

Centre for Personalised Medicine

Annual Report 2021

The Oxford Centre for Personalised Medicine was established through a very generous donation from the Dr Stanley Ho Medical Development Foundation to St Anne's College in 2013. The Centre has enjoyed an ongoing fruitful collaboration with the Foundation over the last eight years, developing exciting academic partnerships with friends in Macau, Hong Kong and the Great Bay area as a result. The CPM also acknowledges with grateful thanks ongoing funding from the Wellcome Trust.



Executive summary

The Centre for Personalised Medicine (CPM) is a partnership between the Wellcome Centre for Human Genetics (WHG) and St Anne's College at the University of Oxford. It was formed in 2013 as a communication and engagement vehicle for students, academics, clinicians and the public to explore the benefits and challenges of personalised medicine. The Centre runs engagement events throughout the academic year, from small College-based lectures and seminars to conference series, public lectures and international symposia.

NHS England describes personalised medicine like this: "Understanding the role our DNA plays in our health can help us transform how we think about our healthcare and help us deliver: prediction and prevention of disease; more precise diagnoses; personalised and targeted interventions; and a more participatory role for patients. By combining and analysing information about our genome, with other clinical and diagnostic information, patterns can be identified that can help to determine our individual risk of developing disease; detect illness earlier and determine the most effective interventions to help improve our health; be they medicines, lifestyle choices, or even simple changes in diet. This can help us move away from simply managing an illness and instead focusing on promoting health."

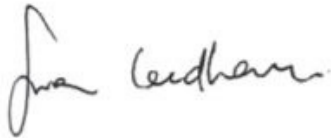
[\https://www.england.nhs.uk/healthcare-science/personalisedmedicine/ accessed 27/07/21]

This year the COVID pandemic has hit the UK and the world very hard, but science and medicine have risen to the occasion. The design, manufacture, testing, distribution and administration of vaccines across the world has been an extraordinary achievement and is testament to the dedication and ingenuity of global colleagues. Although the pandemic has highlighted the value of scientific discovery and clinical translation, there has never been a greater need to engage with people, to openly and transparently discuss the opportunities, challenges, risks and benefits that scientific discovery can bring.



It has been my pleasure and privilege to direct the Oxford Centre for Personalised Medicine over the last 5 years. In that time we have delivered more than 85 events, ranging from school fairs to student tutorials, from informal talks at patient groups to academic conferences with internationally acclaimed speakers. We have enabled our fantastic Oxford students to establish the Oxford University Personalised Medicine Society, and together we moved all engagement output online this year, allowing us to reach wider and more diverse audiences.

I am thrilled to be passing the directorship on to Professor Anneke Lucassen. I am very excited by her vision for the Centre and I look forward to being an avid audience member for the CPM events to come!



Professor Simon Leedham
Director, Centre for Personalised Medicine
2016 – 21



People

The end of Year 8 brings the Centre to a significant milestone, with **Professor Simon Leedham** stepping down from his role of Director after five fruitful years and **Professor Anneke Lucassen** taking up the Directorship from August 2021. The CPM is enormously grateful to Simon for his tireless work to raise the profile of the Centre and to engage with a wide range of audiences across diverse personalised medicine topics. Anneke joins the Centre as she begins working in the Nuffield Department of Medicine, based at the WHG, moving from the University of Southampton. The Centre is delighted that Anneke has agreed to accept the CPM Directorship in addition to her new role as she is an exceptional talent, at the forefront of the interface between genomics, genetics and the public. In addition to her clinical work she is also engaged with the exploration of ethical aspects of personalised medicine.

The CPM welcomed two new Junior Research Fellows (JRFs) at the beginning of the year, **Dr Nicky Whiffin** and **Dr Anika Knüppel**. This took the total JRF numbers from two to four, enabling the Centre to move ahead with a wide range of events and activities such as a video animation, blog and podcast series.

At the end of Year 8 **Dr Jason Torres** leaves the CPM after four years as a JRF, and Dr Anika Knüppel finishes her post after just one year in order to take up a new research role in London. The Centre's JRFs are essential in the creation and delivery of events, and these two Fellowships will be replaced early in Year 9.



Professor Anneke Lucassen



Farewell to Jason, Simon and Anika,
with St Anne's College mascots



The CPM is delighted that Steering Group member Professor Cecilia Lindgren has become Director of the Big Data Institute (BDI) at the University of Oxford, bringing the Centre's links with the BDI closer and enabling rich collaboration opportunities.

Finally, congratulations to CPM External Advisory Board members Professor Sir Peter Donnelly and Professor Dennis Lo on their medal awards from the Royal Society in August. Peter is awarded the Gabor Medal for pioneering work in the genomic revolution in human disease research, transforming the understanding of meiotic recombination, and for developing new statistical methods. Dennis's Royal Medal is in recognition of his discovery of foetal DNA in maternal plasma, developing non-invasive prenatal testing, and making foundational contributions for other types of liquid biopsies. He has made a major impact on pre-natal diagnosis.



The CPM commissioned a piece of original artwork to thank Simon

Administration Team



Catherine Lidbetter



Thea Perry

Steering Group



Professor Simon Leedham



Helen King



Professor John Todd



Dr Padraig Dixon



Associate Professor Nina Hollowell



Professor Julia Hippisley-Cox



Dr Anika Knüppel



Professor Cecilia Lindgren



Associate Professor Francis Szele



Dr Jason Torres



Dr Nicky Whiffin



External Advisory Board



Dame Mary Archer



Professor Sir John Bell



Professor Sir Peter Donnelly



Professor Gary Ford



Tim Gardam



Richard Girling



Ian Huen



Professor Dennis Lo



Dr Magdalena Skipper



Professor Joseph Sung





Year 8 summary of activities 2020-21

Key to demographic groups:

 Clinicians and academics

 Students

 Schoolchildren

 Patient groups and the public

Freshers' introductory talk - October



Junior Research Fellows Jason Torres and Padraig Dixon conducted a welcome session for incoming freshers at St Anne's College. The audience included new Medicine and Biochemistry undergraduates, graduate-entry Medics, Masters and DPhil students and visiting students. The JRFs introduced the new students to the CPM and invited them to attend and participate in forthcoming events. Additionally, the JRFs provided an introductory lecture on personalised medicine that addressed key scientific advances as well as social and ethical challenges. Topics included genetic insights into infection by the SARS-COV-2 virus, genome editing, genetic data privacy, and economic and public health considerations of personalised therapeutics.

