



**MitoCAMB
Patient Newsletter**

March 2022
Issue 5

WELCOME!

Welcome to the first 2022 issue of the **Cambridge Clinical Mitochondrial Research Group** patient newsletter. You are receiving this because you have previously signed up to help with research into **mitochondrial disease or neurodegenerative disorders**. Our aim is to provide you with the latest news from the research group, giving you more information on who we are, what we do, the science behind our work, and how we can support you, our patients.

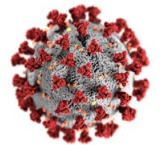
In this issue, we will update you on some exciting developments from the team as well as highlighting some of our new research studies, and putting a spotlight on some of our laboratory work.

COVID-19 booster and immune responses - study invite

We are launching a small study to look at whether the **immune systems** of patients with mitochondrial disease respond to the **COVID-19 vaccine** in the same way as the rest of the population. To do this, we will collect **blood samples** (up to 30ml of blood (6 tsps)) on **two** occasions: around the time of the **booster** vaccine, and then again 28 days later. These samples will allow us to study immune cells in great detail.

If you:

- are a mitochondrial disease patient
- have not had your most recent COVID-19 booster vaccine yet
- would be willing to come to Addenbrooke's Hospital on two occasions for a blood sample



then please contact the research team on: mitoteam@addenbrookes.nhs.uk or ring **01223 331506**, by **Wednesday 6th April**. All travel expenses will be reimbursed. We hope to hear from you!

Neuroferritinopathy clinical trial - coming soon!

We are very pleased to announce that we have received funding from the medical research charity **LifeArc** to undertake a clinical trial in patients with the rare condition **neuroferritinopathy**. Neuroferritinopathy is a disorder in which **iron** gradually builds up in the brain. Certain brain regions that help control movement are particularly affected.

LifeArc

Our trial will be looking to recruit 40 patients with neuroferritinopathy, who will be randomised to receive either **Deferiprone** (a drug that removes excess iron in the body) or placebo. The aim of the trial will be to find out whether this medicine is an effective and safe treatment for neuroferritinopathy.



At the moment, we are still in the set-up phase. However, we are very keen to work with our patients to design the best trial possible. We are committed to collaborating with people with neuroferritinopathy, “**experts by experience**”, in order to ensure the quality and relevance of our research. We may therefore get in touch with some of you to use your expertise to provide valuable insight in reviewing research documents and the trial as a whole. Of course, as always this is entirely voluntary, and how much or how little you would like to get involved will be completely your choice.



FOCUS ON...

In this issue of our newsletter, we would like to share with you information on a new sub-study of our 'Genotype and Phenotype' study that is about to open to recruitment, and which you might be contacted about...

Weight loss and appetite

WHAT IS IT ABOUT?

Some patients with mitochondrial disease tend to have low body weight, but the reasons for this are not clear. In order to understand the mechanisms of these diseases, the research team would like to collect information about patients' appetite/interest in food and their food intake, and correlate this with information from blood samples.



WHAT IS INVOLVED?

We will approach participants to complete a number of **online questionnaires** that will ask questions related to general mood (e.g. anxiety, depression, satisfaction with life), body image, appetite, diet and interest in food, and food intake. The questions may be completed online at home, or on a tablet at clinic appointments. We will ask participants to measure their **weight**, either at home or in clinic, and record this when they complete the questionnaire.



Finally, we will ask participants to donate a **blood sample** every 6-12 months (around the same time that the questionnaire is completed), which allows us to look for **biomarkers** to tell us more about these condition and how they affect appetite and food intake. The information from the questionnaires and samples will be matched, so that the research team can investigate what is responsible for reduced appetite and weight loss, with the hope of developing new treatments in the future. We will aim to take the blood samples when patients attend for their regular clinic appointments.

PROGRESS

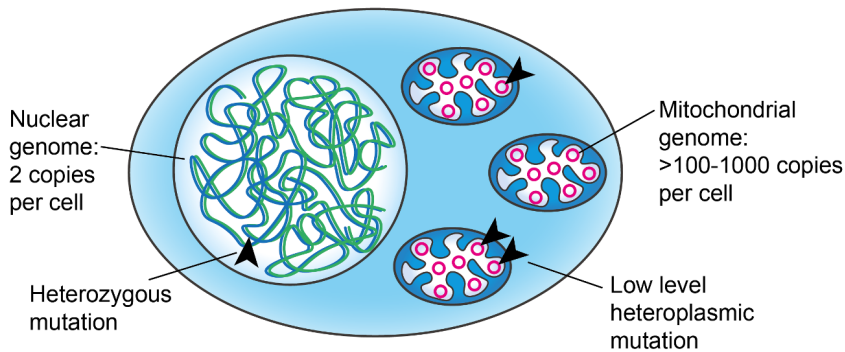
A big thank you to the patients who completed the pilot phase of the study to test the online questionnaires. **We aim to start recruiting to this study over the coming weeks and months, so you may hear from the research team soon!**

Of course, this research is entirely voluntary, so there is no obligation to take part if you do not wish to do so.



View from the lab...

As well as our clinical work, we also have a strong **laboratory programme**, based in the MRC Mitochondrial Biology Unit (MBU), and the John van Geest Centre for Brain Repair - both on the Cambridge Biomedical Campus. We thought we would share with you some of the basic science that underpins our clinical research. In this issue, we are revealing more about two research projects.

