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THE BIOMEDICAL SCIENTIST

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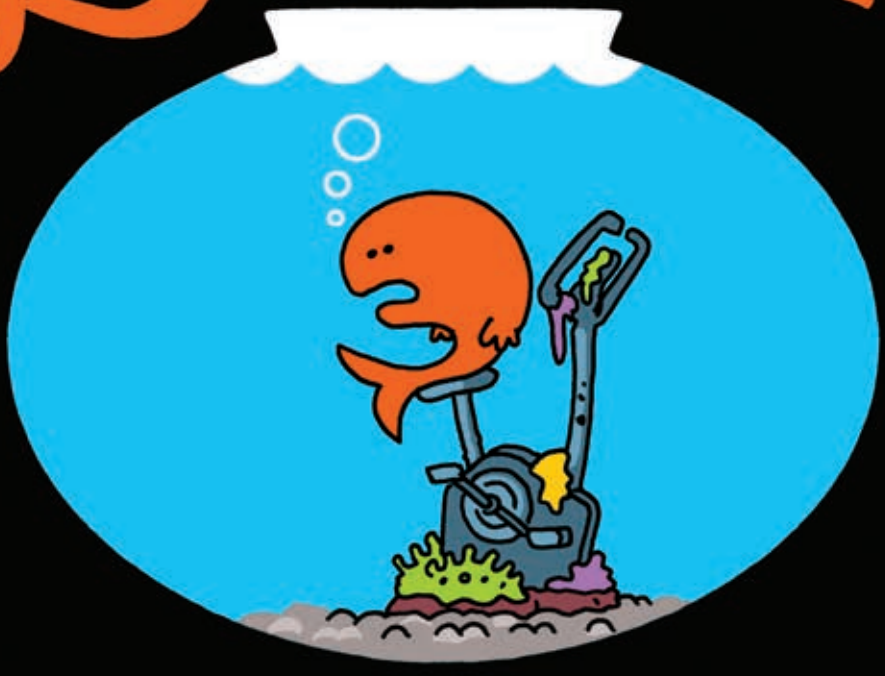
MARCH 2021

One Year in Lockdown



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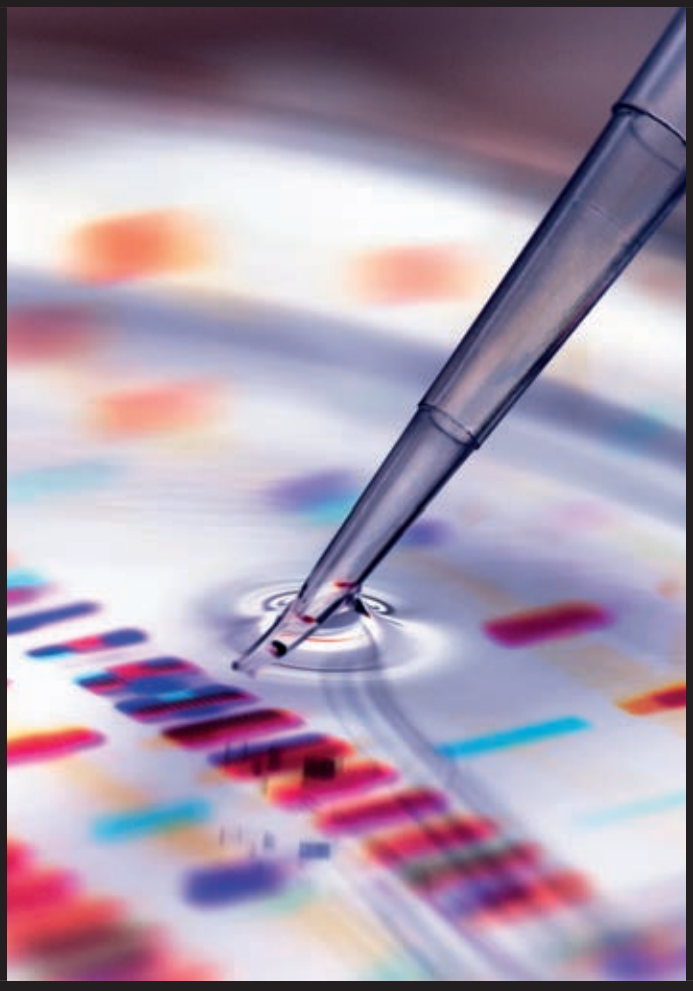

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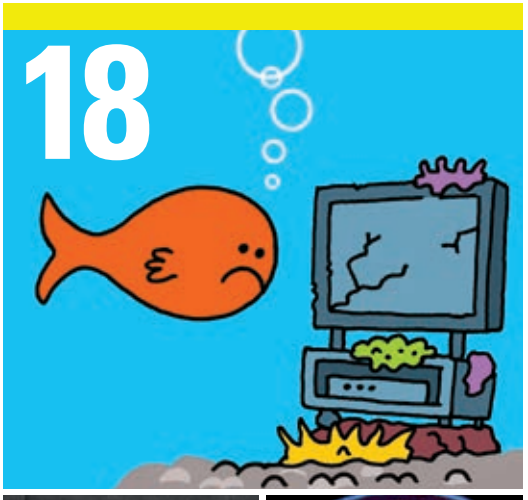

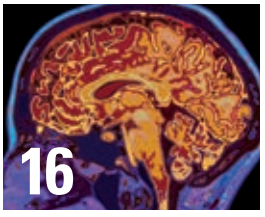

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SPEAK OUT AND SPEAK UP

Sarah May says a sad farewell to IBMS Chief Executive Jill Rodney, who is leaving after a decade at the Institute.

This month we are starting our launch of Congress 2022, not our September 2021 event as originally planned, as we have rescheduled due to COVID-19. In Institute terms this is as significant a change as switching from the Julian to the Gregorian calendar. Our indicative programme is inside this edition of *The Biomedical Scientist* to give a taster for those wanting to take advantage of the booking discount in this financial year and the full lecture programme will be available from May.

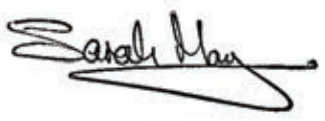
This change though pales into insignificance with the change we are about to undergo as our Chief Executive, Jill Rodney, departs after 10 years at the helm. Jill is an absolute powerhouse and consequently 10 years have gone very quickly. Of all the change and innovation that Jill has overseen I would say that her biggest achievement has been to turn us into an organisation that is not afraid to speak out and speak up. The ability to communicate to individuals and organisations is essential if we are to have a strong future and Jill has built a team whose role is to ensure we make our voice heard through all available communication channels. She has made sure that we look and sound like the professionals that we really are.

Jill has guided us through the development and delivery of our strategies and, in her words, has made sure that we say what we do, and do what we say. Jill is not afraid to recognise when we have gone wrong and to ensure that we make the necessary changes to get it right. She respects our history and our past, but had the vision to take us into a bright future.

Jill oversaw the long overdue redesign and refurbishment of our offices to make them fit for us to work safely and flexibly while ensuring that we had good modern facilities to support the numerous meetings that take place at our offices. During this process a whole team of workmen learnt the meaning of a non-negotiable deadline.

On a purely personal level I fear I may be responsible for the occasional grey hair; whereas Jill is a tremendous forward planner who likes to set and meet early deadlines, I am a last-minute person who habitually hits the "send" button with minutes to spare. After 10 years I have to say I'm sorry Jill, I really did try!

Finally, to end on a totally different subject, I must share my latest dog owner discovery – stomach acid wrecks sock elastic. This I learnt when my sock was successfully regurgitated three days after it had disappeared in one seemingly effortless gulp. Revolting.



Sarah May
Deputy Chief Executive

IBMS

Institute of Biomedical Science is the professional body for the biomedical science profession.

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COVID NEWS

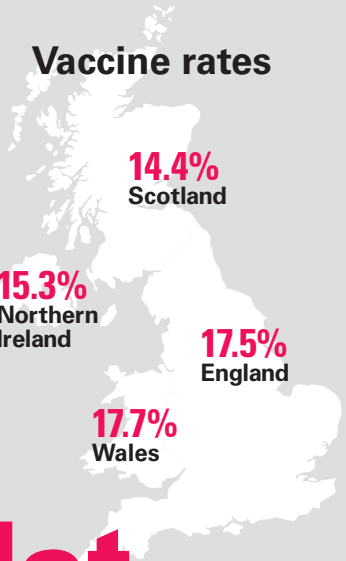
IN NUMBERS

50 staff

Businesses with more than 50 employees are now able to access lateral flow tests, which can produce results in less than 30 minutes.

Previously, only firms with **more than 250 staff** qualified for testing.

Health Secretary Matt Hancock urged businesses and employees to take up the offer to **"stop this virus spreading"**.



1st DOSE

As of the first week of February, Wales was the UK country with the highest percentage of people who had received a first dose of a COVID-19 vaccine.

90% EFFECTIVE

The COVID-19 vaccine from Novavax proved nearly 90% effective in preliminary results from a key clinical trial in the UK.

In its 15,000-volunteer UK trial, Novavax said, the vaccine prevented nine in 10 cases of the virus.

Novavax is due to file for an **emergency authorisation in the UK** in the coming months, once it has final data from its UK clinical trials.

1 IN 330

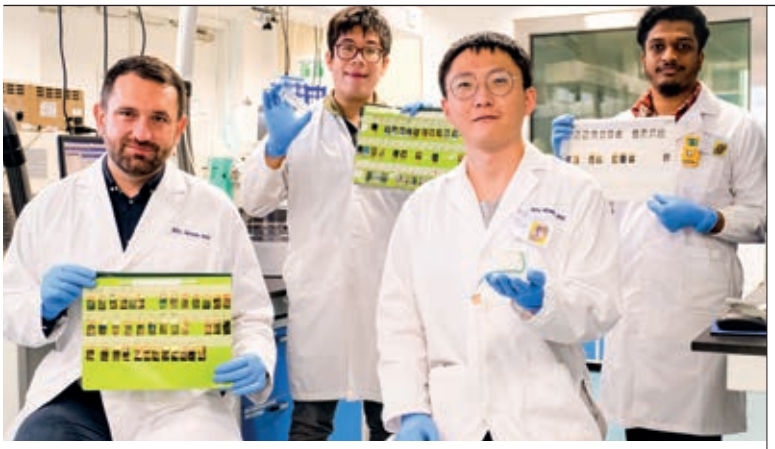
The Medicines and Healthcare products Regulatory Agency has published a summary of its safety reports from COVID-19 vaccinations between 9 December and 24 January.

It found that roughly one in every 330 people **get side effects of some kind**. It stressed that these were **generally aches, tiredness and fever,** which "reflect the normal immune response".

60% TO 36%

Death rates among people who end up in intensive care with COVID-19 have improved dramatically since the start of the pandemic thanks to advances in treatment, new research has found.

The proportion of those worst affected by the disease who die from it **had fallen from 60%** when it first appeared early last year to **36% by October**, the study of global trends shows.



SCIENCE NEWS

DERMATOLOGY

3D skin imaging

A portable device has been developed that produces high-resolution 3D images of human skin within 10 minutes.

A team of scientists from Singapore is behind the portable skin mapping device, which they say could be used to assess the severity of skin conditions, such as eczema and psoriasis.

3D skin mapping could be useful to clinicians, as most equipment used to assess skin conditions only provides 2D images of the skin surface.

As the device also maps out the depth of the ridges and grooves of the skin at up to 2mm, it could also help with monitoring wound healing.

The device presses a specially devised film onto the subject's skin to obtain an imprint of up to 5cm by 5cm, which is then subjected to an electric charge, generating a 3D image.

The researchers designed and 3D-printed a prototype of their device using polylactic acid (PLA), a biodegradable bioplastic.

The battery-operated device measures 7cm by 10cm, weighs only 100g and the prototype was developed at a fraction of the cost of devices with comparable technologies.

→ **bit.ly/2N1w6xJ**

IMAGES: NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

BIOTECHNOLOGY

DIAGNOSIS OF LIPOSARCOMAS

Researchers have leveraged the latest advances in RNA technology and machine learning methods to develop a gene panel test that allows for highly accurate diagnosis of the most common types of liposarcoma.

It is claimed that the test quickly and reliably distinguishes benign lipomas from liposarcomas and can be performed in laboratories at a lower cost than current "gold standard" tests.

The new NanoString assay is described in *The Journal of Molecular Diagnosis*. Lead investigator Torsten Owen Nielsen said: "Many liposarcomas look like their benign and relatively common counterparts, lipomas.

Diagnostic delay and uncertainty cause severe stress for patients, and misdiagnosis can have many consequences including delayed or inadequate treatment or unnecessary surgical procedures and long-term postoperative follow up."

The retrospective and prospective cases probed by the NanoString assay had a 93% success rate and agreed with standard tests 97.8% of the time.

→ **bit.ly/3p1ui4W**

NANOTECHNOLOGY

COVID-19: "NANOFIBRE SWABS MORE SENSITIVE"

Ultra-absorptive nanofibre swabs could reduce the number of false-negative tests by improving sample collection and test sensitivity, it is claimed.

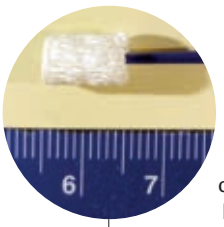
Currently, the most sensitive test for COVID-19 involves using a long swab to collect a specimen from deep inside a patient's nose, then RT-PCR to detect SARS-CoV-2 RNA.

But if the viral load is low, the swab might not pick up enough virus to be detectable.

A team of researchers wanted to develop a nanofibre swab that could absorb and then release more viruses and other biological specimens, improving the sensitivity of diagnostic tests.

They used an electrospinning technique to make 1cm-long cylinders composed of aligned nanofibre layers, which they coated with a thin layer of gelatin and bonded to plastic swab sticks.

In lab tests, the porous nanofibre cylinders absorbed and released more proteins, cells, bacteria, DNA and viruses from liquids and surfaces than the cotton or flocked swabs commonly used for COVID-19 testing.



The team made dilutions of SARS-CoV-2 virus, swabbed the liquid samples and tested for viral RNA with RT-PCR.

Compared with the two other types of swabs, the nanofibre ones reduced the false-negative rate and detected SARS-CoV-2 at a 10-times lower concentration.

In addition to allowing more accurate and sensitive COVID-19 testing, the nanofibre swabs have far-reaching potential in diagnosing other diseases, testing for foodborne illnesses and helping forensic teams identify crime suspects from miniscule biological specimens, the researchers say.

→ **bit.ly/2O4qp2j**

IMAGE: © ADAPTED FROM NANO LETTERS 2021, DOI 10.1021 ACS.NANOLETT.0C04956

HEALTHCARE SYSTEMS

THE COST OF COVID-19

Weekly COVID-19 testing, coupled with a two-week isolation period for positive cases, may be the most cost-effective strategy to tackle the spread of SARS-CoV-2 in the US when transmission is high until vaccines are widely available.

The claim comes in a modelling study published in *The Lancet Public Health* journal. It is the first to identify cost-effective strategies based on local transmission rates, the cost of testing and hospitalisations, and a societal willingness to pay in order to prevent COVID-19 deaths.

Since the pandemic began, countries worldwide have taken robust steps to mitigate the spread of the virus, including restrictions on movement, social distancing measures, and face mask requirements.

Globally, more than 96 million cases and over two million deaths have been reported. Estimated economic costs in the US exceeded $21 trillion in 2020.

This study suggests that until effective vaccines or antiviral drugs become widely available, mass testing is the best way to quickly identify and isolate infected cases.

While testing was initially slow and relatively expensive, costs have decreased rapidly.

To evaluate the economic trade-offs of expanding and accelerating COVID-19 testing in the US, the authors devised a model of 1000 households that was scaled up to represent the country's 328 million residents.

→ **bit.ly/2N1w6xJ**

$21 trillion

MORE THAN **96 MILLION** CASES AND OVER TWO MILLION DEATHS HAVE BEEN REPORTED. ESTIMATED **ECONOMIC COSTS** IN THE **US EXCEEDED $21 TRILLION** IN **2020**.