The JRFs also informed students about the CPM's strong affiliation with the Oxford University Personalised Medicine society and encouraged interested students to join the OUPM and participate in OUPM-led events.

The case for palliative medicine in surgery - November



Dr Charlotte Chamberlain, Public Health Consultant and Clinical Lecturer in Palliative Medicine in the division of Population Health Sciences at Bristol Medical School, delivered an online lecture for the Centre on November 3rd, chaired by Professor Bee Wee. This talk drew from Dr Chamberlain's experiences as both a public health consultant and a palliative medicine practitioner during the Covid-19 pandemic, and particularly considered the case for palliative care in surgery.

The talk considered supportive and palliative care as potential tailored interventions for patients referred for major surgery. Dr Chamberlain reviewed findings from a workshop involving patients and professionals addressing palliative surgery and palliative care in surgery, and proposed a pilot study of perioperative supportive care. The talk concluded with an introduction to some of the unpublished key findings from the Lancet Value of Death Commission. Dr Chamberlain's excellent and thought-provoking talk on a uniquely personal form of medicine encouraged the audience to consider how a rebalancing of our approach to death might improve outcomes for patients and, in so doing, address over- and under-treatment for all manner of patients.



Host microbiome interactions in health & disease - November



The CPM was delighted to host Professor Eran Elinav from the Weizmann Institute of Science in Israel to present an engaging lecture on his research into deciphering the molecular basis of host-microbiome interactions and their effects on health and disease, with a goal of personalising medicine and nutrition. Professor Elinav was to have been the 2020 Annual Lecturer, and the Centre was disappointed not to have him in Oxford in person, but his talk was watched live by over 100 people and on YouTube over 500 times. The lecture was extremely well-received by a wide audience who enjoyed its diversity and breadth.

Annual Lecture: Race, genomes and data: The bias built into science - February



The CPM Annual Lecture 2021 was delivered by scientist, broadcaster and author Dr Adam Rutherford. Adam has been a regular presence on BBC Radio 4 over the past decade and currently presents the podcast *The Curious Cases of Rutherford & Fry* with mathematician Hannah Fry. Adam has authored multiple popular science books around the subject of evolution and, most recently, the thought-provoking book on the history of science and racism, *How to Argue with a Racist*. It was around this latter topic that he focused his lecture.

As a skilled science communicator, it wasn't surprising that Adam's lecture was both insightful and engaging. He discussed race as a social construct: its history, and how scientific terms in genetics have a history entwined in racism.

"If you teach or work in human genetics - the ocean from which human variation is drawn - you have little choice but to speak of race and the history of eugenics."

Adam talked about the clouded history of many great geneticists through history who were often strong proponents of eugenics, and how many of the methods we use in statistical genetics today were developed during their work in this field.

Adam discussed how "we should be able to have complex and nuanced views about people", recognising them

for the progress they have enabled in science, but also not shying away from their horrendous viewpoints. Adam was clear that it is not just a case of facing up to our past, speaking about how "data is never neutral", as the way that we collect and choose to analyse data is biased by our own views, and how we struggle in science and medicine without any generally agreed norms of race language. These are current problems that we need to tackle in science today.



Dr Adam Rutherford



A fascinating question and answer session followed Adam's talk. The live audience comprised over 350 people and the recording has been viewed 1,200 times. This far exceeds the reach of previous annual lectures; the Centre will livestream future high-profile lectures in order to reach as broad an audience as possible.

Stanley Ho Memorial Lecture: CRISPR-Cas9: Genome editing and the future of medicine - March



The CPM was honoured to host Professor Jennifer Doudna to deliver the first annual Dr Stanley Ho Memorial Lecture. Professor Doudna is an outstanding biochemical scientist who was the recipient of the 2020 Nobel Prize in Chemistry, in conjunction with Professor Emmanuelle Charpentier, for their discovery and development of CRISPR-Cas9 gene editing technology.

CRISPR has revolutionised our ability to edit the sequence of DNA, which has important applications for understanding genetics and huge promise for treating human genetic disease. In this fascinating and engaging talk, Professor Doudna introduced how CRISPR-Cas9 was discovered and harnessed, from its origin within a bacterial immune system to its translation to human medical research (along with many, many other fields).

One overwhelming advantage of CRISPR-Cas9 editing compared to other technologies is how, simply by changing the provided guide RNA in the CRISPR system, the Cas9 enzyme's target site can be easily switched. This high level of site specificity combined with the efficacy of CRISPR-Cas9 gene editing gives CRISPR technology a clear advantage compared to previous gene editing technologies.

However, being a novel technology, CRISPR is not without current constraint and Professor Doudna discussed various limitations, including the high cost of treatment, in great depth. The financial as well as scientific barriers to more widespread clinical implementation are ongoing considerations for Professor Doudna and her lab, with an aim to increase both accessibility and affordability of CRISPR-Cas9 therapy.

The lecture ended with a lively question and answer session chaired by Professor John Todd (WHG). The recording of this lecture quickly became the CPM's most-watched video, with well over 13,000 views to date, and translations made into Chinese languages for the benefit of our international audiences.



Professor Jennifer Doudna



OUPM Annual Symposium - March



The Oxford Personalised Medicine Society (OUPM) organised its 2nd full-day annual symposium on 11 March, with a key focus on showcasing and celebrating our society members' research endeavours. With the ongoing COVID-19 pandemic, this year's symposium was held virtually and attracted over 60 attendees from across the University and various countries. Keynote addresses were delivered by Dr John McDermott, NIHR Academic Clinical Fellow in Genomic Medicine, who presented on genomics in clinical practice, and Dr Sowmiya Moorthie, Senior Policy Analyst at PHG Foundation, who spoke on genomics, policy and practice. As a highlight of our popular Oxford SARS-CoV-2 Lecture Series, the symposium included a COVID-19 talk delivered by Professor Sharon Peacock CBE, Executive Director and Chair of the COVID-19 Genomics UK (COG-UK) Consortium, who shared a comprehensive lecture on COVID-19 variants. This CPM-sponsored event also included a new addition of an interactive heated debate session led by the CPM Junior Research Fellows: "This house believes individuals have a right to ownership of their own genetic data". Moreover, the symposium featured a diverse cohort of fantastic student research studies, ranging from CRISPR Cas9 to clinical applications of physics-based research, at various Oxford-affiliated departments.

