EST. 1996

Scifest Africa

SOUTH AFRICA'S NATIONAL SCIENCE FESTIVAL

science & technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

INNOVATION 4.0
22 YEARS OF SCIFEST AFRICA
7-13 MARCH 2018
GRAHAMSTOWN, SOUTH AFRICA
www.scifest.org.za

NRF National Research Foundation

A project of the Grahamstown Foundation
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CONTENTS

SCIFEST 2018 - INNOVATION 4.0

The Scifest Africa poster and theme for 2018 were inspired by the Fourth Industrial Revolution which tributes technology advancement and transformation. In the poster, we highlight the numerous advancements made in South Africa in medicine, astronomy, information technology etc.

We also celebrate the binary code, invented by Gottfried Leibniz, which has formed the basis for technological advancements. The binary code on the poster reads 'Innovation 4.0'.

The technological advancements of the Fourth Industrial Revolution are no longer futuristic concepts - they are a reality. While many fear that machines will take over the world, we seek to remind people that the world will always need human brilliance, human ingenuity and human skills, because at the very center of all these advancements, is the human brain. We pay tribute to this amazing organ, which has shaped how the world works today. Another element in the poster that represents how vital humans are to innovation is the bone x-ray of the chest, which emphasizes how we are the supporting structure to this transformation of our world. The DNA helix celebrates the new advancement in CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats), where the technology of the CRISPR/Cas system CRISPR/Cas9 has been modified to edit genomes. These editing techniques have many potential applications, including medicine and crop seed advancement.

The globe of the earth depicts the African continent, which gives scope to our name, Scifest Africa, with the reflection of the SARAO telescope seen in metal headpiece to locate the National Science Festival to South Africa. Innovation will not only benefit industry, but it will empower people and benefit the world at large.

Scifest® Africa, South Africa's National Science Festival®, is a project of the Grahamstown Foundation supported by the Department of Science and Technology (DST).

Published by the Grahamstown Foundation
Programme devised and coordinated by Pumza Tshebe and friends of the festival
Edited by Pumza Tshebe, Kate Davies and the Scifest Africa Team
Cover design by Melanie Le Roux and Bad Apple Creative, Port Elizabeth
Design and layout by Melanie Le Roux and Bad Apple Creative, Port Elizabeth
Printed by Goshawk Printers, Port Elizabeth

HOW TO USE THE PROGRAMME

The full-colour Official Programme lists and describes all the events that make up Scifest Africa. The programme is also available online at www.scifest.org.za and www.tickethut.co.za.

- Each section of the programme is colour-coded.
- At the beginning of each section there is a schedule of events for the week.
- Lecture details are listed by date.
- Details for Workshops, Exhibitions, Rhodes University and Water World are listed alphabetically by name of the presenting organisation.
- Details for Etcetera events are listed alphabetically according to the name of the event.

HOW TO BOOK TICKETS

ONLINE BOOKINGS

- Once you have seen what is on offer, click on the Scifest Africa Logo at www.tickethut.co.za, where you will find the simple four-step process to register, book and pay for your tickets, outlined in detail under TICKET INFORMATION at the bottom of the home page.
- TicketHut allows you to select from the drop down menus provided, or BROWSE SCIFEST 2018 by date, or SEARCH & BOOK where you can select a date on which you want to attend the festival along with multiple genres simultaneously to broaden your festival experience.
- The system will allow you to select an event, add it to your basket, register, check out and pay.
- To add tickets to your booking, simply login using your username and password and book your tickets by following Steps 1 and 2.
- You will receive an email confirming your online booking.

SPACE IS LIMITED. Tickets will be issued on a first come, first served basis. Book early to avoid disappointment!

TELEPHONIC BOOKINGS

- Download and complete the Pre-Booking Form and Visitor Registration Form from the website: www.scifest.org.za by clicking on THE FESTIVAL tab. Email or fax completed forms to TicketHut at scifest@tickethut.co.za or 086 233 2122.
- Contact the TicketHut call centre on 0860 002 004. The call centre will assign you a reference number, which must be quoted in all correspondence.
- Make a record of all the tickets you require using the daily programmes that appear at the start of each section of the programme and e-mail or fax your list using the email address or fax number provided above, or call the centre on 0860 002 004 to book your tickets over the telephone.
- Your tickets will be temporarily reserved and the total price agreed upon.
- You will receive an email or fax confirming your booking.
- Please note that telephonic bookings close at 17h00 on 2 March 2018. Tickets can still be purchased online, or at the Booking Office in the Monument until the end of the festival.

PAYMENT

Make a full payment by credit card, EFT, or by depositing cash into the Grahamstown Foundation's bank account as follows:

Bank name:	Standard Bank
Branch name:	Grahamstown
Branch code:	050 917
Account #:	081 996 071
REFERENCE:	SCIF and your reference number

Send proof of payment by email or fax to TicketHub using the contact details provided above.

VENUE MAP

A venue map is available on the inside back cover of the programme, and at www.scifest.org.za with the 2018 Scifest Africa Festival information.

ACKNOWLEDGEMENTS

Scifest Africa thanks:

- Our premier supporter, the Department of Science & Technology (DST)
- Our advisors, contributors and the media
- Our colleagues at the Grahamstown Foundation
- Fire and Disaster Management Services, Hi-Tec Security, Makana Municipality, St John Ambulance and the South African Police Service (SAPS)
- Our service providers, especially those who helped us more than we paid them
- The citizens of Grahamstown who so generously share the Festival City with us and provide accommodation and other services
- All our visitors, with whom we share our dream of a culture of science in South Africa, and without whom all our work would be wasted.

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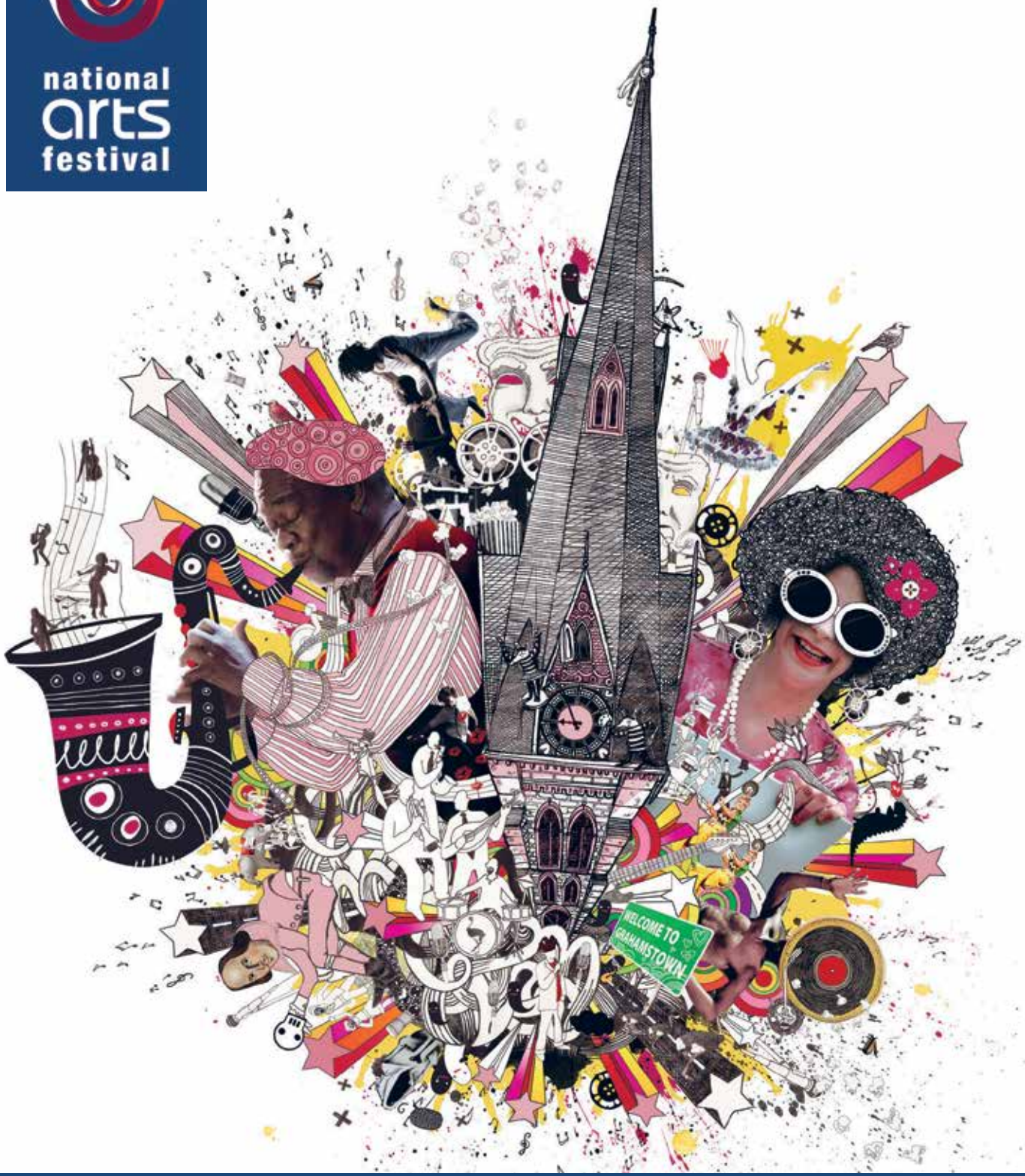
11 DAYS OF AMAZ!NG



28 June - 8 July 2018

Grahamstown • South Africa • www.nationalartsfestival.co.za

FESTIVAL MESSAGES

MMAMOLOKO KUBAYI-NGUBANE

Minister of
Science and Technology

Scifest Africa has become a platform where the learner can meet a leading innovator, where scientists can learn something new from emerging researchers, and science talks can inspire budding innovators. These budding innovators come from different communities even the most poorest of our communities.

"We should never let the constraints of poverty and underdevelopment extinguish the imagination of young people," said President Cyril Ramaphosa during his opening address at the 2017 Science Forum South Africa (SFSA). He emphasized SFSA must rekindle hope in a world of unending possibilities. "A world where imagination, innovation and scientific discovery allow us to dream of a better, more secure and equitable future. According to the 2017 Global Innovation Index released by the World Intellectual Property Organisation, Sub-Saharan Africa has counted more "innovation achiever" countries than any other region. Kenya, Rwanda, Mozambique, Uganda, Malawi, Madagascar and Senegal are regularly included in that list while, in 2017, Burundi and the United Republic of Tanzania made the list for the first time.

In that context, it is not inconceivable that Sub-Saharan Africa could become an innovation powerhouse even, in time, challenging countries like Switzerland and Sweden who top the innovation rankings. Looking through the programme for Scifest Africa this year I am filled with confidence as I see some of the thought leadership emanating from this part of the world. In particular I would like to note Dr Tiisetso Lephoto, from the University of Witwatersrand, a Woman in Science awardee, and one of South Africa's youngest PhD graduates in the field of cell and molecular biology. Special mention must also be made to the other Women in Science awardees who are making tremendous advancements for society in their fields; Professor Henrietta de Kock, Professor Etheresia Pretorius and Professor Philiswa Nomngongo.

And so, as I welcome you to another edition of Scifest Africa, I remind you that the next breakthrough innovator could well be walking among us this week in Grahamstown, soaking up the knowledge and inspiration on offer in so many fora. Government's role is to create an enabling environment by supporting events such as this and help bring them to life. We can help give necessary support and momentum in critical areas like ensuring that we close the gender gap in science, and we can put sensible, workable policy initiatives in place that will make it easier for companies to invest in innovation.

But we can only do so much.

What we rely on participants to do is to bring your imaginations; your bold ideas; your passion and your hunger for innovation. We hope that we'll then see an alchemic spark that gives rise to the next big breakthrough or the hundreds of critical, smaller breakthroughs that will help to take us forward.

Thank you for joining us at Scifest Africa 2018 – we hope you find exploring what it has to offer both inspiring and challenging.

DR THOMAS AUF DER HEYDE

Deputy Director-General of Science and Technology

A warm welcome to all the participants at the annual Scifest Africa hosted in Grahamstown, Eastern Cape. A special word of welcome to all the foreign visitors to our country attending this event. Please enjoy the event and the hospitality of your South African hosts.

The Department of Science and Technology seeks to create a society that is knowledgeable about science and engages critically with science issues. The Department supports Scifest Africa because it is an excellent platform for thousands of members of the public to engage with science, engineering, technology and innovation. Various target publics are represented here at this science festival, namely learners, educators, students, science interpreters, journalists, scientists and researchers, tourists and the general public. Science festivals create an informal means to complement the learning and teaching of science subjects, with a particular focus on making learning and teaching of these subjects stimulating and fun.

Scifest Africa which is in its 22nd year, has a long and rich history and there are tens of thousands of people who experienced a science show and interacted with real and live scientists for the first time. The general public, especially learners and students are given opportunities to see, smell, taste and experience a range of science-related activities. This is a great platform to stimulate and motivate young bright minds to be creative, innovative and answer local, community or even global questions in future as scientists, researchers or engineers. I look forward to meet participants and hear about their positive experiences and opinions formed after interaction with various exhibitors or attending lectures, talks and debates.

I would like to thank the Grahamstown Foundation for once again hosting this, the biggest science festival in the country. A special thanks to all the organisations, institutions, scientists, exhibitors and the general public supporting Scifest year by year. I also need to thank the many volunteers and organisers for ensuring the smooth flow of the programme and managing the crowds which keep everyone safe and secure.

I wish you well for your participation at Scifest 2018. Enjoy the activities and I wish you all a safe journey back to where you have come from.

TONY LANKESTER

Executive Director:
Grahamstown Foundation

Welcome to Grahamstown and to another edition of Scifest Africa: an event that, since its inception in 1996, has grown to become one of Africa's favourite playgrounds for young explorers.

"No one is less ready for tomorrow than the person who holds the most rigid beliefs about what tomorrow will contain."

