

# Under the Microscope



Newsletter reporter:  
Research Nurse Claire  
Glemas  
Design, illustration:  
Jen Rose (Creative  
Patient Ltd)  
Guest editor: Emma Rudd,  
age 10

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

Issue 10 - March 2025

## HELLO!

Welcome to issue 10  
of our newsletter!

We are thrilled to introduce Kelly, our new research nurse!  
You can find out more about her on the 'Meet the team' page - she's  
already doing an amazing job helping us with our studies and getting to know lots of you!

Congratulations to Dr Heuschkel and his team for winning the annual team Christmas quiz (again)!!



This is our team virtual darts night! We'd like to introduce Colin, (far left in the photo!) who's spending some time with the research team. He's a medical student at Cambridge, but also has a particular interest in how immune cells help keep our bodies healthy and prevent disease. To do this, he uses special tools and technologies to look closely at human tissues and understand how everything works.

We had a special visit from Professor John Walker Smith and Alan Phillips in December, you can read Dr Zilbauer's story to find out all about them on page .

We want to say a big thank you to everyone who has been part of the TRIPP study - thanks to you, we've now recruited nearly 1200 young people! That's so many amazing people helping us with our research, we couldn't do it with you. Find out more about the TRIPP study on page 3.



We will be running our IBD family day again this year on June 6th - save the date!  
We'll let you know how you can get tickets soon.



Cheesy science joke!

How do scientists  
freshen their breath?

With experi-mints!

### Young Sparks!

A fun (and messy!) experiment with a fizzy finale!

**You need:**

- A big bottle of diet coke (2 litres works best!)
- A pack of Mentos sweets
- A piece of paper (to make a funnel to drop the Mentos in!)
- Lots of outdoor space (and a grown up's permission!)

**Method:**

1. Head outside and find a space where you can make a mess!
2. Open the diet coke bottle and place it on a flat surface
3. Get the Mentos ready. Roll the paper into a tube to funnel the Mentos in
4. Drop the Mentos into the bottle - be fast! As soon as they go in, step back quickly!
5. Watch the eruption! The diet coke will shoot up like a fountain - how high did it go?

**Why does this happen?**

The surface of Mentos are covered in teeny tiny bumps. When they drop into the coke, they help bubbles to form really quickly. The gas in the drink rushes out, pushing the liquid up and out of the bottle in a fizzy explosion!

# Meet our team...



Scan here to see all our newsletters!

## Kelly

Hi, my name is Kelly and I'm paediatric research nurse. I recently joined the research team and I get to work with Claire (who you might have met when you were in hospital!). I qualified as a children's nurse in 2005, two years before the first iPhone had even been invented! I used to look after poorly babies on NICU (also with Claire), and I spent some time as a children's community nurse too.

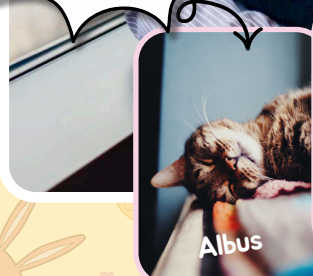
More recently I worked as a neonatal research nurse and got to be part of studies looking at newborn baby's brains and how they develop. I really love working in research as we get to try to answer questions that will hopefully make the care that we give you in the future a lot better and more personal to you.

I'd say photography is my biggest (and most enjoyed) hobby, and I've recently learnt some videography basics too. If you made it to last years family day you might remember me there with my camera taking lots of photos and videos of you all. Can't wait to see you all at the next one!



'I really love music and got to shoot four music videos for my best friend!'

'I have 2 cats who LOVE having their photo's taken'



## June

'I'm from Gangnam, and I really don't like Gangnam Style!'

'I only drink diet coke - never original coke!'



'I have a birch tree allergy. And I avoid hairy fruits as they make my throat itchy!'

Hi everyone! My name is June, and I'm a PhD student originally from South Korea. I came to the UK in 2015, and I'm currently working to help scientists and doctors understand more about how our guts work- especially when something isn't quite right, like with Inflammatory Bowel Disease (IBD).