WHAT'S HOT AND WHAT'S NOT

HOT

CATS

Researchers from the Luxembourg Institute of Health claim high levels of the adjuvant molecule CpG oligonucleotide can boost immune tolerance to the major cat allergen Fel d 1.

HOT

VEGAN DIET

A vegan diet is more effective for weight loss than a Mediterranean diet, according to a randomised crossover trial, which was published in the *Journal of the American College of Nutrition*.

HOT

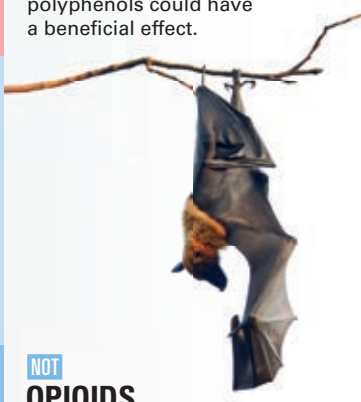
GRAPES

An American Academy of Dermatology study claims that consuming grapes could protect against ultraviolet skin damage. The authors say polyphenols could have a beneficial effect.

NOT

GLOBAL WARMING

A new study provides the first evidence of a mechanism by which climate change could have played a direct role in the emergence of SARS-CoV-2, by driving growth of forest habitat favoured by bats.



NOT

OPIOIDS

Scientists from the Scripps Research Institute have developed experimental vaccines that have been shown in rodents to blunt the deadly effects of fentanyl, which has been driving up opioid deaths in the US.

NOT

DREAMS

Researchers at a centre for neuromathematics say that during the pandemic, turbulent feelings are being expressed in dreams reflecting a heavier burden of mental suffering, fear of contamination and stress.

IMAGES: ISTOCK/SHUTTERSTOCK

CELL BIOLOGY

PRECISION GENOMICS IN CANCER TREATMENT

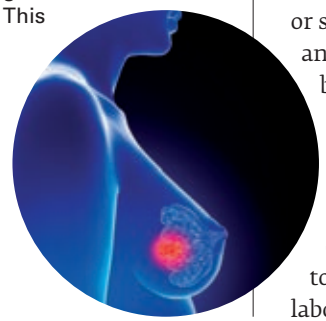
Scientists have identified genomic signatures in women developing the most common type of breast cancer that can be associated with long-term survival.

A team from NUI Galway analysed the genomes of breast cancer patients to look for associations with survival rates using advanced statistical techniques.

Early detection by national screening programmes and timely treatment for patients diagnosed with "luminal" types of breast cancer have resulted in excellent prognoses, with survival rates of over 80% within five years of treatment.

The challenge of long-term survival, however, is not as well understood and studies have shown that more than half of all recurrences for luminal breast cancers take place after this time point.

The team calculated the level of genome instability across 2000 patients, then used statistical modelling to identify distinct long-term survival outcomes. This enabled them to confirm the significantly worse prognoses for luminal A patients suffering from the most extreme levels of genome instability in their tumour biopsies.



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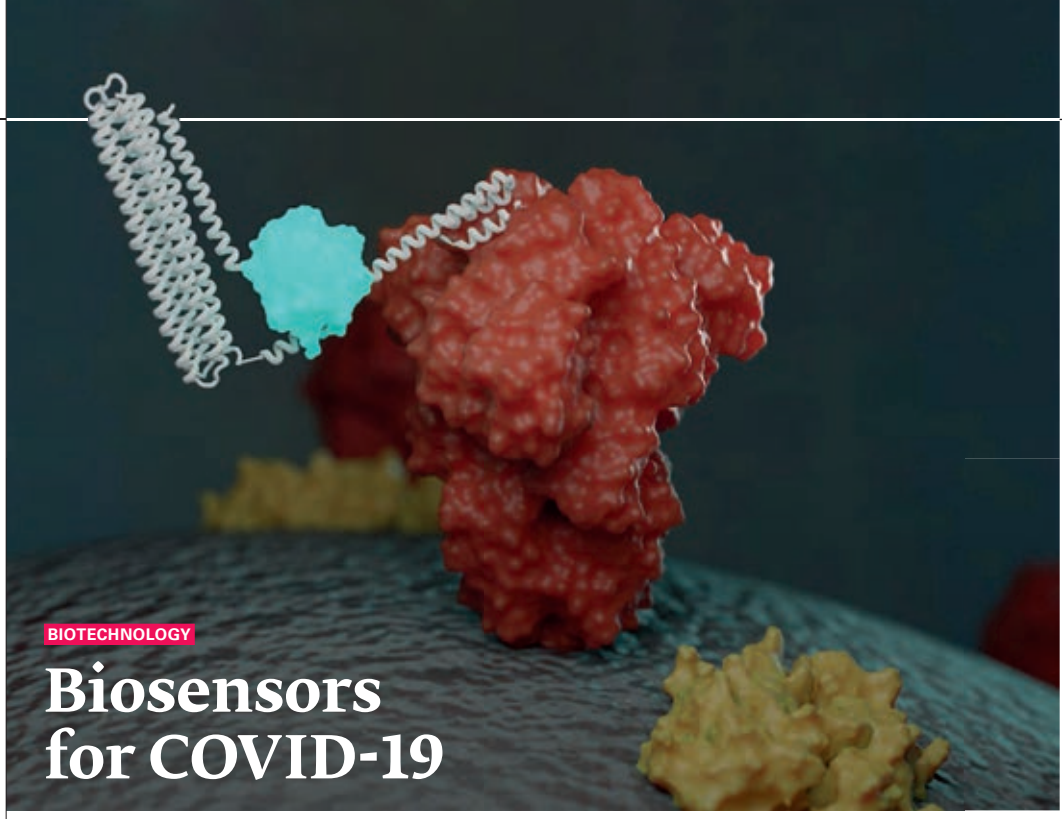

BIOTECHNOLOGY

Biosensors for COVID-19

Scientists have created a new way to detect the proteins that make up the pandemic coronavirus, as well as antibodies against it.

They designed protein-based biosensors that glow when mixed with components of the virus or specific COVID-19 antibodies. This breakthrough could enable faster and more widespread testing in the near future.

To diagnose coronavirus infection today, most medical laboratories rely on a RT-PCR, which amplifies genetic material from the virus so that it can be seen.

This technique requires specialised staff and equipment. It also consumes lab supplies that are now in high demand all over the world.

In an effort to directly detect coronavirus in patient samples without the need for genetic amplification, a team of researchers led by David Baker, Professor of Biochemistry and Director of the Institute for Protein Design at UW Medicine, used computers to design new biosensors.

These protein-based devices recognise specific molecules on the surface of the virus, bind to them, then emit light through a biochemical reaction.

"We have shown in the lab that these new sensors can readily detect virus proteins or antibodies in simulated nasal fluid or donated serum," said Baker. "Our next goal is to ensure they can be used reliably in a diagnostic setting."

→ **go.nature.com/3tzuig6**

IMAGE: IAN HAYDON/INSTITUTE FOR PROTEIN DESIGN AT THE UNIVERSITY OF WASHINGTON

UNDER THE MICROSCOPE

This month: HEPA filtration

OK, so I've never heard of this. What is it?

HEPA is an acronym for high-efficiency particulate air. To be classed as HEPA in Europe, a filtration system must remove at least 99.95% of particles whose diameter is equal to 0.3µm from the air passing through it.

Where are these filters used?

All sorts of places – from vacuum cleaners to air conditioning systems in buildings to (the one we are interested in today) airliners.

Why are we interested in planes?

A commentary in the *Journal of the Royal Society of Medicine* states that improving air quality in classroom spaces should be as important as following government advice regarding social distancing, mask-wearing and hand washing. It points to lessons learned from the airline industry.

What are the lessons?

The risk of contracting COVID-19 on a flight is currently lower than in an office building or classroom. Kaveh Asanati, lead author of the paper, said: "The strategy includes testing passengers, the use of face coverings or masks, hygiene measures and, more importantly, maintaining clean air by circulating a mix of fresh air and recycled air through HEPA filters."

What does the commentary recommend?

A potential practical option for schools would be the use of portable HEPA filtration units.

If schools don't have these units, what should they do?

Keeping doors and windows open – for as much as is reasonably practicable – seems to be the best way forward, they write.

CARDIOLOGY

Genetic risk factor for stroke

Researchers have identified a common genetic variant as a risk factor for stroke – especially in patients older than 65.

Cerebral small vessel disease (SVD) causes about a quarter of ischaemic strokes worldwide and is the most common cause of vascular dementia.

SVD can manifest as lesions on the brain, which typically appear on brain scan images. It is commonly associated with ageing and hypertension, but a minority of cases are caused by cysteine-altering variants in the NOTCH3 gene. Approximately one in 300 people have this type of gene variant. A rare hereditary condition known as cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL), which is caused by this gene variant, has been associated with SVD and an increased risk of stroke.

In a new study, researchers evaluated a set of health records, including imaging and genomic sequencing data, of more than 300 patients, of which 118 exhibited a NOTCH3 variant.

Of this group, 12.6% had a history of stroke, compared with 4.9% of those in a control group. The risk of stroke was significantly higher in those older than 65, and patients exhibited a higher number of white matter lesions on the brain. Although all 118 patients in the study group had a NOTCH3 genetic variant, the specific variant that causes CADASIL was rarely seen.

Given the high population frequency of NOTCH3 variants, the number of people who may be at higher risk of SVD and stroke as a result of a NOTCH3 variant is significant, the research team wrote. The study indicates that most individuals with a NOTCH3 variant will develop NOTCH3-associated SVD after the age of 65.

→ **bit.ly/3pZPOrY**

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TECH NEWS

IMAGE: ISTOCK

SIEMENS HEALTHINEERS

LIVER FIBROSIS TEST

NHS Tayside has implemented a blood test from Siemens Healthineers to rapidly provide an indication of liver fibrosis severity, enabling prioritisation of clinical treatment for patients at risk of severe liver disease.

The Enhanced Liver Fibrosis test has enabled the Scottish Health Board to reduce the liver clinic waiting list by 43% and more easily route patients to the correct intervention.

The rapid, minimally invasive blood test identifies priority patients.

→ **siemens-healthineers.com**

LGC

ORAL FLUID TESTING

LGC has expanded its innovative portfolio of SARS-CoV-2 quality solutions with its latest release – AccuPlex SARS-CoV-2 in Synthetic Oral Fluid reference material.

The product is designed to support development and testing efforts around novel saliva-based SARS-CoV-2 diagnostics.

It serves as an ideal research tool for assay developers and can also function as a complete quality solution for clinical laboratories employing such tests.

→ **seracare.com**

BC PLATFORMS

PREDICTING COVID-19

BC Platforms, a global leader in clinical and genomic data management, analytics and access, announced that it has joined forces with Japan's RIKEN research institution and the Finnish Institute for Health and Welfare, in an international research effort to support development of a precision prediction model to identify those most at risk from COVID-19.

RIKEN and THL play significant roles in Japan and Finland, respectively, in the fight against COVID-19, improving society's resilience to the coronavirus pandemic.

→ **bcplatforms.com**

THE BIG QUESTION

THIS MONTH WE ASK

"How do you think the public has coped with the last year of lockdowns and social restrictions?"

Angela Jean-François

Director of Operations
North West London Pathology

I thought I would be brave and put this question out to social media, to ask my friends and family, as together we form "the public" in one way or another. Whilst I expected some comments about conspiracy theories, what I actually received were responses from all over the world that all spoke with similar voices. Stories of lives being put on hold, concern about our children, their education and impact of loss of social interaction. Hardships, as jobs have been lost and families struggle to keep their heads above water. Stories of personal losses, funerals attended online and an inability to be there for others; to comfort and care.

One friend, a carer in the community, spoke of how colleagues have "switched off" their own feelings to ensure that the people being cared for have their spirits lifted and the frustration to not be able to tell the elderly when they will be able to see their family again. But what cut through all the messages was stories of hope and compassion – how communities have come together to ensure that no-one is forgotten.

Time has given way to thought; stopping in the street and talking with strangers; finding innovative ways to stay in touch; lockdown birthdays with social dis"dancing" on Zoom; WhatsApp groups for entire streets to provide care for those who need it. There is an appreciation of the things achieved and of the closeness and bonds reforming in families that had been lost in the busyness of past lives.

IMAGE: GETTY

Madihah Abbas

Specialist Biochemistry Team Manager
The Christie Pathology Partnership

The current coronavirus pandemic presents a considerable challenge to public health not just within the UK but globally. All the social distancing measures, including the banning of public gatherings, closure of schools and all non-essential shops, workplaces and services, have caused a huge impact, not just psychologically, but also through loss of structure and routine.

However, this situation has brought the best out in all of us, in terms of reinforcing the strength of connecting with others – community spirit and new ways of interaction by utilising social media platforms. In order to stay connected and gain a sense of purpose, everyone has had to adapt to change. Who would have thought of arranging a virtual coffee chat before COVID-19? Household quarantine has allowed more time with family, and a general appreciation for everything that is taken for granted.

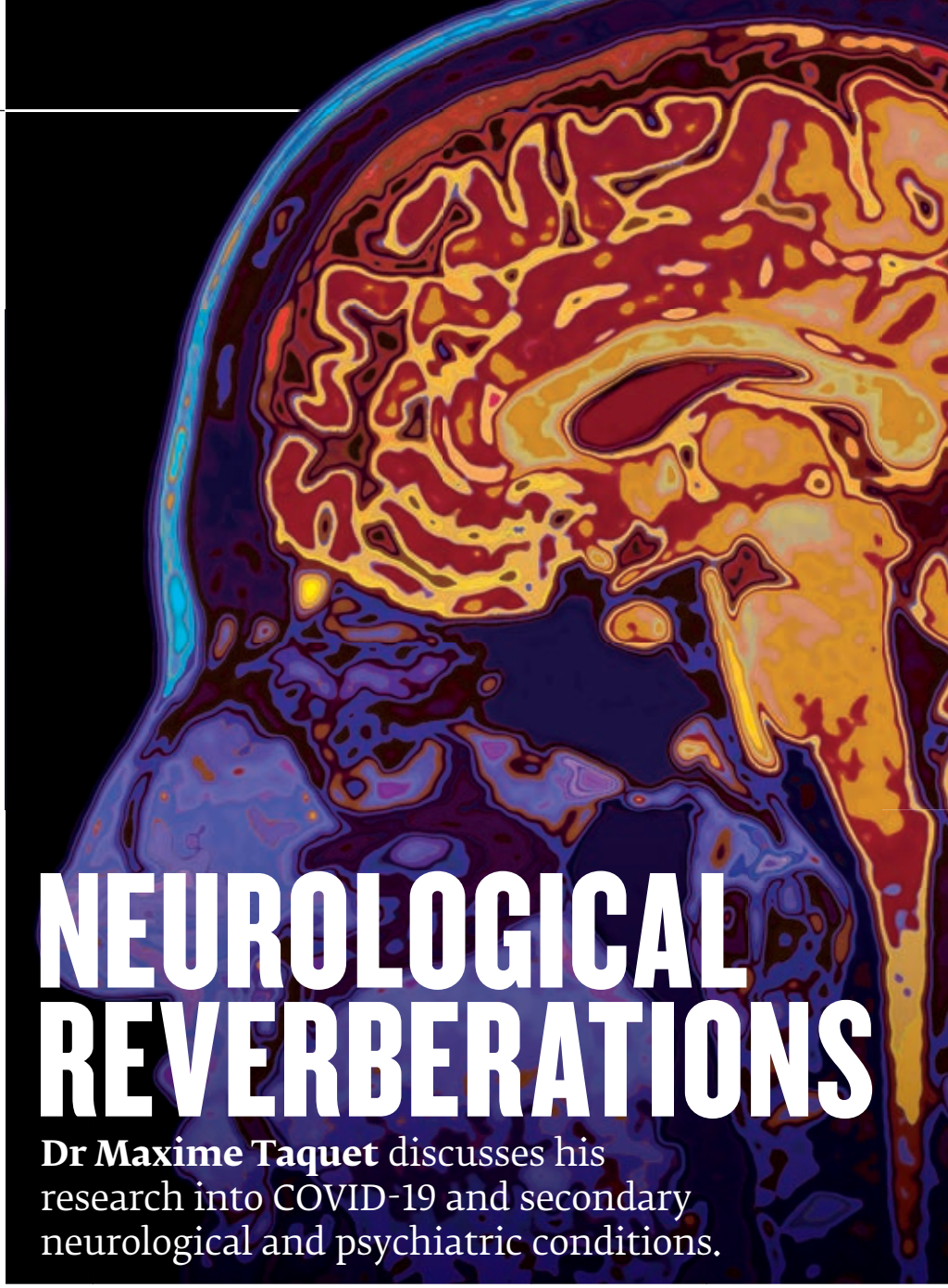
We are all carrying out a variety of activities, including yoga, meditation, walking in nature, or just taking some time out for ourselves with a good book, to stay focused. Initiatives from employers such as Mental Health Awareness Week provided by Synlab and wellbeing events are aimed at helping us reduce stress and be happier. Also, the little things are making a big difference as well – from simple thank-you gestures of chocolates, to motivational post-it notes, and remembering it's OK to ask for help. Above all, we have supported one another and discovered that we really are stronger when we work together.

