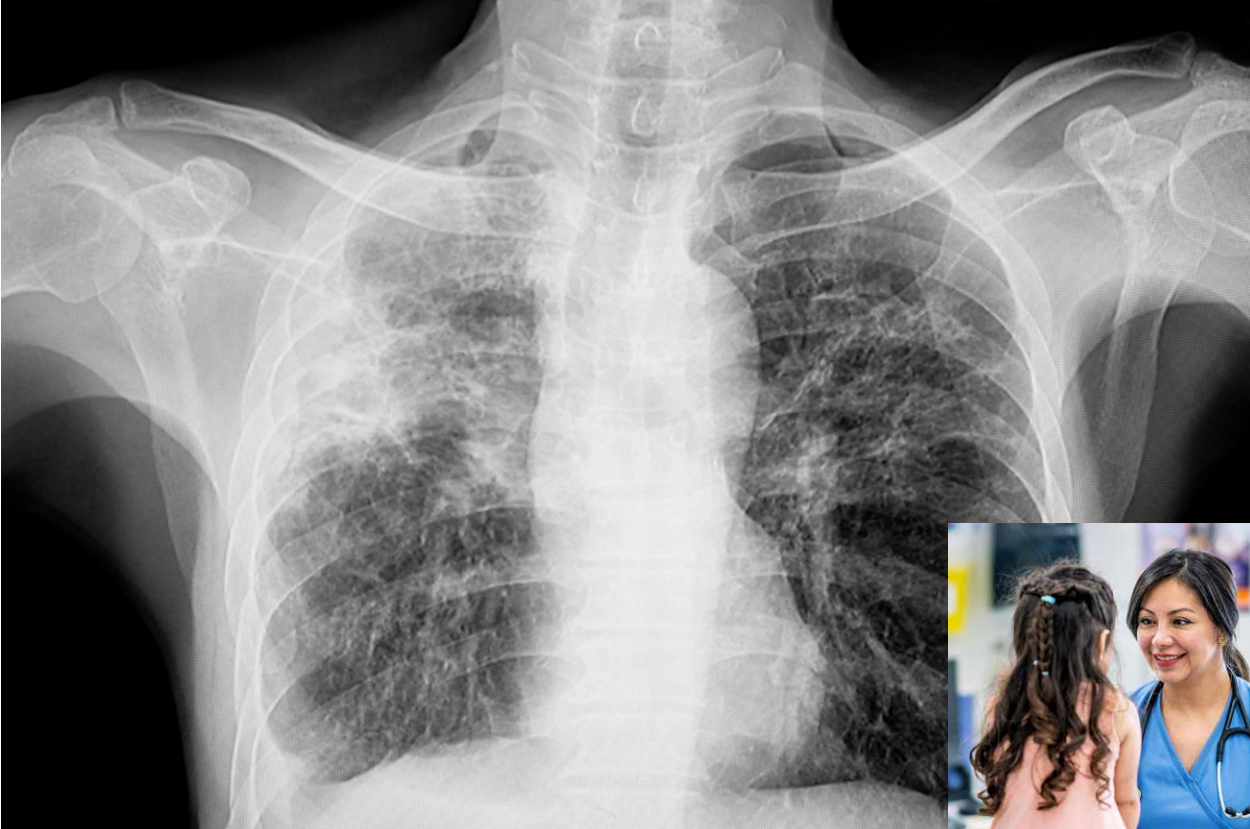


"Some of those people never came home, and their families never knew what happened to them."

Bruce Chandler, MD, MPH, Alaska TB Program, Alaska Section of Epidemiology

"On World TB Day we went up to Anchorage and did a free screening event for residents. We provided lunch when people came in and got their QuantiFERON test – we found two cases of LTBI in that one day. Raising awareness is the key and now we've developed a formal partnership agreement with the Department of Health, so we'll be working very closely with the whole department, statewide." While the department was already doing excellent work in tackling TB, there's "only so much they can do – it's like salmon swimming upriver," she says.

"Our goal at QIAGEN is to support them where we can. It's been really exciting, and things are starting to move forward." Key to this will be increasing the capacity to offer QuantiFERON testing across the state, not just in suburban areas. "I look back five or ten years and very few places in Alaska were able to do QuantiFERON testing, but now many of the hub communities are able to do it fine," states Chandler.



Overcoming logistical challenges through partnerships

The use of QuantiFERON is already well established in Anchorage and some other places, but in the majority of areas it's still skin testing, says Williams – "in part due to logistics, but also because that's what they're used to doing."

At the provider and state level, the advantages of modern IGRA tests like QuantiFERON-TB Gold Plus over skin testing are well understood. "The evidence shows that using an IGRA increases sensitivity and specificity in LTBI testing, but a lot of the focus in Alaska right now is still on active TB, because it's highly contagious," she says. Crucially, QuantiFERON offers the opportunity to be truly proactive, she stresses. "We can test for latent TB and get treatment before it progresses to active. It's about helping to educate the providers and the community that this is such an easy disease to prevent and cure. We're coming at it from a different angle."

