

ANNUAL REPORT AND FINANCIAL STATEMENTS

for the year ended 31 December

2022

A photograph of a young woman with long blonde hair and glasses, wearing a white lab coat, smiling warmly. She is in a laboratory setting with shelves of equipment and bottles in the background. The image has a teal overlay.

*Nurturing the future leaders
in biomedical research*

The Institute was founded in 1891 and for the next 85 years played a vital role in the development of the laboratory aspects of preventive medicine as an independent research institute in the UK. Since the 1980s the Lister Institute has been a highly successful trust awarding prestigious research fellowships, which in 2003, were revised to become Prize Fellowships. The Fellowships continue to deliver the Lister Institute's strategic aim of nurturing the future leaders in biomedical research.

Over its history, the Lister Institute research staff and Fellows have made discoveries that have made significant impacts on human health. For example,

Dr (later Dame) Harriet Chick discovered that a deficiency of vitamin D was the cause of rickets. Several researchers were involved in research into blood groups thus making blood transfusion safe. Dr (later Professor) Leslie Collier found a way to produce a form of smallpox vaccine storable at warm temperatures so it could be used all over the world and ultimately led to the eradication of smallpox. Dr (now Professor Sir) Alec Jeffreys discovered DNA fingerprinting for use in solving crimes and paternity cases. Our current Fellows continue to build on this illustrious past and are making discoveries that will impact our health and medicine in the future.

CHAIRMAN'S INTRODUCTION

for the year ended 31 December 2022

I am pleased to present the Lister Institute of Preventive Medicine Annual Report for 2022 on behalf of the Governing Body.

This is the first Annual Report that I have the honour of presenting as Chairman of the Lister Institute, having taken over as Chair at the AGM in September 2022. I am delighted to have been appointed as Chair as I have a deep fondness for the Lister Institute and its spectacular track record in supporting young talent. If you would like to read more about my thoughts about the Lister Institute and how it can transform talent, please see page 7.

I have taken over at a good time as 2022 was a notable year for the Institute with it awarding eight Lister Prizes of £250,000, the highest number it has ever awarded. The Governing Body agreed to the increased number in part as something the Lister could do to mitigate for the impact of the pandemic on young researchers. It also gave 35 studentships and held an excellent Annual Meeting in Oxford.

As always, our Fellows and former Fellows continue to conduct excellent research, publish in high impact

journals and to win awards and recognition for their work. This year, particular congratulations must be given to Professors Kate Storey and Paul Lehner who were made Fellows of the Royal Society; Professor Nick Lemoine (past SAC member) who was awarded the CBE for services to Clinical Research; and to Professor Ravi Gupta who was awarded the Translational Microbiology Prize and Dr Tanmay Bharat who was awarded the Fleming Prize by the Microbiology Society.

It is with sadness that I have to report that Edward Guinness CVO died at the end of 2022 aged 98. Edward was the representative of the Guinness family on the Governing Body for 32 years from 1969 to 2001 and was said to have found it 'a most enriching and rewarding experience'. He had a crucial role in steering the Institute through its change from being a physical institute undertaking research and producing vaccines and other products to being an organisation which awards prestigious research fellowships. I am also sorry to report that Lawrence Banks, another former Governor (2001-2006) passed away this year as well.

We held a very successful Annual Meeting at Corpus Christi College in Oxford. We had talks from both 2022



and 2021 prize winners. Professor Frances Platt gave a very inspirational talk and Professor Sir Alex Markham shared his words and wisdom as our departing Chairman.

Professor Sir Alex Markham and Dr Sally Burtles undertook a record number of visits to the Fellows in their home institutions this year to make up for visits missed because of the pandemic. In 2022 they visited 9 Fellows in 7 institutions: Dr James Lee and Professor Rickie Patani (Crick), Dr Stephen Uphoff (Oxford), Professor Yanlan Mao (UCL), Dr Chris Stewart (Newcastle), Dr Tomás Ryan (Dublin), Dr Stineke Van Houte (Exeter), Professor Ravi Gupta and Dr Tanmay Bharat (Cambridge). It is always excellent to hear the Fellows present their research and to be able to tell their colleagues about the Lister Institute. On behalf of Professor Sir Markham and Dr Burtles I would like to express our thanks for their excellent hospitality and ongoing support. The visit to Dublin involved a larger group which also included both myself and the Hon Rory Guinness. As well as the visit with Dr Ryan we held a special event aimed at encouraging more applications from Irish institutions.

I would like to thank Professor Julian Blow and all the members of the Scientific Advisory Committee ('SAC') for their extremely hard work

in reviewing the applications and identifying the Lister Prize Fellows. As a past member and Chair of the SAC I know it is always a big task for both the SAC to review the applications and the staff to secure external reviewers for those that are long-listed. For the first time since 2019, the final interviews were conducted in person at the Royal Society with the candidates giving presentations and being subject to intense questioning before the Prize Winners were selected.

I would also like to thank the members of the Governing Body and the Finance and Investment Committee for all their hard work and support throughout the year and the challenges of managing our investments through testing times.

Financial markets remained volatile in 2022 with concerns about inflation, energy prices and the war in Ukraine. Through this our investment managers continued to do a good job of managing our investments although we ended the year with a negative outcome. The valuation of our investments on 31 March 2022 (after withdrawal of the funds for the Prize Fellowships and our operational costs) was £43.3, down from £47.6M in 2021. Despite these challenges we awarded eight Lister Prizes in 2022 but, for the first time, we used the 'B' Liquidity Portfolio to fund them.

The Covid pandemic and other changes in the research environment are causing considerable challenges for young researchers. The Lister Institute Prizes of £250,000 provide an excellent opportunity to make a significant and positive impact on the research and careers of those who win them, and to deliver on our aim of 'nurturing the future leaders in biomedical research'.

I must end by thanking the team – Sally Burtles, Nicola King, Dina Almuli and Sue Andrews – for making the Lister Institute operate so smoothly on a day-to-day basis. Our Operations Manager, Nicola King went on maternity leave in October and has been replaced by Dina Almuli who is doing an excellent job of covering all the work. I must also thank my predecessor Professor Sir Alex Markham for leading the Lister Institute so well over the last eleven years, wishing him well in his retirement and hoping we will continue to see him at the Lister Institute Annual Meetings.

The Lister Institute is a strong organisation and that is because of the people associated with it - our Fellows, the members of the Governing Body and its sub-committees, the Membership of the Institute and our staff. To all I offer my sincerest and warmest appreciation.

Professor John Iredale, Chairman

2022 LISTER RESEARCH PRIZE FELLOWSHIP WINNERS

The individuals to whom we awarded the Lister Prize Fellowships are as follows:



Dr Shoba Amarnath, University of Newcastle upon Tyne

Translating co-receptor biology to immunotherapeutics in cancer

Immune checkpoint therapies – antibodies directed against checkpoint proteins such as programmed cell death-1 receptor (PD-1) – benefit about 30% of cancer patients. But why do most patients not respond? Shoba's aim is to determine whether early immune activation triggered by tumour cells can play a key role in enhancing response. Determining immune modifiers that drive robust early immune activation may be key to improving checkpoint therapies and stratifying patients.



Dr Elizabeth Ballou, University of Exeter

Investigating how cross-kingdom microbial partnerships impact fungal pathogenesis of the causative agents of Mucormycosis

Elizabeth's group studies how relationships between soil-dwelling fungi and bacteria influence disease. They have shown that transient interaction with bacteria can cause changes in fungal stress resistance resulting in increased virulence. By investigating the molecular mechanisms by which fungal-bacterial partnerships influence pathogenesis in a variety of species, Elizabeth's lab is identifying new ways to block fungal stress resistance and improve patient outcomes.



Dr David Bending, University of Birmingham

T cell receptor signalling dynamics during T follicular helper cell responses

T follicular helper (Tfh) cells are a key immune cell population controlling the generation of high affinity germinal centre B cells and antibody responses. David's lab employs state-of-the-art tools to reveal how T cell receptor signal strength and duration impact upon Tfh cell formation and the ensuing development of antibody-secreting lymphocytes. Better understanding these processes will help to design more effective vaccines and immunotherapies.



Dr Amanda Chaplin, University of Leicester

Cryo-EM studies of human DNA repair complexes: DNA-PK and interacting partners

Amanda's lab studies a key mechanism to repair double-strand breaks in DNA, called non-homologous end joining (NHEJ). They use cryo-electron microscopy and biochemical techniques to understand large multicomponent assemblies critical for DNA repair. Proteins involved in NHEJ are also important during viral infection, which they are also investigating. Understanding these mechanisms has the potential to develop specific therapeutics against cancer and viruses.

This year, in response to the Covid pandemic, we were keen to award as many Fellowships as possible. We received a high number of outstanding applications and so, for the first time, eight researchers received the £250,000 in flexible funding.



Professor James Davies, University of Oxford

Using base pair mapping of genome architecture to interrogate the mechanisms by which enhancers control transcription

James' lab specialises in understanding how DNA is structured within the nucleus and how this relates to gene expression. They have developed new approaches that allow DNA structures to be determined at very high resolution. These are providing insights into the fundamental mechanisms by which genes are controlled as well as enabling them to understand the effects of sequence variation on human disease.



Dr Marco Di Antonio, Imperial College London

Unravelling epigenetic pathways leading to chemo-resistance in ovarian cancer with a light-controlled CRISPR-based platform

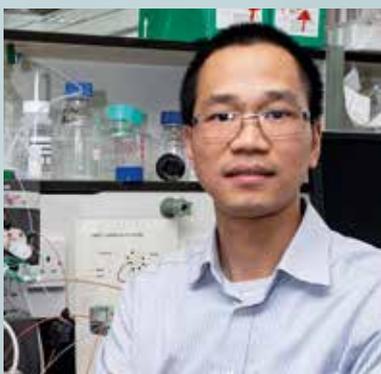
Marco's group investigates the prevalence of non-helical DNA structures and DNA chemical modifications in the context of ageing related disorders. They aim to develop chemical-based tools to perturb, in real time, DNA-methylation in ovarian cancer cells using light irradiation. This technology will underpin druggable pathways to restore the sensitivity to therapies whilst also identifying diagnostic markers to monitor resistance acquisition.