Following the presentations of our passionate student researchers, the symposium concluded successfully with a prize-giving ceremony for the best student speaker as well as the best debater.

Science engagement activity - April



Dr Pdraig Dixon and Dr Nicky Whiffin gave online talks to students at local secondary school The Cherwell School in Oxford. These talks were to Year 11 and Year 13 students (16 and 18 year olds) participating in the school's enrichment programme. Pdraig introduced students to the uses of economics in healthcare, including in relation to the pricing of new drugs. The students asked excellent questions, and were particularly interested in how economics could be used to understand the distribution of vaccines for COVID-19, and in fairness and equity issues in pricing new healthcare technologies. A week later, Nicky gave a talk on genomic testing for rare diseases, touching on many of the ethical implications around genomic testing both in the clinic and when used in the population. The students were engaged throughout, and really interested in the ethics around this, including posing the question "do you own the copyright to your own genome?".



Oxford Genomics Centre and CPM forum: Spatial transcriptomics - April



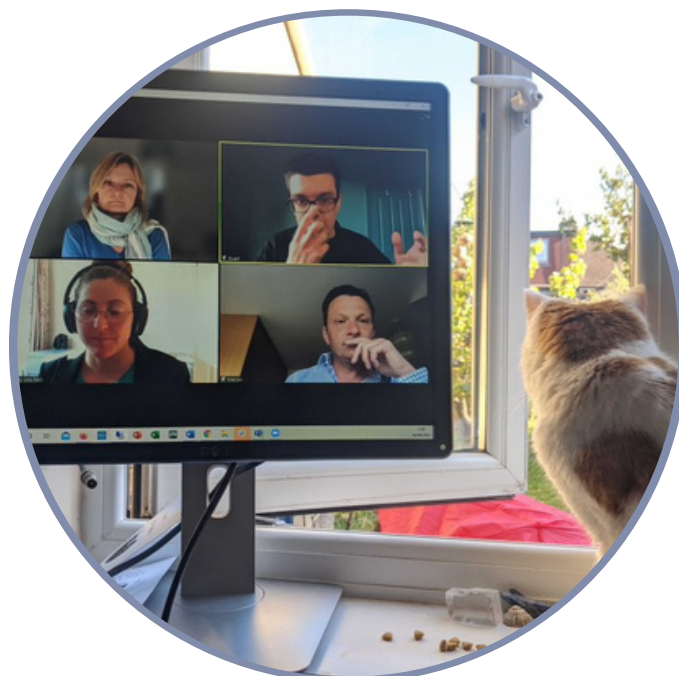
The CPM collaborated with the Oxford Genomics Centre, part of WHG, to host an afternoon forum exploring spatial transcriptomics. This was well-attended and of interest to academics and to those working in industry. The new technology of spatial transcriptomics was discussed in relation to therapeutic immune regulation and tissue spatial analysis, renal histology, single-cell spatial resolution and defining tissue microenvironments in the human gut in health and disease. Representatives from five translational research and sequencing companies completed the line-up. The Centre is working towards its second collaboration with OGC.

Reproducibility in science: A fireside chat - April



The CPM hosted a virtual fireside chat on the theme of reproducibility in science on April 26th. This event centred on the best-selling book *Science Fictions*, authored by Dr Stuart Ritchie, Lecturer at the Institute of Psychiatry, Psychology and Neuroscience at King's College London. He was joined by Dr Marcus Munafó, Professor of Biological Psychology at the University of Bristol and Dr Malika Ihle, Reproducible Research Oxford Co-ordinator. The event was expertly chaired Dr Magdalena Skipper, Editor-in-Chief of Nature and a member of the Centre's External Advisory Board.

This engaging event covered topics including the development and history of the so-called “reproducibility crisis”, and including its origins in human fallibility, technology as a double-edged sword and the structure of career incentives facing scientists. The discussants also considered potential ways of overcoming the challenges that have emerged in this domain. Solutions discussed included pre-registration, improved and optimised use of technology, education and training, an attitude and culture of organized scientific scepticism, and the need to test any possible solutions to the problems identified before they are widely implemented. The event and its format offers rich possibilities for holding similar “fireside” discussions in the future.



A feline audience member



Genes, behaviour and metabolic health symposium - May



The latest in the Centre's Personalised Medicine in Practice series, this symposium was organised by the CPM in collaboration with Oxford Metabolic Health (OMH), a cross-Oxford initiative established in 2018 with the aim of bringing together researchers who are interested in the relationship between metabolism (in the broad sense of the term) and health. The event was aimed at researchers in the field of metabolic health, genetics and behaviour. The symposium was run online, from 1-6 pm and organised into three sections: genetic medicine, lifestyle interventions and a keynote lecture.

The first session included experts in the genetics of obesity and diabetes, Professor Cecilia Lindgren from the University of Oxford, Professor Paul Franks and Associate Professors Rachel Freathy and Richard Oram. They each presented their research showing the breadth of different research approaches in this field from risk score to maternal and foetal genetic studies. The second session included experts in the field of behavioural research, Dr Alison Fildes, Associate Professor Aiden Doherty from the University of Oxford and Dame Theresa Marteau. Their talks included research on twin studies, wearable-device-measured physical activity and an overview of the effects of genetic risk communication on behaviour change.

In the keynote session Professor Tim Spector of King's College London reported the setup and findings from the Predict study, which is investigating individual nutritional responses to meals in order to predict personalised food responses based on individual characteristics such as the microbiome. The goal of the study is to develop a consumer product, which could give personalised food recommendations to optimise metabolism, manage weight and improve long-term health. The talk was followed by a Q&A and in-depth discussion with Professor John Todd, Director of the WHG.