Those words from The Visionary's Handbook capture, as much as any, the spirit in which we want Scifest Africa to be embraced this year, and the thinking that underpins a programme that celebrates and explores the Fourth Industrial Revolution. Our theme for this year – Innovation 4.0 – is intended to plunge us all into a brave new future, where lines are blurred; new skills become critical; disruption is the norm; and rules are broken almost as quickly as they are made. Scifest Africa aims to inspire exploration among our participants, as they prepare for journeys that take us into new worlds and on new adventures.

As change becomes the new norm, there are more conversations to be had and questions to be asked than ever before. From exploring big ideas about nanotechnology, to having real debates about virtual worlds. The only certainty about the future is that it is going to take us all by surprise; and the only way to prepare for the future is to nurture open, curious and confident thinkers. The role of events like Scifest Africa is not to remove the element of surprise – but rather to prepare us all to embrace it and to thrive in tomorrow's world.

We hope that the way this week has been planned and designed will inspire you to step into tomorrow better equipped, more informed and inspired to find ways in which science and technology can ensure a better life for everyone on our planet. We thank the Department of Science and Technology and all of our funders and supporters for their friendship and partnership, and for making the journey into tomorrow something that we can contemplate and prepare for with confidence.

LECTURES

The high-profile lecture programme lends the festival its trademark international flavour, and proudly welcomes esteemed international and South African scientists and researchers to this celebration of science.

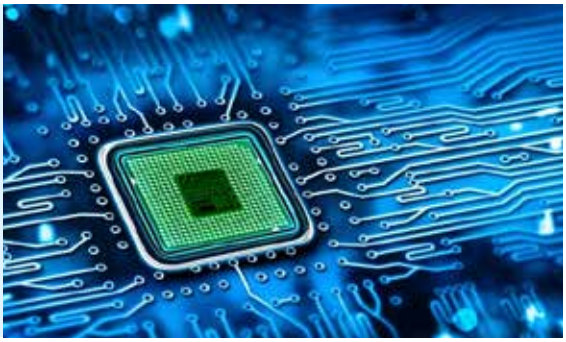
AUDIENCE:	Grade 10+
CAPACITY:	200/900
PRICE:	R25

Start	End	**Speaker,** Organisation *Title*	Venue
WEDNESDAY, 7 MARCH			
13h00	14h00	**Danielle Taljaard,** Antarctica Engineer, SANSA *Space Science on Ice – the life of an Antarctic adventurer*	Monument Olive Schreiner Hall
15h00	16h00	**Professor Henrietta de Kock,** University of Pretoria *Some live to eat… others eat to live: who cares most about the taste of food*	Monument Olive Schreiner Hall
18h30	19h30	**Komal Kumar, U.S. Fulbright Researcher, Groote Schuur Hospital** *HIV-to-HIV Kidney Transplantation*	Monument Olive Schreiner Hall
THURSDAY, 8 MARCH			
11h00	12h00	**Theda Minthe,** City of Hannover Municipality, Germany (via Skype) *How the Leibniz biscuit and Calculation with "1" and "0" made the Difference*	Monument Olive Schreiner Hall
13h00	14h00	**Professor Lesley Cornish,** DST-NRF Centre of Excellence in Strong Materials, School of Chemical and Metallurgical Engineering *Why Should I be interested in Materials?*	Monument Olive Schreiner Hall
15h00	16h00	**Jonathon Rees,** STEAM Foundation NPC *Making it real – harnessing a challenging environment for dynamic STEAM education*	Monument Olive Schreiner Hall
18h30	19h30	**Andy Mathis,** Oculus, USA *Virtual Reality*	Monument Olive Schreiner Hall
FRIDAY, 9 MARCH			
11h00	12h00	**Timothy Harrison & Professor Dudley Shallcross,** University of Bristol, UK *A Pollutant's Tale - a Lecture Demonstration*	Monument Olive Schreiner Hall
13h00	14h00	**Kamogelo Ragketse,** Abraham Serote Senior Secondary *Maglev Power Station* **Nozipho Zikhali,** Manor Gardens Primary School *The Real Truth behind Bottled Water*	Monument Olive Schreiner Hall
15h00	16h00	**Professor Petri Vaisanen,** SAAO *Hey, Were those Ripples in the Space-time Continuum? Or perhaps Life in the Universe?*	Monument Olive Schreiner Hall
Brian Wilmot Lecture **Please note: This lecture forms part of the Scifest Africa Official Opening**			
18h30	19h30	**Dr Tiisetso Lephoto,** University of Witwatersrand *Entomopathogenic Nematodes: Biological control agents to aid South African Agricultural industries*	Guy Butler Lecture Theatre
SATURDAY, 10 MARCH			
13h00	14h00	**Dr Jeanita Pritchett,** National Institute of Standards and Technology, USA *NIST: Promoting U.S. Innovation and Industrial Competitiveness*	Monument Olive Schreiner Hall
Christina Scott Memorial Lecture			
18h30	19h30	**Toby Shapshak,** Maven Media *Why Innovation is Better in Africa*	Monument Olive Schreiner Hall
SUNDAY, 11 MARCH			
13h00	14h00	**Professor Ryan Blumenthal,** Forensic Pathology Services, University of Pretoria *Death and Adventure in Africa – Tales of an African Forensic Pathologist*	Monument Olive Schreiner Hall
15h00	16h00	**Dr Anne Verbiscer,** University of Virginia, USA *Exploring the Solar System Beyond Neptune: Pluto and Other Distant Worlds*	Monument Olive Schreiner Hall
18h30	19h30	**Professor Etheresia Pretorius,** Stellenbosch University *Why do so many of us die from blood clots?*	Monument Olive Schreiner Hall

MONDAY, 12 MARCH			
13h00	14h00	**Professor Mike Bruton,** Mike Bruton Imagineering *What a Great Idea! Awesome South African Inventions*	Monument Olive Schreiner Hall
18h30	19h30	**Tshiamo Legoale,** Mintek *Small Scale Mining: Small step or giant leap?*	Monument Olive Schreiner Hall
TUESDAY, 13 MARCH			
13h00	14h00	**Professor Philiswa Nosizo Nomngongo,** University of Johannesburg *Why Waste Wastes? - Using waste tyres to remove pollutants from water systems*	Monument Olive Schreiner Hall
15h00	16h00	**Professor Thomas Eugene Cloete,** Stellenbosch University *The Intelligence Trap - Unlocking your Genius*	Monument Olive Schreiner Hall

DID YOU KNOW?

THE WORD "TECHNOLOGY" IS A COMBINATION OF A GREEK WORD FOR "ART, CRAFT" (TECHNE) AND THE WORD FOR "WORD, SPEECH" (LOGOS).



WEDNESDAY, 7 MARCH

13H00 ····· 14H00

Danielle Taljaard

Antarctica Engineer, SANSA

Space Science on Ice – the life of an Antarctic adventurer

Antarctica, a continent often described as the coldest, windiest, driest, least populated and most remote corner of the world, is not a place for the faint-hearted. Yet, those brave enough to journey there will forever have a deep connection to this icy wonderland.

As part of the South African National Antarctic Programme (SANAP), South Africa maintains a permanent research base in Antarctica for scientists to participate in various research programmes. The South African National Space Agency (SANSA) operates a wide suite of specialised instruments and systems from the South African base to monitor our near-earth space environment. SANSA engineers live at the base throughout the year in order to maintain and develop these systems, while ensuring that meaningful data is transferred back to the Space Agency.

Not many of us know Antarctica as much more than the big white chunk of ice at the bottom of the world… But the life and science in Antarctica is booming! There are as many as 45 year-round operated research stations scattered widely across the continent, with 30 additional field camps only active during the summer period, supporting specific scientific projects.

This presentation will attempt to let you into the elite circle of what it is like to call Antarctica home. The rich culture, traditions, unique challenges, raw beauty and critical sciences are but a few of the key points I will be sharing with you based on my 15 months spent on ice.

This lecture is supported by the South African National Space Agency

15H00 ····· 16H00

Professor Henrietta de Kock

University of Pretoria

Some live to eat… others eat to live: who cares most about the taste of food

The food we choose to eat and drink is a major factor contributing to our nutritional and health status. The sensory quality of food relates to the look, smell, taste, feel and sound of products and plays a huge role in the daily lives of all consumers. Sensory properties of food are important drivers of our selection and consumption of food. They guide us to judge safety and suitability of food products, affect general wellbeing and our state of happiness. However, how our senses perceive food also contribute to overconsumption of unhealthy food choices and may hinder control over logical reasoning. Food manufacturers are acutely aware of the importance of optimising the sensory properties of food products to promote sales and customer loyalty. The reality is that South Africa is one of the countries in the world with the most unequal distribution of income. A large percentage of the population has very limited food options to choose from due to poverty or other factors affecting food sources.

Prof de Kock is an Associate Professor at the University of Pretoria involved with the development of future food scientists. In her research, she explores the look, smell, feel, taste and sound of food materials and is always searching for novel sensory food experiences. In 2016, she was recognised as a distinguished woman scientist by the Ministry of Science & Technology for her outstanding contribution to research and innovation leading to socio-economic impact and woman empowerment. She consults with food companies to ensure that the products that they sell to consumers have desirable sensory properties. This year she became the co-owner of a food start-up aiming to manufacture nutritious snacks and to provide employment opportunities for the youth. She swims to stay fit and use the time under the water to reflect and to find some silence.

This lecture is supported by the Department of Science & Technology's Women in Science Award programme.

18H30 ····· 19H30

Komal Kumar

U.S. Fulbright Researcher, Groote Schuur Hospital

HIV-to-HIV Kidney Transplantation

The demand for organs has expanded every year with the increase in non-communicable diseases, however the supply has remained the same. Due to this, recent efforts have focused on creative ways to expand both living and deceased donation. One of these innovations was pioneered here in South Africa.

In 2008, the world's first HIV positive-to-HIV positive (HIV-to-HIV) deceased donor kidney transplantation was performed at Groote Schuur Hospital in Cape Town. While the political climate in South Africa at the time was characterised by AIDS denialism, the use of HIV positive donors for HIV positive patients offered a treatment option that gave people hope, and also addressed some of the social barriers, ethics, and stigma surrounding the disease of HIV.

Komal Kumar is a Fulbright researcher from Johns Hopkins University working within the Groote Schuur Hospital's transplant unit to investigate knowledge and perceptions of HIV-to-HIV-positive transplantation. She is a graduate of both Johns Hopkins University's Krieger School of Arts and Sciences and Bloomberg School of Public Health. Her training has been in Epidemiology and Biostatistics with the Epidemiology Research Group in Organ Transplantation at Johns Hopkins. Her research focuses on various aspects of organ donation transplantation, specifically access, systematic barriers, and interventions to increase live donor kidney transplantation.

This lecture is supported by the US Embassy in South Africa.

THURSDAY, 8 MARCH

11H00 ····· 12H00

Theda Minthe

City of Hannover Municipality, Germany

How the Leibniz biscuit and calculation with "1" and "0" made the difference

Gottfried Wilhelm Leibniz and his hometown Hannover have one thing in common. Both are connected to images that neither universities or municipality nor stakeholders in Hannover like. Ask people about "Leibniz", and they will most likely refer you to a popular biscuit produced in Hannover. Enquire about the City of Hannover, and the answer might be "boring", an attribute often quoted in German media. But mathematician and philosopher Leibniz invented the binary calculation with "1" and "0" over 300 years ago which is the basis of our digital life today and Hannover, state capital of Lower Saxony, provides nine universities for 48,000 students, the world's largest trade fairs and digital excellence. Ten years ago deacons of universities, CEO's of scientific institutions and the Lord Mayor established the Hannover Science Initiative in the spirit of Leibniz: "It is worthwhile to study the discoveries of others as for ourselves arises a new source of ideas." The network brought together commitment, creativity, money and sustainable structures of governance. New science edutainment and participation projects were developed in the benefit of Leibniz and the City. Ideas and experiences we will to share with Grahamstown - in the spirit of Leibniz.

Theda Minthe started her career as a journalist for science radio programmes after studying Protestant Theology (Master), Sociology and Communication. In the nineties, the reunion process of Germany brought her to the Mecklenburg-Western Pomerania's Ministry of Economic Affairs in Schwerin as press- and communication officer and later head of "Economic Development Coordination". Finding her big love in Hannover, she works directly for the Lord Mayor in leading positions as counselor in the field of science networking, politics, communication and integrated urban development. Thanks to the NUCLEUS project on Responsible Research and Innovation, funded by the EU, Theda enjoys working together with SAASTA and SAIAB. Theda Minthe has established several political and social networks and initiatives in Hannover.

13H00 ····· 14H00

Professor Lesley Cornish

DST-NRF Centre of Excellence in Strong Materials, School of Chemical and Metallurgical Engineering

Why should I be interested in Materials?

Materials are part of our everyday life, and we often take them for granted. Few people think about why certain materials are used in their cars, cell phones or even for the kettle! This talk unpacks the properties of certain materials, and why these materials have those properties. From there, it shows why certain materials are used for certain applications. The talk also shows how materials can be manipulated to change their structures and therefore their properties, and some examples will be given. The talk will finish by showing how materials can solve some of our environmental problems

Some people think that Prof. Lesley Cornish does not know where she's at; she's British, born in Uganda, and has lived in South Africa for 28 years. She obtained her BSc (Metallurgy and Materials), MSc (Computer Science) and PhD (Metallurgy and Materials) from the University of Birmingham, UK. She is a Physical Metallurgist and has been working on alloy development almost continually since her PhD, at the United Kingdom Atomic Energy Authority, University of the Witwatersrand and Mintek. Her research has focused mainly on platinum-based alloys, cermets, as well as the derivation of phase diagrams.

