



PRESENT



Gozo's own Science Festival

MAKE A DATE WITH SCIENCE!

**22<sup>ND</sup> APRIL 2017**

9AM-9PM



## ABOUT SCIENCE IN THE CITADEL

Science in the Citadel is a one-day Science festival, taking place within the historic walls of the atmospheric Cittadella in Victoria. We are aiming to provide a fun and stimulating experience for visitors of all ages in order to get people talking about science, engaging with its many strands and appreciating the breadth of research, creativity and innovation taking place on the Maltese islands.

Modelled on the annual Science in the City, held in Valletta every September, this day will however be firmly Gozitan in flavour. There are displays relevant to our lives here, including items on the island's biodiversity, geology, agriculture, seas and skies as well as items highlighting the science and engineering inherent in the Citadel itself and its museums. Our interactive Science Trail will take you around most of the features and spectacular vistas of the fortress. Effortlessly blending the past with the leading edge science and technology of the future, the trail demonstrates how Science is, and always has been, relevant to our daily lives.

The event will be opened at 9am by **Dr Anton Refalo, Minister for Gozo**, and feature contributions by the island's schools, underlining the importance that is placed on communicating about Science on Gozo and inspiring the next generation of Scientists. But it has something for everyone with a series of shows, film, workshops, live experiments, talks, exhibitions and a science fair. Come, get involved and be part of the future in the midst of the glory of the past!

## HOW TO USE THIS GUIDE

On the following pages you will find details of the 19 stations of the Science trail, with over 50 separate activities, and a map of the Citadel showing where each station is located. In order to get the most from your time with us, use the key over to understand the nature of each activity and their suitability for your party. Time-specific activities are highlighted here so you don't miss items of particular interest. ►

### FILM



#### STATION 8

- A Plastic Ocean (Cinexjenza) 12pm - 2pm

### EXHIBITIONS

E

### TALKS



#### STATION 3

- From Clay to Pottery 11am - 12pm

#### STATION 5

- The Malta Human Genome Project 3pm - 4pm
- Malta Life Sciences Park 4pm - 5pm
- Know your Medicines 5pm - 6pm

#### STATION 7

- The Grain Stores 12pm - 1pm

#### STATION 8

- Science in your Food 2pm - 3pm
- Astronomy and Relativity 3pm - 6pm

#### STATION 14

- Indigenous Flora of Gozo 12pm - 1pm
- What has Geology got to do with you? 1pm - 2pm
- The Secretive Life of the Yelkouan Shearwater 2pm - 3pm

#### STATION 16

- The Story of Honey 4pm - 5pm

#### STATION 19

- Controlling the Brain with Lights 6pm - 7pm
- Weird, Random, Quantum 7pm - 8pm
- The Immune System in Cancer Research 8pm - 9pm

### SHOWS

#### STATION 9

- Esplora presents Bubbles 9am, 11am
- Kids Dig Science Puppets 1pm, 3pm



### WORKSHOP/ INTERACTIVE

- Esplora presents Tinkering 10am, 12pm
- Kids Dig Science Forces 2pm, 4pm
- Square Kilometre Array 6pm - 8pm



### REFRESHMENTS



### FAIRS/ STANDS



### PARTICULARLY CHILD FRIENDLY



## KEYS AND TIMES

START  
HERE

### STATION 1



9AM - 8PM • Welcome Area

### STATION 2



- Discover Malta's Birds
- Roving Science
- DNA Origami
- Science in the Sci-tadel
- Anatomy Roadshow: Understanding the Structure of the Human Body
- Discover your Creative Potential
- Healthy Living - Free Health Checks
- Fascinating Science
- Using Honey as a Medical Device
- Forensic Science

SCIENCE  
FAIR

### STATION 13



- 9AM - 5PM • Forensics - the application of science to law

### STATION 14



- 12PM - 1PM • **Alfred Baldacchino** - Indigenous Flora of Gozo
- 1PM - 2PM • **Jane Carr** - What has Geology got to do with you?
- 2PM - 3PM • **Paulo Lago** - The Secretive Life of the Yelkouan Shearwater in the Maltese Islands