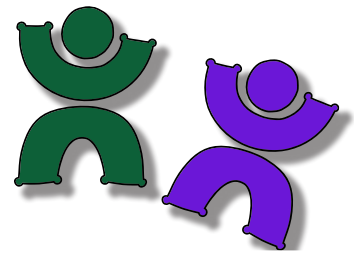
My job is a bit like being a detective, but instead of looking for clues in a mystery, I use computers and clever tools (called AI) to figure out what's happening inside tiny models of the gut, called organoids. These organoids act like mini versions of a patient's gut, and they help us understand what changes might be happening in the cells of someone with IBD. By studying these changes, I hope to find ways to develop new treatments and help doctors make patients feel better. You might not see me in the clinic, but I'm always working hard in front of computer screens to find answers that could lead to better therapies for IBD!

When I'm not working, I love cooking delicious Korean food, playing tennis, and exploring new places around the world. Most recently, I visited Porto, a beautiful city with amazing food!



# Our research...

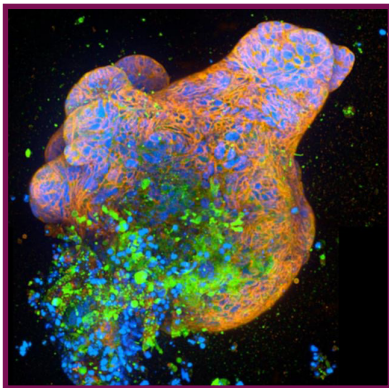
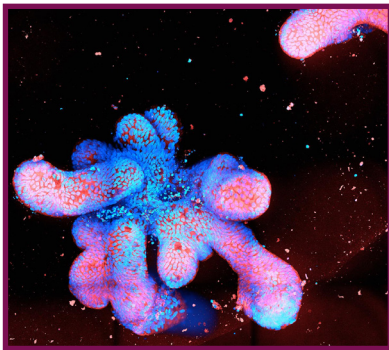
(...and interesting research other teams are doing!)



Have you taken part in the TRIPP study? Do you want to know more about what happens in the lab? Our clever scientist Fariba explains this for you...

TRIPP  
Study

Ever wondered how our scientists grow miniature versions of the gut in the lab? These tiny, functional replicas (mini copy of something that acts like the real thing) called 'organoids' help us understand gut diseases, test new medicines, and even explore how our intestines heal. Here's a step-by-step guide on how we create them from a small gut biopsy!



Mini-guts under the microscope!

## What we use:

**Gut biopsy sample** - tiny piece of gut tissue, collected by a doctor during an endoscopy

**Enzymes (digestive solutions)** - special liquids that break down the biopsy into individual cells

**Extracellular matrix gel (Matrigel)** - jelly-like substance that supports cell growth in 3D

**Growth factors and nutrients** - essential proteins and vitamins that help cells multiply and develop

**Incubator (37°C, 7% CO<sub>2</sub>)** - a warm, controlled environment mimicking the human body

**Culture medium** - nutrient-rich liquid that keeps the cells alive and growing

**Sterile lab tools** - pipettes, well plates, and gloves to maintain a clean workspace

## The mini-gut growing process

By Fariba Khan

### Step 1: Collecting the gut biopsy

A doctor takes a small piece of gut tissue during an endoscopy. This sample is placed in a special liquid that keeps the cells happy until they reach the lab

### Step 2: Breaking it down

Scientists add enzymes that act like tiny scissors, carefully breaking down the tissue into smaller structures called crypts, which contain stem cells. These crypts are washed and collected, ready for the next step (crypts are like tiny hidden pockets inside your gut!). Imagine your intestines are lined with millions of tiny valleys and hills. The valleys are called crypts, and they are super important because they contain special cells called stem cells. These stem cells are like little builders that help repair and grow new gut cells all the time!

### Step 3: Creating a 3D home for the cells

These crypts are mixed with extracellular matrix gel - a supportive jelly that helps them form three-dimensional structures, just like they would inside the body. In the lab, scientists use a special extracellular matrix gel (like Matrigel) to give cells a home, just like jelly holds fruit pieces in place in a dessert! This helps the cells form mini-organs (organoids) that act like tiny versions of real body parts!

