BARWON INFANT STUDY EVOLUTION:

Now entering our third year, with 1000+ BIS families, and recruitment ending June 24th...

Issue No.5 (April 2013)

With the impending completion of the 3 year recruitment phase on June 24, we'll shortly start analysing & reporting on some of the important aspects of the project. The years ahead promise to be busy & exciting, and we'll share results with you as they occur, starting with the June BIS forum (see the back page). For the moment though, we want to share some preliminary work with you.

Firstly, we've been busy optimising the quality of the study procedures. We've investigated whether we're obtaining reproducible data from the ultrasounds of the baby's aorta – which you'll recall from your 4 week visit. We had both Kaye and Stacey perform ultrasound measures on a subgroup of BIS babies. Those images were separately analysed by Dr's Kate & Jane. We were delighted to see a very high level of correlation between the results, assuring us that our testing is providing high quality data (Figure 1). In fact the average difference between results from Kaye & Stacey's scans was less than 0.1 of a millimeter – as good or better than the correlation reported in studies with scans done by specialist ultrasonagraphers in major teaching hospitals! So we think Kaye & Stace are pretty clever. But shush… we don't want them to get big heads!

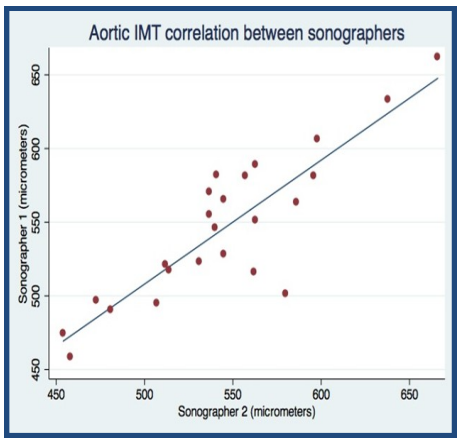
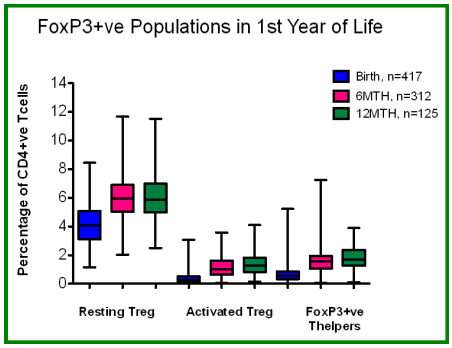


Figure 1. The correlation between aortic intima media thickness from images taken by Research Nurses Kaye and Stacey.

As another process check we've looked at the effect of freezing, storing and thawing of the baby's white blood cells (which are kept at minus 270 degrees – which is pretty cold). We were delighted to find that we are able to retrieve over 80% of cells alive and good condition – as good or better than any lab in the world! This is crucial because it allows us to investigate the immune responses of the living cells. For example, we'll now test (in A/Prof Mimi Tang's lab at the Royal Children's Hospital) the efficiency of baby's naïve T cell's (immune cells that have not yet formed immunological memory) in producing an important signaling molecule called interferon gamma. Our hypothesis is that a reduced capacity of naïve T cells to produce this interferon gamma may be a risk factor for allergic disease.

Fiona, Barwon Health Research Manager has been investigating changes in the composition of the baby's white blood cells over the course of the first year of life. We're particularly interested in a group of cells known at T regulatory cells (T regs). As their name suggests, T regs have a key role in controlling immune responses. T regs are identified (in part) using a cell surface marker called FoxP3. Fiona's work has shown that the proportion of T regs increases during the first year of life, particularly between birth & 6 months. We think this early period – the first months after birth - is a key phase for immune development. This is one of the reasons why the blood samples you've provided at your baby's birth, 6 & 12 months are such a unique and important resource. We're now investigating a hypothesis that a delay in the increase of T regs is associated with increased risk of allergic disease.

