Theirworld
Edinburgh Birth Cohort

Autumn 2021

WELCOME,

to the latest edition of the TEBC newsletter. In this edition we're keeping you up to date on developments with recruitment to the study and what's happening with follow-up visits.

We are also delighted to introduce new members, Amy and Katie, to the TEBC team. Research this time includes findings about immune responses in preterm babies and hormone levels that are present in the hair of newborns. We have a roundup of other news as well as some ideas for Halloween fun!

We hope you enjoy reading the newsletter and we will be in touch again in spring of 2022!

With best wishes.
The TEBC Team

STUDY UPDATES

RECRUITMENT

It was something of a milestone recently when we finally stopped recruiting new families to the study. There are over 400 families signed up and we are working hard to fit in all those follow-up visits! Huge thanks to everyone who has helped make this possible, including staff at the Simpson Centre for Reproductive Health, the neonatal unit and of course our amazing families, without whom none of this would be possible.

In the early days when you signed up (around the time your baby was born), we collected lots of information and samples about your pregnancy, birth and the first few weeks and months of your baby's life. As recruitment draws to a close, here's just some of the data we've collected from that time period:

STARTED	STOPPED	RECRUITED
NOV. 2016	SEPT. 2021	429 FAMILIES

STUDY UPDATES

UMBILICAL CORD BLOOD
277 SAMPLES

PLACENTA
286 SAMPLES

Looking at the placenta under the microscope and running blood tests on umbilical cord blood can provide information about your baby's development in the womb. See Gemma Sullivan's research findings in this newsletter that used cord blood and placenta samples to investigate immune responses in babies born preterm.

POO SAMPLES
142 SAMPLES

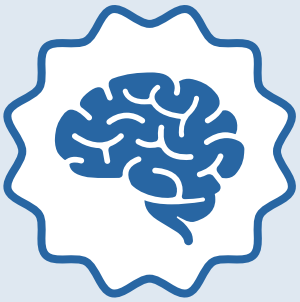
Poo contain lots of bacteria! The number and type of bacteria in poo is important for long term health. We want to find out the effect of preterm birth on these bacteria, and whether it matters for babies in the long run.

SALIVA SWABS
234 SAMPLES

A person's "genetic make-up" may be defined as the molecules in our bodies that we inherit from our parents, which help determine who we are, and how our body grows and develops. This information is held in a 'code' that exists in the cells of our body, called DNA. The exact way in which that code works is influenced by another set of molecules in each cell called the epigenome. Both types of genetic information can be obtained from cells that are present in baby saliva.

NOSE SWABS
450 SAMPLES

Preterm infants are in general more susceptible to infections of the breathing system in infancy and childhood. This may be due to differences in ability to fight infection in nasal secretions. We plan to test whether immunity in the nose is altered in preterm infants and also whether they have altered bacterial communities in their noses that might be less capable of fighting ill-making bugs.



BRAIN SCANS
286 SAMPLES

We are collecting brain scans from MRI from premature babies and babies born at full term so that we can find out what leads to altered brain development for some babies. In this way we hope to develop ways of helping children in the future.

We also have lots and lots of questionnaires that everyone so kindly took the time to complete! We'll continue to analyse all the data that we have collected and look forward to sharing what we learn with you all!

WHO'S WHO!

AMY CORRIGAN
RESEARCH MIDWIFE

I'm Amy, the new research midwife with TEBC. I joined the team in April 2021, picking up where Gill Black left off with recruitment and neonatal data collection. I originally studied and worked in ecology so came to midwifery relatively late in life and gained my clinical qualification at aged 40 – nice to know the brain cells still work! I have subsequently been working as a community midwife in Midlothian, supporting women and families through their pregnancy journey from booking to discharge to the health visitor. I have a keen interest in all things research, and some research experience from my pre-midwifery life, and so I was delighted to join TEBC. I am really enjoying applying my skills in a new and rewarding way and getting to know all of the project participants. I spend most of my time talking with parents about the research, either before or after they have had their baby, and collecting and managing data such as nasal swabs and medical histories. Another big part of my job is arranging and supervising the MRI scans at term and this is currently my favourite part of the job. Seeing parents and babies back for the MRI scan after some time settling into family life at home, which so often has been such a long time coming, is a genuine joy.