The events offered a broad overview on the topic of genes, behaviour and metabolic health by bringing together eminent speakers using different research methods for similar questions as well as opening up researchers from the genetic field to what this might mean for health behaviour change and vice versa. The organisers received great feedback. Speaker Dr Alison Fildes wrote: "Thank you very much for the opportunity to be part of such a fantastic event. I really enjoyed all the talks and I have spoken to several people who attended and who have also said how great the event was".



Professor Tim Spector



Facing up to disparities in healthcare conference - June



The CPM, in partnership with Dr Jenny Douglas from the Open University, organised a two-day symposium focussing on disparities in healthcare. The event addressed the regrettable fact that, despite advances in medicine gleaned during the past few decades, considerable disparities in health outcomes persist among ethnic minority populations throughout the world. The programme explored scientific and social factors that contribute to biases within healthcare systems and result in unequal outcomes in disease diagnosis, treatment, and prevention.

It featured presentations from leading epidemiologists, sociologists, and geneticists that were coupled with focused discussions on causes of health inequity and potential solutions. Eye-catching and thought-provoking original artwork was commissioned to advertise this event by Dr Alex Cagan of the Wellcome Sanger Institute near Cambridge.

The distinguished cadre of speakers included Professor Kevin Fenton (Public Health England), Professor Vittal Katikireddi (University of Glasgow), Professor Clare Bamba (Newcastle University), Professor Marian Knight (University of Oxford), Professor Eimear Kenny (Ichan School of Medicine at Mount Sinai, New York, USA), Professor Aimé Lumaka (University of Liege, Belgium), Dr Alicia Martin (Broad Institute / Massachusetts General Hospital, USA) and Professor Keolu Fox (University of California, San Diego, USA).

The event included a panel discussion on how the ongoing COVID-19 pandemic has exposed and exacerbated health disparities among BAME communities. In addition, the programme addressed how the genomics revolution and efforts to advance personalised medicine may be increasing, rather than ameliorating, current disparities in healthcare. Lastly, Professor Dorothy Roberts from the University of Pennsylvania delivered a keynote address on conceptions of racial identity and their pernicious consequences in medicine.



Detail from the conference poster

Professor Dorothy Roberts



Aim for Oxford Academic Taster Session - June



On behalf of the CPM, Junior Research Fellow Anika Knüppel delivered an online academic taster session for the Aim for Oxford programme in the field of medicine. The programme supports forty high-achieving state school students per year from the North East of England, from the beginning of Year 12 through to making strong applications for, and then arriving at, Oxford, and is a collaboration with Christ Church.

In her talk “Epidemiology: From the headline to my laptop”, Anika used news media headlines taken from her research to teach the students science literacy. This included some basic insight into the field of epidemiology, offering awareness into the scientific process and scientific publishing, and how research ends up in the news media. A key focus was to teach students to ask the right questions, such as “What are alternative explanations for these findings?”, and to understand the difference between a catchy health news headline and evidence.

year effort to return actionable genetic findings to participants in a local biobank. Their story was one of struggling through ethics and learning about the opinions of participants around receiving genetic test results that can impact on clinical care. The talk was fantastic and generated a large number of fascinating questions that were taken during a discussion that followed it.



Cristen Willer high profile lecture - June



The Centre welcomed Dr Cristen Willer and Rajani Aatre to deliver a high-profile lecture in June. Cristen is an associate professor and Rajani is a genetic counsellor, both at the University of Michigan. This event was organised on the back of a paper (and associated Twitter thread), led by Cristen, on a five-



Dr Cristen Willer, L, and Rajani Aatre, R



Scholarships, bursaries and student support

It has not been possible to move forward with either of the planned Dr Stanley Ho Scholarships with students from the University of Macau, due to the ongoing pandemic and consequent travel restrictions. It is hoped that Year 9 will see at least one of these Scholarships happen, creating bespoke student experiences for postgraduate students from the Pearl River Delta region. The CPM remains committed to this programme and its links with Universities in the region. A couple of small bursaries were given to OUPM members to undertake specific training to enable them to hold events and build their website.

The CPM also offers travel bursaries to support students who want to attend conferences. The CPM reviews applications for these funds using a simple form made available to students, although there has been no take up in the past academic year because of pandemic-related travel restrictions.

The CPM has also supported student efforts in organising their activities. This has included financial support to establish the student-led personalised medicine journal, as well other contributions and advice on the planning of their extensive programme of events.



OUPMS activities throughout the year



The OUPM has grown significantly over the past year, developing new initiatives to maximise engagement with our members despite restrictions during the pandemic. Despite being a very new society, the OUPM has managed to gather over 200 active members. While the majority of these are medical and biomedical students, we are also proud to have attracted students from a range of other courses who may not traditionally have been interested in the personalised medicine movement. Building on this momentum, we expanded our social media platforms, creating Twitter, Instagram and LinkedIn accounts, as well as developing a website in addition to our weekly newsletters. We also created pre-event surveys, feedback forms, and new committee roles (Publicity Officer and College Ambassadors) to more effectively promote our events and opportunities and to reach a wider audience.

The OUPM has held talks on research and clinical subjects, encompassing a diverse array of areas in Personalised Medicine on a regular basis throughout the year. Most recently, we hosted Professor Sir Mark Caulfield, Chief Scientist for Genomics England, who delivered an incredibly exciting talk on transforming genomics in the NHS. This insightful talk is indubitably one of the most well-received lectures in our series.

In light of the ongoing COVID-19 pandemic, the OUPM continued to host a wide variety of keynote speakers who are at the forefront of COVID-19 research and treatment as part of the Oxford SARS-CoV-2 Lecture Series.

