



# SciFest

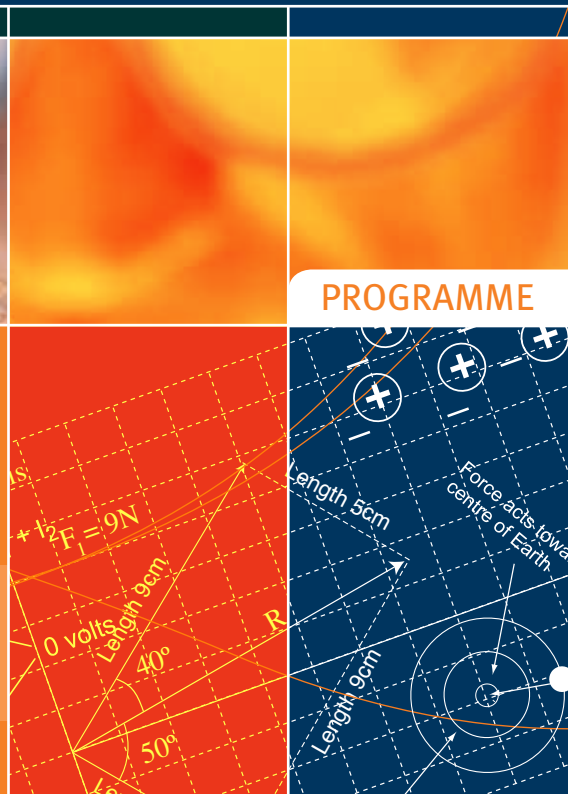
Inspiring and Promoting Excellence in STEM Education

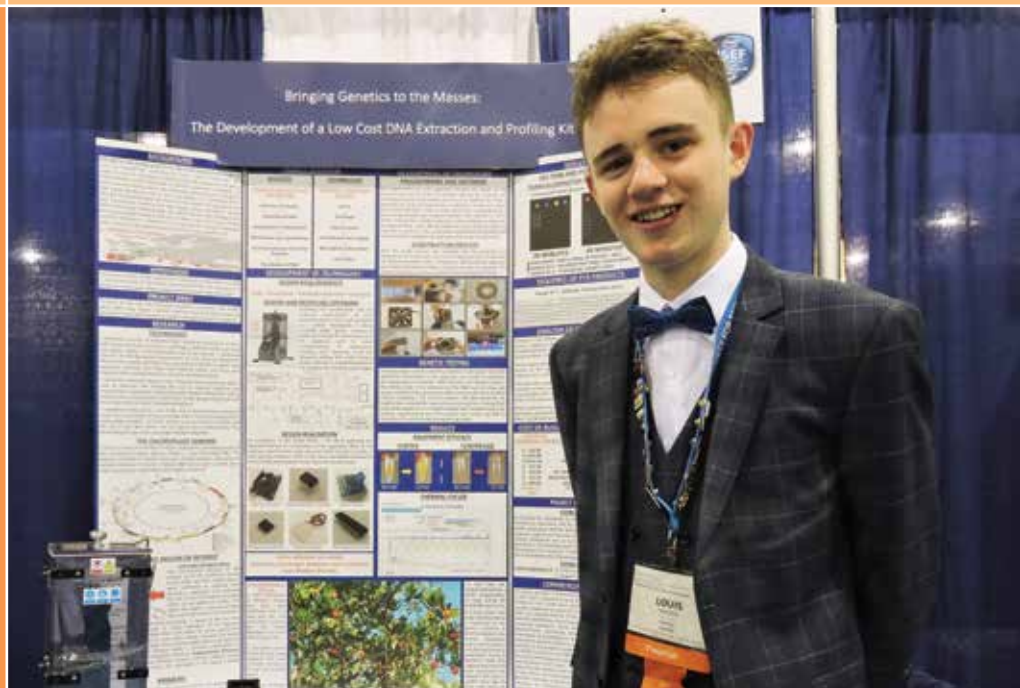


PROGRAMME

## SciFest 2016 National Final

A Celebration of  
Excellence in STEM





# SciFest 2016

was funded primarily by Science Foundation Ireland, Intel Ireland and Boston Scientific. The events were hosted locally in schools and regionally in the Institutes of Technology, DCU and St Mary's College, Derry and supported by a number of other partners. SciFest symbolises a highly successful collaboration between education, Government and enterprise and between the second and third level education sectors.



# Foreword from Richard Bruton, TD

*Minister for Education and Skills*



**I'd like to welcome everyone to the SciFest 2016 national final. This event and others like it are always inspiring occasions where students demonstrate their interests and incredible successes in the areas of science, technology, engineering and maths (STEM). STEM is of crucial importance to our society for it is there that we will see the next vital breakthroughs in the areas of medicine, mechanics, architecture, economics and human development. To see young people achieve so much in these areas is very heartening and encouraging for the future. I had the opportunity to view some of the fantastic work when I visited SciFest 2015. It is great to see the levels of innovation, rigour and dedication.**

It is crucial for our society and our world that students gain a robust grounding in STEM. The Government's newly published Action Plan for Education outlines plans to increase the take-up of "gateway subjects" including Chemistry, Physics and ICT at senior level, and the introduction of coding at primary level and Junior Cycle.

SciFest offers a crucial opportunity for students to participate in STEM outside the classroom, to take what they've learned and apply it to a real life situation while developing skills of teamwork, innovation and collaboration. What they have learned throughout this process will stand to them in future years in whatever walk of life they choose to pursue. This process is, in effect, giving our students the skills and experience to contribute to the betterment of our society in a real and meaningful way.

More than 8,000 students from 263 schools throughout the country participated in SciFest 2016 - a historic level of participation. I would like to take this opportunity to thank all of those who made this possible - the pupils, teachers, parents, Institutes of Technology, DCU, St Mary's College and SciFest organisers. The participants included over 5,000 students who participated in local SciFest@School Science Fairs, across 57 schools. I would also like to congratulate them and also those who participated at regional level and all their supporters.

The students here today who are participating in the national final represent the brightest scientific minds of their generation on the island of Ireland. Each and every one of them is already a winner, having succeeded at the regional finals.

*I wish all students the very best of luck and look forward to hearing about the winning project.*

## Welcome from Sheila Porter

*SciFest Founder and CEO*



**On behalf of SciFest I would like to welcome each and every one of you, students, teachers, parents, judges, and invited guests to the SciFest 2016 National Final. This is an exciting day for SciFest; it is the culmination of another very successful year.**

The SciFest national science fair programme is Ireland's largest pre-college STEM competition. This year saw more than eight thousand second-level students presenting projects at local and regional SciFest science fairs. The programme is designed to encourage a love of STEM through active, collaborative, inquiry-based learning and to give every young person, whatever their background or circumstances, the opportunity to achieve their potential in, and have an enjoyable experience of, STEM. Entry is free and open to all second-level students, thus promoting diversity and making participation highly inclusive and accessible.

I would like to take this opportunity to congratulate all the incredibly talented young people who've travelled here today from every corner of Ireland to demonstrate their creativity and problem-solving skills. All of the students participating in this SciFest national final have already achieved success at a regional SciFest science fair. We hope that they will see today not just as a competition but also as an opportunity to exchange ideas, broaden their knowledge, meet mentors, make new friends and seriously consider a career in STEM.

The SciFest programme could not take place without the support of our partners, Science Foundation Ireland, Intel, Boston Scientific, the Institutes of Technology, DCU and St Mary's College, Derry. I would like to thank them, and all our sponsors, for their continued support. I would also like to thank the teachers and parents; their support and encouragement play a vital role in the success of the students.