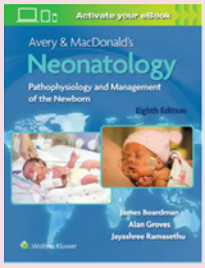
KATIE MCKINNON
CLINICAL RESEARCH FELLOW

Hello! I'm Katie – I have just started as a Clinical Research Fellow with the TEBC group. You might see me at some of your five-year follow up appointments, or for a five-year MRI scan. I was previously working as a Junior Doctor in London, and I am specialising in neonatology. I have joined the team to work towards a PhD. I have just moved up to Edinburgh, and I'm looking forward to exploring the Highlands in my campervan.

OUR NEWS

Congratulations to Emily Wheater who recently completed her PhD. Emily has since taken a job with the Biotechnology and Biological Sciences Research Council.

Gemma Sullivan was awarded the Young Investigator Prize by the Neonatal Society, and received her award at a prize lecture at the Royal Society of Medicine in June.



James Boardman has been lead editor on the 8th edition of Avery and MacDonald's Neonatology Pathophysiology and Management of the Newborn over the past 3 years and it is being released in October. It contains 61 chapters with a global authorship.

FOLLOW-UP VISITS

Follow up visits are going full steam ahead! We've got a mix of online and in person visits taking place at the 9-month, 2 year and soon to be 5-year time point. In person at our lab, we're following all the COVID safe guidelines to ensure that it's as safe as possible. We've also been able to reintroduce some of the toys that we haven't been able to play with for the past while. It's been lovely to catch up with our families both in person and online.

RESEARCH FINDINGS

PRETERM BIRTH IS ASSOCIATED WITH AN ALTERED IMMUNE RESPONSE

Infection or inflammation around the time of birth is associated with an increased risk of problems with learning, thinking and behaviour in children who are born too soon. Premature babies may benefit from therapies to reduce inflammation but the immune system responses in early life are not well understood.

By combining information from placenta and blood from 177 infants, we show that the immune system response is significantly altered by preterm birth and remains altered for several days in infants who are exposed to inflammation in the womb before delivery. These findings suggest that therapies to reduce inflammation and restore healthy brain development may be effective in the days after preterm birth and focus research attention on the discovery of potential immune system therapeutic targets.

The full paper can be accessed here.

FACTORS AFFECTING THE LEVEL OF "STRESS" HORMONES IN THE HAIR OF NEWBORN BABIES

Cortisol is a steroid hormone, also known as a "stress hormone", that regulates heart rate, blood pressure and other body systems in response to a stressful event. As cortisol accumulates into hair as hair grows, we can measure its concentration in hair to study its production over time.

Using hair samples collected after birth from TEBC infant participants and their mothers, we tried to establish the relationship between stress hormone levels in mothers and babies. We also investigated the impact of early life stressors, such as preterm birth and labour. Neonatal hair cortisol was linked to mothers' cortisol during pregnancy and with reduced fetal growth.

Additionally, in preterm infants, hair cortisol measured at 6 weeks after birth reflected postnatal stressors. We hope that these discoveries will help us understand better how being exposed to stressful events impacts development, so that we can inform new therapies to avoid adverse outcomes.

The full paper can be accessed here.

HALLOWEEN FUUUUN!

SPIDER HANDPRINT

Learn how to make your very own here!

VAMPIRE LEAVES

Try going out for a walk and collecting some fallen leaves. After you've made sure that they're clean and dry paint them using black paint. After the paint dries, use a white pen or some white paint to make little vampire faces.

LITTLE MONSTERS

Try using whatever craft supplies you have to turn tissue boxes into little monsters.

Check out the full tutorial.

HALLOWEEN FUUUUN!

INGREDIENTS

- **200g** bar white chocolate (*supermarket own brand Belgian is good*), broken into chunks
- **4** medium-large, ripe bananas
- **85g** desiccated coconut (you won't use it all)
- **handful** dark chocolate drops

METHOD

STEP 1

In a small bowl, gently melt the chocolate either in the microwave – in short bursts on high or over a pan of simmering water (make sure the bowl isn't touching the water). Set aside for a moment while you get the bananas ready.

STEP 2

Peel the bananas, cut in half, and push a lolly stick into the middle of each piece. Spread the coconut out in a shallow bowl. Line a large baking tray with baking parchment, and make sure there is room for the tray in the freezer.

STEP 3

Using a pastry brush, coat a banana half in chocolate, letting excess drip away. Sprinkle with plenty of the coconut until coated, then set it on the prepared sheet. Now add two chocolate eyes and a mouth, and if you like, cut a few little eyebrows from the chocolate drops too. Freeze the lollies for at least 4 hrs, and up to a week.

BOOOOO!

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