



## A Symphony of Science

# *Eol-Oidí na hÉireann* Irish Science Teachers' Association



## The 50th Annual Conference April 20th-22nd 2012



# A message from the Provost of Trinity College Dublin

It is my great pleasure to welcome the Irish Science Teachers' Association to Trinity College Dublin for its 50th annual conference.

Trinity, like the Irish Science Teachers' Association, is deeply committed to promoting the importance of science as a fundamental part of our culture. The University has a proud tradition of scientific excellence in education and research extending back generations and is actively engaged in tackling some of the major challenges of today and tomorrow.

Trinity provides one of the most popular undergraduate science courses in Ireland with a broad curriculum that allows choice from degree courses in all aspects of the Biological, Physical, Earth and Mathematical Sciences. Students are taught by pioneering scientists at the forefront of their disciplines making breakthroughs in several major multi-disciplinary areas such as telecommunications, nanoscience, neuroscience, molecular medicine, immunology and cancer research. You will have an opportunity to hear about some of this research during the conference, much of which is strongly based on collaborations with other universities and industry, as well as to meet some of Trinity's and indeed the world's top scientists.

It is appropriate that ISTA's 50th anniversary should be in 2012 given that it is a major year for science in Ireland. Not only is Dublin designated European City of Science this year and is hosting the largest interdisciplinary science conference in Europe, the 5th Euroscience Open Forum, it is also the 80th Anniversary of the splitting of the atom by Ernest Walton and his colleagues in Cambridge in April 1932. Walton is one of Trinity's most famous alumni and Ireland's only Nobel Laureate in science. He was a lifelong advocate of science education. He also had active connections with ISTA as have many of Trinity's alumni and academic staff over the decades.

Trinity is honoured therefore to host the 50th anniversary celebrations of ISTA's annual meeting. It is fitting that much of the conference will be based in our flagship Science Gallery which was established in 2008 as a new model of engaging the public with science particularly young people between 15 and 30. I hope you enjoy the lab-based workshop parts of your programme in the Cocker Laboratories, a fine example of some of the College's state of the art teaching and research



science facilities. Others include CRANN (the Centre for Research on Adaptive Nanostructures and Nanodevices), TCIN (Trinity College Institute of Neuroscience) and our new Biomedical Sciences Institute on Pearse Street.

I would like to take this opportunity to wish the Irish Science Teachers' Association continued success for the future. Its members are making a vital contribution to the sustainability of science education and it is important that this continues. I hope you enjoy the 50th anniversary celebrations and your visit to Trinity. I encourage you to take some time to visit the rest of the campus including the Old Library which celebrates its tercentenary this year.

**Patrick J. Prendergast**  
**Provost**

# Welcome to our Symphony of Science

Mary Mullaghy

Tá an-áthas orm fáilte a chur romhaibh go léir chuig an chaogadú comhdháil de Eol-Oidí na hÉireann. As chairperson of the Dublin Branch, I am delighted to welcome you all to the 50th Annual Conference of the Irish Science Teachers' Association, during the year when Dublin is the 2012 European City of Science. We especially welcome past Chairpersons and Presidents of the Association and we hope that new members will have an opportunity to meet with them and gain an appreciation of the history of the Association.

Continuous Professional Development can be defined as *"The systematic updating and enhancement of knowledge, skills and competences and the development of personal qualities necessary for the effective execution of professional duties throughout ones working life."* Continuous Professional Development has always been central to the Irish Science Teachers' Association. In fact some might say that ISTA may be responsible for inventing the term! With this in mind we tried to create a broad programme of events to inspire teachers.

I wish to thank sincerely the dedicated conference committee, a team of committed individuals who met faithfully for weekly planning meetings in Wesley College over the past nine months. I was honoured to have such a wonderful group of people to work with and we had some memorable moments. For me personally, it was an enjoyable experience and I would wholly recommend anyone to take on the challenge of organizing an annual ISTA conference. Thank you, Brian,

Cynthia, John, Karen, Lisa, Richard, Rory, Seosamh and a true gem Siobhán. I cannot forget our wider 'Circle of Friends' within the ISTA organization, whom we felt free to shoulder tap for help during the conference.

I would also like to thank the generous sponsors, without whom we could not put on such a spectacular 'Symphony of Science'. For fear of leaving someone out, I won't list them all here, but they are mentioned elsewhere in this commemorative book, which has been put together by the talented Rory Geoghegan. To our wonderful host Trinity College, thank you for allowing us to use this super venue for this historic occasion. In particular I have to mention Prof David Grayson who went beyond the call of duty in being of assistance to us despite his hectic schedule.

Last but not least, I would like to give a special mention to my colleagues & management at Eureka Secondary School for being supportive, and my friends and family for their positive encouragement.

Tá súil agam go mbeidh deireadh seachtaine iontach agaibh go léir agus go mbainfidh sibh taitneamh as ár "Siansa Eolaíochta". Go mbeirimid beo ag an am seo arís.

*Le meas,*

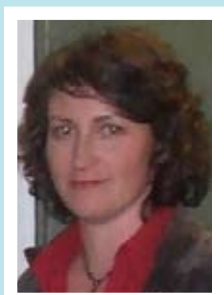
*Mary Mullaghy.*

*Chairperson of Dublin Branch of ISTA and*

*Chairperson of the conference organising committee*



## The organising committee



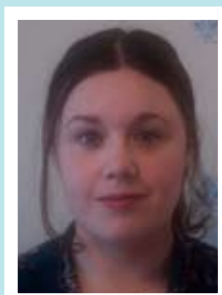
Mary Mullaghy



Cynthia Cellier



John Daly



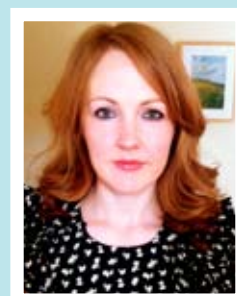
Lisa Darley



Richard Fox



Rory Geoghegan



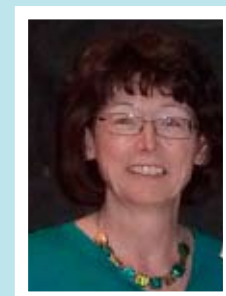
Karen Maye



Seosamh Ó Braonáin



Brian Smyth



Siobhan Sweeney

# Early Days of the Association

Dr Adrian Somerfield

This Association was formed on January 3rd 1961 at a meeting held in the Chemistry Department of UCD, then in Upper Merrion Street, Dublin. A year before, in January 1960, during the fourth annual Refresher Course for teachers run by the Irish Institute of Chemistry (these began in 1957), a few science teachers, largely under the encouragement of George Lodge, who had recently retired after teaching for 37 years at St Columba's College near Rathfarnham, proposed to form an Irish branch of the Science Masters' Association, to which several Irish teachers, including himself and the present writer, already belonged. The SMA, based in Britain, later merged with the Association of Women Science Teachers to form the well-known Association for Science Education (ASE), headquartered in Hatfield. The Irish Branch was duly formed on March 16 1960 and included about 70 members, female and male, lay and religious, from all areas of the Republic. There was already a Branch in Northern Ireland.

Although the setting up of this branch was welcomed by many teachers, it soon became clear that the interests of its members would be better served by a body which would be seen more easily as national rather than a branch of a foreign organisation, however helpful that organisation had been. In particular there were problems for the Department of Education. This point was put to the General Committee of the SMA in Cambridge in September 1960 and the SMA proved, as usual, helpful and understanding. At the first (and last) AGM held in January 1960 the Branch was formally dissolved and the new organisation, Eol-Oidi na h-Eireann, the Irish Science Teachers' Association, was brought into being. At this meeting, which again coincided with the Refresher Course, there was a large display of apparatus and books and there were lectures by Professor Nevin and Dr T. Walsh among others. The first President was T.S. Wheeler, Professor of Chemistry UCD, who gave the first Presidential Address, "Billiard Balls and Hard Water", during the first AGM held in UCD in April 1962. Professor Wheeler was a great supporter and he was very keen to overcome the stagnation of syllabuses and teaching of science so evident at that time.

To avoid conflict with the Teacher Unions, particularly the ASTI, George Lodge was keen to stress that the Association's aims were purely concerned with the teaching of science.



In its earlier years it was inevitable that the Association was largely Dublin based, and it was also inevitable because of the "ban" that its meetings could not for some years be held in Trinity College although several of its staff were early members and supporters. However, it was not long before a regional structure started to develop. In September 1962 a group of science teachers met in the Metropole Hotel in Cork and decided to form a Cork Secondary Teachers' Science Society with Mr J. O'Keeffe as Chairman. This Society proceeded actively with its work of refresher courses, lectures and so forth, and for a time there was little contact between it and the ISTA. However, in 1964 a Cork branch of the Association was formed and it remained a very keen and active part of this Association.

Other branches rapidly followed, and as time went on entirely new constitutions and structures have had to be developed. The Association has maintained fraternal contacts with the ASE, both in Britain and in Northern Ireland. It has published continuously, if somewhat irregularly, its magazine "Science", and seeks to act in the best interests of the teaching of science.

(Adapted from SCIENCE, Volume 17, Number 2)



# Welcome by the Honorary President of ISTA

Charles Dolan

On behalf of the Irish Science Teachers' Association, I would like to extend a very warm welcome to you, to the 50th Annual General Meeting. Furthermore to have access to Trinity College and the Science Gallery as the base location for this historical meeting of the Association is very fitting.

Many months of planning have gone into this event by the Dublin AGM Committee and I trust that the agenda they have prepared will be both interesting and valuable to you individually and as a teacher.

The topics range from 'Tiny but Mighty' (a talk on nanotechnology) at the official opening ceremony on Friday to the Sunday morning guided walking tour, entitled 'From Elephants to Earthquakes; there is something for everyone here at this AGM

Thankfully, Dublin has gone "Science Mad" this

year. Who would have ever dreamt of the St Patrick's Day parade theme being Science? Dublin is also the location for the prestigious Euroscience Open Forum which will be held from July 11th to 15th of this year. Long may it continue.

I hope you enjoy the conference and your weekend in Dublin and return safely to your home after an energising and fun weekend.

*Charles Dolan, President*

*Senior Personnel Representative at Eli Lilly*



# Welcome by the National Chairperson of ISTA

Yvonne Higgins

I wish to welcome each of you to this very special event in the history of the Irish Science Teachers' Association; its 50th annual conference. It is a testament to the dedication and professionalism of Irish Science teachers that the ISTA continues to grow from strength to strength.

The excellent programme of events on offer over this weekend is a prime example of the role played by the ISTA in providing continuous professional development opportunities of the highest calibre to its members. On behalf of all delegates attending this weekend, I take this opportunity to thank the conference organising committee, chaired by Ms. Mary Mullaghy, for the enormous amount of work they have carried out in bringing this event to fruition.