"It's a unique culture. We are excited about our partnership with the Department of Health and look forward to extending our educational and testing services with additional agencies throughout the state," says Williams. "I would like to see more Alaska Native providers," adds Chandler, "who may have a more trusted relationship with their local communities."

The feedback from the Alaskan authorities so far has been incredibly positive, Williams says. Alaska is very open – it's like a big hug. "The country is amazingly beautiful, and the people are just genuine. You can't help but love being here." •



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TB can progress more quickly in children and cause health complications, so early detection is crucial



The QuantiFERON-TB Gold test is an in vitro diagnostic test that measures a person's immune response to antigens derived from *Mycobacterium tuberculosis*, the bacteria causing tuberculosis (TB). It involves taking a blood sample from the patient and exposing the blood to TB antigens in the laboratory.

Our sustainable impact

QIAGEN is dedicated to giving the most vulnerable populations better access to healthcare, reducing social inequality and protecting the environment. Our commitment to ESG was reaffirmed with an elevated ISS ESG Prime rating in 2023, placing us among the top 10% of all companies in our category.

15%
or 3,156t CO₂ emissions reduction over 2022

Approved Net-Zero Target

SBTi-validated near- and long-term science-based emissions reduction targets

Near term: 42% reduction by 2030
Long term: Net zero by 2050

Environment

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≥37% women in leadership positions in 2024

Maintain our ratings with Bloomberg Gender Equality Index

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Foster diversity, inclusion and access to healthcare

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Established a Human Rights Committee in 2023

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Ensure responsible corporate practices and compliance

Click here for more about ESG at QIAGEN

100%

renewable energy for
main production sites in
Germantown and Hilden

~ 84%
electricity from green tariffs

**> 100
million**

QuantiFERON-TB Gold Plus
tests distributed to over 130
countries around the world

36%

of leadership roles
held by women

7%

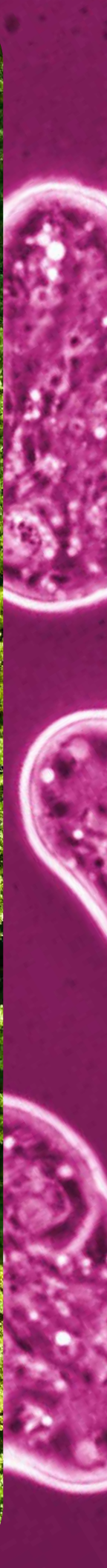
plastic reduction achieved,
20t as goal for 2024

Zero

data security
incidents

85%

of employees have completed the
mandatory cybersecurity training



A mysterious tropical infection



In tropical regions where parasitic and bacterial infections are common, accurately identifying pathogens is crucial for enhancing patient outcomes and minimizing hospital stays.

Dr. Wong Jin Shyan, a consultant general physician at the Borneo Medical Center in Sarawak, Kuching, Malaysia, often faces challenging cases involving multiple potential disease causes. To keep trainees engaged, Wong emphasizes the excitement of diagnosing: "I tell them that making a diagnosis is the funnest part, that's the 'yay' moment," he remarks. Even more rewarding, he says, is being able to make a diagnosis within the first 24 hours of a patient arriving at the hospital.

"It's better for the patient and the hospital." In tropical climates, weather significantly influences infectious disease spread, especially during its monsoon seasons from late May to September and November to March. Flooding creates breeding grounds for mosquitoes, leading to diseases like malaria, dengue, and encephalitis. It also compromises water safety by overwhelming wastewater drainage causing outbreaks of bacterial and parasitic infections such as typhus, leptospirosis, *Giardia*, and *Entamoeba*.



Microscope image of *Entamoeba histolytica*, a parasitic protist causing amoebiasis, infecting about 50 million people worldwide

There are multiple advantages in being able to quickly distinguish a viral infection from other types of illness. For example, parasitic and bacterial infections often require specific treatment, while viral diseases do not. Even more concerning, the misuse of antibiotics to treat viral infections not only proves ineffective but also accelerates the development of antibiotic resistance, posing a threat to global health.

Helping curb outbreaks

Achieving accurate and swift diagnoses is paramount for any healthcare facility. In this vein, the lab at the Borneo Medical Center made a breakthrough in rapidly identifying the cause of infectious illnesses when they adopted a modern method for pathogen detection: real-time PCR panel tests.

With the addition of the QIAstat-Dx Respiratory SARS-CoV-2 Panel, QIAstat-Dx Meningitis/Encephalitis Panel and QIAstat-Dx Gastrointestinal Panel to their diagnostic repertoire, diagnoses that previously took days now take a few hours. Being able to help identify the specific cause of a respiratory infection can make a huge difference to a patient's peace of mind.