*I look forward to meeting the students and hearing about their projects. I wish them the best of luck and a very enjoyable experience.*

## A Message from Dr Ruth Freeman

*Director of Strategy and Communications,  
Science Foundation Ireland*



**I am delighted to be here at the SciFest National Final. 2016 has been a hugely successful year for this inspiring and inclusive competition. With 8,084 students competing from 263 schools across the island of Ireland, this truly is the largest and most welcoming of all science fairs, bringing together young people of all backgrounds, united by a common interest in science, technology, engineering and maths (STEM).**

We in Science Foundation Ireland are delighted to support SciFest every year. It is crucial to encourage young people to develop and interest in STEM, particularly outside the classroom. The inherent advantage of SciFest is that it combines enjoyment with a sense of mission – to answer previously unanswered questions, to experiment and test new ideas and to compete among the best young scientific minds of your generation. When I look around the room today and see the high standard of projects on display I am extremely encouraged. Science Foundation Ireland is committed to the promotion of STEM across Irish life. The young scientific minds of today will be the ground-breaking scientific leaders of tomorrow and I have no doubt that many of you in partaking today will go on to achieve great success in the future.

Your success in being here today is also a reflection of the people around you who are supporting you every step of the way – your teachers and your families. I know that your achievements mean a lot to them as well. SciFest, as we all know, is more than just one day a year. It is a grassroots enterprise in schools across this island. At each level of SciFest young people get the opportunity to push boundaries in the area of STEM and the support you receive from those around you is crucial in making this happen.

I wish to congratulate all those involved in the organisation of today's event. Sheila and George Porter have an unwavering and passionate commitment to this event that is to be commended. I also wish to thank the many teacher, schools, Institutes of Technology, Universities and supporting organisations who help make this event a success.

*Congratulations most of all to the students presenting projects today. Your hard work has paid off, and each and every one of you deserves to be here. I wish the best of luck to everyone!*

## A Message from Sarah Sexton

*Communications Manager,  
Intel Ireland*



**Intel Ireland is proud to continue its sponsorship of the all island science competition SciFest. We are a science, technology and engineering company with people at the core of what we do. Every day we use science, technology, engineering and maths (STEM) to make amazing experiences possible for business and society, and for every person on Earth.**

We believe that science fairs are an important element in promoting a student-centred, inquiry-based approach to skill development. Students are motivated to develop their own scientific investigations, develop models, collect, analyse and interpret data, draw inferences, display, communicate and defend their findings at a science fair and receive feedback on their investigation.

SciFest creates important opportunities for students to work on exciting and innovative projects and through participation at SciFest events students develop a wide range of valuable skills.

It is the bright, creative and curious minds of today's students that will be responsible for the innovations of tomorrow and the technologies and discoveries that we have yet to imagine.

*Intel Ireland wishes all students the best of luck in today's competition.*



## A Message from Elaine Boyd

*Director, Human Resources,  
Boston Scientific Galway*



**On behalf of Boston Scientific we welcome everyone to the SciFest 2016 national final. This is an event that we in Boston Scientific are passionate about supporting and so we are delighted that, in our third year of sponsorship, we see the event continue to grow in content and excellence.**

As a medical devices company with a strong focus on research, development and innovation, Boston Scientific is constantly looking for top talent in the fields of science, technology, engineering and bio-medicine. We are very aware therefore that the promotion of science, technology, engineering and maths (STEM) subjects, at second level in particular, is of vital importance. Our aim is to inspire students to develop a passion for these subjects, thereby ensuring we have a continuous uptake of the science and engineering disciplines at third level. As a result, we are helping to mould the scientists and engineers of the future.

We believe SciFest is an excellent opportunity for students to research, explore and develop their own ideas. It is through endeavours like this that students can nurture a passion for the STEM subjects and the positive impact they have on the world around us. Our commitment at Boston Scientific is to advancing healthcare while giving back to the communities in which our employees live and work. As an employer of over 4,000 Irish workers we believe STEM education is a top priority for our business, for our patients and for our communities. We are delighted therefore to see such talent coming to events like SciFest. We know that as these motivated and passionate young people go on to pursue their education in STEM-related fields of study they will build a brighter future for everyone.

*We wish all the students the very best of luck in their endeavours and we look forward to continuing our fruitful and exciting partnership with SciFest.*

# Table of Contents

Programme [page 11]

SciFest 2016 National Final Judges [page 12]

Awards [page 13]

## SCIFEST 2016 GRAND AWARD FINALISTS

PROJECT ABSTRACTS [pages 15-37]

---

[STAND 1] **MULTIPURPOSE HOUSE SAFETY ALARM**

SciFest@CIT [page 16]

[STAND 2] **THE DIGITALISATION OF FARMING**

SciFest@AIT [page 17]

[STAND 3] **DISTANCE DIAGNOSTICS**

SciFest@NorthWest(NI) [page 18]

[STAND 4] **DESIGNING A MULTI ROLE STEALTH AIRCRAFT AND TESTING ITS VIABILITY**

SciFest@DIT [page 19]

[STAND 5] **THE HEALTHY ALTERNATIVES TO THE HIGH CALORIFIC INGREDIENTS  
IN FOOD FOR YOUNG CHILDREN**

SciFest@DkIT [page 20]

[STAND 6] **CAN WE IMPROVE THE PROTECTIVE QUALITIES OF CAMOGIE OR  
HURLING GLOVES?**

SciFest@ITB [page 21]

[STAND 7] **TO DESIGN AND MANUFACTURE A WIRELESS TRAILER DEVICE**

SciFest@LIT [page 22]

[STAND 8] **APPLYING REAL-TIME PHYSIOLOGICAL RESPONSES TO eLEARNING  
AND WORKPLACE STRESS MANAGEMENT**

SciFest@GMIT [page 23]

[STAND 9] **ECO DISHES**

SciFest@WIT [page 24]

- [STAND 10] **THE UGLY SIDE OF BEAUTY: AN INVESTIGATION INTO TOXIC CHEMICALS USED IN COSMETICS**  
SciFest@ITC [page 25]
- [STAND 11] **THE MECHANICS OF PENCIL HOLDING**  
SciFest@LIT Thurles [page 26]
- [STAND 12] **HUM YOUR WAY TO BETTER HEALTH**  
SciFest@ITT Dublin [page 27]
- [STAND 13] **TO INVESTIGATE IF EGG SIZE/BREED AFFECTS THE HATCH RATE IN CHICKEN EGGS**  
SciFest@LyIT [page 28]
- [STAND 14] **EYE OPENER: HELPING DROWSY DRIVERS STAY SAFE**  
SciFest@IT Sligo [page 29]
- [STAND 15] **SOUND ABSORBING PAINT**  
SciFest@DCU [page 30]
- [STAND 16] **DOES PLAYING BOARD GAMES HELP PEOPLE WITH DYSLEXIA?**  
SciFest@IT Tralee [page 31]
- [STAND 17] **POISON AT STREET LEVEL: AMBIENT AND KERBSIDE NITROGEN DIOXIDE LEVELS**  
SciFest@ITB [page 32]
- [STAND 18] **DOES *STRONGYLOIDES RANSOMI* EXIST ON IRISH PIG FARMS?**  
SciFest@CIT [page 33]
- [STAND 19] **SOUND'S OK – A UNIQUE DEVICE TO LESSEN DISTRESS OF ASD RELATED SOUND SENSITIVITY**  
SciFest@WIT [page 34]
- [STAND 20] **TICK TACK TUBERCULOSIS**  
SciFest@ITC [page 35]
- [STAND 21] **THE EDUCATION AND PROMOTION OF BREASTFEEDING TO CHILDREN, ADOLESCENTS AND ADULTS**  
SciFest@IT Sligo [page 36]
- [STAND 22] **THINK FAST: ANALYSING THE VISUAL REACTION TIMES OF GAA ATHLETES VERSUS NON-GAA ATHLETES**  
SciFest@DCU [page 37]

