500 FAMILIES

THE ORIGINS PROJECT

THE ORIGINS PROJECT

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

Joondalup Health Campus
Part of Ramsay Health Care

The ORIGINS Project acknowledges the Aboriginal and Torres Strait Islander people as the Traditional Custodians of the land and waters of Australia. We also acknowledge the Nyoongar Wadjuk people and their land upon which our facilities are located, and pay respect to the Elders both past and present, and seek their wisdom in our work to improve the health and development of all children.

WE ARE THE 5000 FAMILIES

ORIGINS is about research.

ORIGINS is about discovery.

ORIGINS is about global translation.

ORIGINS is about community.

ORIGINS is a catalyst for change.

But most of all, ORIGINS is about families—
families and their histories, experiences and stories.

Without our families there would be no ORIGINS.

The recruitment of 5,000 families to The ORIGINS Project is not just a milestone for the study, but for research.

This milestone document celebrates our families and their commitment to research, their community, the health of their own families and that of the next generation. We are aiming to enable all children to have a healthy start for a better future.

My twins, Julian and Amelia, are now 4.5 years old (they insist on me including the half!) and we were the first set of twins to be enrolled in ORIGINS just before they were born. We were really excited to be part of a study into child development, particularly one looking into the causes of allergies.

We thought having twins may provide a unique perspective, given they are growing up in the same environment, at the same age, with the same genetic information, although they are not identical. Through ORIGINS we are not only giving something back and helping future generations, but we have joined a lovely family of other parents, staff and supporters.

We loved meeting up for family days, celebrations and receiving emails and connecting - even after moving interstate. We are proud to be part of this project!

We have also had additional health checks we otherwise would not have had, like the allergy testing, which picked up a raw egg allergy that we would never have known about until one of the twins had a reaction.

If my involvement in the project could change one thing for future generations, it would be to help to reduce the impact and severity of allergies.

KATIE VAN DER WATT
— Mum to Amelia & Julian (4.5)

CONTENTS

ORIGINS

A UNIQUE INTERVENTIONAL BIRTH COHORT & LONGITUDINAL STUDY

The ORIGINS Project is examining ways to optimise the health potential of individuals and communities from early life. Going beyond preventing disease, we aim to identify the conditions that enable flourishing from birth.

ORIGINS is taking a broader approach to the protective and buffering factors that enhance an individual, such as building nature-relatedness, interpersonal relationships, mindfulness, and positive emotions. In addition to scientific pursuit, our interventional cohort can contribute to solutions in every community - empowering individuals and communities towards positive change.

The largest study of its kind in Australia, The ORIGINS Project is a partnership between Telethon Kids Institute and the Joondalup Health Campus, aimed at reducing the rising epidemic of non-communicable disease, also known as chronic conditions, by providing a healthy start to life.

Our ORIGINS children are being followed for the first five years of their lives, beginning with their time in the womb.

AIMS

The ORIGINS Project's aim is to improve the health of the next generation through a better understanding of how to optimise the early environment.

Over a decade, we are recruiting 10,000 women and their partners early in pregnancy and collecting biological samples, routine data and information from web-based questionnaires on physical and mental health, diet, physical activity patterns and a range of environmental factors, creating an extensive Biobank and Databank.

ORIGINS researchers, and those we collaborate with, are specifically looking at how the early environment influences the risk of diseases and the optimal time for interventions for early detection and prevention.

OUR VISION

Happy people building healthy communities across the planet that empower us to realise our potential.

OBSERVING AND CREATING IMPACT

ORIGINS is grounded in making meaningful changes in policy and practice that will reduce the burden of common health conditions through early interventions.

A novel aspect of The ORIGINS Project is that it is fully integrated into the clinical and diagnostic services, led by a strong cohesive vision of Joondalup Health Campus Executive and Department Heads, across both public and private sectors. Clinicians (including midwives and laboratory staff) conduct research appointments in addition to clinical duties, promoting a research culture.

Conceptually, The ORIGINS Project is an observational cohort, building a platform of information on 10,000 families. This is the core function of ORIGINS, however, the opportunity for families to become involved in sub-projects and the provision of real-time feedback transforms it into an interventional cohort study.

In addition to observational data, ORIGINS provides a framework for a series of smaller intervention studies nested within the main cohort to improve modifiable aspects of the early life environment, such as nutrition, physical activity, microbial diversity, microplastics, weight gain, language development and mental wellbeing.

The ORIGINS Project is a catalyst for change, intervening as soon as anomalies are detected by referring participant families to appropriate community and health services. Not only does the project provide a framework for new discoveries, it is also a facilitator of collaboration across disciplines, sectors and communities.

> "There is an explosion in child developmental, behavioural and mental health issues, to the extent that there are not enough paediatricians to keep up with demand. I would love for ORIGINS to be able to change the early trajectory of the next cohort of children to improve the quality of life of a generation - whether that be through looking at factors influencing development in the womb or the findings that come from our work in early childhood.
>
> **DR JAMIE TAN**
> **— Paediatrician**

AT A GLANCE

AT THE TIME OF RECRUITING
OUR 5000TH FAMILY ORIGINS HAD...

246,000
individual sample aliquots in the Biobank

1,809
non-birthing partners

5,581
babies born

5,000
birthing mothers

13M+
data points in the Databank

29
students supported by the project

30
nested sub-projects

800
placentas

11,689
individuals making up the ORIGINS population

550+
engagements with researchers from around the world

92%
retention of families

9
giant freezers full of samples

63
research papers published on ORIGINS and its sub-projects

INNOVATION

IGNITING THE SPARK

"The significance of reaching this milestone is symbolic of the support that research receives, and deserves, in Western Australia— recognising the importance of empowering individuals and communities towards positive change."

TAKING ON THE CHALLENGE

The rapidly developing field of 'developmental origins of disease' has been raising more questions than answers about how to give children the best start in life.

In 2015, Susan Prescott had just published a very important book called 'ORIGINS' which explained this emerging field and identified a number of research gaps and opportunities. Meanwhile, an Australia-wide survey on children prior to commencing school identified worrying pockets of developmental, emotional, and physical issues in our community. So, we decided to take on the ambitious challenge to better understand what we can all do to ensure happy, resilient children and to identify vulnerable children as early as possible who may benefit from timely intervention.

We both felt that a community project was critical to understanding these challenges and how the community could have a voice to help solve these issues together.

PROMOTING POSSIBILITY

Dramatic changes in disease profile over the past two decades, with surging rates of obesity, allergies, poor mental health and neuro-developmental issues in young people, made a strong case for new approaches to address new challenges and emphasised a need for completely new perspectives on how to tackle modern environmental risks.

The ORIGINS Project provides an ideal research platform of opportunity to test new ideas, challenge the status quo, and explore how our environment can affect our gene expression from very early in life. Newly recognised factors, such as the human microbiome, add important new dimensions to these questions. Advances in technology and data collection also provide us with an opportunity to study other new frontiers, such as 'epigenetics', as a critical mediator of genetic and environmental interactions during early development.

The ORIGINS Project is about promoting possibility in every imaginable sense and valuing and promoting wellbeing and fulfillment of individuals in new ways for flourishing communities.

It is about enabling this through awareness and action that recognise improving early life with amplified potential for life-long health and longevity, not just prevention of disease - through healthy bodies, minds, emotions, attitudes and behaviours - all with greater awareness of ourselves and others.

PROF SILVA (LEFT) & PROF PRESCOTT (RIGHT)

PASSIONATE FOR POSITIVE CHANGE

We are both passionate about making positive changes for our community and recognise the importance and power of working with others to achieve this. As paediatricians, we understood the importance and power of a healthy start in life for a better future - not just for each individual child, but for our society as a whole.

Our health is intimately related to the health of our environment and the health of our societies, and that means that our many challenges cannot be solved in isolation. A broad and long vision is required with a coordinated, collaborative approach to both advocacy and action.

Working with many in our own community, we co-created ORIGINS with these concepts in mind, to encourage new and inspired ways of imagining the health of our future. We believe that local efforts can be part of the solutions in every community, as we actively link with other communities to become part of a much greater global change narrative.