This year the OUPM committee recruited an editorial team who worked hard to produce the first issue of the Oxford Personalised Medicine Journal. This is the first student-run journal at the University of Oxford that focuses on the inherently interdisciplinary nature of Personalised Medicine and provides readers with an in-depth insight of the current research and implementation of personalised medicine in the modern era. The OUPM also supported the CPM in its new blog as well as with the CPM Podcast Meet the Advisory Board series, preparing questions and interviewing eminent speakers. In addition, we are incredibly proud of the work our society members carry out, and thus we organised a full-day OUPM Annual Symposium which served as a platform to highlight and reward their work. Other new initiatives included an outreach event in conjunction with the student-run access society STEP inTO OxMed, and a Coding Skills Workshop series to provide OUPM members with experience using various programming languages for research. In collaboration with the Centre's Junior Research Fellows, we created a new Careers Workshop series to support students working towards a career in academia. Finally, we promoted the many excellent events hosted by the CPM including lectures by Dr Adam Rutherford and Professor Jennifer Doudna.



Our society's aims are to increase engagement and awareness of research opportunities available for students in Personalised Medicine within the University and foster discussions about the benefits and detriments of the field on healthcare in modern-day medicine. We are glad to have met our goals via organising a diverse range of activities and seen our society move ahead throughout the year, which would not have been possible without the strong support and help by our sponsor, the Centre for Personalised Medicine.

Jiyeon Lee and Holly Eggington



"It has been a great honour and privilege to serve the society in synergy with the CPM, which provided constant support for all our events and enabled us to be exposed to a wide range of Personalised Medicine-related opportunities. It was a tough but certainly a fruitful academic year for the OUPM."

Jiyeon Lee
President of the OUPM



Members of the Society hard at work (before COVID)



Website and social media

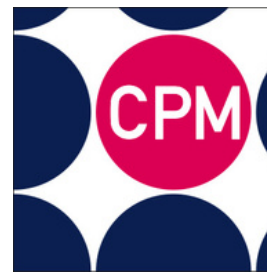


The CPM continues to add event recordings to its website, offering an ever-increasing and exceptional line-up of speakers on a wide range of personalised medicine topics. Twitter and Facebook remain important tools in disseminating news and advertising events. <https://cpm.well.ox.ac.uk/>

Blog



This year has seen the CPM establish a blog, which can be found on the website. We hope to use this new communication platform to write reports on our events and lectures, to publicise our podcasts (see below) and as a new forum for engagement. We have so far published five posts, including an introduction to the blog, posts connected to the first two podcasts, a report on Jennifer Doudna's Dr Stanley Ho Memorial lecture written by Holly Eggington, Secretary of the OUPM, and a post written by Steering Group member Nina Hallowell on *Debating data: a mini citizens' jury during a perfect storm*. We will continue to develop the blog and introduce new post types over the coming year.



Podcasts



In Spring of 2021 the CPM published its first Centre of Personalised Medicine Podcast in its Meet the Advisory Board series on the University of Oxford Podcasts, and available on most podcasting apps such as Apple podcasts and Spotify.

In this series, the President of the OUPM, Jiyoung Lee, and Junior Research Fellow Anika Knüppel have interviewed members of the CPM's External Advisory Board about their careers and views on personalised medicine. In the episodes published within the reporting period they interviewed Dr Magdalena Skipper, geneticist by training and Editor-in-Chief of the journal *Nature*, and Dame Mary Archer, physical chemist by training and among other things chair of the Science Museum Group.



In conversation with Dr Skipper, Jiyeon and Anika talked about women in science, the work of an editor and new possibilities for scientific publishing, reproducibility and personalised medicine research, a topic described by Dr Skipper as “close to my heart”. Dr Skipper highlighted the role of diversity in personalised medicine: “as wonderful as it has been and as much progress as we have made - the field has by and large focused on a subset of the global population. There has been great predominance of research on individuals of European descent [...] but this is a tremendous opportunity to collect the data but also engage those communities in the research that's being done [...]”. The CPM has taken a further look at this final topic in this year's Facing up to disparities in healthcare conference.

In conversation with Jiyeon and Anika, Dame Mary Archer discussed her most notable career move of becoming Chair of Cambridge University Hospitals and how it has shaped her views of the NHS. Dame Mary explained how having a grounding in science has helped in her career outside of academia and why it made decision-making difficult at times because “less usefully, it makes you obsess about details”. Dame Mary also described the changes she has noticed when comparing her time at St Anne's College in 1966 with what she sees current students are experiencing. In respect to personalised medicine, she shared how her career and personal health experience have offered her a unique insight into the role of personalised medicine in patient decision making.

She stated that “personalised medicine is here to stay. It is a force for good, increasingly powerful and should be a part of the clinicians and patients' armoury in all appropriate cases to weigh information and evidence and determine what is the best way forward for that individual patient.”

The podcasts allow those interested in personalised medicine and the CPM to gain insight into each board member's breadth of experience, careers and their unique views on personalised medicine, in that person's own voice.



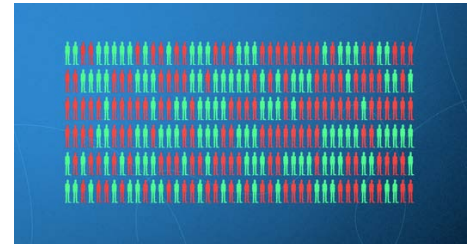
Video animation



During the past year, the CPM has produced its first fully animated educational video. The purpose of the animation is to inform a general audience, including prospective research participants, on the subject of polygenic risk scores, or PRS. The aims of the video were to (a) define what a PRS is and describe how it is calculated, (b) discuss the potential of PRS to benefit patients through improved diagnosis, treatment, and prevention of disease, (c) address current challenges and limitations of PRS and (d) encourage viewers to participate in clinical trials of PRS supported by the Oxford Biomedical Research Centre.

Junior Research Fellow Dr Jason Torres, in conjunction with a committee of CPM Steering Group members and Professor Jenny Taylor of the BRC, prioritised learning objectives, drafted an initial script, and selected Earth London as the animation studio to hire for the project. Jason coordinated with the creative director Richard White on selection of art style, writing of an animation screenplay, and selection of audio tracks and voice talent.