Dr Anthony Khawaja, Institute of Ophthalmology, University College London

Translating genomic discovery into clinical prediction tools for glaucoma

Detecting glaucoma early is challenging, response to available treatments is variable, and it is impossible to predict which patients will become blind. The solution to these challenges lies in understanding glaucoma's complex genetics. Anthony's team is identifying many new genetic markers and building prediction tools that will enable population screening for early detection and enable more personalised care, saving sight and considerable cost.



Dr Tung Le, John Innes Centre

The line of duty: How to segregate a giant linear plasmid in antibiotic-producing Streptomyces

Streptomyces bacteria are peculiar in that they often contain giant linear plasmids, which are often involved in complex metabolic processes including antibiotic production. Tung's group is interested in understanding the fundamental mechanisms by which these important linear plasmids are faithfully segregated and how they might contribute to the genome evolution in antibiotic-producing Streptomyces.

TRANSFORMING TALENT



The Lister Institute's Chair, Professor John Iredale, highlights the unique, nurturing environment that Lister Fellows and Members create. Connectivity, conversation and collaboration are crucial ingredients for truly world-class, breakthrough research.

I first joined the Lister Institute as a member of its Scientific Advisory Committee in 2013 and since then I have developed what I can only describe as a deep affection and respect for this wonderful organisation. I don't say this lightly either. Over my career, I've reviewed innumerable research proposals, sat on umpteen committees and am currently Interim Chair of the Medical Research Council. All of these experiences have been rewarding, but there's nothing quite like the Lister Institute. It stands out from the crowd and has a unique place in UK and Irish medical research funding.

We have neither scale nor resources on our side, but we do our best to make up for all that in the significance of our funding impact. Just flipping through the last few years of Annual Reports, I'm staggered by what our Fellows and Members achieve. Although you could argue that our grants are comparatively modest, nevertheless having several hundred thousand pounds that you're able to spend almost as you choose offers freedom and, most importantly, transformational support for exciting new ideas. And it is that potential for transformation that is so important in what we do and how our decisions are informed.

Given the depth, breadth and originality of the science we support, my only lament is that the Scientific Advisory Committee is not able to award more and bigger annual prizes! With the pandemic, the Ukraine conflict and continued global instability, this is not an easy period to navigate financially so we will

continue to seek new benefactors and look to the potential to develop funding awards jointly with other institutions and organisations. We will continue to invest responsibly in the future of biomedical science as our mission is more important now than ever.

The science funded by Lister is always incredible, however part of the real magic of this Institute happens outside of the lab. We've got a spectacular track record in supporting young talent. That's because as a community we genuinely want to see our Fellow researchers thrive and push the boundaries of our knowledge. We aspire always to wrap around support and mentorship to those we fund and see that knowledge potential realised as our Fellows thrive.

We have created a community that builds meaningful connections across generations and disciplines. I love the Annual Meeting because you see this in action. I'm immersed in so many lively discussions, so many offers of help, so much excellent mentoring that directly builds our capacity and capability for breakthrough science.

So alongside our support for excellent science, as Chair I want to maintain this drive to nurture excellent scientists too. It is something that no grant award can buy, but something we do so well. Let's keep connecting, collaborating, challenging, and mentoring each other. Together, we have the potential to transform lives.

CREATING A MODEL MOUSE EMBRYO

– WITHOUT EGGS OR SPERM



Professor Magdalena Zernicka-Goetz, former Lister Fellow and former member of the Lister's Scientific Advisory Group (SAC), talks about her achievement to grow a model mouse embryo from stem cells.



My research group is investigating the molecular and cellular mechanisms that drive cell specification and patterning at the earliest stages of our life, when cells have to develop their identities for the first time. We use molecular genetics and cell biology techniques to alter live embryos, then image how they develop. The mouse embryo is great to study because it closely resembles human development.

Through this research, my colleagues and I began to wonder whether we can reproduce cell-cell communications using all different stem cell types critical for the process of embryogenesis. So we combined embryonic stem cells with two other stem cell types from mice. After inducing expression of a particular set of genes and placing the cells in a suitable environment, we indeed detected their mutual interaction. They self-organised into structures that progressed through developmental stages until we had a beating heart and the foundations of the brain. We were amazed to see the structure even contained a yolk sac where the embryo develops and gets nutrients during its first weeks.

This is the furthest point any scientists have achieved using any kind of stem

cell-derived model. It felt unbelievable that we got this far. This had been the dream of our research community for years and a major focus of my work for a decade. Finally, we had done it, an amazing moment for my team.

The so-called “embryoids” mirror a natural mouse embryo up to 8.5 days after fertilisation. Our follow-up studies have revealed some of the mechanisms behind this incredible phenomenon. It appears that extraembryonic cells signal to embryonic cells by chemical signals, but also mechanistically, through touch, using a code (cadherin code) to guide the embryo’s development. In essence, there’s a dialogue happening between the different types of stem cell in these earliest days of development – we’ve shown how it occurs and how it can go wrong.

With further refinement, the technique could really improve our understanding of the earliest stages of organ development, especially why some pregnancies fail. We also hope that we could use embryoids to study the early stages of development and tease apart the mechanisms behind diseases without having to use animal models.

This period of human life is so mysterious, so to be able to see how it happens in a dish – to have access to these individual stem cells, to understand why so many pregnancies fail and how we might be able to prevent that from happening – is very special.

'TIS IN MY MEMORY LOCK'D



Dr Tomás Ryan is the first scientist in an Irish institution to secure a Lister Fellowship.

He is deciphering the neuroscience of memory-making and forgetting.

Like confidential documents and large wads of crisp bank notes, we try to keep our thoughts and memories safe. We lock them in our minds where no-one can touch or tamper with them.

But are these memories really so hidden or safe?

This question puzzles Tomás Ryan too, but in 2022 he posited a new theory of forgetting. Writing a Perspectives piece in Nature Reviews Neuroscience, he proposed that forgetting was the outcome of adaptive cell plasticity in the brain.

Neuroscientists argue that memories are stored in groups of neurons known as “engrams”. Building on this idea, Tomás and his co-author, Dr Paul Frankland of the University of Toronto, suggest that forgetting –the loss of memories – occurs when engrams switch from an accessible to an inaccessible state. Forgetting is like losing the key to your supposed high security engram memory vault.

Going a step further, the authors argue that ‘forgetting’ is actually an act of learning: it requires neuronal plasticity that alters access to specific memories, based on environmental feedback and predictability. They suggest that in diseases associated with memory loss, natural forgetting mechanisms may become faulty, leading to a loss of accessibility to engrams and subsequent memory loss.

The Perspective article looks in detail at the different theories of how humans forget. It also reviews the techniques that can be used to explore these possibilities, including how scientists’ ability to observe and manipulate memory engrams provides the opportunity to study the effect of forgetting on these cells.

The big question is whether memory loss can be reversed. Is it possible to reconnect engrams and recover memories, as if you have found that missing key?

Tomás is using his Lister Prize award to advance his research into memory engrams, amnesia and recall, for example by supporting the post of Dr Clara Ortega-de San Luis in his lab. His group explores the neurobiological background of infantile amnesia – the natural phenomenon in which we lose all our early memories. He wants to find out if and how childhood memories can be rediscovered in adulthood, and what impact this may have.

In May 2022 last year, Tomás and Clara published a review paper in Journal of Biological Chemistry. It covers current understanding of the molecular and cellular nature of memory formation deduced from engram studies. The paper highlights unanswered questions, many of which Tomás himself aims to solve, most intriguingly, whether there is anything like a “memory code” that machines might one day decipher.

“I believe that the great breakthrough in neuroscience will come from understanding the physical substrate of information in the brain and how learning is translated into it,” remarks Clara. We have a sophisticated set of tools available now to explore this fascinating question and better grasp what memories look like.

“What Clara has articulated here, is the importance of distinguishing between the molecular basis of information storage and the mechanisms of the expression of that information. Just as for the genome, an engram likely uses different approaches for each aspect,” Tomás adds.

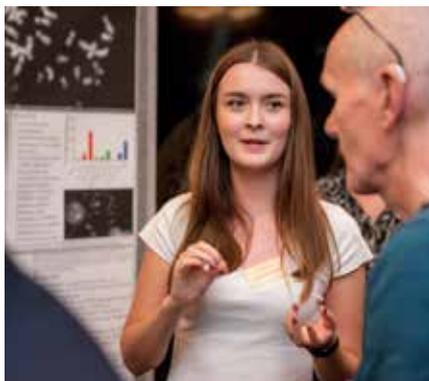
Perhaps our memory is not quite as locked away as we once thought.

SUMMER STUDENTSHIP SCHEME 2022

Since it launched in 2011, we have supported over 500 students to experience life in top laboratories. The opportunity encourages most participants to register for PhDs. Some students projects even contribute to papers in high profile journals!

In 2022 we funded 35 studentships. A few students' and supervisors give their reflections.

The student perspective



Grace Kirman: *studentship with Professor Mark Buttner and Dr Susan Schlimpert, John Innes Centre*

"It was exciting to have the opportunity to explore such a fast-evolving field of research. This was challenging but also intellectually stimulating and as a consequence brought with it a huge sense of achievement. The financial benefits provided by the Lister Institute also served as motivation – I would have not been able to take up the placement had it been unpaid."



Rohum Hossain: *studentship with Professor Sherif El-Khamisy and Dr Hannah Crane, University of Sheffield*

"I have grown more confident in research and scientific communication. The studentship has given me the opportunity to network with fellow academics in the research sector and enhanced my understanding in the field of cancer biology."