Prof. Cornish is currently supervising or co-supervising 12 postgraduate students, mainly at Wits University, with 30 MSc and 20 PhD students already graduated. When not working, she enjoys travelling to places without cell phone coverage, and is a very keen birder. She has recently returned from a birding trip in Kazakhstan, Uzbekistan and Mongolia, with an unscheduled stop in Kyrgystan on the way home. She is also a keen photographer, especially of wildlife. She is an Honorary Officer for the North West Parks and Tourism Board, and has had the privileged of working with rhinos, lions and wild dogs.

Prof Cornish is a NSTF-South 32 award winner.

This lecture is supported by the National Science & Technology Forum.

15H00 ····· 16H00

Jonathon Rees

STEAM Foundation NPC

Making it real – harnessing a challenging environment for dynamic STEAM education

The STEAM Foundation NPC is a registered non-profit company which focuses on science education through practical experimentation by learners and educators. It trains educators to teach scientific concepts and deliver co-operative learning. The foundation was established in 2017 and is aligning the Siemens Stiftung's Experimento science education kits to the South African curriculum to ensure high impact and affordability.

This will be an interactive talk about how science can be related to the daily experience of children and adults. Science should not be put in a box marked 'difficult'. Science is all around us. Children are naturally inquisitive and experience physics, chemistry, mechanics and multiple other disciplines in their daily lives. This understanding can be the basis for more effective education.

Jonathon is a science communicator who works on things that are complex, important and true. He helps people and organisations to communicate more effectively; and believes that good STEAM education is one of the foundations of a successful society. Jonathon is the founder and director of Proof Communication Africa, a dedicated science communication company.

FRIDAY, 9 MARCH

18H30 ····· 19H30

Andy Mathis

Oculus, USA

Virtual Reality

Join Andy Mathis, Oculus Director of Business Development and Partnerships for an explanation of what virtual reality is and how it may very well change our future! Virtual Reality has entered mainstream technology as the next major disruptive tool alongside the smart phone, the personal computer and the internet. From NASA to medicine, high tech industry is getting ready for the impact total immersion will have on business and society. Oculus makes state of the art virtual reality equipment that is popular around the world. Come for an interactive description and discussion of what the next wave of innovation may look like! There may even be a chance to experience VR for yourself!

A 17-year industry veteran, Andy has held leadership roles in business development, account management, and sales at Motorola, Esmertec (a mobile technology startup), Google, and now, Oculus from Facebook. In his current role at Oculus, he leads mobile partnerships and business development, working with a range of partners to drive VR distribution and engagement. Prior to this, Andy worked at Google for over seven years where he led the Android Carrier Partnerships team from the early stages of the platform through the growth of over 1B Android users globally. Andy holds a BA and an MBA from the University of Texas.

This lecture is supported by Oculus, USA

11H00 ····· 12H00

Timothy Guy Harrison & Professor Dudley Shallcross

University of Bristol, UK

A Pollutant's Tale - a Lecture Demonstration

'A Pollutant's Tale' is a lecture-demonstration about atmospheric chemistry and climate change performed by Tim Harrison and Dudley Shallcross from the School of Chemistry at the University of Bristol, UK. This lecture covers areas which include the composition of the Earth's atmosphere in comparison to other planets; a brief description of the structure of the atmosphere; investigation of some of the chemistry and properties of nitrogen and oxygen; and a few of the tropospheric pollutants, including carbon dioxide. Throughout the humorous lecture on a very serious topic there are chemical demonstrations including those involving liquid nitrogen, oxygen foam, dry ice and a few explosions. The lecture has been given in 26 countries and over 2000 times in the last 12 years and has been seen by more than 250 000 people.

Tim Harrison is the Science Communicator in Residence and Director of Outreach at Bristol ChemLabS (University of Bristol) in the UK. He has a passion for communicating chemistry and pursues this through performing lecture demonstrations, writing articles for school students and teachers and in delivering teacher training in practical chemistry. For 23 years Tim was a secondary school teacher in London, Gloucestershire and Australia. When he was younger he was a beer tester in London and once drank a brewery dry!

Dudley Shallcross is a Professor of Atmospheric Chemistry and CEO of the Primary Science Teaching Trust. He has wide-ranging interests in atmospheric science and science education. One of his children will start as a primary school teacher in September, two are training to be Pharmacists and the last is a football referee.

13H00 ·····

Kamogelo Makgobo Rakgetse

Abraham Serote Senior Secondary

Maglev power station

There is currently a global need for clean and renewable energy sources. Fossil fuels are non-renewable and require finite resources, which are running out because of high cost and environmentally damaging retrieval techniques. So, the need for cheap and obtainable resources is greatly required. An efficient and more feasible alternative option is the Maglev Power Station. Maglev derived from the term 'magnetic levitation'. The Maglev Power Station uses a self-propelled levitating power shaft supported by either attraction or repulsion of superconducting magnets. For this study, the technique is used to produce electrical energy through a special kind of maglev tesla coil generator.

Maglev Power Station incorporates a basic fact about magnetic forces such as that *LIKE* magnetic poles repel each other and *OPPOSITE* magnetic poles attract each other to lift, propel and guide the levitating shaft in terms of acquiring rotation from it. The Levitating Technology (LT) comes from an application exploiting the principle of magnetic induction between materials with different permeability. The LT allows the drive shaft to levitate in a stable and extremely safe way, without the need of an external power source and with a cost that is lower than fossil fuel based power stations.

Kamogelo Rakgetse is a 17-year-old learner from Abraham Serote Senior Secondary. His passion lies in designing and generating solutions to proposed problems for the upcoming future. He enjoys fixing things in his spare time. He is also a huge fan of cars and he one day wishes to start his own Auto-ECU (engine control unit) car company. He hopes to study Mechatronics Engineering as he enjoys working with a combination of all engineering fields. He is proud enough to call himself a young scientist and his work speaks for itself. Kamo is also a motivational speaker and enjoys encouraging others to 'dream big' just like him.

Kamogelo and Nozipho are ESKOM EXPO for Young Scientists Awardees of the Science Communication Prize supported by Scifest Africa.

14H00

Nozipho Zikhali,

Manor Gardens Primary School

The real truth behind bottled water

Is bottled water purer than tap water? …that is the question. In 2005, it was estimated that 196-million litres of bottled water were drunk in South Africa. Recently in America, news reported that bottled water contained substances that were not approved by International Standards. Nozipho tested the properties of bottled water in South Africa with the understanding that most people assumed that bottled water is pure and healthy for consumption.

Microbial testing, using microbial monitors, was undertaken on 12 bottled water brands, tap water, and deionised water (control) samples. The filter membranes were incubated in Total Count Broth at 370C for 48 hours, and thereafter colonies were counted. The pH level and conductivity of each water sample was then tested. Ion chromatography was used to test the presence of ions (metals and chemicals) that could result in toxicity if consumed in large quantities or over long periods. The study showed that 9 out of 12 brands contained microorganisms, which is not acceptable by South African National Standards (SANS) and International Standards for drinking water. These results indicated that most of the tested bottled water brands are less pure than tap water.

Nozipho Zikhali is a 12-year old learner from Manor Gardens Primary School. She aspires to become a molecular biologist, vet or scientist one day and enjoys participating in science expos. At school, her favourite subjects are History, Maths, English Literature and Science and she loves writing stories and reading books in her spare time. Her extramural activities include gymnastics, judo, ice skating, karate and swimming. She has dual citizenship for South Africa and America and hopes that on her next trip to America she will be able to take Jojo and Jayjay, her pet dogs, with her.

Kamogelo and Nozipho are ESKOM EXPO for Young Scientists Awardees of the Science Communication Prize supported by Scifest Africa.

15H00 – 16H00

Prof. Petri Sami Mikael Vaisanen

South African Astronomical Observatory

Hey, were those ripples in the space-time continuum? Or perhaps life in the Universe?

The last couple of decades have seen phenomenal discoveries in astronomy, from the first detection of planets outside our Solar System to dark energy and the weirdly accelerating universe. The 2017 Physics Nobel Prize was awarded to the detection of gravitational waves proving Prof. Einstein right, once again. To add to the excitement of the past year, researchers witnessed the birth of a totally new field of astrophysics, with a set of those gravitational waves traced back in visible light to an unimaginably violent explosion resulting from a merger of two neutron stars. That explosion 130 million light years away shook our space-time continuum, also creating gold and platinum in real time. Meanwhile, astronomers are finding new planets by the thousands in the Milky Way. The next grand quest is thus to find habitable planets, perhaps even life in the universe, as we all look for our place in the universe. South Africa is right in the thick of front-line astronomy research with a successful 10-m class SALT telescope pouring out results, with plans to modernise other SAAO Sutherland telescopes into an intelligent network, and the MeerKAT nearing completion.

Prof. Petri, originally from Finland, fell in love with the night-sky and stars as a child in Ethiopia. He got his first telescope when he was 14 years old, and never truly considered other careers than astronomy. Pursuing the study of galaxies and working with very large telescopes from Atacama to the Karoo meant that, with his wife, he raised four kids on four continents. After working for years for SALT, he now serves the SA astronomical community as the Director of the SAAO in Cape Town, which operates SALT and a host of other telescopes in Sutherland. He still has a passion for observing the universe, for education, outdoors and deserts, especially at night, and is a big fan of science fiction and literature in general.

This lecture is supported by the South African Astronomical Observatory.

18H30 – 19H30

Dr Tiisetso Lephoto

University of Witwatersrand

Entomopathogenic Nematodes: Biological Control Agents to aid South African Agricultural Industries

Brian Wilmot Lecture

The use of synthetic chemical pesticides has several negative implications for the Agricultural industry, which include the development of resistance to the insecticides, crop contamination and the killing of non-target insects. This has motivated research into the potential of entomopathogenic nematode as biological control agents of insect crop pests. A nematode belonging to the Oscheius genus was isolated from a grassland in South Africa. The technology and informatics aspect was incorporated to sequence the whole genome of this microscopic worm and also its pathogenic symbiotic bacteria belonging to the genus Serratia. The draft genome of Oscheius nematodes will support the improvement and initiation of further studies intended to help us understand the molecular and metabolic processes in this genus. Furthermore, it will provide more genomic insights about the insect-nematode interactions and thus help improve their ability possible as biological control agents in agricultural industries.

Dr Lephoto is one of the youngest PhD graduates in the field of cell and molecular biology. She is a multi-award winning, trailblazer scientist and has published papers in international journals. She obtained her PhD at the age of 26 in Nematology, Genomics and Biotechnology with an emphasis in Bioinformatics at the University of Witwatersrand. She is one of SA's brightest young researcher's who is passionate about science, agriculture and innovation. One of her aims is to further annotate and analyse whole genomes of the nematodes and its endosymbiotic bacteria she isolated in her study. She is currently a postdoctoral research scientist at Wits University and is supervising five Masters students and three Honours students with Professor Vincent Gray in the school of molecular and cell biology. She has served as a committee member for the section of NRF postdoctoral, doctoral and masters fellowships and scholarships.

This lecture is supported by the Department of Science & Technology's Women in Science Award programme.

Please note: This lecture forms part of the Scifest Africa Official Opening

SATURDAY, 10 MARCH

13H00 ..... 14H00

Dr Jeanita Shauntae Pritchett

National Institute of Standards and Technology

NIST: Promoting U.S. Innovation and Industrial Competitiveness

From the smart electric power grid and electronic health records to atomic clocks, advanced nanomaterials, and computer chips, innumerable products and services, rely in some way on technology, measurement, and standards provided by the National Institute of Standards and Technology (NIST). Today, the NIST measurements support the smallest of technologies to the largest and most complex of human-made creations - from nanoscale devices so tiny that tens of thousands can fit on the end of a single human hair up to earthquake-resistant skyscrapers and global communication networks. NIST is one of the nation's oldest physical science and metrology laboratories founded in 1901.

Dr Jeanita Pritchett is an Academic Program Manager in the International and Academic Office and a Research Chemist in the Chemical Sciences Division at NIST. She manages the prestigious National Research Council Postdoctoral Program and the Graduate Measurement Science and Engineering Fellowship. She promotes organizational excellence by providing career development training for various levels of NIST staff and works with educational institutions at all levels to implement measurement science training and exposure to STEM subject areas.

Dr Pritchett began her tenure at NIST as a National Research Council Postdoctoral Fellow working on a number of forensics related projects. She transitioned into cutting-edge research involving developing reference materials and robust, analytical methods for clinical biomarkers, vitamins, nutritional constituents, and environmentally relevant substances. Her expertise has been drawn on for a number of media activities, including appearing as forensic science expert for HLN's documentary series, Beyond Reasonable Doubt (2017).

As the recipient of an Embassy Science Fellowship, she had the unique opportunity to work at Scifest Africa in 2015 to develop hands-on content for the programme as well as training resources for educators. Dr Pritchett has been the recipient of a number of awards including, in 2015, the Best Workshop Award: Curriculum. Dr Pritchett plays American Flag Football, is a Zumba fitness instructor, and paints in her spare time.

This lecture is supported by the US Embassy in South Africa.

18H30 ..... 19H30

Toby Shapshak

Maven Media

Why innovation is better in Africa

Christina Scott Memorial Lecture

Africa's unique problems have resulted in a unique brand of innovation, out of necessity, often using mobile technology. Africa's innovative spirit has produced mobile payment systems like M-Pesa (through which $148m a day or 40% of Kenya's GDP is transacted); mobile money (Africa has half of the world's such services); solar power like M-Kopa to Zipline drones delivering blood in Rwanda; and other ground-breaking inventions. Many of these great success stories have emerged because of the rapid uptake and innovative use of mobile. While the rest of the world is still grappling with how to transition to mobile payments and drone deliveries, Africa is already doing it. Africa is not just mobile-first, it is a mobile-only continent.

In this presentation, Toby Shapshak writes and speaks about how innovation is better in Africa. His TED talk on how Africa is solving real problems has had over 1,4-million views; and he has been featured in the New York Times. Toby is the editor-in-chief and publisher of Stuff magazine, contributor to Forbes and writes a weekly column for the Financial Mail. He has written on Africa, as a mobile-driven continent, for CNN, The Guardian in London and Forbes.