### STATION 4



- 9AM - 6PM • **Microsoft Workshops** - Imagine - Create - Code

### STATION 3



- 11AM - 12PM • **George Azzopardi** - From Clay to Pottery: Chemical Transformations

### STATION 12



- SAN MARTINO • Science-themed Menu

### STATION 15



- 9AM - 5PM • Science in the Citadel through the eyes of a Gozitan child (showing for 2 weeks thereafter)

MEET THE  
RESEARCHER

### STATION 5



- 9AM - 3PM • **Horizon 2020...** turning your ideas into tomorrow's opportunities
- Know your Medicines
- The Epilefree Project
- Malta Human Genome Project
- The Science in your Food

### STATION 6



- 9AM - 6PM • **National Aquarium** - Marine Conservation: Protect & Respect
- **SharkLab** - Sharks, Skates & Rays of the Maltese Islands

### STATION 11



- 7PM - 9PM • Viewing the Night Sky through Telescopes

### STATION 16



- 9AM - 4PM • The Story of Honey: its history, production & health benefits
- 4PM - 5PM • **Adrian Bugeja Douglas** - The Story of Honey

3PM - 4PM

- **Joseph Borg** - The Malta Human Genome Project - Its Relevance to Science, Health & Education

4PM - 5PM

- **J.P. Sammut** - Malta Life Sciences Park

5PM - 6PM

- **Malta Medicines Authority** - Know your Medicines

### STATION 7



- 12PM - 1PM • **Giovanni Zammit** - STEM & the Grain Stores

### STATION 10



- 9AM - 6PM • Wild Plants of Gozo

### STATION 17



- 10AM - 11AM • **Ta Rikardu** - Cheesemaking - a Traditional Science

### STATION 9



- 9AM - 10AM • Bubbles
- 10AM - 11AM • Tinkering
- 11AM - 12PM • Bubbles
- 12PM - 1PM • Tinkering
- 1PM - 2PM • Kids Dig Science
- 2PM - 3PM • Kids Dig Science
- 3PM - 4PM • Kids Dig Science
- 4PM - 5PM • Kids Dig Science

### STATION 18



- 9AM - 9PM • Get Involved - how you can take your interest further

### STATION 8



- 12PM - 2PM • **CineXjenza** - A Plastic Ocean
- 2PM - 3PM • **Jeanette Cameron** - Science in your Food
- 3PM - 6PM • **Joseph Caruana & Jackson Said** - Astronomy & Relativity