## SCIFEST 2016 SEAI INESPO AWARD FINALISTS

[pages 39-41]

---

- [STAND 23] **CAONACH CLISTE**  
SciFest@AIT [page 40]
- [STAND 24] **THE GREENHOUSE**  
SciFest@NorthWest(NI) [page 40]
- [STAND 25] **WHAT IS THE BEST INSULATOR?**  
SciFest@IT Sligo [page 40]
- [STAND 26] **TESTING DIFFERENT WAYS TO IMPROVE THE AMOUNT OF ENERGY  
PRODUCED INSIDE A SALT WATER GENERATOR**  
SciFest@ITT Dublin [page 41]
- [STAND 27] **THE INTERNET OF GREEN THINGS**  
SciFest@LIT [page 41]

## SCIFEST 2016 BOSTON SCIENTIFIC MEDICAL DEVICES GRAND AWARD FINALISTS

[pages 43-45]

---

- [STAND 28] **INVESTIGATING THE DIFFERENCE IN BACTERIAL CONTAMINATION  
WHEN HANDLING AND USING A DEVICE TO INSERT CONTACT LENSES**  
SciFest@AIT [page 44]
- [STAND 29] **LEARNING WITH HEARING AIDS: THE INFLUENCE OF ENVIRONMENTAL  
FACTORS IN A CLASSROOM**  
SciFest@CIT [page 44]
- [STAND 3] **DISTANCE DIAGNOSTICS**  
SciFest@NorthWest(NI) [page 44]
- [STAND 30] **DEVICE TO INCREASE EARLY DETECTION OF TESTICULAR CANCER**  
SciFest@GMIT [page 45]
- [STAND 31] **DIABETIC APPLICATION**  
SciFest@WIT [page 45]

## SCIFEST 2015 AWARD WINNERS

---

[STAND 32] **SCIFEST 2015 GRAND AWARD WINNER**

Louis Madden, Largy College,  
Clones, Co. Monaghan [page 46]

[STAND 33] **SCIFEST 2015 SEAI INESPO AWARD WINNER**

Lúc de Barra, Coláiste Raithín,  
Bré, Co. Chill Mhantáin [page 46]

The SciFest 2016 Team [page 47]

The SciFest Partners and National Sponsors [page 48]

# SciFest 2016 National Final

A CELEBRATION OF EXCELLENCE IN STEM

## PROGRAMME 11 November 2016

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9.00	Arrival and set up of projects
10.00	Judging and viewing of projects (10.00-11.00 – Judges only)
10.15	Mr Richard Bruton, TD, Minister for Education and Skills will visit the exhibition and view the projects
11.00	Judging and viewing of projects (exhibition hall open to invited guests, parents and teachers)
12.45	Lunch
13.30	Awards Ceremony Introduction – Dr Arlene O’Neill
13.40	Prof. Brian MacCraith, President of DCU and Chair of the Board of SciFest Ltd
13.50	Dr Ruth Freeman, Director of Strategy and Communications, Science Foundation Ireland
14.00	Guest of Honour, Dr Jennifer Cleary, Presenter of RTE’s INSIDERS science programme
14.10	Presentation of Awards <ul style="list-style-type: none"><li>» Excellence in STEM Awards</li><li>» Spirit of SciFest Award</li><li>» ISTA Award</li><li>» THEA Award</li><li>» Boston Scientific Medical Devices Grand Award</li><li>» SEAI INESPO Award</li><li>» Berlin Long Night of Science Award</li></ul>
15.00	SciFest 2016 Grand Award Intel Teacher of Excellence Award
15.15	Photographs

# SciFest 2016 Judges

## SciFest Grand Award Judging Panel

Mr Gerard Hughes (Chair)	<i>Project Manager, Sentinus</i>
Prof. James Lunney	<i>School of Physics, TCD</i>
Dr Fergus McAuliffe	<i>Public Engagement Manager, iCrag</i>
Dr Sheila Gilheany	<i>The Institute of Physics in Ireland</i>
Ms Noreen McMorrow	<i>Inspector, Department of Education and Skills</i>
Dr Katie Corbett	<i>Skerries Community College</i>
Dr Jennifer McKenna	<i>European Programme Manager, Intel Research and Development Ireland</i>
Mr Jim Cooke	<i>Teacher of Mathematics</i>
Ms Michelle O'Flaherty	<i>Quality/Validation Consultant, Consultancy, Griffith College, Ireland</i>
Dr Pádraig Ó Murchú	<i>Former Education Manager, Intel Ireland</i>
Dr Miriam Ryan	<i>Regulatory Affairs &amp; Specialised Nutrition Executive - Irish Dairy Industries Association at IBEC</i>
Dr Deirdre Kilbane	<i>School of Physics, UCD</i>
Dr Natasha Williams O'Hanlon	<i>Oriflame Cosmetics – Research and Development</i>
Mr Simon Bluet	<i>Intel ISEF 2013, Electronic Engineering, TCD</i>
Mr Philip Smyth	<i>Cool Planet Experience, RTÉ and Pint of Science</i>
Mr Paul Sheehy	<i>Intel Ireland</i>
Ms Rachel Linney	<i>Education Officer, NCCA</i>
Dr Paul Lavin	<i>Genetic Technologist, Our Lady's Children's Hospital, Crumlin</i>
Dr Chris Bleakly	<i>School of Computer Science, UCD</i>

## SEAI INESPO Award Judging Panel

Ms Áine Woods (Chair)	<i>CPD for Junior Cycle</i>
Mr Kevin O'Rourke	<i>Former Head of Low Technologies, SEAI</i>
Ms Aileen Duffy	<i>Energy Demand Management Programme Executive, SEAI</i>
Mr Alan Dunne	<i>Senior Inspector, Department of Education and Skills</i>

## Boston Medical Devices Grand Award Judging Panel

Ms Anne Lynch (Chair)	<i>SciFest</i>
Mr Michael Dunning	<i>Research &amp; Development Engineer, Boston Scientific</i>
Mr Kevin Guerin	<i>Senior Quality Engineer, Boston Scientific</i>
Dr Ruth Richards	<i>Inspector, Department of Education and Skills</i>

# The Awards

## SCIFEST 2016 GRAND AWARD

Trophy and an all-expenses-paid trip for the student(s) to represent Ireland at the Intel International Science and Engineering Fair (ISEF) in Los Angeles in May 2017. *Sponsored by Science Foundation Ireland and Intel Ireland.*

## INTEL TEACHER OF EXCELLENCE AWARD

Trophy and an all-expenses-paid trip to the Intel International Science and Engineering Fair (ISEF) in Los Angeles in May 2017 for the mentor of the Grand Award winner(s). *Sponsored by Intel Ireland.*

## BERLIN LONG NIGHT OF SCIENCE AWARD

Trophy and an all-expenses-paid trip for the student(s) and their mentor to attend the Long Night of Science in Berlin in June 2017. *Supported by the Department of Foreign Affairs and Trade.*

## SEAI INESPO AWARD

Trophy and an all-expenses-paid trip for the student(s) and their mentor to represent Ireland at the International Environment and Sustainability Project Olympiad (INESPO) in the Netherlands in May/June 2017. *Sponsored by the Sustainable Energy Authority of Ireland (SEAI).*

## BOSTON SCIENTIFIC MEDICAL DEVICES GRAND AWARD

Engraved trophy and €500. *Sponsored by Boston Scientific.*

## THEA AWARD

Engraved trophy and €75. *Sponsored by the Technological Higher Education Association.*

## ISTA AWARD

Engraved trophy. *Sponsored by the Irish Science Teachers' Association.*

## SPIRIT OF SCIFEST AWARD

Engraved trophy. *Presented by SciFest Limited.*

## EXCELLENCE IN STEM AWARDS

Engraved plaques. *Sponsored by Science Foundation Ireland, Boston Scientific and the Sustainable Energy Authority of Ireland.*



SCIFEST 2016

**GRAND AWARD**

**PROJECT  
ABSTRACTS**



# SciFest@CIT 2016

[STAND 1] Title of Project	<b>MULTIPURPOSE HOUSE SAFETY ALARM</b>
Students	Harold Ibarlin, Filip Gajda, Elvis Nzekwe
School	North Monastery Secondary School, North Monastery Road, Cork
Teacher Mentoring Project	Frank Murphy

## ABSTRACT

Have you ever gone out of your home with an awful feeling that you left something turned on that might cause a fire or that your family might be harmed by dangerous gases leaking in your home?