The QIAstat-Dx Respiratory SARS-CoV-2 Panel allows physicians to test for multiple respiratory pathogens simultaneously, while giving them fluids and fever-reducing medications. If a test comes back positive for a viral pathogen, the patient can usually go home the same day. "The test gives patients the confidence that they can recover at home. It makes parents and patients happier." The positive detection of a virus also "stops us from overusing antibiotics," says Wong.

Treating a camper's co-infections

Recently, molecular testing helped Wong correctly diagnose a complex case. A patient came to the medical center with COVID-19 symptoms. A molecular diagnostic test helped confirm the diagnosis. Doctors began administering Paxlovid, an anti-viral to treat the infection. While in the hospital ward, the patient developed diarrhea – a common side effect of the drug. But the frequency of the patient's bowel movements made Wong suspect something else



"QIAstat-Dx is so fast. We used to think two days for a result was fast. Now we get results in about an hour."

Wong Jin Shyan, M.D, Consultant General Physician, Borneo Medical Center

might be going on. He tested a stool sample with the QIAstat-Dx GI Panel and helped discover that the patient was also positive for Entamoeba – a gut parasite. It turned out the patient had been on a camping trip where he was not only exposed to the coronavirus, but also likely infected with the parasite, says Wong. The patient was immediately given the appropriate medicine.

Before bringing the QIAstat-Dx in-house, the hospital laboratory would have had to culture microbes from a stool sample, or examine the sample using microscopy. But cultures can take up to two days for a result, if the microbe can be cultured at all. And microscopic analysis of a stool sample for the presence of cysts – a sign of Entamoeba infection – sometimes does not detect them, says Wong. In addition to Entamoeba, Wong can also now detect Giardia – another parasite that can be particularly difficult to treat in people with compromised immune systems.



Work comparable to that of Dr. House

Another advantage of the QIAstat-Dx system is the ability to later analyze the test result data in bulk through the QIAsphere app, says Wong, and consequently respond to public health needs. Hospital physicians can get a snapshot of the types of pathogens that are circulating in the population. They can see when there is a change in influenza subtype, for example, or a rise in respiratory syncytial virus detections, says Wong.

The information enables the hospital to plan ahead and “strategize.” In the past, “we had no data about what was going on. Now if we start detecting a lot of infections, we can push hard for community vaccination and hopefully blunt the rise in pathogens.” And having hard data helps convince the health community of the need to be proactive, he adds.

Available diagnostic tests, however, don’t cover all of his needs, he says. The laboratory still conducts serology tests in parallel with molecular diagnostic testing to increase confidence in the test results. Do the new tests eliminate some of the “fun” in making a diagnosis? Not at all, says Wong. “Since the panels are syndromic, we have to choose which syndrome we are going to test for,” he says. And there are still many infectious illnesses for which there are no simple diagnostic tests. He frequently encounters tough cases for which multiple types of tests are necessary and even with such tests and imaging, they can still be challenging.

He says: “My job is like Dr. House’s” – an American medical drama TV series about an unconventional and quirky doctor who leads a team of hospital diagnosticians – “minus the friend drama.”

A QIAstat-Dx panel being prepared to test a patient sample



The QIAstat-Dx Analyzer, combined with QIAstat-Dx assay cartridges, surveys multiple pathogens in human biological samples. The QIAstat-Dx Analyzer runs ready-to-use cartridges that include all the reagents on board, allowing for hands-off sample preparation.

Beyond desk and bench

Q What inspired you to start volunteering?

Our employees exemplify a remarkable spirit of compassion and commitment, engaging in voluntary activities that stretch far beyond the typical workplace boundaries. From serving as volunteer firefighter paramedics and saving lives, to refurbishing classrooms and planting trees, their efforts not only transform lives but showcase their dedication to positive change.

Catherine Cottone
Research and Development

Catherine Cottone has spent over eight years as a volunteer firefighter paramedic in Loudoun County, Virginia.

"After I graduated college, I looked up local volunteer fire departments in my area and decided to fill out an application after I saw an ambulance responding to a 911 call while I was stopped at a light. As a volunteer firefighter paramedic, you are responding to 911 calls and helping people during their worst moments. They are so relieved to see you and look to you for help. I have held their hand as they've died, done CPR more times than I can count, delivered a baby at home during a snow storm, extinguished car fires and house fires, and have stopped people from dying by bringing emergency medicine to their home.

These experiences have put my own life into perspective and have made me realize how lucky I am and to not take life for granted. It makes you enjoy the little things and give people grace. You never truly know what other people are going through."



Andrei Lee volunteers by refurbishing classrooms in the Philippines, organizing teams to clean and prepare educational spaces, enhancing the learning environment for local students.