Joanna Andrew

Laboratory Medicine Manager (designate)
York and Scarborough Hospital

I think on the whole the public has coped well. We are all in this together and although people have been affected in many different ways, there has been a sense of solidarity and support. Social media and technology, such as Zoom, has helped people feel connected and less alone. However, I think this is now wearing a bit thin. The public in general never imagined that one year on we would be in a third nationwide lockdown, with some areas of the country having never really opened up at all.

It is getting harder to remain positive. This will have a long-lasting impact on us all.



NEUROLOGICAL REVERBERATIONS

Dr Maxime Taquet discusses his research into COVID-19 and secondary neurological and psychiatric conditions.

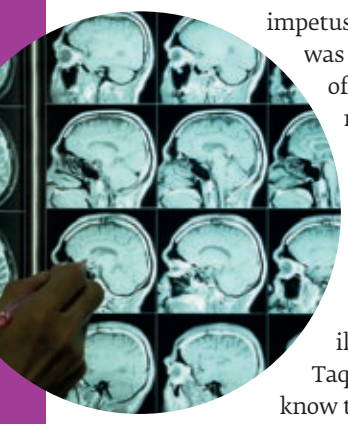
While the effects and after-effects of COVID-19 infection have been studied non-stop since the pandemic was declared a year ago, two areas that perhaps haven't received so much scrutiny have been the neurological and psychiatric reverberations.

That changed recently with the publication on *medRxiv* of the paper *Six-month Neurological and Psychiatric Outcomes in 236,379 Survivors of COVID-19* (not yet peer-reviewed). Looking at the incidence rates and relative risks of neurological and psychiatric sequelae among the cohort, it estimated that incidence at six months among patients was 33.6%, with 12.8% receiving their first such diagnosis. The conditions included intracranial haemorrhage, stroke, Parkinson's, encephalitis, dementia, anxiety, psychotic disorders, substance misuse and insomnia.

Data were obtained from the TriNetX electronic health records network from across the US. Some 80% of the patients (190,077) were not hospitalised by the infection; the remaining 46,302 were.

The trigger

The research team, drawn from the University of Oxford and the city's NHS hospitals, was headed by Dr Maxime Taquet in the department of psychiatry at the University of Oxford. The impetus for the research was the known risk of secondary neurological and psychiatric conditions. "Any infection, severe or otherwise, can be a trigger for psychiatric illness," says Taquet. "We also know that a severe infection can cause patients to have conditions such as delirium, which is a transient change in the mental state. That's mostly in the elderly – they might be very confused, for instance. That in itself can be a risk factor. So in that broad sense, any health event, including infection, can be a trigger for psychiatric and neurological diseases."

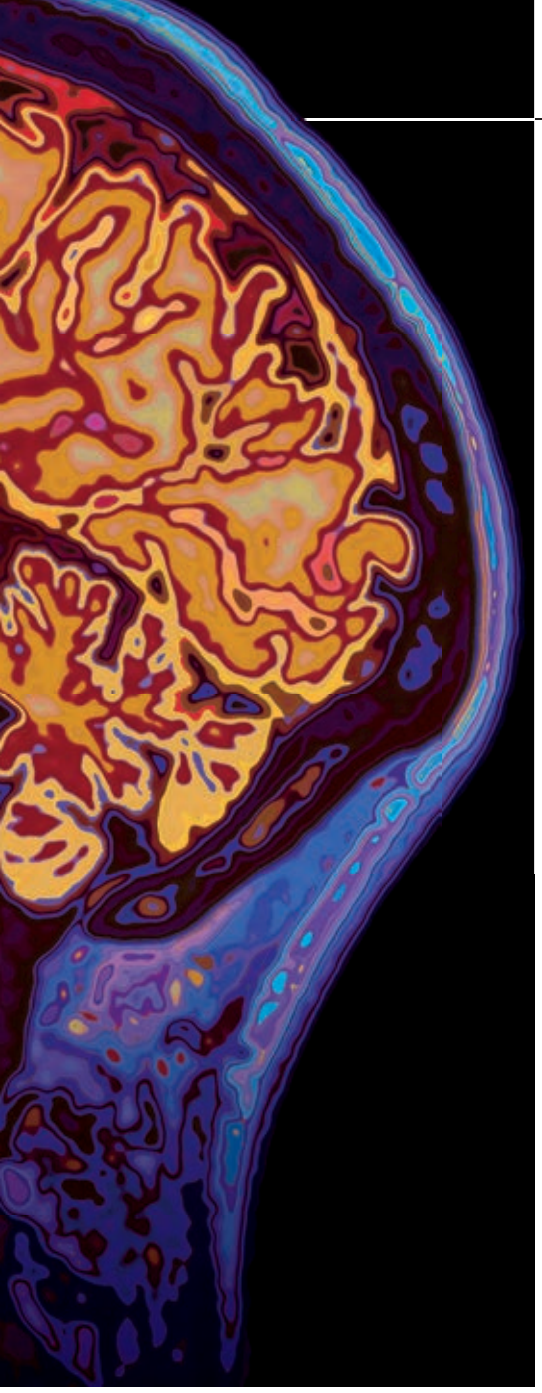


There are also historical markers. Research found that in the six years following the Spanish flu pandemic of 1918-19 the number of patients hospitalised in Norway for the first time with mental disorders rose significantly. In the US, suicide rates were heavily related to Spanish flu up to 1920. Here in the UK, flu survivors were reported to suffer depression, neuropathy, neurasthenia, meningitis, never cell degeneration, and impaired vision.

"That was one of the questions that we had," says Taquet. "Is COVID-19 one of those events that has a specific association with neurological and psychiatric conditions? The answer seemed to be yes, so the real purpose of the study was to look at the extent of the issue and to quantify it."

Establishing a link

A handful of earlier studies helped to establish the link between COVID-19 infection and neurological and psychiatric conditions, not least from Taquet and his colleagues themselves. "We had a previous



IMAGES: ISTOCK/SHUTTERSTOCK

study published in *The Lancet Psychiatry* where we looked at the three-month outcomes of patients with COVID-19 in terms of psychiatric illnesses only. We were quite surprised by the extent to which it was associated with these illnesses. But that finding has now been replicated in different studies in different settings."

This latest study has taken a step further by including neurological conditions and by looking at a much larger population over a longer period. "We looked at six months of follow-up rather than three months after diagnosis. It was quite surprising to see that the diagnosis of neurological and psychiatric conditions carried on increasing. We thought that it might reach a plateau."

The paper reports: "like the neurological outcomes, the psychiatric sequelae of COVID-19 appear widespread, and persist to and probably beyond six months."

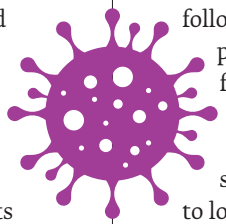
Risk of stroke

Perhaps even more surprising is the extent to which COVID-19 infection is associated with certain neurological diseases. "We looked at the incidence of stroke, and what we found is that among all patients with COVID-19, not just the most severely affected and not even just those who are hospitalised, one in 50 develop a stroke. That's quite a big number. The association with stroke has been mentioned in the literature before, but this is probably the first time that we have put an actual number to that. Again, rather than just the presence of those sequelae, I think the surprising thing is the extent to which that's the case."

Why might an infection such as COVID-19 raise the risk of stroke? "What's been found and highlighted in the literature about COVID-19 is that it tends to disturb the coagulation system in people's bodies. A blood clot can be a good thing if you are bleeding, but it can also be a bad thing if it's overdriven. That might cause issues such as a pulmonary embolism. We know that quite a few patients who died of COVID-19 actually died of a pulmonary embolism, so if those clots can form in the lungs they can also form in the heart or the brain and then cause a stroke."

Conclusion

The implications of the teams' research are that a substantial number of post-COVID-19 patients are going to require care in the months after their recovery and possibly much longer. "It's going to be important to follow up those patients to see what the long-term outcomes are. For example, anxiety, depression and psychiatric disorders come in all shapes and sizes, as do many of the neurological diseases.



DR MAXIME TAQUET

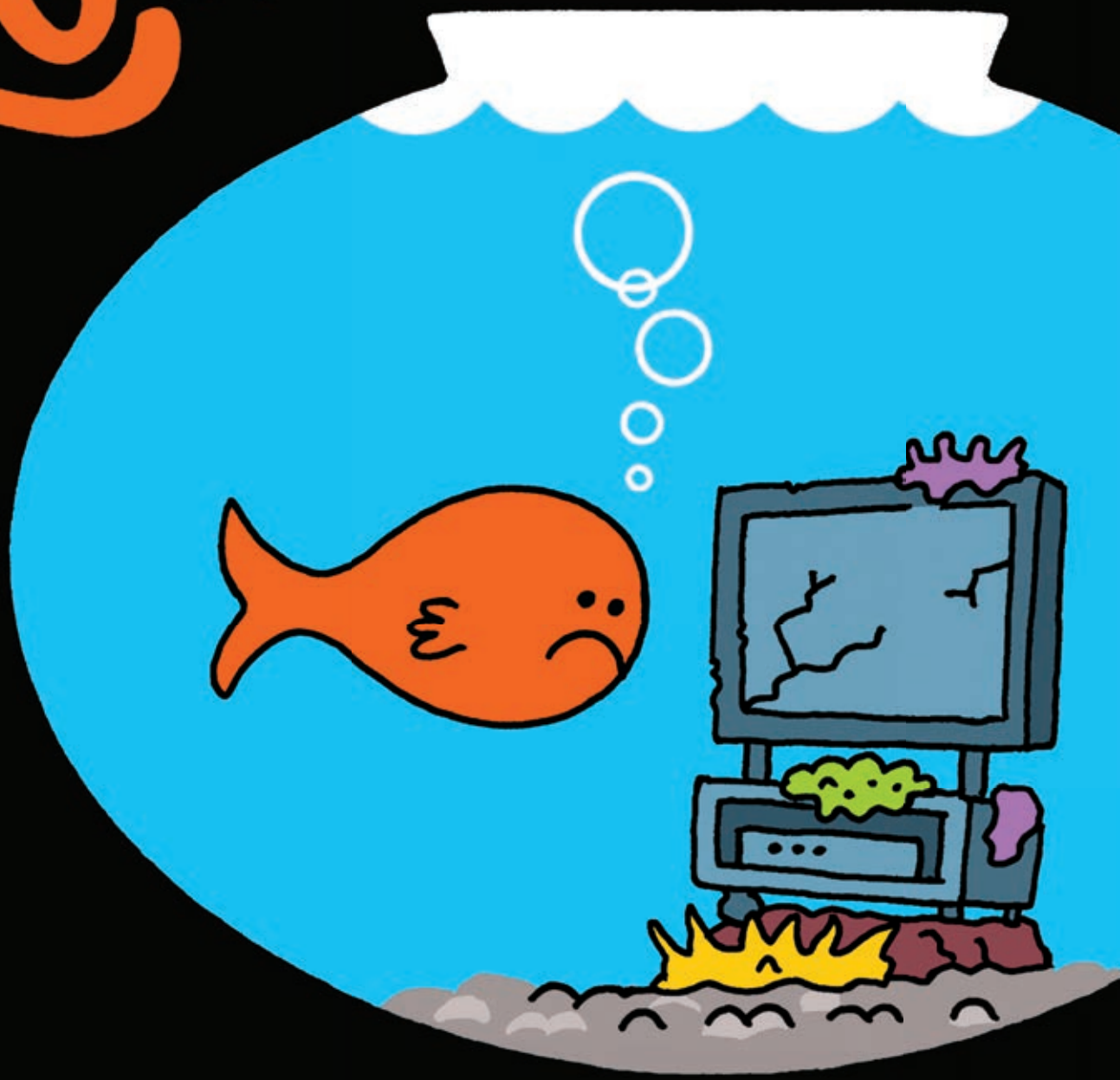
- ✔ Academic clinical fellow, department of psychiatry, University of Oxford
- ✔ PhD in engineering sciences, UCLouvain and Harvard Medical School
- ✔ Research fellow, Harvard Medical School
- ✔ Master's degree in engineering, Simon Fraser University (Canada)
- ✔ Bachelor's degree in engineering, UCLouvain (Belgium).

So this is a key question: is it a short-lived episode, which is concerning in itself, or does it have a more prolonged course? That's going to be important to establish and assess if we are to give patients the best available treatment."

The limitations of the study data pose further questions. "We are only capturing those people who have presented to a healthcare facility and received a diagnosis by a clinician. We suspect that for psychiatric conditions, quite a lot of patients did not receive a diagnosis simply because they didn't seek medical attention. That's a reason for active follow-up of COVID-19 patients, perhaps even screening them for signs of neurological and psychiatric conditions."

Besides these issues, Taquet says he and his colleagues want to look at aspects of long COVID-19 and more. "We're also interested in surprising research showing that some antidepressants are effective at reducing the severity of COVID-19. That is puzzling and might point to shared mechanisms. Those are exciting and open research questions that I think we will be trying to tackle in future." BMS

One Year in Lockdown



With social freedoms curtailed over the last 12 months, many of us have turned to baking, jogging and, when all else fails, watching TV for hours on end. We speak to three biomedical scientists who are expert in these fields about the impact of lockdown.

Our work and social lives have been limited drastically by successive lockdowns: no more theatre, cinema trips or live music. Pubs and restaurants, meeting friends and visiting relatives indoors have been off the cards for months.

Many of us have embraced the daily exercise allowed by government – in March 2020, nearly one million people tuned into personal trainer Joe Wick's online PE lesson on YouTube, breaking a Guinness World Record. We've also sought comfort and entertainment in front of the television. In August 2020, Ofcom reported that people in the UK spent 40% of their day watching TV and online video services.

In place of the pastimes outside of the home, many people have turned to baking. In the first two months of the first 2020 lockdown, 34% of more than 4000 UK adults polled by the National Association of British and Irish Millers had used two or more bags of flour to bake something.

ILLUSTRATIONS: ANDY SMITH

Time to bake

Yan Tsou, Quality Control Scientist at the Francis Crick Institute and contestant on series eight of *The Great British Bake Off*, says it was hard to find flour in the first lockdown. "Luckily – and this is one of the things that comes from being on *The Great British Bake Off* – you get to know all the tricks," she says, adding that fellow former contestants put her into contact with people in the flour industry.

But the flour shortage, combined with extra time at home, allowed Yan to investigate alternatives, often using Youtube videos. "Sourdough is already a complicated process and I experimented with different flours because I had to. I was able to improve and now my loaf is the best I have made because I have learnt more."

Yan has also experimented with cooking what would normally be considered food waste. "During the first

lockdown my partner and I made pulled banana peel – a vegan version of pulled pork. The amount of energy and science that goes into making food – I cannot waste it."

But there are fewer people for Yan to share her bakes with. She makes bread for her family – Yan is in a bubble with her partner and brother and his family – but things have changed at work. "I used to bake a loaf of sourdough for the team, someone else would bring cheese and butter and we'd have it at tea break in the morning. Ironically, I have got more time to make sourdough now but I can't share it. And I can't share cakes."