We have created a multipurpose house safety alarm that will send a text if it detects high temperature or harmful gases such as carbon monoxide, LPG or smoke. Furthermore, to make our device much safer and more eco-friendly our way of detecting smoke is different from most ordinary smoke alarms that use a harmful radioactive isotope called americium 241 that is poisonous to the human body when either inhaled or swallowed.

Our device detects smoke using an LED and a tsl2561 light sensor and operates on the principle that smoke interferes with the light path. When a sensor reads a dangerous level that we have set through multiple calibrations it will sound a buzzer, light an escape light and, most importantly, it will alert the homeowner by sending a text.

We hope that in the future everyone will have the peace of mind that their home is always safe from fire and gas related incidents. This could also save insurance companies in pay outs and ultimately bring the price of home insurance down. Having conducted multiple tests, we conclude that our device works and could one day be sold as a commercial product.

# SciFest@AIT 2016

[STAND 2] Title of Project	<b>THE DIGITALISATION OF FARMING</b>
Student	Will Dennigan
School	Lanesborough Community College, Lanesborough, Co. Longford
Teacher Mentoring Project	Michael Lyons

## ABSTRACT

I chose this project as I grew up on a farm and naturally have a farming background; however, computer science has always intrigued me. I decided I would try to use technology to bring farming into the modern era. To do this I had to figure out the parts of farming which were still tedious as ever. Upon investigation I noticed that feeding livestock was still lacking in modern terms. It also became clear to me that keeping up to date information about your herd at hand was progressively getting more difficult. So I thought to myself, “How can I tackle these issues?”

The solution to these problems were the “HerdChecker” (patent pending) and the Automated Feeder. The “HerdChecker” is a simple web app written using basic HTML which allows the user to input information about their herd at any time. The information will then be kept up to date automatically if there is already data present, such as medical history. With the implementation of QR codes on the livestock tags, the farmer can find any information about a specific animal in their herd with no hassle at all.

The Automated Feeder was even more in line with my interest in technology. I built it using the Raspberry Pi - “The \$5 computer”. Using Python I was able to create scripts which allowed the Raspberry Pi to rotate the servos “X” amount of times depending on how much meal the farmer would like it to dispense at a given time.

# SciFest@NorthWest(NI) 2016

[STAND 3] Title of Project	<b>DISTANCE DIAGNOSTICS</b>
Students	Stephen Emerson, Sean Martin
School	St Killian's College, Carnlough, Co. Antrim, BT440JS
Teacher Mentoring Project	Sean Connolly

## ABSTRACT

When watching the news I heard about the shortage of GPs in Northern Ireland to go out to visit patients in their homes in order to diagnose and monitor them. 'If only there was something that would stop GPs having to make house visits', I thought; that was when the Distance Diagnostics first came into focus. Its function would have to allow GPs to interview, diagnose and monitor house bound patients.

Distance Diagnostics is a device controlled by a Raspberry Pi combined with an Arduino board that reads sensors which can test for heart rate, temperature and oxygen levels, along with the possibility of other specialist medical sensors being connected to it. Distance Diagnostics is equipped with a display screen so the patient can see their own results and also send data via the internet to a doctor. Live data and pictures can be displayed on a web page or monitored on a phone app.

We calibrated our device on a visit to Dr Brian Mc Crossan at the Royal Victoria Hospital, Belfast. We were also told that our method for viewing the patient was great because it comforts the patient knowing the doctor is monitoring them.

Our device is currently able to monitor five out of the six scores for the NEWS system used by the NI Health Service. This is more than ample to allow patients home early from hospital, reducing hospital bed time and giving patients and carers confidence that they are still under hospital care.

# SciFest@DIT 2016

[STAND 4] Title of Project	<b>DESIGNING A MULTI ROLE STEALTH AIRCRAFT AND TESTING ITS VIABILITY</b>
Student	Omar Salem
School	Sutton Park School, St Fintan's Road, Sutton, Dublin 13
Teacher Mentoring Project	Catherine Tattersall

## ABSTRACT

The objective of my project was to design and test a heavy, multi-role, low-observable aircraft. The project took a year to complete.

The aircraft has many different applications, including strategic and tactical airlifting, aerial refuelling and airborne early warning and control.

My design incorporates two systems that are on no other aircraft in the world: a system that prevents the engine exhaust from radiating heat and a system that enables the aircraft to manoeuvre efficiently without compromising its low observability or stress the airframe.

The design prevents it from being detected by advanced military detection methods including RADAR, sight, sound and thermographic imaging. The shape of the aircraft is designed to cause the absolute minimum drag possible which increases speed and fuel efficiency and reduces emissions. The brakes on the landing gear include a kinetic energy recovery system.

For the design I used SolidWorks software. I tested the completed model for how it would behave aerodynamically. I obtained a 3D printed prototype of my aircraft scaled 1:250 for testing whether or not the stealth technologies incorporated on my plane functioned properly.

I devised an experiment to show that the shape of the aircraft works and that the aircraft cannot be detected by radar.

# SciFest@DKIT 2016

[STAND 5] Title of Project	<b>THE HEALTHY ALTERNATIVES TO THE HIGH CALORIFIC INGREDIENTS IN FOOD FOR YOUNG CHILDREN</b>
Students	Alison McDonnell, Simone Clerkin
School	St Louis Secondary School, Glen Road, Monaghan
Teacher Mentoring Project	Joanne Myers

## ABSTRACT

11-12% of Irish children are obese and 48% of Irish people snack, indicating the need for a nutritious, low-calorie snack. Our aim was to create a novel nutritious recipe highlighting the ease of smart substitution.

“Trial and Error” was a major factor in altering the cupcake recipe. Pure fruit juices, peanut butter, eggs with the yolk removed, yeast, avocado, bananas, applesauce and Greek yoghurt are a few of the substitutes tried.

A sugar-free recipe was created with almost half the calories and increased potassium and vitamin C levels. A bomb calorimeter was used to quantify the calorific value. This was tested on a number of foods with published calorific content. In a blind survey a group of 11-13 year-olds tested the taste, texture and appearance compared with the original cupcakes. They also completed our healthy lifestyle survey. An application was created to enable worldwide access to “A Smart Child’s Health”.

Overall the children preferred the taste, texture and appearance of the substituted cupcake. They said the most difficult part of living a healthy lifestyle was avoiding sweet treats and the most important element in food was the taste.

A low-calorie, tasty recipe was created to demonstrate substitution. An application was constructed to support healthy eating in young children worldwide.

We will substitute a savoury recipe and make the application available to iPhone devices. We will verify the experimental results for the cupcakes using another method for estimating calories, e.g. fat by Soxhlet and carbohydrate by difference.