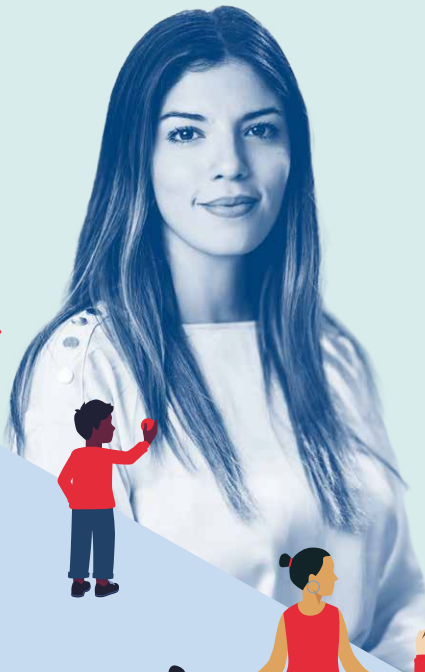
“Coming from a relatively poor family, early on our parents encouraged us to offer help however we can. In the context of helping, giving money seems to be the norm where I come from. And since we can’t seem to afford to offer that kind of help, we were taught to help in simple ways. This includes doing favors for people without expecting anything in return.

We were joined by a few of the students who will be using the classrooms we were working on and it just hits differently when they said ‘Salamat, po kami mag aral’ (Thank you! This makes us excited to go back to school and study!). I have a great sense of pride doing whatever I can to move that needle towards improving lives.”

Andrei Lee
HR Operations



Azul de Bianchetti
Content Marketing



Azul de Bianchetti from content marketing, collects and distributes Christmas toys and winter clothes to children in shelters, hospitals, and local centers in Rome, Italy, before the cold season begins.

“Volunteering has always been a big part of my life. My own family taught me the importance of sharing and helping others, so it’s rooted in my core values. I grew up in Argentina, a beautiful country where, unfortunately, not everyone has access to the basic resources, and that is something that raised awareness in me. I learned early on that people don’t choose where they’re born or what economic conditions they have, or whether they have access to education and healthcare. And this is particularly true for kids, which has always been my main focus when it comes to volunteering. I believe each one of us has something valuable to give and share, that could change someone’s day, or life.”



Luvie Gudgad and Morena Faller volunteer in reforestation efforts at La Mesa Dam, Philippines, helping restore the area's environmental health.

Luvie: "Volunteering for me is a calling to share the blessings I've received. Whether it's organizing a major event or helping in small, everyday ways, each experience enriches my life and shapes my actions. Early mornings are tough for someone who isn't a morning person, but knowing the purpose behind the effort makes it worthwhile. For the past six years, planting trees in Manila has been particularly meaningful. Protecting the environment is really important. It can give us a sense of peace, as living in the city can sometimes be tiring and exhausting. Aside from the experience, getting to know people who are dedicated to what they do made me realize that I can also do that in my own small ways."

Luvie Gudgad
Supply Chain Specialist



Morena Faller
Global Services and Support

Morena: "My friend and I love watching Miss Universe, and you know, to be Miss Universe you need to 'advocate for a cause.' By engaging in activities like planting trees, you really feel connected to Mother Earth and like you're making a difference. We often have to navigate muddy forest trails until we reach the designated tree-planting site. The journey is a mix of slipping on the trail and singing throughout the trek. In the end, we're covered in mud, but thrilled to be there – experiencing tranquility in the middle of the forest, the earthy scents, the sound of the birds. These experiences have deepened my understanding of conservation and reinforce my sense of environmental responsibility."



Anna Lach-Bilska coordinates a support group for parents of children with the rare chromosome disorder microduplication 1q21.1-1q21.2 in Poland.

"It all began when we discovered our twins were affected by a rare chromosome disorder, microduplication 1q21.1-1q21.2, which involves the duplication of a small piece of chromosome 1 and can affect development and health in unpredictable ways.

Feeling a bit lost at the start, I searched for information and connected with a few parents in Poland through global social networks. Realizing we lacked a supportive group to exchange information about child development, disability law, new treatments, and emotional support, I was inspired to create a group chat called 'Wyjątkowe 1 (1q21.1-1q21.2)' or 'Unique Ones'. Over nearly two years, our group grew from 5 to 17 moms, creating a tight-knit community I never expected, given the rarity of the disorder.

Personally, this volunteering has reassured me that I am not alone, and I hope every parent in our group feels the same. This small community has become a vital support network for us, helping us to better understand and explain our children's condition to the wider world. I believe that even small efforts can make a significant impact, and this group has proven just how true that is."



Anna Lach-Bilska
Accounting

Jacqueline Karachi collaborates with organizations aimed at supporting marginalized women and improving emergency primary care in Kenya.

"Volunteering is very much a construct of my upbringing. It was a central part of how we gave back as a family, with local community events, fundraising support, local churches, and schools. It is also largely rooted in the African Ubuntu philosophy: the interdependence of humans on another and the acknowledgment of one's responsibility to others and the world around them. As a leader within my family and community, I bear the task, gladly to guide and support where I can. Beyond volunteering, it has become clear to me that we all bear a collective responsibility for the change we want to see in the world."