Toby has spoken four times at the South by South West (SxSW) conference in Austin, Texas, and has given presentations at The Guardian's Activate: Johannesburg, Intel's IDF conference in San Francisco, Germany's Zukunftskongress (Future Congress), Sweden's The Conference, AfricaCom in Cape Town, TEDxGateway in Mumbai, Pivot East in Nairobi, and Tech4Africa in Johannesburg.

As a news and political journalist, he ran the Mail & Guardian newspaper's website when it was the first news site in Africa, shadowed Nelson Mandela when he was president, and covered the Truth and Reconciliation Commission. Amongst many other distinctions, he won the ICT Journalist of the Year award in 2002. He has interviewed a range of tech industry luminaries, including Apple co-founders Steve Jobs and Steve Wozniak.

SUNDAY, 11 MARCH

13H00 ..... 14H00

Professor Ryan Blumenthal

Forensic Pathology Services , University of Pretoria

Death and Adventure in Africa – Tales of an African Forensic Pathologist

What does it mean to be a forensic pathologist? What does it mean to be a forensic pathologist in Africa? What kind of cases does one get to see? What does a 'day in the life' of a South African forensic pathologist look like? Ryan Blumenthal has performed between 250 and 450 autopsies per year for the past 15 years and has been involved in several high-profile cases. Learn how science and pathology can help catch murderers.

Prof. Blumenthal is the senior specialist forensic pathologist at Forensic Pathology Services, Pretoria and Associate Professor at the University of Pretoria's Department of Forensic Medicine. His chief field of interest is the pathology of trauma of lightning (keraunopathology). He has been involved in the publication of numerous articles and textbooks on lightning and electrothermal injuries and has helped generate international standard operating procedures and guidelines for lightning strike fatality and electrocution victims. He has also published widely in the fields of suicide and other areas involving the pathology of trauma.

His hobby is sleight-of-hand magic and he has been performing semi-professionally since 2001. Blumenthal also enjoys bird watching, mountain biking, squash, novel writing and adventure hiking.

MONDAY, 12 MARCH

15H00 ····· 16H00

Dr Anne Verbiscer

University of Virginia, USA

Exploring the Solar System Beyond Neptune: Pluto and Other Distant Worlds

What do worlds in the outer Solar System look like? What are they made of and what can they tell us about how our Solar System formed?

NASA's New Horizons spacecraft launched from Earth in January 2006 and after a 9-year journey flew past Pluto and its five moons on 14 July 2015. This lecture will give an overview of where the spacecraft is going after its Pluto flyby and beyond. New Horizons is headed into the Kuiper Belt to fly within 3500 km of an icy world known as "2014 MU69" on 1 January 2019. The lecture will look at what the spacecraft is doing in this year leading up to the flyby and highlight the importance of observations of "MU69" obtained in South Africa (in 2017) and Senegal (in 2018) to help us learn about "MU69" before the spacecraft arrives. In addition the importance of Planetary Science in Africa will be addressed as Dr. Verbiscer is a member of the Scientific Advisory Committee of the Africa Initiative for Planetary and Space Sciences.

Anne Verbiscer is a Research Professor at the University of Virginia where she explores icy surfaces in the outer Solar System. Fascinated by the exploration of the Moon by the Apollo astronauts in the 1960s, she wanted to follow in their footsteps and become an astronaut. There were no female astronauts then, so instead she pursued her dreams of exploration using robotic spacecraft. She is an Assistant Project Scientist for NASA's New Horizons mission and also a Participating Scientist on NASA's Cassini mission to Saturn. In 2017, she led an expedition of 28 astronomers with portable telescopes to the Western Cape Province of South Africa.

This lecture is supported by NASA's New Horizons mission.

18H30 ····· 19H30

Prof. Etheresia Pretorius

Stellenbosch University

Why do so many of us die from blood clots?

Cardiovascular conditions including diabetes, heart attacks and strokes are some of the leading causes of death, not only in South Africa, but in the world. This presentation will give insights into what is happening inside our bodies, inside our blood vessels, long before we actually suffer from e.g. a stroke. The presentation will take you on a journey through the lens of a super-resolution microscope to show you how your blood cells in your body react when they are exposed daily to too much sugar and fat, as well as smoking; the main causes of cardiovascular disease. Prof Pretorius will answer the question: can we prevent cardiovascular disease, heart attacks and stroke by looking at our diet and by reducing inflammation?

Professor Resia Pretorius is the Head of Department of Physiological Sciences at Stellenbosch University. She is an internationally recognised researcher with an NRF B-rating and has published over 280 research publications. She was runner-up of the prestigious Women in Science award in 2017 and won the African Union Women in Science award in 2011. Her main interest is physiological changes in the haematological (blood) system during cardiovascular disease. She has supervised numerous MSc and PhD students.

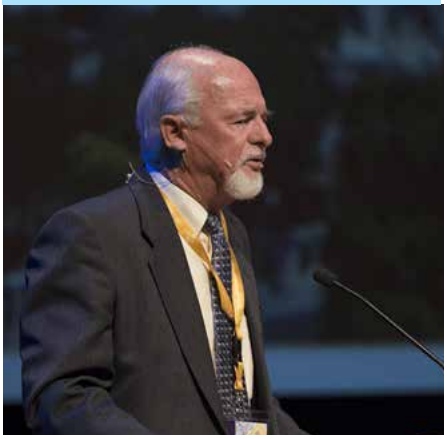
This lecture is supported by the Department of Science & Technology's Women in Science Award programme.

13H00 ····· 14H00

Prof. Mike Bruton

Mike Bruton Imagineering

Why is science important?



The nature of inventions has changed dramatically in recent decades with the rise of computers, the internet, information science and the digital economy. Many inventions now take the form of invisible digital services, apps on smart-phones, cloud-based services or techniques that serve the needs of new fields of endeavour. Some inventions are new ways of living sustainably, yet others are novel forms of music, art, sport or entertainment. Increasingly, technology has changed from being a handheld tool to a form of social intervention, even domination. Some modern inventions are processes that facilitate technology leapfrogs or new decision making protocols that bring modern technology into the hands of more people. Others offer new ways of dealing with the challenges that technology itself has thrown at us, such as hyper-connectivity, vast data fields and the environmental costs of our wasteful ways of living.

Professor Mike Bruton has always been a tinkerer and innovator who likes to question the status quo and promote creative thinking. Mikes professional interest in innovation was sparkled when he led a team of scientists in the Ichthyology Institute and needed to develop an environment that nurtured creativity and innovation. He realised that great scientists are not 'faithful formalists' but risk takers who think outside the box, hate rules, make mistakes but learn from them, dream big, and are often eccentric. Unlike artists, scientists do not have to create what they are working on as it is already there; scientific discovery is about revealing existing truths.

Mike Bruton has received many honours and awards for his contributions to science and technology education. He is an Honorary Research Associate of the South African Institute for Aquatic Biodiversity and an Honorary Life Member of the Two Oceans Aquarium and the South African Association for Science & Technology Centres. His hobbies include writing, watching fishermen, collecting clothes pegs and not using social media. He lives in Cape Town with his wife, Carolynn, three dogs, a cat and millions of bacteria that he has delegated to produce compost for his garden.

TUESDAY, 13 MARCH

18H30 ····· 19H30

Tshiamo Legoale

Mintek

Small scale mining: Small step or giant leap?

What was the mining sector historically like? Have there been any significant advancements and are they adequate? Have the technological changes benefited the miners, economy and environment in any way?

This lecture will look closely at the interventions of the public and private sector, with specific focus on phytomining as a tool in the mining sector. It will explore the use of plant hyperaccumulators to "mine out" metals of choice from substrates, the methods employed, the research conducted and possible applications thereof. Finally, the concept of science communication and possible application in small scale mining will be discussed. Case studies where science communication was used as a tool for efficient and environmentally considerate mining will be given.

Tshiamo is a geologist employed in Mintek, and the 2017 International FameLab Science Communication Champion. She is from the Platinum City of Rustenburg and obtained her undergraduate qualification in geology at the University of the Free-State, Mineral Resource Management at Wits University, and an MSc in Environmental Management at the University of the Free State.

She joined Mintek in 2012 as a scientist, and is based in the Small Scale Mining and Beneficiation Division, working with marginalised communities and assisting them in the legal mining of local geological orebodies. She is passionate about sustainability studies, community development through science, and wetland conservation and believes the best way to eat an elephant is one bite at a time. The world is facing many challenges, social, economic and environmental and she believes that it is the role of young scientists, such as herself, to change the doomed future through interventions, no matter how small. One such intervention is her current research focus, phytomining. It is the use of plant hypperacumulators to extract metals of interest from ore substrates to create bio-ores. This mining method is less capital intensive that the conventional and less environmentally detrimental.

This lecture is supported by Mintek.

13H00 ····· 14H00

Professor Philiswa Nosizo Nomngongo

University of Johannesburg

Why waste wastes? -Using waste tyres to remove pollutants from water systems

Environmental pollution is one of the major challenges worldwide because of the increase in contamination of water, soil and air by trace metals and organic based contaminants. The prevalence of inorganic and organic pollutants in the environment calls for urgent intervention and encourages the development of methods that are effective and efficient in the extraction, separation and preconcentration of trace metals and pharmaceutical drugs. In this study, the waste tyre was used as raw material to produce high performance activated carbons. The activated carbons were applied as an adsorbent in the removal of pharmaceuticals and trace metals, from wastewater and river water samples. The obtained results indicated that waste tyre is a promising precursor for the production of low cost carbon adsorbents with high specific surface areas and high adsorption capacities for the targeted contaminants.

Professor Nomngongo is an Associate Professor in the Department of Applied Science at the University of Johannesburg. Following a short stint as a postdoctoral fellow in the Department of Applied Chemistry she was appointed as a research and a lecturer in the department. She leads the analytical environmental chemistry group in the department and her research focuses on organic and inorganic pollutants in environmental, biological and other matrices. It also extends to the application of nanotechnology in environmental pollution monitoring, desalination and water treatment. Her research publications to date includes 43 articles in accredited international journals, two book chapters, two conference proceedings book chapters, and 27 conference papers. She is a mentor, supervisor and co-supervisor of a number of PhD, Masters' and postgraduate students, and is actively involved in various community engagement projects. Professor Nomngongo's achievements have been recognised through the award of a number of prestigious fellowships and awards, including, most recently the 2017 South African Women in Science award in the Distinguished Young Woman Research: Natural and Engineering Sciences category and the 2017 Vice-Chancellor's Distinguished Award: Most Promising Young Researcher of the Year.

This lecture is supported by the Department of Science & Technology's Women in Science Award programme.

15H00 ····· 16H00

Professor Thomas Eugene Cloete

Stellenbosch University

The intelligence trap – unlocking your genius

We all know the classic story of the tortoise and the hare. There are kids in school who are smarter than you in some ways. There are kids who are faster learners than you. However, that does not mean they are ahead of you. If you study at your own pace and keep on learning, you will pass people who learn quickly but then stop learning. Just because a child has good grades in school does not mean that child will do well in life. In a recent career survey conducted by the Harvard Business School, attitude came out as the most important criteria for success, followed by skill and knowledge and lifelong learning.

Research has indicated that people tend to act in harmony with whatever their mental self-portrait shows them. Often low self-esteem stems from uncertainty about whether you are accepted and often a person believes that they have to earn any acceptance they may get from others. Someone with a poor sense of self-worth is a slave to the opinions of others. Acceptance is when people come together and are able to take the other into his or her life completely, with no reservations, no pretence, no masks. Unlocking your multiple intelligences starts with accepting yourself and raising the expectations you have for yourself.

Prof Cloete grew up on a dairy farm in the Eastern Cape where there was no mains electricity and he had to study mostly by candlelight. He enjoyed science from a young age and read the Popular Mechanics magazine since he can remember. Vice rector for Research, Innovation and Postgraduate studies at Stellenbosch University, Prof Cloete holds a DSc degree in Microbiology from the University of Pretoria. He places a high premium on creativity, innovation and entrepreneurship holds nine patents, two of which received awards and a third appeared on the cover of 2010 Scientific American as one of 10 world-changing ideas. He is fond of classic cars and the proud owner of a 1962 Jaguar MKII.

This lecture is supported by the National Science & Technology Forum.

WORKSHOPS

Workshops are fun, hands-on activities that afford visitors an opportunity to immerse themselves in the practice of science. Activities for learners relate to the revised National Curriculum Statements where possible. Workshops are listed alphabetically by name of the presenting organisation.