Ivan Yang Ji: *studentship with Professor Serge Mostowy, London School of Hygiene and Tropical Medicine*

"I got to better understand the dynamics of research and funding in academia, and how to succeed in it, which has helped me to make an informed decision on how to continue my career in this field."

The supervisor perspective

Professor Yanlan Mao,
University College London

"Katherine's work in the lab during her project placement has been truly exceptional: she's an enthusiastic and fast learner and was able to master the different steps involved in data collection and analysis. She fit in very quickly with our interdisciplinary group, showing great interest in people's research projects and topics related to a career in science."

Professor Julian Blow,
University of Dundee

"Within two weeks Kai Lynn progressed to being able to work both independently and effectively. Throughout the remaining duration of her studentship Kai Lynn worked very hard producing well controlled and reproducible results that made a valuable contribution to our project. I am very pleased that Kai Lynn will return to the lab to continue her project in the autumn as a part of her degree course."

ANNUAL MEETING

On 8 and 9 September, we returned to our usual venue of Corpus Christi College, University of Oxford, for our annual gathering of Fellows and Members. If you feel you missed out – or want to relive this spectacular event – here are some of our favourite moments.



Lecture from Professor Frances Platt 'Saved by the Lister Institute; the story of miglustat'

The opening talk at this meeting always serves to inspire, and Frances's presentation was no different.

She talked us through her body of work into lysosomal storage diseases, and how her 1994 paper outlined a new therapy approach. It was met with considerable scepticism but led to animal research and then human trials to establish miglustat as an approved treatment in 2002-3.



The audience enjoyed Frances's recollections of applying for the Lister Fellowship two days before the closing date. She admits her proposal was "a stream of consciousness" and she posted it without any time for edits.

The huge impact of her work is undeniable. As the only approved therapy for this disease, miglustat adds an average of 10 years to life expectancy: "Niemann-Pick patients wouldn't have received treatment if it wasn't for the Lister Institute," she concluded.



Talks by winners of the 2021 Research Prizes

Dr Christopher Stewart of Newcastle University

spoke about his studies using stem cell-derived "mini guts" to investigate microbiome-host interaction in early life.

Pre-term babies are at risk of necrotising enterocolitis (NEC), a life-threatening infection resulting from inflamed tissues in the gut. Working with the Great North Neonatal Biobank, Christopher explored how different bacteria in babies' gut microbiome react to sugars. He has identified the sugar DSLNT in human milk as needed to prevent NEC.

A paper in *Nature Microbiology* highlights Christopher's work using intestinal organoids derived from pre-term infants which discovered that the probiotics act in strain-specific ways to drive gut microbiome development in very pre-term infants.

Poster session

Lister Fellows and Members ended the day with a buffet and drinks reception whilst viewing research posters from Lister Summer Studentships.

It is always a great honour to fund these studentships and give undergraduate students a unique opportunity to meet other Lister Fellows and esteemed Members.

Talks by winners of the 2022 Research Prizes

Dr Tung Le, based at the John Innes Centre

kicked off the series of 2022 Prize Winners with his presentation *The line of duty: How to segregate a giant linear plasmid in antibiotic-producing Streptomyces*.

He described foundational work to understand how *Streptomyces* form giant linear plasmids to ensure DNA is not damaged during bacterial cell replication. Tung is now using his Lister funding to explore how this process happens in multicellular organisms. The project has potential to contribute to the vitally important discovery and production of new antibiotics.

The research certainly went down well, with Professor John Iredale praising the “beautiful, elegant work.”

Dr Shoba Amarnath of Newcastle University

is using her funding to discover whether there is an initial immune cell in tumours that drives tumour immunity. She hopes that the research will help explain why immune checkpoint therapies currently benefit just a third of patients – and help improve them accordingly.

Focusing on the PD-1 receptor, Shoba’s lab is full of questions about cancer cell immunity. “*In the next few years, we’ll be tearing apart the immune system in melanoma patients and putting it all back together,*” she says.

Dr Elizabeth Ballou of University of Exeter

gave us a fascinating insight into the unique Mucorales or black fungus, which she described as widely misunderstood by clinicians. Current treatment options are limited.

During the delta wave of Covid-19 in India, doctors were giving patients steroids to try and tackle their Covid symptoms, only to see them return to hospital after a fortnight with severe mucormycosis. Liz believes that cross-kingdom microbial partnerships affect Mucormycosis pathogenesis; she wants to identify global trends in highly diverse clinical isolates to find a signature for endosymbiosis and ultimately improve outcomes for patients.

Dr David Bending of University of Birmingham

is studying signalling dynamics in T cells. He spoke about his work that shows how T cell receptor signal strength and duration influence the formation of T follicular helper cells. Ultimately, he hopes his research will lead to the development of more effective vaccines and immunotherapies by identifying the ideal amount of antigen to use, known as the ‘Goldilocks’ amount.

David’s award will fund proof of principle studies to establish new vaccination models and expand his research to assess mode of antigen delivery and route. It will help to retain his MSc student in a technical post so the research can continue.

“*I know enough about immunology to know that was absolutely brilliant,*” said Professor Sir Alex Markham, following the lecture.

Dr James Davies of University of Oxford

focused on his lab’s technique to capture chromosome conformation at base pair resolution. This work is providing insights into the fundamental mechanisms by which enhancers control gene expression. It also provides hints on how genome sequence variation may affect human disease. The research is pioneering a new mapping technique that James plans to integrate with other modelling approaches, such as machine learning, static models, and polymer modelling.

Dr Marco Di Antonio of Imperial College London

is trying to unravel the complex epigenetic pathways that lead to chemo-resistance in ovarian cancer. He’s hoping a light-controlled CRISPR-based platform will do the trick.

“*I really like challenging dogmas,*” said Marco – and with that, the lecture theatre was captivated! His work draws from the fact that DNA is not only found as a double helix, and that the genetic code is not limited to A, T, G, and C nucleotides.

His lab studies ovarian cancer – a disease for which the survival rate hasn’t improved since 1975, contrary to most other tissue cancers. The research aims to understand the temporal and spatial control of methylation in ovarian cancer and the epigenetic contribution to therapy resistance.



Special Lister Lecture from Professor Sir Alex Markham

After all the inspiring science, we knew we were in for a treat, and Alex did not fail to deliver. As outgoing Chair, Alex gave a walk through his life and times, bidding the Lister *“a fond au revoir”*. We got glimpses of manuscripts scrawled with notes, wonderfully faded photos and a steady stream of anecdotes delivered with good humour and a generous portion of gratitude and reflection.

Professor John Iredale thanked him for his years of service. We enjoyed some photos of Alex’s trip to a brewery to make his very own *“Alex’s Lister Ale”* – bottles of which went down well at the evening drinks reception!

Hon Rory Guinness tweeted, *“What a legend of a man. A kind gentleman with a great sense of humour. We are so lucky to have had the honour of his Chairmanship. Scientists and science have benefited immeasurably from his wise ways.”*

It was only fitting to give Alex the ovation he so clearly earned for his outstanding contribution.



Talks by winners of the 2020 Research Prizes

Dr Hayley Sharpe of The Babraham Institute was unable to join us in previous years, but she delighted us with an update on research that is reshaping how we think about receptor tyrosine phosphatase signalling in health and disease. She is using her Lister funding to recruit a PhD student to the lab who will drive forward research into new areas of signalling, using a mouse model for CD45.

CURRENT LISTER PRIZE FELLOWS

For the full list of all Lister Fellows (past and present) please see the Lister website
<https://www.lister-institute.org.uk/former-fellows/>

Fellow	Title of Research	Awarded
Dr Shoba Amarnath University of Newcastle upon Tyne	Translating co-receptor biology to immunotherapeutics in cancer	2022
Dr Tom Baden University of Sussex	Anisotropic retinal circuits for processing of colour and space in nature	2018
Dr Elizabeth Ballou University of Exeter	Investigating how cross-kingdom microbial partnerships impact fungal pathogenesis of the causative agents of Mucormycosis	2022
Dr David Bending University of Birmingham	T cell receptor signalling dynamics during T follicular helper cell responses	2022
Dr Tanmay Bharat University of Oxford	In situ structural studies of the functional organisation and inhibition of the BAM complex in Gram-negative bacteria	2021
Professor Timothy Blower Durham University	BREX and phage-bacteria interactions	2019
Dr Amanda Chaplin University of Leicester	Cryo-EM studies of human DNA repair complexes: DNA-PK and interacting partners	2022
Dr Ross Chapman University of Oxford	DNA double-strand break repair mechanisms in immunity and oncogenesis	2019
Dr Rebecca Corrigan University of Sheffield	Analysis of the role of (p)ppGpp in staphylococcal infection using zebrafish as a model organism	2018
Professor James Davies University of Oxford	Using base pair mapping of genome architecture to interrogate the mechanisms by which enhancers control transcription	2022
Dr Marco Di Antonio Imperial College London	Unravelling epigenetic pathways leading to chemo-resistance in ovarian cancer with a light-controlled CRISPR-based platform	2022
Dr Mark Dodding University of Bristol	A new chemical biology approach to target molecular motors for the manipulation of cytoskeleton and organelle dynamics	2018
Professor Sherif El-Khamisy University of Sheffield	The repair of oxidative and topoisomerase induced chromosomal strand breaks and human disease	2013
Professor Susana Godinho Queen Mary University of London	Regulation of paracrine signalling by centrosome amplification	2016
Dr Sebastian Guettler The Institute of Cancer Research	Structural basis and mechanism of telomere maintenance by poly(ADP-ribosyl)ation	2017
Professor Ravindra Gupta University of Cambridge	Cell cycle regulation in Macrophages	2021
Dr Sophie Helaine Imperial College London Harvard Medical School	Salmonella Persister formation at the single cell level	2017
Dr Matthew Hepworth University of Manchester	Targeting cell metabolism to regulate innate lymphoid cells in health and disease	2018