SHARED PURPOSE

It has been a delightful journey being part of this team, especially one working on a meaningful project like ORIGINS.

Whether we are contributing as staff, volunteers or as participants, it is important for all of us to step back and realise how valuable it is to have a shared purpose and be part of something greater, that is having an important impact.

We couldn't do it without our families, whose ongoing commitment helps our researchers to compile the best research evidence possible.

Leading The ORIGINS Project is an enormous privilege and provides an opportunity to make a difference. It's exciting to learn new ideas from brilliant research minds and meet extraordinary families who see the value in ORIGINS, who give up their time to make a difference and appreciate the support and understanding they receive. The most rewarding part is working with such a fabulous diverse and adaptable team who are so passionate and share a common goal to ensure every child gets the best start in life and is able to reach their full potential.

TO OUR 5000 ORIGINS FAMILIES & THE 5000 YET TO JOIN THE PROJECT...

Thank You!

Prof Desiree Silva & Prof Susan Prescott
— Co-Directors, The ORIGINS Project

Stella

We decided to join The ORIGINS Project as we felt it was a good opportunity for us to get on the front foot with our child and ensure that she had no allergies.

We wanted to know that if she did, we would have resources through the project to assist us.

We've enjoyed the regular check-ups and all the information provided to us. It gives us peace of mind knowing that Stella is healthy and developing well for her age. We have just had her one-year check and we she didn't have any reactions to any of the allergy tests, so that's such a relief.

The commitment to the study requires little effort and doesn't take up much time. We think the knowledge, assistance and support we have gained during the study has helped us be better prepared parents. We are now pregnant with our second and have just enrolled this bub in the study as well.

If our family's involvement in ORIGINS could change one thing for future kids it would be the development of a medication that treats allergies to animals and doesn't just treat the symptoms.

LEANDRA BAYMAN
— Mum to Stella (1)

PAUL RAMSAY IN THE LAUNDRY AT JHC

SUPPORT

We gratefully acknowledge that The ORIGINS Project is funded by the Paul Ramsay Foundation and the Commonwealth Government of Australia through the Channel 7 Telethon Trust.

The commitment from the Paul Ramsay Foundation and Commonwealth Government, in entrusting their financial investment in this project, is continually valued and appreciated.

Our local collaborations are also cherished, and we acknowledge the support and dedication of the Telethon Kids Institute and Joondalup Health Campus. Both organisations are entrenched in our activities and processes.

paulramsay FOUNDATION
PARTNERSHIPS FOR POTENTIAL

Australian Government

telethon 7

We had long wanted to increase the research activities at Joondalup Health Campus, so when the idea of ORIGINS was born more than five years ago, it seemed an excellent opportunity for the hospital.

The concept behind ORIGINS is a proven science. We know that the early origins of disease can impact children for their whole life, but it hadn't been translated into action, anywhere in the world. This was an opportunity to do that. The broad vision of ORIGINS is working to address the poor early childhood development indicators in the northern suburbs of Perth - the hospital's local community.

Our team had the privilege of supporting Desiree in getting the project up and running. We had such generous support to secure the funding, which included seed funding of $13 million from the Paul Ramsay Foundation, that was to be matched. Influential businessman Kerry Stokes AC and Mathias Cormann, Minister for Finance at the time, were then instrumental in securing the additional $13 million from the Federal Government.

A novel aspect of The ORIGINS Project is that it is fully integrated into our clinical and diagnostic services, led by a strong cohesive vision of Joondalup Health Campus Executive and Department Heads, across both the public and private sectors. ORIGINS also received outstanding support when it was first presented to staff, right throughout the hospital, and that enthusiasm continues today.

Collaboration and engagement are fundamental elements of ORIGINS at every level, and the project is an example of how collaboration can be successful in having an impact on a community. We are proud to be a part of that.

DR AMANDA LING
— CEO, Joondalup Health Campus

ENGAGE

Pregnant women and non-birthing partners are recruited with informed consent early in their pregnancy to collect detailed environmental and psychosocial data using questionnaire data, medical records, diagnostic tools and biological samples.

We follow our ORIGINS families from the womb until five years of age. As well as completing repeated online questionnaires and at-home sample collections they are asked to attend three paediatric assessments and sample collections with their child in the ORIGINS clinic at Joondalup Health Campus.

ORIGINS families are contacted at multiple touchpoints throughout their ORIGINS journey by their dedicated Family Liaison Officer.

ACTIVE AND NON-ACTIVE PARTICIPANTS

The 10,000 families that ORIGINS will recruit consist of the following;

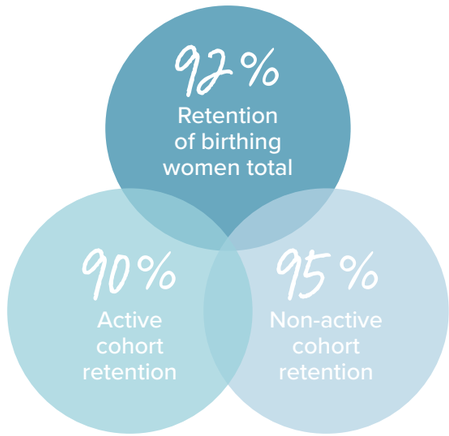
4,000 'ACTIVE' PARTICIPANTS

Families that undertake multiple data and sample collections at specific timepoints. These families are engaged through ORIGINS touchpoints, including appointments, questionnaires or data collection points that they are asked to participate in.

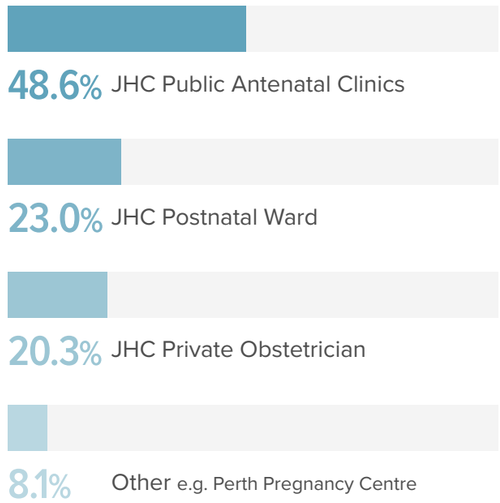
6,000 'NON-ACTIVE' PARTICIPANTS

Families that consent to give us access to all their routinely collected hospital data, opportunistic samples and linkage to government and non-government databases. Non-active participants do not attend appointments or complete questionnaires but allow us to collect their precious routinely gathered data from hospital and government records.

Both active and non-active participants (mother, child and partner) can be involved in multiple sub-projects from pregnancy to five years of age.



HOW PARTICIPANTS ARE RECRUITED:



TOUCHPOINTS

Families are asked to collect samples themselves at home at several timepoints from the birthing mother, partner and child, such as house dust, faeces and urine, at various time points. They then also come in and have samples taken, such as blood, and saliva as well as body measurements.

Families are asked to complete online questionnaires at home, which explore factors influencing their child's health and development. They also attend in-clinic appointments with the ORIGINS paediatric team three times throughout the study.

All samples and requirements are voluntary contributions to the research project. We respect the wishes of all of our ORIGINS families, and they are within their rights to refuse any collections according to their values or needs.

Many of our families are involved in sub-projects (see page 40) which sometimes require additional appointments, questionnaires, activities and touchpoints to those outlined below.

ETHICAL CONSIDERATIONS

The ORIGINS team is committed to protecting the confidentiality and privacy of our families as well as their data and biological samples.

Everything we do is underwritten by an ethics approval process. We are committed to creating an environment that promotes responsible conduct by having standards of excellence, trustworthiness, and lawfulness. The ethical aspects of ORIGINS are reviewed and approved by the Ramsay Health Care WA|SA Human Research Ethics Committee. Practices are continuously evaluated whenever a change to protocol or procedure is made.