We're also starting to get an idea of the incidence of food allergy amongst the BIS babies. Based on current figures,



about 12% of babies are skin prick test positive & about 6% have proven food allergy on formal challenge testing (with John & Leonie). These figures are a bit lower than those that Prof. Katie Allen (a BIS lead investigator) found among babies in Melbourne (where 17% had allergic sensitization & 10% challenge proven food allergy). So we're comparing the factors that may influence the risk of food allergy between Geelong & Melbourne. Experiments are underway with collaborators in Finland & Adelaide to investigate whether differences in the composition & development of the baby's gut flora influence the risk of food allergy. Did you know that there are 10 times as many bacterial cells as human cells in the adult body, and 100 times as many bacterial genes as human genes? The bacteria in our gut & our immune systems have evolved together, & are designed to work in close harmony. There is a lot of interest in the current concept that changes in gut bacteria in the modern environment may adversely affect our immune systems. It is a very new and exciting field, and BIS is arguably the best resource for investigating the role of gut bacteria in immune development in the world. So all those wonderful poo samples you've diligently collected for us are going to be very, very important! Thank you!

I look forward to updating again as more findings come to hand. For now, hold on to your hats because we are in for an exciting ride! A/Prof Pete Vuillermin.

BIS Baby News

Recruitment of new families will cease on June 24th, 2013. So far we have 1070 participant families and 888 babies born into the study, more than 120 babies born since the last newsletter!!

Here are some recent baby names:

Charley-Mae, Adele, Raf, Oscar, Miette, Van, Alice, Xavier, Jasper, Ella, Evelyn, Ruby, Fynn, Nate, Eliza, James, Viraaz, Noah, Kiki, Archie, Charlotte Rose, Lily, Thomas, Amelia, Heidi, Savannah, Phoebe, Ethan, Reeve, Lincoln, Jack, Molly, Harrison, April, Lloyd, Luxe, Emma, Harris, Isabelle, Lachlan, Mason, Xavier, Eliza, Will, Jillian, Lila, Kodi, Elsa William, Eliana, Gilbert, Lilly, Henry, Kimberly, Brennan, Sebastian, Matilda, Patrick, Arkadiy, Charlie, Reeve, Pia, Sienna, Murphy, Dana, Lexi Parker, Wolfgang, Clancy, Rupert, Charlotte, Isabella, Aston, Georgia, Aaliyah, Eadie, Navy, Kennedy, Ethan, Lucas, Jackson, Harry, Alexis, Emily, Ruby, Alivia, Zoe, Leo, Jack, Neve, Eva, Alfie, Mila, Lola, Cooper, Sefton, Page, Indi, Nathan, Arlo, Flynn, Dusty, Taylah, Matea, Shelby, Alexa-Ray, Brax-Xavier, & Erica-Lily.

Gorgeous April looking bright eyed at her 6 month BIS review.

Meet the Team!

Spotlight on … BIS Investigator, Sarath Ranganathan.

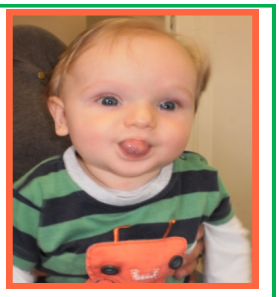
BIS News*: *Tell us a bit about yourself!
***Sarath*:** I am the Director of Respiratory Medicine at the Royal Children's Hospital in Melbourne. I joined BIS because I believe the research has the potential to be world-leading and to answer important questions about children's development in several different areas.

***BIS News:** What is your current research focus?*
***Sarath*:** My research focuses on how lung disease develops in children.

***BIS News:** What do you most enjoy about your job?*
***Sarath*:** I get bored easily by many things but never by my job! A day at work is totally unpredictable which I love.

***BIS News:** Tell us something interesting about yourself….*
***Sarath*:** Well, I'm quite funny underneath a serious exterior. And I represented England in the first soccer world cup for doctor's held in Spain. Unfortunately we did no better than the English national team….!!