### Step 4: Feeding the cells

The cells are placed in a culture medium (like a super smoothie for cells! Scientists use it to feed tiny cells, just like watering a plant to help it grow!) filled with growth factors and nutrients. This keeps them alive, helps them multiply, and encourages them to self-organise into mini-guts!

### Step 5: Incubation and growth

The cells are placed in an incubator set at 37°C with 7% CO<sub>2</sub>, mimicking the human body's conditions. Over several days, they grow into very tiny gut-like structures, organoids that look and function like real gut tissue!

### Step 6: Putting organoids to work

Once fully developed, organoids can be used to:

- \* Study gut diseases, such as infections or genetic disorders
- \* Test new medicines to see how gut cells react
- \* Explore gut healing by observing how cells regenerate

By growing these mini-guts, scientists are unlocking new ways to treat gut diseases and improve children's health. We think it's pretty amazing, we hope you do too!

# A special visit

By Professor Matt Zilbauer

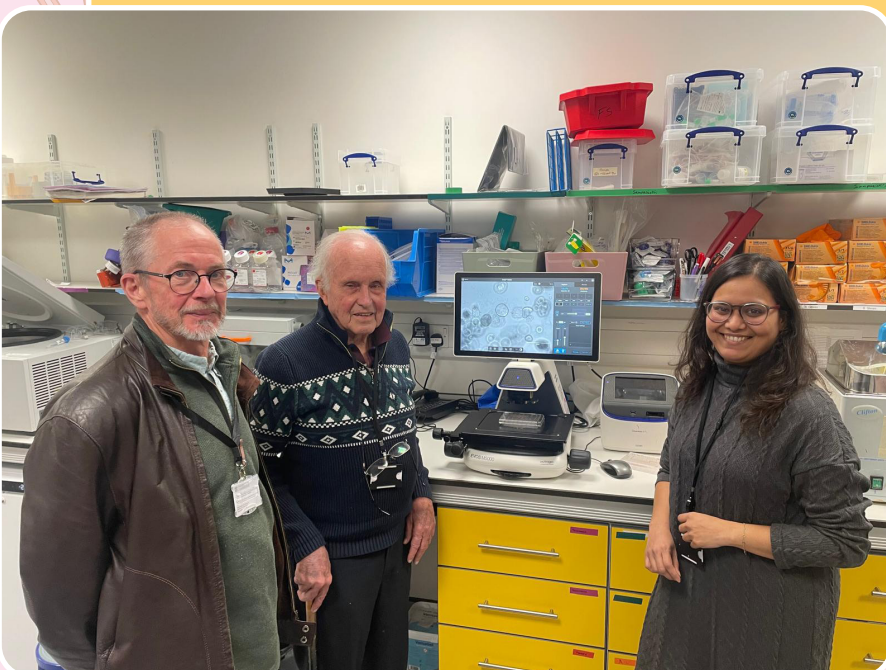
We had some extra special guests in our lab recently. Professors Alan Phillips and John Walker-Smith! These two incredible doctors are legends in the world of paediatric gastroenterology (that's the science of looking after children's tummies!).

Prof. Walker-Smith, who just turned 88 (wow!), played a huge role in shaping the way doctors and scientists work together to understand tummy diseases in children. He and Prof. Phillips have been big supporters of our research for many years, and we were so excited to welcome them back to Cambridge.

During their visit, they met with our team, had some great chats with our young researchers, and even got to see some of our latest experiments in action. They were really impressed with the work we're doing to understand and treat gut diseases!

The visit ended with a wonderful dinner where they shared stories, laughed a lot, and told us how much they admire the passion and dedication of our team. We're so grateful for their ongoing support and for inspiring us to keep making discoveries that help children feel better.

**Check out these photos from their visit!**





# Emma's story

Emma, our guest editor, shares her IBD story, and tells us about a lovely friendship that has grown!



Hi, My name is Emma and I was diagnosed with Crohn's disease in November 2023.