It is very appropriate that this year's conference, held in Trinity College and the Science Gallery, coincides with Dublin hosting the 2012 European City of Science. This conference plays an important part in underlining the importance of second level science in the education of this country's scientists and ensuring that students follow third level courses that help maintain Ireland's standing as a leader in areas such as nanotechnology, biotechnology and the pharmaceutical sector. A word of thanks to Trinity College, the Science Gallery and the Alexander Hotel for providing us with excellent accommodation for the programme of events over the weekend.

*ISTA 50th Annual Conference, Dublin 2012*

I wish to thank all our sponsors and exhibitors, without whom, it would not be possible to run this conference. In particular, I wish to thank PharmaChemical Ireland who supports the ISTA on a continuous basis throughout the year. I encourage all delegates to attend this year's symposium on the ISTA PharmaChemical Ireland teacher awards.

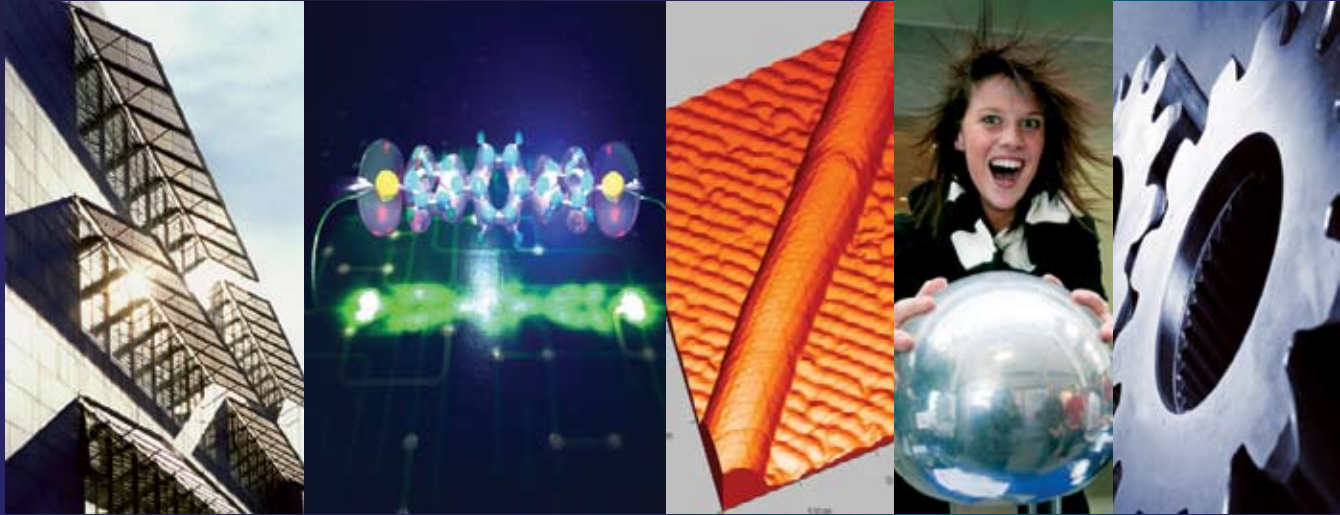
Finally, I extend a warm welcome to all our overseas guests – we are delighted that you are able to join us on this very special weekend and I hope that we will continue to build on our working relationships over the next fifty years!

Wishing each and every one of you a very enjoyable weekend - I hope that you will also have an opportunity to avail of the many exciting and interesting activities that our capital city has on offer.

Enjoy our 'Symphony of Science'.

*Yvonne Higgins*





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# Welcome to Trinity College, University of Dublin

Prof Clive Williams

On behalf of the Faculty of Engineering, Mathematics and Science at Trinity College, I welcome you to our historic and ever expanding campus.

Science, Technology, Engineering and Mathematics Education is strong in Ireland both at Second and Third level, with many benchmarks which show these strengths, especially the intellectual capacity and enterprise of our students, and their employability at home and abroad. These achievements are often overlooked when our critics emphasise some of the areas which still could show improvement.

Maintaining such a good system, let alone improving it, is a major challenge to us all, in such a weak economic climate. Nevertheless, STEM education is being encouraged to be a major, if not the major, player in our economic revival, and both levels can play a partnership role in doing so.

We are also seeing a revival of interest in STEM subjects and again this is a major challenge at both Second and Third level, both in terms of continual and rapid developments in teaching and learning methods, and also the numbers of students taking STEM subjects.

I wish your 50th Annual Conference every success, and hope you will be able to see some of our facilities and interact with some of our staff and students. The Provost and I also look forward to meeting some of you and hearing your views during your Conference.

*Clive Williams, Dean.*

*Dean of Engineering, Mathematics & Science*



# Bursaries and awards

European Space Education Resource Office (ESERO) Ireland are offering bursaries to 10 teachers to attend the Euroscience Open Forum 2012 Conference in Dublin from 11-15 July, 2012. Dublin has been chosen to host Europe's largest science conference and to celebrate this prestigious international event Dublin has been declared the City of Science 2012.



The bursaries are worth €200 each and teachers can enter a draw at the



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**What next for Nano?** poster competition: In conjunction with ISTA, CRANN have run a national poster competition - What's next for nano? Entrants were asked to design a poster outlining future ideas or innovations for nanotechnology, based on what they had learnt during the Nano in my Life TY Modules. Prizes include an iPad, iPod nanos, iTunes vouchers and trips to CRANN's nanoscience research centre. The winners will be announced at the Conference.



**PharmaChemical Ireland Science Teacher Awards:** In another collaboration with PharmaChemical Ireland, ISTA run an annual science teacher awards competition. Principals are asked to nominate a team of excellent science teachers from within their school that are considered worthy of the award. The top three teams are invited to a seminar entitled "Encouraging the uptake of Science subjects at Second Level", which will be held on Saturday 21st at the Conference, where each team will present a 10 minute overview on their work in their school to encourage the uptake of science subjects. All three teams will be presented with their prizes at the Conference dinner in the Alexander Hotel. First prize is €1200, with runner-up prizes to the value of €600.



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## “Tiny but mighty and controllable: how today’s nanomaterials will lead to tomorrow’s nanotechnologies”

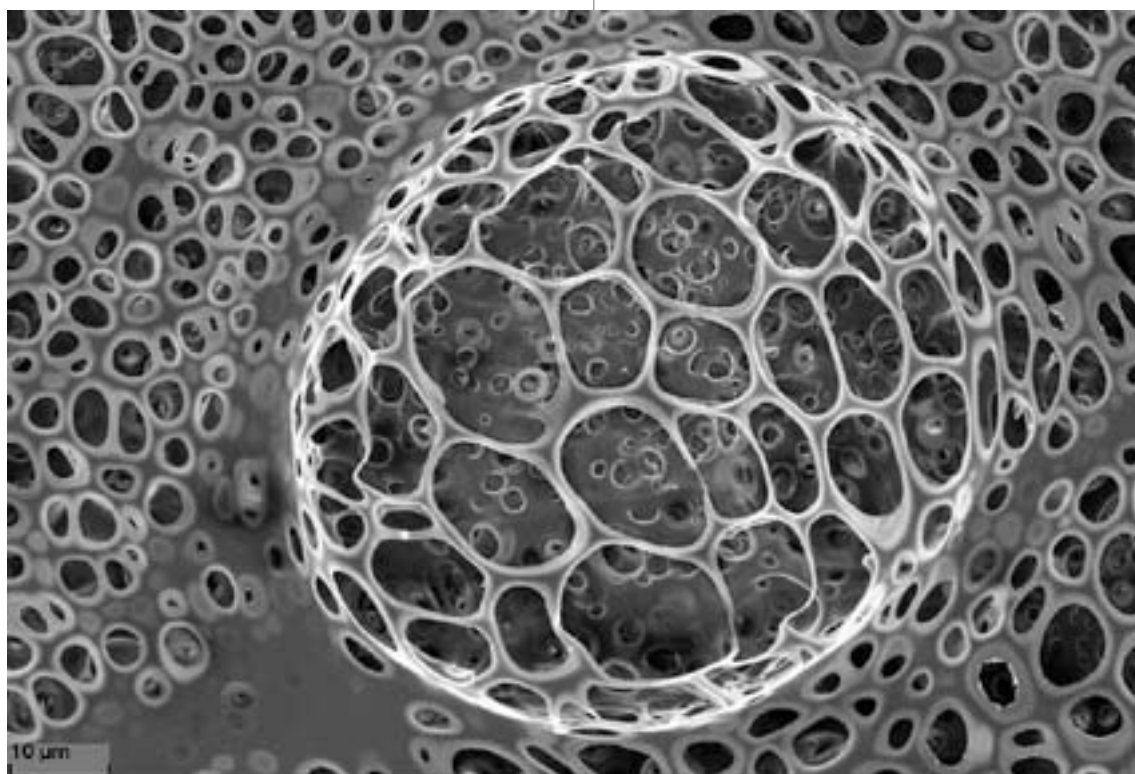
Prof John Boland

**Biography:** Prof John Boland received a BSc degree in chemistry from University College Dublin and a PhD in chemical physics from the California Institute of Technology, where he was an IBM graduate fellow and recipient of the Newby-McKoy graduate research award. From 1984 to 1994 Prof Boland was a member of the research staff at the IBM T.J. Watson Research Center (New York). In 1994 he joined the chemistry faculty at the University of North Carolina at Chapel Hill where he was appointed the J.J. Hermans Chair Professor of Chemistry and Applied and Materials Science. In 2002 Prof Boland moved to the School of Chemistry at Trinity College Dublin as a Science Foundation Ireland Principal Investigator. In 2004 he was



appointed Director of the Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN). He was elected a Fellow of Trinity College in 2008, a fellow of the American Vacuum Society (AVS) in 2009 and a fellow of the American Association for the Advancement of Science (AAAS) in 2010. He was Laureate of the 11th ACSIN Nanoscience Prize in 2011, St Petersburg, Russia and recipient of the Science Foundation Ireland (SFI) Research Image of the year in 2011.

**Abstract:** This talk will introduce nanoscience and nanomaterials for a lay audience. This will lead into a description of some of the research ongoing in Prof Coleman’s group with an emphasis on the practical applications of this work. Finally, collaborations with industry will be discussed and the possibility of commercialising such research explored.