Start	End	**Organisation** *Title*	Audience	Capacity	Price	Venue
DAILY						
09h00 13h00	10h00 14h00	**Department of Environmental Affairs** *My 2050*	Gr 10-12	20	R25	Monument, Visitors Centre I
09h00	10h30	**DST-NRF Paleosciences Centre of Excellence / Evolutionary Studies Institute,** *One hundred thousand years of African arts and crafts with ochre!*	Gr 4-12	24	R40	Monument, Atherstone Room Annexe
09h00 10h00 13h30 15h30	09h30 10h30 14h00 16h00	**Eskom IDM** *Eskom's Energy Education Programme*	Gr 4-9	60	R25	Monument, Art Gallery
09h00 15h00	10h00 16h00	**KwaZulu Natal Museum** *Climate Change and Sustainability*	Gr 10 Gr 11-12	30	R25	Monument, The Bridge
09h00 15h00	10h00 16h00	**NRF/iThemba LABS: Laboratory for Accelerator Based Sciences** *DIY: DC Motor*	Gr 11-12	50	R25	Monument, Gallery-in-the-round
09h00 15h00	10h00 16h00	**NRF/NZG: National Zoological Gardens of South Africa** *Power of the Microscope*	Gr 6-11	25	R25	Monument, Visitors Centre II
09h00	10h00	**Scifest Africa** *Creative Chromatography*	Gr 7-9	30	R25	Albany Science Museum, Rennie Hall
09h00	10h00	**Scifest Africa** *DIY Dessert*	Gr 7-9	30	R25	Albany History Museum, Standard Bank Gallery
09h00	12h00	**Scifest Africa** *Micro Rockets*	Gr 4+	14	R25	Monument, Fort Selwyn
09h00	10h00	**Scifest Africa** *What's the matter?*	Gr 7-9	20	R25	Albany Science Museum, Green Gallery
09h00 11h00 13h00 15h00	10h00 12h00 14h00 16h00	**South African Council for National Scientific Professions (SACNASP)** *Up sci-cling*	All	30	R25	Monument, B2 Arena
09h00	10h00	**South African National Space Agency (SANSA)** *Uses of Earth Observation Satellites*	Gr 8-12	35	R25	Monument, Gallery-in-the-round
09h00	10h00	**South Africa Radio Astronomy Observatory (SARAO)** *Colour by Numbers*	Gr 8-9	20	R25	Monument, Ntsikana Gallery Annexe
09h30 11h30 13h30 15h30 17h00	10h30 12h30 14h30 16h30 17h30	**BASF Holdings South Africa** *Kids' Lab*	Gr 4-8	20	Free Booking Essential	Monument, Fountain Court
10h30	11h30	**Council for Scientific and Industrial Research (CSIR)** *3D printing*	Gr 11-12	25	R25	Monument, The Bridge
11h00	12h00	**National Institute of Standards and Technology** *Engineering Challenge: Bridge Building*	Gr 1-5	20	R25	Albany Science Museum, Education Classroom
11h00 15h00	12h00 16h00	**Nna le Bokamoso Science and Arts Academy** *Play Science*	Gr 4-12	60	R25	Monument, Rehearsal Room
11h00 15h00	12h00 16h00	**NRF/SAASTA: South African Agency for Science and Technology Advancement** *Get fired up on Hydrogen and Fuel Cells!*	Gr 8-12	20	R25	Monument, Visitors Centre I
11h00 13h00	12h00 14h00	**NRF/SAASTA: South African Agency for Science and Technology Advancement** *Wonders of Nanotechnology*	Gr 10-12	25	R25	Monument, Visitors Centre II
11h00	12h00	**Scifest Africa** *Build a comet*	Gr 6+	20	R25	Albany History Museum, Standard Bank Gallery
11h00	12h00	**Scifest Africa** *Mankala*	Gr 6+	20	R25	Albany Science Museum, Rennie Hall
11h00	12h00	**South African Astronomical Observatory (SAAO)** *A Hitchhiker's Guide to the Universe*	Gr 9-12	36	R25	Monument, Gallery-in-the-round

11h00 – 13h00	**South African Society for Bioinformatics Student Council (SASBiSC)** *Bioinformatics for Beginners*	Gr 11+	20	R25	Monument, Ntsikana Gallery Annexe
11h00 – 12h00 13h00 – 14h00 15h00 – 16h00	**Siyavula Education** *Siyavula Practice*	Gr 8-12	30	R25	Monument, Restaurant Monument, Ground Floor Classroom
11h00 – 12h00	**University of KwaZulu-Natal, Science and Technology Education Centre,** *Going Nano - What makes a crystal?*	Gr 10+	30	R25	Monument, Art Gallery
11h00 – 12h00 15h00 – 16h00	**University of Limpopo Science Centre** *PhotoAqua Kids Puppet Shows*	Gr R-7	50	R25	Albany Science Museum, Green Gallery
11h30 – 13h00	**DST-NRF Paleosciences Centre of Excellence/ Evolutionary Studies Institute,** *Travelling through time: South Africa from the origin of life to the origin of humanity*	Gr 7-12	30	R30	Monument, Atherstone Room Annexe
12h00 – 14h00	**University of South Africa (UNISA)** *I-SET (Inspired towards Science, Engineering and Technology)*	Gr 8-12	30	R25	Monument, The Bridge
13h00 – 14h00	**Living Maths** *Braintwisters!*	Gr 4-7	30	R25	Monument, Ground Floor Classroom
13h00 – 14h00	**National Institute of Standards and Technology** *Extraction of DNA from Strawberries*	Gr 7+	20	R25	Albany Science Museum, Education Classroom
13h00 – 14h00	**Scifest Africa** *Foam Gnomes*	Gr 7-9	30	R25	Albany History Museum, Standard Bank Gallery
13h00 – 15h00	**Scifest Africa** *Mathematics of Beading*	Gr 8+	10	R25	Albany Science Museum, Rennie Hall
13h00 – 14h00	**South African Astronomical Observatory (SAAO)** *Exploring the universe with telescope 4.0*	Gr 5-9	30	R25	Monument, Gallery-in-the-round
15h00 – 16h30	**DST-NRF Paleosciences Centre of Excellence/ Evolutionary Studies Institute,** *Interactive Human Evolution*	Gr 11-12	24	R25	Monument, Atherstone Room Annexe
15h00 – 16h00	**National Institute of Standards and Technology** *Endothermic and Exothermic reactions*	Gr 7+	20	R25	Albany Science Museum, Education Classroom
15h00 – 16h00	**South African National Space Agency (SANSA)** *From micro to nano, building a space cube satellite*	Gr 4-6	35	R25	Monument, Council Chamber
15h00 – 16h00	**University of KwaZulu-Natal, Science and Technology Education Centre** *Smart Materials*	Gr 3-5	30	R25	Albany History Museum, Standard Bank Gallery
WEDNESDAY, 7 MARCH					
09h00 – 11h00 12h00 – 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
09h00 – 10h30 15h00 – 16h30	**DST-NRF Centre of Excellence for Invasion Biology / IImbovane Outreach Project,** *MagnificANT life below ground*	Gr 4-12	15	R25	Monument, Restaurant
09h00 – 10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room
11h00 – 12h00	**National English Literary Museum** *Bhala Njengenzululwazi (Write like a Scientist)*	Gr 8-12	30	R25	National English Literary Museum, Activity Room 2
11h00 – 12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
13h00 – 14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
15h00 – 16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe
THURSDAY, 8 MARCH					
09h00 – 11h00 12h00 – 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
09h00 – 10h30 15h00 – 16h30	**DST-NRF Centre of Excellence for Invasion Biology / IImbovane Outreach Project,** *MagnificANT life below ground*	Gr 4-12	15	R25	Monument, Restaurant
09h00 – 10h00	**Sci-Bono Discovery Centre** *Bionics*	Gr 4-8	30	R25	Albany Science Museum, Education Classroom
09h00 – 10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room

11h00 – 12h00	**National English Literary Museum** **Creative Writing**	Gr 8-12	30	R25	National English Literary Museum, Activity Room 2
11h00 – 12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
11h00 – 12h00 13h30 – 14h30	**NRF/SAEON: South African Environmental Observation Network** *Salty Science and Buoyancy*	Gr 10-11	25	R25	Monument, Ground Floor Classroom Monument, Atherstone Room Annexe
13h00 – 14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
15h00 – 16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe
FRIDAY, 9 MARCH					
09h00 – 11h00 12h00 – 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
09h00 – 10h30	**DST-NRF Centre of Excellence for Invasion Biology / Ilmbovane Outreach Project,** *MagnificANT life below ground*	Gr 4-12	15	R25	Monument, Restaurant
09h00 – 10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room
11h00 – 12h00	**National English Literary Museum** *Bhala Njengenzululwazi (Write like a Scientist)*	Gr 8-12		R25	National English Literary Museum Activity Room 2
11h00 – 12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
11h00 – 12h00 13h30 – 14h30	**NRF/SAEON: South African Environmental Observation Network** *Salty Science and Buoyancy*	Gr 10-11	25	R25	Monument, Ground Floor Classroom Monument, Atherstone Room Annexe
13h00 – 14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
13h00 – 14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
15h00 – 16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe
SATURDAY, 10 MARCH					
09h00 – 11h00 12h00 – 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
09h00 – 10h00	**Sci-Bono Discovery Centre** *Bionics*	Gr 4-8	30	R25	Albany Science Museum, Education Classroom
09h00 – 10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room
11h00 – 12h00	**Mike Bruton Imagineering** *Animal Story Telling*	Gr 4-9	30	R25	Monument, Ground Floor Classroom
11h00 – 12h00	**National English Literary Museum** *Creative Writing*	Gr 8-12	30	R25	National English Literary Museum, Activity Room 2
11h00 – 12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00 – 14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
15h00 – 16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe

SUNDAY, 11 MARCH

09h00	10h00	**Sci-Bono Discovery Centre** *Bionics*	Gr 4-8	30	R25	Albany Science Museum, Education Classroom
09h00	10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room
11h00	12h00	**Mike Bruton Imagineering** *Animal Story Telling*	Gr 4-9	30	R25	Monument, Ground Floor Classroom
11h00	12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
13h00	14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
14h00	16h00	**DST/NRF SARChI Chair in Biotechnology Innovation and Engagement, Rhodes University,** *Responsible Research and Innovation- What role can science communicators play?*	Scientists & Science Communicators	20	Free Booking Essential	Monument, Ntsikana Gallery Annexe

MONDAY, 12 MARCH

09h00 12h00	11h00 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
11h00	12h00	**Mike Bruton Imagineering** *Animal Story Telling*	Gr 4-9	30	R25	Monument, Ground Floor Classroom
11h00	12h00	**National English Literary Museum** *Bhala njengenzululwazi (Write like a Scientist)*	Gr 8-12	30	R25	National English Literary Museum, Activity Room 2
11h00	12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
13h00	14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
15h00	16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe

TUESDAY, 13 MARCH

09h00 12h00	11h00 14h00	**Oculus, NCAT, NIA USA, SKA SA** *An introduction to the World of Virtual Reality*	Gr 8-12	18	R25	Monument, Council Chamber
09h00	10h00	**Sci-Bono Discovery Centre** *Bionics*	Gr 4-8	30	R25	Albany Science Museum, Education Classroom
09h00	10h00	**University of East Anglia** *Spectroscopy in a Suitcase*	Gr 10-12	30	R25	Monument, Rehearsal Room
11h00	12h00	**Mike Bruton Imagineering** *Animal Story Telling*	Gr 4-9	30	R25	Monument, Ground Floor Classroom
11h00	12h00	**National English Literary Museum** *Creative Writing*	Gr 8-12	30	R25	National English Literary Museum, Activity Room 2
11h00	12h00	**National English Literary Museum** *Out of this world*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**National English Literary Museum** *Alien African Images*	Gr 4-8	30	R25	National English Literary Museum, Activity Room 1
13h00	14h00	**Sci-Bono Discovery Centre** *Science of Flight*	Gr 4-8	30	R25	Albany Science Museum, Green Gallery
13h00	14h00	**University of East Anglia** *Make your own slime*	Gr 6-12	30	R25	Monument, Rehearsal Room
15h00	16h00	**South Africa Radio Astronomy Observatory (SARAO)** *Satellite laser rangers*	Gr 8-12	20	R25	Monument, Ntsikana Gallery Annexe

BASF HOLDINGS SOUTH AFRICA

KIDS' LAB

DATE:	Daily
TIME:	09h30-10h30, 11h30-12h30, 13h30-14h30, 15h30-16h30, 17h00-17h30
VENUE:	Monument, Fountain Court
AUDIENCE:	Grade 4-8
CAPACITY:	20
PRICE:	Free, Booking Essential

BASF Kid's Lab is an interactive chemistry programme that focuses on educating today's children about the role of chemistry in building a sustainable future. Our Clever Foodies programme, especially designed for learners between the ages of 10 and 14, gives them an opportunity to participate in explorative and interactive chemical experiments to detect and identify vitamins and secondary metabolites (pigments). These experiments are simple, fun and engaging.

www.basf.com

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

MY 2050

DATE:	Daily
TIME:	09h00-10h00, 13h00-14h00
VENUE:	Monument, Visitors Centre I
AUDIENCE:	Grade 10-12
CAPACITY:	20
PRICE:	R25

Join the Department of Environmental Affairs for an interactive workshop on climate change and energy. The goal of the workshop will be for the students to develop their own low-carbon South Africa in 2050. Along the way, climate change related concepts will be learned and debates on how we use energy and what we use it for will take place.

www.my2050.environment.gov.za

DST/NRF SARCHI CHAIR IN BIOTECHNOLOGY INNOVATION & ENGAGEMENT, RHODES UNIVERSITY

RESPONSIBLE RESEARCH AND INNOVATION – WHAT ROLE CAN SCIENCE COMMUNICATORS PLAY?

DATE:	11 March
TIME:	14h00-16h00
VENUE:	Monument, Ntsikana Galley Annexe
AUDIENCE:	Scientists and Science Communicators
CAPACITY:	20
PRICE:	Free, Booking Essential

This workshop is specifically targeted at science communicators or scientists involved in science engagement. The workshop aims to examine the Responsible Research and Innovation (RRI) framework and its implications for the future of scientific research and science communication in South Africa. The South African Agency for Science and Technology Advancement (NRF-SAASTA), in collaboration with the South African Institute for Aquatic Biodiversity (NRF-SAIAB) are partners of the Nucleus Project, an EU funded initiative which seeks to demonstrate how RRI can be implemented in higher education institutions and research organisations. Through the DST/NRF SARChI Chair in Biotechnology Innovation & Engagement at Rhodes, case studies of students' engagement with the public about their research are also discussed. Central to the workshop is the role that science communicators can play in the RRI framework.