# SciFest@ITB 2016

[STAND 6] Title of Project	<b>CAN WE IMPROVE THE PROTECTIVE QUALITIES OF CAMOGIE OR HURLING GLOVES?</b>
Student	Katie Byrne
School	Loreto Secondary School, St Michael's, Navan, Co. Meath
Teacher Mentoring Project	Dr Lisa Darley

## ABSTRACT

Through my own experiences playing camogie and football I noticed I received a lot of injuries to my hands, particularly around the joint areas. Curious about my observations I consulted the Gaelic Athletic Association's annual report 2015 which stated that there were 461 hand and finger related injuries claimed for via their injury benefit fund, an increase of 9% on the 2014 figures.

In response to my research I decided to design and test a reinforced glove that would protect the joints in players' hands and fingers but maintain flexibility.

I achieved this via incorporation of non-Newtonian fluids into specially designed pouches placed at the main joints inside a standard GAA glove. The wrist protection of the glove was enhanced in a similar way.

To test the effectiveness of my glove I conducted impact studies using a Vernier dual range force meter which would enable me to measure the time it takes for the force to act on the object. My aim was to increase the time taken, thus decreasing the impact. My results showed that the glove I designed does in fact provide increased protection by increasing the time taken for impact by approximately 200% at the wrist and fingers. Flexibility studies also show that this increased protection does not come at any cost to performance.

I am hoping my glove will provide camogie, hurling and football players with protection against common sporting injuries which have been linked to the development of arthritis in former GAA players.

# SciFest@LIT 2016

[STAND 7] Title of Project	<b>TO DESIGN AND MANUFACTURE A WIRELESS TRAILER DEVICE</b>
Students	Kalin Foy, Ciara Coyle
School	Coláiste Chiaráin, Croom, Co. Limerick
Teacher Mentoring Project	Edel Farrell

## ABSTRACT

### Introduction

We have constructed a wireless trailer light system to replace the 7-pin connector that is used to conduct signals from the car to the trailer. These signals control and power the lights on the trailer. We chose this project as many trailer lights do not work properly and this is a safety concern.

### Description

Initially we used the Arduino Uno and XBee RF wireless communicators. We used a PC fan wired as an alternator to generate power for the lights. The alternator produced current which was used to charge a re-chargeable battery. This system worked but was not very robust. We decided to make the device low power and more durable. We used the Arduino Pro Mini and the RF69CW wireless communicators which are smaller and more power efficient. To make the system robust we changed the layout of the boards to fit inside the base of the trailer lights beside the battery. We added a cable to connect to mains power to charge the battery.

We then added a parking system. By using two ultrasonic sensors we were able to make a proximity sensor to aid parking and reversing. We used a GLCD screen on the sun visor for the display and a beeper. The display also shows battery life.

### Conclusions

The system runs for 32 hours on a fully charged battery. It is compact and durable. The driver is constantly informed of the battery life and is assisted in parking by the proximity sensors.

# SciFest@GMIT 2016

[STAND 8] Title of Project	<b>APPLYING REAL-TIME PHYSIOLOGICAL RESPONSES TO eLEARNING AND WORKPLACE STRESS MANAGEMENT</b>
Student	Maghnus Hartigan
School	Mary Immaculate Secondary School, Lisdoonvarna, Co. Clare
Teacher Mentoring Project	John Sims

## ABSTRACT

In this project I am developing a computer mouse with heart rate and perspiration sensors, an algorithm to deduce the mood state of the user and software that utilises this technology to provide a quality user experience, integrating the user's mood into a decision making process.

For the hardware, I am using 3D printing to create the mouse "shell", and am integrating sensors attached to an Arduino.

The mood-state algorithm is based on research I conducted into how stress and other emotions affect a user's physiological response.

I am developing two software applications that utilise the technology. The first is a computer-based learning environment aimed at improving students' computer-based education. It uses the sensory data to deduce what topics a user enjoys and what causes them stress. The aim is to deliver a personalised learning experience, playing to a user's strengths and working on their weaknesses. The second, a workplace stress management program, monitors a user's stress level and recommends to them when they need to take a break from work. This is aimed towards those working in office environments. It would give them a helpful reminder to avoid a build-up of stress and should result in improved user wellbeing and productivity.

# SciFest@WIT 2016

[STAND 9] Title of Project	<b>ECO DISHES</b>
Students	Marie Keogh, Grace Hanneffy, Roisin McEvoy
School	Mountrath Community School, Dysartbeigh, Mountrath, Co. Laois
Teacher Mentoring Project	Dr Mary Kelly

## ABSTRACT

The purpose of this project was to investigate the possibility of making a dishwasher tablet that contained all natural ingredients and cleaned the dishes equally as well as commercial products but did not cause health problems and were friendly to the environment.

Since May we have been focusing on expanding our project. We have done this by creating an all-natural washing up liquid to use in sinks. We have also worked on making a new eco-friendly floor cleaner.

In this study three different formulations of tablets were prepared using different methods of preparation. On the newer products we have tried them at a broader range of temperatures.

The dishes and cutlery from each cycle were swabbed and tested for cleanness on a petri dish at room temperature and at 37 °C over a 24-hour period. A biuret test for protein and a starch test were also carried out to check for any food residues. Analysis of the data from the three different formulations were compared to results from two commercial dishwasher tablets. We also carried out these same experiments on our two new products.

Comparison of the results showed that the dishes cleaned with formulation 2 were equally as clean as the commercial tablet and had the added advantage of being environmentally friendly, cheaper and safer for human health. The newer products will also be assessed in terms of their economic marketability.

This current research shows that this project has commercial viability and addresses a very real pollution problem.

# SciFest@ITC 2016

[STAND 10] Title of Project	<b>THE UGLY SIDE OF BEAUTY: AN INVESTIGATION INTO TOXIC CHEMICALS USED IN COSMETICS</b>
Student	Seán Byrne
School	Avondale Community College, Rathdrum, Co. Wicklow
Teacher Mentoring Project	Aoife Sullivan

## ABSTRACT

My project investigated worker exposure limits for toxic chemicals contained in nail polishes.

My main aims were:

- » To identify solutions to improve worker safety in nail salons
- » To design a low cost safety enclosure to protect beauticians from exposure to toxic chemicals in nail polishes
- » To investigate if chemicals banned from cosmetics are still in use

I developed a survey to check levels of awareness of toxic chemicals in nail polishes. I completed another survey to assess availability of safety information for nail products.

I used workplace exposure monitoring equipment to measure levels of VOCs in nail salons.

I designed a safety enclosure to protect beauticians from exposure to toxic nail polish vapours. This enclosure is connected to an extractor fan and carbon filter to remove toxic vapours, thus preventing them from being inhaled by users.

I researched and tested samples of nail polish using gas chromatography-mass spectrometry to check if any contained banned substances, including formaldehyde, toluene, and dibutyl phthalate.

My main findings are:

- » Survey results show good levels of awareness, but inadequate availability/use of MSDS safety data, in relation to nail products
- » Workplace monitoring indicated good levels of controls for worker protection
- » Testing of the safety enclosure demonstrated that it was very effective in preventing toxic vapours from nail polish being inhaled
- » GC-MS analysis found that two of the 17 nail polish samples tested contained toluene, which is a banned cosmetic substance in the EU

The safety enclosure could also be used in other environments, such as pharmacies.

# SciFest@LIT Thurles 2016

[STAND 11] Title of Project	<b>THE MECHANICS OF PENCIL HOLDING</b>
Students	Katie Kinane, Ali Ryan
School	St Anne's Secondary School, Rosanna Road, Tipperary
Teacher Mentoring Project	Jeanne Dowling

## ABSTRACT

Our project set out to examine pencil holding technique and hand writing. Research identified the three most common grips: the tripod, the quadropod and the bear grip. The tripod is identified as the 'correct' technique, causing minimal stress on the hand, allowing the writer the most control. Having identified the correct technique, we aimed to correct technique and develop a simple, inexpensive way of correcting or developing the correct technique.