The team at the Crick – which acts as a "support unit with a bit of research thrown in" in cell services – have been "on the ball" with social distancing, testing and PPE. "We were one of the first teams to come in wearing masks, we have two metres of social distancing and I am in my own laboratory area," she says. "We're lucky enough to be tested twice a week."

"The amount of energy and science that goes into making food – I cannot waste it"

Yan's team acts as quality control for the cell services team – giving technical advice and tuition in basic cell culture techniques and testing for mycoplasma. They also do species ID authentication and single tandem repeat testing on human cell lines. The team provided cells for the early COVID-19 models, setting up a vaccine team "very quickly".

This meant Yan was still allowed to travel into work at the Institute in the first lockdown, and she's now there four days a week. "It's not possible to work from home permanently, the amount of work that's ramping up, you need to be at the bench using the machines," she says. "We have to be more skilled at time management." This means planning work effectively when in the lab so that on the days when working from home Yan can go through any data.

Current day-to-day life for Yan is going to work and coming home again. An introvert by nature, she found the recognition that came with her appearance on *The Great British Bake Off* "unnerving". But being on the show has served as an "ice breaker" for social settings. "I never did *The Great British Bake Off* to change my life in my work, but it has opened doors to things we would never have experienced. I am thankful for being given the opportunities."

Top Tips for Lockdown

YAN TSOU'S TOP 5 LOCKDOWN BAKES

- ✔ **Sourdough bread** – "If you have the time to do it."
- ✔ **Brownies** – "As decadent as you want them – if you have left over biscuits or candy you can chuck them all in."
- ✔ **Rocky road** – "Not strictly baking, but chocolatey."
- ✔ **Katsu curry chicken pie** – "A good pie is great, especially not your standard pie fillings. This has got a nice flavour to it and you can't get it in the shops – you have to make it yourself."
- ✔ **Feta and spinach pie** – "Use filo pastry and put a honey glaze on it to add sweetness, like baklava."

Feet up in front of the telly

Being recognised in the street is a familiar experience for Umar Siddiqui, who appears on the Channel 4 show *Gogglebox*, with brother Baasit and father Sid. "I would be lying if I said it didn't change our lives," Umar says. "You'll incidentally just turn on Channel 4 and there you are. That's the weirdness of it." There have been lots of highlights and "every time people approach you on the street, they have only got good things to say."

Gogglebox was in the middle of filming a series when the first lockdown hit, and the show's participants were given key worker status as part of the broadcast television industry, meaning they could continue filming. "But we didn't feel comfortable with dad being part of the show because he's in a vulnerable group. So just Baasit and I did it for the remainder of that series," Umar says.

When autumn came, Sid was able to participate due to production changes. "The filming crew have creatively adapted their approach to filming that significantly minimises any risk to the participants. Studio Lambert, which makes *Gogglebox*, have gone above and beyond putting in measures to protect us and them," Umar adds. "They do regular disinfection, temperature checks and courtesy calls each day to make sure you're feeling okay.

"All credit to them and a lot of organisations that don't have a background in science or medicine."

The same applies to his day job, in which wearing masks, plastic screens, regular disinfection and social distancing have become the norm, and his team has been called for the COVID-19 vaccination. Umar is a Biomedical Scientist in microbiology at Burton Hospital, focused mainly on microscopy, culture and sensitivity. "It's basic things like urine culture, blood cultures, wound swabs, enterics and a bit of serology thrown in there as well," Umar adds.

But this routine work has changed since the pandemic because GPs aren't really offering patient clinics. "The routine samples have decreased but been replaced by COVID-19 swabs that have been coming in. We don't do the PCR testing in-house but we have to package up those samples, check details and then deal with the results when they come back."

Umar balances his time between the lab in Burton, being on-call and working from home training other biomedical scientists. "It's an unusual situation because I know and work with the staff at

IMAGE: GETTY

SHANNON HYLTON'S TOP 5 EXERCISE TIPS FOR LOCKDOWN

- ✔ **Just go out and start something** – "Do whatever feels natural to you. Do something small if you want. And don't set any expectations."
- ✔ **Use weights to work out at home** – "Something that got me through the first lockdown."
- ✔ **Small bands are great for people to do exercise at home** – "You can buy these online."
- ✔ **Do workouts at home** – "I like a high-intensity workout, so I would do 30 seconds of burpees, high knees, crunches and mountain climbers. But you can vary the level you do it at."
- ✔ **Yoga** – "I really enjoy doing this, and you can do it online."

UMAR SIDDIQUI'S TOP 5 LOCKDOWN TV SHOWS AND FILMS

- ✔ ***Tiger King*, Netflix** – "The TV show I will always associate with the first lockdown. It provided quite a nice distraction from everything that was going on."
- ✔ **2020: *The Year Where Covid Changed Everything*, ITV** – "This is a really good programme for a review of the pandemic and crisis."
- ✔ ***The Chase*, ITV** – "I love watching quiz shows."
- ✔ **Old Christmas movies** – "You find comfort in things from the past."
- ✔ ***The Crown*, Netflix** – "I have been watching it avidly."

Burton so I can gauge their competencies and capabilities," Umar says. "But with staff at the Coventry lab [who he also trains] I have to gauge competency at a distance." He's immensely grateful to his colleagues – they remain "unsung heroes" during the pandemic. "If we get anything from the pandemic it's hopefully greater recognition for the work we do."

He can spot the parallels in his work and *Gogglebox* role. "With programmes like the news or *Panorama*, I put my scientific hat on when watching. But it's also important to watch something that has absolutely nothing to do with what is going on with COVID," he adds. "I think uplifting TV is often the way to go."

Taking regular exercise

Shannon Hylton spent time during the first lockdown "chilling in front of Netflix". "But there is only so much Netflix you can take," she adds. The British Champion 100m and 200m sprinter – along with her twin sister Cheriece (also a British sprinter) – also did mini workouts for their younger siblings, who were missing out on PE lessons and physical activity at school.

The first lockdown was "really tough" for Shannon, who graduated with a First-Class degree in biomedical science from the University of East London in 2019. "But because it was a new thing, you adjust and adapt and don't think too deeply about it. Also the weather was pretty nice," she says. "If I had a gym session I could just go on the grass with some free weights. I had to do some of my hill runs in the woods and found loads of new places in the area where I live and met loads of dog walkers in the mornings, which is just nice." But lockdown now is tougher. "In winter training on the grass isn't ideal because you want to feel the traction on the ground."

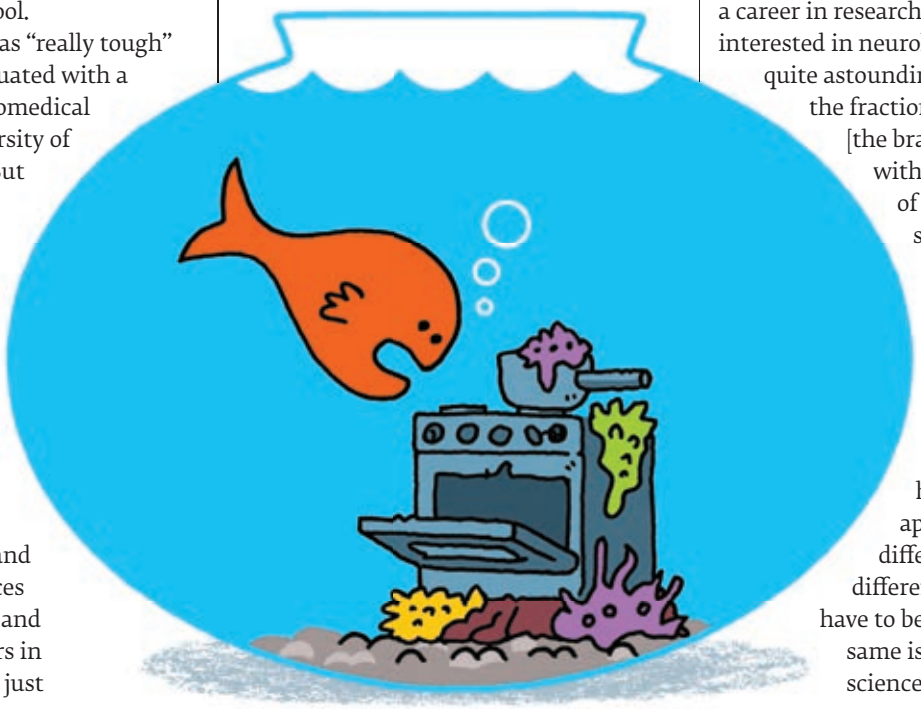
As regulations have allowed for elite sport to continue, Shannon has access to all her facilities, which provides some crucial structure to the week. She does two-hour track sessions at her running club in Bromley with her coach six days a week, visits the gym three times a week in north London, because her local gym is closed, and does online yoga once a week. "I have my own little bubble, we wear our masks, sanitise everything and social distance. It's a new normal to adapt to but we are still getting the work done."

The main focus at the moment is the Summer Olympic Games in Toyko, which may or may not take place later in the year. "No one knows what is going to happen but we are preparing and staying ready because there will be other competitions anyway," she says. "The one thing the last year has shown us is that nothing is guaranteed and you need to enjoy what you are doing and stay ready."

"The last year has shown us nothing is guaranteed and you need to enjoy what you are doing"

This doesn't mean she's left her biomedical science behind. "Even though I am not in an academic environment I am still continuing to learn, reading papers and listening to podcasts, especially focusing on neurology, neuropharmacology and immunology." Shannon still emails her tutors to discuss how the COVID-19 vaccine research is progressing, and plans someday to have a career in research. "I'm particularly interested in neurology," she says. "It's quite astounding how an organ the fraction of our body weight [the brain] can provide us with an infinite number of questions. I love that science is a way of thinking as much as a body of knowledge."

And it applies to her athletics training. "Discipline is one thing that overlaps, and you have to have the aptitude to work with different situations and different scenarios. You have to be able to adapt. The same is true with biomedical science," she concludes. BMS



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SARS-CoV-2 – more transmissible variants	**Detection and differentiation of:** ✓ South England variant ✓ South African variant ✓ Brazilian variant ✓ Endogenous control with RNAse-P ✓ In development ✓ 1 MasterMix

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Science and celebration

After what's been the most difficult year many of us have ever experienced, we all need something to look forward to. I'm delighted to announce that rather than cancel our Congress, originally planned for this September, we've decided to reschedule it to Monday 14 to Thursday 17 March 2022.

I'm conscious this means a longer interval between events than usual, but what makes Congress such a valuable and memorable part of our year is being together in one place. By giving ourselves an extra six months, I believe we have every chance of being able to meet together safely, and gain the maximum professional and personal benefit that you expect from Congress.

Our 2022 Congress will also be an opportunity to reflect on and celebrate a unique period in our profession's history. As biomedical scientists, we've played a critical role in the testing and diagnosis of COVID-19 and its health effects, while still maintaining our vital work as the UK's laboratory medicine service. After a year like no other we have much to be proud of; let's make Congress 2022 a celebration of our science and our central role in the delivery of healthcare.

I look forward to seeing you in Birmingham.

Allan Wilson, IBMS President

Think ahead. Book now.

We're opening booking for Congress 2022 now, so you have the option of spreading the cost over two financial years. As always, you can save money by booking early – the deadlines are as follows:

Premium early booking discount ends 30 June 2021

Early booking discount period ends 30 October 2021

To help you further, you can make block bookings without having to specify individual delegates; you can let us have names nearer the time, once people's availability is known.

So much to catch up on

Congress 2022 will be our first since 2019, so there'll be a lot to catch up on across a whole range of scientific, professional and vocational topics. You'll also get to see and discuss the latest products and equipment from top suppliers in the largest exhibition of its kind in the UK.

We always aim to make our Congress content topical and relevant, so we'll be launching the main programme in May with further content over the following months. In the meantime, we've put together an outline of some of what you can expect, so you can start planning your visit now.

CELLULAR PATHOLOGY

- Tissue recognition and pathology workshop
- Liver pathology
- Consultant Scientist reporting – 2 years on
- The ethics of genomics testing in histopathology
- Digital pathology – pilot to practice
- Lymphoma pathology
- Head and neck pathology

EDUCATION & MANAGEMENT

- Laboratory degree placements
- Too busy to train?
- Spotting qualification fraud
- Qualification choices: HSD v MSc
- New HCPC Standards of Proficiency: changes, emphasis and impact
- Band 6 – finding, developing, keeping
- Challenges of delivering training with a limited scope service

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HAEMATOLOGY

- Morphology, drugs and technology
- COVID-19 in the context of haematology
- Haemoglobinopathy conundrums – small details, big difference!
- Gene therapy and bone marrow transplant treatment
- The latest BSH guidelines and their significance
- Quality issues in haematology

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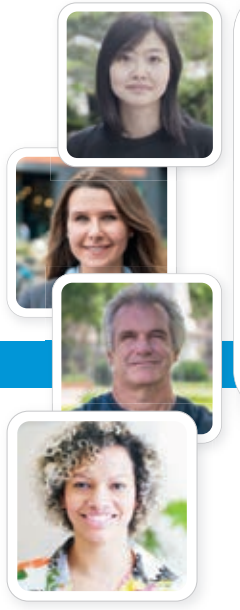

MEDICAL MICROBIOLOGY

- Mycology
- Anaerobic pathogens
- Parasitology update
- HSST in microbiology
- Procalcitonin – outbreak management
- Microbiome topics
- Orthopaedic & joint infections

POINT OF CARE TESTING

- POCT in pathology networks
- How COVID-19 has accelerated the POCT landscape
- Implementing and managing quality control in a multi-professional POCT team
- Molecular advances in POCT
- Teaching and training of POCT for non-scientific staff
- CEP in POCT – value of the qualification
- POCT in the anticoagulant service

TRANSFUSION SCIENCE

- Managing O Negative red cells in hospital transfusion laboratories
- Managing donation during a pandemic
- Introduction of a new blood component
- Finding new blood group antigens
- Antibody workshop
- Transfusion technologies
- The therapeutic tissue laboratory

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CLINICAL CHEMISTRY

- The future of clinical chemistry
- Myeloma and plasma cell disorders
- Urgent biochemistry – species, turnaround times and e-alerts
- Cancer: developments and new markers
- Reproductive biochemistry
- COVID-19 and its impact on clinical chemistry
- Toxicology – post mortem and blood screening

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IMMUNOLOGY

- Management issues in immunology laboratories
- Neuroimmunology
- Autoimmunity
- H&I in the context of transplantation
- Immunodeficiencies and their genetics
- Cryoglobulins
- Case studies and patient syndromic experiences

QUALITY MANAGEMENT

- ISO 22870/15189 revision update
- Learning from excellence – recognising when things go right
- Investigation of serious incidents – what to do when things go wrong
- Ensuring quality in an emergency situation
- Maintaining a permanent state of readiness
- Remote auditing
- Maintaining quality when working from home

CYTOPATHOLOGY

- Cervical Screening Programme Four Nations update
- Biliary cytopathology
- ROSE clinics
- Diagnostic cytology EQA
- Molecular diagnostics in cytopathology
- Andrology

LABORATORY MANAGEMENT

- Decision-making in a crisis situation
- Positive onboarding – making staff induction an investment for success
- The exit interview – a meaningful goodbye
- Pre-empting problems – may the workforce be with you
- Lead, follow or get out of the way
- Motivating a tired and exhausted workforce
- The importance of good laboratory design on staff health and wellbeing

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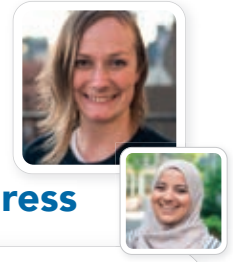
VIROLOGY

- New strategies for managing new diseases
- Vaccination programmes and virus resurgence
- Pandemic response – service impact, lessons learned and legacy
- Viral infections in risk groups
- Outbreak control – value of epidemiology & whole genome sequencing
- Gastrointestinal virology
- Transplantation and the importance of virology

Delivering science, celebrating achievement.