ORIGINS PARTICIPANT TOUCHPOINTS

ANTENATAL	Enrolment 20 Weeks Gestation	**ORIGINS APPOINTMENT** In-Clinic samples • At-Home samples ORIGINS questionnaire • Australian Eating Survey
	36 Weeks Gestation	**ORIGINS APPOINTMENT** In-Clinic samples • At-Home samples ORIGINS questionnaire • Australian Eating Survey
BIRTH	Birth	Cord blood and placenta collected by midwives Meconium and colostrum samples in hospital PEA POD-body composition measurement
POSTNATAL	2 Months	At-Home samples • ORIGINS questionnaire
	4 Months	Ages & Stages Questionnaire
	6 Months	At-Home samples • ORIGINS questionnaire Australian Eating Survey
	9 Months	Ages & Stages Questionnaire
	1 Year	**ORIGINS APPOINTMENT** In-Clinic samples • At-Home samples • Allergy testing ORIGINS questionnaire • Australian Eating Survey Ages & Stages Questionnaire • Paediatric check
	1.5 Years	ORIGINS questionnaire
	2 Years	ORIGINS questionnaire • Ages & Stages Questionnaire
	3 Years	**ORIGINS APPOINTMENT** In-Clinic samples • At-Home samples Ages & Stages Questionnaire • Paediatric check Allergy testing • Conners Early Childhood survey
	3-3.5 Years	ORIGINS questionnaire • Australian Eating Survey **BOD POD APPOINTMENT** Body composition measurement
	2 Years	ORIGINS questionnaire • Ages & Stages Questionnaire
	5 Years	**ORIGINS APPOINTMENT** In-Clinic samples • At-Home samples • Allergy testing ORIGINS questionnaire • Conners Early Childhood survey Ages & Stages Questionnaire • Kids Check

REAL-TIME FEEDBACK

BEING A PART OF THE ORIGINS PROJECT, NOT ONLY SUPPORTS GLOBAL RESEARCH AND THE HEALTH OF FUTURE GENERATIONS, BUT ALSO PROVIDES MANY BENEFITS FOR PARTICIPANT FAMILIES

Real-time feedback is incorporated into The ORIGINS Project, which is helping to identify health issues among participant babies and toddlers. This includes delayed speech and physical development, and severe allergies, as well as anxiety and depression in mums, leading to referral to specialists and enabling early intervention.

Participant families are advised of any results that are found through ORIGINS assessments so they can be addressed as soon as possible. At one-year and three-years of age, ORIGINS children are assessed by a paediatrician following a review of data collected using the Ages & Stages questionnaires. All participants receive a feedback report that they can send to their general practitioner.

The integration with local and state-based service networks, and new technological capability, provides capacity for ‘real-time’ data generation and feedback. Early screening and identification of children at risk provide timely referrals to early intervention.

To our knowledge this is completely unique and is the first cohort to take this approach.

EARLY INTERVENTION FOR ORIGINS' ONE-YEAR-OLDS

Of those ORIGINS children who have attended a one-year clinic appointment, 20% (n=250) were recommended for a General Practitioner or Child Health Nurse follow-up appointment.

15% of those who attended the appointment (n=186) were referred to a health care specialist for further assessment/treatment as follows:

24%	Allergist/immunologist
20%	General paediatrician
19%	Child Development Service
11%	ENT (ear, nose, throat)
9%	Physiotherapist (private)
8%	Dietitian
5%	Ophthalmologist

IRON LEVELS OF OUR KIDS

As part of ORIGINS assessments, we look at ferratin (iron) levels: low iron was detected in many children at the one- and three-year appointments. At one-year of age, 97 children had low iron (22% of the cohort who attended an appointment) and 120 children at three years (44% of the cohort that attended an appointment) had low iron. Each child was individually followed up by a paediatrician and advised specific supplements, dietary advice and/or further investigation by their GP.

Harry

We joined ORIGINS in early pregnancy, after a six-year battle to conceive our beautiful Harry. We originally joined the study to help mothers and children in the future, but it turns out that we are the ones who have benefitted the most from the project.

When I was pregnant, ORIGINS' doctors helped to identify an issue with Harry's placenta, which led him to be delivered early at 33 weeks gestation. We spent 22 days in the NICU and the nurses at Joondalup Health Campus were incredible at pulling me and my family through such a scary time.

After completing one of the health and development questionnaires - part of the ORIGINS protocol - when Harry was 18 months old, my worries about his speech regression were flagged. Thanks to ORIGINS' Dr Jamie Tan, we were quickly referred to the Health Department's Early Childhood Intervention team, where they diagnosed Harry with Global Development Delay, which is a term they use when a child shows delays across several areas of development.

We then received National Disability Insurance Scheme (NDIS) assistance and an autism assessment, all within 12 months from our referral from ORIGINS. This early intervention has helped us immensely as Harry has received the assistance he needs to learn how to communicate and learn in his own way.

I have started dropping into conversation that I am part of ORIGINS, when I am speaking to other local community services, as it seems like it is getting me things a bit faster. They recognise the study and think it's great that I am a part of it and know that the diagnosis would be valid because of my involvement in the project.

I have been told that most people have to wait 2-3 years for an appointment with a specialist and I have seen four different ones in the last nine months.

I hope that our involvement with ORIGINS can help other families to be able to intervene early if their child begins to display traits such as speech delay, hypermobility, and autism. My family are thankful every day that we have Harry and my eldest son, Aiden, was so happy to finally get a baby brother. I would like to thank everyone in the ORIGINS team who have been involved in all our testing and monitoring, and who dedicate so much time and effort to this amazing study.

CATHY CHOPPING
— Mum to Aiden (10) & Harry (3)

PROFILE

COHORT

THE FIRST 5000 ORIGINS FAMILIES

A SNAPSHOT ANALYSIS OF OUR 5000 FAMILIES IS PROVIDED ON THE FOLLOWING PAGES

The majority of ORIGINS families live in the Joondalup and Wanneroo catchment areas and, in general, live with socio-economic advantage.

On average our families are similar to the general population, when compared to national health data. In terms of risk factors for developing chronic conditions, ORIGINS parents consume less alcohol and other drugs in comparison to their Australian counterparts, however they typically exercise less. Overweight and obesity levels are concerning, particularly post-birth: at one year after delivery, half of the ORIGINS women and three-quarters of their partners that provided us with information are overweight or obese. Stress levels also rise for some women, with 10% expressing extreme stress one-year post-birth.

Understanding this information enables ORIGINS to develop targeted interventions and refer individuals to appropriate health and social support services.

“There is so much precious information we can get from such a significant sample size. These data and samples are forming an ORIGINS ecosystem, and a comprehensive observatory of participant information to be used for decades to come.

JACKIE DAVIS
— Senior Program Manager

OVERVIEW

5,000
Birthing mothers

1,809
Non-birthing partners

5,581
Babies born

90%
Active cohort retention
Active participant = detailed data and sample collections

95%
Non-active cohort retention
Non-active participant = routinely collected and linked data

92%
Total birthing women retained

11,689
Total ORIGINS population

ETHNICITY + SOCIO-ECONOMIC STATUS

80.9%	Caucasian
5.9%	Asian
3.8%	Indian
0.6%	Aboriginal & Torres Straight Islander
8.8%	Other

65% have a **combined income of more than $100,000 per year** — similar to the average Australian household income

71% in the **top two quintiles** of **advantaged population** based on their postcodes (IRSAD)

COHORT PROFILE

ORIGINS MOTHERS

OF THE 5000 BIRTHING MOTHERS

31
Average age

1.5%	20 years or younger
42.3%	aged 21-30
53.7%	aged 31-40
2.4%	41 years or older

91% Married or in a defacto relationship

40% are degree educated
19% hold a postgraduate degree
compared to 33% of Australian women who have a bachelor degree or above

MOST COMMON MEDICAL CONDITIONS

At enrolment, women report that they have at some time been clinically diagnosed with
7.8% anxiety disorder and/or **6.1%** depression

6.8% asthma **3.0%** anaemia **2.6%** Polycystic Ovarian Syndrome

PREGNANCY

TOP PREGNANCY COMPLICATION

6.2%
gestational diabetes

FOLLOWED BY:
3.8% Carrier of Group B Streptococcus
3.5% Pre-labour rupture of membranes

