

Sixth year students' investigation of Pythagoras' Theorem wins SciFest 2022

*~ Killarney Community College students take top prize for innovative research ~
~ Liam Waldron, Rachel Griffin, Luke O'Sullivan will represent Ireland in Dallas, Texas at the
Regeneron International Science and Engineering Fair 2023 ~*

Liam Waldron, Rachel Griffin and Luke O'Sullivan sixth year students from Killarney Community College, Co. Kerry were named SciFest STEM Champions 2022 at this year's SciFest National Final, for their project Group Theoretic Approach to Pythagoras' Theorem and will go on to represent Ireland at the Regeneron International Science and Engineering Fair in Dallas, Texas next year.

Supported by Intel Ireland and Boston Scientific, SciFest is the largest, most inclusive all-island STEM fair programme for second-level students in Ireland. SciFest is free to enter and open to everyone across the island of Ireland, no matter their background or circumstances. The most important thing for SciFest is the participation of students and encouraging their interest in STEM in a fun and engaging way.

The National Final, held in the Marino Conference Centre in Dublin today, was attended by student finalists from all over Ireland. Liam, Rachel and Luke were presented with the SciFest STEM Champion 2022 Award by Sheila Porter, SciFest Founder and CEO. The students secured their place at the National Final after their victory at the SciFest regional final at MTU Kerry.

Pythagoras' Theorem is a foundational theorem in geometry, with many far-reaching implications in other fields. There are many proofs of Pythagoras' theorem, from geometry, trigonometry and even using the exponentiation properties of complex numbers. Their project, approached the Pythagorean Theorem through the framework of group theory, exploring the algebraic structures which can be defined within coordinate systems.

This year marks the 17th year of the SciFest programme which saw students participating in local and regional SciFest STEM fairs across the country. Since launching in 2006, more than 90,000 students have participated in the competition, which represents an average year-on-year increase of almost 20% in participation.

Sheila Porter, SciFest CEO, said: *"We are delighted to be back in person for this year's SciFest National Final as it has allowed both the judges and fellow students to grasp the full scope of every presentation here today. The aim of SciFest has always been to develop a love of STEM and of inquiry-based learning*

and every year it is refreshing to see how the students of today continue to love and enjoy immersing themselves in science, technology, engineering and maths. As SciFest grows each year, we grow more excited to see what new experiments and technologies are thought of and created. This year, students have shown incredible innovation in how STEM can make a positive impact on society, with initiatives in farming, space exploration and healthcare. I wish to congratulate all the participants here today, as well as their teachers and their parents who have given them such wonderful support."

Norma Foley TD, Minister for Education said: *"STEM subjects nurture and cultivate curiosity and can develop and cultivate inquiring minds, from an early age. These subjects are crucial for equipping the young people of today with the problem-solving and critical thinking–skills needed to meet the challenges of tomorrow. It is fantastic to see so many young people actively engaging with important issues like climate change and looking at practical, creative and innovative solutions which could contribute to our response. The projects on display here today will show how science, technology, engineering and maths can be applied to real world problems, often in unexpected ways. Congratulations to Liam, Rachel and Luke on their success here today and to all of those who are participating in SciFest – you should be very proud of what you have achieved. I would also like to extend my sincere thanks and congratulations to all the school staff, mentors, parents and all those who supported you in getting this far."*

Other award winners at the SciFest 2022 National Final were:

- Maha Shahzadi, Coláiste Nano Nagle, Limerick who was named the SciFest STEM Champion 2022 Runner-Up for her project, 'Eataware'.
- Alex Scott & Anna Woodward, Ursuline College, Sligo who won the Berlin Long Night of Science Award for their project, 'CoolAid: A Wearable Hypothermia Prevention Device'.
- Maura Moore-McCune, The Kings Hospital, Palmerstown, Dublin 20 who won the Intel Technology Award for her project, 'Vipmod: Visually Impaired Person's Moving Object Detector'.
- Fionn Rush, Mary Immaculate Secondary School, Lisdoonvarna, Co. Clare who won the Boston Scientific Grand Award for his project, 'Can Artificial Neural Networks Aid Hearing Impaired Individuals to Lip-Read?'
- Jim Culhane and Paula-Eve Culhane, Tarbert Comprehensive School, Listowel, Co. Kerry who won the Boston Scientific Grand Award Runner Up for their project, 'CPR Chest Pedal Chest Compression Device'.
- Maura Moore-McCune, The Kings Hospital, Palmerstown, Dublin 20 who won the STEM Outreach Video Award for her project, 'Vipmod: Visually Impaired Person's Moving Object Detector'.
- Mairéad Lohan and Tommy Morris, Roscommon Community College, Co. Roscommon

who won the SciFest Social Sciences Award for their project, 'An Investigation into the Recovery of Adolescents Moving from the Sympathetic to the Parasympathetic Nervous System'.

- Juliette Kelleher, Aoife Lynn and Honor Lynch, Loreto College, St Stephen's Green, Dublin 2 who won the SciFest Life Sciences Award for their project, 'The Einstein of Enzymes: A Battle Against Plastic Pollution'.
- Laura Brennan, Desmond College, Newcastle West, Co. Limerick who won the THEA Award for her project, 'Mela No More'.
- Sean Allen, Roscommon Community College, Co. Roscommon who won the ISTA Award for his project, 'A Novel Alternative to Synthetic Fertilisers'
- Micheál Deely, CJ Burke who won the SciFest Scientists of the Future Award for their project, 'A Dyslexia Lamp with a Difference'
- Mairéad Lohan and Tommy Morris, Roscommon Community College, Co. Roscommon
- who won the American Psychological Association Award for their project, 'An Investigation into the Recovery of Adolescents Moving from the Sympathetic to the Parasympathetic Nervous System'.
- Rachel Griffin, Luke O'Sullivan and Liam Waldron, Killarney Community College, Co. Kerry who won the YALE SCIENCE & ENGINEERING ASSOCIATION, INC. Award for their project 'A Group-Theoretic Approach to Pythagoras' Theorem'.

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For further information

Holly Ryan / Cian Doherty

086 3111 030 / 087 7726 678

Holly.ryan@drury.ie / cian.doherty@drury.ie

Cian Doherty

Senior Client Manager

T: +353 1 260 5000

M: +353 87 772 6678

cian.doherty@drury.ie

www.drury.ie

1st Floor, Westmoreland House,
Ranelagh, D06 RX46

DRURY.