Fellow	Title of Research	Awarded
Dr Anthony Khawaja Institute of Ophthalmology University College London	Translating genomic discovery into clinical prediction tools for glaucoma	2022
Dr Joanne Konkol University of Manchester	Atypical monocytes at the oral mucosa; revisiting myeloid cell development and function at a unique barrier site	2019
Dr Yogesh Kulathu University of Dundee	Regulation and function of protein FUBlylation	2017
Dr Rebecca Lawson University of Cambridge	Computational neurodevelopment: a new framework for understanding autism spectrum disorder	2020
Dr Tung Le John Innes Centre	The line of duty: How to segregate a giant linear plasmid in antibiotic-producing <i>Streptomyces</i>	2022
Dr James Lee The Francis Crick Institute	From SNPs to biology in inflammatory diseases	2021
Dr Michelle Linterman Babraham Institute	Tertiary lymphoid structures in health and disease	2019
Professor Yanlan Mao University College London	Mechanochemical regulation of tissue growth and morphogenesis	2018
Dr Joseph Marsh University of Edinburgh	The dominant-negative effect in protein complexes: implications for human genetic disease	2018
Dr Will McEwan University of Cambridge	Protein-level knockdown as a new frontier for biological and biomedical sciences	2019
Dr James Nathan University of Cambridge	The interplay between metabolism and oxygen sensing	2017
Professor Rickie Patani UCL & The Francis Crick Institute	Identifying therapeutically targetable RNA binding proteins in ALS	2021
Dr Tomás Ryan Trinity College Dublin	Gone or Misplaced? – Retrieving Infant Memories in Adults	2020
Dr Amanda Sferruzzi-Perri University of Cambridge	Biomarkers of materno-fetal health: role of placental endocrine mediators in normal and obese pregnancies	2018
Dr Hayley Sharpe Babraham Institute	Receptor tyrosine phosphatase signalling mechanisms in health and disease	2020
Professor Daniel Smith University of Edinburgh	Investigating the overlap between hypertension and bipolar disorder to identify new and repurposed medications for bipolar disorder	2016
Dr Christopher Stewart Newcastle University	Using stem cell derived “mini guts” to investigate microbiome-host interaction in early life	2021
Dr Stephan Uphoff University of Oxford	Resolving oxidative stress response mechanisms in bacteria during infection and antibiotic treatment	2020
Dr Stineke Van Houte University of Exeter	Developing new tools to tackle antibiotic resistance	2021

ENVIRONMENT, SOCIAL, GOVERNANCE (ESG); EQUALITY, DIVERSITY & INCLUSION (EDI) AND FINANCIAL OVERVIEW

GOVERNANCE

The Governing Body

Governance of the Lister Institute is overseen by the Governing Body which meets twice a year. Members of the Governing Body are Trustees of the charity and have responsibility to the Charity Commission to ensure the charity is well run and remains true to its purpose. As ever, we must pay tribute to the quality and dedication of the Governing Body members and the speed and clarity with which they respond to Lister matters.

At the AGM in 2022 Professor Sir Alex Markham stood down after eleven years as the Chair of the Governing Body and was succeeded by Professor John Iredale. In addition, Mr Andrew Hutton retired after 15 years on the Governing Body and Finance and Investment Committee. Professor Ros Smyth (Great Ormond Street Hospital and Institute of Child Health) was Appointed as a new member of the Governing Body. Professor Wendy Bickmore stood down as the Elected member longest in role since last election. She was re-elected for a further 2 years to reduce churn on the Governing Body. With the departure of Professor Sir Markham and Mr Hutton from the Governing Body,

Professor John Iredale and Mr Steve McMahon stood down as Appointed members and were Elected as members of the Governing Body.

Finance and Investment Committee

The Finance and Investment Committee (FIC) met twice in 2022 and undertook its normal business reviewing the performance of the investment managers and the finances of the Lister Institute.

The Lister Institute's quinquennial review of its investment managers concluded in early 2022. Our recent investment performance has been strong and we decided to continue with our existing investment managers and to continue to review our stance and trends on ESG matters. We also decided to invest a proportion of the B portfolio in a "absolute return minded" fund managed by Ruffer LLPs to seek to mitigate the effects of inflation. While there has not been 100% mitigation of current levels of inflation, the B portfolio has at least had a positive return over 2022 whereas as a result of the impact on markets of the war in Ukraine, higher inflation and generally unsettled market conditions including Covid effects, our main portfolio has had a negative return over 2022.



Scientific Advisory Committee

The Institute endeavours to manage the turnover of membership of the SAC so that a small number of people leave each year, however due to circumstances beyond our control this was not achieved this year. There were quite a few changes in membership, but this had been managed carefully and the new members given support through the first round of the review process by existing members of the SAC.

Five members of the SAC stood down after the 2022 round of Prizes were awarded. These were: Professor John Iredale (Bristol); Professor Chris Tang (Oxford); Professor Barry Potter (Oxford); Professor Kikkeri Naresh (Fred Hutchinson Institute, Seattle); and Professor Kate Nobes (Bristol). Five new members joined the SAC. These were:- Professor Yvonne Jones (Oxford); Professor Angus Lamond (Dundee); Professor Inga Prokopenko (Surrey); Professor Anne Rosser (Cardiff); Professor Daniel St Johnston (Cambridge).

The SAC met two times this year. The main and most important meeting was the interviews of the short-listed candidates for the Lister Prize Fellowships. The interviews were held in person for the first time since 2019. While conducting the interviews online worked well, everyone agreed that meeting the candidates in person was much better. The SAC also met via Zoom in advance of the interviews to undertake the work of the SAC to look at diversity, the review process etc.

Institute Membership

All Fellows of the Lister Institute become Members when they complete their Fellowship. In addition, all Committee members, previous members of staff and others with a particular interest in the Lister Institute are Members. At present we have 232 Members and they are all eligible to vote at the AGM.

Dr Rahul Roychoudhuri (University of Cambridge) has completed his Fellowship and was elected as Member of the Institute in 2022.

Four new SAC Members were also elected as Members of the Institute: Professor Yvonne Jones (University of Oxford), Professor Angus Lamond (University of Dundee), Professor Inga Prokopenko (University of Surrey) and Professor Daniel St Johnston (University of Cambridge).

ENVIRONMENT

The Lister Institute is a small organisation with a small environmental impact. It has no buildings and all three staff work from home. Essential meetings, such as the Annual Fellows Meeting are held in person with travel by public transport encouraged. Other meetings are held on-line or in person as needed.

SOCIAL

Through the biomedical research that it funds the Lister Institute has a beneficial impact on society through direct patient and public benefit e.g. new treatments and diagnostics as well as through the expansion of knowledge and understanding. For the Lister Institute to be successful it is essential that it attracts and retains skilled and talented people. It does this by creating an inclusive working environment where people can be themselves, treating everyone fairly with dignity and respect. We are committed to fairness in our remuneration packages and supporting flexibility at work. Pensions continue to be paid to a small number of former employees.

EQUALITY, DIVERSITY AND INCLUSION (EDI)

We value and embrace EDI and aim to achieve equality, diversity and inclusiveness across the Lister Institute – in our Prize Fellows, our committee members and our staff. While EDI is our aim, we recognise that we still have work to do achieve it. We aspire to having an equal gender balance across the Lister Institute. Currently the gender balance in the organisation is as follows: Governing Body 36% female: 64% male; Scientific Advisory Committee 46% female: 54% male; current Fellows 35% female: 65% male; staff 100% female. The gender balance at all stages of our application process is monitored and steps are made to address any aspects of the process that may affect the gender balance, though ultimately the highest quality candidates are selected. The Institute aspires to achieve ethnic diversity consistent with the demographics of the UK general population (broadly 82% white, 18% ethnic minority) and for the 2022 round of prizes have started to collect data to assess our performance. Our 2022 Prize Winners and Scientific Advisory Committee have good ethnic diversity. For the 2022 prize round 28% of applicants and 37.5% of Prize Winners were from diverse (minority ethnic) backgrounds. We recognise that significant improvements can be made to our Governing Body's diversity and intend to address this as members retire and we make new appointments. Membership of committees is considered annually and equality and diversity are always considered as part of that process.

FINANCIAL OVERVIEW



Murray Legg, Treasurer

2022 was once again a challenging year for the financial markets with very high inflation, high energy prices and the war in Ukraine as well as the ongoing global after-effects of the pandemic. The Lister Institute has its low volatility liquidity reserve fund, which was established to enable the Lister to ride out a major market correction. It has continued to provide a buffer against this uncertainty and falls in the markets and, for the first time this year, we took advantage of this reserve and used it to fund the Prizes.

Our two investment managers, Cazenove and Partners Capital have managed our portfolio with our investments having a final valuation (after withdrawal of £2.2M from the B portfolio for the Prize Fellowships and Lister operations) of £43.3M, down from £47.6M at the end of 2021. The FIC will continue to monitor closely our portfolio and there will continue to be careful consideration of the numbers and levels of Fellowships and studentships and if and when the liquidity reserve fund (B portfolio) should be replenished.

Eight prizes were awarded instead of the originally budgeted number of six, but in other areas all expenditure has been in line with the agreed 2022 budget. The investment managers' fees were £185K, down from £263K in 2021. With eight Fellowships being awarded at £250,000K each, £84K spent on studentships and operational costs being £245K the total expenditure for the Lister institute in 2022 was £2.514M.

	£K
Prize Fellowships and Studentships	2,084
Investment managers fees	185
Staff and operational costs	245
TOTAL	2,514

The Lister Institute remains indebted to our all the members of the Finance and Investment Committee, and I would like to thank them all for their scrutiny of the Institute's finances and the rigorous questioning of our current investment advisors, Partners Capital LLP and Cazenove Capital Management. We are particularly grateful to Murray Legg for his contribution as Treasurer and Chair of the FIC.