5PM - 6PM

- **Daniela Farrugia** - Restless Planet: the Good & the Bad of Earthquakes

6PM - 8PM

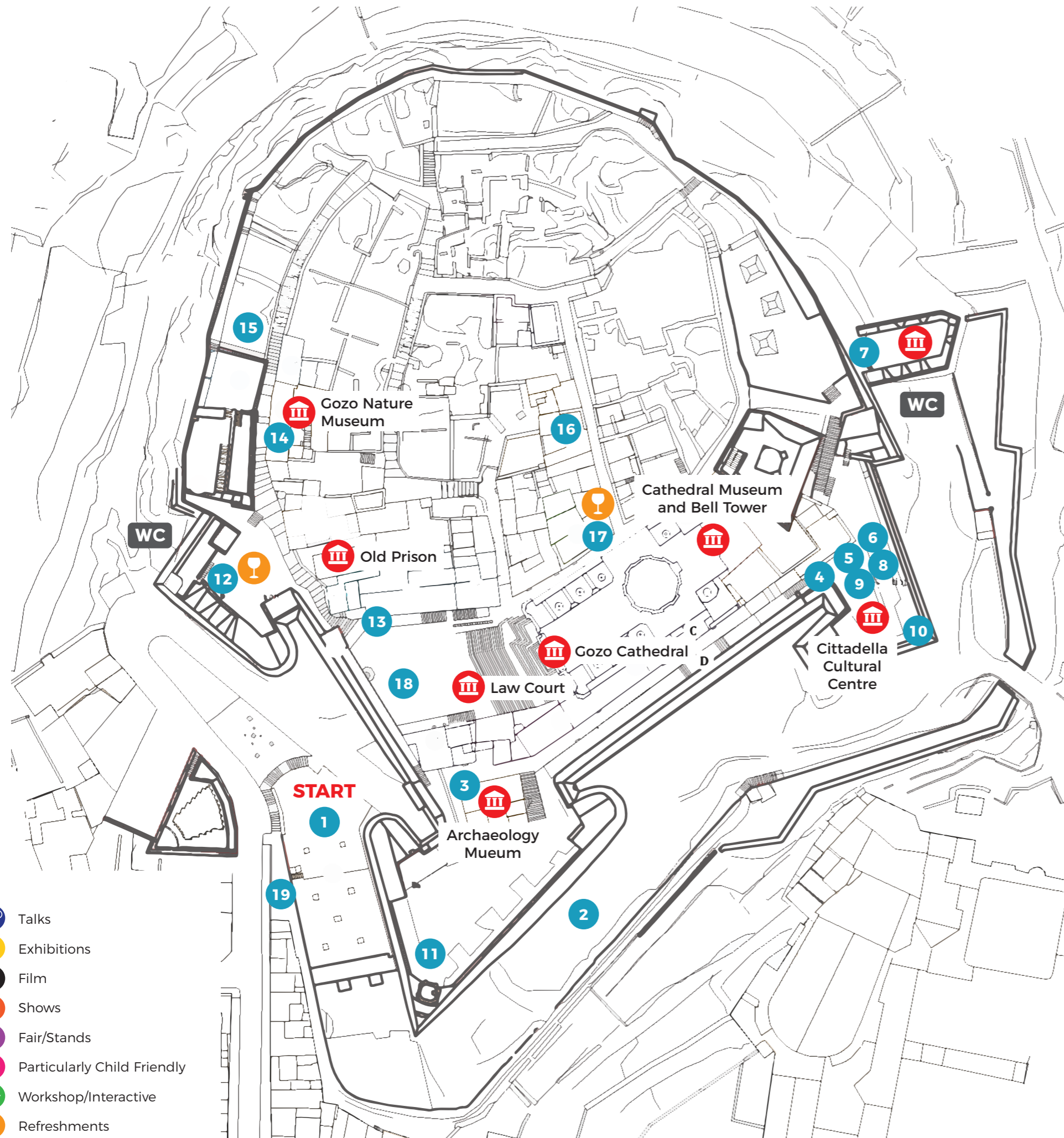
- **Alessio Magro & Andrea Demarco** - Square Kilometre Array









### STATION 19



- 6PM - 7PM • **Giuseppe Di Giovanni** - Controlling the Brain with Lights
- 7PM - 8PM • **Andre Xuereb** - Weird, Random, Quantum: An introduction to the strange and wonderful world of quantum mechanics
- 8PM - 9PM • **Pierre Schembri-Wismayer** - The immune system in cancer research





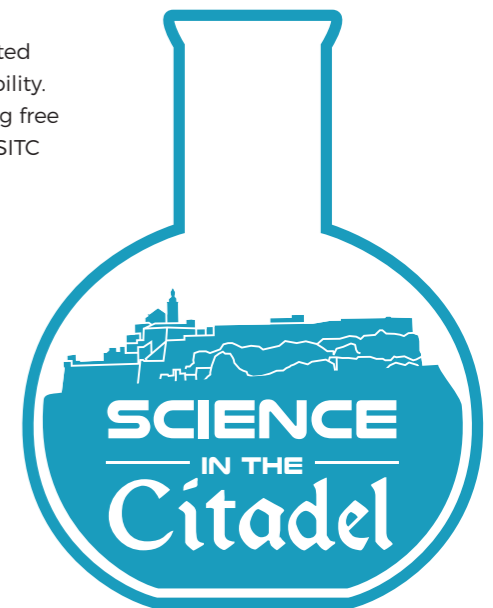
-  Talks
-  Exhibitions
-  Film
-  Shows
-  Fair/Stands
-  Particularly Child Friendly
-  Workshop/Interactive
-  Refreshments