A collaboration between the DST/NRF SARChI Chair in Biotechnology Innovation & Engagement of Rhodes University, SAASTA, a business unit of the National Research Foundation (NRF) and the South African Institute for Aquatic Biodiversity (SAIAB)

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

3D PRINTING

DATE:	Daily
TIME:	10h30-11h30
VENUE:	Monument, The Bridge
AUDIENCE:	Grade 11 & 12
CAPACITY:	25
PRICE:	R25

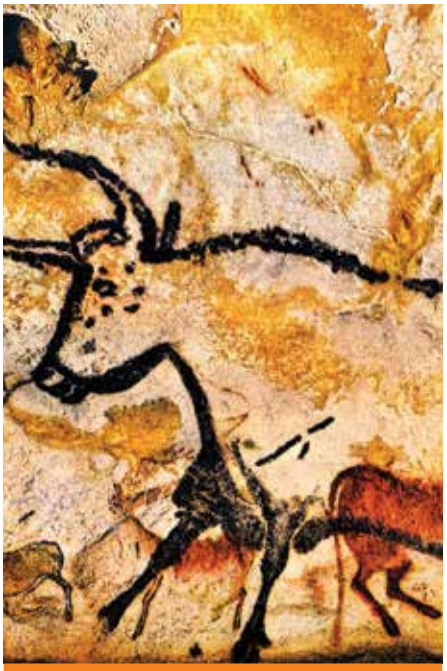
The CSIR offers specialised laser Research and Development services to local industries such as the medical, automotive and manufacturing industry. One of these specialised services is 3D printing. 3D Printing is becoming one of the fastest growing laser based technology that can be used in the manufacturing industry. This technology is a manufacturing process that deposits materials layer by layer to form a tangible product. Leading at the forefront with this 3D Printing service for local industry is the CSIR. With its 3D printing platforms, the CSIR conducts research for the development of manufacturing and repair processes for high value metallic engineering components used in industries such as aerospace, automotive and medical. The systems that are being used are: Optomec LENS (Laser Engineered Net Shaping) and Aeroswift.

https://www.csir.co.za/csir-national-laser-centre

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

DST-NRF PALAEOSCIENCE CENTRE OF EXCELLENCE /EVOLUTIONARY STUDIES INSTITUTE

ONE HUNDRED THOUSAND YEARS OF AFRICAN ARTS AND CRAFTS WITH OCHRE!

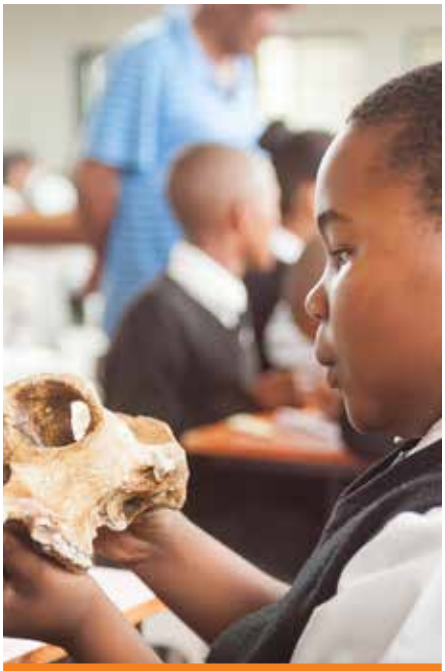


DATE:	Daily
TIME:	09h00-10h30
VENUE:	Monument, Atherstone Room Annexe
AUDIENCE:	Grade 4-12
CAPACITY:	24
PRICE:	R40

Humans have been using ochre for almost a 100 thousand years here in South Africa! It was used for paint, sunscreen, carving, in glue and more! In this workshop participants will get a chance to try their hand at ochre art and crafts – and while doing this they can reflect on the extraordinary artistic, technical and cognitive abilities of our African ancestors from the Middle Stone Age to the Khoisan hunter-gatherers. These are the same abilities that have helped develop computers, have placed robotic explorers on Mars and sent space probes beyond our solar system.

http://ancient-earth.co.za, https://www.wits.ac.za/esi/, https://www.wits.ac.za/origins/

TRAVELLING THROUGH TIME: SOUTH AFRICA FROM THE ORIGIN OF LIFE TO THE ORIGIN OF HUMANITY

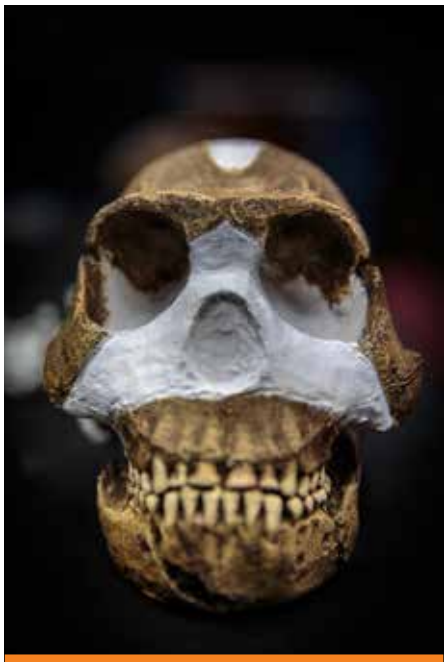


DATE:	Daily
TIME:	11h30-13h00
VENUE:	Monument, Atherstone Room Annexe
AUDIENCE:	Grade 7-12
CAPACITY:	30
PRICE:	R30

Palaeontogists and geologists have been unravelling the story told by South Africa's rocks and fossil for over 100 years. Join us as we travel back in time to relive this incredible tale. Hold real fossils in your hands (and replicas when the real fossils are too precious). See two billion year old bacteria, trilobites, prehistoric plants, ammonites, dinosaurs, mammal ancestors and, of course, the prehistoric ancestors of humans. What would it have been like to travel back in time and experience the world millions of years ago? Can you survive the past!

http://ancient-earth.co.za, https://www.wits.ac.za/esi/, https://www.wits.ac.za/origins/

INTERACTIVE HUMAN EVOLUTION!!!!



DATE:	Daily
TIME:	15h00-16h30
VENUE:	Monument, Atherstone Room Annexe
AUDIENCE:	Grade 11 & 12
CAPACITY:	24
PRICE:	R30

One of South Africa's secret treasures is its wonderful fossil record of human evolution. In this workshop participants get to handle replicas of the skulls that demonstrate human evolution. These are skulls that are household names in many parts of the world; the Taung Child, Naledi, Karabo, Neo and Mrs Ples, to name a few. But how do we know that humans evolved? Participants will discover for themselves how the skulls, stone tools, and genetic evidence can be organised into evolutionary trees - revealing a common ancestor between humans and chimps.

www.ancient-earth.co.za

NRF/NZG: NATIONAL ZOOLOGICAL GARDENS OF SOUTH AFRICA

POWER OF THE MICROSCOPE

DATE:	Daily
TIME:	09h00-10h00, 15h00-16h00
VENUE:	Monument, Visitors' Centre II
AUDIENCE:	Grade 6-11
CAPACITY:	25
PRICE:	R25

How to use a microscope correctly is one of the most important laboratory skills that a life scientist will need. This workshop covers understanding how a microscope works, preparing your own slide, and discovering a world hidden from a naked eye.

www.nzg.ac.za

DST-NRF CENTRE OF EXCELLENCE FOR INVASION BIOLOGY / IIMBOVANE OUTREACH PROJECT

MAGNIFICANT LIFE BELOW GROUND

DATE:	7-8 March
TIME:	09h00-10h30, 15h00-16h30
DATE:	9 March
TIME:	09h00-10h30
VENUE:	Monument, Restaurant
AUDIENCE:	Grade 4-12
CAPACITY:	15
PRICE:	R25

In our sugar pots, climbing up the wall even in the kettle - ants are everywhere! But have you actually seen them close-up? Join the Iimbovane Team on a journey discovering the amazing life of ants. Using microscopes, this interactive workshop will open your eyes to a tiny but remarkable world, unknown by many.

www0.sun.ac.za/iimbovane/

NRF/ITHEMBA LABS: LABORATORY FOR ACCELERATOR BASED SCIENCES

DIY: DC MOTOR

DATE:	Daily
TIME:	09h00-10h00, 15h00-16h00
VENUE:	Monument, Gallery-in-the-round
AUDIENCE:	Grade 11-12
CAPACITY:	50
PRICE:	R25

Electromagnetism has a huge number of technological applications that range from fun to life-saving; from pinball machines to particle accelerators, and MRI's in hospitals. In this workshop the learners will build a mini DC motor using everyday items for further understanding and conceptualisation of this concept.

www.tlabs.ac.za

NRF/SAASTA: SOUTH AFRICAN AGENCY FOR SCIENCE AND TECHNOLOGY ADVANCEMENT

GET FIRED UP ON HYDROGEN AND FUEL CELLS!

DATE:	Daily
TIME:	11h00-12h00, 15h00-16h00
VENUE:	Monument, Visitor Centre I
AUDIENCE:	Grades 8-12
CAPACITY:	20
PRICE:	R25

Hydrogen fuel cells appear to be the perfect way to generate clean electricity by combining oxygen and hydrogen to produce water with a release of energy. In this workshop, you will interact with a fuel cell specialist to learn what fuel cell technology is, how it works and how it may develop in the future, and you will assemble and drive a small hydrogen fuel cell vehicle.

www.hysa-padep.co.za

WONDERS OF NANOTECH

DATE:	Daily
TIME:	11h00-12h00; 13h00-14h00
VENUE:	Monument, Visitors Centre II
AUDIENCE:	Grade 10-12
CAPACITY:	25
PRICE:	R25

Why do materials behave differently at a nanoscale level? Why does gold appear red at a nanoscale level? Can nanorobots really 'repair' organs or tissues in your body? Interact with our nanotechnologist as we provide answers to these mysteries and other wonders on nanotechnology. Using inexpensive materials readily available at your nearest pharmacy or supermarket, we will show that the world of nanotechnology is all around you. If you are curious about exploring the invisible world of nanotechnology, come and enjoy this fun and interactive workshop.

www.npep.co.za

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

SOUTH AFRICAN ASTRONOMICAL OBSERVATORY (SAAO)

A HITCHHIKER'S GUIDE TO THE UNIVERSE

DATE:	Daily
TIME:	11h00-12h00
VENUE:	Monument, Gallery-in-the-round
AUDIENCE:	Grade 9-12
CAPACITY:	36
PRICE:	R25

Fasten your belts and join us for a fast paced interactive and exciting journey from Grahamstown across the universe. Exploding stars, black holes and cannibal galaxies, we'll see them all and much more. Come and learn, enjoy demos and perform exciting short experiments to learn about this journey.

EXPLORING THE UNIVERSE WITH TELESCOPE 4.0

DATE:	Daily
TIME:	13h00-14h00
VENUE:	Monument, Gallery-in-the-round
AUDIENCE:	Grade 5-9
CAPACITY:	30
PRICE:	R25

Can you find our next habitable planet? Fasten your seat-belts, as we take you on a journey through the known universe and explore the differences amongst stars, planets and galaxies? Solve puzzles, find clues and let's build telescope 4.0.

www.saao.ac.za

SOUTH AFRICAN COUNCIL FOR NATURAL SCIENTIFIC PROFESSIONS (SACNASP)

UP SCI-CLING

DATE:	Daily
TIME:	09h00- 10h00, 11h00-12h00, 13h00-14h00, 15h00-16h00
VENUE:	Monument, B2 Arena
AUDIENCE:	All
CAPACITY:	30
PRICE:	R25

SACNASP presents a fun and entertaining science show for all ages. The shows aim to generate a scientific curiosity in learners while providing edu-tainment, by combining different kitchen chemistry principles with a couple of more advanced experiments that have been engineered to be more entertaining. The show will incorporate pH changes, oxidation, create smoke filled bubbles and work with dry ice and liquid nitrogen.

www.sacnasp.org.za

NRF/SAEON: SOUTH AFRICAN ENVIRONMENTAL OBSERVATION NETWORK

SALTY SCIENCE AND BUOYANCY

DATE:	8-9 March
TIME:	11h00-12h00
VENUE:	Monument, Ground Floor Classroom
TIME:	13h30-14h30
VENUE:	Monument, Atherstone Room Annexe
AUDIENCE:	Grade 10 & 11
CAPACITY:	25
PRICE:	R25

Ocean currents arise in many different ways. Deep ocean currents are caused by differences in water temperature and salinity. In this experiment, students will hypothesise the cause of ocean currents and develop a model to explain the role of salinity and density in deep ocean currents. Then we will explore how these ocean currents can regulate climate.

www.saeon.ac.za

SOUTH AFRICAN NATIONAL SPACE AGENCY (SANSA)

FROM MICRO TO NANO, BUILDING A SPACE CUBE SATELLITE

DATE:	Daily
TIME:	15h00-16h00
VENUE:	Monument, Council Chamber
AUDIENCE:	Grade 4-6
CAPACITY:	35
PRICE:	R25

Planet Earth has its own large natural satellite known as the moon. Man-made satellites are machines made by people. Can you imagine building a tiny satellite of just over 1kg and launching it into space? This is exactly what has been achieved in our country. Join this workshop hosted by CPUT and SANSA and build your own CubeSAT model and learn about how this satellite works and how SANSA uses satellites to improve our lives.

USES OF EARTH OBSERVATION SATELLITES

DATE:	Daily
TIME:	09h00-10h00
VENUE:	Monument, Ground Floor Classroom
AUDIENCE:	Grade 8-12
CAPACITY:	35
PRICE:	R25

Earth Observation is the gathering of information about planet Earth's physical, chemical and biological systems via remote sensing technologies supplemented by earth surveying techniques, encompassing the collection, analysis and presentation of data. Earth observation has become technologically increasingly sophisticated.

www.sansa.org.za

SOUTH AFRICAN RADIO ASTRONOMY OBSERVATORY (SARAO)

The South African Radio Astronomy Observatory (SARAO) spearheads South Africa's activities in the Square Kilometre Array Radio Telescope, commonly known as the SKA, in engineering, science and construction. SARAO is a National Facility managed by the National Research Foundation and incorporates radio astronomy instruments and programmes such as the Hartebeesthoek Radio Astronomy Observatory (HartRAO) in Gauteng, as well as the associated human capital development and commercialisation endeavours.