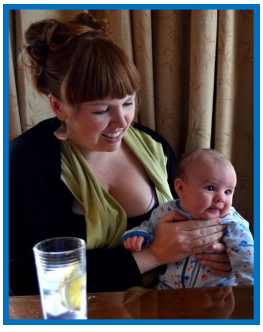
We just had to include these photos, of cheeky Oscar, right, at his 12 month review with Liz, while gorgeous Charlie, left looks happy at his 6 month review with Nat.



BIS Fieldwork Baby News:

*Archie Samuel (right) was born on 30th March, weighing 6 pound & 52 cms, to first timers Research Nurse Stacey & partner Matthew. Archie is also a BIS Participant so we're doubly lucky **:)** Stacey is quite content with a break from BIS field-work, but motherhood will keep her busy enough & we'll see her soon for Archie's 4 week review.*

While midwife Heather and Roland welcomed Felix Montgomery Anderson (below) on Jan 23rd, at home in water weighing 3.1kg or 6lbs 13oz. As you can see his big sisters, Isla (7) and Elsie (5) absolutely adore him, and Heather reports "He is a very mellow little guy and has just made our family all the happier."



MEET THE HARRISON-LESLIE FAMLY

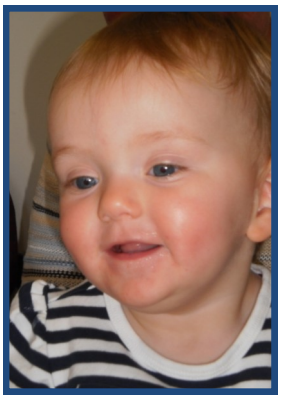
A sea change has benefited the Harrison-Leslie clan and the Barwon Infant Study. Moving to Victoria 6 years ago from the Pilbara region, WA leaving careers in Nursing & OH&S in the mining industry (Jodie) & Youth Welfare and Community Services (Sue) the family now reside in coastal Lorne, a lifestyle decision that's led to a new life, new business and & two babies, Ollie, now 6 years old & Rikki, 14 months.

"We left the Pilbara for a sea change intending to see another part of Australia we'd never seen before", says Sue. A weekend day trip from Melbourne to Lorne saw them fall in love with the area & "2 months later we'd bought a new business & a house to start our new life"!

Already pregnant with Ollie, with a new town, business, home and locale to get used to the couple know all about juggling and overcoming life's hurdles.

BIS family—Sue, Ollie, Jodie and Rikki Harrison-Leslie

"One of the most challenging things about pregnancy and early parenting was just falling pregnant, given our circumstances – the IVF process wasn't too bad, but keeping the pregnancy viable was quite difficult", Sue reports. "And of course learning to adjust to the lack of sleep once a newborn came along while also having a toddler at home was quite a challenge too".



But challenges aside, the absolute best part of parenting is "the sheer love you feel for the little thing growing inside of you. And of course watching your toddler falling in love with something that he watched growing via the size of my belly! It's the joy of how they complete you as a person". (Read more about this process below).

While Jodie runs the couples' business Sue has returned to work part time in Child Protection with Otway Health, as well as bringing up Ollie and Rikki. "Rikki comes with me and attends day care whilst Ollie is in Kindergarten, which works well for us all", says Sue.

Having joined BIS with Rikki's birth in 2011 Sue said they were "interested in being part of a study that was new and had the potential to improve children's lives in the future. I would absolutely recommend BIS to other families not only for the good of research and making the lives of future babies better but for the peace of mind you get from having the extra testing, medicals and support from all the staff throughout the first year of your baby's life".

"Thank you BIS staff. You've all been so wonderful to us".

All About Oxytocin ...

Oxytocin is fundamental for pregnant, labouring and breastfeeding women. Created & released in the brain the hormone helps labouring women by stimulating contractions. Oxytocin is so important that a synthetic form is often used to induce labour & most women are offered an oxytocin injection after birth to help the uterus contract. Further oxytocin is released when you breastfeed, which is one reason why breastfeeding soon after birth can cause more contractions, importantly helping to shrink your uterus down to pre-birth size.