## STATIONS KEY FOR MAP

- 1  Terrace above visitors centre
- 2    Ditch
- 3  Gozo Archaeology Museum
- 4   Cultural Centre Old Cell
- 5   Cultural Centre Exhibition Hall
- 6    Cultural Centre Open Exhibition Area
- 7   Old Grain Stores
- 8    Cultural Centre Lecture Room (Upstairs)
- 9    Cultural Centre Board Room (Upstairs)
- 10    Bastion 1
- 11    Bastion 2
- 12  San Martino Restaurant
- 13    Old Prison
- 14  Gozo Nature Museum
- 15   Heritage Malta Gozo Area Office
- 16   Gran Castello Historic House
- 17  Ta Rikardu Restaurant
- 18  Cathedral Piazza
- 19  Visitors' Centre

**Please note:**

- Some areas of the Citadel have limited access for those with restricted mobility.
- Heritage Malta Museums are offering free entry for visitors for the duration of SITC activities inside.



## ABOUT OUR CONTRIBUTORS



**EcoGozo** is a directorate within the Ministry for Gozo with a vision on sustainability for the island which strives for a better quality of life. [www.ecogozo.com](http://www.ecogozo.com)



**Esplora** is the interactive Science centre at Kalkara designed to create fun, exciting and enjoyable science experiences and to create awareness of the pervasiveness of science in everyday life. [esplora.org.mt](http://esplora.org.mt)



**Horizon 2020** is the largest EU funding programme for Research and Innovation in Science and Technology and is represented locally by MCST. [mcst.gov.mt](http://mcst.gov.mt)



**The Malta Chamber of Scientists** is a learned society of professionals, academics, teachers and students involved in the field of science. We act as a hub for the discussion and exchange of innovative ideas with professionals and public. [www.mcs.org.mt](http://www.mcs.org.mt)



**The Department of Physics and Institute of Space Sciences & Astronomy** centres on the behaviour of matter and its interaction with energy under vastly different conditions. [www.um.edu.mt/science/physics](http://www.um.edu.mt/science/physics)

**The Department of Geosciences** spearheads the University's response to the challenges and opportunities of the physical environment of our land and surrounding seas, drawing from operational oceanography, seismology and geophysics, marine geology, and climate research. [www.um.edu.mt/science/geosciences](http://www.um.edu.mt/science/geosciences)

**The Anatomy Department** welcomes students starting the Medical and Dental Degree courses and conducts Biomedical research into a variety of areas including stem cell and cancer differentiation, gene regulation and pedagogical research. [www.um.edu.mt/ms/anatomy](http://www.um.edu.mt/ms/anatomy)

**The Division of Rural Sciences and Food Systems** offers courses in agricultural sciences, and also coordinates and conducts research that is specific to the needs of modern Maltese agriculture. [www.um.edu.mt/contact/ruralsciences](http://www.um.edu.mt/contact/ruralsciences)

**The Center of Molecular Medicine and Biobanking** encompasses expertise in microbiology, pathology, physiology and cell biology, aiming to improve health outcomes and develop the next generation of personalised medicine.

**The Department of Maths and Science Education** provides quality initial teacher education as well as research in these subject disciplines and in areas closely related to them, promoting innovative classroom practices and professional development for teachers. [www.um.edu.mt/educ/dmse](http://www.um.edu.mt/educ/dmse)

**The Edward de Bono Institute for the Design & Development of Thinking** was set up using Professor de Bono's thinking tools as a platform and now offers a wide range of courses promoting creativity, idea generation, innovation management, entrepreneurship and foresight. [www.um.edu.mt/create](http://www.um.edu.mt/create)



**The Malta Neuroscience Network** keep up with the most important developments in brain research world-wide using multi-disciplinary collaboration. [www.facebook.com/uom.neuroscinet](http://www.facebook.com/uom.neuroscinet)



