

For the 2011 grant period, the Channel 7 Children's Research Foundation (CRF) allocated **\$1,138,200** in funding, supporting 22 projects.

To date, via its annual Grants process, CRF has allocated almost \$18 million dollars to more than 700 projects that focus on the cause, prevention, diagnosis and treatment of conditions that may affect the general health, education or welfare of children in South Australia and the Northern Territory.

The successful projects are listed below, in alphabetical order by Institution.

Children, Youth & Women's Health Service

Recipient: **Children, Youth & Women's Health Service**
Chief Investigator: **Dr David PARSONS**
Funding Amount: **\$60,000**
Project Title: **Optimised initial gene transfer for the lifetime correction of CF airway dysfunction**

Our goal is to create a cure for cystic fibrosis (CF) airway disease by delivering a properly functioning CFTR gene into airway cells. This project is part of that vision and will test simple alterations to dosing methods that are expected to greatly improve the levels of corrective gene transfer so that it can last for much of a lifetime. It will also give us some of the important data needed to move toward human clinical trials. This research will also help us uncover the stem cells that are probably responsible for giving very long-lasting gene transfer effects, and together the findings will help us to continue the successful development of airway gene therapy methods that we have been pursuing over the last 12 years.

Recipient: **Children, Youth & Women's Health Service**
Chief Investigator: **Dr Cuong TRAN**
Funding Amount: **\$40,000**
Project Title: **Zinc supplementation as an adjuvant therapy for children with Coeliac Disease - SECOND YEAR**

The purpose of this study is to learn if zinc supplementation together with the gluten-free diet would more rapidly improve gut health and integrity in children with Coeliac Disease compared to children on the gluten-free diet alone. It will also show whether zinc deficiency is a factor in the delayed clinical improvement in some children with Coeliac Disease. The knowledge gained from this study is expected to benefit the clinical management of Coeliac Disease.

Recipient: **Flinders University**
Chief Investigator: **Professor Jonathan GLEADLE**
Funding Amount: **\$60,000**
Project Title: **Profiling lymphocyte populations and lymphocytic microRNAs in children with nephrotic syndrome**

Nephrotic syndrome in childhood is a chronic illness of unknown cause, characterised by excessive protein loss in the urine and associated with severe complications and treatment side effects. Ninety percent are caused by minimal change disease and a few by focal segmental glomerulosclerosis. About 10-20% of children with these conditions do not respond to steroid treatment and may develop severe kidney disease. Seventy percent relapse after initial treatment and for many this is frequent. The aim of this study is to profile lymphocytes, a type of cell in the blood, and a molecule known as microRNA in the blood and urine to understand the development of this condition and the reason for relapses and lack of response to steroid treatment.

Recipient: **Flinders University**
Chief Investigator: **Dr Susan KRIEG**
Funding Amount: **\$54,000**
Project Title: **Combined child care and preschool: What level of participation is needed to improve school readiness for disadvantaged children?**

There is increasing evidence that combined care and preschool programs can improve “school readiness” among socially disadvantaged children by stimulating their cognitive, socio-emotional and behavioural development. However, there is little information about the level of participation needed by children to achieve effective outcomes. This study will examine the impact of different levels of participation in combined child care and preschool programs and the extent to which the effectiveness of combined programs is influenced by (i) the level of participation by children, (ii) the family and social characteristics of children and (iii) the quality of the learning program being offered.

Recipient: **Flinders University**
Chief Investigator: **Dr Billy TAO**
Funding Amount: **\$17,500**
Project Title: **Can controlled consumption of non-allergic nuts benefit children with nut allergy? A randomised controlled study.**

Children with nut allergy are usually advised to avoid all nuts. In a pilot study in 2009 we showed that these children can in fact safely eat the non-allergic nuts, after the latter are confirmed to be safe through a “multi-nut challenge test” performed under doctor’s supervision. Benefits after 1 year of non-allergic nut consumption include improved psychological well-being, reduced skin prick reactions to both allergic and non-allergic nuts, and approximately 25% remission rate for the original allergic nuts. The proposed project is built on the experience of the pilot study and has a randomised controlled design.