Initial research was carried out in playschools in Tipperary. 59% of the ECCE children surveyed had incorrect pencil holding technique. The children were given a 'glove' developed for the project to correct their technique. Using the glove over 60% of children with incorrect technique improved, meaning reduced muscle strain, less pressure placed on the tip of the pencil and increased control of the pencil.

The project progressed looking at other age groups and their technique. It emerged that current teenagers were one of the largest groups with incorrect technique. We then decided to look at the technique of 14/15-year-old girls, furnishing those with incorrect technique with a 'glove' to wear to compare with ECCE children. The teenagers were far less compliant; many removed the glove and reverted to their original technique. Resulting improvements if any in handwriting were minimal.

From the research done it is evident that the development of correct technique at a young age is vital as 'correction' of same at later stages did not yield the same success. It is advised that wearing of the 'glove' in the ECCE years to develop correct pencil holding technique would be of significant benefit.

# SciFest@ITT Dublin 2016

[STAND 12] Title of Project	HUM YOUR WAY TO BETTER HEALTH
Student	Caolann Brady
School	St Wolstan's Community School, Ballymakealy, Clane Road, Celbridge, Co. Kildare
Teacher Mentoring Project	Karen O'Callaghan

## ABSTRACT

**Introduction:** Previously documented research indicates that nasal breathing is the preferred method of respiration for a myriad of physiological reasons, one of which relates to nitric oxide (NO) production in the paranasal sinuses. The Karolinska Institute found that ventilation of the paranasal sinuses increases greatly when a person practised specifically defined humming techniques, proven to be attributable to the increase of NO production in the nose. This work links respiratory biochemical understanding with that of well-known Vedic eastern medical practices. With this in mind I developed a research project to measure the effects of humming on lung function.

**Hypothesis:** Humming improves lung function and may be used as a natural treatment for asthma and other respiratory conditions.

**Method:** Looking at various demographic sub-populations and asthma sufferer subgroupings, a series of controlled experiments were carried out, measuring lung function using a peak flow meter. The test subject hums in a paper bag at a precise pitch for a specified length of time, 45 seconds, which yielded significant post peak expiratory flow readings.

**Results:** Test result analysis from this project has shown that the prescribed humming technique improves lung function across the range of ages, genders and breathing capabilities by an average of 10% with 99.9% statistical confidence. This positive impact on the respiratory system also lasts on average for 45 minutes.

**Conclusion:** Humming combined with nasal breathing improves the general lung function of sufferers and non-sufferers alike, providing an alternative solution to commercial, pharma-intervention treatments for breathing disorders, thus validating ancient Vedic science.

# SciFest@LyIT 2016

[STAND 13] Title of Project	<b>TO INVESTIGATE IF EGG SIZE/BREED AFFECTS THE HATCH RATE IN CHICKEN EGGS</b>
Students	Dylan Mc Bride, Conor Bradley
School	Mulroy College, Milford, Co. Donegal
Teachers Mentoring Project	Aisling Mc Ateer and Susan Mc Kelvey

## ABSTRACT

There are 87 breeds of chickens recognised by the Poultry Club of Great Britain. All these breeds lay eggs of different colours, shapes and sizes.

We decided to complete a comparative study “To investigate if egg size/breed affects the hatch rate in chicken eggs”.

Under controlled conditions, we incubated 112 eggs. In order to ensure a fair test we hatched the 60 large fowl and 52 bantam eggs during 3 different seasons - before (January) during (March) and after breeding season (July.)

The eggs were weighed and candled weekly to monitor the embryos development.

All eggs were labelled and data was recorded weekly. From the 112 eggs, 81 eggs hatched.

The controlled conditions included chickens being fed the same food type and living in the same environment. There were also extraneous variables such as the amount of food each chicken consumed which was on an ad-lib basis.

Upon analysis, our data revealed that the smaller eggs are more likely to hatch i.e. more viable, although the larger eggs proved to have a higher fertility rate. From the 56 fertile large fowl eggs 43 hatched. Out of 42 fertile bantam eggs, 38 hatched. This indicated to us that the bantam eggs are more likely to hatch (more viable).

This research leads us to believe that smaller breeds of chickens produce more viable eggs for hatching. We feel that if productivity increases price should decrease.

# SciFest@IT Sligo 2016

[STAND 14] Title of Project	<b>EYE OPENER: HELPING DROWSY DRIVERS STAY SAFE</b>
Student	Aoife Kearins
School	Ursuline College, Finisklin, Sligo
Teacher Mentoring Project	Anthony Carolan

## ABSTRACT

### Purpose

Road accidents are identified by the World Health Organisation as one of the top 10 leading causes of death worldwide. Within this statistic, approximately 20% of Irish road deaths, 20% of UK road accidents and 72,000 crashes in the USA each year are due to drowsy driving. After 18 hours awake a person is as impaired for driving as if he or she were legally drunk. This major problem has no cost-effective, scientifically-sound solution, and this project aims to tackle this issue. My aim was to design, produce and test a device to prevent drowsy driving accidents on our roads.

### Description

Twenty to thirty minutes prior to sleep occurring the pineal gland in the brain begins to produce a hormone called melatonin which regulates the body's sleep cycle. The production of melatonin causes physiological changes in the body. A hardware device wirelessly monitors the driver and sends a constant stream of data to an app on the driver's phone. The app is programmed using algebraic inequalities and works by notifying the driver 20-30 minutes before they fall asleep by identifying the physiological changes.

### Result

I designed, produced and tested this device. It has been successful in all tests to date, and thus fulfils my aim by solving the problem of drowsy driving. Drivers are notified well in advance so they have time to pull over and rest, and are still alert enough at this moment to not be a danger. It has the potential to save many lives worldwide.

# SciFest@DCU 2016

[STAND 15] Title of Project	<b>SOUND ABSORBING PAINT</b>
Students	Heather Murphy, Naoise Tobin
School	Sutton Park School, St Fintan's Rd, Sutton, Dublin 13
Teacher Mentoring Project	Catherine Tattersall

## ABSTRACT

### Introduction

Our interest in this project began when we noticed an annoying increase in sound levels in many indoor public and private areas, such as coffee shops and apartments. Our background research showed that this is caused by sound reflection from many smooth surfaces such as tiled floors, marble tabletops and glass windows. Having chosen the sound insulation experiment for coursework B for the Junior Certificate, our research showed there was a lack of sound insulating materials which are effective, cost efficient and aesthetically pleasing.

### Description

We decided to investigate whether we could make a paint which could absorb the sound. Our hypothesis was that a dense porous material could work like an anechoic chamber and a recording studio lead lining to absorb the sound. We chose activated carbon as the material to add to the paint as it is porous whilst also being rigid. We tested our paint on tiles in identical boxes firstly in our school lab and later in DCU's anechoic chamber. We measured sound intensity and decibel levels using microphones and data loggers.

### Conclusion

Our experiments proved that our carbon sound absorbing paint is significantly more effective in reducing decibel levels and echoes (up to 32% reduction). We also proved that we can manufacture this solution as an affordable product (€66.67 per 5 litres).

# SciFest@IT Tralee 2016

[STAND 16] Title of Project	<b>DOES PLAYING BOARD GAMES HELP PEOPLE WITH DYSLEXIA?</b>
Student	Natasha Myers
School	Killorglin Community College, Langford Street, Killorglin, Co. Kerry
Teacher Mentoring Project	Donal O'Reilly

## ABSTRACT

People with dyslexia find memory, numeracy, spelling and reading a lot more difficult. People with dyslexia can sometimes be insecure telling other people about their condition. My project concentrates on two board games that will help people with these difficulties. The board games will add to the resources already available to help people with dyslexia.

