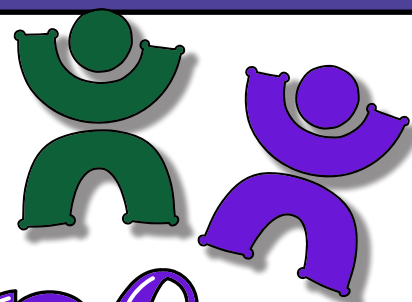
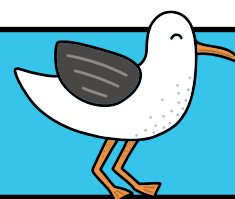


Under the Microscope



Paediatric Gastroenterology Research Team newsletter
Addenbrooke's Hospital, Cambridge University Hospitals NHS Trust



Issue 5

July 2023

HELLO!

Welcome to our summer newsletter - we can't believe we're already 5 issues in!

We've had some changes to team - we said goodbye to Fliss who's been with us for nearly 6 years. Adam has moved to a new team, but not before donating his lovely long hair (which he had been growing for 3 years!) to the Little Princess Trust. We've welcomed Eva as our new research assistant, Claire P as our admin coordinator and Woojin who you can read more about later!



Here is the team enjoying a warmer evening at the Jeffrey Cheah summer party!



Some of the team went to Vienna in May to the ESPGHAN conference, where healthcare professionals from across the world get together and share science information to help improve the health of our patients (like you!). Our team were really excited and proud to win the PIER (Paediatric Involvement and Engagement in Research) award for involving patients in everything we do. Claire G went to Glasgow to receive the award on behalf of the team.



Closer to home, in June we held our first EEPGN study day since 2019, where we invited team from across our region to join us. We were able to share all our good ideas, new information and future plans, and learned about all things patient engagement from our two IBD patient (and parent!) representatives!

Finally, Norfolk and Norwich University Hospital have recruited their first patients to our TRIPP study - we're always so amazed and grateful that so many young people and families want to contribute to research!

Our Patient Research Day is back!

On Friday 25th August we are running our second Patient Research Day at the Jeffrey Cheah building (on the hospital site) for our patients and their families. There'll be a lab tour, hands-on science experiments and the chance to chat to doctors, nurses and the lab team (and other young people and families too!).

If you want to learn to make blood soup, or look at your own cells close up, let Claire G know:

claire.glemas@nhs.net



If you read our newsletter, we'd love to know what you enjoy and what could be better. You can scan this QR code to tell us! (You can ask us to stop sending you our newsletters here too!)



Beware - dad joke!!

Why did the skeleton refuse a colonoscopy?

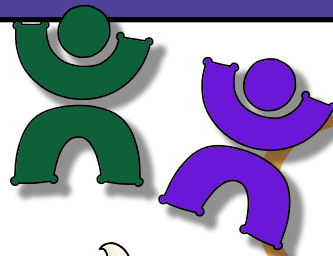
Because he didn't have the guts!

from Dr Michael Stevens
(our guest editor's dad!)



Newsletter reporter, research nurse Claire Glemas
Design and illustration, Jen Rose (Creative Patient Ltd)
Guest editor, James Stevens (and his dad, Michael!)

Meet our team...



This is where you can learn a little more about us and what we do!

FRANCO

Hi, I'm Franco and I'm one of the doctors. As part of my role, I see children in the out-patient clinic and on the wards. I also spend time in theatre doing endoscopy, the investigations that allow us to see the inside of your digestive system through the magnified lenses of our instruments.

My main interest is inflammatory bowel disease and, as a clinician, I also help out with research by seeing children who are part of studies looking at the benefits of new medications.

I really like working with the research team in the lab, and I help them by collecting biopsies. These are really important - they give us new information which we hope will help us understand more about inflammatory bowel disease and provide more effective treatments in the future.

Outside work, I like spending time with my friends and family and being active outdoors.



"I like reading and cooking, although sometimes my cooking experiments aren't very successful!"

"My sense of orientation is terrible - I often feel like I've let people down when they ask for directions, even within the hospital!"

WOOJIN

Hi, I'm Woojin and I'm a PhD student! I'm originally from Seoul in Korea, and I arrived in the UK in 2019. I'm interested in creating a model of the gut which would help us to better understand lots of diseases, including IBD (inflammatory bowel disease).