John Iredale, Chairman

REPORT OF THE GOVERNING BODY

for the year ended 31 December 2022

The Governing Body presents its Annual Report under the Charities Act 2011 together with the audited Financial Statements of the Charity for the year ended 31 December 2022. The Financial Statements have been prepared in accordance with the accounting policies set out in Note 1 (page 27) to the Financial Statements and comply with the Companies Act 2006, the FRS102 Charities SORP and the documents governing the constitution of the Charity.

LEGAL AND ADMINISTRATIVE DETAILS

Legal and administrative information is set out on page 33 of this report.

Members of the Governing Body, Directors and Trustees

The members of the Governing Body are, for the purposes of company law, Directors of the Institute and, for the purposes of charity law, Trustees of the Institute and throughout this report are collectively referred to as the Trustees.

Details of the Trustees serving throughout the year are set out on page 33.

STRUCTURE, GOVERNANCE AND MANAGEMENT

Constitution

The Institute is registered with the Charity Commission for England and Wales (registration number 206271). It is incorporated and registered in England and Wales under the Companies Act 2006 as a company limited by guarantee and not having a share capital (company number 34479). It is governed by its Articles of Association and has charitable status.

Appointment and Re-appointment of Trustees

The Trustees are the fourteen members of the Governing Body of whom six are elected by the members at the Annual General Meeting. A maximum of six further Trustees are appointed by the Governing Body and there are currently five such appointees. One additional member is Lord Iveagh's representative, another is Professor Sir Alec Jeffreys who was appointed to life-membership, and the final member, Professor Douglas Higgs, is the representative of the Royal Society. Trustees, other than the two nominated representatives, Professor Sir Alec Jeffreys and exceptionally those appointed by the Governing Body, generally serve for a period of six years and a system of planned rotation is in place. When considering appointment or nomination for election as Trustees, the Governing Body has regard to the specialist skills needed.

Induction and Training of Trustees

New Trustees undergo induction sessions with the Chairman, Treasurer and Director during which they will gain an understanding of the Institute's structure, activities, financial position and future strategies. Prior to appointment they will

attend one meeting of the Governing Body as 'observers'. New Trustees will also be made aware of their legal obligations with regard to charity and company law. In addition, new Trustees will be advised of appropriate literature and training courses. An Induction check list supports the process.

Organisation

The Institute is governed by its Governing Body which is responsible for setting policies, authorising actions on all significant operational issues and ensuring legality and good practice. The Governing Body meets formally twice a year. The Treasurer and Chairman review the remuneration of all staff once a year. This includes the remuneration of those individuals considered to be key management personnel.

Specific authorities are delegated to two sub-Committees in particular areas. The Scientific Advisory Committee (see page 33 for membership) has responsibility for identifying the Lister Institute Prize Fellows and the monitoring of their scientific activities, as well as providing scientific and medical advice to the Governing Body as required. The Finance and Investment Committee (see page 33 for membership) has responsibility for interaction with the Institute's investment advisors, ensuring implementation of the Institute's investment policy and monitoring performance. It prepares and submits to the Governing Body the annual budget, and subsequently monitors performance against it. It also advises the Governing Body, as required, on other financial and risk matters.

The routine management of the Institute's activities is undertaken by its Director, aided by the Operations Manager and the Accountant. All staff work from home.

In 2022, one of the Charity's Trustees received remuneration in relation to their work for the charity. This is the Chairman of the SAC who is the only one of the Trustees who is offered any remuneration in relation to their dealings with the Charity. They are offered a small honorarium in recognition of the very significant workload associated with the role.

The Chairman and the Treasurer of the Charity agree the Director's remuneration which, along with other Lister Institute staff, is normally increased in line with RPI. Salaries are also compared to similar organisations and adjusted periodically where appropriate.

Risk Management

The Trustees assess the risks facing the Institute and review the effectiveness of the controls to monitor and mitigate them. A Risk Management Register is maintained and formally reviewed annually by the Governing Body.

The key controls used by the Institute include:

- Formal agendas for all Governing Body meetings
- Strategic planning, budgeting and management accounting
- Formal written policies
- Clear authorisation and approval levels
- Regular review of Fellows' scientific reports

REPORT OF THE GOVERNING BODY (CONTINUED)

- Regular detailed review of investment policies and performances

The risk of cybersecurity is considered by the Trustees on an ongoing basis and amendments have been made to the risk log. A cyber-security policy for staff has been developed. IT support for staff has been changed to a new company and now involves more formal and regular security updates and regular training for staff. An online grants management system called Benefactor has been implemented to improve the security around the application process.

In recent years, the risk logs, terms and conditions, policies and procedures have been adapted and updated to address the specific risks of bribery, scientific misconduct and data protection. The terms and conditions were reviewed again in 2022. The risk register is reviewed annually and policies are reviewed regularly as defined within each policy.

The Institute maintains a 'Register of Interests' for all Governing Body and committee members as well as principal staff and operates a clear "declaration of interests" policy and procedures for all meetings.

The principal risk facing the Institute lies in its ability to maintain and protect the value in real terms of its investments and to generate from them, on a long-term basis, a consistently high overall return. This risk is mitigated by the Institute's appointment of experienced investment managers with a proven track record; by internal controls that allow close and regular monitoring of their performance against benchmarks; by the Institute's requirement of its investment managers to re-tender periodically and competitively for appointment; and by regular meetings that formally review investment performance and policy and include one-to-one presentations by the investment managers. The investment manager review was conducted in early 2022.

Investment Policy Statements are in place for the Lister Institute and its investment partners. These are reviewed on an annual basis.

Objectives and Activities

The statutory Object of the Institute is to further the understanding and progress in preventive medicine by promoting excellence in biomedical research in the UK and Ireland.

When founded in 1891, the Institute sought to achieve this objective by establishing a research institute specialising in the area of "infections" and their prevention by immunisation and other means. It complemented these research activities by the production and supply of materials such as vaccines and anti-toxins.

The Institute continued in this mode until the late 1970s when increasing financial and regulatory pressures caused the cessation of these activities. Proceeds from the resultant sale of land and buildings created the investment funds from which present-day activities are financed; at 31 December 2022 these

funds stood at £43.3M. From the 1980s the Institute has pursued its objective of nurturing future leaders by the provision of grant funding to facilitate the research and careers of high-quality individuals working in areas of biomedicine relevant to preventive medicine. It has done this because it believes that the acquisition and advancement of knowledge is crucial to the understanding of health and disease and that research to achieve this is driven forward by high quality individuals and their supporting staff.

Principal Activities

In pursuance of this objective, during 2022 the Institute awarded eight new Prize Fellowships. In addition, the Institute has continued its Summer Studentship scheme. Generally, this has enabled an increasing number of undergraduates per year to work with Lister Institute Fellows or former Fellows in order to gain experience of biomedical research with the hope that they might consider it as a career. In 2022, 35 studentships were awarded.

Achievement and Performance

The Scientific Advisory Committee has monitored the performance of the current 37 Lister Institute Prize Fellows through review of their annual scientific research reports that includes the progress they are making, as well as all publications and presentations. The Scientific Advisory Committee has reported to Trustees that it is of the view that all Fellows are undertaking high quality research and producing new knowledge that will contribute significantly to our understanding of disease, its causes, treatment and prevention. The reports of the research undertaken by the Summer Students have also been reviewed and found to be satisfactory.

Eight Lister Institute Prize Fellowships were awarded in 2022 to Dr Shoba Amarnath (Newcastle), Dr Elizabeth Ballou (Exeter), Dr David Bending (Birmingham), Dr Amanda Chaplin (Leicester), Professor James Davies (Oxford), Dr Marco Di Antonio (Imperial College), Dr Anthony Khawaja (UCL), Dr Tung Le (John Innes Centre) from an initial field of 82 applicants. They were awarded following extensive scientific review of their applications and final interview by the Scientific Advisory Committee (more details of the Prize Fellows and their research are provided on pages 2 and 3). Each Prize Fellowship provides £250K to be spent over 5 years with the funds provided to the host institution at the commencement of the award.

35 Summer Studentships were awarded in 2022. Each is a £2,350 student bursary and is paid to the host institution at the commencement of the award for the support of the student for up to a ten-week period.

Public Benefit

The statutory objectives, aims and activities of The Lister Institute of Preventive Medicine are to further understanding in preventive medicine by promoting biomedical research, as set out on page 18 of this Report. The Trustees have considered the

Charity Commission's guidance on public benefit, including the guidance 'public benefit: running a charity (PB2)'.

The public benefit of the Institute's grant-making is clearly identifiable in the 'Achievement and Performance' paragraphs above and in the list of Research Prize Fellows together with their areas of research on pages 12 and 13. All Lister Institute Fellows are actively encouraged, where appropriate, to develop their research findings for potential public benefit and the Scientific Advisory Committee has regard to this when reviewing their research reports. The Lister Institute therefore benefits the public or a sector of it without imposing any restrictions. Applications from individuals are accepted only when demonstrably consistent with the charitable objectives of the Institute.

Impact

The impact of the activities of a medical research charity can be measured at many levels ranging from the growth of knowledge to direct patient/public benefit. Often the transition from the former to the latter may take many years and the involvement of several organisations. The Institute requires that the results of the research it supports are published and disseminated; that, where appropriate, significant intellectual property is protected via patents; and that its commercial development is encouraged. Several biotechnology companies have been formed around the findings of Institute-funded research and there are several interactions with large pharmaceutical companies. A prime example of the impact of Lister Institute research is DNA fingerprinting, which was discovered by Sir Alec Jeffreys when a Lister Institute Fellow, and has become an integral part of society, helping to prove innocence or guilt in criminal cases, resolving immigration arguments and clarifying paternity.