COLOUR BY NUMBERS

DATE:	Daily
TIME:	09h00-10h00
VENUE:	Monument, Ntsikana Gallery Annexe
AUDIENCE:	Grade 8-9
CAPACITY:	20
PRICE:	R25

Radio waves travel through space, just like light, and can be intercepted by radio telescopes like the MeerKAT radio telescope. Astronomers then convert these radio waves into pictures that look like photographs. However, radio waves are invisible! Join scientists from SKA SA and HartRAO to find out how scientists make "radio pictures" of the objects in the Universe. Then, using your imagination, complete your own radio picture.

DID YOU KNOW

SOUTH AFRICA IS THE ONLY COUNTRY IN THE WORLD TO HAVE TWO NOBEL PEACE PRIZE WINNERS WHO HAD HOUSES ON THE SAME STREET. THE STREET IN QUESTION IS VILAKAZI STREET IN SOWETO, THE NOBEL PRIZE WINNERS WERE NELSON MANDELA AND ARCHBISHOP DESMOND TUTU.

SATELLITE LASER RANGERS

DATE:	7-10, 12, 13 March
TIME:	15h00-16h00
VENUE:	Monument, Ntsikana Gallery Annexe
AUDIENCE:	Grade 8-12
CAPACITY:	20
PRICE:	R25

Geodesy is the science of measuring and representing the Earth's geometric shape, orientation in space and field of gravity, as well as the changes of these properties with time. Various types of techniques and instruments are used at HartRAO to do geodesy, including satellite laser ranging (SLR). Join scientists from HartRAO to operate a SLR system, take your own measurements and help determine the shape of things!

www.hartrao.ac.za, www.ska.ac.za

ESKOM: IDM

ESKOM'S ENERGY EDUCATION PROGRAMME

DATE:	Daily
TIME:	09h00-09h30, 10h00-10h30, 13h30-14h00, 15h30-16h00
VENUE:	Monument, Art Gallery
AUDIENCE:	Grade 4-9
CAPACITY:	60
PRICE:	R25

Eskom's Energy Education Programme aims to educate school children about the value of electricity and the important role it plays in bringing so much comfort into the home. It aims to bring awareness to the fact that 'flicking a switch' is so quick and easy that one almost never considers the huge positive impact electricity has on our daily lives.

www.eskom.co.za/sites/idm/SchoolYard/Pages

KZN MUSEUM

CLIMATE CHANGE AND SUSTAINABILITY

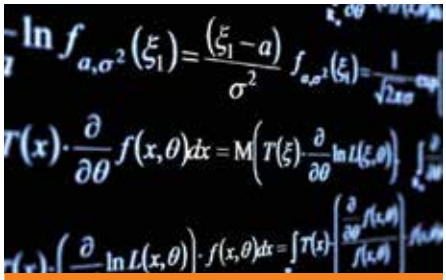
DATE:	Daily
TIME:	09h00-10h00 (Grade 9 & 10) 15h00-16h00 (Grade 11 & 12)
VENUE:	Monument, The Bridge
CAPACITY:	30
PRICE:	R25

The Kwazulu Natal Museum will host an interactive workshop on climate change, its causes and impacts on the environment and society. Museum-in-a-box is an interactive tool used to engage learners in relating the concept to everyday living.

www.nmsa.org.za

LIVING MATHS

BRAINTWISTERS!



DATE:	Daily
TIME:	13h00-14h00
VENUE:	Monument, Ground Floor Classroom
AUDIENCE:	Grade 4-7
CAPACITY:	30
PRICE:	R25

Give your brain a solid workout with some of the wackiest, funniest and brainiest brainteasers known to man!

www.livingmaths.com

MIKE BRUTON IMAGINEERING

ANIMAL STORY TELLING

DATE:	10-13 March
TIME:	11h00-12h00
VENUE:	Monument, Ground Floor Classroom
AUDIENCE:	Grade 4-9
CAPACITY:	30
PRICE:	R25

How do different animals feed, breed, avoid being eaten, and find a place to live? How do they move over land in the air and water? What are the major animal groups, and how do they evolve? Why are some of them threatened with extinction? What can we do about it? Become a learner scientist for 40 entrancing minutes and share your knowledge with your friends.

www.mikebruton.co.za

NNA LE BOKAMOSO SCIENCE AND ARTS ACADEMY

PLAY SCIENCE

DATE:	Daily
TIME:	11h00-12h00, 15h00-16h00
VENUE:	Monument, Rehearsal Room
AUDIENCE:	Grade 4-12
CAPACITY:	60
PRICE:	R25

The workshop advocates for a Playscience duality as an approach to stimulate learners' curiosity, fostering their creativity and helping them discover and make meaning of the world around them. Children are curious about the world and related systems which engage in this world. It is imperative therefore to nurture this curiosity using both intellectual and creative means. Play is associated with the development of creative skills and fosters creativity of thought, and imagination.

www.facebook.com/nnalebokamoso.sciearts

DID YOU KNOW

THE KIMBERLY MINE – ALSO KNOWN AS 'THE BIG HOLE' OR 'DIE GROOT GAT' IN AFRIKAANS - WAS CLAIMED TO BE THE LARGEST HOLE EXCAVATED BY HAND. THAT TITLE HOWEVER BELONGS TO THE JAGERSFONTEIN MINE, ANOTHER OLD SOUTH AFRICAN DIAMOND MINE APPROXIMATELY 109 KM SOUTH-WEST OF BLOEMFONTEIN. MINING BEGAN IN 1870 AND THE PIT WAS HAND-DUG FOR 39 YEARS UNTIL 1909.

NATIONAL ENGLISH LITERARY MUSEUM

OUT OF THIS WORLD

DATE:	7-9, 12, 13 March
TIME:	11h00-12h00
VENUE:	National English Literary Museum, Activity Room 1, 25A Worcester Street
AUDIENCE:	Grade 4-8
CAPACITY:	30
PRICE:	R25

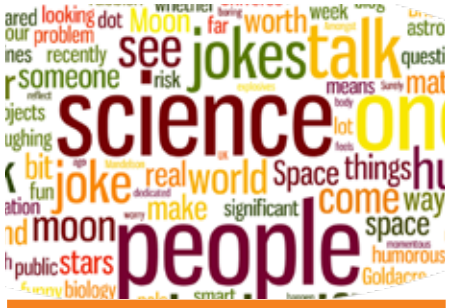
Join Basil Mills in a sci-fi fantasy world of myth and magic. Launch into warp speed by boldly learning how to draw aliens, cyborgs and creatures of your imagination. Become a starship trooper and debug your inhibitions by expressing your inner creativity on paper. Excellent therapy for wannabe Star Wars, Star Trek and Buzz Lightyear enthusiasts.

ALIEN AFRICAN IMAGES

DATE:	7-9, 12, 13 March
TIME:	13h00-14h00
VENUE:	National English Literary Museum, Activity Room 1, 25A Worcester Street
AUDIENCE:	Grade 4-8
CAPACITY:	30
PRICE:	R25

Take a sho't left onto an extra-terrestrial highway of discovery. Discover ancient African myths and legends and people from the Sky. Basil will introduce you to the Tokoloshe, AbantuBamlambo, the Mbulu, Chitukwane and the Nya-Nya Bulembu. See the sculptures portraying ancient African beliefs. Capture the essence of your nightmares, daydreams and imagination and transform them into 3D creatures. Basil encourages innovation, creativity and hands on ideas. Learn about recycling, make a robot, droid or cyborg using objects you would normally throw away.

BHALA NJENGENZULULWAZI



DATE:	7, 9, 12 March
TIME:	11h00-12h00
VENUE:	National English Literary Museum, Activity Room 2, 25A Worcester Street
AUDIENCE:	Grade 8-12
CAPACITY:	30
PRICE:	R25

Write like a Scientist. The workshop uses topics from home-based and community science and technology, the prescribed literature and the natural environment, to write science pieces (poetry or drama). Z. Matshoba is the Manager of the Education and Public Programmes at NELM. The section links the museum with public. This is done through education, exhibitions and a number of public programmes such as book launches. He is also a writer, a photographer and a media practitioner (with a keen interest in online content management and filming).

CREATIVE WRITING

DATE:	8, 10, 13 March
TIME:	11h00-12h00
VENUE:	National English Literary Museum, Activity Room 2, 25A Worcester Street
AUDIENCE:	Grade 8-12
CAPACITY:	30
PRICE:	R25

The workshop uses topics from science and technology, and from the natural world, to write science fiction. Learners will be required to think creatively. They would be supplied with pens and papers to write down their ideas. They would also be given books with creative works, and be shown some pictures in order to stimulate their creativity. These would be used to develop the poems / short stories.

www.nelm.org.za

OCULUS, NCAT, NIA USA, SARAO

AN INTRODUCTION TO THE WORLD OF VIRTUAL REALITY

DATE:	7-10, 12, 13 March
TIME:	09h00-11h00; 12h00-14h00
VENUE:	Monument, Council Chamber
AUDIENCE:	Grade 8-12
CAPACITY:	18
PRICE:	R25

No longer a curiosity or gamer's tool, Virtual Reality has entered mainstream technology as the next major disruptive tool alongside the smart phone, the personal computer and the internet. Already, NASA, Surgeons and Pilots use VR. Now, as innovators embrace this new technology, virtual reality will transform our future world in ways that we've only just begun to imagine. In this immersive workshop, learners will experience true virtual reality using the Oculus Rift state of the art VR. Come for a glimpse into how VR is made and what you might have to do to stay on the leading edge of the next tech revolution!

www.oculus.com; www.ncat.edu; www.nianet.org; www.ska.ac.za

oculus

NATIONAL INSTITUTE OF AEROSPACE

NRF National Research Foundation | SARAO South African Radio Astronomy Observatory

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

EXTRACTION OF DNA FROM STRAWBERRIES

DATE:	Daily
TIME:	13h00-14h00
VENUE:	Albany Science Museum, Education Classroom
AUDIENCE:	Grade 7+
CAPACITY:	20
PRICE:	R25

Have you ever wondered how scientists extract DNA from an organism? All living organisms have DNA, short for deoxyribonunucleic acid, which is basically the blueprint for everything that happens inside organism's cells. Overall, DNA tells an organism how to develop and function, and is so important that this complex compound is found in virtually every one of its cells. In this activity you will make your own DNA extraction kit from household chemicals and use it to separate DNA from strawberries.

ENDOTHEMIC AND EXOTHEMIC REACTIONS

DATE:	Daily
TIME:	15h00-16h00
VENUE:	Albany Science Museum, Education Classroom
AUDIENCE:	Grade 7+
CAPACITY:	20
PRICE:	R25

Every chemical reaction that exists is one of two things: endothermic and exothermic. The Greek root therm means temperature or heat, which gives us a clue about all reactions: there is energy exchange! Endo means 'within' while exo means 'outside', so these types of reactions are opposite. Students will observe a series of reactions using household ingredients to determine if they are endothermic or exothermic.

ENGINEERING CHALLENGE: BRIDGE BUILDING

DATE:	Daily
TIME:	11h00-12h00
VENUE:	Albany Science Museum, Education Classroom
AUDIENCE:	Grade 1-5
CAPACITY:	20
PRICE:	R25

Can you design a gumdrop bridge? Creating shapes with gumdrops and toothpicks is a lot of fun, but the challenge comes when you try to build a structure using them. The goal is to work as a team to make a load-bearing bridge crossing a 25.4cm span, using only 20 gumdrops and 40 toothpicks.

These workshops are supported by the US Embassy in South Africa

www.nist.gov; https://za.usembassy.gov/embassy-consulates

SOUTH AFRICAN SOCIETY FOR BIOINFORMATICS STUDENT COUNCIL (SASBISC)

BIOINFORMATICS FOR BEGINNERS

DATE:	Daily
TIME:	11h00-13h00
VENUE:	Monument, Ntsikana Gallery Annexe
AUDIENCE:	Grade 11+
CAPACITY:	20
PRICE:	R25

Bioinformatics is a broad interdisciplinary field representing the interface between molecular biology and computers. This discipline focuses on using databases and computer algorithms to answer complex biological questions relating to the functioning of small molecules, pathways, diseases and evolution. This workshop is aimed at introducing young scientists to the new and exciting field of Bioinformatics and prepare them for today's 'data-driven' biological research.

http://sasbistudents.weebly.com/

SIYAVULA EDUCATION

SIYAVULA PRACTICE

SIYAVULA
TECHNOLOGY-POWERED LEARNING

DATE:	Daily
TIME:	11h00-12h00, 13h00-14h00
VENUE:	Monument, Restaurant
TIME:	15h00-16h00
VENUE:	Monument, Ground Floor Classroom
AUDIENCE:	Grade 8-12
CAPACITY:	30
PRICE:	R25

Siyavula Practice offers high school learners a chance to improve their marks, while helping them master their skills in Maths and Science. With an unlimited number of questions and their fully worked-out solutions available, learners are able to see where they have gone wrong and improve on their mistakes. Want a way to improve your marks at your fingertips? Then Siyavula Practice is for YOU!

www.siyavula.com

SCI-BONO DISCOVERY CENTRE

SCIENCE OF FLIGHT

DATE:	7-9, 11-13 March
TIME:	13h00-14h00
VENUE:	Albany Science Museum, Green Gallery
AUDIENCE:	Grade 4-8
CAPACITY:	30
PRICE:	R25

How is a plane able to take flight? How do birds stay up in the sky? From the Wright Brothers' first flight in 1903 to the modern day planes and jets, come along and explore the science of flight while experimenting with paper planes.

BIONICS

DATE:	8, 10, 11, 13 March
TIME:	09h00-10h00
VENUE:	Albany Science Museum, Education Classroom
AUDIENCE:	Grade 4-8
CAPACITY:	30
PRICE:	R25

The bionic man is no longer a fiction of science, it is a reality. Experiment with, and explore the application of biological systems found in nature, space exploration, and design of engineering and modern technology.

www.sci-bono.co.za

SCIFEST AFRICA

CREATIVE CHROMATOGRAPHY

DATE:	Daily
TIME:	09h00-10h00
VENUE:	Albany Science Museum, Rennie Hall
AUDIENCE:	Grade 7-9
CAPACITY:	30
PRICE:	R25

A homogenous mixture, also known as a solution, is simply any mixture that is the same in composition throughout. Chromatography is a broad range of physical methods used to separate and/or to analyse complex mixtures. Fruit juices, powder drinks and soft drinks all contain a number of ingredients (including food colouring) that are not visible to the naked eye. Use art and chromatography to determine which food colourings are found in your favourite drinks.