The COVID-19 pandemic has put science, and scientists, centre stage in a way we've rarely seen. As well as being our most important forum for developing our professional skills and knowledge, Congress 2022 will also be a true celebration of science in all its variety, influence, potential and impact on society. The circumstances and timing may be different, but you can be sure it'll be worth the wait.



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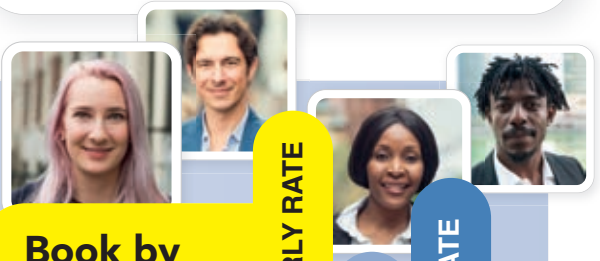

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2 Days	£280	£340	£400
3 Days	£385	£470	£550
14 March + 1, 2 or 3 Days	£75	£90	£105
14 March ONLY	£90	£105	£125
Lab support staff half day	£75	£90	£105
Non-Members			
1 Day	£175	£215	£250
2 Days	£350	£420	£495
3 Days	£460	£560	£655
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14 March ONLY	£120	£145	£170
Lab support staff half day	£85	£105	£125

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TESTING TIMES

Dr Sarah Pitt and **Dr Mark Erickson** report the findings of their research into the feelings of UK biomedical scientists and other IBMS members during the COVID-19 pandemic.

Since December 2019 the world has witnessed an unprecedented level of change as a result of the COVID-19 pandemic. International borders have closed, countries have enforced lockdown measures, and daily reporting of death rates has become normal. The global health crisis has prompted a global response from national governments and international agencies. This response has catapulted healthcare professionals and public health workers into the spotlight: their actions literally do have life or death consequences for individuals infected with the virus.

In the UK we saw a complex package of public health measures rolled out across the country from early 2020. The government produced simple messages to encourage personal and social hygiene to reduce transmission of respiratory infections. The importance of rapid and accurate testing of symptomatic patients and their contacts became clear early on in the pandemic. It also later transpired that a significant proportion of those infected could be asymptomatic. Therefore "testing and tracing" and the overall public health response has been the subject of much discussion by politicians, opinion formers in the media, but also laboratory and public health professionals.

The forefront of testing

IBMS members have been at the forefront of the testing programme. Biomedical scientists, clinical scientists and assistant and associate practitioners in diagnostic laboratories have rapidly implemented SARS-CoV-2 PCR testing. They have been

"I feel as though I am making a difference, but that it is not recognised or appreciated outside of my profession"

IMAGES: ISTOCK/SHUTTERSTOCK/GETTY

making a vital contribution to the assessment and monitoring of patients who are seriously ill with COVID-19. Serological surveys for anti-SARS-CoV-2 have also been incorporated into the testing repertoire. However, anticipating a lack of testing capacity across the existing diagnostic laboratory networks, the UK government set up three "Lighthouse Laboratories" to extend testing capacity. In April 2020 two English laboratories were set up by accountancy firm Deloitte and bypassed both the NHS and public health laboratories, and the Scottish one was organised by the University of Glasgow. The SARS-CoV-2 PCR testing regime was then organised into "Pillars": Pillar 1 was NHS and public laboratories, which processed tests from patients and some healthcare workers and Pillar 2 was the Lighthouse Laboratories. Testing became a major topic for the news media throughout 2020. The UK government particularly focused on setting and meeting "targets" for processing numbers of tests. This was not always led by the usual considerations of clinical requirements. Issues with testing, such as prolonged turnaround times and results not being reported to local public health authorities, were regularly and widely reported. It was not always clear that these problems related to the Lighthouse Laboratories. Similarly, it was the Pillar 2 system where staff experienced computer database glitches and health and safety breaches.

Testing and screening

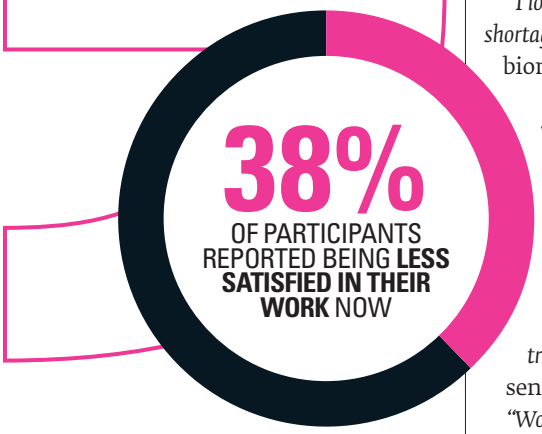
In the autumn of 2020, the government increased the emphasis on the importance of the testing programme as a way of

curbing the pandemic and "defeating the virus". To that end, they introduced "screening" using a variety of point-of-care tests. Mass testing outside of the laboratory setting using a lateral flow antigen test began in the city of Liverpool. The test was intended by the manufacturers to be used as a rapid test for symptomatic patients, but is being used to screen asymptomatic individuals. Universities were asked to use it to test students in December 2020 before they returned home. The plan to continue to use it was paused in January 2021, due to a surge in cases of the SARS-CoV-2 virus and a decision by the Medicines and Healthcare Productions Regulatory Agency (MHRA) not to approve it for use in regular screening of pupils and staff in schools.

Although this screening is not being conducted in laboratories or by registrant laboratory professionals, it is nevertheless included in the national discourse about testing. The IBMS has provided resources for its members about all the available test assays and it has promoted the profession and offered professional advice.

By autumn 2020 it became clear that the UK testing programme was in some disarray, having faced communication problems, equipment and staff shortages since the start of the pandemic, and this led to media criticism. Bearing the brunt of this were biomedical scientists working in NHS facilities, many of whom are members of the IBMS. We decided to investigate how these workers were coping with being the focus of media attention, and also how their working lives had changed through the course of the pandemic. Our brief online survey, which was disseminated using social media and via the IBMS website, attracted 164 responses, of which 98 were complete. Despite this low response rate, we collected data from a good cross-section of IBMS members in terms of age, gender, grade and region. We present some results here, with a particular focus on our two research themes: How did biomedical scientists feel about the way their profession, work and response to the pandemic was represented in the media? And in what ways had their work changed as a result of the pandemic?

I have got more involved in training and hence [the] IBMS. It has given me a sense of purpose



Job satisfaction/work changes

Over 60% of participants reported that their workload had increased, and over 50% said they had continued to carry out their usual duties and took on new duties because of the pandemic (Fig 1/Fig 2).

Such a large amount of change in work practices and level would likely have an effect on job satisfaction.

We asked participants to report on their job satisfaction and also on how this had changed because of the pandemic. IBMS members show high levels of general job satisfaction, but it is clear that the pandemic has caused a lot of disruption to this usual pattern (Fig 3/Fig 4).

In total, 38% of participants reported being less satisfied in their work now. We followed up this question by asking respondents to explain further by providing some text comments (n=67). We carried out a basic thematic analysis of these text comments and found, perhaps unsurprisingly, that almost a third reported more pressure at work.

Typical comments included:

"Having to work six days a week every week and longer hours. It is too much." – Band 7 senior biomedical scientist

"I love my job but the extra work and staff shortages are exhausting." – Band 5 biomedical scientist

"Still proud of what I do, but due to high workload other aspects have slipped and I am not completing all the tasks I should." – Band 7 senior biomedical scientist

"I feel overwhelmed and under pressure to increase capacity and turnaround time for Sars-CoV-2 testing as well as keep on top of stock control, quality assurance, staff training and competencies." – Band 7 senior biomedical scientist

"Work was really bad, huge pressures to deal with routine work and now... we have to deal with COVID samples also." – Student/trainee biomedical scientist

Other prominent themes included identification of positive work changes:

"I enjoy new challenges." – Band 7 senior biomedical scientist

"I have got more involved in training and hence [the] IBMS. It has given me a sense of purpose." – Band 6 specialist biomedical scientist

"I feel that work being done by my team is helping towards finding a cure and that our contribution has been vital to research. I have enjoyed the collaborative nature of working across many disciplines both academic and clinical." – Band 8 biomedical scientist/manager

"Seeing through the media, family and friends everyday the impact of COVID and knowing you are actively helping with the national effort every day by doing your usual job, really gave a morale boost to myself. We all work in the NHS to help people but sometimes with the heavy workloads

FIGURES 1–6: SURVEY RESULTS GRAPHS

N* INDICATES THE NUMBER OF MISSING VALUES [ME: STANDARD SOCIAL SCIENCE NOTATION]

Figure 1: Reported changes to workload during 2020,(n=97 n*=1)

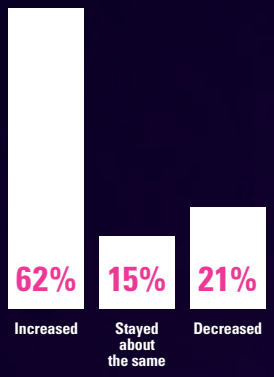


Figure 2: Changes to work practices during 2020 (n=97, n*=1)

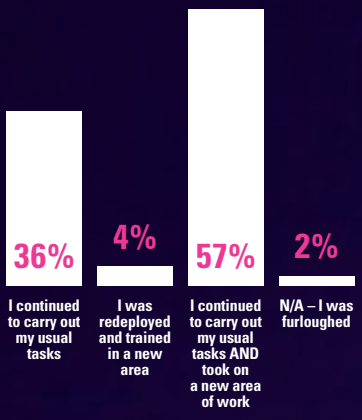


Figure 3: Reported overall job satisfaction (n=89, n*=9)

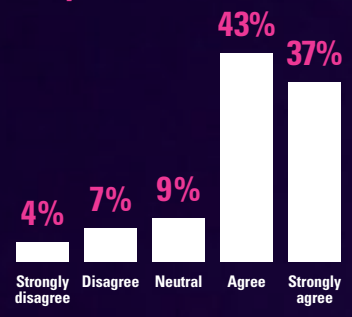


Figure 4: Change in reported work satisfaction (n=95, n*=3)

Figure 5: Media reports and feelings (n=98)

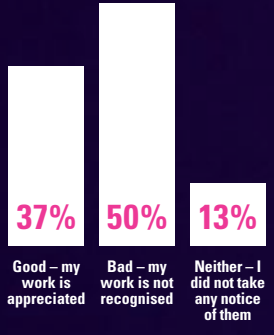
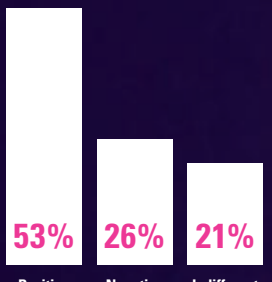


Figure 6: Assessment of media reports (n=98)



and stress staff can become disillusioned but this brought to the forefront of the mind why we work in the NHS every time I left for a day, night or weekend shift. I think I moaned less to my manager as well!" – Band 6 specialist biomedical scientist

However, in contrast to this comment many participants identified a lack of public and institutional recognition and support:

"I feel as though I am making a difference, but that it is not recognised or appreciated outside of my profession." – Band 7 senior biomedical scientist

"I feel we have been overlooked as a profession. Additional resources poured into NHS path labs would have been a much better option and provided long-term benefits for the service and staff. This was our opportunity to shine as a profession and the government took it away from us." – Band 8 biomedical scientist/manager

"No appreciation, no support." – biomedical scientist, grade not specified

"The establishment in which I work has shown little appreciation for the efforts we have made to deliver a full and timely service. It merely complains and blames when results have been delayed." – Band 6 specialist biomedical scientist

The theme of feeling blamed and scapegoated also appeared in comments about media representations, which we will turn to now.

Media reporting and representations of biomedical scientists

We asked participants to report on their perceptions of media reports, and also how these made them feel about themselves and their work (Fig 5/Fig 6).

We followed this second question up with a request for participants to explain in their own words how the media portrayal of diagnostic laboratories and staff working in them during the pandemic had made them feel. We carried out a basic thematic

analysis of the 76 write-in text comments.

The strongest theme that emerged was a thoroughgoing criticism of the media as a whole for misrepresenting and misunderstanding the testing process and the landscape it sits within. **Here are some typical comments:**

"I think the negative focus on the labs' testing capabilities has been really upsetting for our team. The team have adapted brilliantly, go above and beyond but according to media it's never good enough. Really disappointed in the media's representation of the labs during the pandemic." – Band 8 biomedical scientist/ manager

"It has undermined the message I have been giving for the last 40 years on the importance of the biomedical science profession. As a virologist it has been hard to take the ignorance spouted by the media." – Band 8 biomedical scientist/ manager

"It's a joke. Mainstream media should be ashamed." – Band 7 senior biomedical scientist

"Media [has] not helped saying army doing tests and then saying labs have been poor to get the test results back." – Band 5 biomedical scientist

"The media has not indicated the differences between pillar 1 testing laboratories (NHS) & Pillar 2 (Government) lighthouse labs. I feel disappointed that the public may think that the poor turnaround of results from the lighthouse labs is anything to do with the NHS labs." – Band 7 senior biomedical scientist

"The media hasn't portrayed biomedical scientists like me. Instead it has focussed on private labs staffed by non-professional lab workers. If anything this has had a negative impact upon public perception of 'lab staff'." – Band 6 specialist biomedical scientist

This trenchant criticism of the media's understanding of the science and practicalities of laboratory testing was coupled to considerable dismay at the operation of the UK's Lighthouse Laboratories, which received very heavy criticism for a range of perceived flaws and faults:

"Very disappointed, the lighthouse lab poor service is bringing the rest of the profession into disrepute. There is no requirement for staff to have the correct qualifications, HCPC registration, UKAS registration, IBMS training portfolio, or the requirements to follow SOPs or SMIs as required in NHS or PHE labs." – Band 6 specialist biomedical scientist

"Some of the lab staff I worked with the in early days of the pandemic worked 7 days a week. I don't think you would have got this in a lighthouse lab. Also, the media don't distinguish between NHS labs and lighthouse labs, so when there's test result issues (such as delays or inability to get a test) its automatically thought of as an NHS issue." – Band 7 senior biomedical scientist

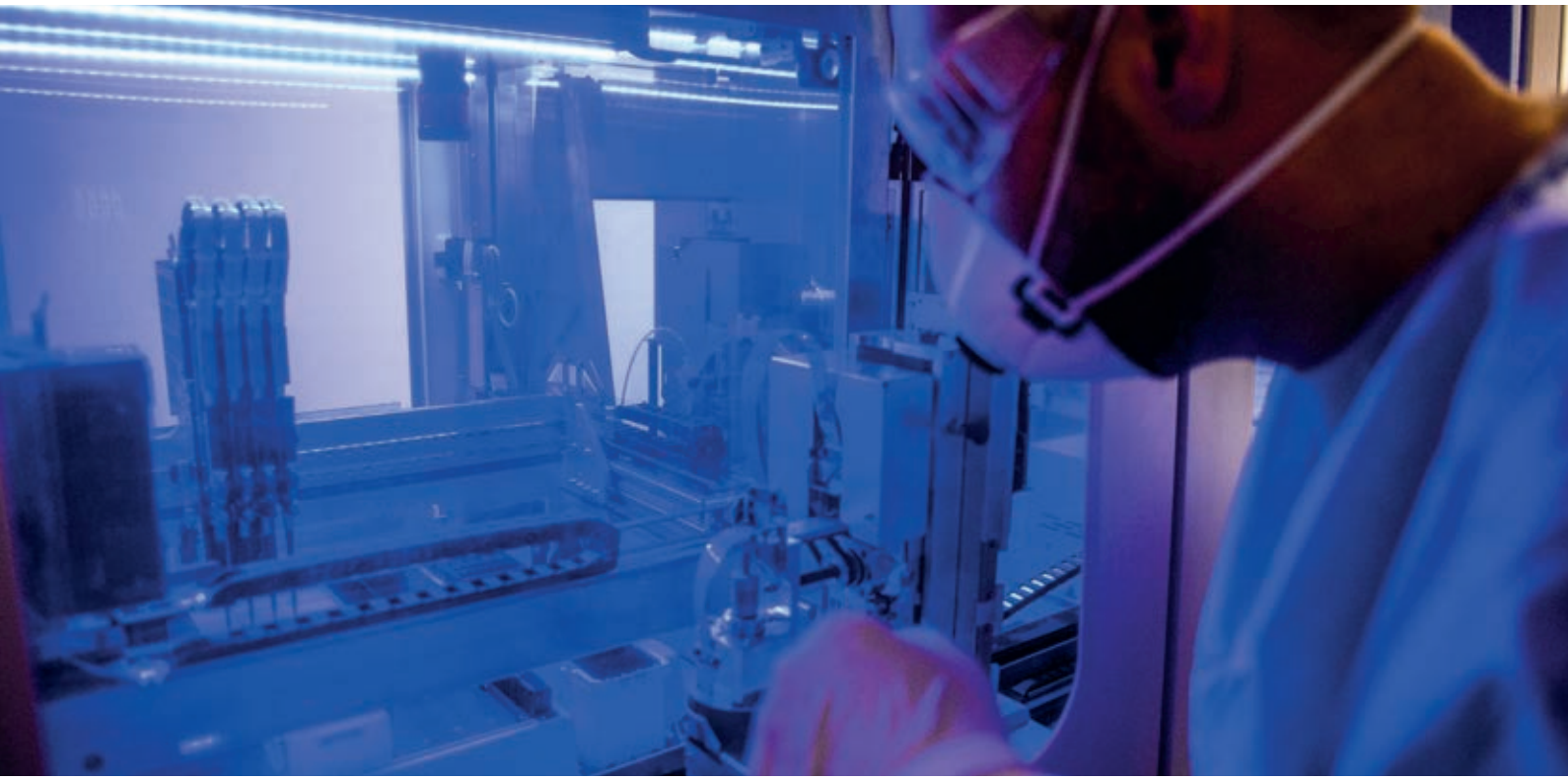
"Annoyed due to the problems with lighthouse labs which has portrayed the real biomedical scientists in a bad light." – Band 7 senior biomedical scientist