More directly, since 2019 we have awarded 23 Lister Prizes (2019 – 5, 2020 – 4, 2021 – 6, 2022 – 8) helping the careers of 23 excellent young scientists and clinicians at pivotal stages of their research careers. In the last four years we have also awarded 125 summer studentships which will hopefully have encouraged many students to take up careers in research.

Investment Policy and Performance

The Institute's investment objective is to develop and maintain its financial resources in real terms through the selection of investments, consistent with an acceptable level of risk.

The Institute's investment portfolio is split between Cazenove Capital Management and Partners Capital LLP who both operate under mandates agreed in advance with the Finance and Investment Committee. These mandates set out an overall target asset allocation with allowable ranges for each category of asset.

Both investment managers invest on a total returns basis through a variety of pooled funds and in accordance with the Institute's overarching "Investment Policy Statement" ("IPS"), which states the overall investment objective and sets

the investment return objectives, the risk parameters, the performance measures and review procedures for the portfolio. The Institute's IPS was reviewed and revised as part of the quinquennial review of investment managers with specific versions agreed for each of the investment managers to reflect their individual investment approaches. The IPS's are reviewed annually. Every year the Institute reiterates its likely cash requirements, both in terms of the amount and the timing of any withdrawal.

The Institute's IPS includes reference to an ethical investment policy which does not permit direct investment in tobacco or tobacco-related companies. It has been agreed that our focus will remain on balancing ethical investments and returns as there is no compelling argument for a significant change in strategy at this time, although the Lister's stance on ESG will be kept under close review.

The Institute's overall financial return objective is to preserve and, if possible, enhance the purchasing power of its portfolio assets, net of costs and approved withdrawals, over rolling five-year periods. This goal is synonymous with the pursuit of a time-weighted net return on portfolio assets that equals and, if possible, exceeds cost inflation as measured by the UK Consumer Price Index plus the Institute's long-term spending rate of 3-4% measured over corresponding five-year periods. Having exceeded this target over recent years, with the high level of inflation now being experienced and difficult markets our investment performance is now running behind the target.

The performance of the investment portfolio is reviewed by the Finance and Investment Committee, which held two meetings in the year with the investment advisors to review performance, liquidity within the portfolio etc. In addition, the Institute receives detailed quarterly valuation and transaction reports. 2022 was another difficult year for the market which resulted in the Lister Portfolio declining from £47.6M to £43.3M.

A decision, taken in 2015 (and ratified in subsequent years), to withdraw and place £5M in a Liquidity Account was based both on the recent strong growth of the portfolio but also concerns about future market volatility and performance. Given the increase in the number and level of the Fellowships a further discussion was held in 2022 and the decision was made to maintain £5M in this Account, on a rolling basis, to be reviewed annually. As a result of the Investment Managers Review at the beginning of 2022 a proportion of this £5M was invested in a 'absolute return minded' fund - Ruffer Charitable Assets Trust that will hopefully help protect against the worst ravages of inflation. This decision was aimed to ensure that six Prize Fellowships of £250K each can be awarded for at least three years from 2023. The cash part of the Liquidity fund was used in 2022 to fund the Prize Fellowships. As a result of this, at the end of 2022 the Liquidity 'B' Fund has £3.098K.

More details of the Institute's activities are set out in the Chairman's Report on pages 1 to 16.

REPORT OF THE GOVERNING BODY (CONTINUED)

FINANCIAL REVIEW

Allocation of Resources

The Institute, which does not seek to raise funds from the public, depends primarily on investment returns to meet its pension payments, administrative expenditure and expenditure in furtherance of the Charity's objectives. The total return on investments for the year was a net loss of £2.483M and investment income of £595K.

The resources expended totalled £2,514M of which £2,084M were resources expended for the Institute's charitable activities.

The Prize Fellowships are fixed sum awards and, therefore, expenditure can be regulated by altering the number and/or value of prizes awarded each year. In 2022, prizes were awarded to eight very strong candidates. As previously described, a £5M liquidity portfolio has been established so that the number and level of awards is sustainable over a minimum of three years and for the first time was used to fund the Prizes in 2022.

Payments are currently made to three pensioners who are previous employees of the Lister Institute. The Institute's unfunded pension liability is some £142K. Given the value and nature of our investments, we do not believe pension funding to be a concern.

Reserves Policy

The policy of the Trustees is to maintain adequate financial resources to provide income to meet current and future commitments as they fall due and ensure that adequate funds remain available to enable them to make awards in perpetuity.

The adequacy of the level of reserves (£43.3M at the end of 2022) and the continuing appropriateness of the policy are reviewed on an annual basis by the Trustees. They continue to endorse the policy and its ability to support the long-term viability of the Institute and, given that the Institute is not formally committed to awarding any Prizes beyond the current year, are confident in the ability of the Institute to maintain appropriate levels of activity in the short-term.

Plans for the Future

The Institute's future policy is to continue to pursue its current objectives. It will therefore maintain and look to increase the Prize Fellowship scheme, which it sees as a funding priority. In wishing to continue to support young researchers through the on-going challenges in the research environment, the Governing Body has agreed that if there are sufficient high-quality candidates, the SAC may award up to 7 Lister Prizes in 2023. The Summer Studentship scheme will also be increased when possible.

Trustee Responsibilities Statement

The Trustees (who are also directors of The Lister Institute of Preventive Medicine for the purposes of company law) are responsible for preparing the Trustees' Annual Report and the financial statements in accordance with applicable law

and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

Company law requires the Trustees to prepare financial statements for each financial year, which give a true and fair view of the state of affairs of the charitable company, and of the incoming resources and application of resources, including the income and expenditure, of the charitable company for that period. In preparing these financial statements, the Trustees are required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in the Charities SORP;
- make judgments and estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements; and
- prepare the financial statements on the going concern basis, unless it is inappropriate to presume that the charitable company will continue in business.

The Trustees are responsible for keeping proper accounting records that disclose with reasonable accuracy at any time the financial position of the charitable company and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the charitable company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

In so far as the Trustees are aware:

- there is no relevant audit information of which the charitable company's auditor is unaware; and
- the Trustees have taken all steps that they ought to have taken to make themselves aware of any relevant audit information and to establish that the auditor is aware of that information.

The Trustees are responsible for the maintenance and integrity of the corporate and financial information included on the charitable company's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

This Trustees' report has been prepared in accordance with the special provisions of Part 15 of the Companies Act 2006 relating to small companies.

By Order of the Governing Body

JOHN IREDALE, Chairman
MURRAY LEGG, Treasurer

19 April 2023

INDEPENDENT AUDITOR'S REPORT

to the Members of the Lister Institute of Preventive Medicine

Opinion

We have audited the financial statements of The Lister Institute of Preventive Medicine ('the company') for the year ended 31 December 2022 which comprise the Statement of Financial Activities, the Balance Sheet, the Cash Flow Statement and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable to law and United Kingdom Accounting Standards, including FRS 102 'The Financial Reporting Standard Applicable in the UK and Republic of Ireland' (United Kingdom Generally Accepted Accounting Practice).

In our opinion the financial statements:

- give a true and fair view of the state of the charitable company's affairs as at 31 December 2022 and of its incoming resources and application of resources, including its income and expenditure, for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs(UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the audit of the financial statements section of our report. We are independent of the charitable company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the Trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the charitable company's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the Trustees with respect to going concern are described in the relevant sections of this report.

Other information

The other information comprises the information included in the Annual Report, other than the financial statements and our auditor's report thereon. The Trustees are responsible for

the other information. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

Opinions on other matters prescribed by the Companies Act 2006

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the Trustees' Annual Report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the Trustees' Annual Report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the company and its environment obtained in the course of the audit, we have not identified material misstatements in the Trustees' Annual Report.

We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept, or returns adequate for our audit have not been received from branches not visited by us; or
- the financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of Trustees' remuneration specified by law are not made;
- we have not received all the information and explanations we require for our audit; or
- the Trustees were not entitled to prepare the financial statements in accordance with the small companies regime and take advantage of the small companies exemption in preparing the Trustees' Annual Report and from preparing a Strategic Report.

INDEPENDENT AUDITOR'S REPORT (CONTINUED)

Responsibilities of Trustees

As explained more fully in the Trustees' responsibilities statement, the Trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Trustees are responsible for assessing the charitable company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Trustees either intend to liquidate the charitable company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below.

Explanation as to what extent the audit was considered capable of detecting irregularities, including fraud

The objectives of our audit in respect of fraud, are; to identify and assess the risks of material misstatement of the financial statements due to fraud; to obtain sufficient appropriate audit evidence regarding the assessed risks of material misstatement due to fraud, through designing and implementing appropriate responses to those assessed risks; and to respond appropriately to instances of fraud or suspected fraud identified during the audit. However, the primary responsibility for the prevention and detection of fraud rests with both management and those charged with governance of the charitable company.

Our approach was as follows:

- We obtained an understanding of the legal and regulatory requirements applicable to the charitable company and considered that the most significant are the Companies Act 2006, the Charities Act 2011, the Charity SORP, and UK financial reporting standards as issued by the Financial Reporting Council.
- We obtained an understanding of how the charitable company complies with these requirements by discussions with management.
- We assessed the risk of material misstatement of the financial statements, including the risk of material misstatement due to fraud and how it might occur, by holding discussions with management.
- We inquired of management and those charged with governance as to any known instances of non-compliance or suspected non-compliance with laws and regulations.
- Based on this understanding, we designed specific appropriate audit procedures to identify instances of non-compliance with laws and regulations. This included making enquiries of management and those charged with governance and obtaining additional corroborative evidence as required.
- In addressing the risk of fraud due to management override of internal controls, we tested the appropriateness of journal entries and assessed whether the judgements made in making accounting estimates were indicative of a potential bias.