Jacqueline Karachi
Sales and Marketing



Finding cancer's Achilles' heel



Crislin Print, PhD
Department of Molecular Medicine &
Pathology, University of Auckland



Colored scanning electron micrograph (SEM) of adenocarcinoma (cancer) of the uterus

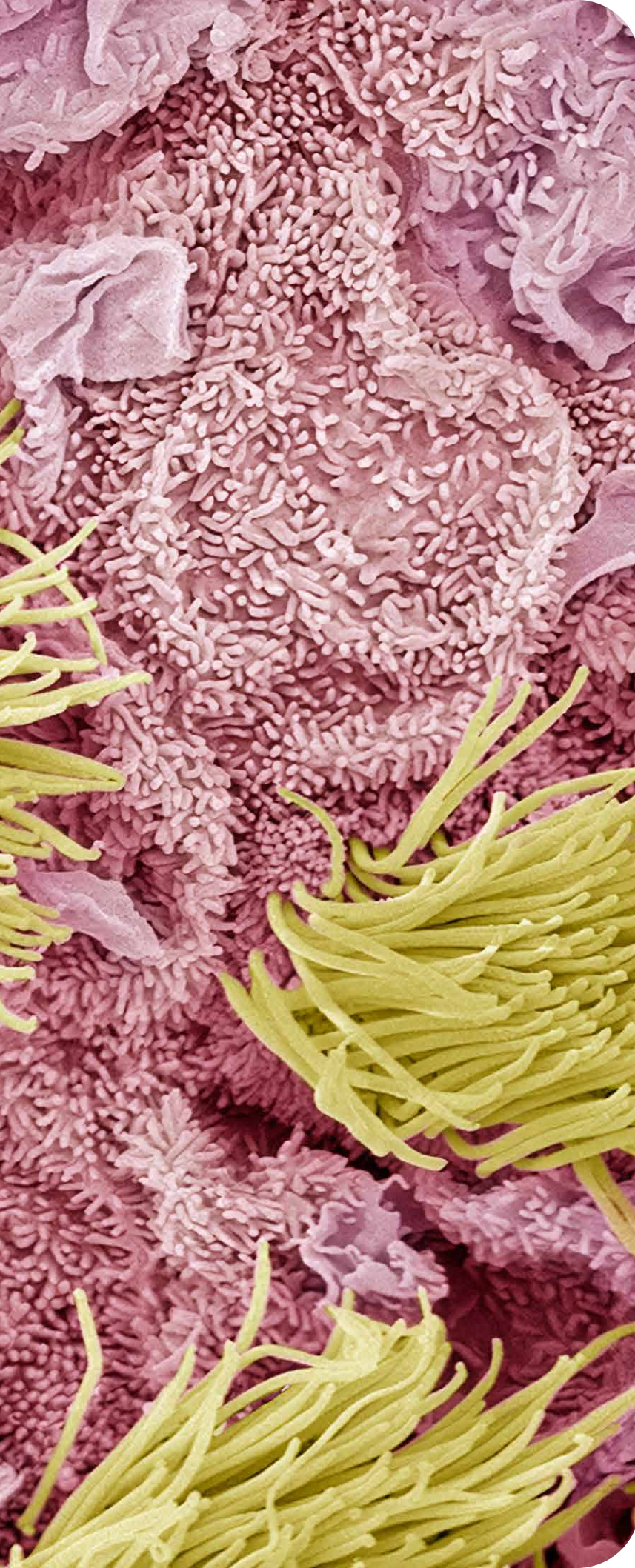
Not every cancer reacts the same way to a treatment. So why target all cells indiscriminately? That frustration motivated New Zealand genomics researcher and professor Cristin Print, PhD to look into new research tools to help find the Achilles' heel of specific tumors.

Print was a house surgeon fresh out of medical school in Auckland, New Zealand in the early 1990s when he realized that medicine's lack of understanding of how specific diseases worked was hindering the ability of clinicians like him to treat patients.

"I felt like I was mowing the lawns, doing the same thing every day, when I wanted to be designing the garden... trying to find better ways to attack disease," he explains. "One of the biggest examples for me was cancer – why some people did far worse on some treatments than others – and how little we understood scientifically about how tumors grow." As a result, he says, "the treatments were one-size-fits-all, and I felt very frustrated that we couldn't personalize them."

That frustration transformed the trajectory of his career. Print made the leap from clinician to medical researcher, spending over a decade focusing on genomics research and bioinformatics. In particular, Print wanted to understand how molecular pathways become disrupted to cause disease, specifically in cancer.

"With thousands of complex molecules inside each cancer cell, we want to understand where the regulation of those molecules has gone wrong to allow cancer to grow out of control, and how we can bring it back into line using targeted therapies. We especially want to work out how tumors evolve to evade the immune system."





