

Spring/ Summer 2023



Newsletter

Welcome,

to the latest edition of our newsletter. In this edition we have an update on study follow-up visits and what will happen beyond 5 years.

Research this time includes findings linking breast milk exposure and brain development which was reported on STV. We also highlight research using saliva we collected from babies around the time they were born. We used DNA in the saliva to explore associations between genetic modifications, inflammation and baby brain development.

We congratulate Kadi Vaher who has completed her PhD. Kadi research used the poo samples your children provided when they were new born babies and we share what she discovered.

In staff news we say goodbye to Yu Wei and welcome Ray (our new Research Assistant) and Dr Sam Neal. Who's Who, meets Rebekah Smikle who is a PhD student with TEBC.

We have a roundup of other news as well as some things to keep little hands and minds occupied. This time we are making a special request for your help with our birthday card designs!

As always, huge thanks to everyone who helps us with our research, without your time and commitment none of it would be possible.

Warm wishes, The TEBC Team.

Things To Do

Draw a picture for our birthday cards, try some easy painting or rustle up some chocolate treats.



Research



New research from TEBC has found that breast milk exposure is associated with

brain development in preterm infants. You can find a written summary of the findings [here](#). The research also featured on STV news, with lead author Dr Gemma Sullivan and Professor James Boardman. You can view the STV article [here](#).

Many of you may recall us collecting a saliva sample from your baby (usually at the same time as the MRI brain scan). By extracting DNA from the saliva, it allows us to investigate epigenetic modifications to DNA (slight additions to our genetic code that affect how our genes are expressed). PhD student, Eleanor



Conole, has published work which has investigated the links between these genetic modifications, inflammation and baby

brain development. You can read a summary of Eleanor's research [here](#).

Study Update

Study Visits

Our follow-up team is continuing to work hard offering in person visits for 2 year and 5 year appointments. You can get a flavour of the activities we ask the children to do at the visits by watching this video [here](#). The 5 year appointment also includes the opportunity to come back for a visit to the brain scanner. So far, over 60 children have visited for their 5 year assessment, where they have the chance to learn about the brain scan and practice in our pretend scanner. Just like during the 'real' scan, children get to watch movies while they practice lying still and listening to the funny robot noises that the scanner makes. Children who come in for the real scan get a picture of their brain to keep, as well as a book about how the brain works and a £20 voucher. The scan will provide useful information about how the brain supports children's development around a time when they are rapidly gaining new skills. For example, the brain scan can help us understand why children respond differently to standard tasks we conduct in the laboratory, or relate to how they are doing at home or in school.



These data will also give us a better understanding of the dramatic developmental changes in the brain that occur between infancy and age 5 years. We are looking forward to sharing what we learn with you all!

Beyond 5 Years

After the 5 year visits, we will contact you next when your child is age 7. Until then, we'll keep in touch through our newsletters and Facebook Group. Our website also has lots of useful information (click [here](#) for the website). You can contact us at any time (contact details at the end).

News

PhD Students



Congratulations to Kadi Vaher who recently completed her PhD! Kadi's research was about the relationships between the gut microbiota (the bacteria living in our gastrointestinal system) and brain structure.

She found that, shortly after birth, the microbiota had a low diversity, and most babies were colonised by a single bacterium - this was observed both in term and preterm babies. Before going home from the hospital, preterm baby gut microbiota had diversified and was dominated by different bacteria in different babies. She found that microbiota richness (how many different bacteria there are) and composition (which bacteria there are) correlated with brain microstructure in the white matter bundles (the connections between different brain regions), deep grey matter (brain structures in the centre of the brain that are important body's information relay stations) and the cortex (involved in all higher-level processes in the brain including thinking, emotions and motor functions). The bacteria most strongly correlated were *Escherichia/Shigella*, *Enterobacteriaceae*, *Klebsiella*, and *Veillonella* – these bugs are commonly found in the preterm infant gut and have been found associated with developmental outcomes by other studies too. As the microbiota can be modified, it is an exciting avenue to promote brain health in preterm infants, but more research is needed to fully understand the linking mechanisms and design effective interventions.

Kadi is staying with TEBC in a post-doctoral position and will be working mainly on finishing publications from her PhD project and analysing longitudinal outcome data. She will also be helping out with the data collection at 7 years so you will be seeing her at the follow-up appointments.