Due to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audit in accordance with auditing standards. For example, as with any audit, there remained a higher risk of non-detection of irregularities, as these may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. We are not responsible for preventing fraud or non-compliance with laws and regulations and cannot be expected to detect all fraud and non-compliance with laws and regulations.

As part of an audit in accordance with ISAs (UK) we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purposes of expressing an opinion on the effectiveness of the charitable company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Trustees.
- Conclude on the appropriateness of the Trustees' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the charitable company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the charitable company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Use of our report

This report is made solely to the charitable company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to any party other than the charitable company and charitable company's members as a body, for our audit work, for this report, or for the opinions we have formed.

LUKE HOLT (Senior Statutory Auditor)

for and on behalf of Moore Kingston Smith LLP, *Statutory Auditor*

9 Appold Street
London EC2A 2AP

July 2023

STATEMENT OF FINANCIAL ACTIVITIES

for the year ended 31 December 2022

	Notes	2022	2021
		£'000	£'000
Income from:			
Investments	2	595	612
Total income		595	612
Expenditure on:			
Cost of raising funds			
Investment management costs	3	(185)	(263)
Charitable Activities			
Prizes and Summer Studentships	5	(2,305)	(1,711)
Total expenditure		(2,490)	(1,974)
Net (losses) / gains on investments	8	(2,483)	4,265
Net (losses) / gains		(4,378)	2,903
Other recognised losses:			
Actuarial losses on defined benefit schemes	12	(25)	(19)
Net movement in funds		(4,403)	2,884
Reconciliation of funds:			
Total funds brought forward		47,678	44,794
Total funds carried forward		43,275	47,678

All items in the above Statement of Financial Activities relate to continuing operations for both years. The Institute has no other recognised gains and losses other than as stated above and hence no separate income and expenditure statement has been shown.

The notes set out on pages 27 to 32 form part of these financial statements.

BALANCE SHEET

as at 31 December 2022 Company no: 34479

	Notes	2022	2021
		£'000	£'000
Fixed assets:			
Investments	8	43,294	47,597
Total fixed assets		43,294	47,597
Current assets:			
Debtors	9	6	5
Cash at bank and in hand	10	167	283
Total current assets		173	288
Current liabilities:			
Creditors: amounts falling due within one year	11	(50)	(73)
Net current assets		123	215
Total assets less current liabilities		43,417	47,812
Creditors: amounts falling due after more than one year			
Pension provision	12	(142)	(134)
Net assets		43,275	47,678
Represented by			
Unrestricted funds		43,275	47,678
Total charity funds		43,275	47,678

The Trustees have taken advantage of the exemptions conferred by the Companies Act 2006, on the grounds that the Institute is entitled to the benefit of those exemptions as a small company.

These financial statements were approved by the Governing Body on 19 April 2023

JOHN IREDALE
MURRAY LEGG
Members of the Governing Body

The notes set out on pages 27 to 32 form part of these financial statements.

CASH FLOW STATEMENT

for the year ended 31 December 2022

	2022	2021
	£'000	£'000
Cash flow/(outflow) from operating activities		
Net cash used in operating activities	(2,531)	(1,997)
Cash flows from investing activities		
Investment income	595	612
Proceeds from disposal of fixed asset investments	16,314	16,474
Acquisition of fixed asset investments	(13,818)	(14,042)
Other movements on investments	(676)	(896)
	2,415	2,148
Net (decrease) / increase in cash	(116)	151
Cash and cash equivalents at beginning of year	283	132
Cash and cash equivalents at end of year	167	283
Reconciliation of net income to net cash flow from operating activities		
	2022	2021
	£'000	£'000
Net (expenditure) / income	(4,403)	2,884
Adjustments for		
Net loss / (gains) on investments	2,483	(4,265)
Investment Income	(595)	(612)
Decrease / (Increase) in debtors	(1)	21
Increase / (Decrease) in creditors	(23)	(25)
(Increase) / Decrease in pensions	8	0
Net cash used in operating activities	(2,531)	(1,997)

NOTES TO THE FINANCIAL STATEMENTS

for the year ended 31 December 2022

1 PRINCIPAL ACCOUNTING POLICIES

Basis of preparation

The Financial Statements have been prepared in accordance with the Statement of Recommended Practice, Accounting and Reporting by Charities (FRS102 SORP). The Financial Statements are prepared in accordance with the historical cost convention modified by the revaluation of investments. The charity is a Public Benefit Entity as defined by FRS102.

The Financial Statements are prepared in sterling which is the functional currency of the Charity. Monetary amounts in these Financial Statements are rounded to the nearest thousand pounds.

The principal accounting policies adopted in the preparation of the Financial Statements are as follows:

Income

All incoming resources are accounted for on a receivable basis.

Prizes and Summer Studentships

The cost of Research Prize Fellowships is charged in the year awarded.

Expenditure

The costs of raising funds include those fees payable to the Institute's investment fund managers for the management of the Institute's investment portfolio. These are accounted for on an accruals basis.

Charitable activities comprise all expenditure directly relating to the objects of the charity and are accounted for on an accruals basis. The allocation of expenditure between governance and management, administration and support costs is reviewed on an annual basis to ensure the allocation is appropriate. Indirect costs are generally treated as falling into the latter category with the exception of a proportion of salary and related costs, which have been classified as governance costs.

In addition to auditor's remuneration, governance costs comprise the proportion of staff costs associated with the time spent on the preparation of the statutory accounts and other governance issues, together with honoraria remuneration provided to members of the Institute's Scientific Advisory Committee for their duties in selecting the Prize Fellows.

Supplementary pensions and staff pensions

An estimate of the full provision is made in the Financial Statements for the costs of future supplementary payments. The provision and charge to income are reviewed annually by the Trustees in the knowledge that the number of persons receiving the supplementary pensions will not increase. The pension costs are assessed in accordance with actuarial advice and these costs are accounted for in accordance with FRS102 SORP.

Existing employees participate in a defined contribution scheme, the costs of which are expensed as incurred. These disclosures are made in accordance with FRS102 SORP.

Tangible fixed assets

Any capital items purchased under £1k in value are expensed in the accounts in full as incurred. The Charity has no tangible fixed assets.

Investments

Investments are shown at market value in the balance sheet. Changes in the market value are included in the Statement of Financial Activities as realised and unrealised investment gains or losses in the year in which they arise. Investments denominated in foreign currencies are valued at year-end rates of exchange.

Cash flow statement

The Charity has included a cash flow statement in accordance with FRS102 SORP.

Taxation

The organisation is a registered charity and has obtained exemptions from taxation under Part 11, Chapter 3 of the Corporation Tax Act 2010. This exemption will remain as long as income is compatible with that section and expenditure is applied to charitable purposes only.

Critical accounting estimates and areas of judgement

In preparing financial statements it is necessary to make certain judgements, estimates and assumptions that affect the amounts recognised in the financial statements. The Trustees consider the estimates involved in the valuation of investments to have most significant effect on amounts recognised in the financial statements. These are taken directly from Investment Managers' reports.

In addition, the company has an obligation to pay pension benefits to certain employees. The cost of these benefits and the present value of the obligation depend on a number of factors including: life expectancy, salary increases, asset valuations and the discount rate on corporate bonds. Management estimates these factors in determining the net pension obligation in the balance sheet. The assumptions reflect historical experience and current trends. See Note 12 for the disclosures relating to the defined benefit pension scheme.

Going concern

The Trustees have assessed whether the use of the going concern basis is appropriate and have considered possible events or conditions that might cast significant doubt on the ability of the charity to continue as a going concern. The Trustees have made this assessment for a period of at least one year from the date of approval of the financial statements. In making this assessment the Trustees are satisfied that the substantial reserves and liquid assets held by the Lister Institute

NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

1 PRINCIPAL ACCOUNTING POLICIES *continued*

justify their belief that there are no material uncertainties that cast significant doubt on the charity's ability to continue as a going concern. The charity therefore continues to adopt the going concern basis in preparing its financial statements.

Financial instruments

The company has elected to apply the provisions of Section 11 'Basic Financial Instruments' and Section 12 'Other Financial Instruments Issues' of FRS 102 to all of its financial instruments. Financial instruments are recognised in the company's balance sheet when the company becomes party to the contractual provisions of the instrument. Financial assets and liabilities are offset, with the net amounts presented in the financial statements, when there is a legally enforceable right to set

off the recognised amounts and there is an intention to settle on a net basis or to realise the asset and settle the liability simultaneously.

With the exceptions of prepayments and deferred income all other debtor and creditor balances are considered to be basic financial instruments under FRS 102. See notes 9 and 11 for the debtor and creditor notes.

Fund accounting

Unrestricted funds are available for use at the discretion of the Trustees in furtherance of the general objectives of the Institute. Restricted funds are funds available subject to specific restrictions imposed by donors.

2 INVESTMENT INCOME

	2022	2021
	£'000	£'000
Income from fixed asset investments	588	612
Bank interest receivable	7	0
	595	612

3 INVESTMENT MANAGEMENT COSTS

	2022	2021
	£'000	£'000
Partners Capital LLP	92	168
Cazenove Capital Management	93	95
Total investment management fees	185	263

Investment management fees referred to here are those accrued fees relating to the management of the Institute's investment portfolios in 2022.

4 GOVERNING BODY AND STAFF COSTS

Emoluments of members of the Governing Body

One member of the Governing Body received an emolument of £2,000 in respect of services to the Institute during the year (see Scientific Advisory Committee below) (2021: 2000). Travel expenses of £858 were paid relating to the claims of four members in connection with their attendance at meetings (2021: £703 five members).

Members of the Scientific Advisory Committee (the Chair of which is also a member of the Governing Body) are offered remuneration in relation to their services to the committee. An honorarium of £2,000 (2021: £2,000) was paid to the chair of the SAC, the other SAC members (none of whom are members of the Governing Body) were paid £1,000 (2021: £1,000). The majority of members asked for the honorarium to be paid to their employing institution.