BIRTH

TOP LABOUR COMPLICATION

10.7%
foetal distress

FOLLOWED BY:
2.9% Prolonged second stage of labour
1.9% Precipitate delivery

RISK FACTORS FOR NON-COMMUNICABLE DISEASES

MATERNAL WEIGHT

43.2% entered pregnancy overweight or obese
At one year post-birth **49.5%** are overweight or obese
12.6kg average weight gain in pregnancy *(standard deviation = 5.1kg)*

PHYSICAL ACTIVITY

60% undertook no vigorous activity at one year post-birth

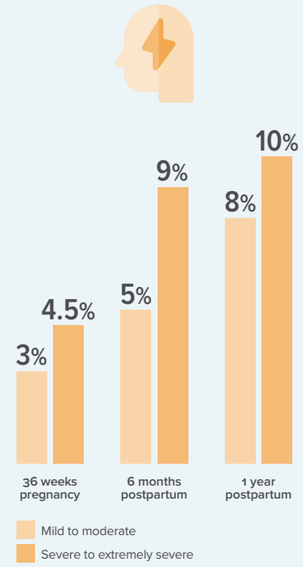
48% undertook no moderate activity at one year post-birth

ALCOHOL + OTHER DRUGS

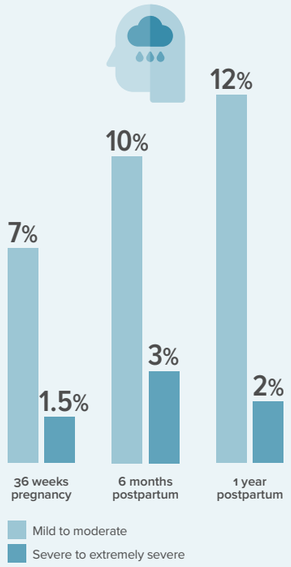
3% smoked cigarettes during pregnancy compared to the WA average of 8.6%

3% drank alcohol in the first 20 weeks of pregnancy
56% consumed alcohol during their pregnancy
26% continued to drink once they knew they were pregnant

SELF-REPORTED STRESS



SELF-REPORTED DEPRESSION



PROFILE

COHORT

NON-BIRTHING PARTNERS

FROM A TOTAL OF 1,803

1,785 Identify as **male**

18 Identify as **female**

23% are **degree educated**
8% hold a **postgraduate degree**

33
Average age
66% aged 31-40

92%
Full-time employed
at enrolment

72.5%
Overweight
or obese

ORIGINS BABIES

BABIES BORN

5,360 Singletons

109 Sets of twins

1 Set of triplets

BIRTH

	Weight		Length
Max.	5,410g		60cm
Min.	910g		24cm
Av.	3,360g		50cm

BREASTFEEDING + SOLIDS

97% tried **breastmilk** at least once

26% combining **breastmilk & formula-feeding** on leaving hospital

On average, mothers breastfeed their child to **4 months**

33% still breastfeeding at **one-year of age**

The most common age to **introduce solids** was **5 months**

25% of women experience **mastitis, blocked ducts, thrush or nipple pain** by the time their baby was 6 months old

ORIGINS CHILD

HEALTH CONCERNS

48%
of parents have at least **ONE HEALTH CONCERN** for their child at the one-year appointment
22% have at least **two concerns**
7% have **three concerns**

20%
of kids had **WHEEZE** identified at 7-months-old
For **60%** wheeze causes **sleep issues**

22%

TONGUE TIE
32% receive **no treatment**
40% snip **25%** laser treatment
Tongue tie can affect breastfeeding but does often correct itself

10% **LIP TIE**

41%
of children at their one-year check had **ECZEMA/DERMATITIS**
25% doctor diagnosis at 4 months
78% are being **treated**
91% moisturiser **51%** steroids

IRON LEVELS

1YR Fe

20% at the **one-year check** were identified with **low iron levels** (15-20 µg/L)
16% had **very low iron levels** (less than 15µg/L)

3YR Fe

31% at the **three-year check** had **low iron levels**
23% had **very low iron levels**

54%
of children that attended their one-year check, were living in a family environment where at least one parent had experienced **MENTAL HEALTH DIAGNOSIS**

ANXIETY
31% in mums
14% in dads

DEPRESSION
19% in mums
22% in dads

I was last to have my baby out of the girls (my sisters-in-law) and I had heard about the project from them. ORIGINS wasn't around when I had my first two children and I wanted to also contribute.

I feel the project is an opportunity to provide much-needed information to perhaps help uncover early diagnosis and provide insights to help other families and generations.

The extra monitoring for Jack has been really valuable so far and I would love to think that between the three related families, we will contribute to helping uncover any genetic links that could help with early detection or prevention of medical conditions.

CAROLINE DUNSTAN
— Mum to Isla (7), Owen (5) & Jack (7 months)

We joined ORIGINS as I was interested in being a part of the important research and felt it was giving me value while also helping society.

I encouraged my sisters-in-law, Danielle and Caroline, to become a part of the project when they became pregnant, because I thought it would be an interesting genetic link to explore and felt the benefits would help them as well.

I love that we are helping support important research that could help mothers and babies in the future. We receive reports and information about my daughter's milestones and development, which is so helpful and reassuring as a first-time mum.

JADE DUNSTAN
— Mum to Lilly (13 months)

Cooper's father, Chris, was involved in the Raine Study and we decided it would be good to continue a research project with our son, Cooper.

Jade was already part of the project and we had discussed the benefits. Given the babies are so close in age, it is interesting to see how they all progress in both similar and different ways.

We hope that ORIGINS' research can help prevent or reduce the impact of illness and disease in the future, allowing all babies to go on and live healthy and happy lives.

DANIELLE HEWITT
— Mum to Cooper (11 months)

ORIGINS DATABANK

A PLATFORM FOR RESEARCH DISCOVERY

ORIGINS is collecting substantial data, in the form of administrative, physiological, biological and clinical data from the mother, non-birthing partner and child.

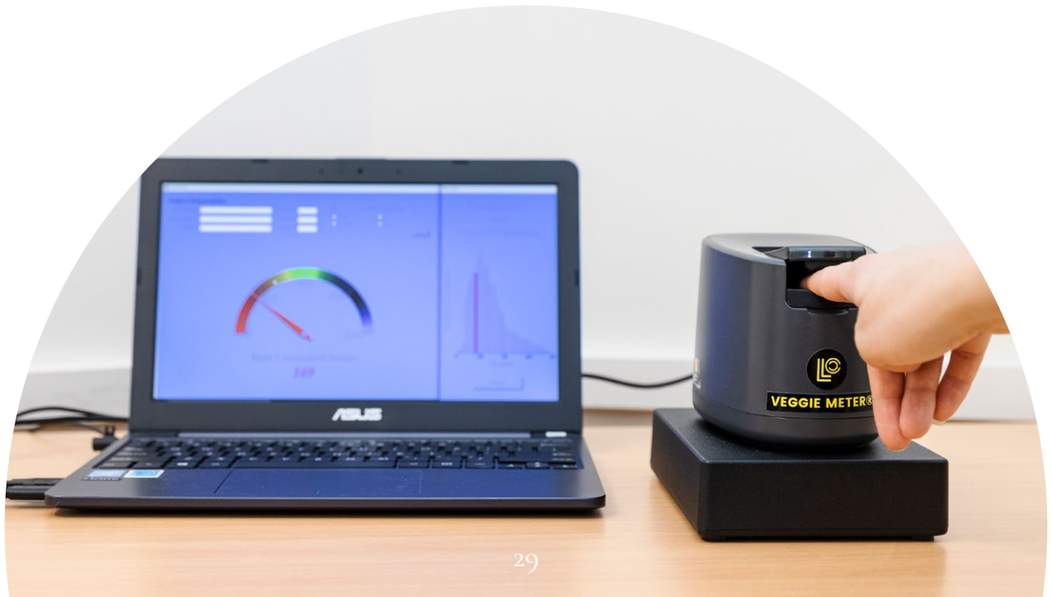
A critical element of data management is the ability to link the numerous data sets. The potential richness of information from the curation of this comprehensive, longitudinal Databank collection is immense.