I was 9 when I was diagnosed and I didn't really know who else had it and I felt different to all my other friends because of all the extra illnesses I got with it. Asthma, under active thyroid, oral Crohn's, coeliac disease, dairy and soy intolerances and lots of extra symptoms. I tried doing things that I used to do and enjoyed but it just didn't feel the same. If I did stuff that involved walking, running well...basically any exercise, it would make my stomach hurt, my head dizzy and make me instantly tired. I was admitted to hospital lots of times and have tried all the medications for my age range - some made me feel poorly and my hair even started to come out. I miss my friends as I haven't really been to school for over a year, but I think we have now found a medicine that is starting to work.

When in hospital we were told about the Addenbrooke's family day and when I went with my mum, I loved it. At the first one I met a girl and we started texting when I was admitted to hospital. It was nice to talk to someone who understood.

At the young scientist day later in the year, we were doing some experiments and a Mum came and spoke to my mum with her two children. One of them had UC and we just started chatting - later we found out that we lived close to each other. It was so nice to meet someone that was almost the same as me. We swapped phone numbers and now we are BFF's and she has been to my house and we chat everyday. You should definately go to the family days, maybe you can learn more about Crohn's and UC and make a friend too.

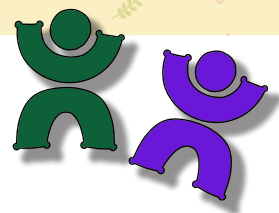
A couple of weeks ago I started journalling. I said I'd do it everyday (I'm terrible at keeping to that) but I try to do it when I remember! I do it more when I feel down and sometimes it makes me feel better trying to focus on the good things. I always make my journal pretty and it really does help - it might help you if you feel down.

Even though I don't like having Crohn's, I like that I made a good friend that I wouldn't have met if I didn't have it. There is always a positive to everyone's journey, you just have to find yours.

Emma x



# Over to you...



A space to share your news, talents and things to celebrate!

Thomas, our super singer, is learning valuable skills and inspiring others too!

Thomas went to the O2 for the second time - he went 2 years ago as well. This time he went with his school, joining 8550 other children from many other schools across the UK at Young Voices! He and all the other children sang together, taking part in this amazing experience, in front of an audience, singing alongside some famous people too! It was a wonderful, but very long day, and he had the best time.

Thomas has also completed his CPR training. His school were so impressed, they are getting all their other students to do it, and are raising money for a defibrillator for his school community.

Well done Thomas!

## Certificate of RevivR completion

British Heart Foundation certifies that

Thomas Davey

has completed lifesaving CPR training with RevivR. Together, we'll help increase the survival rate of out-of-hospital cardiac arrests.

Date: 25 Jan 2025

Dr Chantelle Griffiths

Chief Executive, British Heart Foundation

Remember:  
refresh your CPR skills every six months using RevivR.



bhf.org.uk/revivR



Emily is back, and she was at the O2 too!

Emily and her sister Lydia took part in the Young Voices concert too, with their school choir at the O2 in London. They sang alongside thousands of other children - including Thomas! They loved it and it was a fantastic sight and sound for their parents!



Super sporty Pops doesn't let anything stop her! Here's her story...

My name is Pops and I was diagnosed with Crohns in 2021.

I remember the day I got admitted to hospital, swollen ankles, incredibly slim and no energy. I was put on monitors and my mum was told that I potentially could have had blood clots. That was ruled out and I was kept in overnight.

More tests followed, more things were found and then all of a sudden I was transferred to Addenbrooke's on a Friday afternoon. The ward was lonely it was COVID times and I remember being scared. My mum was there every step and kept telling me that it was all going to be okay. After a long weekend, we met Dr T. I remember being worried when my mum cried with him and wondering what my new normal was going to be. My whole family was so worried about me.

Prior to my diagnosis, I danced, rode a horse and loved to run. I dreamt of playing football. I remember being so worried that I was going to never be able to do those things again.

However, I was wrong.

I am so lucky to be able to do everything that I love. That is because I have never given up but also it is down to the medical people around me. Dr T (who is just amazing!), Rachel (my wonderful gastro nurse at Colchester) and Stuart (the best phlebotomist you could wish to meet!). They have always given me hope and encouraged me to do anything I set my mind to. They all know me so well and I know that they really care about me.