But arguably its most important function lies in helping you bond with your new baby. Released when you hug someone, when you trust someone, fall in love and orgasm, it's earned the nickname "the love hormone". The huge amounts of oxytocin you produce when in labour help you 'fall in love' with your new baby and stimulate those protective parental mechanisms, boosted every time you breastfeed or cuddle your baby.

So next time you need a bit of a boost, cuddle someone special. And when you get a warm fuzzy feeling, remember to thank oxytocin. While we could say more this about this impressive little hormone, we'll save that for the next time we chat.

Reference: Odent, M 2002, 'The first hour following birth: Don't wake the mother!', *Midwifery Today,* vol. 61.

BIS Field-staff changes:

Next time you take a phone call or visit BIS you'll see some new faces and perhaps miss others. Research Assistant (RA) Kristin has accepted a place at Deakin Medicine. Our dynamic Research Nurse Stacey welcomed her first baby, Archie Samuel into the world, while Scottish beauty, midwife Heather enlarged her family with baby boy Felix (details inside).

And we've had 8 new people join us! RA's Helen, Luka, & Melanie conduct the 28 week interviews, 3 month & 18 month phone reviews. You may recognise Helen, a former BIS vollie of 2 years, whose initiative & 'in-house knowledge' greatly benefit our field-work. While nursing graduate Luka undertakes his honours year in BIS looking at antenatal mental health, midwife student Melanie's passion lies in the investigation of the relationship between oxytocin levels at birth & delivery method (more inside).

Karin, an experienced infant Phlebotomist (taking bloods) joins us to conduct 6 month reviews, and 6 & 12 month infant bloods. Karin has four adult kids, a cheerful demeanour & can-do spirit. RA (Psychology) Sandy joins us to implement our 2 year reviews which build on the neuro-development components of the 9 month review. Sandy and Gavin have two kids and two dogs.

Psychology Honours student Nahanni assists with the 9 month neurodevelopment testing, and Bio-Medical Honours student Sabina assists with the 4 week infant review investigating the influence of age, weight, height and gender on infant lung function. Paediatrician John Molloy commenced his PhD into childhood food allergies. John coordinates the food challenges clinics for those children testing positive to food allergens via the Skin Prick Test as well as advises BIS participants via the Peadiatrician hotline.

2013 BIS Participant Forum - You're invited !

In October 2012 we held the first BIS Forum with around 100 attendees. **The next event is on Wednesday June 12th. We hope that you can come along to hear some further results.**

When: 9.30am—11.30am, 12th June, 2013.
Where: Deakin Geelong Clinical School, 285 Ryrie Street, Geelong (just behind Kitchener House, where BIS is located)
What: Light refreshments provided
RSVP: COB Wednesday 5th June.
Questions, suggestions & RSVP's to Melissa via ***bis@barwonhealth.org.au***

BIS Contact details

Late last year all Barwon Health phone numbers changed including BIS. Hopefully you didn't experience too many issues getting through. You might like to display these details somewhere prominent...

Phone: 03-4215 3384 Mobile: 0400 432 976
BIS Paediatric hotline: 03-4215 3392
Email: bis@barwonhealth.org.au
Website: www.barwoninfantstudy.org.au Twitter: @BIStudy

The Barwon Infant Study is conducted within the Child Health Research Unit, at Barwon Health (CHeRUB)
Working together for children's health

Participating Institutions:

Murdoch Childrens Research Institute – Healthier Kids. Healthier Future.
Barwon Health
St John of God Geelong Hospital
Deakin University
The University of Melbourne
Telethon Institute for Child Health Research

Proudly Supported By:

Scobie & Claire MacKinnon Trust
Australian Government National Health and Medical Research Council NHMRC
toys..... Jates ...hobbies
Our Women's Our Children's Fundraising Committee, Barwon Health
creativeforce advertising marketing graphic & web design
Rotary Of Geelong East
The Jack Brockhoff Foundation
Shane O'Brien Memorial Asthma Foundation
Cotton On Foundation