ORIGINS DATA SOURCES

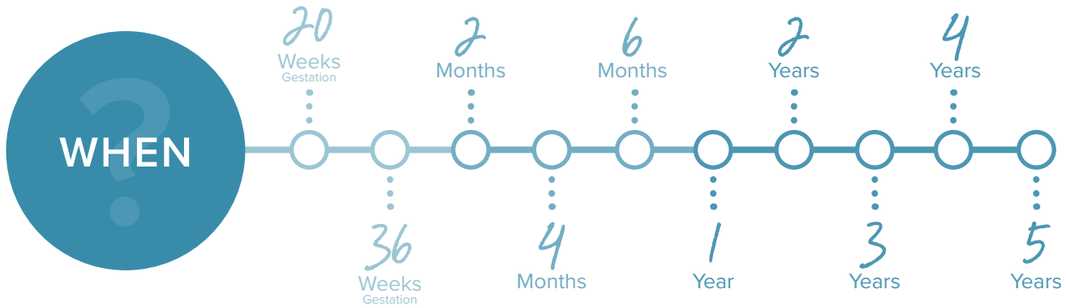
The ORIGINS Project collects data from multiple sources, including ORIGINS specific data collections and existing routinely collected data through the hospital and health service providers. The ORIGINS online questionnaires capture detailed information self-reported by the participants on repeated measures over time. This longitudinal data collection allows for investigation into child development as well as many other domains, such as changes to body weight over time and parental mental health at different timepoints. All data will be linked through unique identifiers in order to track individual participants as well as family units.

A unique strength of ORIGINS is that sub-projects agree to return data and analytics to ORIGINS for use by future projects. The Databank includes additional images, hand-held medical and community records, additional external questionnaires, diagnostic tests and genome sequencing from sub-projects.

Data derived from samples ('omics data such as metabalomics, transcriptomics, proteomics) and microbiome analyses will need external supercomputing storage capabilities.



ORIGINS DATA SOURCES



Demographics
Medications
Medical/Surgical History
Developmental Difficulties
Fertility
Allergies
Vaccinations
Diet, Nutrition & Lifestyle
Height & Weight
Body Composition
Medical History
Lifestyle
Physical Activity
Sleep

Mental Health & Wellbeing
Skin & Sun Exposure
Neighbourhood
Environment
Child Health
Child Development
Parental Anthropometry
Past Hospital or Ed Visits

WHAT

Toilet Training
Feeding
Constipation
Wheeze Symptom History
Asthma
Family History
Family Structure
Burns
Referrals

Access To Community Health Services
Communication
Gross & Fine Motor Skills
Problem Solving Skills
Inattention / Hyperactivity
Behaviour Scores
Developmental Milestone Scales
Aggression
Social Functioning
Atypical Behaviours
Anxiety
Pregnancy, Birth & Labour Complications

DATA MANAGEMENT

The ORIGINS data platform is a secure data ecosystem, tracking data sources and biological samples in an integrated, secure environment. Data visualisation capabilities enable internal and external management and extraction. The creation of the unique ORIGINS data platform provides enormous potential for impactful health research that can directly translate to health improvements and guide policy decisions.

ORIGINS BIOBANK

THE ORIGINS PROJECT BIOBANK IS ONE OF THE LARGEST AUSTRALIAN COHORT COLLECTIONS

The ORIGINS Biobank collects biological samples from participant families at 10 timepoints between pregnancy and when the child turns five years of age. The Biobank contains approximately 250,000 samples from our 5000 families, and this will continue to grow to an estimated 700,000 individual samples by 2027.

ORIGINS Biobank software accurately tracks samples and is integrated with clinical data capture software to fulfil the requirements of a very large and complex sample collection.

ORIGINS' significant Biobank (DNA, breast milk, urine, plasma and mononuclear cells) will build substantial additional future capacity to address critical search questions, including genetic, epigenetic, metagenomic and metabolomic studies, as technologies and new avenues of investigation evolve.

MANAGING SAMPLES

The ORIGINS Biobank has managed specimen data using Open Specimen software since 2020. This software syncs to our participant database and allows us to easily record and track the collection, processing, quality, location and distribution of every single sample spread across nearly 20 freezers, storage sites and liquid nitrogen tanks.

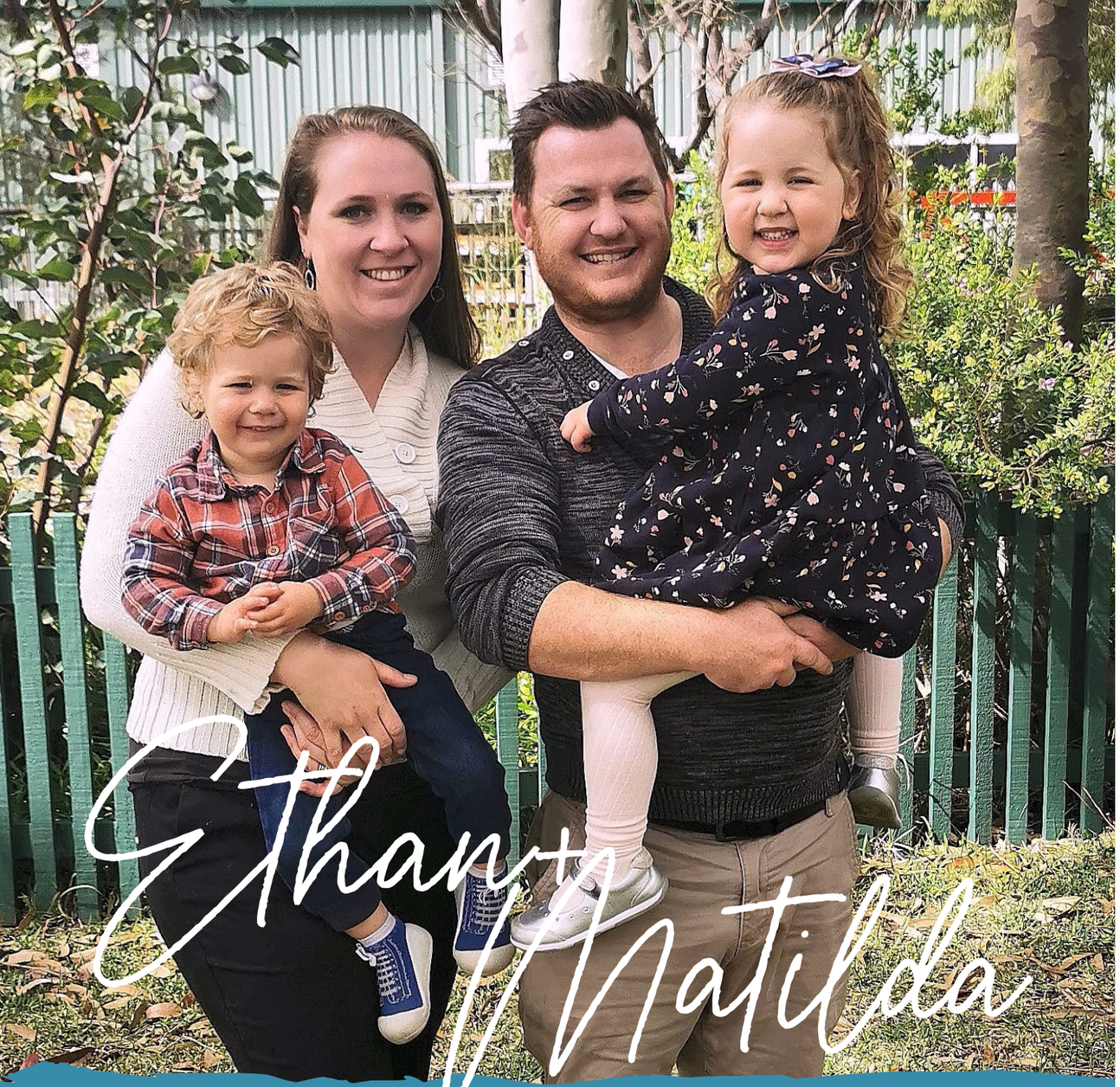
The ORIGINS laboratory team works across two processing sites where specimens are registered using this software. They map the precise location and unique barcode of every individual aliquot along with relevant data (collection, processing, volume, viability, sample quality, tissue photography etc.).