"It annoyed me about the lighthouse labs and the use of unregistered members in private healthcare testing. I trained for years to get my registration!" – Band 5 biomedical scientist

"The Lighthouse labs have predominantly unqualified staff and that portrays the profession negatively as the public aren't aware there's a difference. Sampling is not testing!" – Band 7 senior biomedical scientist

"The IBMS has tried hard against the tide to promote the profession, but this voice is drowned out among bad publicity for testing centres employing non- biomedical scientist staff. This is demoralising." – Band 8 biomedical scientist/manager

"There has been confusion in respect of accredited laboratories and the lighthouse non-accredited labs. The IBMS President has done a fantastic job in trying to rectify these



misrepresentations." – Band 8 biomedical scientist/manager

Media representations did, for a small number, engender positive feelings and emotions:

"It has shown the vital role that is played by staff in the laboratory." – Band 8 biomedical scientist/manager

"Proud of the work we do and have been doing before the pandemic (when there was little to no recognition). The media did actually focus on laboratory staff as well as clinicians which I found a welcome surprise." – Band 6 specialist biomedical scientist

"I feel valued, appreciated and fulfilled in my profession." – Band 6 specialist biomedical scientist

However, the vast majority of comments reflected participants' sense that they were not appreciated or recognised. **These are typical responses to the question of "how did media representations make you feel?":**

"Invisible." – Band 6 specialist biomedical scientist

"We're still seen like backstage workers, that no one knows we're there or that we just there to put a test tube in a machine and the results just appear magically in the doctors and nurses hands." – Band 6 specialist biomedical scientist

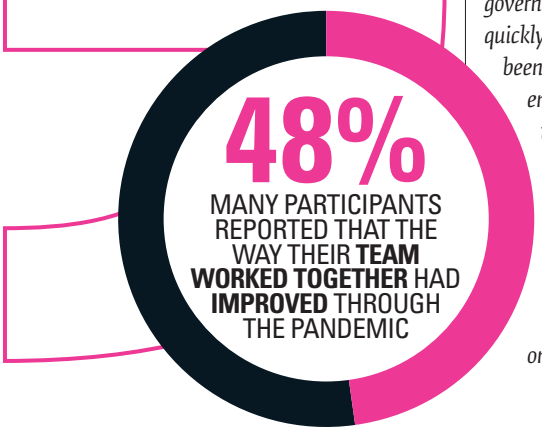
"I work for PHE and found out about the proposed changes in the press. We have been made to feel that we are not fit for purpose, when we have been the backbone of the COVID testing work in the country." – Band 7 senior biomedical scientist

"Not valued. Like we don't exist. Unfortunately, it is not only the media but our own Trust that not once has thanked us for the hard work." – Student/trainee biomedical scientist

"Undervalued and misunderstood." – Band 6 specialist biomedical scientist

"Unappreciated and as though the poor testing situation is the fault of laboratories." – Band 8 biomedical scientist/manager

> *The media* did actually *focus on laboratory staff* as well as clinicians which I *found a welcome surprise*



But more than just a lack of recognition or appreciation, a number of participants felt that they were being blamed and scapegoated for problems in the testing system that were simply beyond their control:

"I feel we are continually blamed about test turnaround times, unavailability of tests, etc. The government have set up new testing facilities very quickly, I feel that this investment should have been made in the current laboratory services to enable us to provide a quicker, more efficient testing and turn around process." – Band 7 senior biomedical scientist

"Mixed NHS with non accredited non professional labs and blamed us for testing failure." – Band 7 senior biomedical scientist

"Delays in turn around times blamed on laboratories is not a fair judgement when

NHS laboratories have been stripped to the bone. With proper investment in technology and people, NHS laboratories could have performed exceptionally well and expanded to take on all of the local coronavirus testing. Turn around times would have been better and result relayed to GP's or health professionals sooner. The media has not given the full story." – Band 6 specialist biomedical scientist

"Diagnostic laboratories have been blamed for lack of testing, delays in testing. The COVID testing has been additional to normal workload with no extra staff. Just blame the labs is what it feels like." – Band 7 senior biomedical scientist

Finally, a recurring theme was the sense of frustration: with the government, the media and the lack of support and equipment:

"I feel frustrated. Although I don't work in microbiology the fact the government decided to invest in private labs to carry out testing rather than improving hospital laboratories has fed into a belief that NHS scientist are not as good as university based staff. This has been followed up in the media. When things have gone wrong the NHS staff have been blamed and our knowledge and expertise is down played constantly. Whilst nursing and medical staff have rightly been celebrated the same hasn't happened with pathology staff." – Band 7 senior biomedical scientist

"Frustrated, we can do the tests but supplies of kits have been purposely limited." – Band 6 specialist biomedical scientist

"It is very frustrating to hear that there was a delay between April and October for the Health Minister at Westminster to respond to the plea and listen to the IBMS advice relating to laboratory investigations, equipment, supplies and the need to work collaboratively with Lighthouse labs and NOT waste public money on project managers who really do not understand the logistics of pre-analytical, analytical and post analysis all needing to be joined up for an audit trail and speedy turn around times." – Band 8 biomedical scientist/ manager

"To some extent [the media] failed to recognise existing NHS lab staff. Frustrating. IBMS President has done a fantastic job in trying to rectify this issue." – Band 8 biomedical scientist/manager

Summary

In summary we can see that these have certainly been testing times for staff in diagnostic laboratories. They have faced considerable changes to their work practices and workloads as a result of the pandemic, and we are particularly grateful to those IBMS members who took time out from such busy schedules to complete our survey. Despite increased workload and pressure at work, job satisfaction remained high and, for some of our participants, actually increased. Many participants reported that the way their team worked together had improved through the pandemic (48%), and a majority (62%) reported that they felt supported by their managers.

In addition, 80% felt that the IBMS had done a good job in representing them and their work to the outside world.

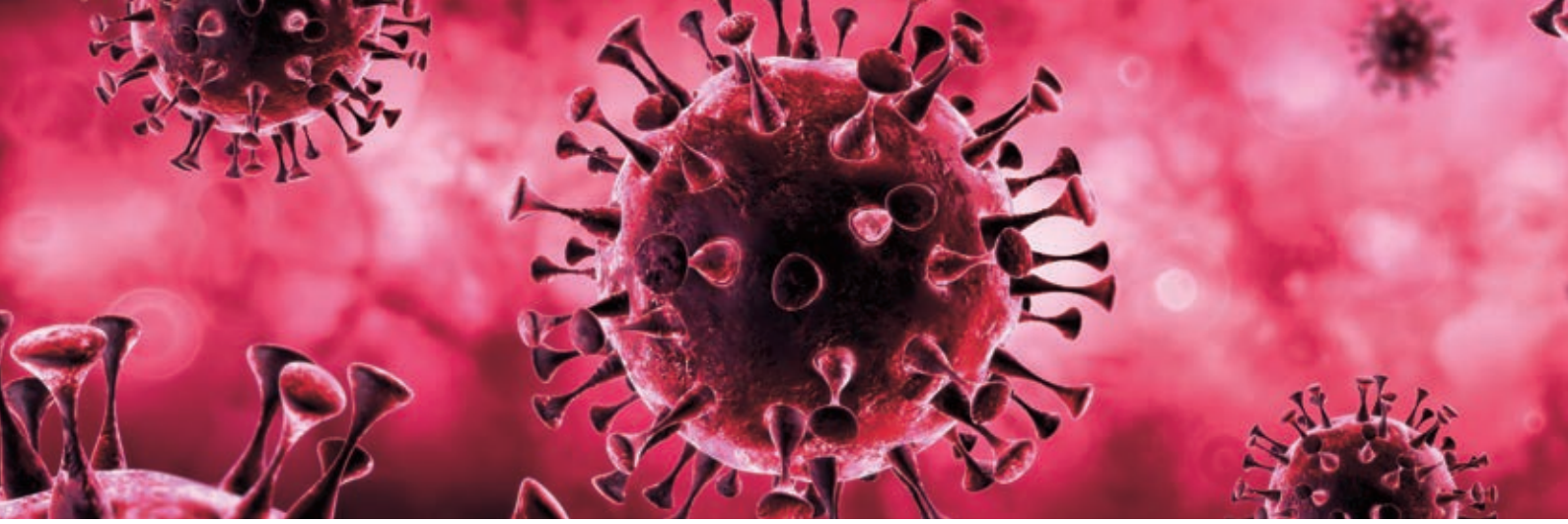
However, it is when we consider the world beyond the laboratory that we find some very significant issues emerging for biomedical scientists. Feelings of a lack of appreciation from the media and the public, despite participants noting that the media represented healthcare workers positively, were expressed by many. The efforts of the IBMS to promote the profession were noted and appreciated and participants commented positively about the regular media appearances of the IBMS President. Nevertheless, this survey found a sense of frustration with the media, the government and external institutions, and a general feeling of the media not understanding their role, the processes they were involved in, and the science behind testing were also expressed by participants. Perhaps most significantly, a number of our participants felt that they were being blamed and scapegoated for things that were simply beyond their control. Given these negative findings it is perhaps surprising that job satisfaction remains so high amongst biomedical scientists and other IBMS members. This highlights the need for further research into this important professional group. IBMS

FURTHER READING

- ✔ **The BMJ** – The UK's public health response to COVID-19 **bit.ly/TestingTimes1**
- ✔ **Gov.uk** - Glasgow COVID-19 Mega Lab Opens **bit.ly/TestingTimes2**
- ✔ **Gov.uk** – Virus tests conducted in the UK **bit.ly/TestingTimes3**
- ✔ **BBC News** – Coronavirus testing lab "chaotic and dangerous", scientist claims **bit.ly/TestingTimes4**
- ✔ **Liverpool Express** – COVID testing: your questions answered **bit.ly/TestingTimes5**
- ✔ **The BMJ** – Covid-19: Government uses lateral flow tests to keep children in schools against regulator's advice **bit.ly/TestingTimes6**
- ✔ **Gov.uk** – Guidance: Student movement and plans for the end of term **bit.ly/TestingTimes7**
- ✔ **IBMS** – COVID-19 resources **bit.ly/TestingTimes8**

Dr Sarah Pitt CSci, FIBMS is a Principal Lecturer in Microbiology in the School of Pharmacy and Biomolecular Sciences and a member of the IBMS Virology Scientific Advisory Panel.

Dr Mark Erickson is a Reader in Sociology in the School of Applied Social Sciences. Both are at the University of Brighton.



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DEALING WITH DEATH IN THE PANDEMIC

Association of Anatomical Pathology Technology (AAPT) council member **Martin Goddard** on how his profession has coped during the pandemic.

The COVID-19 pandemic has changed the world in which we live. Our perceptions of healthcare and its availability has changed as COVID-19 has taken a grip, and the provision of healthcare that we once took for granted is now cherished like never before.

People have taken to the streets to bang pots and pans, supermarkets have made special provisions for exclusive access and those working within care settings have taken extra pride in their roles.

Whilst for many years the focus of healthcare has been on doctors and nurses, throughout the pandemic, many previously unseen professions are coming to the fore, and major news organisations such as the BBC, ITV and Sky have presented the many different staff groups who work in hospitals and other healthcare organisations.

Michelle Williams, a Mortuary Manager from Gloucestershire, says: "Public recognition for nurses and other undervalued professions was and still is exceptional during this pandemic; the focus on them is rightly deserved. What this pandemic has done has changed public perception of frontline staff.

She continues: "As anatomical pathology technologists (APTs) we have historically dealt with a great deal that is unspoken and have got used to being hidden away from the public. Although this is frustrating, we carry on with self-pride, accepting that our recognition comes directly from the families that we have contact with. I don't believe that any of my colleagues would have felt anything but proud of the acknowledgement other professionals are receiving during this time, however, for my profession now to be noticed and heard is something we have all quietly hoped for for a long time."

A conveyor belt

In January, a special BBC report featured a brief interview with an APT working in

the Royal London Hospital, which generated much emotion and discussion.

Why did this happen? As the APT broke down in tears, describing how she felt about the "conveyor belt" situation that this pandemic has produced, the raw emotion of what these professionals deal with on a daily basis was highlighted.

APTs pride themselves on delivering a high standard of personalised and individual care to all of their patients, and whilst the deceased may not be viewed as a patient in a traditional sense, that person is a patient for those who work in the mortuary.

Gemma Norburn, an APT from Essex, says: "Being able to help feels like a privilege and that is something I am grateful for. Often there have been days that are overwhelming, either because there is too much to do than there is time for or because there is too much to cope with emotionally." She adds: "However, I have felt hugely supported by my colleagues. At no time have I felt unsafe, only there has been frustration that the number of deaths has meant we have struggled to keep the high level of care that we pride ourselves on. I don't feel like we haven't achieved that high level, but we have worked tirelessly to do this"

The service provided

Mortuaries are often hidden away from the eyes of the general public in hospitals; for instance, it is still not common to see them signposted within a hospital setting, and nursing staff still often refer to the department as "Rose Cottage" as this is felt to be a softer description.

The taboos around death and dying still exist in the 21st century and the mortuary and its staff remain a hidden part of the patient journey. It is assumed that death and dying is something they are used to dealing with and so are emotionally hardened, but this is not the case. Throughout the pandemic, mortuary staff have been unable to provide the same type of care as before the pandemic. Many normal practices have had to be foregone to reduce the risk of infection and ensure that patients are taken into the care of a Funeral Director promptly. Undoubtedly, the effects of the pandemic have been the hardest thing APTs throughout the country have had to deal with in living memory.

Emma Romeling, Joint Mortuary Manager and Senior APT, says: "As a member of the AAPT Council and newly appointed Lead for Education & Professional Standards for AAPT, all APTs have been affected one way or another, whether they work for the NHS, local authority or as a locum.

"Trainee APTs have had courses or exams delayed and those that were nearing the end of their qualification have had their practical assessments put on hold due to travel restrictions. This hasn't deterred them, though some may have grumbled and rightly so – they have kept going though through all of this with qualifying put on hold until assessors can visit in person. We have nothing but praise for these trainee students and what a learning experience they have had through all of this; they are our future caring, dedicated and professional APTs."