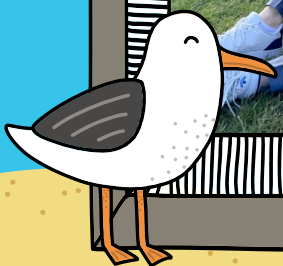
I grow a lot of organoids and (try to!) keep them happy so we can use them for different experiments. My goal is to grow organoids with different types of cells, such as immune cells, bacteria, and maybe even neurons (brain cells)! This would really help us uncover what causes diseases like IBD and how to treat them in the future.

In my free time, away from feeding my organoids, I enjoy football, running, swimming, and singing way too loudly in the shower! I really like trying new activities - it's always exciting to jump into something fresh! I've always wanted to try to learn to dance!

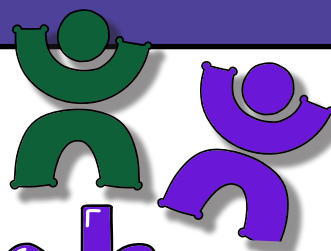
"I don't mind pineapple on pizza - ssshh, don't tell Francesca!"

"I like dogs more than cats!"

"I can fall asleep within 3 minutes of lying down (if I have Chopin for company!)"



Our research...

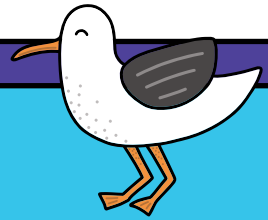


This is where you can find out more about the studies we are doing!

FOCUS ON...



unlocking the secrets of disease in miniature!



by Francesca Perrone

Our gut is very important for digesting and absorbing all the good things (nutrients) from our food, and for protecting our bodies from infections! There are special cells that help do this. They are called **epithelial** cells and there is a layer of them covering the inside of your intestine! There are different types of epithelial cells, and each type helps to keep us and our gut healthy!

epithelial cells



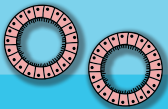
My job is to work out the differences between healthy and diseased epithelial cells, especially in patients who have inflammation in their gut. But first we need to know what a cell is like when our gut is healthy!

During endoscopies, sometimes biopsies (small samples of tissue) are taken from the gut and sent to us in the lab. There, I take the biopsies from our patients, and separate the layer of epithelial cells into single cells. I can then look at the **genes** in the different types of epithelial cells and compare the genes in healthy cells with genes in diseased cells to look for any differences.

To help you understand the role of **genes**, they carry the information that gets passed down from one generation to the next. For example, genes are why one child has blonde hair like their mum, while their sibling has brown hair like their dad. Genes also determine why some illnesses run in families and whether babies will be male or female. A **DNA** strand looks like a twisted ladder, and the genes are like a series of letters strung along each edge. These letters are used like an instruction book!



We've told you about **organoids** in our first newsletter - the 'mini-guts' we grow in our lab! They are grown from the epithelial cells that we have separated from the gut biopsies and contain the different types of epithelial cell.

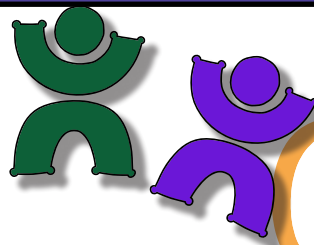
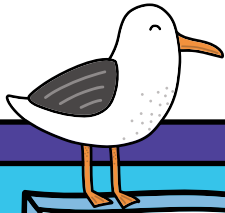


To try to understand what might make healthy cells become diseased, I add special substances to the organoids (like a new ingredient when you make a cake). To see if the organoids have stayed healthy or become diseased, I then add another ingredient: a liquid called **forskolin**. If they are still healthy, the forskolin should make the organoids grow bigger and bigger (like when you blow up a balloon!). However, if the organoid cells don't grow bigger (like when your balloon has a hole in it) then that particular ingredient might be harmful to the organoids, and so probably to your gut too!

We're hoping this research helps us to understand what can damage the epithelial layers in the gut, and then find a treatment that stops this from happening and helps your gut to be healthy again!



Time to play!



Let's have some fun!