As researchers request samples from the Biobank, the software allows for rapid identification of suitable sample sets to fit their project requirements. This has resulted in the reliable and traceable distribution of almost 4000 samples for analysis since the move to this new software, with thousands more in the pipeline.

BIOLOGICAL SAMPLES FROM OUR 5000 FAMILIES

SAMPLE	ANTENATAL		POSTNATAL HOME COLLECTIONS			CHILDHOOD		
	20 or 28 Weeks	36 Weeks	Birth	2 to 4 Months	6 Months	1 Year	3 Years	5 Years
Blood	Mother **1177/1323** Partner **737**	Mother **1932**		Mother* **233** Child* **156**	Child* **246**	Child **678**	Child **183**	
Urine	Mother **1072/1123**	Mother **1979**		Mother **684** Child **589**	Mother **824** Child **674**	Child **684**	Child **182**	
Buccal (cheek) Swab	Mother **1107/1056** Partner **689**	Mother **1886**			Mother* **227** Child* **231**	Mother **1053** Child **1090**	Child **284**	
Saliva	Mother **1183/1170** Partner **740**	Mother **1971**			Mother* **124** Child* **251**	Mother **1034** Child **664**	Child **95**	
Stool	Mother **812/1009**	Mother **1534**		Mother **669** Child **769**	Mother **697** Child **892**	Child **894**	Child **182**	
House Dust		**1279**				**553**	**302**	
Meconium			**1467**					
Cord Blood			**1384**					
Placenta			**1220**					
Colostrum			**591**					
Breast Milk				**763**	**523**	**274**		
Hair	Partner **110**	Mother **1961**				Mother **1027** Partner **18**		

* Samples are collected from a smaller subset of ORIGINS families



I think research is so important and without it, issues such as allergies and chronic conditions, will continue to get worse. I was 20 weeks pregnant with my now three-year-old daughter, Matilda, when we joined ORIGINS and have found it to be a big support network that just happens to include some really smart people!

My one-year-old son, Ethan is also part of the study and has multiple serious food allergies. Without the skin prick allergy testing that is part of the ORIGINS appointments, we would have found out in a potentially life threatening and horrible way. Even though my son's allergies cause us a lot of stress, they were discovered in a controlled, safe manner and we have since had the opportunity to introduce some effective early treatments. This early intervention will hopefully give him the best chance possible on either growing out of his allergies or reducing his risk of anaphylaxis.

I think that people would be mad not to join if they have the opportunity. Not only do you have access to quick referrals and the medical team if something is found to be wrong, but you also are improving your own health, your child's health and potentially that of your future great grandchild's.

If our involvement in ORIGINS could change one thing for future generations, it would be to reduce the chances of allergies developing. Allergies are a terrible thing for a child and their families to live with and they seem to be increasing in our community.

EMILY FALKINGHAM
— Mum to Matilda (3) and Ethan (1)

CONNECT

Connecting with our families on a consistent basis is crucial to the success and impact of ORIGINS. Maintaining participation and momentum of participants in longitudinal research can be challenging. Establishing rapport with our families and sustaining open communication, while ensuring confidentiality, contributes to keeping our families engaged and actively involved in the project.

THE ORIGINS COMMUNITY

ORIGINS HAS DEVELOPED ITS OWN SMALL 'COMMUNITY' WITHIN THE COMMUNITY OF THE JOONDALUP/WANNEROO AREA

Participants have access to a **private Facebook page** that gives members the opportunity to share parenting tips and information, as well as discuss family resources in the local area.

Social and educational activities have been organised by ORIGINS, where families can get together and have some fun or learn about developments in health research.

Coffee & Connect events, held monthly, give ORIGINS families a chance to connect with each other, as well with a child health nurse and ORIGINS staff, at an informal morning tea.

Our **Annual Family Fun Day** provides us with the opportunity to thank our families for their involvement and commitment to research. Families get together with the project team and enjoy free activities and treats at a local community centre.

The ORIGINS Project **community reference group** consists of members of the Wanneroo and Joondalup community who meet with researchers from the project. The role of the community reference group is to provide a community perspective on all aspects of ORIGINS.

An ORIGINS **participant reference group** was established in November 2017. The reference group aims to provide feedback and guidance on the project. Priority-setting surveys have also been completed, and focus groups have been conducted with our families to establish what they see as important which helps to shape ORIGINS as the project grows.

RESEARCH TRANSLATION

At the end of the day, our research needs to contribute to the global understanding of disease, influence policy and practice, build capacity and collaboration, and must have a direct effect on the lives of children, for it to be valuable. ORIGINS is ensuring our research is translated into real-life outcomes that make a tangible difference to communities, now and in the future.

It is unusual for research to be a race to the finish, though many researchers would like immediate results for their work in an ideal world. Of course, in cases like COVID-19 that is exactly what it has been, however, research is most often a slow burn taking many years to build understanding of disease, find out how we might tackle it and then it takes ongoing evaluation to see if cures, treatments or interventions have worked.

ORIGINS is an example of how a longitudinal research platform can not only enable local and international research but also provide a pathway for prevention, early identification and treatment in developmentally vulnerable children and families.

Investing in early life solutions can provide the biggest gains in public health. This novel research approach can be replicated for the benefit of local communities and society more broadly.

The ORIGINS cohort is generally representative of Australian young families, though erring on the side of a higher sociodemographic group.

With the project being fully integrated into the clinical and diagnostic services of Joondalup Health Campus, the opportunity to have an impact is presented across both public and private sectors. An important aspect to this approach is the ability to translate research findings into clinical practice, and to inform policy changes, where appropriate.

ORIGINS is focused on translational research and improving the health of the next generation through early intervention. In order to do this, we need to work with others who have the knowledge base and resources to join us in helping to achieve our common goals.

> Getting to know our families across the lifetime of their ORIGINS journey is one of the real pleasures of being part of the project.
>
> **MEGAN JONES**
> **— Engagement Team Coordinator**

Article in

TELETHON KIDS INSTITUTE IMPACT REPORT 2021

ENABLING RESEARCH FOR COLLABORATORS

Collaboration with ORIGINS provides numerous advantages and benefits for researchers.

Through the ORIGINS research platform, researchers have the opportunity to access multiple longitudinal data sets, linked data, and can embed novel interventions and clinical trials in an established cohort with existing infrastructure and resources.

The ORIGINS research platform has international significance. Collaboration with ORIGINS provides access to a community of multidisciplinary researchers, health professionals, clinicians, and consumers locally, nationally, and internationally.

Researchers may seek access to:

- Use of cohort, to implement a new clinical trial, intervention, or observational study.
- Use of cohort, to collect new data (biological information, and/or participant information).
- Use of existing data (biological information, and/or participant information).
- Data linkage.

The novel aspect of The ORIGINS Project is that it is fully integrated into the clinical and diagnostic services, led by a strong cohesive vision of Joondalup Health Campus Executive and Department Heads, across both public and private sectors. Clinicians (including midwives and laboratory staff) conduct research appointments in addition to clinical duties, promoting a research culture.

Strategic integration and coordination streamlines the recruitment processes and generates greater economies of scale. An important aspect to this approach is the ability to translate research findings into clinical practice, and to inform policy changes, where appropriate.

RESEARCH INTEREST GROUPS

ORIGINS invites potential collaborators to join a Research Interest Group (RIGs) to facilitate new evidence, information and research opportunities in connection with The ORIGINS Project. RIGs also enable and support collaboration between researchers and project and provide a medium for research dissemination associated with ORIGINS.

The groups aim to facilitate the development of the most rigorous, competitive, relevant and inclusive applications, including research proposal and funding applications. By continuously involving others in ORIGINS and gaining feedback from industry we can be reassured that ORIGINS is staying relevant and looking at the bigger picture of health.

Prof Andrew

I have been lucky enough to be part of several studies that are using the power of ORIGINS to drive community-wide change. CliniKids run the CUBS and TALK studies, which are sub-projects of ORIGINS, looking at the impact of genetics, early environment and early intervention on the development of autism and ADHD, as well as language development, in kids.

ORIGINS is pioneering a new way of doing research by having community partnerships from the very get-go which drive, not just family involvement in research, but the potential translation of that research. Translation of our findings into tangible change is essentially why all researchers and scientists do what we do.