Watch the video for this story

Finding out how cells tick

Print's translational research lab works on analyzing tissues, cells and genomes of various tumors. "We want to identify the Achilles' heels of each patient's cancer," Print says. "We're moving into a phase now when we can get a very deep and nuanced understanding of an individual cancer," he says. One of the powers of advanced pathway analysis is its ability to identify biomarkers – for example, genes that are mutated, highly expressed or demonstrate altered expression, in association with specific active pathways. "We often use advanced pathway analysis to try and understand – based on looking at how thousands of genes are expressed – how the downstream effects of mutations drive cancers."

QIAGEN Digital Insights analysis tools, such as QIAGEN Clinical Insights (QCI), used to analyze gene variants, and QIAGEN Ingenuity Pathway Analysis (IPA), used to analyze gene expression, have changed the pace at which Print and his team can turn data into insights. Though the field of pathway analysis did not even exist when Print was a house surgeon and has vastly developed since Print's early days as a researcher, there are still many mysteries.

Molecular pathway of disease

A major achievement in Print's lab, through collaboration with colleagues including Annette Lasham PhD, was the discovery of a novel oncogene named YB1, implicated in breast and ovarian cancers. "Without advanced pathway analysis, we'd never have detected this and would never have been able to start developing drug agents that could potentially be used in the future as a targeted therapy," he says.

Leveraging the QIAGEN Pathway Knowledge Base, QIAGEN IPA employs meticulously curated content and robust algorithms to shed light on the most crucial pathways, uncover potential regulatory networks, and elucidate causal relationships. Such tools have enormous value because they offer an "up-to-date and exponentially growing pool of knowledge," Print says. "This software also makes that knowledge base readily accessible to our collaborators, who aren't quite as nerdy as us, and don't have the time to scour literature to validate findings," he laughs.



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The detection of oncogenes is a large part of understanding tumor behavior

"The beauty of these different software tools is that they really speed up our process of understanding," Print says.

"It's like when you're out on a walk in the wilderness and you think you've seen the top of the hill. You get there, and then there's an even bigger hill above it. The deeper we look at molecular pathways in disease, the more we see and the more we need to look."

Beyond cancer, Print has used advanced pathway analysis to understand endometriosis ("one of the greatest unsolved diseases of our modern age"), endothelial cell function, immune response and stem cell growth.

Fostering health equality

Making sure personalized disease treatment is available to people historically neglected by medicine is another of Print's goals.

“In New Zealand, we’re very aware that Māori and Pacific people have a huge inequity in survival outcomes for cancer and many other diseases.”

Cristin Print, PhD
Department of Molecular Medicine &
Pathology, University of Auckland

He and his colleagues have begun to recognize that the explosion of genomics information available in international databases, and the increasing sophistication of tools to mine it, has the potential downside that it could widen an already massive health equity gap, especially in indigenous populations.

“In New Zealand, we’re very aware that Māori and Pacific people have a huge inequity in survival outcomes for cancer and many other diseases,” Print says. “We need to ensure that current research doesn’t generate further inequity in the future.”

This means genomics research in New Zealand is co-led by Māori, who regard their genetic information as a precious taonga (treasure). It’s for this reason that Print is co-lead researcher of Rakeiora, a genomics program in partnership with Māori researchers, clinicians and community leaders to lay a path for safe and effective use of indigenous genomic information that contributes to health equity. It’s a model being increasingly adopted internationally for indigenous populations.

Reflecting on the personal impact of genomic sequencing, Print shares, “The funny thing is, when you have your own genome sequenced, you start to think in a very similar way to your Māori friends and colleagues. You realize that everything is long term. Your genome doesn’t belong to you. It belongs to your parents and many generations in front of you and behind you. And we’re starting to think in that way in some of our research.”

Embracing and integrating the genomic information of diverse populations can enhance our understanding of diseases and tailor treatments more effectively, ensuring that no one is left behind when it comes to personalized healthcare. •



QIAGEN’s analysis tools, including QIAGEN Clinical Insights (QCI) and QIAGEN Ingenuity Pathway Analysis (IPA), represent a leap forward in genomic research. Together, these tools empower scientists to rapidly translate vast amounts of genomic data into actionable insights, significantly accelerating the pace of discovery in fields such as oncology, personalized medicine, and beyond.



Healthcare evolution in the UAE



“State-of-the-art hospitals, research centers, and significant government investment reflective of the growing population.”

Rami Kanso is Commercial Manager-Middle East at QIAGEN

The Middle East is quickly emerging as a healthcare hub, bolstered by various programs across the United Arab Emirates and Saudi Arabia. Rami Kanso, Commercial Manager, discusses his role at QIAGEN Dubai and highlights the significant healthcare investments transforming the region.

Rami Kanso transitioned from a chemistry PhD and post-doctoral research to becoming QIAGEN’s Commercial Manager-Middle East, driven by a desire to improve lives through healthcare technology. “Some people ask me why I went from science to business, but there’s a real connection. In both fields, you start with a problem and structure it to find a solution. It’s all about understanding and addressing the customer need,” he explains. He views chemistry as a bridge to medicine, essential for developing impactful diagnostic tools. “Everything is about equilibrium – a kind of equilibrium of nature. You lose energy here, you lose energy there, but then two molecules meet to create a more stable molecule – that’s chemistry. It’s like magic.”