Upon creation of an initial version of the video, the animation committee petitioned external feedback from Patient and Public Involvement and Engagement (PPIE) participants for feedback on the effectiveness of the video in conveying core messages, Professor Sir Peter Donnelly for additional feedback on the scientific accuracy of the description of PRS, and communications experts working for the *Our Future Health* initiative for additional feedback on the clarity and utility of the video. External feedback was then used to produce a revised version of the animated video that will be hosted on a CPM webpage and incorporated into educational materials for clinical trial recruitment efforts. The video will be available in both English and Cantonese language versions. Funding for this project was provided by the Dr Stanley Ho Medical Foundation, the Wellcome Trust and the BRC.

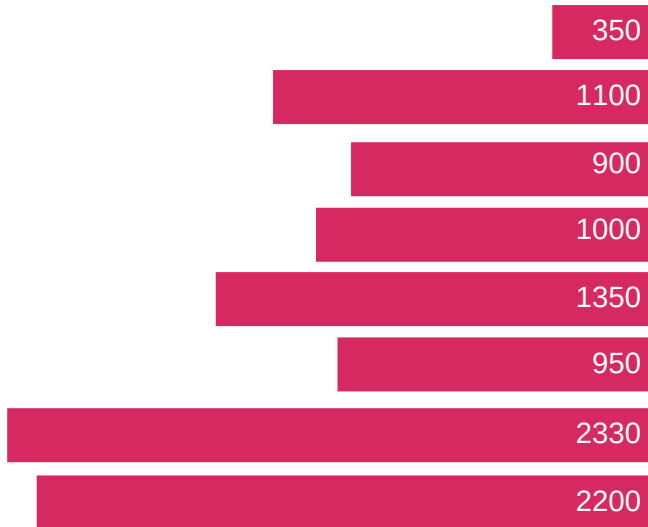


Year 8 Impact Statement 2020-2021



With generous support from the Dr Stanley Ho Medical Development Foundation and The Wellcome Trust

Number of event attendees



Number of events



Virtual attendees
from 56 countries



823 YouTube subscribers
29,200 views in the last year
Over 53,000 'lifetime' views



1,390 Twitter followers
1,419 tweets



143 Facebook followers

Collaboration



**St Anne's
College**
University of Oxford



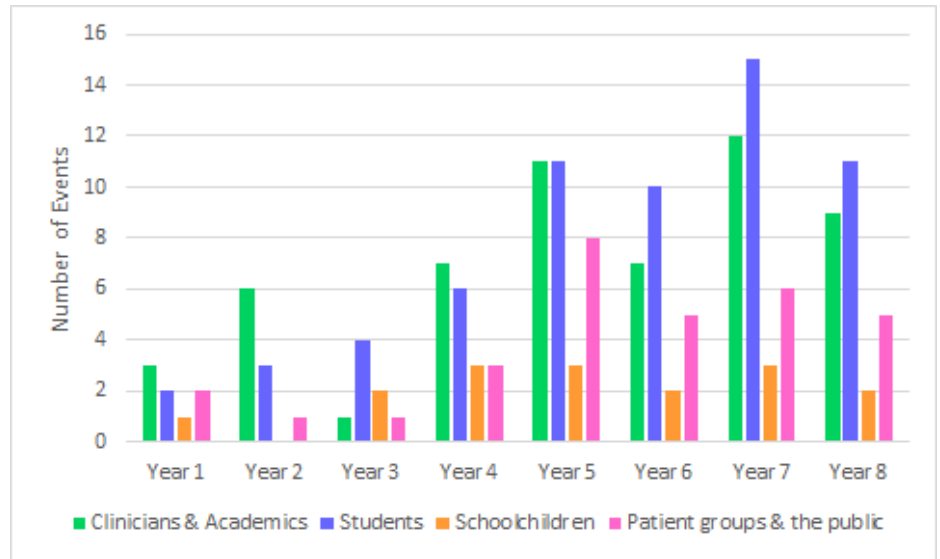
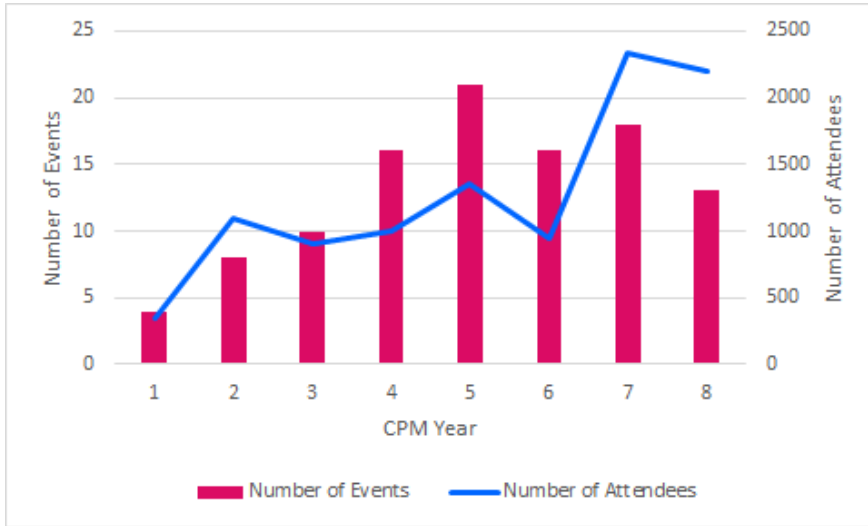
The Open
University

Oxford
Genomics
CENTRE



Statistics

Although these figures show that the Centre hosted fewer events this year, this is due to last year's exceptional output of online talks by the OUPMS at the beginning of the pandemic. This year's figures contain *only* CPM events, not those organised by the students, except for the Annual Symposium, in which the JRFs were active.



Strategic plan 2021 - 2022

As incoming Director, I would like to say how delighted I am to be taking on this role, and to join the CPM team in thanking Professor Simon Leedham for all he has done for the Centre over the past five years. His enthusiasm, ability and application have made the CPM the successful partnership and outreach vehicle it is today, and I will work hard to continue this upward trajectory.

I hope that over this next year we will see a return to some face-to-face activities, while continuing to benefit from the greater international reach that virtual meetings allow. Further development of online resources such as the video library is part of this extended reach, the JRF-led animation on polygenic risk scores a great example, and we are about to produce a film for the American Society of Human Genetics Thought Leadership Film Series.