Using card, computer, board or thinking games to help young people understand how to overcome the symptoms of dyslexia is supported by every major dyslexia group. Studies from the Dyslexia Association and the National Institute of Human Development have shown that a multi-sensory approach to learning is best suited to overcoming the problems dyslexia causes. My games meet these criteria.

Games can involve movement, visual learning, hand gestures, speaking, solving problems, writing, taking notes and repeating answers. Card games involve recognizing letters, making sounds and spelling without the pressures of having to learn or the burden of “dyslexia” or other “label” on the player’s mind. Young people are able to process information faster and for longer periods. When they play the games the young person learns to work through the problems, in the process helping their reading and visual memory. Young people are taught how jotting down key facts or notes also helps in solving problems – young people taught to mind map at an early stage are helped enormously and seem to retain information more effectively.

# SciFest@ITB 2016

[STAND 17] Title of Project	<b>POISON AT STREET LEVEL: AMBIENT AND KERBSIDE NITROGEN DIOXIDE LEVELS</b>
Students	Mathilde Lyons, Isabel Browne
School	St Louis High School, Charleville Road, Rathmines, Dublin 6
Teacher Mentoring Project	Zachary Lyons

## ABSTRACT

This was an ambitious project whose main concerns were to:

1. undertake accurate measurements of NO<sub>2</sub> levels at peak traffic flow under different atmospheric conditions, and
2. compare ambient and kerbside readings of NO<sub>2</sub>.

Building upon an exploratory pilot study in 2014-2015 we evaluated hourly, diurnal, weekly, monthly and quasi-seasonal variations in NO<sub>2</sub> levels. Furthermore, we analysed the effects of traffic volume, air temperature, humidity, air pressure, wind speed and wind direction on NO<sub>2</sub> levels.

In total, 11,418 ambient readings were taken and analysed from both the project's fixed monitoring station and from Dublin City Council's permanent stations from October 2015 to January 2016. Some 47 hours of kerbside NO<sub>2</sub> measurements were also made during this time period but only 33 hours were deemed useable due to technical issues.

**Finding No. 1:** 27 hourly exceedances during this period which is in breach of the EPA guidelines of 18 hourly exceedances per year.

This has significant implications for Ireland and its relationship with the EU's Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC).

**Finding No. 2:** Direct correlation between traffic volume and NO<sub>2</sub>.

This may seem intuitive but this is the first research in Ireland (that we could find) which explicitly shows this relationship at kerbside.

**Finding No. 3:** Direct correlation between wind speed/direction and NO<sub>2</sub>.

This has significant implications for urban street design and features such as traffic flow direction and location of bus shelters, outdoor cafes, crèches, etc.

**Finding No. 4:** Only moderate correlation between NO<sub>2</sub> levels, temperature, pressure and humidity.

# SciFest@CIT 2016

[STAND 18] Title of Project	<b>DOES <i>STRONGYLOIDES RANSOMI</i> EXIST ON IRISH PIG FARMS?</b>
Student	Cora Twomey
School	Davis College, Summerhill, Mallow, Co. Cork
Teacher Mentoring Project	Carol O'Sullivan

## ABSTRACT

The aim and purpose of my project was to research and scientifically prove if the parasite *Strongyloides ransomi* was present on our home pig farm and thus existed on Irish pig farms, outlining the problems and effects the parasite may have on a pig herd through its complicated life cycle. If *Strongyloides ransomi* was present I also intended to highlight the potential loss to the industry and the national pig herd and to outline methods of control and complete eradication.

After observing slurry samples microscopically, I noticed that live nematodes were present. In University College Dublin I used the 'McMaster Technique' to test for the presence of eggs. No eggs were present in the samples, but from research on *Strongyloides ransomi* I know that the hatching period is very short (4-12 hours).

In University College Cork I carried out a PCR to identify the nematodes. The results stated the nematodes were *Rhabditella axei* and not *Strongyloides ransomi*. After researching both parasites, I found out that they are very similar and are often misdiagnosed as each other.

In conclusion *Strongyloides ransomi* is not present on our pig unit, but *Rhabditella axei* is present. This diagnosis has been the first one documented in Ireland. Very little information is available worldwide on *Rhabditella axei* and questions remain whether or not it is parasitic. From my home experiments I have proven that it is parasitic. Much more study is required on *Rhabditella axei* and its parasitic nature.

# SciFest@WIT 2016

[STAND 19] Title of Project	<b>SOUND'S OK – A UNIQUE DEVICE TO LESSEN DISTRESS OF ASD RELATED SOUND SENSITIVITY</b>
Students	Alice Carew, Evgenia Melnikova
School	Mountrath Community School, Dysartbeigh, Mountrath, Co. Laois
Teacher Mentoring Project	Dr Mary Kelly

## ABSTRACT

Sound sensitivity is one of the lesser-known challenges faced by children with Autism. The fear of hurtful sounds can make an autistic child fearful of certain situations, leading to problematic avoidance of places and events which might otherwise be enjoyable.

We had first-hand experience of this while helping at an ASD preschool. We set out to design a device to lessen the negative impact on the lives of children with ASD.

Through surveys with parents and teachers we confirmed and defined the need. We drew up preliminary designs. Keeping in mind budgetary and time constraints we opted for the most feasible design. Using Arduino boards and open source software we created a wearable device, made up of headphones and a music player containing four calming tracks. Two tracks are pre-recorded and two are put onto a memory card by parents, to correspond with the child's favourite sounds or songs. Each of the four tracks is activated when the child pushes a chunky colourful button, leading to a sense of independence for the child.

A lengthy design/ trial/ redesign/ retrial process was undertaken thanks to the co-operation of three students, their parents and teachers, bringing us to the current but far from final iteration of "**Sound's OK**".

Trials have proven that "**Sound's OK**" provides an effective way to lessen the negative impact of sound sensitivity for autistic children. We look forward to the day when our product will be stocked on shelves and in catalogues throughout the world.

# SciFest@ITC 2016

[STAND 20] Title of Project	<b>TICK TACK TUBERCULOSIS</b>
Students	David Fleming, Conor Windsor
School	Avondale Community College, Rathdrum, Co. Wicklow
Teacher Mentoring Project	Aoife Sullivan

## ABSTRACT

In this project we propose that there is a direct link between worm concentration and badger concentration which then indirectly affects the sum of bovine tuberculosis (BTB) cases in Ireland.

The conditions necessary for the spread of bovine tuberculosis in cattle and other related animals were investigated. Through soil variations and soil boring insects (worms) we tried to establish a link between the conditions found in the soil and the current animals on the land.

The project was divided into two parts. Part 1 consisted of extensive research and experimentation on the conditions necessary for the spread of tuberculosis in cattle and investigated if there is a link between the concentration of worms in the soil and the number of badgers that are on the land under investigation. Part 2 involved experimentation with the concentration of fertiliser and type of fertiliser. The aim of Part 2 was to examine if changing the concentration and type of fertiliser used reduces, increases or has any effect on worm concentration in soil.

# SciFest@IT Sligo 2016

[STAND 21] Title of Project	<b>THE EDUCATION AND PROMOTION OF BREASTFEEDING TO CHILDREN, ADOLESCENTS AND ADULTS</b>
Students	Clodagh Hegarty, Aoife Parsons
School	Davitt College, Springfield, Castlebar, Co. Mayo
Teacher Mentoring Project	Fiona O'Connor

## ABSTRACT

In Ireland 12% of women breastfeed up to six weeks; this drops to 1% after six months. We created a questionnaire, which was completed by over a thousand mothers, and the following were found to have major impacts on why mothers chose not to breastfeed: education, work, hungry babies, formula top-ups being offered, painful latch, felt they didn't have enough milk and social stigma.