Menzies School of Health Research

Recipient: **Menzies School of Health Research**
Chief Investigator: **Associate Professor Amanda LEACH**
Funding Amount: **\$40,000**
Project Title: **Study of microbiology linked to evaluation of strong teeth for little kids (SMiLE_STLK) - SECOND YEAR**

In year one of SMiLE_STLK (a randomised controlled trial conducted in remote Indigenous communities), we identified that the density of *Streptococcus mutans* and total bacterial load were reduced in samples from children who had

1. fewer dental caries
2. received the STLK intervention (fluoride varnish and health promotion)
3. recent tooth brushing.

We will now use a molecular method (TRFLP) to measure the diversity and putative pathogens in the same specimens. This will identify further major species associated with dental caries, and thus potential new and novel strategies for the prevention of dental caries in young Indigenous children.

Recipient: **Menzies School of Health Research**
Chief Investigator: **Dr Heidi SMITH-VAUGHAN**
Funding Amount: **\$45,000**
Project Title: **Do atypical pathogens explain the high rates of acute otitis media treatment failure in Indigenous children? - SECOND YEAR**

Young Indigenous children living in remote communities suffer excessively high rates of severe middle ear infection (acute otitis media) and associated hearing loss. Middle ear infection can be caused by a number of different bacteria, but antibiotic treatments are designed for only the common causes, and often fail for Indigenous children. This study will use new technologies to determine the causes of antibiotic treatment failure so that we may design more effective treatments.

Novita Children's Services

Recipient: **Novita Children's Services**
Chief Investigator: **Dr Parimala RAGHAVENDRA**
Funding Amount: **\$46,000**
Project Title: **Connective solutions: Facilitating the social participation of children and adolescents with physical disabilities or acquired brain injury using the Web 2.0 social networking and 3D virtual environments - SECOND YEAR**

Children with disabilities have reduced social networks resulting in social isolation and limited opportunities to participate in a variety of activities. This project, the first of its kind in Australia, aims to promote the health and welfare of children and adolescents with physical disabilities or acquired brain injury by investigating the viability of the Internet to facilitate their social networks through providing access, training and support to use Web 2.0 sites and 3D virtual environments. The outcomes will inform the understanding of the opportunities these technologies offer for strengthening the social networks of children and adolescents with disabilities. Strong social networks would enhance their self-esteem and social participation.

SA Pathology (Trading as IMVS)

Recipient: **SA Pathology (Trading as IMVS)**
Chief Investigator: **Dr Mark CORBETT**
Funding Amount: **\$60,000**
Project Title: **A mouse model for Borjeson-Forsman-Lehmann syndrome**

Intellectual disabilities directly affect up to 3% of the population with a wider impact on the families and support groups of affected individuals. We have created a model of a human disorder (Börjesson – Forsman – Lehmann Syndrome) that causes intellectual disability and obesity by removing the Phf6 gene in the mouse. Using this model we will study the presently unknown role of Phf6 to identify potential avenues for improving treatment of this and similar disorders.

Recipient: **SA Pathology (Trading as IMVS)**
Chief Investigator: **Professor Antonio FERRANTE**
Funding Amount: **\$50,000**
Project Title: **Regulation of neonatal T cell maturation by polyunsaturated fatty acid oxidation products**

Birth is a stressful experience for both mother and child. Before, during and after birth, infants are exposed to high levels of oxidative stress, which newborns may be unable to deal with due to their small anti-oxidant reserves. The white blood cells, T cells, which are a key component of the immune system, are exquisitely sensitive to certain mediators of oxidative stress. This proposed study aims to determine the effect of aspects of oxidative stress on the maturation of neonatal T cells which may be associated with the development of allergy or asthma in childhood.