Simply screening people during pregnancy for family history, which is one of the many screenings that ORIGINS does, is so powerful, because it helps to triage that information into different studies. At CliniKids, we don't think we would be able to do what we do without ORIGINS. That's the reality.

We all agree on these huge issues that face our communities - around supporting child development, supporting new families, obesity, community and connectedness. These big issues need to be solved with big projects. It takes a fundamental change like ORIGINS to make that happen. What ORIGINS is doing is saying that community-wide solutions require community-wide involvement. And by doing the hard work to get that, the outcomes that come out of ORIGINS will be so much more powerful in changing the world.

PROF ANDREW WHITEHOUSE
— Director CliniKids

SUB-PROJECTS

A KEY ASPECT OF ORIGINS IS THE NESTING OF CLINICAL TRIALS, EARLY INTERVENTIONS AND SHORTER-TERM RESEARCH STUDIES THAT FOCUS ON RESEARCH RANGING FROM ALLERGY TO VACCINATION

Known as sub-projects, these studies are nested within the main ORIGINS project and look at multiple aspects of child and family health and development.

Many of these additional studies not only enhance research opportunities for scientists in WA, but also provide further benefits for families already involved in ORIGINS.

RETURN ON INVESTMENT

The ORIGINS Project infrastructure has been a facilitator for investment in nested sub-projects. The structure of ORIGINS enables researchers to implement their own research projects, leveraging a fully developed platform providing cost savings and economies of scale.

ORIGINS recoups costs back into the project, to sustain and increase the capacity of ORIGINS' resources. A degree of cost recovery is required from those requesting and granted use and/or access to the cohort.

To date The ORIGINS Project infrastructure has attracted independent grant funding in excess of $14 million.

LEGEND

- Brain & Behaviour
- Mental Health & Wellbeing
- Growth & Development
- P4' Omics & Systems Biology
- Allergy, Inflammation & Immunity
- COVID-19
- Environment & Lifestyle
- Nature Relatedness
- Nutrition & Metabolism
- Infections & Vaccines
- Fathering
- Oral Health

SUB-PROJECTS BY DOMAIN

INTERVENTIONAL STUDIES

- SYMBA
- BENEFIT
- TUMS
- PrEggNut
- ADAPTS
- CASHEW
- ENGAGE
- NOSE
- Respectful Parenting
- The CUB Study
- PLAN
- Nature Play & Grow
- ACE Infant Feeding
- Breastmilk Allergy Prevention
- Mums Minds Matter
- Positive Family Foundations

OBSERVATIONAL STUDIES

- SunPreg
- A Family Journey
- AERIAL
- Machine Learning
- STORK
- TALK
- Kindy Readiness
- Early Moves
- Neuro-developmental Pathways
- BioMood
- COCOON
- CARE-Dads
- FACE
- Diabetes During Pregnancy
- BEACHES
- Dental Health
- PEAPOD
- ORBIT
- Mast Cell
- Time Out for Wellbeing
- Mediterranean Diet
- SCREEN
- Plastic Compounds
- Exposures & Infant Lung Function
- Dental Screening
- Oral Microbiota
- Community Wellbeing

ACTIVE SUB-PROJECTS

Numbers represent how many of our 5000 families are currently, or have been, involved in each sub-project as at August 2021.

COMMUNITY WELLBEING DURING COVID-19 Investigating the impact of COVID-19 on emotional wellbeing, perceived stress, financial hardship and family functioning within the ORIGINS community. — 1639

MUMS MINDS MATTER Pregnancy, childbirth, and motherhood can involve many new challenges. This project aims to pilot three different programs of support for emotional health, to compare how they influence well-being and stress among pregnant women. — 61

KINDY READINESS PROJECT Reviewing the development and wellbeing of children, prior to them commencing preschool, kindergarten and/or an early learning environment. — 36

BENEFIT (Breastfeeding & Eating Nuts & Eggs for Infant Tolerance) TRIAL By age one, 10% of babies will develop a food allergy. This trial looks to answer the question of whether the amount of eggs and peanuts a mother eats during breastfeeding has an influence on her baby's food allergy development. — 108

PREGGNUT Investigating whether the amount of eggs and peanuts a mother eats during pregnancy influences whether her baby will develop an egg or peanut food allergy. — 117

THE CASHEW STUDY Investigating different doses of cashew nut spread regularly eaten by babies from 6 months to one year of age to see whether it reduces the chances a baby will develop a cashew nut food allergy. — 193

CARE-DADS Studies have shown that a father's involvement in his child's life can be associated with positive child outcomes. The aim of the CARE-Dads study is to evaluate the risk of diabetes and cardiovascular disease in expectant fathers. — 504

EARLY MOVES Using home videos, researchers will investigate whether we can identify babies at risk of cognitive difficulties very early to provide critical support and intervention. — 1145

TUMS Looking at domestic tap water quality and how this shapes the friendly bacteria that inhabit the gut in early childhood. — 190

THE CUB STUDY Video technology is helping researchers learn more about the early communication style of infants with a family history of autism, ADHD or intellectual disability. — 11

AERIAL Studying the importance of the cells lining the airways in the nose and lungs, known as the epithelial cells. This study will look at the epithelial cells in the nose at birth to help to understand the development of early-life airway conditions. — 148

SYMBA Investigating whether taking a high fibre prebiotic supplement during pregnancy (and whilst breastfeeding) will help to reduce the risk of children developing allergic disease, like eczema, by looking at gut health in pregnancy and its impact on the development of a baby's immune system. — 465

TALK Aiming to better understand how testosterone exposure in the womb may be related to brain growth before birth, and language development after birth. — 501

SCREEN ORIGINS This research will assess what influences family screen use, with a focus on mobile devices like tablets and smartphones, and measure the potential implications of screen time on a child's health and development. — 30*

THE MAST CELL STUDY Comparing how mast cells within the immune system are 'programmed' in allergic and non-allergic children at one year of age, using existing ORIGINS samples. — 60**

ADAPTS Looking at whether probiotics can improve the health of babies that have received antibiotics early in life. — 60

SUNPREG Investigating whether sun exposure in pregnancy changes your skin pH and skin barrier function and its implications for eczema development. — 48

COCOON Monitoring the physical and mental health during the COVID-19 pandemic to find out who has developed signs of immunity to Coronavirus possibly without even knowing they have been exposed. — 100

* Screen ORIGINS: 30 participants in the initial stage
** Mast Cell Study: 60 blood samples to be analysed

A further 25+ studies are currently under development or seeking approval and/or funding.

Not only have we received so many benefits for my children through ORIGINS, but it also feels like I belong to a community. With the opportunity to meet other families, I have loved the free community fun days and monthly catch ups. I feel like the team goes out of their way to provide value to families.

With every sub-project we have participated in there have been additional benefits too. With Eli, my first son who is now three, we joined CARE-Dads and the Cashew Study. We have just had little Cody 12 weeks ago and we joined Early Moves and AERIAL sub-projects when I was pregnant with him.

We have had the opportunity to have my children tested for various allergens, paediatric check-ups that I wouldn't have otherwise had access to, which gives me the comfort knowing my children are developing well. With AERIAL we have had nose swabs of my baby each time he shows a fever or respiratory illness symptoms, which means we have found out exactly what bug he has had, and then received detailed support on how to deal with that particular illness. Eli loved the Cashew Study as he got free cashew nut paste every day for months.

I have found that as a family, we get so much value for each sub-project we participate in, as well as the base ORIGINS Project, and usually it's pretty easy to take part in, with little effort on my end.

CHANTALLE BLIKMAN
— Mum to Eli (3) and Cody (12 Weeks)

COLLABORATION

Collaboration and engagement are fundamental elements of ORIGINS at every level. ORIGINS has been established on a foundation of collaboration with consumers, government, clinical services, researchers, service providers and academic institutions.

We have strong links with other birth cohorts locally, nationally and internationally, and are working towards developing a global cohort network to harmonise and enhance research capacity.

> Collaboration: the practice of sharing knowledge, ideas and resources to achieve a common goal.