Eliminating TB and sequencing a million genomes

Kanso’s expertise in both science and business now plays a role in managing healthcare projects to meet the complex demands of Middle Eastern markets. One project Kanso is especially excited about is QuantifERON testing for latent TB in Oman. This will be part of the country’s nationwide screening program. “It’s unique – Oman is the first country in the region developing this kind of population-scale project,” he says, but the long-term aim is to replicate it in other locations.

The initial plan is to screen 800,000 people using QFT over two years, and treat anyone who tests positive. Alongside this is the genome sequencing project in Dubai. “People in Europe or the US – they have this image of Dubai as just beaches and hotels, but that is just part of the story. The country is equipped with state-of-the-art facilities capable of conducting sophisticated scientific research.”

Kanso has lived in France and the US; he now enjoys the cosmopolitan hub of Dubai

Healthcare hub

Qatar and Bahrain are also moving into population genomics, he points out. Given its advantages in initiating personalized medical treatments, enhancing disease prediction, and developing targeted therapies, this move is a logical step.

In fact, the whole Middle East seems to be becoming a real hub for healthcare and healthcare innovation, with lots of investment and health tech start-ups. The reason for this shift? “One, the population is growing,” he states. “The population in what we call the Gulf Corporation Council (GCC) countries – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE – is projected to increase by 50 or 60% by 2050, driven by both the local population and expats coming in. Two, the economy, the oil and energy revenues definitely help the governments to fund healthcare, and three, we’re part of the emerging markets, which means more funding can be secured. The governments have funds to support healthcare, and they’ve decided to go in this direction.”

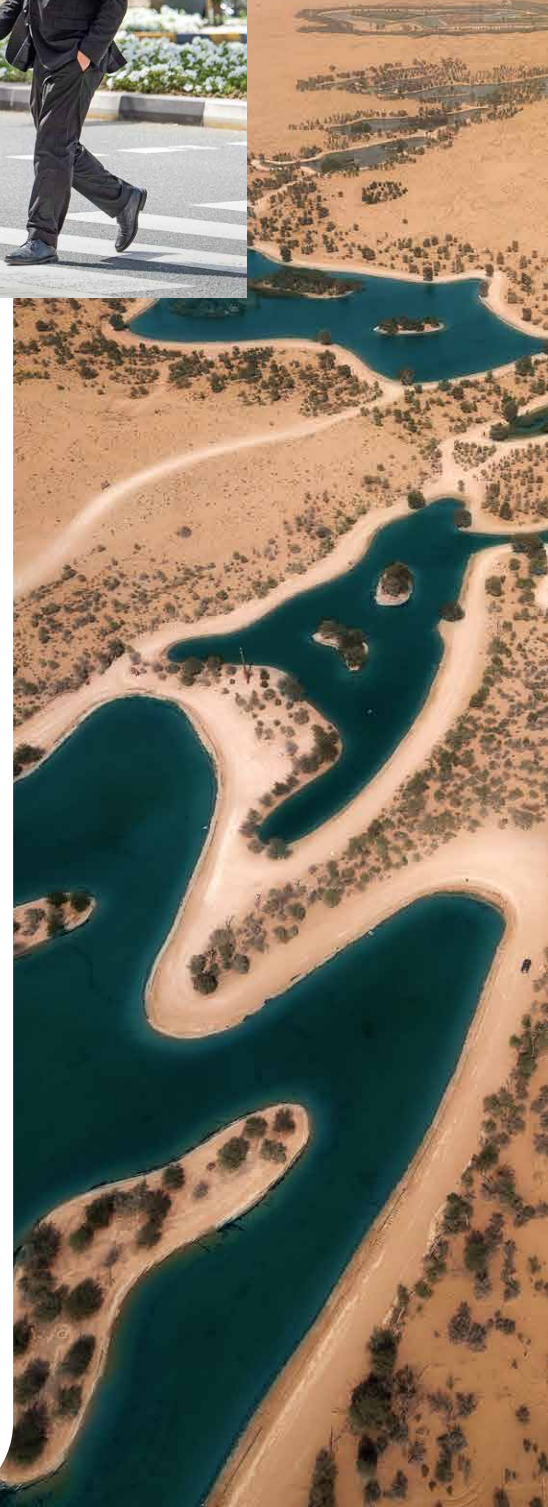
Saudi vision 2030 – new healthcare initiatives

“I’m basically managing all the countries in the Gulf region, except Saudi Arabia,” Kanso explains, with another commercial manager looking after Saudi by itself. “Saudi, in terms of population, in terms of economies, is huge. We can’t just consider it the same as other countries. We’re talking about 35 million people.”

The new Saudi Arabian office also ties in with Saudi Vision 2030, the country’s roadmap for economic diversification, global engagement and improving its citizens’ quality of life as the country moves towards a post-oil economy. A key part of this is a set of objectives for the health sector, including digitalization, population genomics and working to eradicate certain diseases.