**The Science Students' Society (S-Cubed)** represents all students following a University science course at national and international levels. Its aim is to unite science students through educational and social activities. [www.scubed.org.mt](http://www.scubed.org.mt)



**The Malta Medical Students' Association (MMSA)** represents all the medical students studying at the University of Malta. Medical students will be present to promote a healthy lifestyle and raise awareness about common diseases, as well as carrying out free blood glucose, blood pressure and Body Mass Index (BMI). [www.mmsa.org.mt](http://www.mmsa.org.mt)



**Heritage Malta** is the national agency for museums, conservation practice and cultural heritage. Its mission is to ensure that those elements of cultural heritage entrusted to it are protected and made accessible to the public. [heritagemalta.org](http://heritagemalta.org)



**Wirt Ghawdex** aims to foster knowledge of our heritage amongst all levels of society and to strive to safeguard the natural, archaeological, historical and anthropological patrimony of the islands. [www.wirtghawdex.org](http://www.wirtghawdex.org)

## ABOUT OUR CONTRIBUTORS



**BirdLife Malta** works to conserve birds and their habitats in the Maltese Islands, working towards sustainability in the use of natural resources. We engage Maltese people in their natural environment, and ensure a natural legacy is left for the next generation. [birdlifemalta.org](http://birdlifemalta.org)



We at the **Malta National Aquarium** are very proud of our Conservation/Education efforts which is why we shall be focusing our display on the subject of plastics/trash and the devastating effects this has on us, the oceans and our beautiful Marine life. [www.aquarium.com.mt](http://www.aquarium.com.mt)



**Sharklab-Malta** is dedicated to research, raising awareness and making a difference for all Elasmobranch (sharks, skates and rays) around the Maltese islands and within the Mediterranean sea. [www.sharklab-malta.org](http://www.sharklab-malta.org)



We at Microsoft, want to spark your creative minds and meet the next generation of innovators. With our collaborative and fun workshops, join us to explore a world through code, creativity and problem solving! [www.microsoft.com/youthspark](http://www.microsoft.com/youthspark)



**The Malta Medicines Authority (MA)** regulates medicinal products and pharmaceutical activities, keeping the wellbeing of the patient at its heart. [medicinesauthority.gov.mt](http://medicinesauthority.gov.mt)



**MLSP** was conceived by the country's economic development agency, Malta Enterprise, to provide an international class facility for life sciences and information technology development. [www.maltalifesciencespark.com](http://www.maltalifesciencespark.com)



Kids Dig Science gives learners of all ages the opportunity to discover something completely new in science in a fun way. For this event, KDS (brought to you by Science in the City), has commissioned a performance which delves into the wonderful world of FORCES. [scienceinthecity.org.mt](http://scienceinthecity.org.mt)



**The Malta Police Forensic Science Laboratory** safeguards the integrity of evidence and crime scene management using the latest in forensic science techniques and equipment. [pulizija.gov.mt/en/police-force/police-sections/Pages/Forensic-Science-Laboratory-\(FSL\).aspx](http://pulizija.gov.mt/en/police-force/police-sections/Pages/Forensic-Science-Laboratory-(FSL).aspx)



**Cafe Scientifique** is a place where, for the price of a cup of coffee or a glass of wine, anyone can come to have a conversation about the latest ideas in science and technology. We offer a forum for debating science issues and keeping up to date with latest research developments. [www.meetup.com/Cafe-Scientifique-Gozo](http://www.meetup.com/Cafe-Scientifique-Gozo)



**Cinexjenza** has teamed up with No To Plastic Malta to create awareness on the effects of plastic to the environment. "A Plastic Ocean" presents the staggering facts on how this material is negatively affecting the world we live in. [facebook.com/CineXjenza/](http://facebook.com/CineXjenza/)



**Melissa Medi Ltd** is currently involved in developing a medical device for the treatment of chronic wounds, based on Maltese honey and nano silver. The product will be available in the coming months, once further research, clinical studies and lab trials are concluded.