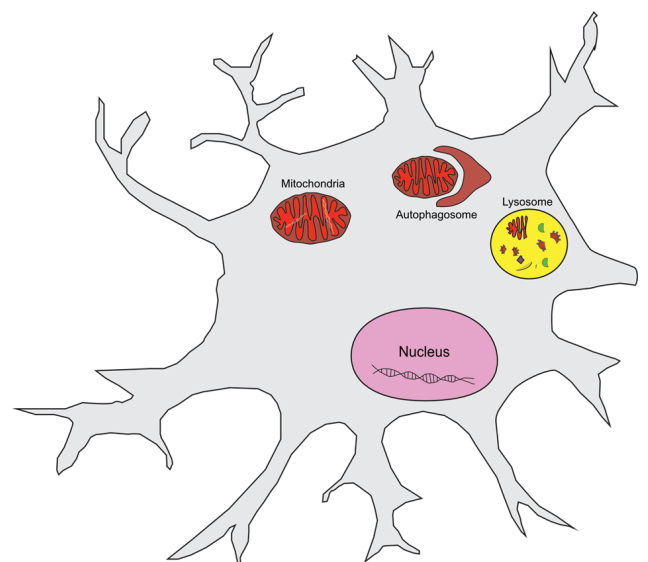


Dr Katherine Schon: Diagnosing mitochondrial disorders is difficult because people can have many different symptoms and the disorders can be caused by genetic changes (“mutations”) in over 300 different genes. **Whole genome sequencing** is a promising approach because it can look at the DNA from the

chromosomes in the cell nucleus (nuclear DNA) and the small circular DNA molecules from the mitochondria (mtDNA) at the same time. Dr Schon used whole genome sequencing to look for the genetic cause in 319 families with undiagnosed mitochondrial disorders as part of the UK **100,000 Genomes Project**. The families had already had standard genetic testing. She **identified a new genetic diagnosis in 31% of families**. The results were recently published in the British Medical Journal. Whole genome sequencing is now available to undiagnosed patients with rare disorders through the **NHS Genomic Medicine Service**.

Dr Michele Frison works at the MRC MBU and studies how to use ‘**mitophagy**’ to remove genetic changes - “mutations” – in the DNA of the mitochondria (mtDNA). Mutations can be found in the hundreds or thousands of copies of mtDNA present in a cell at any given time. The number of mutations in the mtDNA is very variable and changes over time. Some of these fluctuations are caused by random events. However, there are also biological “**quality control**” systems that make sure that a mutation never reaches high levels. One of these important mechanisms is called **autophagy**, from the Greek word meaning “**self-eating**”. Autophagy is the body’s way of recycling material from cells during a biological ‘energy crisis’; it is also a promising target for neurodegenerative and mitochondrial disease treatment. This is because autophagy sorts between molecules to destroy only the damaged ones.

In the mitochondria, this process of removing only damaged molecules by autophagy is called ‘**mitophagy**’. Dr Frison is studying how mitophagy can reduce the number of mutations in mitochondrial disease. The outcomes of this work could have a concrete impact on therapy, as **drugs** for many of these molecules are already being developed for Parkinson's disease. Dr Frison’s work could therefore help with repurposing these drugs and speeding up clinical trial approval.





PPI group

Patient and Public Involvement (PPI)



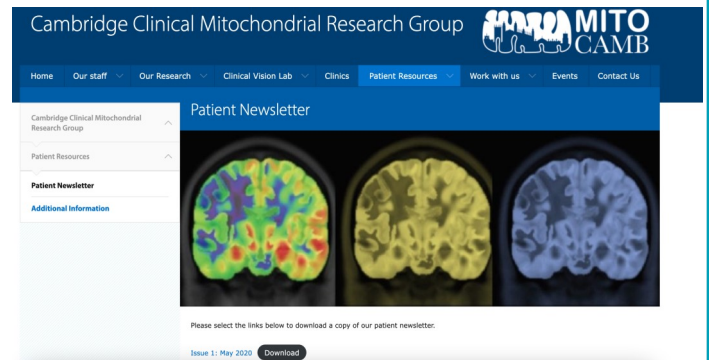
We believe that it is important for you, our patients, to **have a say** in how we do research. Over the coming year, we aim to identify a group of patients to help us at different stages of the process, from reviewing study documents, to discussions on how to make the design and outcomes of our studies more relevant to you.

If this is of interest, please let the study team know, or you may hear from us in due course. More to come soon!

Never miss an issue

Inbox heaving under the weight of so many emails? Remember reading something interesting in a previous issue of the newsletter, but you cannot remember where you saved it? Never fear! All of our patient newsletters get added to our website, so you can always go back to them. Just head to the following page to download them:

<https://www-neurosciences.medschl.cam.ac.uk/mitocamb/information-for-our-patients/patient-newsletter/>



CONTACT US

Thank you for your continuing participation in our research programme. If you have any queries relating to **research studies** that you have taken part in, or if you would like further information on any of our studies, please contact the team on:



mitoteam@addenbrookes.nhs.uk



01223 335106



@cam_mito



<https://www-neurosciences.medschl.cam.ac.uk/mitocamb/>

For queries regarding **routine NHS clinic appointments**, please contact Katrina Dedman:

katrina.dedman@addenbrookes.nhs.uk
or 01223 216751