Staff News

In February we said goodbye to Yu Wei, Research Assistant with TEBC. Many of you will have met Yu Wei at follow-up visits. Yu Wei has taken up a post at the University of Liverpool exploring the impact of social inequalities on childhood health and wellbeing. We wish Yu Wei well and every success for her future career!

We wished a warm welcome to Ray Amir who recently joined us as Research Assistant! Ray recently completed an MSc in Psychological Research at the University of Edinburgh and is looking forward to meeting families when they come to Kennedy Tower for their 2 year and 5 year study visits. We also welcomed Dr Sam Neal who will be working with us over the coming months to explore child development at 2 years and how this relates to findings on baby brain imaging.

Meetings and Conferences

Katie McKinnon and Kadi Vaher presented TEBC research findings at the spring meeting of the Neonatal Society. The Society brings together scientists and clinicians with the aim to promote neonatal science.



Katie's project looked at the impact of socioeconomic status in the newborn MRIs of TEBC children - measures of someone's social standing, including access to financial, educational, social and health resources. This showed that both preterm birth and socioeconomic status were associated with differences in brain structure, but preterm birth has more widely distributed effects across the brain. This means measures to reduce social inequalities during NICU care could help to improve brain development after preterm birth. Kadi presented part of her PhD findings about the links between the gut microbiota and brain dysmaturation in preterm babies (see previous article).

ITAKOM Some of the research team attended the [Salvesen Mindroom Centre](#) international conference in March, which was held in Edinburgh. Entitled 'It Takes All Kinds of Minds' it focused on the science and reality of neurodiversity. We were also able to support a place for a TEBC parent to attend. *"ITAKOM was a brilliant conference and I am so grateful I was able to attend. My brother is autistic and I am always looking for opportunities to learn more about the condition but also to check whether my children have autism or not, as premature babies are more likely to be neurodivergent. To be honest, I have an interest in the whole neurodivergent group and be able to better understand their qualities and learn how to support them. The conference covered a broad range of topics within neurodivergence and it was an eye opener. One of the discussions was about terminology and that we should perhaps not use the term 'Neurotypical'. I really enjoyed it."* (TEBC Parent).

Keeping in Touch

We usually publish a couple of newsletters each year and try to include a mix of news and research that we think will be of interest. We are always keen that our work reflects the priorities of our participants so if there are other things you would like to see in the newsletter then please do let us know! Contact details are at the end of the newsletter.

Who's Who

Rebekah Smikle



Hi, I'm Rebekah! I joined the TEBC team this year as part of my PhD at the University of Edinburgh. You may see me at five-year follow up appointments and five-year MRI scans. I am interested in learning how children's immunity around the time of their birth relates to their brain development and cognitive skills like language and working memory. I grew up in Jamaica and then lived in London for a few years, so it's exciting to be in such a wonderful new city, and I look forward to having some fun with the TEBC children at their visits.

Things to Do

Birthday Card Design

Happy Birthday



Each year, we send a birthday card to every child taking part in the study. All the cards are designed by the children themselves, or their siblings. We would love to add some new cards to the collection!

Happy Birthday



You can choose to paint or draw anything you like – something nice and colourful works great! On a piece of A4 paper works best. Ask an adult to take a photo of your picture and email it to Jill (jill.hall@ed.ac.uk), who will arrange for it to be made into a birthday card. We'll also give you some cards so you can send them to

your friends when it's their birthday.

Easy Rock Painting

Fun rock painting project with a colourful ladybird design – it's a quick, cheap and simple afternoon activity for when the kids are home from school. [Click here for details.](#)



Potato Stamps



Do you have a few spuds lurking in your cupboard? Learn how to make these easy potato stamps – they're quick to make and will keep the kids busy. Toddlers especially will love using them to make cards and simple pictures. [Click here.](#) These would also work for a picture for a birthday card design!

Kid's Baking



Chocolate Cornflake Cakes.

Looking to use up leftover chocolate? Well, maybe not! But who doesn't like chocolate cornflake cakes, no matter your age. [Click here.](#)



Marshmallows Dipped in Chocolate
[Click here.](#)

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