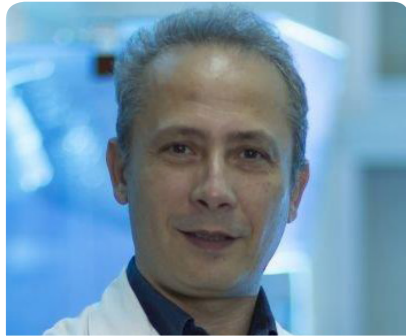


**BioDNA Ltd. Laboratory Services** offers a number of tests including DNA testing (Forensic and Paternity testing), Drug Analysis, Toxicology and Microbiology Analysis for Food and water including Legionella Testing.



**Elty Food** provides Food Technical Solutions for challenges that arise throughout the supply chain of food manufacturing, such as improving product quality, shelf life, nutritional labelling and packaging solutions. [www.eltyfood.com](http://www.eltyfood.com)

## MORE ABOUT OUR SPEAKERS



**Prof Giuseppe Di Giovanni**

Prof Giuseppe Di Giovanni received his Ph.D. in Neuroscience from the University of Chieti, Italy and was a postdoctoral fellow at Yale University, USA. Now Professor of Human Physiology at the Medical School of the University of Malta, his research focuses on understanding the pathophysiology of monoaminergic systems in Epilepsy, Depression and Drug of Addiction using electrophysiological, behavioral and neurochemical approach. Widely published, he is also the Coordinator of the Malta Neuroscience Network.



**Dr Joseph Borg**

After an M.Sc in Molecular Genetics (Pathology) in 2007, Dr Borg went on to conduct Ph.D. studies in the field of molecular genetics with special interest in globin gene regulation and contro at the Erasmus Medical Center in Rotterdam and concluded it at the University of Malta in 2010. Dr Borg is currently a resident academic full-time senior lecturer with the Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta. His work is carried out in collaboration with the Laboratory of Molecular Genetics, Department of Physiology and Biochemistry.



**Alfred Baldacchino**

Now a well-known botanist, Alfred from 1974 to 1986 was the General Secretary of the Malta Ornithological Society. He coordinated and adapted television and radio nature programmes. He published a number of popular works on nature and the need for its protection and edited the magazine In-Natura from 1982 up to 2003. He was appointed assistant Director responsible for the protection of Biodiversity in the Environment Protection Directorate, within the Malta Environment and Planning Authority, until retirement in 2007.



### *Wirt Ghawdex*

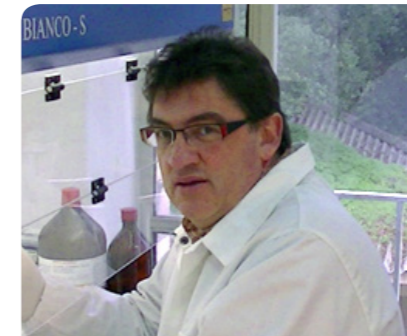
**Giovanni N Zammit**

After working overseas, Giovanni returned to his birthplace, Gozo, on his retirement in 2000. He volunteered with Wirt Ghawdex as the society's PRO at a time when it was adopting a more hands-on restoration strategy. He later became Executive Secretary, a position he still holds.



**Joseph P. Sammut**

Joseph P. Sammut is a professional engineer with a 20 year track record of working on various projects and implementation of solutions within private industry, using then the expertise and methodology to contribute to the public and the academic sectors. He was a founding council member on government bodies including the Malta Council for Science and Technology (MCST); the Malta Standards Authority and the Building Industry Consultative Council, a former President of the Chamber of Engineers and Director of National Research Funds at the MCST.



**Adrian Bugela Douglas**

Adrian Bugeja Douglas joined the University of Malta in 1991. He received a B.Sc. in Biology and Chemistry in 1995 and a M.Sc. in Plant Genetic Manipulation from The University of Nottingham in 1998. His main interest is plant genetics and he is working in various molecular genetic research programmes, including the project Authentication and Molecular Characterizations of Maltese Honey.