*‘The Hive’, winner of SFI’s Research Image of the Year 2011*

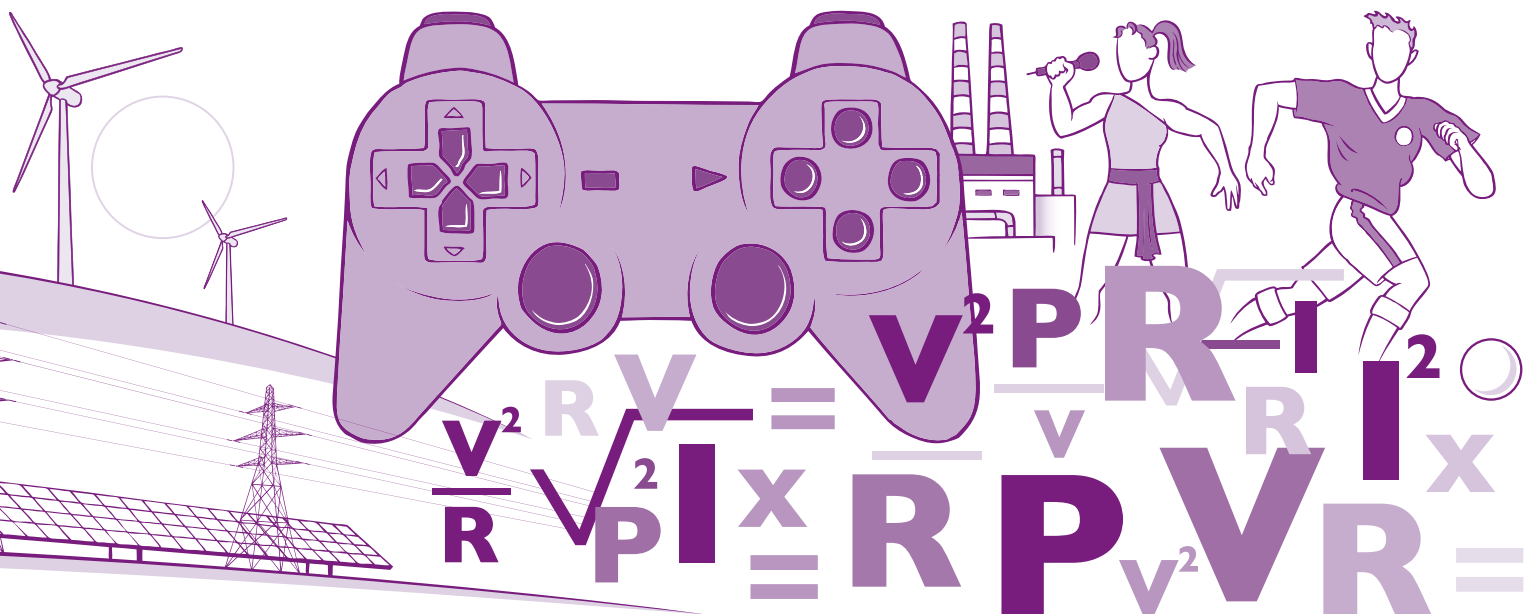
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## “Why it’s great being a scientist - adventures in inflammation research”

Professor Luke O’Neill

**Biography:** Luke O’Neill was appointed to the Chair of Biochemistry at Trinity College Dublin in 2008, where he leads the Inflammation Research Group. He is also Academic Director of the Trinity Biomedical Sciences Institute. He has a PhD in



Pharmacology from the University of London and carried out Post-Doctoral research at the Strangeways Laboratory in Cambridge. He has won numerous awards for his research, notably the Royal Irish Academy Medal for Biochemistry, The Irish Society for Immunology medal, the Royal Dublin Society/ Irish Times Boyle medal for Scientific Excellence and the Science Foundation Ireland Researcher of the Year Award 2009. He was elected a member of EMBO in 2005. He is a co-founder and director of Opsona Therapeutics. In 2008 he was appointed Chair of the Immunity and Infection panel of the European Research Council. His research is in the area of the molecular basis to inflammatory diseases, with a particular interest in pro-inflammatory cytokines and Toll-like receptors. He has published over 200 papers and reviews on his research, in journals such as Nature, Science, Cell, Nature Immunology, Nature Medicine, Nature Genetics and PNAS. He is on the editorial boards of 6 journals, including the Journal of Biological Chemistry and Trends in Immunology. He is also on the Board of Reviewing Editors for Science, covering Innate Immunity.

**Abstract:** The great thing about being a research scientist is you can satisfy your curiosity about the world (or at least the little piece of it you’re investigating) and if you find something useful, it could lead to benefits for your fellow human beings. I will discuss my own journey from a love of biology in secondary school, through a degree in Biochemistry at TCD, when the research bug bit. I became fascinated by the process of inflammation, which occurs when we have infections and also in response to injuries. When it goes awry however diseases such as rheumatoid arthritis and Type 2 diabetes can result. I will describe the thrill of making discoveries and also how those discoveries might be put to good use, when I co-founded a company called Opsona which aims to develop new medicines for inflammatory diseases.

## “From Ernest Walton’s atom splitting to the LHC and the Higgs Boson”

Dr Ronan McNulty and Dr Eric Finch

**Abstract:** The LHC produces energies last seen one billionth of a second after the Big Bang and allows us to recreate the early universe. We can travel ‘back in time’ to a point where electromagnetism and radioactivity were the same - a unification in which the Higgs boson plays a fundamental role. I will discuss the Irish involvement in this investigation and report on the latest results in the search for the Higgs.

**Biography:** Dr Ronan McNulty is a particle physicist at UCD who leads a team of ten physicists working on the LHCb experiment at the Large Hadron Collider at CERN. Ronan was awarded his Ph.D. from the University of Liverpool in 1993 and spent nine years working at CERN on the LEP electron-positron collider before moving to Fermilab, near Chicago, where he worked on the CDF experiment at the Tevatron collider. He returned to Ireland in 2003 to found the only experimental particle physics research group in Ireland. He is currently looking for the Higgs boson.



**Biography:** Dr Eric Finch is in the School of Physics, Trinity College Dublin. His research interests lie in nuclear radiation detection, including environmental radioactivity. He established collaborations with laboratories at accelerators and nuclear reactors in the U.K., France, Belgium and Germany, and has co-authored a textbook on radiation detectors.



Originally from Oxford and Durham Universities, he became in 1972 the last person appointed to Trinity by the Physics Nobel Laureate, E.T.S. Walton, before his retirement. A Fellow both of the Institute of Physics and of TCD, Dr Finch is the first holder of the Provost of Trinity’s Lifetime Achievement Teaching Award.

## “Biological warfare: using bacteria to combat infections”

Professor Colin Hill

**Biography:** Colin has a Ph.D in molecular microbiology and is Professor of Microbial Food Safety in the Microbiology Department of University College Cork, Ireland. He has been an SFI Principal Investigator since 2002 (renewed in 2006 and 2010). He is also a Principal Investigator in both the Alimentary Pharmabiotic Centre (APC), a multidisciplinary research centre focusing on the role of gut microbiota in health and disease, and the Food for Health Ireland research centre (FHI), a multi-Institutional Centre engaged in identifying bioactive components for use in functional foods. His main interests are in infectious disease, particularly in defining the mechanisms of virulence of foodborne pathogens and in developing strategies to prevent and limit the consequences of microbial infections in the gastrointestinal tract. In 2005 Prof. Hill was awarded a D.Sc by the National University of Ireland in recognition of his contributions to research. In 2009 he was elected to the Royal Irish Academy, the highest honour for an Irish academic. In 2010 he was elected to the American Academy of Microbiology and together with his colleagues Prof. Gerald Fitzgerald, Prof. Paul Ross and Dr Catherine Stanton, was awarded the Metchnikoff Prize in Microbiology.



**Abstract:** Infectious disease continues to be a scourge of humanity, responsible for many millions of deaths every year. The discovery of antibiotics revolutionised the treatment of infectious disease, making it a relatively minor medical issue in developed countries. However, the rise of antibiotic resistant superbugs risk returning us to a pre-antibiotic era, where even the most trivial infection could prove fatal.

In our laboratory we have been interested in using alternative approaches to the prevention and treatment of infection, including using bacteria themselves, bacterial products and even bacterial viruses as therapies for a variety of infections. Could this type of research offer hope for new treatments for infectious disease in years and decades to come?

## “Letting the Fun in Science Out”

Dr Paul McCrory

**Biography:** Learn differently is a STEM engagement organisation run by Paul McCrory and based in Antrim. Paul is passionate about science, engineering and maths and in communicating this enthusiasm to others. He has a BSc in physics and mathematics, an MSc in science communication, a PGCE in secondary education, and a PhD in science education.



**Abstract:** It seems as if teachers are constantly being exhorted to “make science fun” nowadays. How can hard-pressed teachers working to deliver a curriculum, find the time to do this in practice? Is it even possible, or desirable, to “make” all science topics fun? This interactive presentation will explore these fundamental questions and use exciting demonstrations to introduce a toolkit of techniques to emotionally engage students in science in the classroom.

## Let’s talk about Radioactivity: how much radiation are the Irish exposed to?

Dr Ciara McMahon

**Biography:** Ciara is the Director of Environmental Surveillance and Assessment in the Radiological Protection Institute of Ireland RPII. After BA (Mod) in Natural Science (Experimental Physics) from Trinity College, she went to do a PhD in Radiation Physics/Marine Radioecology from UCD (Dept of Experimental Physics). Her thesis was “Fluxes, dispersion and radioecological consequences of anthropogenic radionuclides in the central Arctic Ocean”. She spent some time in the USA as a researcher in a Radioactivity Group of the National Institute of Standards and Technology. She also attained a Higher Certificate in Statistics (DIT/Royal Statistical Society) and worked as a scientist in Environmental Laboratory, (RPII) and as a Manager of Emergency Preparedness and Nuclear Safety, RPII



**Abstract:** Every minute of the day we are exposed to radioactivity from a variety of sources, both natural and man-made. What are these sources, how much radiation are we exposed to and how much does it depend on where in Ireland you live and work? This talk will explore these questions, as well as touching on how the basic concepts of radioactivity included in the Leaving Certificate are used in finding the answers.

## “What’s the point of this?”

Alom Shaha

**Biography:** Alom is a science teacher and author of The Young Atheist’s Handbook. He has spent most of his professional life trying to share his passion for science and education with the public. Alom has produced, directed, and appeared in a number of television programmes, and has received fellowships from the National Endowment for Science Technology and the Arts (NESTA) and the Nuffield Foundation. Alom has represented the community in which he grew up as an elected politician and volunteered at a range of charitable organisations. He teaches at a comprehensive school in London and writes for a number of print and online publications. Website: <http://alomshaha.com/>



**Abstract :** What’s the point of this? Alom Shaha seeks to address what is perhaps the most common question asked by school students - “What’s the point of this?” The answer to this question for teachers of science is not necessarily obvious, nor is there necessarily a single good answer to the question which automatically emerges for children simply through sitting through enough science lessons. In this talk, Alom describes his “Why is Science Important?” project in which he set out to find a meaningful answer to this question by gathering answers from prominent scientists, science communicators and, of course, science teachers. He reveals whether the project succeeded in making it any easier to answer the question, “what’s the point of this?”