University of Adelaide

Recipient: **University of Adelaide**
Chief Investigator: **Dr Miles DE BLASIO**
Funding Amount: **\$55,000**
Project Title: **Preventing insulin resistance and obesity following fetal growth restriction with omega-3 polyunsaturated fatty acids (PUFA).**

Funding withdrawn – project received NHMRC funding

Recipient: **University of Adelaide**
Chief Investigator: **Dr Kylie DUNNING**
Funding Amount: **\$35,000**
Project Title: **Preservation of Female Fertility For Young Cancer Patients: The Importance of Fatty Acid Oxidation in a 3-D Ovarian Follicle Culture System**

Girls surviving cancer are often infertile later in life due to the use of life-saving chemotherapy. Unfortunately, there is no successful fertility preservation option for these patients. The latest technology involves growing ovarian tissue in a 3-dimensional culture system that enables eggs to develop surrounded by their support cells, known collectively as the follicle, following cryopreservation of ovarian tissue. This study will determine the importance of fats as an energy source for follicle development. I have recently discovered that fat metabolism is vitally important for embryos, thus its optimisation is expected to significantly improve egg quality following 3-D follicle culture.

Recipient: **University of Adelaide**
Chief Investigator: **Dr Wendy INGMAN**
Funding Amount: **\$70,000**
Project Title: **Understanding the inflammatory basis of mastitis**

Mastitis is a common inflammatory disease in lactating women that causes pain, fever, low milk supply and leads many to cease breastfeeding. This study will explore the cellular mechanisms that lead to inflammation and investigate potential therapies to quickly and effectively stop the symptoms of mastitis. By improving the treatment of mastitis, we expect more women will comply with the World Health Organisation guidelines of 6 months exclusive breastfeeding, which will help reduce the incidence of allergies and obesity in Australian children.

Recipient: **University of Adelaide**
Chief Investigator: **Dr Christopher McDEVITT**
Funding Amount: **\$53,000**
Project Title: **The role of manganese in the virulence and pathogenicity of *Pseudomonas aeruginosa* - SECOND YEAR**

Pseudomonas aeruginosa is a clinically important bacterium responsible for a wide range of diseases and remains the leading cause of cystic fibrosis (CF) mortality. *P. aeruginosa* infects CF patients during childhood, and once acquired cannot be removed by current therapies, the consequence of which is the inevitable deterioration of their lungs. Metals are crucial micronutrients and, therefore, their uptake mechanisms offer novel antimicrobial targets. My work has identified the high affinity transporter of a crucial metal directly involved in growth and survival of this microbe. This study will uncover its physiological role and determine its requirement for colonisation within humans.

Recipient: **University of Adelaide**
Chief Investigator: **Dr Beverly MUHLHAUSLER**
Funding Amount: **\$50,000**
Project Title: **Blocking the Programming of Childhood Obesity by Maternal High Fat Feeding: A Role for Omega-3 Fatty Acids? - SECOND YEAR**

Experimental studies have also shown that maternal high-fat feeding results in an increase in the number and size of fat cells in the offspring, and that this results in an increase in their risk of later obesity. In this study, we will test a **novel strategy for intervention** which aims to reduce the accumulation of body fat in the offspring of obese mothers by increasing the availability of omega-3 polyunsaturated fatty acids (fish-oil), a substance which is known to inhibit fat cell formation and fat storage in adults, during the period of fat development.

Recipient: **University of Adelaide**
Chief Investigator: **Dr Julia PITCHER**
Funding Amount: **\$70,000**
Project Title: **Motor cortex facilitation during speech listening in children born preterm.**

We recently identified altered neurophysiology of the brain motor areas of preterm children that correlate strongly with cognitive dysfunction, particularly language comprehension and speech perception. In adults passively listening to speech, motor cortex excitability is increased and is thought to reflect motor centres contributing to decoding word meaning. Since motor cortex development is abnormal in preterm children, this language-related motor ability may also be abnormal, contributing to their learning difficulties. Non-invasive neurophysiological techniques will be used to test this hypothesis in 12-14 year old children born after various lengths of pregnancy. The findings will guide future development and testing of novel interventions to improve motor and cognitive outcomes in preterm children.