**Dr Joseph Caruana**

Dr Joseph Caruana studied physics and mathematics at the University of Malta and a doctorate in astrophysics at Oxford, where he tutored general relativity and cosmology, and together with colleagues discovered some of the farthest galaxies in the Universe. Afterwards, he conducted astrophysics research at the Leibniz Institut für Astrophysik (AIP) in Potsdam. Currently, he teaches and researches astrophysics and teaches physics at the University of Malta.



**George Azzopardi**

George Azzopardi is a researcher in archaeology and epigraphy is one of his main research interests. He is currently curator of the Gozo Archaeology Museum.



**Andre Xuereb**

André Xuereb read for an undergraduate degree in mathematics and physics at the University of Malta, a PhD in theoretical physics at the Southampton in the UK, and a master degree in entrepreneurship back in Malta. He is a senior lecturer in atomic and quantum physics at the University of Malta, Science Policy Officer of the Malta Chamber of Scientists, and expert on quantum technologies for the Government. He represents Malta on several European research networks, and was recently elected as the first Maltese member of the Global Young Academy. André established and leads the quantum research group at the University, and co-owns an educational software startup.



**Jane Carr**

A Chartered Geologist with a Masters in Mineral Exploration, Jane has worked in the States, Malaysia, and Norway, looking for uranium, gold, and molybdenum, and has had a long association with diamond exploration in West Africa. She is also a freelance editor/author – presently working on a popular physics book ('Completing What Einstein Started'), and a keen environmentalist. She says: "What excited me about geology is that it is all around us. There is nothing we use that doesn't come back to geology from the planet we live on to the sun's geology that provides the light and heat we need to exist."



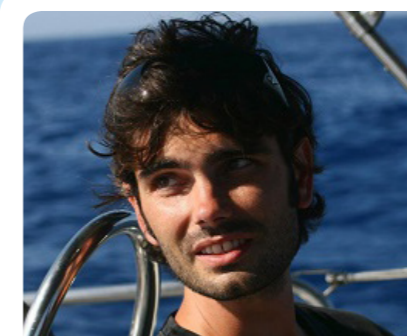
**Pierre Schembri-Wismayer**

Dr Schembri-Wismayer is a great believer in science education and won a contract with the EU's FP6 to produce an international television series, later called X-lab, broadcast in Malta and Cyprus to encourage youngsters to take part in science as a career as well as highlighting local scientific heroes for Maltese students. He regularly talks locally about the benefits of cord blood stem cell banking and was for a long time the Programme committee expert for the Malta Council of Science and Technology in relation to the Life sciences. Research into stem cells, differentiation and cancer is a large part of his work.



**Jeanette Cameron**

Elty Food Ltd is a private company based in Malta at the Malta Life Sciences Park. Its director, Jeanette, obtained her Master's Degree in Food Technology from Wageningen University and has several years of experience as a senior product-developer in the Netherlands for international and award winning food brands. With her international experience and professional expert network she helps food companies improve their food quality to international standards.



**Paulo Lago**

Paulo has more than 10 years of experience in bird and nature conservation, a Master in Protected Areas, and many volunteer experiences with various environmental NGOs. The last four years his career has been linked to BirdLife Malta, where he began as a conservation assistant in 2012. In 2014, Paulo was a field assistant in the LIFE+ Malta Seabird Project and in 2015 became Head of Research in the last stage of this project (as part of the marine Natura 2000 network).



**Daniela Farrugia**

Daniela Farrugia graduated with a First Class Hons B.Sc. in Mathematics and Physics from the University of Malta in 2013, and is currently reading for her Ph.D. in Geophysics. Her thesis, and current research interest, involves the analysis of the behaviour of rocks in Malta and Gozo in response to earthquake ground shaking, with particular focus on areas where clay lies beneath the surface. She has authored a number of publications in peer-reviewed international journals.



UNIVERSITY OF MALTA  
L-Università ta' Malta



The Malta Council for  
Science & Technology



MINISTRY FOR GOZO

 Heritage Malta



MALTA  
NEUROSCIENCE  
NETWORK



FSL  
Forensic Science Laboratory  
Malta Police Force



Sharklab - Malta



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