## “The Chemistry of Teaching”

Mr Bob Becker

**Biography:** Bob was born and raised in St. Louis, Missouri, received a B.A. in Biology from Yale University in 1983 and a Masters in Education from Washington University in 1990. He taught for 6 years in Greenwich, Connecticut with Ron Perkins as his mentor. He moved with his wife, Kathy, and two daughters, Jenna and Amariah, back to St. Louis where he has taught at Kirkwood High School for the past 18 years.



Together, they are blessed with three incredible daughters and two rambunctious dogs. He currently teaches Honours Chemistry and serves as sponsor to the Chemistry Club and Kirkwood Youth Service, both of which put heavy emphases on Service Learning. His awards include a regional Catalyst Award in 1992, given by the CMA (Chemical Manufacturers Association) a local ACS (American Chemical Society) award in 1994, the Midwest regional ACS award in 1995, a Tandy Technology Scholar Award in 1996, the ACS National Conant Award in 1997, Missouri Teacher of the Year in 2011, Missouri Horace Mann Teacher of the Year 2012 and is currently a finalist for the 2012 Presidential Award for Excellence in Mathematics and Science Teaching.

**Abstract:** Bob will do a demonstration show that integrates some of his philosophy of teaching. He has developed and published several unusual demonstrations and micro-scale lab experiments in Chem 13 News, the Journal of Chemical Education, the Chemcommunicator, the Octet Gazette, Chemunity News, and the Science Teacher, and he is now a regular writer for CheMatters Magazine. He has also conducted over 140 workshops and presentations across the US and Canada. He has published two books of demonstrations, available together with a videotape through Flinn Scientific. From 2000 to 2003, he had the great honour and privilege to work with Penney Sconzo and Ed Brogie on one of the Flinn Foundation travelling teams, presenting week-long chemistry workshops around the country.

## “Everything I know about life I learned from my genome”

Dr Aoife McLysaght

**Biography:** Aoife McLysaght is an Associate Professor of Genetics in Trinity College Dublin, where she has taught since 2003. She was a member of the international consortium that published the first draft of the Human Genome sequence in 2001; was the first to discover novel human-specific genes, in 2009; and has made many significant contributions to our understanding of the human genome, as well as the genomes of other animals, plants and viruses. She has been recognised as a young leader in her field through the granting of a President of Ireland Young Researcher Award (PIYRA), appointment to editorial roles in high-impact journals, invitations to speak at major international conferences and organisation of international meetings. Aoife takes a keen interest in communicating science to the general public in an engaging and accessible manner. She has given many talks at public events, including music festivals, given numerous radio interviews including on BBC Radio 4, appeared on live TV, contributed to TV science documentaries, and written several articles for the Irish Times science supplement.



**Abstract:** Your genome is a record of your past. It reveals relationships between people and between species, and contains footprints of past events in human history and prehistory. Aoife will take us through some of her favourite examples of the lessons contained within our genes.

## The Resourceful Physicist

Keith Gibbs

**Biography:** On numerous occasions Keith Gibbs has given practical and enjoyable physics demonstration-lectures at the ISTA Annual Conference. He is written or co-written several books explaining basic physical principles and giving details of hundreds of simple experiments. He was a physics teacher for about thirty years but is now engaged mainly in giving lecture-demonstrations to groups of teachers, student teachers and school students. He is also involved in writing resources material for physics education, much of which are available free on his website: <http://www.schoolphysics.co.uk/>



**Abstract:** Keith will present entertaining physics demonstrations and although many of them use relatively simple equipment they help to clarify and reinforce fundamental scientific concepts.

# Who was George Lodge?

Most organisations can be regarded as having had one driver and in this sense George Lodge was the creator of this Association. He was born in Tramore, Co. Waterford, in 1893, into a family who ran a well-known grocery business there, and educated at the Christian Brothers Schools there and then at Waterpark College in Waterford. He won a scholarship to the Royal College of Science for Ireland in 1912. Graduating A.R.C.Sc.

In 1916 he went to Levinsteins, dyestuffs manufacturers (later British Dyestuffs Corporation and finally part of Imperial Chemical Industries) in Manchester. He returned to Dublin in 1920 and after a year at Fine Chemicals Ltd in Mary Street, he joined the staff at St Columba's College near Rathfarnham, where he taught Physics and Chemistry until 1959 when I, a former pupil of his, succeeded him. It was, in some ways, an odd situation. This school, a boys' boarding school, was then very much in the protestant and unionist Church of Ireland and English Public School tradition, whereas George Lodge was a devout Roman Catholic with Republican (though not violent) leanings who had been involved in the escape of Sinn Fein prisoners from Strangeways prison in 1919. And yet he fitted in and took a great interest in the school and its history, organising its archives and holding senior positions. I think both he and the school gained from his involvement.

He was very keen that science should be taught in a practical and interesting way and that pupils should do as much practical laboratory work as possible. He set up and equipped laboratories that were probably as good as any others in Irish schools and better than most, and remained functional until replaced by a new building (not as nice to teach in!) in 1972. He thought that in a school laboratory children should be able to see interesting apparatus and chemicals around the walls and he had a wide array of bottles on the shelves which I well

remember with great interest, though they have all been destroyed now and everything is locked away for Health and Safety! He was a good teacher, clear and precise, who believed that it was important to understand the principles of the subject, not just the more obvious and entertaining "froth". Science, he held, is a discipline.

After retirement he began setting up this Association, inevitably recruiting me! He was a great recruiter and believed in getting things done and people involved. He was also a Demonstrator in the Physics Department of UCD from 1960 to 1966 and a lecturer to students for the Higher Diploma in Education. It was here that he was able to influence teaching in the future and also to become aware of the poor conditions of science teaching generally. He produced texts for the new Intermediate Certificate syllabus and was much involved in discussions of syllabus reform, so he had an extremely active, though short, retirement, passing away in September 1968, shortly after the AGM in Cork.

(Adapted from Science, Volume 6, Number 2, October 1968)

*Dr Adrian Somerfield*

## Lodge Award recipients:

1971	Adrian Somerfield
1987	Randal Henly
1990	Oliver Ryan
1997	Rory Geoghegan
2000	George Porter

## Science Educator of the Year award winners

1984	Randal Henly	1995	Sr. Mercedes Desmond	2006	Paddy Daly
1985	Dr. Peter Childs	1996	Margaret O'Brien	2007	Pat Hanratty
1986	Fr. Donal Collins	1997	Tom Bolger	2008	Yvonne Higgins
1987	Jim Hurley	1998	Ann Wilkinson	2009	Mary Lee
1988	Br. Maurice Murphy	1999	Siobhan Greer	2010	Marge Anderson
1989	Helen Renehan	2000	Padraig O'Leime	2011	John Lucey
1990	Peter Burke	2001	George Porter		
1991	Patrick Hogan	2002	John Daly		
1992	Declan Kennedy	2003	Seamus McManus		
1993	Marion Palmer	2004	Noel Brett		
1994	Oliver Harrington	2005	Dr. Oliver Ryan		

## Title

## Dr Michael Mosley

**D**r Michael Mosley is a British journalist, producer, well known presenter on the BBC, one of the most charming doctors on the television and above all a great communicator of science.

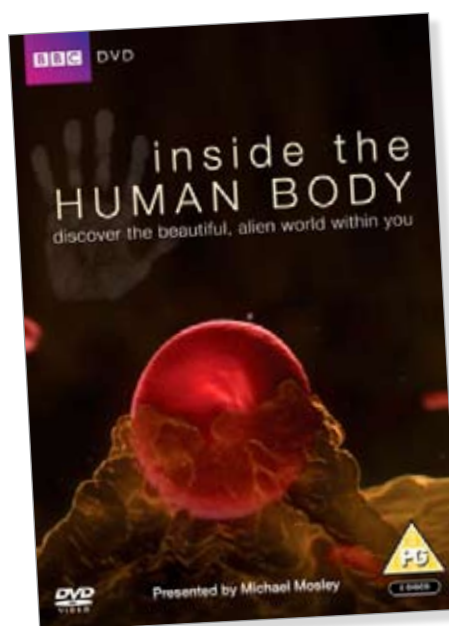
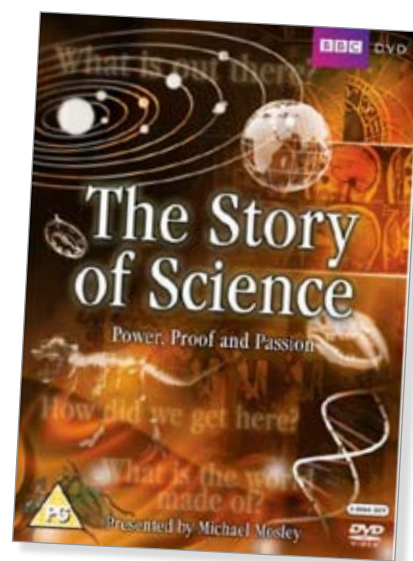


He studied philosophy, politics and economics at the New College, Oxford before working for two years as a banker in London. He then decided to move into medicine, intending to become a psychiatrist, however he became disillusioned by psychiatry and immediately after graduating joined a trainee assistant producer scheme at the BBC

He produced a number of science programmes, including *The Human Face*, three series with Professor Robert Winston, and the 2004 BBC two engineering series *Inventions That Changed the World* starring Jeremy Clarkson. He has presented *10 Things You Need to Know about Losing Weight*, *Blood and Guts*, *Medical Mavericks* and *The Story of Science* for television, and *The Making of Modern Medicine* for Radio 4. In April–June 2010 he produced and presented the series *The Story of Science: Power, Proof and Passion* broadcast by BBC Two. He is also well known for his episodes of “*Inside the Human Body*” featuring certain aspects of the human body and the ways in which it works.

In 2011 he made a series entitled *The Brain: A Secret History*, on the history of psychology and neuroscience. In the same year, he made a two-part documentary, *Frontline Medicine* with episodes called *Survival* and *Rebuilding Lives*. These programmes focused on the medical advances in the treatment of military personnel during the 10 years of war in Iraq and Afghanistan and examine how these new techniques are being utilised in emergency medicine for civilian casualties in the United States and Great Britain.

His documentary *The Truth About Exercise*, shown first in 2012, gave air to current thinking about how different patterns of exercise might help achieve health benefits, the danger of sitting for prolonged periods and revealed how certain genotypes



are unable to gain significant improvements in aerobic fitness by following endurance exercise programmes. His own genetic type can gain many of the benefits of exercise, primarily improved insulin response, through short, high intensity sessions (HIT).