Recipient: **University of Adelaide**
Chief Investigator: **Emeritus Professor Jeffery ROBINSON**
Funding Amount: **\$50,000**
Project Title: **Do maternal and infant obesity related genotypes influence efficacy of interventions to limit weight gain in obese pregnant women and obesity in their offspring?- SECOND YEAR**

Obesity, the sixth most important risk factor contributing to the overall burden of disease worldwide, is occurring at an increasingly earlier age, and has reached epidemic proportions. A significant and consistently identified risk factor for childhood obesity is maternal overweight and obesity, both of which are increasingly common. We are evaluating whether common obesity-related genetic variants in mothers and their offspring influence efficacy of a package of dietary and lifestyle advice to overweight and obese women during pregnancy to limit weight gain (currently being evaluated in the LIMIT randomised trial) in improving maternal health, perinatal outcomes and infant growth and adiposity.

Recipient: **University of Adelaide**
Chief Investigator: **Professor Michael SAWYER**
Funding Amount: **\$64,700**
Project Title: **Does Nurse Home Visiting Improve Infant Development in Rural and Remote Regions? - SECOND YEAR**

Infancy and early childhood are critical periods for lifelong well-being, with increasing evidence that infants and young children exposed to poor quality parenting, poor attachment, and maltreatment are at heightened risk for a range of later developmental problems. This project seeks to evaluate whether the South Australian nurse home-visiting (SA-NHV) program improves the social, emotional, and communicative development of infants and young children living in rural and remote regions of South Australia. The knowledge gained will be of significant value to health services in Australia and overseas.

Recipient: **University of Adelaide**
Chief Investigator: **Dr Michael STARK**
Funding Amount: **\$35,000**
Project Title: **Placental PPAR pathways and respiratory morbidity following preterm birth**

Perinatal inflammation contributes to the development of chronic neonatal lung disease, the major morbidity following preterm birth. Antenatal interventions have not decreased its incidence and postnatal interventions may be too late to be effective. Therapeutic regulation of placental inflammation may modify inflammatory processes with targeted manipulation of these pathways leading to prevention of chronic neonatal lung disease.

University of South Australia

Recipient: **University of South Australia**
Chief Investigator: **Dr James DOLLMAN**
Funding Amount: **\$65,000**
Project Title: **Exploring predictors of physical activity attrition and maintenance among females in early adolescence**

Regular physical activity brings many physical, social and psychological benefits to children and adolescents. However previous research has shown that physical activity levels decrease substantially among girls as they enter their teenage years. This trend is partly due to changes that occur with puberty, but has also been linked with aspects of teenage 'culture' and the neighbourhood environment. It is important to gain a deeper understanding of these cultural and environmental influences so that programs and policies can be designed to more effectively promote active lifestyles among these young people.

Recipient: **University of South Australia**
Chief Investigator: **Professor Jonathan NEWBURY**
Funding Amount: **\$58,000**
Project Title: **Aboriginal Families Study**

Funding withdrawn – project received NHMRC funding

Recipient: **University of South Australia**
Chief Investigator: **Dr Michael WIESE**
Funding Amount: **\$55,000**
Project Title: **The impact of obesity on the pharmacokinetics of paracetamol in the paediatric population**

Paracetamol is safe and effective at reducing pain and fever, but administration of high doses has been linked with potentially fatal liver toxicity. Conversely, administration of low doses can result in inadequate relief of pain and fever. Dosing instructions for paediatric paracetamol formulations generally include age- and weight-based recommendations. This project will develop evidence based guidelines on what dose to give children who are not the normal weight for their age must be developed to ensure the safe and effective use of paracetamol in this population.