



**National Children's Research Centre**  
**Newsletter January – June 2021**



**NATIONAL CHILDREN'S  
RESEARCH CENTRE**

**55**

Research Grants

**7**

Irish Universities  
hosting NCRC  
research grants  
(NUIG, NUIM,  
RCSI, UCD, TCD,  
UL, UCC)

**14**

National &  
International  
hospitals  
involved in NCRC  
supported  
research

**60 %**

of grants held by  
female lead  
applicants

**>100**

researchers  
supported across  
all grants

Projects focussed on both rare  
and common childhood  
illnesses

Childhood Cancer (neuroblastoma,  
medulloblastoma, leukemia), Congenital Heart  
Disease, Cystic Fibrosis, Eczema, Inflammatory  
Bowel Disease, Diabetes, Malaria, Sickle Cell  
Anaemia, Mumps, Behçet's Disease, Arthritis,  
Scoliosis, Childhood Obesity, prematurity,  
neonatal brain injury, neonatal sepsis

> 100  
publications  
by NCRC  
affiliated  
researchers\*

## The Warburg Effect Occurs Rapidly in Stimulated Human Adult but Not Umbilical Cord Blood Derived Macrophages

Cilian Ó Maoldomhnaigh<sup>1</sup>, Donal J. Cox<sup>1</sup>, James J. Phelan<sup>1</sup>, Fergal D. Malone<sup>2</sup>, Joseph Keane<sup>1†</sup> and Sharee A. Basdeo<sup>1†\*</sup>

On publication of the study results in *Frontiers in Immunology*, lead investigator Cilian Ó Maoldomhnaigh said; “We found fundamental differences in how a baby’s immune cells respond to TB compared to those of an adult and hope that this will eventually lead to new ways to target this infection”. Read more [here](#).

On publication of the study results in *Pediatric Rheumatology*, lead investigator Dr Daire O’Leary said; “We know that CNO can behave differently in different people. But it’s important to know how it behaves in the children and teenagers we’re looking after in Ireland.....This study shows that more work is needed to figure out if there are different types of this disease and if those different types need different treatments. Comparing the children and teens who took part in this study with groups from other countries certainly suggests this”. Read more [here](#).

RESEARCH ARTICLE

Open Access

Variability in phenotype and response to treatment in chronic nonbacterial osteomyelitis; the Irish experience of a national cohort



Daire O’Leary<sup>1,2\*</sup>, Anthony G. Wilson<sup>1</sup>, Emma-Jane MacDermott<sup>2</sup>, Clodagh Lowry<sup>2</sup> and Orla G. Killeen<sup>1,2</sup>

## Lung Clearance Index to Track Acute Respiratory Events in School-Age Children with Cystic Fibrosis

Lucy Perrem<sup>1,2,3,4,5</sup>, Sanja Stanojevic<sup>3,6</sup>, Michelle Shaw<sup>3</sup>, Renee Jensen<sup>1,3</sup>, Nancy McDonald<sup>1,3</sup>, Sarah M. Isaac<sup>3</sup>, Miriam Davis<sup>7</sup>, Charles Clem<sup>7</sup>, Julia Guido<sup>3</sup>, Sylvia Jara<sup>7</sup>, Lisa France<sup>7</sup>, Melinda Solomon<sup>1,2,3</sup>, Hartmut Grasmann<sup>1,2,3</sup>, Valerie Waters<sup>2,3,8</sup>, Neil Sweezey<sup>1,2,3</sup>, Don B. Sanders<sup>7</sup>, Stephanie D. Davis<sup>9</sup>, and Felix Ratjen<sup>1,2,3</sup>

On publication of the study results in the *American Journal of Respiratory and Critical Care Medicine*, lead investigator Dr Lucy Perrem said; “LCI (Lung clearance Index) has great potential as a monitoring tool in children with CF who have early lung disease. Our results strengthen the case for using LCI as a clinical test”. Read more [here](#).

TRANSLATIONAL RESEARCH

BJD  
British Journal of Dermatology

## Topical corticosteroids normalize both skin and systemic inflammatory markers in infant atopic dermatitis

M. A. McAleer<sup>1,2,3</sup>, I. Jakasa<sup>4</sup>, N. Stefanovic<sup>3</sup>, W. H. I. McLean<sup>5</sup>, S. Kezic<sup>6</sup> and A. D. Irvine<sup>1,2,4\*</sup>



On publication of the study results in the *British Journal of Dermatology*, senior author Prof. Alan Irvine said; “Our study shows that inflammatory signals from the skin of children with eczema leak into the system and are circulating widely. Treating the skin inflammation reduces the levels of these inflammatory signals in the blood. These findings help shape our understanding of the systemic (all of body) effects of eczema”. Read more [here](#).

# NCRC Researcher in Focus: January – June 2021

## January – Dr. Michael Carter (UCC)

Michael is an NCRC Clinical Research Fellow working on the PiRAMiD (*PR*edicting early onset *Autism* through *Maternal Immune Activation* and *proteomic Discovery*) study.

Explaining the background to project, Michael said *“The problem we are trying to address is one of timing. Typically, children with ASC (Autism Spectrum Condition) do not receive a diagnosis until they are aged 4-5 years or older. ..If we can identify children with ASC at an earlier age, then they can receive early intervention therapies, and we can expect improved outcomes”*. Read more [here](#).

## February – Dr Lyudmyla Zakharchenko (RCSI)

Lyudmyla was an NCRC Clinical Research Fellow studying the effect of inflammation on heart function in children with Down Syndrome.

Discussing the project, she said *“Half of the babies born with DS also have problems with the structure of the heart (called congenital heart disease or CHD for short) and the risk of high pressure in the blood vessels of their lungs”*. Read more [here](#).

## March – Dr. Matthew McGovern (TCD)

Matthew was an NCRC Clinical Research Fellow working on the **GENIE** (*GE*nder and *Neonatal Inflammation* in *prE*term outcomes) study.

Describing his research, Matthew said *“In this study, we were aiming to better understand the role of sex in the immune system, infection susceptibility and clinical outcome among premature babies”*. Read more [here](#).

## April – Dr. Claire Murphy (RCSI)

Claire is an NCRC Clinical Research Fellow characterising blood coagulation and blood cell derived extracellular vesicles in preterm babies.

Describing the research problem, Claire said *“Worldwide, prematurity is the leading cause of death in the first month of life...These infants require intensive care support to survive. Infants born very early can experience serious problems due to bleeding and inflammation”*. Read more [here](#).

## May – Alice Shannon (UL)

Alice is an IRC and NCRC funded PhD student working to develop anti-bacterial 3D printed feeding tube accessories for children with Cystic Fibrosis.

Discussing her research, Alice said *“Children with CF need at least one and a half times the amount of food compared to a healthy child of the same age.... As it is very important to meet their food intake goals, feeding tubes can be used to help with nutrition.... These feeding tubes are fantastic for providing nutrition but can have some drawbacks”*. Read more [here](#).

## June – Dr. Patrick Walsh (TCD)

Patrick is NCRC principal investigator studying the role of IL-36 cytokines in the development of childhood obesity.

Discussing the research problem that the project is addressing, Pat said *“There is pressing need to greater understand how obesity impacts children’s health, and in particular to identify strategies which can be exploited to therapeutically intervene and successfully treat this disease”*. Read more [here](#).