He was nominated for an **Emmy** and **BAFTA** for his **Horizon** documentary revealing the proposed link between *Helicobacter pylori* and gastric ulcers, and was named **Medical Journalist of the Year in 1995** by the British Medical Association.

## Friday 20th April

**Please note** only the **Pearse Street** entrance to the Science Gallery will be open on the Friday night due to Trinity Ball. **All guests must have their invitation/receipt with them** and arrive on time to secure entry.

From 5.30 pm	Registration with Tea & Coffee
7.15 pm	Guests should be seated in Paccar Theatre – Doors closed at 7.15pm.
7.30 pm	Official Opening Ceremony & Lecture ‘Tiny but Mighty’ by Prof John Boland
8.30 pm	Wine reception with canapés and music recital
10.00 pm	Guests welcome to adjourn to the Alexander Hotel

## Saturday 21st April

From 9.00 am	Registration Desk in Hamilton Building (Panoz Institute). <b>Entrance by Lincoln Gate on Saturday</b>		
9.30 – 10.15	Prof Luke O’Neill	“Why it’s great being a scientist — adventures in inflammation research”	1
	Dr Eric Finch & Dr Ronan McNulty	From Ernest Walton’s atom splitting to the LHC and the Higgs Boson”	3
	Chemistry workshop	Chemistry demonstrations	CL
10.30 – 11.15	Prof Colin Hill	“Biological warfare; using bacteria to combat infections”	1
	Dr Paul McCrory	“Letting the fun in Science out”	2
	Physics workshop	Physics demonstrations	CL
11.15 – 11.45	Coffee Break		
11.15 – 12.30	Biology workshop	DNA profiling (note early start)	CL
11.45 – 12.30	Dr Ciara McMahon	“Let’s talk about radioactivity: how much radiation are the Irish exposed to?”	2
	Mr Alom Shaha	“What’s the point of this?”	1
12.30 – 2.00	Leisurely lunch & opportunity to browse the exhibitions		
2.00 – 2.45	Mr Bob Becker	“The Chemistry of Teaching”	6
	Dr Aoife McLysaght	“Everything I know about life, I learned from my genome”	2
	Keith Gibbs	The Resourceful Physicist	
3.00 – 4.30	Dr Michael Mosley (plenary lecture)		1
	PharmaChemical Awards		1
	Winners of Nanoscience Poster Competition		1
5.00 – 6.00	Annual Business Meeting and election of officers		1
7.30 pm	Reception followed by Conference Dinner at 8 pm in <b>Alexander Hotel</b>		

**Computer Labs** with ICT drop-in sessions: 10.00 am – 3.00 pm

**C1 C2 C3**

**Primary Science sessions:** 11.30 – 12.15 pm & 12.30 – 1.30 pm with Liz Lawrence, Chair-Elect of the ASE: *“Inquiry-based Learning in older Primary Science”* and Elena Setterfield: *“Rubbish Science: learning Primary Chemistry, Biology and Physics from the materials in the recycle bin”*

4  
4

### Lunchtime Sessions

- Institute of Biology of Ireland Awards to LC 2011 students: (1.00 – 1.20 pm)
- ESTABLISH (15 min. sessions on Physics, Chemistry, Biology & Junior Science) 12.30 – 2.00
- Quizlet and Screencasts demonstrations in Computer Labs 10.30 – 11.15 & 11.45 – 12.30
- Using the Biology Resource DVD to develop Literacy and AfL 11.45 – 12.30
- Sci-Fest & Sci-Clubs in Joly Theatre 12.30 – 2.00

CL  
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C2  
C3  
2

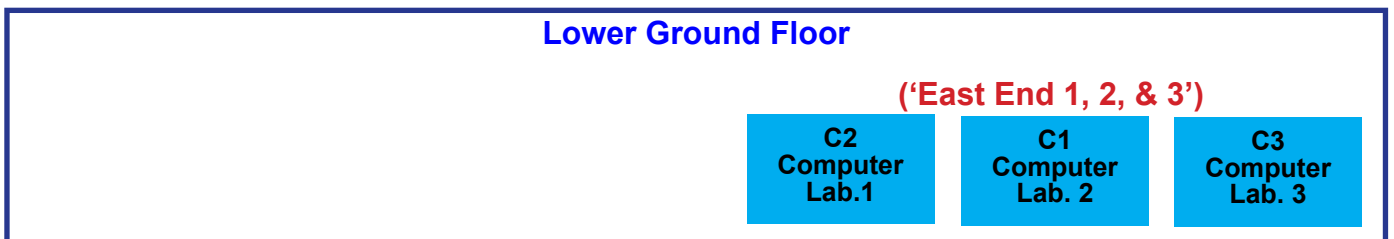
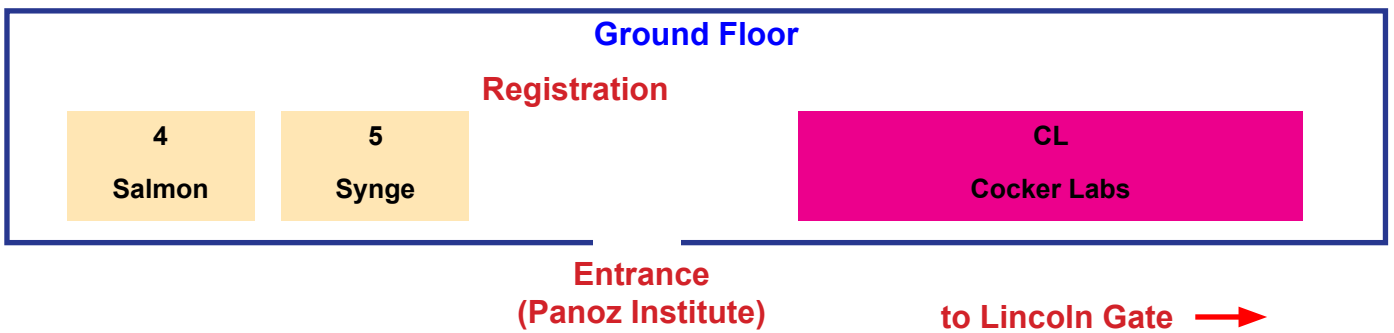
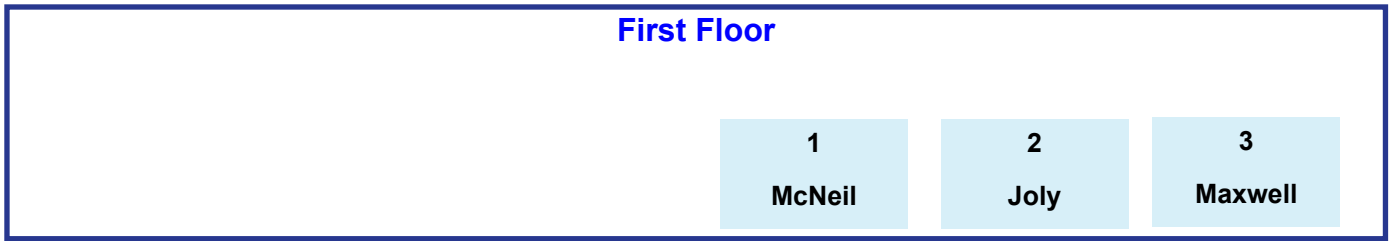
Mass will be available at 6.15 pm in the Alexander Hotel.

## Sunday 22nd April

10.30 – 12.30	Ingenious Dublin Walking Tour ‘From Elephants to Earthquakes’ with Mary Mulvihill.	
11.00- 11.45	“Understanding & Improving Memory” by Prof Aidan Moran in Trinity College.	7
12.00 – 12.45	Mr Humphrey Jones aka The Frog Blog Top Apps for Science Teaching Trinity College.	7

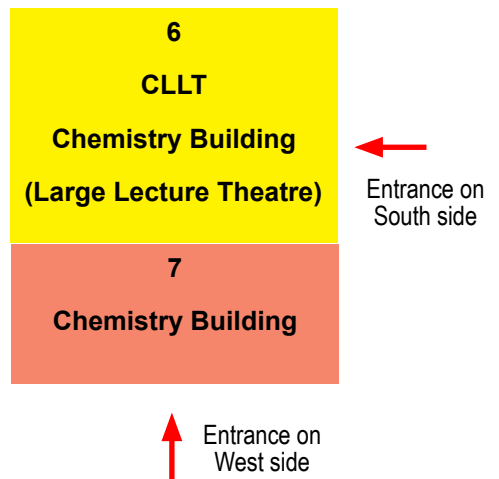


# Guide (floor plans)



The **map inside the back cover** shows the locations of the various buildings in use during the conference.

Meet at Campanile in TCD  
(starting 10.30 am)



## Professional Development Service for Teachers [www.pdst.ie](http://www.pdst.ie)

The Professional Development Service for Teachers PDST provides continuing cross-sectoral support in a wide range of curriculum areas. The Sciences and Applied Maths pillar supports teachers of Agricultural Science, Applied Maths, Biology, Chemistry, Home Economics, Junior Science, Physics and T4. Our team of experienced classroom teachers, called local facilitators, generously share their classroom experiences, resources and teaching strategies to enhance the learning experience for all.

PDST Science subject websites are one-stop-shops which include updates on courses available, downloadable classroom resources, discussion forums, newsletters, etc.

The 2012 support programmes includes national courses, such as induction courses for new teachers and a range of continuous professional support courses to enhance Literacy and Numeracy in Science as well as communities of practice supporting specific identified local needs.

Visit [www.pdst.ie](http://www.pdst.ie) and click on the Maths & Sciences dropdown menu for navigation.

We look forward to continue collaborating with the Irish Science Teachers' Association and other interested agencies to organise and support local workshops.

If you are interested in becoming a local facilitator and wish to get more information contact: the PDST Sciences and Applied Maths office.

### Address:

PDST Sciences & Applied Maths  
Limerick Education Centre,  
Marshal House,  
Dooradoyle,  
Limerick

Email: [sciences@pdst.ie](mailto:sciences@pdst.ie)

Tel.: 061 585064



The Professional Development Service for Teachers is funded by  
the Department of Education and Skills  
under the National Development Plan 2007 - 2013



## “Understanding & Improving Memory”

Prof Aidan Moran

**Biography:** Aidan Moran is Professor of Cognitive Psychology and Director of the Psychology Research Laboratory in University College, Dublin. He and his research team explore cognition in action – especially the motor imagery and attentional (via eye-tracking) processes underlying expertise in athletic performance.