QIAGEN has now signed a memorandum of understanding with the Saudi Ministry of Health, which includes developing a national latent TB screening program using QuantiFERON-TB Gold Plus, supplying the country with HPV tests for cervical cancer screening, and using QIAstat-Dx Analyzers to work towards eliminating meningitis, as well as the establishment of a major data center for advanced bioinformatics.

“Look at the region today,” Kanso says, pointing out the advanced healthcare infrastructure. “State-of-the-art hospitals, research centers, and significant government investment reflective of the growing population.” He adds, “They have this vision, and we believe that QIAGEN should play a pivotal role – us and others.”



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Where we play



Grow in a
\$11 billion market



Cross-fertilize investments
across life sciences and
molecular diagnostics



Maintain significant R&D
investments (10% of sales) to
create differentiated solutions



Build out global
presence – go local in
relevant markets

How we win



Consistently
deliver on
our commitments



Create top 1–3 leadership
positions, especially in our
Pillars of Growth



Unleash EMPOWER culture
driven by accountable
“doers” taking ownership



Embrace digital mindset
and power of generative
AI to enhance R&D,
operations and customer
centricity

Our aspirations



Impact

Helping to advance science
and improve patient
outcomes



Growth

Above-market growth and
returns help to fuel new
opportunities



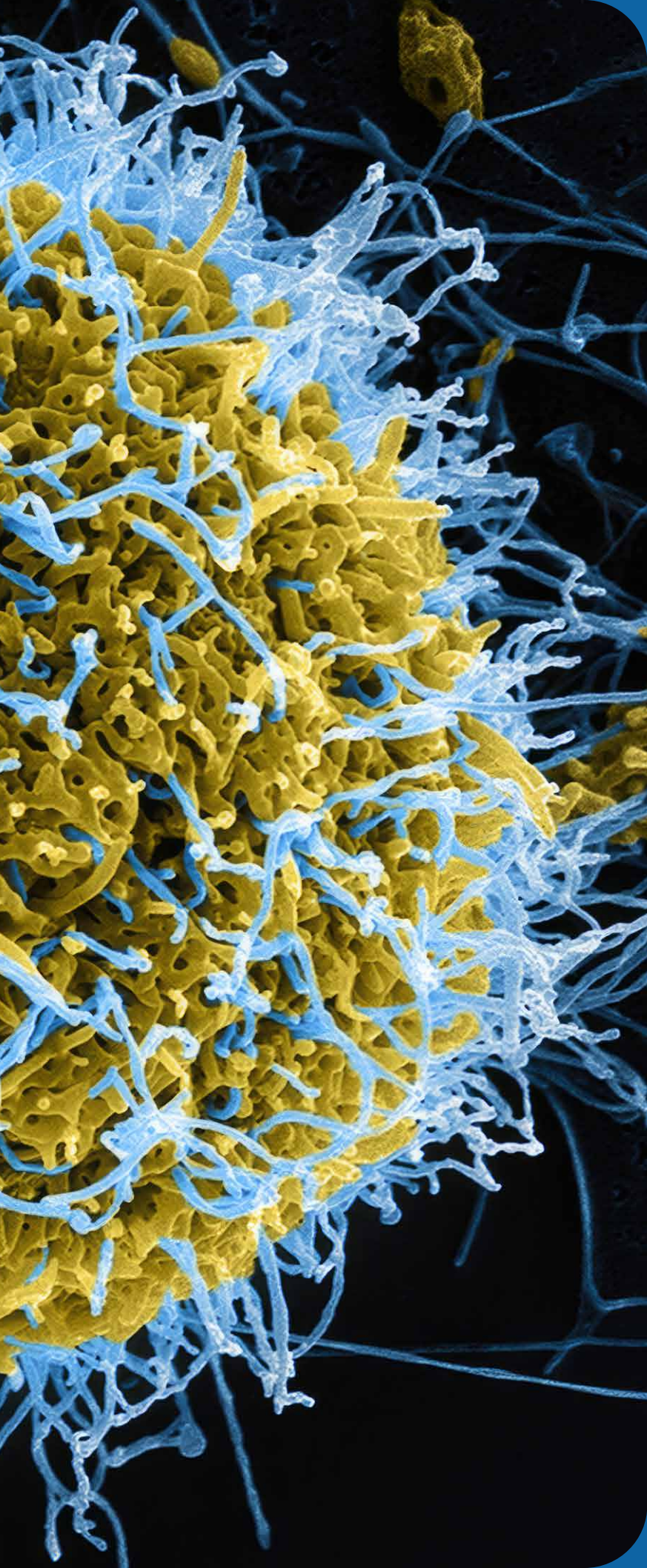
People

Employer of choice with
diverse and inclusive
teams



Quality

Strong reputation for
excellence, reliability
and empathy



[Click here to read our stories and find out more](#)