ALL ABOUT THE AAPT

The AAPT was formed in 2003 with support from the IBMS, Royal College of Pathologists (RCPath) and Royal Society of Public Health. It is governed by the elected AAPT Council and has a membership of 330. The Chair of the AAPT is John Pitchers FAAPT and Dr Michael Osborn is the President.

The AAPT is a licensed and member body of the Science Council and has become the first point of contact for all matters relating to mortuary staff and standards. The AAPT has representation on the Human Tissue Authority Histopathology Working Group and the RCPath Death Investigation Group. The AAPT also provides the assessors for the Level 3 Diploma in Healthcare Science (Anatomical Pathology Technology).

> More information at www.aaptuk.org and Twitter @AAPTTweets

The most important goal

Anatomical pathology technologists are not afraid to speak out on behalf of the service they manage and the patients they care for. Although an unregistered profession, this group continues to strive for regulation and consistent high-quality care.

The AAPT cares for the needs of its members and is a voice for the profession, working tirelessly to ensure the development of its members and engagement with the Government through multiple agencies.

The AAPT recognises that statutory regulation of this profession is the single most important goal to achieve.

"Statutory regulation provides two-fold importance," says Robert Cast, an APT from London. "It stands as recognition of the standards we as APTs set for ourselves and our patients, on par with any other profession already regulated, such as biomedical scientists and paramedics.

"We, as a nation, put our faith in the training and expertise of professionals when we call an ambulance or order a blood test. The same is very much expected and shown by APTs looking after your loved ones. Why should we not deserve the same statutory regulation and registration?"

He concludes: "It also provides a level of security and accountability to our profession, to ensure that your loved one is being cared for by a trained professional who meets regulatory standards and is accountable to regulatory bodies, who you can trust with the care of your deceased loved one and know they will be given the same dignity and care as they received in life." BMS

IMAGES: ALAMY/ISTOCK

WOMEN IN SCIENCE

To mark International Women's Day on 8 March, **Tahmina Hussain** asked four colleagues three questions about gender and the workplace. Here's what they said.

TAHMINA HUSSAIN
Job title: Biomedical Scientist Team Manager and Blood Sciences Training Officer
Workplace: The Christie Pathology Partnership

ZOÉ ANDREWS
Job title: Healthcare Scientist Assistant. Currently studying biomedical science at Ulster University
Workplace: Princess Elizabeth Hospital, Guernsey

VALERIE BEVAN
Job title: Chair of the British Society for Microbial Technology
Workplace: Honorary Teaching Fellow, Lancaster University Management School

NICHOLA LAWRENCE
Job title: Principal Biomedical Scientist Advanced Practitioner in Morphology
Workplace: Royal Stoke University Hospital

CHARLOTTE FELTON
Job title: Senior Healthcare Technical Officer
Workplace: Manchester Blood Centre

WHY DO YOU LIKE WORKING IN SCIENCE?

TH I have always enjoyed studying human biology as I am fascinated by how the anatomy and physiology of the human body allows us to better understand health and disease. I've also always known that I wanted to work in a hospital to help patients, so this aspect, combined with my appreciation for biomedical science, allowed me to work in pathology whilst enabling me to apply the knowledge and skills I have gained during my studies.

ZA I enjoying being able to learn new things, and different processes. Science is forever learning, always changing and it helps you learn adaptation skills.

VB Working in science provided me with an exciting career, as well as knowledge and many skills. Having retired from paid employment, I remain involved in the British Society for Microbial Technology and in current political issues as well as editing a car magazine – all because of my career in science.

I experienced working throughout pathology, choosing microbiology because of its variety and eventually moving into management and directing a department. I gained an MSc, an MA and a PhD researching issues women face that hinder them progressing to the top jobs. My PhD led to publishing a book and related papers. More recently my articles have questioned government approaches to testing for COVID-19.

NL I like that science is governed by logic and rules, but in my current job I also have some subjective interpretation by reviewing blood films and bone marrows. This means that I can spend my day interpreting results with set reference ranges, but then I also review how the different populations of blood cells appear down the microscope and help make a diagnosis that will affect patient care. No two days are the same – each day is varied and exciting.

CF I love working in science because I am involved in something where I am making a positive difference to patient lives – in my current role I am adding to the supply of quality and safe blood products for hospitals around the country – something which requires great attention to detail. Whilst there can be elements of pressure, I am able to maintain professionalism.

WHAT CHALLENGES DO WOMEN IN SCIENCE FACE?

TH Women in science have come a long way and have made significant contributions to the field, however, I feel there are still some challenges women face. One of the biggest challenges is the stereotyping of women.

ZA I honestly believe we are judged on whether or not we have or are going to have children. I think that impacts whether we are considered for positions or promotions. Unconscious bias is a common theme concerning women in science.

VB Working in the man's world of science, women still face similar challenges to those I faced. However, I think the main difference now is the uncertainty that women face in their careers. Working in the health service for me was a job for life. Now, employment is unpredictable and opportunities for funded study have shrunk drastically. Technological advances are now on a different scale, but keeping up to date remains paramount.

NL I think, historically, women have felt that they might have had to choose between a family and a career but the NHS is very good at allowing flexible working arrangements, which mean that women can enjoy both and they don't have to sacrifice one for the other. This means they can choose a career in science and be assured that advancement is available to them.

CF Women and girls face a variety of challenges throughout their careers in science. One that is widely known is the constraints that are put on women consequently after having children. Time away from the workforce because of maternity leave means that women miss opportunities that aren't necessarily always provided when they return to work.

WHAT COULD BE DONE DIFFERENTLY TO IMPROVE THINGS?

TH Continuing to do outreach work and engaging young girls and women of the younger generation will inspire them to be ambitious and provide them with opportunities to gain insights into exciting and unique careers. Clarity and implementation of the training and career pathways for scientific roles is extremely important. Active mentoring can also help provide realistic insights to scientific careers and access to networks, which can help younger girls and women recognise their talents and shape the route to the career of their choice. I also think encouraging a greater diversity is necessary, as education in science isn't always within reach for all females and, therefore, specialist training in the field cannot be accessed, regardless of desire. Finding ways to provide opportunities and engaging them will help to make things more inclusive and attract more talent into the pool of women in science. Also, providing opportunities for women with families, such as part-time or flexible working, can help towards creating a solid work–life balance and allow them to enjoy both a career and a family. We need to break down the barriers that women face and encourage them to develop their skillsets and support career progression.

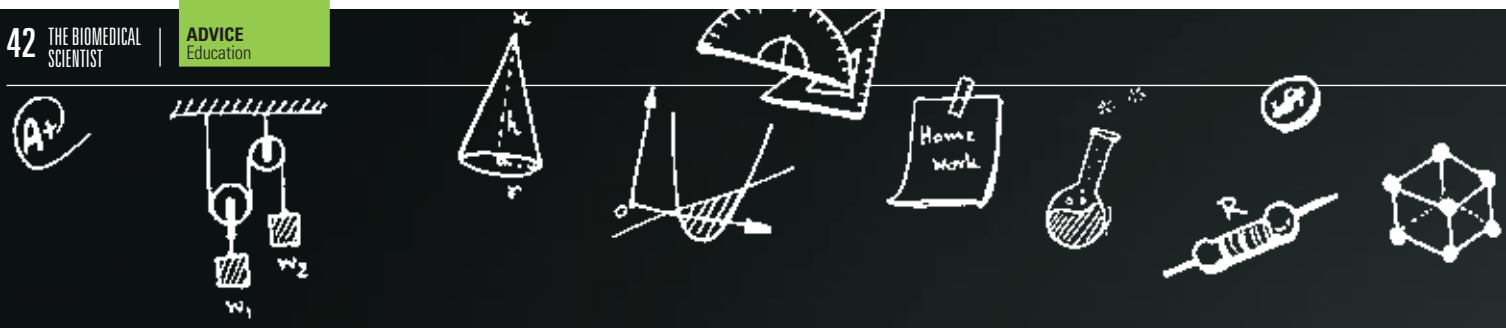
ZA I think laboratories and management should be more open to flexible working policies and job shares for women that do have children. I know that I have faced discrimination from a previous workplace for requesting a shift pattern change. When a workplace recognises an employee's need and supports them it makes a real difference.

VB Government initiatives improving opportunities for women in science have ceased – this needs reversing. Schoolgirls need to be encouraged to love science and aspire. At work, women tend to be uncomfortable talking about the issues they encounter, so both women and men should be encouraged to discuss difficulties faced. Lastly, my advice is to become an expert and persevere.

NL Women no longer have to settle for roles that stereotypically have been associated with a particular gender. They can choose to be anything they want, if they work hard and apply themselves. I think it's important that we engage with girls at a primary school age and help them realise their full potential. Introduction to STEM days should be encouraged, so they can see the full choice of careers available to them.

CF It is critical to support women. More emphasis needs to be put on allowing women to be mothers and also being able to have a successful career without hindering future development – this should be an attitude reciprocated by managers allowing flexibility. Many women are lost from pivotal roles in science due to the guilt that consumes them because they are struggling to keep up with the demands of motherhood and trying to strive in environments that don't support them. BMS

IMAGES: ISTOCK/SHUTTERSTOCK



LEARNING IN LOCKDOWN

Teaching children during lockdown can be challenging. Associate Professor for Engagement in STEM, educator, and parent **Martin Khechara** advises.

Well, here we are again. At the time of writing, it's lockdown number three. We are limiting contact with other people, panicking when we have forgotten our facemask when we go shopping for food and trying our best to keep up with Joe Wicks on YouTube. We are all working hard doing extra hours to get the job done and then of course the schools have been closed. We have unwittingly become teachers again and our children are looking to us to help them study. Most of us have no teaching experience and the very prospect of stepping into those shoes is daunting, but it doesn't have to be hard. With patience, organisation and a bit of imagination it can be as rewarding for parents and carers as it is for younger people.

I am an educator and have worked in higher education teaching biomedical science for 13 years. Like many people now in higher education, I work from home. I also have two fantastic boys who have been learning at a distance through the school closures and even knowing a thing or two about education doesn't make the whole process of home schooling easier, especially when coping with a busy work schedule. Hopefully, the schools will be reopening in the coming days, but with COVID-19 outbreaks in schools set to cause further closures, here are my top tips for coping with home schooling in the lockdown.

Make a special space to work in, if you can

Working from the kitchen table is no good for anyone. If you have a space to make into a place for learning then do it. It means your young learner has his or her own place for work, can be supervised, it isn't in your workspace and you don't have to tidy up before teatime every day.

Make a routine and set the rules

It is important to set expectations right from the start. Routine is essential for getting the best out of learning at home. Two to four hours of concentrated learning a day is plenty, so make a schedule. After all, with breaks and disruptions this is what some children get at school anyway.

Do not be afraid to talk to teachers

We are not experts in the national curriculum, but teachers are. If you need advice, speak to your child's teachers. They are there to help and can give you loads of good guidance about how to get the most out of lessons at home.

Get outside; the world is the best classroom

Learning is all about context and doing. Exploring subjects first hand, especially for the sciences, is invaluable. The world is your laboratory and your classroom. Cooking cakes is chemistry and the natural world is just outside the front door. Learning is all around us and the concepts that are taught particularly in the subjects of science, technology, engineering and maths (STEM) are literally at your fingertips. Go for a drive and talk about acceleration and forces, go for a walk to look at natural adaptation to different environments and animals and

stay up late to look up and wonder at the universe. With just a bit of imagination you can become a better science communicator than anybody on the BBC.

Do not re-invent the wheel:

During the lockdowns there has been so much content made to help people learn at home, so use it if you can. Much of it is produced by professional educationalists and is curriculum-linked. A good example is the STEM Response Team at the University of Wolverhampton who have been creating content for people to use at home since the first lockdown.

Please be flexible

Although we might have a timetable and a lovely organised workspace, things can go wrong. Life gets in the way; it is just how it is. Don't worry if you have to have time-out. Go for a walk and switch off, be together and just come back to it. There's always time to catch up later and we are under enough stress as it is already. Just make sure if live teaching online is involved that you might miss, you let your teachers know you cannot attend. It's only polite after all, and in the world before COVID we would send a note in, wouldn't we?

"With just a bit of imagination you can become a better science communicator than anybody on the BBC"

Do not put yourself down

Remember you are doing your best. Try not to feel you are not doing a good job. Don't worry if you have to look up information for simple things you should already know, or you can't think of an elegant way to explain something. Just remember, you are spending time together. Enjoy it; after all when do you get to spend this kind of one-to-one time with each other? Even if it does feel stressful now, the time you spend together will pay dividends later.

It's a different world for us all and we are all coping in different ways and for those of us who are supporting young learners it can be a daunting and sometimes difficult experience. There is loads of help out there and you are not alone. It's not always going to be like this and once it is all over, although there have been so many negatives the positive is that we have been there for the children and have had a true hand in their future. IBMS

Martin Khechara is a Fellow of the IBMS and British Science Association Media Fellow for 2020–21

IMAGES: ISTOCK/SHUTTERSTOCK

JOURNAL-BASED LEARNING EXERCISES

Please select your choice of correct answers and complete the exercises online at: **www.ibms.org/cpd/jbl**

DEADLINE WEDNESDAY 2 JUNE 2021

Stop testing for autoantibodies to the VGKC-complex: only request LGI1 and CASPR2.
Michael S, Waters P, Irani SR. *Pract Neurol* 2020; **20** (5): 377–84. doi: 10.1136/practneurol-2019-002494. Assessment No: 030521

01	Direct LGI1 and CASPR2 antibody testing should be performed as a second-line reflexive test after a positive VGKC antibody result.	11	The VGKC antibody radioimmunoassay is not an effective screening test for the key pathogenic autoantibody species as it misses ~15% of LGI1 or CASPR2 antibodies.
02	CASPR2 antibody-positive patients often have neuromyotonia or Morvan's syndrome, and some have forms of limbic encephalitis as well as neuropathic pain syndromes.	12	LGI1 antibodies are prominent in patients with limbic encephalitis, found in many with Morvan's syndrome, and in a few with neuromyotonia.
03	CASPR2 is a neurexin family protein with a large intracellular domain.	13	LGI1 or CASPR2 antibodies typically show robust cell-surface reactivity to the native, mammalian target and strong data support their *in vitro* and *in vivo* functionality.
04	Patients with double-negative VGKC antibodies respond strikingly to immunotherapy.	14	In the largest such series, testing of ~100,000 samples yielded 3910 (~4%) samples with VGKC antibodies. Only 256 of these 3910 (6.5%) showed concomitant LGI1 or CASPR2 reactivities.
05	LGI1 and CASPR2 antibodies have strong and specific clinical associations, and unequivocal clinical value in accurately detecting treatable syndromes.	15	Double-negative VGKC-complex autoantibodies occur in ~5% of healthy controls, complicating their interpretation especially with widespread testing.
06	Patients with LGI1 and CASPR2 autoantibodies respond poorly to immunotherapy.	16	Double-negative VGKC antibodies appear to account for ~85% of routine VGKC antibody requests.
07	HLA-DRQ1*07:01 and HLA-DRQ1*11:01 were found to be over-represented in patients with LGI1 autoantibodies.	17	Around 5% of patients with LGI1 antibodies show a highly specific seizure semiology termed faciobrachial dystonic seizures.
08	Double-negative VGKC antibodies usually target extracellular epitopes and lack pathogenic potential.	18	VGKC antibody titre is a clinically reliable measure.
09	The above evidence strongly argues against VGKC antibody testing in routine clinical practice.	19	Patients with LGI1 antibodies are typically aged over 60, with a 2:1 female to male predominance.
10	Live testing remains biologically intuitive; it has a higher sensitivity and specificity, and can resolve samples that routine commercial kit testing assesses as indeterminate.	20	Patients with CASPR2 autoantibodies are very often elderly males.

REFLECTIVE LEARNING

01	Review the relative sensitivity and specificity of the VGKC complex *vs.* individual CASPR2 LGI1.	02	Reflect on your own laboratory's testing practice and the implications of this in diagnosis.