A Fulbright Scholar, he has written/co-authored 15 books (as well as 3 audiobooks/CDs) and has published many scientific papers in various high-impact, international journals in psychology, medicine and sport science. He is the inaugural Editor-in-Chief of the International Review of Sport and Exercise Psychology (IRSEP; Taylor and Francis, Oxford). A full list of his publications is available at <http://www.ucd.ie/research/people/psychology/professoraidanpmoran/publications/>

Applying his research to enhance skilled performance in fields such as sport and medical surgery, Aidan has advised many of Ireland’s leading professional athletes (e.g., golfer Pádraig Harrington) and teams (e.g., the Irish rugby team) and is a former psychologist to the Irish Olympic Squad. He is an experienced radio and television broadcaster in Psychology and is a regular speaker at academic conferences and corporate events in Ireland and abroad. His most recent audiobooks/CD is: **Learn to Study** (MindCool Productions; see <http://www.mindcool.com/productdetails/20/learn-to-study.aspx> )

**Abstract:** Memory is a paradoxical mental system because although it is immensely powerful, it is also frequently fallible. So, what exactly is “memory?” And how can we improve it – especially in formal learning situations (e.g., in school/college)? The purpose of this lecture is to answer these and other relevant questions. Drawing upon his own research, and using the latest findings from cognitive psychology/neuroscience, Prof Moran explains what memory is and how to improve it in everyday life.

## “Apps for teaching science”

Humphrey Jones

**Biography:** Humphrey Jones is a Science Teacher & Blogger from Dublin. His science blog, [www.frogblog.ie](http://www.frogblog.ie), is a frequently updated website aimed at enthusing young people (and the general public) about the world of science and technology. The Frog Blog took home the “Big Mouth” Award at the 2010 Eircom Spider Awards and also the ‘Best Science / Education Blog’ at the 2011 Irish Blog Awards. Humphrey is also a regular contributor to BANG, the Irish Times science monthly supplement and has also written for Science Spin, Ireland’s dedicated science and discovery magazine. He is a Local Facilitator for Agricultural Science with the PDST and sits on the ‘STEPS to Engineering’ Advisory Group (Engineers Ireland).



Follow Humphrey on Twitter: @TheFrogBlog

**Abstract:** Everyone wants one - Apple’s iPad - but what do they have to offer science teachers? During this short talk Humphrey will talk about why he loves his iPad and outline the wonderful iPad apps he thinks are perfect for science teachers or students. The apps cover general science, biology, physics, chemistry, astronomy & more and range in price from free to around €10.

## Ingenious Dublin walking tour: From Elephants to Earthquakes

Mary Mulvihill

**Abstract:** Explore the fascinating stories of Irish scientists, their inventions and discoveries, in the company of science writer Mary Mulvihill. Among the intriguing delights you will hear about Dublin earthquakes, the Essex Street elephant, the humane hangman’s drop, and the invention of the hypodermic needle.



**Duration:** two hours.

**Bring:** comfortable shoes, raincoat (just in case), a bottle of water perhaps, and of course... your sense of curiosity!

**Your guide:** Mary Mulvihill is a native Dubliner, and the author of *Ingenious Ireland*, the award-winning guide to Ireland’s scientific heritage. Her company, Ingenious Ireland, specialises in science heritage tours and talks.



## KidWind Ireland

# FREE! Teacher training in wind energy in summer of 2012

KidWind Ireland is a project that seeks to support teachers all over Ireland to access training programs and equipment in wind energy. The primary aim of the KidWind program is to train and equip teachers at primary and second level to teach their own students about wind energy and provide knowledge about the industry and topic. The program is aimed at teachers of science, mathematics and geography although others may attend. Participant teachers receive free class materials, lesson plan folders and free wind turbine lab kits to take back to their schools.

KidWind Ireland commenced in 2011 and ran courses in Dundalk and Cork. This 4 day course focuses on specific hands on practical topics such as turbine blade design, basic turbine system concepts to wildlife impacts, and economics. It also covers energy concepts, renewable energy, history of wind energy, wind farms in Ireland and wind energy environmental impacts. Classroom projects



Hands-on activities in class

involve building and testing model turbines using kits provided. Participant teachers keep the wind turbine kits and are given class folders with lesson plans to take back to their schools. Outdoor activities include a tour of a large scale wind turbine or a wind farm visit. The participant teachers in 2011 found the course very informative and beneficial for the teaching of wind energy and carrying out practical classes with students in their own schools.

The organisers of the programme are the Irish Wind Energy Association (IWEA). The training and materials is sponsored by Wind Skillnet and various corporate sponsors. The project is seen by its organisers as a mechanism for disseminating knowledge about the wind industry to schools.

More FREE! courses are planned at various locations in Ireland during the summer months of 2012.

Interested teachers should contact the Irish Wind Energy Association ([www.iwea.com](http://www.iwea.com))



Visit to a Bord Gáis wind farm

## Rubbish Science

Elena Setterfield

**Biography:** Elena Setterfield. Experienced, enthusiastic science teacher and workshop presenter at numerous National Teachers Conferences in the UK. A keen devotee of pupils learning through experimental science with an awareness of Green issues.



**Abstract:** The launch of Rubbish Science! A thought provoking experimental course covering Biology, Physics and Chemistry using items from the recycle bin to do stimulating practical work on a shoe-string budget. Aimed at 9-11 year olds. Selected practical tasks will be demonstrated to show a high learning outcome but a low carbon footprint!

## “Primary Science, It’s not fair — or is it?”

Liz Lawrence

**Biography:** Liz Lawrence has worked as the advisory teacher for primary science and technology in Barking and Dagenham, London for the last 13 years. Before that she was a primary teacher. She is the co-author of several ASE publications, has been actively involved in many ASE initiatives and is particularly interested in practical and enquiry based science and curriculum development. Within ASE she has served as a region officer and chair of Primary Committee and is currently Chair-elect of the Association.



**Abstract:** In too many primary classrooms fair testing is seen as synonymous with science enquiry. But it is not the only way for children to answer scientific questions. This practical workshop will explore all the different types of science enquiry that children can do. It is for all teachers who want to know more about science enquiry, how to make it purposeful and how to broaden the range of science enquiries that they plan for. It will draw on the ASE Primary Committee and Millgate House guide to science enquiry. It’s not fair - or is it?

## Science Clubs

Sarah Fraser

Five years ago I set up a science club in my school. I started off with 3 students and now I have a gang of about 24 very keen members meeting once a week. The aim of this club is to provide a facility for students to develop their experience and understanding of science. The profile of the students ranges from those who really struggle with the topic and want to help their understanding, to those who are exceptional learners wanting to push their science further than the scope of the curriculum. During the year we have field trips to places such as the Science museum, W5, RDS science live demonstrations, and also guest speakers visit from different areas. We partake in the BT Young Scientist and Technology exhibition and SciFest every year. Getting prepared for their exhibitions has helped the students in their coursework B component of the Junior Certificate. This science club has engaged the students thirst for science and also heightened the profile of the subject in the school. Students can now see that science does not just reside in the classroom but is all around them in everyday life. It has also brought to the fore the many different careers that require a scientific background.



## Quizlet

Michael O’Leary



**Quizlet** is a new learning and study resource with millions of free sets of flashcards covering every possible subject. It’s an amazing way to play educational games, memorize vocabulary and study. In Quizlet there are thousands of science flash cards covering all topics from anatomy to zoology. Students and teachers can view and create their own sets. There are different study and games modes which are explored during the session.

In this workshop you will be shown how to create your own sets, and how to best make use of what is currently available. This is one of the best free ICT resources to come online in recent years. Come along and get a new study tool for your students.

There is also a free years subscription to Quizlet PLUS which is worth \$15, compliments of QUIZLET. That’s right; there is one for everybody in the audience!



**Discover**  
Science + Engineering

# SciFest

Inspiring and Promoting Excellence in STEM Education



Entry open to all second-level students

## Dates and venues for SciFest 2012

IT / Venue	Exhibition Date
Dublin	29 March
Galway - Mayo	18 April
Cork	20 April
Waterford	25 April
Carlow	26 April

IT / Venue	Exhibition Date
Limerick	2 May
Athlone	3 May
Sligo	4 May
Tralee	8 May
Tallaght	9 May

IT / Venue	Exhibition Date
Dundalk	9 May
Blanchardstown	9 May
Tipperary	10 May
Letterkenny	11 May
North-West	15 June

SciFest 2012 - The closing date for receipt of entry forms is **FRIDAY 2 MARCH 2012**



Log into [www.scifest.ie](http://www.scifest.ie)

For further information please contact:  
Sheila Porter, SciFest Project Manager  
Email: [sheilax.m.porter@intel.com](mailto:sheilax.m.porter@intel.com)  
Ph: +353 1 6068949

## From the classroom to the lecture theatre: Innovative ways to bring Chemistry and Chemical Research to Life

In this presentation/workshop we will give you an insight into two innovations that have radically revolutionized our teaching of Chemistry, and explain how these are particularly suitable for secondary school student audiences and how they develop new and creative thinking in the participants.



The process of scientific enquiry is difficult to initiate in a packed School curriculum. To help convey an understanding of it we have developed a specific secondary school-based, outreach module as part of our structured postgraduate training programme. The module, now in its second year, is a recipient of a 2012 College service learning, civic engagement award. Within the module, a group of self-selecting graduates are mentored to produce individual talks that explain what they do on a daily basis and the purpose of their on-going research. The students have developed novel, hands-on, student-centred experiments to complement their talks and both talks and experiments have been deployed in a number of schools in the Dublin area via on-site School visits. This has been a wonderfully positive experience for the graduate presenters, pupils and teachers. We will showcase our activities for delivery to Transition Year (TY) and/or 5th year pupils and the teacher resources generated through this programme.

Chemistry can appear as a demanding, dry and fact-laden subject even at third level where it is taught to a disparate group of students with wide-ranging, end-career goals and very different abilities in Chemistry on entry. To tackle this, the School introduced a team presentation exercise into the second year undergraduate curriculum (2002 onwards). The class (>220 students) is divided into teams of 8-10 and each group prepares a set of reports and subsequently a 20 mins presentation on a topic of their choice that illustrates the relevance of Chemistry to Life. Previous topics have included 'Chemical Warfare', 'The Chemistry of Bees', 'The Chemistry of Addiction' and this year's overall winner 'The Chemistry of Transmutation' (as determined by an external judging panel, drawn from the Scientific media and beyond). The lively, informative and creative talks that ensue continue to amaze and inspire.

You too will be highly entertained while you consider whether to take us up on our open invitation to bring your TY class to the 2013 presentation final to be held within the School's TY week.