From late September we will again have a full complement of four JRFs affiliated to the CPM. I look forward to developing ideas with this talented team as well as with the student-led Oxford University Personalised Medicine Society, who have shown such enthusiasm and initiative since their inception. I also hope that activities that cannot be done entirely on-line, such as the summer school with Padua, will be possible again, and that our collaborations with partners in Macau, Hong Kong and Guangzhou can thrive once travel is possible.

In this next phase I would like to think about some of the implementation aspects of new personalised medicine approaches. How can we ensure that scientific discoveries in the genomic era are translated into effective improvements in health care? What are the ethical, legal and societal aspects (ELSA) that need to be addressed? Ensuring that an ELSA laboratory works effectively alongside molecular laboratories and clinical developments is something that the CPM is well positioned to do. I'd like the CPM to work closely with other Wellcome centres in Oxford; we have a joint event planned with the Centre for Ethics and Humanities in November that will explore the communication of genetic risk factors within families. This in turn links with the NHS and with patient support group Unique, thus fulfilling one of the CPM's core outreach aims. Finally, we have already started discussions on diversity and genomics, building on ideas from Dr Adam Rutherford's lecture and the conference on health disparities.

We always welcome ideas about how the CPM might develop; please do contact us to discuss your thoughts!



Professor Anneke Lucassen, Director, Centre for Personalised Medicine



Year 9 Summary of planned activities

CPM and Oxford Genomics Centre Forum exploring host pathogen genomics - 29 September 2020



This second forum in collaboration with the Oxford Genomics Forum will comprise an afternoon of talks on host pathogen genomics by prominent researchers and technological companies on their work in this field.

St Anne's student freshers' induction talk - October



The Junior Research Fellows will introduce the CPM and the OUPM to new St Anne's students and begin to explore with them the benefits and challenges of personalised medicine.

American Society of Human Genetics Conference - October



The CPM is honoured to have been asked to contribute a short film on its work to the American Society of Human Genetics' (ASHG) Thought Leadership Film Series, a part of ASHG's Annual Virtual Meeting in October.

It will be one of an exclusive number of pre-recorded films, profiling partners at the forefront of research, advocacy and industry across the field. The event draws in over 9,500 attendees from around the globe to disseminate their cutting-edge work and foster successful collaborations. The role of the project is to provide a platform to help raise the international visibility of partners who are engaged in pioneering work and aid greater understanding of innovation in genetics research.



Dr Nicky Whiffin

Being Human Festival: Familial Fortunes - 17 November



In this collaboration with the University of Oxford's Wellcome Centre for Ethics and Humanities, the CPM will host an online discussion with members of the public, addressing such questions as: "Would you want to know what your DNA says about your chances of getting various diseases?" and "Whose job is it to pass on such information?". A panel of experts will discuss these and other complex questions and explore how scientific advances can have repercussions for healthcare choices, family relationships and how we all choose to live our lives.

Inaugural Director's lecture - Autumn

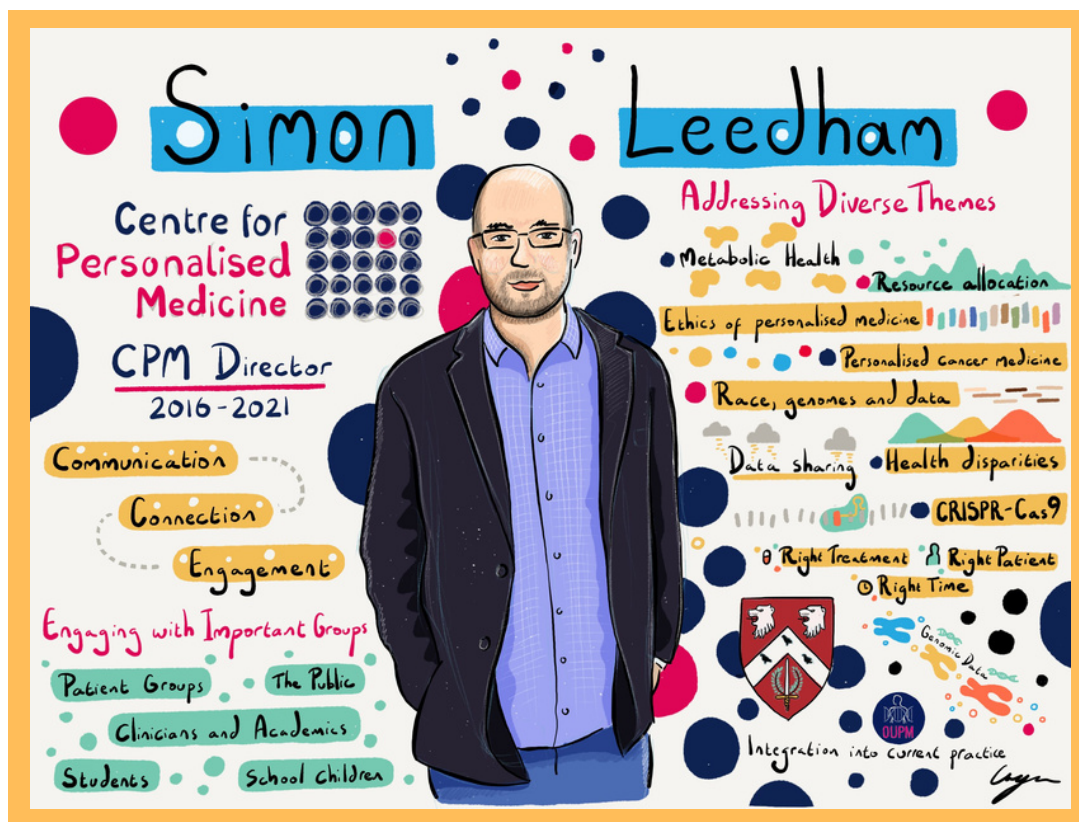


Professor Anneke Lucassen will give an online lecture entitled *The Promises of Genomic Medicine: An interdisciplinary approach to translation and implementation*.