I currently play football three to four times a week, take ballroom, latin, ballet and tap lessons and go to the gym three times a week. I often think back to when I was 9 and worried about my new normal. Not now, I love my new normal and I am so lucky to have so much support around me. I do get tired and sometimes it isn't easy, but my sport gives me my normality (and helps me forget the tablets, injections and blood tests!).

If anyone reading this is worried about their 'new normal' please don't, try to embrace every minute and never let it stop you.



### Meet Kian, who has been raising awareness about IBD!

Hi, my name is Kian and I got diagnosed in September last year with IBD. I spent time in the hospital and missed a lot of school.

Every year my school runs the Wheatfields Public Speaking Competition. All the children in KS2 choose any subject they like and do a 2 - 3 min talk in front of their class. There are two rounds to go through and then it is the final. The final takes place in front of the whole school and there are three external judges invited in to listen to the final speeches.

I chose to do my speech on IBD. After having spent time in the hospital and missing school, my friends would often ask me questions about what had been wrong with me. I thought this would be a great opportunity to be able to tell all my friends and the whole school more about IBD. I focused on the symptoms but also my feelings about having IBD. I was so pleased and nervous to make it through to the final! After all the children had done their speeches, the winners were announced and I was so happy to come second!

I am very proud to have been raising awareness about IBD.



Gaby is back, and has been as busy as ever!

Gabys took her grade 1 ballet exam and got a merit! Well done Gaby!

She is also in the transition squad for competition swimming. She did her first three races, two front crawl and on backstroke, and won all of them!

She had lots of xmas activities including meeting santa on the Polar Express and going to the panto!

Gaby loved the Addenbrookes IBD young scientist day so much she asked for a microscope for Christmas and is now the science ambassador for her school. Wow!

Some of her adventures...

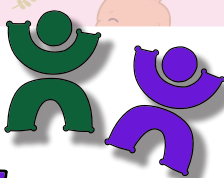


### Zachary has found his place!

Zachary has had a wonderful time recently, since finally gaining a placement in his local cubs group. He has blossomed, making new friends and learning new skills. He's been trying out archery, air rifle shooting, axe throwing, rock climbing and so much more. There are lots of new adventures coming soon - how exciting for him!



# Time to play!



## calling all young journalists!

Would you like to write, or draw, or share something for our newsletter? Or do you have ideas about what we could add? We'd love to hear from you.

We'd also love to know what you enjoy about our newsletter, and what could be better (You can ask us to stop sending you our newsletters here too).

To get in touch, scan this QR code or email: [claire.glemas@nhs.net](mailto:claire.glemas@nhs.net)

## Happy Easter WORD SEARCH

C B B U S B H C C L H C K E  
H U A B A S K E T E L E F S  
O A B I N N O S E N R P R C  
C C O L O U N P S T Y A I H  
O R C H U R C H R U N S D I  
L O E I E S R H H O G R A C  
A S G T U L R S A G Y H Y K  
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Y P P O H B B O N N E T A H  
Y N N U B C S F L O W E R S  
E P E L O S E A S T E R T G

Can you find all these  
Easter words in the  
word search?

BASKET  
BONNET  
BUNNY  
CANDY  
CHICK  
CHILDREN  
CHOCOLATE  
CHURCH  
CROSS  
EASTER  
EGGS  
FLOWERS  
FRIDAY  
HOPPY  
HUNT  
LAMB  
LENT  
PATTERNS  
RABBIT  
SUNDAY

How long did it take you to find  
all the words? ..... mins

### Our guest editor...

This issue, our guest editor is Emma. She's 10 years old and was diagnosed with Crohn's disease when she was 9 - you can read her IBD story on page 5.

Emma created this awesome Easter word search for us - did you find all the words? As guest editor, she also helped us choose the design of the newsletter, wrote her story and helped us check through everything before it went to print. Thank you for all your help Emma!

Would you like to be our guest editor and help  
create a future newsletter? Let us know - [claire.glemas@nhs.net](mailto:claire.glemas@nhs.net)