To combat the above issues, we put up posters welcoming mothers to breastfeed in coffee shops, launched "meet & greets" for breastfeeding mothers and created a leaflet to educate expectant mothers. Our Facebook page acts as a "go to" for inexperienced mothers for advice. Through this we were contacted by "Friends of Breastfeeding" in relation to a grant being awarded by the HSE in buddy system training. To educate young children we created a board game which can be played by children as young as five. A "Who wants to be a Millionaire" quiz targets older children and adolescents. We created a teaching module based around pregnancy and breastfeeding which was launched at Sligo/Leitrim HSE's breastfeeding conference during National breastfeeding week and was taught to all secondary schools in the region in conjunction with a debate on breastfeeding.

Minister Dara Calleary, TD, raised questions in the Dáil on our behalf in relation to expenditure allocation on formula versus breastfeeding support.

We established a number of recommendations for change within the HSE to help alter Ireland's mindset on breastfeeding and these were forwarded to the Minister for Health.

# SciFest@DCU 2016

[STAND 22] Title of Project	<b>THINK FAST: ANALYSING THE VISUAL REACTION TIMES OF GAA ATHLETES VERSUS NON-GAA ATHLETES</b>
Students	Aisling Ní Dhonnabháin, Meadhbh Ní Cheallacháin, Aoife Nic an Tuile
School	Scoil Chaitríona, Bóthar Mobhí, Glasnaíon, Baile Áth Cliath 9
Teacher Mentoring Project	Brian Gallagher

## ABSTRACT

Our hypothesis is that the reason why athletes within the GAA disciplines have better hand-eye coordination and superior reaction times, compared to athletes within other sporting disciplines, and non-sport playing individuals, is because GAA athletes use specific hand eye coordination drills in their training to improve their reaction times.

We sent out surveys to GAA mentors asking them which drills they think help to improve athletes' reaction times/hand eye coordination, and why they think it helps to improve them. Some of the drills included two players striking a ball from hand to helmet level for the other to catch. We ourselves then tested these drills.

We sent out surveys to all of the classes in our school to see who played GAA sports, who played other sports, and who did not play any sports. From these surveys we selected people from each of the following groups to carry out the tests. We have two age categories: 12-15 years and 16-18 years. We tested both playing and non-playing teachers. We also surveyed some students' parents.

We surveyed playing members of our GAA club and their non-playing parents, between the ages of 19-40 years and 40+ years.

We had four tests to carry out on these groups:

'Alternate Hand Wall Toss Test'

'Plate Tapping Test'

'Button Press Visual Reaction Test'

We recorded each result and put the data into charts. Preliminary analysis of the data indicates that GAA athletes do indeed have better reaction times than non-GAA athletes.



SCIFEST 2016

# SEAI INESPO

AWARD FINALISTS



## SciFest@AIT 2016

[STAND 23] Title of Project	<b>CAONACH CLISTE</b>
Students	Ciara Mac Carthy, Claire Lemass, Ellen Finucane
School	Our Lady's Bower, Retreat Rd., Athlone, Co. Westmeath
Teacher Mentoring Project	Ciaran Mac Carthy

## SciFest@NorthWest(NI) 2016

[STAND 24] Title of Project	<b>THE GREENHOUSE</b>
Students	James Kerr, Sean McRory, Tristan Kelly
School	Omagh CBS, Kevlin Road, Omagh, Co. Tyrone
Teacher Mentoring Project	Martin Morris

## SciFest@IT Sligo 2016

[STAND 25] Title of Project	<b>WHAT IS THE BEST INSULATOR?</b>
Students	Lisa O'Rourke, Cora Sharkey
School	Castlerea Community School, Castlerea, Co. Roscommon
Teacher Mentoring Project	Joan Farrell

## SciFest@ITT Dublin 2016

[STAND 26] Title of Project	<b>TESTING DIFFERENT WAYS TO IMPROVE THE AMOUNT OF ENERGY PRODUCED INSIDE A SALT WATER GENERATOR</b>
Student	Tom Armstrong
School	The Kings Hospital, Palmerstown, Dublin 20
Teacher Mentoring Project	Ciaran O'Connor

## SciFest@LIT 2016

[STAND 27] Title of Project	<b>THE INTERNET OF GREEN THINGS</b>
Students	Liam Mulcahy, Neil Heffernan, Seán Lynch
School:	Ardscoil Rís, North Circular Rd, Limerick
Teacher Mentoring Project	Diane Condon



# SCIFEST 2016 BOSTON SCIENTIFIC MEDICAL DEVICES

## GRAND AWARD FINALISTS



## SciFest@AIT 2016

[STAND 28] Title of Project	<b>INVESTIGATING THE DIFFERENCE IN BACTERIAL CONTAMINATION WHEN HANDLING AND USING A DEVICE TO INSERT CONTACT LENSES</b>
Students	Lucy Leonard, Michele Mann
School	Tullamore College, Riverside, Tullamore, Co. Offaly
Teacher Mentoring Project	Elaine Howlin

## SciFest@CIT 2016

[STAND 29] Title of Project	<b>LEARNING WITH HEARING AIDS: THE INFLUENCE OF ENVIRONMENTAL FACTORS IN A CLASSROOM</b>
Student	Nicole Marinos
School	Christ King Girls Secondary School, Half Moon Lane, South Douglas Road, Cork
Teachers Mentoring Project	Lucy O'Farrell and Denise Quilter

## SciFest@NorthWest(NI) 2016

[STAND 3] Title of Project	<b>DISTANCE DIAGNOSTICS</b>
Students	Stephen Emerson, Sean Martin
School	St Killian's College, Carnlough, Co. Antrim, BT440JS
Teacher Mentoring Project	Sean Connolly

## SciFest@**GMIT** 2016

[STAND 30] Title of Project	<b>DEVICE TO INCREASE EARLY DETECTION OF TESTICULAR CANCER</b>
Students	Tiernan Walsh, Seán Gallagher
School	St Gerald's College, Newport Road, Castlebar, Co. Mayo
Teacher Mentoring Project	Cathy Freeley

## SciFest@**WIT** 2016

[STAND 31] Title of Project	<b>DIABETIC APPLICATION</b>
Students	Caoímhe Woods, Aoibhín Foley
School	Presentation Secondary School, Clonmel, Co. Tipperary
Teacher Mentoring Project	Tracey O'Leary

# SciFest 2015 Award Winners

## SciFest@DkIT 2015

[STAND 32] Title of Project		<b>BRINGING GENETICS TO THE MASSES: THE DEVELOPMENT OF A LOW COST DNA EXTRACTION AND PROFILING KIT</b>
<b>SciFest 2015 Grand Award WINNER</b>	Student	Louis Madden
	School	Largy College, Clones, Co. Monaghan
Teacher Mentoring Project		Sharon Magennis

### AWARDS AT INTEL ISEF 2016

Bruno Kessler Foundation Award

Monsanto Award for Innovation in Plant Sciences

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## SciFest@DIT 2015

[STAND 33] Title of Project		<b><i>PINUS SYLVESTRIS</i> NEEDLES: A SUSTAINABLE FEEDSTOCK FOR BIODIESEL PRODUCTION?</b>
<b>SciFest 2015 SEAI INESPO WINNER</b>	Student	Lúc de Barra
	School	Coláiste Raithín, Bré, Co. Chill Mhantáin
Teacher Mentoring Project		Lís Ní Chíobháin

### AWARD AT INESPO 2016

Second Place and Silver Medal

.....

## The SciFest 2016 Team

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George Porter	SciFest CFO
Virpi Lynch	SciFest Operations Manager
Anne Lynch	SciFest Support Executive

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11 November 2016