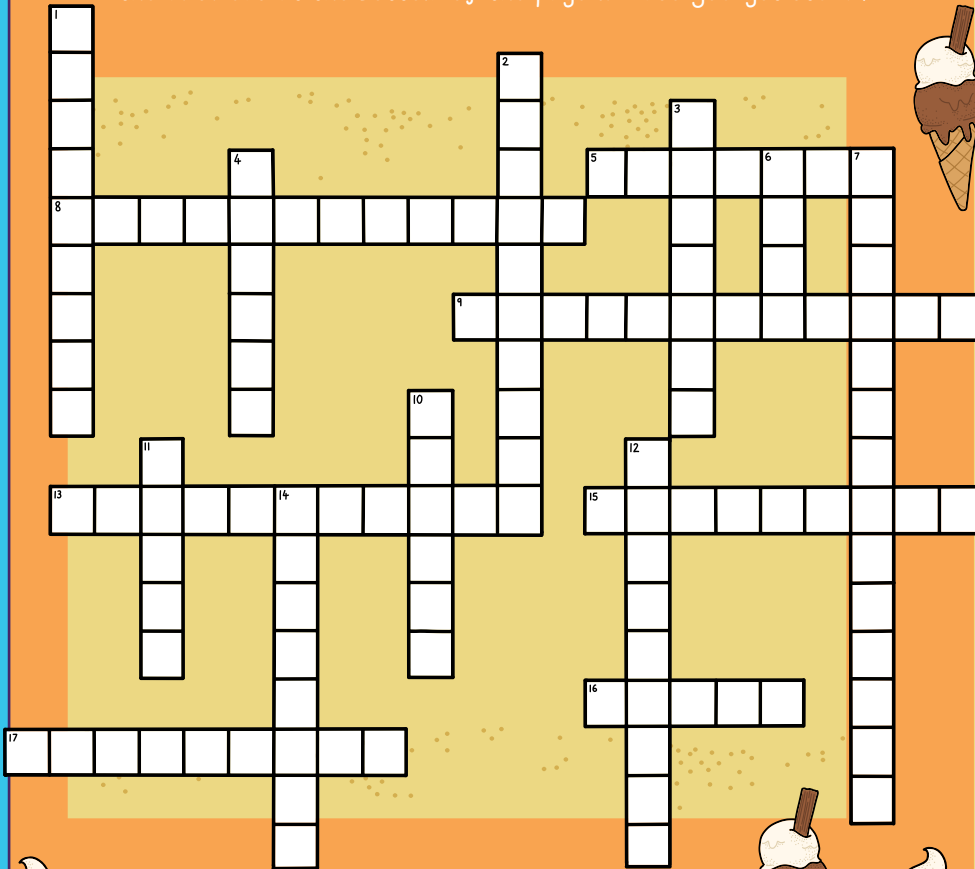
CROSSWORD

challenge!



Let's see if you can find the answers to these clues - they're all about science and the gut!

This amazing crossword was created by our guest editor James and his dad - some of the clues are quite tricky so we've hidden the answers at the bottom of the page in case you get stuck!



Down

1. Home for bacteria in the lab (5, 4)
2. Make sure you wear a white coat and goggles in here!
3. A drug type sometimes used to treat flares
4. Feeling sick
6. Every cell in our bodies have around 20,000 of these inside!
7. A layer of these line the inside of your gut (10, 4)
10. A tissue sample taken from someone's gut
11. It's red!
12. "You have Crohn's disease."
14. A mini-gut!

Across

5. Feeling really tired, or having no energy
8. Hot, red, sore and swelling
9. Send poo to the lab to measure this
13. When a doctor puts a camera up your bottom
15. The process of breaking down food in a healthy gut
16. The 'B' in IBD
17. IBD flares can cause this

And finally...

...a message from our guest editor!



James

"Hi, I'm James. I was diagnosed with Crohn's disease in 2021 and I've been taken good care of since by the team at Addenbrooke's. Once I'm an adult, I'd like to be some sort of software engineer, because I really enjoy coding. My hobbies include programming in Python, drawing, and playing my guitar. I also really enjoy looking at funny pictures of cats and swimming (especially by the sea)! I'm looking forward to having a break from school over the Summer!"



Answers
Down
1. Petri dish
2. Laboratory
3. Antibiotic
4. Nausea
5. Fatigue
6. Mitochondria
7. Mucosa
8. Proctoscopy
9. Stool
10. Biopsy
11. Blood
12. Crohn's
13. Colonoscopy
14. Ileostomy
15. Digestion
16. Bile
17. Diarrhoea
Across
5. Tired
8. Erythema
9. Faecal calprotectin
13. Sigmoidoscopy
15. Enzymes
16. Bile
17. Toxic colitis