Employee information

The average number of persons employed by the Institute during the year was 3, (2021: 3) two of whom are part-time (2021: 2). All staff were employed in an administrative and support capacity. No employees earn over £60,000 p.a. (2021: none). Key management personnel include the Trustees and the Director. The total employee benefits of the charity's key management personnel were £44,069 (2020: £41,608).

Staff costs	2022	2021
	£'000	£'000
Gross salaries	101	88
Pension contributions	4	3
Employer's national insurance	7	5
	112	96

The salary costs are allocated under governance where related to statutory accounts preparation, the balance being reported within charitable activities.

5 PRIZES & SUMMER STUDENTSHIPS

	2022	2021
	£'000	£'000
Prize awards	2,000	1,437
Summer studentship payments	84	97
Support costs (see note 6)	87	64
Salaries (see note 4)	98	84
Governance costs (see note 7)	36	29
	2,305	1,711

6 SUPPORT COSTS

	2022	2021
	£'000	£'000
Office expenses	25	17
Travel expenses	9	0
Professional fees	8	4
Honoraria and events	38	39
Pension costs (see note 12)	7	4
	87	64

These costs are all considered to be costs to support resources expended on charitable activities.

NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

7 GOVERNANCE COSTS

	2022	2021
	£'000	£'000
Auditor's remuneration - current year	15	14
Staff costs (see Note 5)	14	12
Honoraria and events	7	3
	36	29

No non-audit services were provided by the auditors during the year (2021: none).
Auditors remuneration includes irrecoverable VAT.

8 INVESTMENTS

Listed investments are valued at middle market quotations ruling at the year-end

	2022	2021
	£'000	£'000
Market value at beginning of year	47,597	44,858
Purchases during the year at cost	13,231	14,042
Proceeds of sales during the year	(16,314)	(16,474)
Reinvested income for the year	588	593
Movement in un-invested cash	2,875	2,163
Cash withdrawn	(2,200)	(1,850)
Net change in market value	(2,483)	4,265
Market value at year-end	43,294	47,597

The portfolio's asset allocation was as follows

UK investments

Equities	1,845	2,244
Fixed interest	2,781	2,223
Other (including private equity, property, commodities, alternatives and inflation linked bonds)	4,543	5,271
Cash	4,954	6,311
Total UK investments	14,123	16,049

Non-UK investments

Equities	23,473	25,386
Other (including private equity, property, commodities and alternatives)	5,698	6,162
Cash	0	0
Total Non-UK investments	29,170	31,548
Total	43,294	47,598

At 31 December 2022 no single shareholding exceeded 5% of the total value of investments (2021: none).
Historical cost related to the closing position of 2022 was £33.6M (2021: £35.74M).

The Institute's investments held by one custodian are charged as security for the Institute's ongoing financial obligations to that custodian for banking services related to those investments.

9 DEBTORS

	2022	2021
	£'000	£'000
Prepayments	6	5
Total	6	5

10 CASH

	2022	2021
	£'000	£'000
Cash at bank	167	283

11 CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022	2021
	£'000	£'000
Taxation and social security	4	3
Accruals	46	70
Total creditors falling due within one year	50	73

12 PROVISION FOR LIABILITIES AND CHARGES

This represents a provision for future supplementary pension payments in respect of ex-employees, based on their salary and length of service. The pensions are unfunded, with payments made out of the Institute's funds as they fall due.

Movements in the pension provision during the year were as below

	2022	2021
	£'000	£'000
Liability at beginning of period	134	134
Plus interest cost	7	4
Plus actuarial costs and losses	25	19
Benefits paid	(24)	(23)
Liability at end of period	142	134

The tables below state the FRS102 actuarial assumptions used to estimate the pension provision.

Principal actuarial assumptions Valuation at 31 December 2022

	2022	2021
Rate of increase to pensions in payment*	5%	5%
Rate used to discount scheme liabilities	5%	2.5%

The post-retirement mortality assumption uses the PCA00 base tables (year of birth) with improvements equal to medium cohort with a 1% minimum.

* The 2023 Pension increase is 10%

NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

13 RELATED PARTY TRANSACTIONS

There were no related party transactions in the year, other than those outlined in note 5 (2021: none).

14 MEMBERS' LIABILITY

The liability of the Members of the institute is limited to 50p. At the date of the financial statements, there were 232 members, each with a guarantee potential of 50p.

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Page 11: From left to right: Dr Christopher Stewart, Dr Shoba Amarnath, Dr Elizabeth Ballou, Dr David Bending, Dr Tung Le, Professor Sir Alex Markham - past Chairman, Professor John Iredale - Chairman, Professor Julian Blow - SAC Chair, Dr Hayley Share, Professor James Davies, Dr Marco Di Antonio, Dr Sally Burtles - Director.

Page 14: 2022 Prize Winners left to right: Dr Elizabeth Ballou, Dr Marco Di Antonio, Dr Tung Le, Dr Shoba Amarnath.

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Back cover: The science behind it is described in Jones & Uphoff Single-molecule imaging of LexA degradation in *Escherichia coli* elucidates regulatory mechanisms and heterogeneity of the SOS response. *Nature Microbiology* 6, 981–990, 2021.

LEGAL AND ADMINISTRATIVE INFORMATION

for the year ended 31 December 2022

Business Address

PO Box 2502
Watford
WD18 1AE

Solicitors

Macfarlanes
20 Cursitor Street
London EC4A 1LT

Bankers

Messrs Coutts & Co
St Martins Office
440 Strand
London WC2R 0QS

Auditor

Moore Kingston Smith LLP
9 Appold Street
London EC2A 2AP

Registered Office

Macfarlanes
10 Norwich Street
London EC4A 1BD

Investment Advisors

Cazenove Capital Management
1 London Wall Place
London EC2Y 5AU

Partners Capital LLP

5 Young Street
London W8 5EH

Website: www.lister-institute.org.uk

Telephone: 0203 532 5345

The Lister Institute of Preventive Medicine is a company limited by guarantee (England 34479) and is a registered charity (206271)

THE GOVERNING BODY

Professor John Iredale, FRCP, FMedSci, FRSE, Chairman (*Elected 10th September 2022*)

Mr Murray Legg, BSc, FCA, *Hon Treasurer*

Professor Judith Armitage, BSc, PhD, FRS

Professor Wendy Bickmore, CBE, BA, PhD, FMedSci, FRS, FRSE

Professor Sir Adrian P Bird, CBE, FRS, FRSE

Professor Julian Blow, PhD, FRSE, Chair Scientific Advisory Committee

(*Appointed 10th September 2022*)

Professor Rebecca Fitzgerald, MD, FRCP, FMedSci

Hon Rory M B Guinness, BA, MSc, FCIM

Professor Douglas Higgs, MBBS, MRCPPath, DSc, FRCP, FRCPath, FRS

Mr Andrew Hutton, MA, CFA (*Retired 10th September 2022*)

Professor Sir Alec J Jeffreys, CH, DPhil, FMedSci, FRS

Professor Sir Alex Markham, DSc, FRCP, FRCPath, FMedSci (*Retired 10th September 2022*)

Mr Stephen McMahon, MA (Oxon), FCA, FCSI (*Elected 10th September 2022*)

Mr Matthew Pintus, BA

Professor Dame Pamela Shaw, DBE, FRCP, FMedSci

Professor Rosalind Smyth, CBE, FMedSci (*Appointed 10th September 2022*)

THE SCIENTIFIC ADVISORY COMMITTEE

Professor Julian Blow, PhD, FRSE, FMedSci, FMedSci, Chair (*Appointed 10th September 2022*)

Professor Judi Allen, MPH, PhD, FRSE, FRSB, FMedSci

Professor Thomas J Evans, MA, PhD, MBChir, FRCP

Professor Muzlifah Haniffa, FMedSci

Professor Aroon Hingorani, MA, PhD, FRCP

Professor Kikkeri K Naresh, MBBS, MD, DCP, FRCPath (*Retired 10th September 2022*)

Professor John Iredale, BM (Hons), FMedSci, FCRP, FRSE, MA (*Retired 10th September 2022*)

Professor Yvonne Jones, FRS, FMedSci, FLSW (*Appointed 10th September 2022*)

Professor Angus Lamond, FRS FRSE FMed Sci (*Appointed 10th September 2022*)

Professor Iain B McInnes, CBE PhD FRCP FRSE FMedSci

Professor Catherine Nobes, BSc, PhD (*Retired 10th September 2022*)

Professor Sir Mike Owen, BSc, MB ChB, PhD, FRCPsych, FMedSci, FLSW

Professor Elizabeth Patton, BSc, PhD, FRSE

Professor Barry V L Potter, MA, DPhil, DSc, CSci, FRSC, FMedSci (*Retired 10th September 2022*)

Professor Inga Prokopenko, MSc PhD (*Appointed 10th September 2022*)

Professor Anne Rosser, PhD, FRCP (*Appointed 10th September 2022*)

Professor Daniel St Johnston, FRS, FMedSci (*Appointed 10th September 2022*)

Professor Christoph M Tang, MBChB, PhD, FMedSci (*Retired 10th September 2022*)

THE FINANCE AND INVESTMENT COMMITTEE

Mr Murray Legg, BSc, FCA, Hon Treasurer, Chair

Professor Judith Armitage, BSc, PhD, FRS

Hon Rory M B Guinness, BA, FCIM

Professor John Iredale, FRCP, FMedSci, FRSE

Mr Andrew Hutton, MA, CFA (*Retired 10th September 2022*)

Professor Sir Alex Markham, DSc, FRCP, FRCPath, FMedSci (*Retired 10th September 2022*)

Mr Stephen McMahon, MA (Oxon), FCA, FCSI

Mr Matthew Pintus, BA

SENIOR MANAGEMENT

Director and Secretary: Dr Sally Burtles, BSc, PhD