*Niamh McGoldrick, Bartosz Marzec, Jean Bourke, Valerie Gerard, Colm Delaney, Noelle Scully, John M. Kelly, Paula Colavita and Sylvia M. Draper*

*School of Chemistry, University of Dublin, Trinity College*

*<http://www.tcd.ie/Chemistry/outreach/>*

*<http://www.tcd.ie/Chemistry/undergraduate/chemistry/sf/broad/>*

## SciFest

The aim of SciFest is to encourage a love of science and maths through active, collaborative, inquiry-based learning and to provide a forum for students at local/regional/national level to present and display their scientific investigations.



The first SciFest was initiated by **Sheila Porter**, a science teacher in Loreto College, St Stephen's Green, Dublin. The idea arose from a visit to the International Science and Engineering Fair Educator Academy in Phoenix, Arizona, in 2005. An approach to the Institute of Technology Tallaght (ITT) led to the establishment of the first SciFest fair there in 2006. The fair ran successfully for two years in ITT and in 2008 was launched nationwide with the support of Intel Ireland and Discover Science and Engineering as project partners. In 2008 SciFest@College ran in nine Institutes of Technology (ITs). In 2009 the number of ITs involved increased to 14 and an additional SciFest@College was hosted in Northern Ireland. With the numbers increasing so rapidly it was decided to expand the SciFest programme in 2011 by introducing two new levels of participation, SciFest@School and SciFest@Intel. Thus, SciFest now takes place at **three levels**:

- local – SciFest@School
- regional – SciFest@College
- national – SciFest@Intel.

By the end of May this year almost 14 000 students will have exhibited in the region of 6000 projects in SciFest science fairs.

Participation in SciFest helps students to develop an interest in, and enthusiasm for, STEM. It allows them to learn while pursuing an aspect of the subject in which they have a particular interest. It also encourages the development of the skills sets that are required to address future global concerns of food, water and energy security, to create wealth to sustain growth and to provide better health services and better infrastructure. Addressing such **global concerns** will create and drive the jobs and skills needs of the future.

*Sheila Porter*  
*SciFest Project Manager*  
*IR6-2-C15*

*Intel Ireland*

*Leixlip*

*Co Kildare*

*Tel. +353 1 606 8949 / +353 86 3796143*

*Email: [sheilax.m.porter@intel.com](mailto:sheilax.m.porter@intel.com)*

# Put the spark

into your science teaching



**PASCO**

## The Spark Science Learning System from PASCO

- Full colour, 15cm screen for easy group viewing, even when outdoors.
- Finger touch screen for easy navigation - no stylus to lose!
- Simple two-button-design - make measurements easily with just one hand.
- More than 60 free guided inquiry SPARKlabs pre-installed.
- Designed from the ground up for 21<sup>st</sup> century science.



Lennox congratulates the Irish Science Teachers Association for their dedication in serving the science teaching community over the past 50 years and wishes them every success into the future.



**LENNOX**

[www.labsupplies.ie](http://www.labsupplies.ie)



## ESTABLISH

(European Science & Technology in Action  
Linking Industry, School and Home)



### Sharing European ideas and resources for science teaching and learning

**Presenters:** Dr. Eilish McLoughlin & Dr. Alison Graham (CASTeL, Dublin City University)

**The aim** of the FP7 funded project ESTABLISH (2010-2013) is to promote innovation in classroom practice through the provision of appropriate teaching and learning resources and supports for both in-service and pre-service teachers to implement inquiry based science education (IBSE). Through the collaboration of 15 partners in 11 countries across Europe, the ESTABLISH consortium are providing teacher education programmes in IBSE across Europe, focused at the teaching and learning of science (Physics, Chemistry and Biology) at both Junior and Senior Cycle. In these programmes teachers get the opportunity to try out ideas from the project ESTABLISH, are provided with resources adapted for the Irish syllabi ready to use in the classroom and are also equipped with the skills to integrate this approach into other areas of the science curriculum. At these workshops you will get the chance to sample some of the teaching and learning ideas for IBSE suitable for Physics, Chemistry, Biology and integrated Science.

For further details on ESTABLISH, please visit the CASTeL Stand or visit our website at <http://establish-fp7.eu> or contact Dr. Sarah Brady at [castel@dcu.ie](mailto:castel@dcu.ie) Tel. 01 700 6343.

## Screencasts, animations and video games for the chemistry classroom

**Bob Becker**

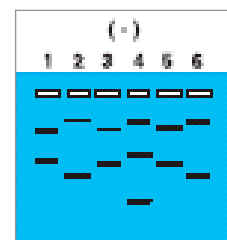


This 'break out session' will be presented by Bob Becker from the USA and it will take place in a computer room with about 20 teachers who are interested in on-line teaching resources. Bob has developed a lot of materials online and is happy to share them. Here are some links:

- <http://ttc.kirkwood.k12.mo.us/SafeVideos/Video.aspx?id=aNviGK8yuZQ>
- [http://ttc.kirkwood.k12.mo.us/SafeVideos/Video.aspx?id=\\_LCK7Ett\\_Qs](http://ttc.kirkwood.k12.mo.us/SafeVideos/Video.aspx?id=_LCK7Ett_Qs)
- <http://scratch.mit.edu/projects/beckerr/1834194>
- <http://scratch.mit.edu/projects/beckerr/1248440>
- <http://scratch.mit.edu/projects/beckerr/867623>

## DNA profiling — Crime Science Investigation

This workshop provides an opportunity to use electrophoresis to produce a DNA profile, to analyse DNA samples obtained from different suspects and compare them to a crime scene sample.



At the end of the workshop you should be able to .....

- Prepare an agarose gel
- Pour the gel
- Load the DNA samples into wells
- Run the gel
- Stain the gel
- Analyse the patterns

### BIOLOGY DNA WORKSHOP

11.30- 1.30 pm, Sat. April 21st

Bookings for this workshop must be made through <http://biology.slss.ie>



# 2020 VISION

## TAKE A CLOSER LOOK AT IRELAND'S ENVIRONMENT WITH 2020 VISION

### – A RESOURCE FOR SECOND LEVEL SCHOOLS

The Environmental Protection Agency has developed a resource to support second level schools in exploring the key environmental challenges we now face in Ireland including climate change, clean air, clean water, sustainable resource use, biodiversity and enforcement of environmental laws. Using short clips from the EcoEye TV series presented by Duncan Stewart as a starting point, various environmental themes can be explored through comprehensions and lesson plans designed specifically for: **Transition Year / CSPE / Science / Junior Cycle Geography.**

## REQUEST A COPY...

TEACHERS CAN REQUEST A COPY OF 2020 VISION – A CLOSER LOOK AT IRELAND'S ENVIRONMENT [ON DVD & CD] BY:

» SENDING NAME & SCHOOL DETAILS TO [EDUCATION@EPA.IE](mailto:EDUCATION@EPA.IE)

» CALLING 053 9160642

## Biology workshop

- Did you miss the Biology DVD Roadshow?
- Have you got latest edition (2011) of the Biology DVD?
- Have you got your 'Biology - Courses and Extra Resources 2012' DVD?

If you answer 'NO' to any of the above now is your opportunity to catch up and avail of the facilities listed at the Biology DVD Workshop 12.00-2.00 pm Sat 21st April. Laptops will be available to give you the opportunity to solve any difficulties you may have in using the latest edition of the Biology Resources DVD, i.e. the 2011 edition. You can receive one-to-one tutoring and problem solving advice on all aspects of the DVDs. Resources in the following areas will be on display:

**Literacy:** Key Word Posters; Dictionary; Terms by topic

### Differentiation and Mixed Ability Teaching:

- Games (customisable for different abilities)
- Concept /Mind Maps
- Posters
- Diagram labelling activities

### Students with different learning styles:

- Visual: Animations, Images, Video Clips
- Auditory: Video Clips
- Reflective: Worksheets
- Kinesthetic: Activities



### Assessment:

- **iQuiz** – New interactive self-assessment (AfL) for students
- **Know-IT-all** – contains learning objectives, PowerPoints, Exam questions and answers (updated to include 2011) for each topic.
- **Learning Objectives** – facilitates assessment of student performance and student self assessment
- **Traffic Light resource** – Traffic Light self-assessment system for students.
- **PowerPoints** – presentations include learning objectives and learning checks.

Some of the authors of the material will be at the stand. Feel free to ask questions, see and handle the resources, and ...

## LEAVE INSPIRED

### Biology DVD Workshop

Sat 21st April, 12.00-2.00 pm

## Physics Practical Workshop

# IOP | Institute of Physics In Ireland

The **Institute of Physics** and **Science on Stage team** will conduct a practical workshop of demonstrations and teaching ideas from previous conferences. The emphasis will be on Physics with some Chemistry and Biology.

All demonstrations rely on readily available equipment (often household) and can easily be reproduced. **Some New, Some Old Favourites — Something for Everyone.**

In Copenhagen 2011 Science on Stage brought together 350 science teachers from all over Europe, to present their most innovative teaching ideas, workshops and performances.

Participants represented 27 countries. Details about the festival can be found at [www.science-on-stage.eu](http://www.science-on-stage.eu)



**Science on Stage** aims to facilitate the exchange of good practice and innovative ideas among Europe's science teachers and to provide a forum for a broad debate among educators about the key challenges in science education today. The goal is to strengthen the awareness and interest of young people in science and technology by increasing the attractiveness of science lessons through the promotion of exciting ideas. The ultimate objective is creative and inspiring science teaching, raising interest in science and a scientific career among European students.

The Science on Stage Festival was structured on the following guiding themes:

- Interdisciplinary teaching,
- Inquiry-based learning,
- Experiments,
- Experiencing science in pre-school and kindergarten,
- New technologies in science teaching.

Science on Stage Ireland has produced four booklets of teaching ideas and demonstrations. These were distributed to physics and science teachers throughout Ireland.

PDF versions of these booklets are available from [www.scienceonstage.ie](http://www.scienceonstage.ie)

At this workshop, Science on Stage Ireland will also distribute its series of videos of 48 demonstrations which have been made in conjunction with **PDST, IoP** and **CASTEL**.

An Irish Language version is also available.



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## Chemistry workshop

This is an opportunity for chemistry teachers to get **hands-on** experience of some **practicals and demonstrations** they may not have encountered before. The workshop is being hosted by **ISTA** members and **PDST** Chemistry Support personnel. The new syllabuses in chemistry physics and biology all encourage the use of ICT in school laboratories; we hope to demonstrate the use of datalogging equipment in a number of our practical activities. The following experiments are included:

1. Carry out a practical activity to investigate the temperature loss during evaporation of a range of organic liquids.
2. Conduct an activity using a conductivity sensor to investigate the relative ability of
  - (i) different solutions of salts of the same concentration and
  - (ii) different concentrations of the same salt, to conduct an electric current
3. Conduct an activity to observe and account for what occurs at each electrode during the electrolysis of:-
  - (i) aqueous sodium sulfate (using universal indicator) and
  - (ii) aqueous potassium iodide (using phenolphthalein indicator)
4. Conduct an activity to determine experimentally, the value of the Universal Gas Constant (R) using sensor technology.
5. Conduct an activity that uses a pH sensor to collect experimental data to plot the following pH curves;
  - (i) strong acid-strong base, strong acid-weak base, weak acid-strong base and weak acid-weak base;
  - (ii) deduce using the curve an appropriate indicator to accurately determine the end point.
6. An Effervescent Universal Indicator 'Rainbow' using Sodium carbonate solution and a little hydrochloric acid and Universal Indicator.
7. The Whoooooosh Bottle. Where various alcohols are ignited in a large polycarbonate bottle.