The ORIGINS Project also provides researchers, students, clinicians and universities with a unique opportunity to play a crucial role in changing the health of future generations.

ORIGINS is having substantial short-term and long-term benefits for WA and Australia, providing a strong collaborative and training environment, international competitiveness, and is attracting new expertise and strategic partnerships to WA.

We continue to work closely within existing and newly established partnerships that allow us to spread our reach further, to achieve more and to learn from each other. The project's growing reputation and influence allows us to develop opportunities, building an extensive collaborative network with researchers and organisations from diverse fields across the world.

ORIGINS is a community project with global implications, therefore, community collaboration is essential. We have created extensive relationships with a range of stakeholders and community groups and continue to work in collaboration for mutual long-term benefit.

INTERVENTIONAL COHORT NETWORK

Article in

TELETHON KIDS INSTITUTE IMPACT REPORT 2021

> When we visit our ORIGINS mums on the maternity ward and they are holding their newborns in their arms, you are reminded what this is all about. To think those babies might have a better chance at a healthy future, because of ORIGINS, I feel proud of the part I am playing in that.
>
> **JO COLE**
> **— Research Assistant**
> **Birth Team**

Dr Jamie

As a paediatrician on ORIGINS, I get to see our delightful participants when they are one and three-years-old for health and development checks. I provide real-time feedback to families in the form of blood test results and address developmental concerns that may arise through the online questionnaires they complete for the project.

By good fortune and timing, I happened to finish my specialist training and commence as a consultant at Joondalup Health Campus at the same time that ORIGINS was starting up. It obviously is an exciting and interesting project, so when Desiree asked if I would like to be involved, I jumped at the chance. ORIGINS is such a unique and revolutionary study. We are looking into the early life factors that might shape someone's entire future - to potentially have that sort of impact is amazing!

We have been seeing a higher-than-expected rate of iron deficiency in our ORIGINS kids, so we are currently working on a paper that looks at why it might be occurring. These findings can then be used to alter the way we approach iron consumption in young kids, which should help to reduce the incidence of iron deficiency in all communities, and that is pretty impactful.

There is an explosion in child developmental, behavioural and mental health issues, to the extent that there are not enough paediatricians to keep up with demand. I would love for ORIGINS to be able to change the early trajectory of the next cohort of children to improve the quality of life of a generation - whether that be through looking at factors influencing development in the womb or the findings that come from our work in early childhood.

DR JAMIE TAN
— ORIGINS Paediatrician

OPPORTUNITY

THE NEXT 5000

The ORIGINS Project is setting up a legacy for the future of research, not only in Western Australia, but with national and international implications. So what are ORIGINS' aims for the next five years and beyond?

Already, we have a valuable resource platform that is added to every day. Ultimately ORIGINS is hoping to continue to follow families beyond their five-year commitment to the project, with the support of additional funding. The opportunity to follow the children further - to better understand the impact of the early environment on development beyond five years into primary school and teenage years - is an exciting and globally unique prospect.

We see this as the future of ORIGINS.

OUR FAMILIES' PERSPECTIVES ON THE FUTURE OF ORIGINS

As we approached the halfway point of the project, we asked our families for their valuable input in setting some priorities for ORIGINS going forward, to ensure we stay relevant, useful and on the right track.

Families provided us with feedback on their biggest concerns and considerations – both positive and negative – for their own child as well as young children in general, that might influence their health, happiness and development.

The outcomes of this exercise will inform The ORIGINS Project as it continues to explore new information, to ensure it remains relevant to the needs of our families from the Joondalup and Wanneroo communities.

THE KEY AREAS OF CONCERN THAT WERE IDENTIFIED:

- Play & Social Development
- Nutrition & Eating
- Physical Health & Development
- Emotional Wellbeing /Mental Health
- Speech & Language Development

THE TOP FIVE POSITIVE INFLUENCES ON CHILD HEALTH AND HAPPINESS THAT WERE IDENTIFIED:

- Feeling Safe & Loved
- Family Time
- Play, Exercise & Sport
- Healthy Eating
- Time in Nature / Access to Nature & Outdoor Space

OUR BIG AIMS

Big data: as sample and data collections grow, the potential for large scale projects and the generation of big data increases. ORIGINS will work towards the implementation of integrated, secure data platforms in the coming years.

Largescale collaborations between Databanks and Biobanks from national and international cohort studies are becoming increasingly feasible and we will be pursuing collaborations for the generation of high-quality collaborative research.

Focus on positive assets: ORIGINS will move to supporting models of care focusing on positive assets as well as looking at causes of disease.

WA Cohort Network: the establishment of a WA Data Portal will harness longitudinal data from The ORIGINS Project, Raine Study and Busselton Health Study, maximising the opportunities for cross-cohort research.

Research capacity: we will build and support research capacity of The ORIGINS Project Team, testing new research ideas and breaking down research silos, while continuing to disseminate ORIGINS research activities, through publications and presentations.

Diversifying the cohort: implement strategies and procedures to increase the diversity of the ORIGINS cohort to priority population groups.

Sustainability planning: in order to secure the sustainability of this unique research platform in WA we will undertake comprehensive strategic and financial planning, take opportunities to compare collections with national and international cohorts and will maximise the ORIGINS infrastructure in its current 10-year lifecycle, and beyond.

THANK YOU

FOR SUPPORTING US AND WALKING ALONGSIDE US IN OUR ORIGINS JOURNEY

- Australiasian Biospecimen Network Association (ABNA)
- Barwon Infant Study
- Best Start Southwest Sydney
- Born in Bradford, United Kingdom
- Born in SA
- Busselton Health Study
- Child and Parent Centre, Banksia Grove
- Child and Parent Centre, Roseworth
- CHILD Cohort Study
- Childhood Allergy Immunology Research
- City of Joondalup
- City of Wanneroo
- CliniKids
- Consumer & Community Health Research Network
- Curtin University
- Edith Cowan University
- Fathering Project
- Fertility North
- Fiona Stanley Hospital
- GenV (Murdoch Children's Research Institution)
- Gomeroi gaaynggal
- Harry Perkins
- Health Engagement Network
- HeraMED
- Ingham Institute
- InVIVO Planetary Health
- Johnson & Johnson
- Joondalup Health Campus midwives, staff and executive
- King Edward Memorial Hospital
- Lions Eye Institute
- Local GP Clinics in the Wanneroo and Joondalup Area
- Meerilinga
- Mirrabooka Early Years Group
- Murdoch University
- Nature Play WA
- NatureLink Perth
- University of Newcastle
- Ngala
- Notre Dame
- One for Women maternity service
- Parenting Connection, Northwest Metro
- Perinatal Infant and Mental Health Network
- Perth Pregnancy Centre
- Perth Radiological Clinic
- Playgroup WA
- Pregnancy to Parenthood Clinic
- Queensland Family Cohort Study
- Ramsay Health Care WA|SA Human Research Ethics Committee (HREC)
- Raine Study
- Rotterdam Study / Generation R
- STORK Pregnancy and Newborn Care
- Strong & Deadly Mob
- Telethon Kids Institute
- The Japan Environment and Children's Study (JECS)
- The ORIGINS team
- The University of Western Australia
- University of Southampton
- WA Child & Adolescent Community Health
- WA Health Translation Network
- WA Phenome Centre
- WA Primary Health Alliance
- Wanneroo and Surrounds Early Years (WASEY) Network
- Wesfarmers Centre of Vaccines & Infectious Diseases
- Western Diagnostic Pathology

Having come from a family with a history of allergies and asthma, we have had first-hand experience in seeing the impact it has on daily life, as well as the development in medical knowledge and awareness of these health issues.

We know that this is only made possible through the amount of research that has gone into these issues over time. Our decision to join ORIGINS came out of wanting to have an active participation in the development of this knowledge base, with the hope that it will one day provide parents with the answers that we were looking for.

Having access to a supportive network of nurses and paediatricians through the periodic catch ups were fantastic. It helped us navigate through identifying our son's allergies and develop a plan for how to introduce different food groups.

DYAN ATKINSON
— Mum to Hazel (5) and Fletcher (3)

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THE ORIGINS PROJECT

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Joondalup Health Campus
Part of Ramsay Health Care