DEADLINE WEDNESDAY 2 JUNE 2021

Improving the processing time for the detection of carbapenemase-producing Enterobacterales using an evolving algorithm.
Cafferkey J, O'Connor M, Doyle D *et al. Br J Biomed Sci* 2020; **77** (2): 97–100. doi: 10.1080/09674845.2019.1704357.
Assessment No: 030121

01	The article states that all carbapenem-resistant Enterobacterales produce carbapenemases.	11	The introduction of the algorithm in 2017 resulted in final reporting processing time of CPE decreasing by 83%.
02	During the retrospective review reported in the article, the predominant carbapenemase was OXA-48 (*n*=117).	12	According to the authors, recognition of OXA-48 production is difficult even though these enzymes strongly hydrolyse carbapenems.
03	The study highlighted limitations in the detection of CPE in the laboratory using the methodology in place in 2011.	13	The authors acknowledge that molecular methods are limited in their usefulness in detecting novel variants.
04	The study reported that between March 2017 and December 2018 the mean of recorded processing times for final reporting was 17.2 days.	14	The laboratory employed alert criteria of >0.5 mg/L for meropenem and ertapenem for *Enterobacter* species when using the BD Phoenix AST analysis software system.
05	The authors state that the cornerstone of their current algorithm is confirmation of relevant genes using molecular techniques.	15	The flow diagram included in the paper shows that for clinical isolates the alert criteria for both meropenem and ertapenem must be met.
06	In 2017 the laboratory's methodology for rectal swabs included a pre-enrichment stage using tryptone soya broth.	16	The report highlights that sub-optimal detection of OXA-48 producers has been reported when using the modified Hodge test.
07	The introduction of the algorithm in March 2017 led to an 89% reduction in average processing times for final reporting.	17	The authors acknowledge a limitation was the inability to calculate median processing time for final reporting of CPE from clinical isolates.
08	During the retrospective review reported in the article, the impact of the methodology was determined using specimen processing times.	18	The carbapenem inactivation method test was incorporated into the detection algorithm to confirm the presence of carbapenem production previously detected.
09	The authors noted that they expect to see an increase in the proportion of CPE detected via clinical specimens as they move toward full implementation of CPE national screening guidelines.	19	The authors state that high-level temocillin resistance is recommended as a marker for OXA-48 production.
10	The study noted that prior to March 2017 the median processing time for final reporting of all eligible CPE isolates was 20 days.	20	During the retrospective review reported in the article, two or more CPE isolates were recovered from 18 specimens.

REFLECTIVE LEARNING

01	Reflect upon the methodologies employed within your laboratory to ensure that testing methods in current use remain appropriate, effective and in line with current guidelines and research.

MY IBMS NEWS

PROFESSIONAL DEVELOPMENT

IBMS MENTORING PROGRAMME

The IBMS announced the launch of its new mentoring programme in February.

It has a bespoke mentoring platform that makes creating and managing mentoring relationships a smooth and practical experience.

The programme is for any IBMS member looking for support in their career development (mentee) and any CSci FIBMS member who is willing to help others with their development (mentor).

During the mentoring process, the mentor will share their personal skills, knowledge and experience with the mentee to enable them to explore their personal and professional situation.

It is a two-way process in which the mentor and mentee work together to set and achieve predetermined goals and objectives.

Mentoring is a way of enabling the mentee to gain the skills, knowledge and confidence to perform at a higher level, and of giving them access to impartial, non-judgmental guidance and support.

The IBMS believes in the powerful impact mentoring can have on an individual's professional growth and hopes the programme will enable IBMS members to reach their full potential.

Mentees will need to register, have their registration confirmed by IBMS staff, and then set up their profile. When they have completed their profile they will be matched with a suitable mentor. Once mentors have accepted, they will contact mentees to discuss how to move forward.

To sign up to the programme you will need to create a new account, as it is separate from the IBMS website.

→ For more information, visit ibms.onpld.com

MEDIA

IBMS member support video

As the professional body for biomedical scientists and laboratory staff, the IBMS has been striving to provide the best coverage, guidance and support for members throughout the pandemic.

It has been a difficult period for the profession and the institute has pushed for the voices of its members to be heard, while also providing the most appropriate services and support.

As your professional body, the IBMS is extremely proud of all the hard work you have done over the last year and hopes to continue to provide a voice for you now and in the future.

The Institute has published a video online that outlines some of the progress the IBMS has made on behalf of members.

→ Visit bit.ly/3tJZ8Cy

SCIENCE COUNCIL

GLOWING CPD CAMPAIGN

Despite 2020 being the toughest year yet, science professionals have adapted remarkably to the challenges presented.

The Science Council's new Glowing CPD campaign aims to showcase those members who shone with their CPD in 2020, against the odds.

The IBMS is calling on members who are also Science Council registrants to promote how biomedical scientists adapted to undertake amazing CPD throughout the lockdown.

Entries are now open and application forms are online.

→ For details, visit bit.ly/3qbT4Rt

AWARDS

NOMINATE BIOMEDICAL SCIENTIST OF THE YEAR

Nominations for the next Biomedical Scientist of the Year are open, with entries due to close on 15 March.

The IBMS is proud to once again sponsor the Advancing Healthcare Awards category for Biomedical Scientist of the Year.

The award celebrates an exceptional biomedical scientist who has used their skills and expertise to advance practice in an innovative and impactful way, making a real difference to patients' lives and inspiring those around them.

The prestigious Advancing Healthcare Awards recognise and celebrate the work of allied health professionals, healthcare scientists and pharmacists and those who work alongside them in support roles, leading innovative healthcare practice across the UK – now more than ever it's important to recognise, celebrate and reward this work.

You can nominate yourself or a colleague through the awards website until 5pm on 15 March.

Nominees must be an HCPC-registered biomedical scientist practising within the UK and show evidence of: measurable achievements; leadership and team working; impact on patient care.

→ **For more information and to nominate, visit ahawards.co.uk**

PODCAST

NEW IBMSPOD LANDS

Around the same time that this magazine lands on your doorstep, a new episode of the IBMS podcast will be live.

Each episode features experts from the field discussing their research and talking about the latest developments.

The latest features Consultant Healthcare Scientist Jo Horne discussing topical issues including mentoring, wellbeing, leadership and compassion.

To listen to the new episode, and all previous instalments, visit

→ **bit.ly/3d0rSkH**

SURVEY

PROVISIONS FOR RAPID ONSITE EVALUATION

The British Association of Cytopathology (BAC) is working with the Royal College of Radiologists to establish a collaborative national framework for Rapid Onsite Evaluation (ROSE) across the UK.

In order for the BAC to provide tailored ROSE training needs, they are seeking the views of IBMS members who work in cellular pathology to complete a short survey.

Feedback will be used to help them understand how ROSE is currently utilised in the UK.

→ **To take the survey, please visit: surveymonkey.co.uk/r/JKSGRG5**

OBITUARY

Bev Groom – an inspiration

It is with deep sadness that we wish to inform you of the death of an IBMS member and colleague who passed away after losing her battle with cancer. Bev Groom passed away on 20 November 2020 at the age of 52.

Bev worked in pathology laboratories throughout her career. She started as a trainee biomedical scientist in September 1987, working in the pathology laboratory at North Tees and Hartlepool Hospital NHS Trust in Stockton on Tees.

Bev specialised in mycology, something that she went on to teach at both North Tees and South Tees.

Having taken some time away from the laboratory following the birth of Kirstie and James, she continued her passion of supporting patients.

In 2008, Bev joined pathology scientists at the James Cook University Hospital and deservedly gained promotion to a Senior Biomedical Scientist within the microbiology department at South Tees Hospitals.

Bev's dedication to her role was demonstrated through her willingness to work despite her own poor health during the first wave of the pandemic, often staying late and supporting colleagues. Unfortunately, her ill health took Bev away from the job and people she so loved.

Bev formed many friendships over her years working at North and South Tees pathology laboratories and was considered a great teacher and a fantastic role model. She was an inspiration and will be greatly missed by all.

IMAGES: SHUTTERSTOCK/ISTOCK

HERE TO HELP

A SAFE SPACE FOR EVERYONE

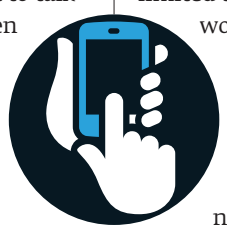
Hugh Baillie-Lane, Education Officer at the IBMS, outlines the latest resources and work around wellbeing for members.

In the Education Team, we try to provide as much help to colleagues as we can. We have formalised this support recently with the creation of the IBMS Support Hub, which aims to provide targeted support and advice regarding IBMS qualifications and processes. We have also identified a need for more personal support and on 29 January we launched our Wellbeing Forum.

The intention of the Wellbeing Forum is for it to be a safe space for all of us to share how things are going, any difficulties we are facing and how, or if, we are coping. A shared willingness to discuss our mental health and wellbeing can be helpful, especially at this difficult time. We want it to be open, safe, and relaxing for all attendees. Contributions are not required, and we are happy for people to join with cameras and microphones off too. We will not record the sessions.

During the first session, colleagues across the country shared their experiences of the past year, and the strategies and mechanisms that have helped to create some sense of normality, and some space away from the pressures of the pandemic and the laboratory. We heard of the difficulties of keeping morale high in the laboratory, managing staffing levels, and the fact that people who do not work within the service only ever want to talk about the pandemic with us, when all we want is a break from it!

We discussed the value of finding space away from the noise and the stresses of work and ways to do this. For some, the support of apps has been extremely beneficial. Apps such as Headspace (free for those with an NHS email address), or the CALM app, were two that colleagues had found helpful for relaxation and meditation. Others had discovered that reading a book or magazine was an opportunity to escape for a period and to relax. We also discussed the benefits of creating an environment, perhaps at home, where discussion about the pandemic was limited to ensure that we can separate work from the rest of life.



One laboratory has set up a mental health group utilising Time To Change resources available online. They have also created a mental health noticeboard where resources, signposting and guidance can be placed, as well as positive stories and inspiration. Perhaps this is something others already do – we would love to hear your stories of how you, or your colleagues, are supporting each other.

We are your professional body, and we will do what we can to support you during these difficult times. We will be continuing our Wellbeing Forum regularly, perhaps every couple of weeks, to check in with colleagues across the country.

In the meantime, why not take a look at the NHS Employers website, or Time To Change, for resources and suggestions for providing support in the workplace. Alternatively, you can contact Mind or the Samaritans for support too.

It's good to talk.

IMAGES: ISTOCK

Career Progression is within EVERYONE's grasp

Why TDL Group should be the next career step for Biomedical Scientists

TDL Group is committed to delivering a high quality service to it's patients. That means a high quality training pathway is required to support and develop staff and their careers within the lab.

We provide IBMS support staff, registration and specialist portfolios in all disciplines and currently have 50 registration portfolios and 29 specialist portfolios ongoing. We also support expert level qualifications such as the IBMS Diploma of Expert Practice and our education faculty annually assigns funding to staff wishing to complete Master's degrees and post-graduate study.

In 2019, our bespoke online learning platform 'Sonic Learn' was launched, which supports continuing professional development with a broad range of courses covering management, leadership and IT skills in addition to specialist scientific knowledge. TDL Group is also proud to support staff moving into higher level roles within the company - providing a mentorship scheme and also a highly regarded "Preparing to Lead" programme to fully develop our future senior managers.

The organisation is keen to reward staff with progression into more senior roles - this is excellently demonstrated by Aristides Mapouras who first joined TDL Group whilst working on his IBMS registration portfolio. He has progressed

through his specialist portfolio, Master's degree and is now Deputy Head of Clinical Biochemistry at Northwick Park Hospital.

"I began at TDL Ealing as a volunteer MLA in 2009, trying to gain experience whilst trying to become a Trainee BMS. I was fortunate enough to have the opportunity to train and become HCPC registered. I then moved to the Automation Laboratory at TDL/UCLH's 60 Whitfield Street site. Here, I expanded my knowledge and skills with encouraging managers who were able to assist me in completing the IBMS Specialist Diploma and gain specialist knowledge by rotating into the HSL Special Chemistry laboratory, which is part of TDL Group. I was then offered a fully funded MSc in Biomedical Science to help develop my skills further and during this time worked in the newly built HSL Halo facility, our flagship hub laboratory in MedCity, central London, where I could complete my project using our new state-of-the-art equipment.

In 2018 I was promoted to Senior Biomedical Scientist and Training Officer, once again at our essential service laboratory for UCLH at 60 Whitfield Street. With support from our Head of Scientific Training and discipline training committees, I began assisting others in their goals and training needs.

A year ago I became Deputy Head of Department in Clinical Biochemistry at Northwick Park Hospital which is my current role. It has been very challenging, particularly in the current climate of the pandemic but has provided me with a wealth of new experience and knowledge. As with all my other roles, I am given support to ensure I am developing my skills and carry out my work to the best of my abilities.

The company has supported my development every step of my journey so far, providing me with the tools and opportunities to develop my career. I am always eager to ensure my experience and personal advancements are used to support others in their development as well."

Both TDL and HSL are highly successful and growing organisations, with great career prospects, flexible working patterns and an excellent salary / benefits package. For further information, please visit our career pages at:
HSL - **www.hslpathology.com** or
TDL - **www.tdlpathology.com**

MY LAB

THE LAB DOWN THE LONG CORRIDOR

Specialist Biomedical Scientist **Cherie Beckett** gives a guided tour of her microbiology laboratory in the Princess Alexandra Hospital, Harlow.

Working in a diagnostic clinical microbiology laboratory right now might feel like it has been engulfed with COVID-19 testing, but the department is about so much more. We processed almost 50,000 swabs for SARS-CoV-2 in our small laboratory in 2020, but our total number of samples processed exceeded 320,000.

Our microbiology laboratory is situated in the Princess Alexandra Hospital in Harlow, Essex. We serve a local population of approximately 350,000, with an extended catchment of 500,000 and growing. Being a smaller laboratory, many of us are blessed with being able to work within all of our sections, which are largely divided into bacteriology, serology and now our expanding molecular section. Last year brought fresh challenges in the laboratory that we could have never foreseen. From referring 100% of our COVID-19 swabs in the very beginning, our department has successfully brought the majority of COVID-19 testing in-house, grown a strong PCR team and evolved our ways and times of working. We are currently planning an expansion of our molecular suite, which pre-pandemic comprised largely of only chlamydia and gonorrhoea PCR testing.

I could blind you all with statistics on the various achievements of our laboratory, but what really shines in our department is the team. These team members work in a hidden department, down a long pathology corridor, and work within a hidden profession. The pandemic has shone a light on microbiology, but there is still a long way to go. The nature of the work that we do means that it is often hidden from the public eye; working with biological specimens and sometimes in containment facilities, it doesn't always make for an appropriate environment to invite the public in, or even many of the wider staff in the hospital. And yet though you may not see us, we are here, providing a 24/7 service, 365 days of the year assisting in the diagnosis of sepsis, bacterial meningitis, urinary tract infections and much, much more.

Pre-pandemic we enjoyed hosting a Harvey's Gang tour to a paediatric oncology patient to demystify the science behind why they had so many pathology tests. What was refreshing to see and helped staff realise that they do make a difference was that the young boy came to the department in tears, so afraid of his next virology blood test, but left in high spirits. I really am proud to work for a team that is so patient-centric, with every sample representing a patient. We might never meet our patients, but they are always at the forefront of our minds.

Lastly, 2020 ended on a high with spectacular news that our esteemed Director of Infection Prevention and Control, and Microbiology Consultant, Dr Shico Visuvanathan, was awarded an MBE in the New Year's Honours List. Dr Visuvanathan humbly dedicated and accepted this award as a reflection on the wonderful infection prevention and control, and microbiology teams that she works alongside, and I feel that this really does reflect the effectiveness of our multi-disciplinary team, from administrative and clerical, to medical laboratory assistant, to biomedical scientist, to public health consultant to professor – all roles are valuable and truly make a difference. BMS

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I KNOW WE'RE DELIVERING ACCURATE RESULTS

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Roche Diagnostics gives you The Power of Knowing that you're providing accurate information to support clinical decisions today, so your patients can experience a healthier tomorrow.

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