Annual Lecture by Siddhartha Mukherjee - 26 May 2022



The Centre will host Professor Siddhartha Mukherjee, well-known biologist, oncologist and author of the Pulitzer Prize-winning book *The Emperor of all maladies: A biography of Cancer* in his CPM Annual Lecture. It is hoped that this event will be in-person, in Oxford.



Simon was presented with this original piece of art as part of his leaving present. It was created by Dr Alex Cagan, who worked with the CPM earlier in the year on the conference *Facing up to disparities in healthcare*

Events List

Since its inception in October 2013, the CPM has hosted events on a wide range of personalised medicine-related topics:

2021

- June** Guest lecture by Cristen Willer
 - June** Health disparities conference
 - May** Personalised Medicine in Practice seminar on Genes, behaviour and metabolic health
 - April** Reproducibility in science fireside chat
 - April** Oxford Genomics Centre and CPM forum: spatial transcriptomics
 - March** OUPM Annual Symposium
 - March** Inaugural Dr Stanley Ho Memorial Lecture by Professor Jennifer Doudna
 - February** Annual Lecture by Dr Adam Rutherford
-

2020

- November** Guest lecture by Professor Eran Elinav
- November** Palliative medicine webinar
- October** Freshers' introduction
- May and June** Oxford SARS-CoV-2 Lecture Series
- March** OUPM symposium
- March** St Anne's outreach event
- February** Science Subject Family Evening
- February** Debating data: A citizen's jury with WEH and Ethox
- February** Personalised medicine and risk prediction for GPs
- February** Colorectal cancer meeting, Royal Society of Medicine
- February** SIU STEM Personalised Healthcare: From bench to bedside
- January** NDPH / WHG talk by George Davey Smith

2019

- December** GMS Neoplasia disease day
- November** Annual Lecture by Professor Dame Sue Hill and VIP dinner
- November** Talk by Dr Tim Morris on Personalised Education
- November** Science Subject Family Evening
- October** Richard Doll Society lecture given by Dr Jason Torres
- October** NIH-Oxford Michaelmas welcome dinner
- October** CPM introduction for WHG new DPhil students
- October** Freshers' introductory talk
- September** Oxford Gardens Primary outreach event
- July** Talk by Dr Chandler Gatenbee on colorectal cancer
- June** Summer School in Padua: Translational and personalised medicine: From bench to bedside
- May** Pint of Science: New genes?
- April** Sponsorship of Biochemistry Society's conference BMP signalling in cancer
- March** Symposium with academics from Pearl River Delta region
- March** Personalised medicine: The social challenges conference
- March** Outreach event for local primary school children, East Hanney, Oxfordshire
- February** Subject Family Evening on Biomedical applications of CRISPR
- February** St Anne's College student visit to WCHG labs
- January** St Anne's College Alumnae event, Old Operating Theatre, London

2018

- December** The importance of genomics in cancer research
- November** CPM Annual public lecture with Professor Charles Swanton
- October** Disease biomarkers talk for Biochemistry students
- October** St Anne's Freshers' induction
- September** PM in Practice Series Seminar 4: Neuroscience
- September** St Anne's supporters' day outreach event
- June** Talk by Professor Joseph Sung on GI cancer
- June** Resource allocation conference with Ethox and HERC
- May** Pint of Science: Stopping the spread of disease
- May** Discussion evening for St Anne's students
- May** Panel discussion of theatre collaboration as part of the Settlers exhibition
- April** Information day on rare disease genomics
- April** Theatre collaboration preview
- March** Strawberry DNA extraction activity for children
- February** Subject Family Evening on Artificial Intelligence
- January** Radley School Science Festival
- January** Stanley Ho Foundation medical symposium, Macau
- January** CUHK seminar, Hong Kong

2017

- November** Padova meets Oxford outreach event, University of Padua
- October** Adult Education Talk on PM

- October** Green Templeton Talk on PM at a Future of the NHS meeting
- October** Prostate cancer support group lecture
- October** New St Anne's Library building formal opening and CPM showcase
- October** St Anne's student introduction
- September** Evening lecture at the King's Fund on the future of PM for cancer
- September** Lecture by Professor Dennis Lo on prenatal diagnosis
- September** Strawberry DNA event for Grenfell children
- September** PM in Practice Seminar Series 3: IBD
- July** UNIQ Programme for Year 12 students
- June** Intellectual property, ethics and the market in personalised medicine
- May** Pint of Science Oxford
- March** Lecture to Oxford Brookes University MSc Genomic Medicine students
- March** Q&A session with Cancer Research UK
- March** Genomics talk to school children
- March** Personalised medicine in practice seminar 2: Reproductive health
- February** Student debate on medical data sharing
- February** Iris festival of ancient and modern science
- January** Subject family evening on the immune system

2016

- November** Personalised medicine in practice seminar series 1: Cancer
- November** Big data research: Governance, security and ethics with Big Data Institute
- November** 3rd CPM annual public lecture with Dr David Altshuler



October Freshers' event for St Anne's students
September Career workshop on science communication
September Personalised medicine: The promise, the hype and the pitfalls conference with Healthcare Values Partnership
July UNIQ Programme for Year 12 students
July CUHK public lecture
June Big data, ethics and the market conference & workshop
March Subject family evening on implementing personalised medicine in the NHS
January Student workshop exploring ethical issues in personalised medicine

2014

October 10 years on: Oxford and Chinese University of Hong Kong global collaboration seminar
October Personalised medicine: from science to clinical decisions, Hong Kong
October Ethical and public health implications of personalised medicine, Hong Kong
June Cheltenham Science Festival panel debate
March Inaugural CPM annual public lecture with Patrick Vallance
March Seminar with Professor Dennis Lo
January CPM launch event at WTCHG

2013

November CPM launch event at St Anne's College



Close-up details of the poster created for the conference *Facing up to disparities in healthcare*

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WHG Business Manager and Deputy Business Manager

St Anne's College Academic, Bursary, Conference, Development and Finance Offices

Image credits: Catherine Lidbetter, Thea Perry, Anika Knüppel, Anneke Lucassen and Alex Cagan



**cpm.well.ox.ac.uk
cpm@well.ox.ac.uk
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