## Developing Strategies for Literacy and AfL using the Biology DVD

**Venue: Computer Labs**

**Time: 11.45- 12.30 pm**

**Date: Saturday April 21st.**

You can register for this workshop on Friday evening or on Saturday morning.

Places are limited and will be allocated on a first come first served basis.



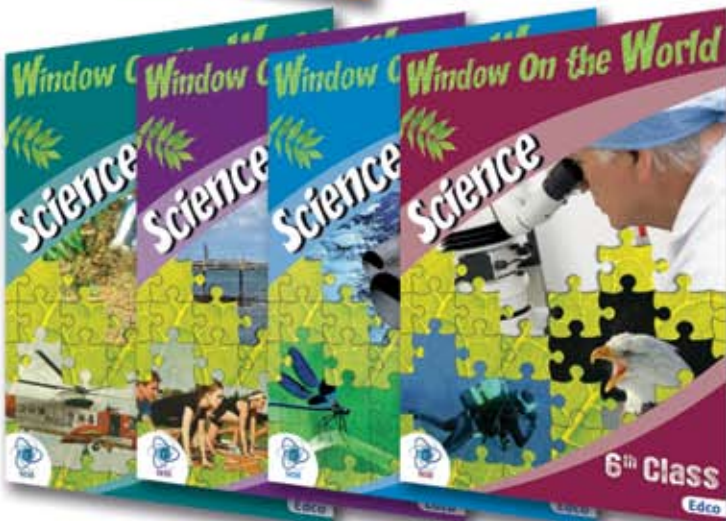
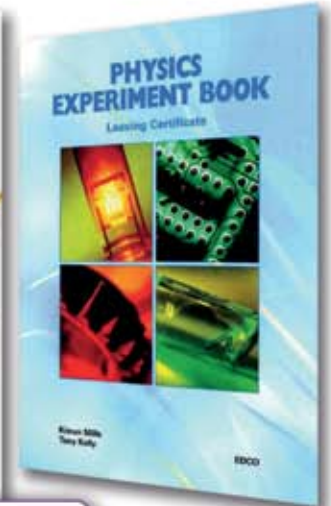
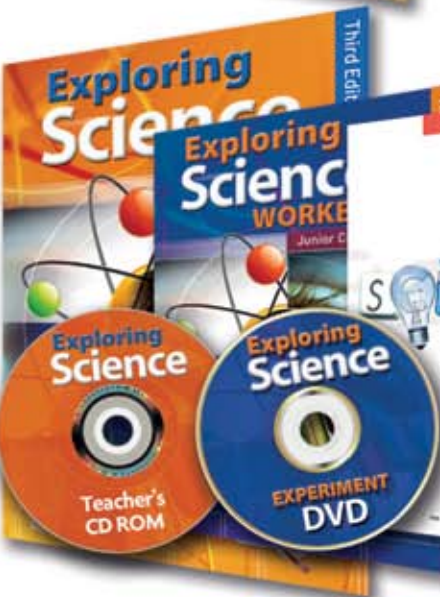
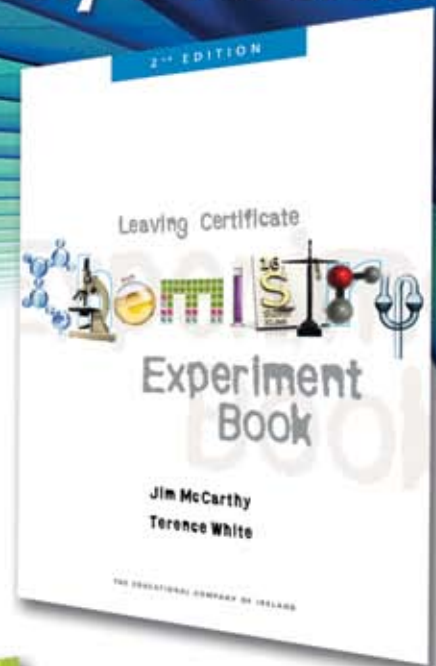
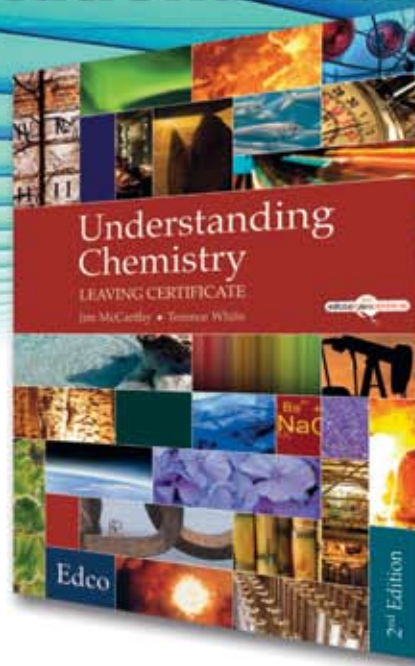
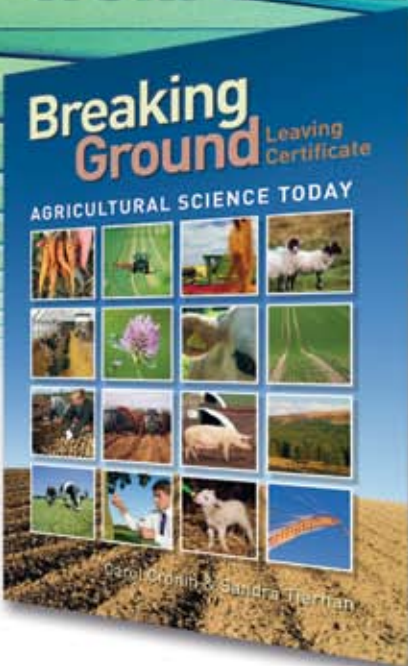
## IoB Awards



**P**resentations will be made in the Cocker Labs to the students who achieved the highest marks in the Leaving Certificate Biology Examination in 2011 at 1.00 pm on Saturday 21st April.

# Science Publications

from The Educational Company of Ireland



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List of all ISTA Annual Conferences		
No.	Location	Year
1	Dublin (UCD, Merrion Street)	1963
2	Dublin (UCD, Merrion Street)	1964
3	Dublin (UCD, Merrion Street)	1965
4	Dublin (UCD, Merrion Street)	1966
5	Dublin (UCD, Belfield)	1967
6	Dublin (UCD, Belfield)	1968
7	Cork (UCC)	1969
8	Dublin (DIT)	1970
9	Dublin (Trinity College)	1971
10	Athlone (RTC)	1972
11	Dublin (St Paul's College, Raheny)	1973
12	Cork (St Aloysius)	1974
13	Dublin (Mount Temple)	1975
14	Wexford (St Peter's College)	1976
15	Limerick (Crescent College)	1977
16	Cork (St Aloysius)	1978
17	Dundalk (RTC)	1979
18	Dublin (Manor House School, Raheny)	1980
19	Kilkenny (St Kieran's College)	1981
20	Galway (UCG)	1982
21	Cork (UCC)	1983
22	Wexford (St Peter's College)	1984
23	Sligo (RTC)	1985
24	Dundalk (RTC)	1986
25	Limerick (Thomond)	1987
26	Wexford (St Peter's College)	1988
27	Cork (UCC)	1989
28	Galway (St Enda's)	1990
29	Dublin (UCD)	1991
30	Kilkenny (Kilkenny College)	1992
31	Tralee (Tralee IT)	1993
32	Dundalk (IT)	1994
33	Kildare (Newbridge College)	1995
34	Donegal (Abbey Vocational)	1996
35	Cork (UCC)	1997
36	Limerick (Limerick IT)	1998
37	Galway (UCG)	1999
38	Dublin (UCD)	2000
39	Waterford (cancelled - foot & mouth)	2001
40	Waterford (Waterford IT)	2002
41	Tralee (Tralee IT)	2003
42	Dundalk (Dundalk IT)	2004
43	Carlow (Carlow IT)	2005
44	Athlone (Athlone IT)	2006
45	Cork (UCC)	2007
46	Donegal (Letterkenny IT)	2008
47	Limerick (UL)	2009
48	Sligo (Sligo IT)	2010
49	Thurles (Tipperary Institute)	2011
50	Dublin (Trinity College)	2012

# Annual Business Meeting



Notice is hereby given that the Annual Business meeting of the ISTA will take place on Saturday 21st April at 5.00 pm in the McNeil Lecture Theatre, Trinity College Dublin.

## Agenda

- Minutes of 2011 ABM
- Matters arising from the minutes
- Votes of thanks for use of facilities
- Hon. Chairperson's report
- Hon. Secretary's report
- Hon. Treasurer's report
- Matters arising from reports
- Vote of thanks of outgoing officers
- Elections
- AOB

Members are requested to note that the quorum for the ABM is one twentieth of the membership reckoned at the Council meeting prior to the ABM or one fifth of the members registered for the AGM by 10.00 am on the morning of the AGM, whichever number is lower. If the quorum is not present within thirty minutes of the time arranged for the beginning of the meeting no business shall be transacted.

The following nominations were received:

Chairperson	Mary Mullaghy
Vice Chairperson	Stephanie Holden
Hon. Secretary	Maria Sheehan
Hon. Treasurer	Paddy Daly
Hon. Auditors	Ted O'Keeffe and Oliver Ryan

# Ceoltoirí Carolan

**A** group of musicians established in 2005. They were friends from a very early age when we started to play the harp. The group is currently comprised of three harpists: Emma Brady, Caoimhe Harte & Rachel McGuinness. They are based in County Meath but love to play all over Ireland.

They play a wide range of music from Classical, Traditional to South American genres and have played nationally in the Mansion House, Dublin Castle, National Print Museum, St James Hospital, Long Room and Dining Hall in Trinity College, and internationally travelling to Bruges for concerts. Most recently they entertained tourists and locals alike on St Patrick's Day at the Hill of Tara.

Their CD is called "**Straight From The Harp**" and available in the Trinity College bookshop.

<http://ceoltoiricarolanharpists.com>