DIY DESSERT

DATE:	Daily
TIME:	09h00-10h00
VENUE:	Albany History Museum, Standard Bank Gallery
AUDIENCE:	Grade 7-9
CAPACITY:	30
PRICE:	R25

Exhausted after a hectic morning at Scifest Africa, really feel like an ice-cream, but still have so much to do and so little time? Use ice, milk, salt and sugar to make your own ice-cream, while learning about freezing point depression, endothermic and exothermic reactions and physical change.

FOAM GNOMES

DATE:	Daily
TIME:	13h00-14h00
VENUE:	Albany History Museum, Standard Bank Gallery
AUDIENCE:	Grade 7-9
CAPACITY:	30
PRICE:	R25

Polyurethane foam is abundantly found in manufactured products and has many practical applications, including footwear, insulation and upholstery. Learn to create polyurethane foam; identify obvious indicators that a chemical change has occurred; and make, decorate and name your own foam gnome! Then, and we dare you, use your gnome to photobomb a classmate's selfie.

BUILD A COMET

DATE:	Daily
TIME:	11h00-12h00
VENUE:	Albany History Museum, Standard Bank Gallery
AUDIENCE:	Grade 6+
CAPACITY:	20
PRICE:	R25

On 12 November 2014, the European Space Agency's Rosetta Mission landed its Philae probe on a comet; the first time in history that such an extraordinary feat has been achieved! Find out where comets come from and how to observe them, and then build your very own true-to-life comet using everyday household materials in this cool workshop developed by the Planetary Science Institute, USA.

www.psi.edu

SCIFEST AFRICA

MANKALA

DATE:	Daily
TIME:	11h00-12h00
VENUE:	Albany Science Museum, Rennie Hall
AUDIENCE:	Grade 6+
CAPACITY:	20
PRICE:	R25

Mankala is an indigenous counting board game, similar to checkers, which has been played in Africa since the 6th Century CE. Learn to play mankala while discovering the contribution of Africa to mathematics, from the oldest mathematical object found in Swaziland to geometric symmetries found in modern African art.

MATHEMATICS OF BEADING

DATE:	Daily
TIME:	13h00-15h00
VENUE:	Albany Science Museum, Rennie Hall
AUDIENCE:	Grade 8+
CAPACITY:	10
PRICE:	R25

Use the mathematics traced in the integrity of beadwork by South Africa's leading beadwork artists, as well as hands-on beading activities, to learn general mathematical concepts such as numbers, polygynous figures, tessellations, symmetry, proportion, etc., and to promote public awareness and engagement with this art form.

MICRO ROCKETS

DATE:	Daily
TIME:	09h00-12h00
VENUE:	Monument, Fort Selwyn
AUDIENCE:	Grade 4+
CAPACITY:	14
PRICE:	R25

This workshop, developed by volunteers of Planète Sciences, France, will allow you to dream about travelling to space, design and build your own original micro-rocket, launch it outside Fort Selwyn (weather permitting), and watch it soar!

www.planete-sciences.org

WHAT'S THE MATTER?

DATE:	Daily
TIME:	09h00-10h00
VENUE:	Albany Science Museum, Green Gallery
AUDIENCE:	Grade 7-9
CAPACITY:	20
PRICE:	R25

Density is how close together the molecules of a substance are, or how much mass a substance has in a given space. Will you be able to shout "Eureka!" like the great Archimedes? Explore how you can use density to determine the identity of unknown metals by doing a few simple measurements.

www.scifest.org.za

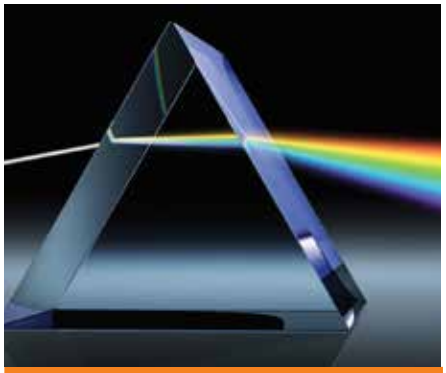
UNIVERSITY OF EAST ANGLIA

MAKE YOUR OWN SLIME

DATE:	7, 9-13 March
TIME:	13h00-14h00
VENUE:	Monument, Rehearsal Room
AUDIENCE:	Grade 6-12
CAPACITY:	30
PRICE:	R25

You will use inexpensive materials, which are available from supermarkets, pharmacies, and hardware stores throughout the country (and probably your mother's grocery cupboard – but we will deny saying that), and unsophisticated and accessible equipment, to make and test your very own yucky slime.

SPECTROSCOPY IN A SUITCASE



DATE:	7-11, 13 March
TIME:	09h00-10h00
VENUE:	Monument, Rehearsal Room
AUDIENCE:	Grade 10-12
CAPACITY:	30
PRICE:	R25

When Isaac Newton passed a beam of sunlight through a prism in 1666, a continuous spectrum of light, consisting of all the colours of the rainbow, could be seen. This discovery led to the invention of the spectroscope in 1819. A spectroscope allows us to learn about the colours present in a light beam, which tells us more about what materials are made of. Make your own spectroscope, see a spectrometer in action, and start to analyse the world around you using light.

www.uea.ac.uk/chemistry

UNIVERSITY OF KWAZULU-NATAL, SCIENCE AND TECHNOLOGY EDUCATION CENTRE

GOING NANO – WHAT MAKES A CRYSTAL?

DATE:	Daily
TIME:	11h00-12h00
VENUE:	Monument, Art Gallery
AUDIENCE:	Grade 10+
CAPACITY:	30
PRICE:	R25

Have you ever wondered why some crystals are hard and some are soft, or some blue and others don't have a colour at all? Join us on a tour to the inside of crystals and explore the roles of atoms and the relationship between the arrangements of atoms and the properties of these materials.

SMART MATERIALS

DATE:	Daily
TIME:	15h00-16h00
VENUE:	Albany History Museum, Standard Bank Gallery
AUDIENCE:	Grade 3-5
CAPACITY:	30
PRICE:	R25

Humans have been modifying the properties of materials for thousands of years. In modern times, scientists have learned more about what gives materials their unique properties, and this has opened up possibilities for designing materials with interesting properties. In this workshop we will explore some of these exciting materials and will investigate what happens to these materials when we change the temperature or expose the material to water and UV light.

www.stec.ukzn.ac.za

UNIVERSITY OF LIMPOPO SCIENCE CENTRE

PHOTOAQUA KIDS PUPPET SHOWS

DATE:	Daily
TIME:	11h00-12h00, 15h00-16h00
VENUE:	Albany Science Museum, Green Gallery
AUDIENCE:	Grade R-7
CAPACITY:	50
PRICE:	R25

The PhotoAqua Kids puppet show consists of two plays, one on water shortage and the other on photosynthesis. The water shortage play will focus on the current challenges we are facing as South Africans with our water being cut-off due to long drought conditions, the importance of water and how to save water. The photosynthesis play will focus on the importance of plants in our lives, looking at the nutrients and how the process of photosynthesis takes place.

www.ul.ac.za

UNIVERSITY OF SOUTH AFRICA (UNISA)

I-SET

DATE:	Daily
TIME:	12h00-14h00
VENUE:	Monument, The Bridge
AUDIENCE:	Grade 8-12
CAPACITY:	30
PRICE:	R25

I-Set (Inspired towards Science, Engineering and Technology) is a community engagement flagship project of Unisa's College of Science, Engineering and Technology (CSET) and Research and Innovation portfolio. Aiming to inspire awareness and interest in the fields of science, engineering and technology, I-SET targets learners between the ages of 9 and 16 and their communities. The exercise uses fun activities, including the building of programmable robots, using Lego MindStorms to achieve robotic challenges.

www.unisa.ac.za/cset

DID YOU KNOW

SOUND TRAVELS ABOUT 4 TIMES FASTER IN WATER THAN IN AIR. IN WATER, THE PARTICLES ARE MUCH CLOSER TOGETHER, AND THEY CAN QUICKLY TRANSMIT VIBRATION ENERGY FROM ONE PARTICLE TO THE NEXT. THIS MEANS THAT THE SOUND WAVE TRAVELS OVER FOUR TIMES FASTER THAN IT WOULD IN AIR, BUT IT TAKES A LOT OF ENERGY TO START THE VIBRATION.

ETCETERA

All interactive events that refuse to be classified as lectures, workshops or exhibitions are included in the Etcetera section of the official programme. Catch a sci-fi film, dig for fossils at the Kids' Dig, be rendered speechless by the Laser Show, build a soap box car for the big derby, or catch the best of Scifest Africa at the Sunset Show.

Start	End	**Organisation** *Title*	Audience	Capacity	Price	Venue
DAILY						
09h00 14h30	09h30 15h00	**Laser Show**	All	900	R25	Monument, Guy Butler Theatre
09h00 10h00 11h00 12h00 14h00 15h00 16h00	09h45 10h45 11h45 12h45 14h45 15h45 16h45	**Activity Zones** *A Journey to Space and Cosmic Collision*	All	35	Free, Timed entry	Monument, Thomas Pringle
11h00 15h00	12h30 16h30	**Activity Zones** Kids Dig	Gr R-7	16	R25	Monument, Fort Selwyn Grounds
13h00 15h00	14h00 16h00	**Talkshop** *Building Blocks for a career*	Gr 7-12	50	R25	Monument, Shakespeare Pub
WEDNESDAY, 7 MARCH						
09h00 11h00 13h00	10h00 12h00 14h00	**Scikids**	Gr R-3	45	Free, Booking Essential	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Str)
10h30	11h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Kitchen Chemistry Seconds*	Gr 3+	900	R25	Monument, Guy Butler Theatre
11h00	12h00	**Paper Aeroplane Competition**	Gr 4-7	24	R25	Monument, Sun Gallery
11h00	12h00	**Talkshop** *My Science teacher in My Pocket*	Gr 10+	200	R25	Monument, Olive Schreiner Hall
12h00	13h00	**Speed-Date-a-Scientist**	Gr 8-12	24	R5	Monument, Fynbos Hub
12h30	13h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Walking Tall: The tree of life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
15h00	16h00	**Discovery Trail**	All	20	R25	National English Literary Museum
15h00	16h00	**STEM Olympics** *The Tower Challenge*	Gr 4-12	24	Free, Booking Essential	Monument, Fynbos Hub
16h00	17h00	**Educational Theatre/ Science Shows/ Virtual Tours** *Wonders of the Earth*	All	900	R25	Monument, Guy Butler Theatre
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
19h30 for 20h00		**A conversation with…**	18+	30	R180 pp	Saints Bistro, 131 High Street
20h00		**Film Festival** *I, Robot (2004)*	PG 13	200	R25	Monument, Olive Schreiner Hall
THURSDAY, 8 MARCH						
09h00 11h00 13h00	10h00 12h00 14h00	**Scikids**	Gr R-3	45	Free, Booking Essential	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Str)
10h30	11h30	**Educational Theatre/Science Shows/Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
11h00	12h00	**Paper Aeroplane Competition**	Gr 4-7	24	R25	Monument, Sun Gallery
12h00	13h00	**Speed-Date-a-Scientist**	Gr 8-12	24	R5	Monument, Fynbos Hub
12h30	13h30	**Educational Theatre/Science Shows/Virtual Tours** *Kitchen Chemistry Seconds*	Gr 3+	900	R25	Monument, Guy Butler Theatre
13h00	14h00	**Talkshop** *Innovative Words*	Gr 10+	100	R25	National English Literary Museum, Activity Room 2
15h00	16h00	**Discovery Trail**	All	20	R25	National English Literary Museum

15h00	16h00	**STEM Olympics** Brain Power	Gr 4-12	24	Free, Booking Essential	Monument, Fynbos Hub
17h00	18h00	**Science Café** *Embracing the Fourth Industrial Revolution… Is South Africa ready?*	Gr 12+	20	R25	Handmade Coffees, Festival Gallery, 38 Somerset Str
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
18h00	20h00	**Fun Family Maths Evening**	Gr 4-9 & Adults	60	R25	St Andrews Prep, Memory Hall
19h30	20h00	**Revenge of the Smarty Pants**	18+	10 teams (max 6 pp team)	R150 per team	Monument, Restaurant
20h00		**Film Festival** *The Dish (2000)*	PG 13	200	R25	Monument, Olive Schreiner Hall
FRIDAY, 9 MARCH						
09h00 11h00 13h00	10h00 12h00 14h00	**Scikids**	Gr R-3	45	Free, Booking Essential	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Str)
10h00	12h00	**SANSA Satellite Building Competition**	Gr 4-6	30	Free, Booking Essential	Monument, Shakespeare Pub
10h30	11h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Wonders of the Earth*	All	900	R25	Monument, Guy Butler Theatre
11h00	13h00	**Cardboard Challenge**	All (U10-Adult super-vision)	24	R25	Monument, Sun Gallery
12h00	14h00	**Book Launch** *Skin We Are In*	All	100	Free, Booking Essential	National English Literary Museum, Auditorium
12h00	13h00	**Speed-Date-a-Scientist**	Gr 8-12	24	R5	Monument, Fynbos Hub
12h30	13h30	**Educational Theatre/Science Shows/Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
15h00	16h00	**Discovery Trail**	All	20	R25	National English Literary Museum
15h00	16h00	**STEM Olympics** Brain Crunch	Gr 4-12	24	Free, Booking Essential	Monument, Fynbos Hub
16h00	17h00	**Educational Theatre/Science Shows/Virtual Tours** *NASA Robotics Lab Virtual Tour*	All	900	R25	Monument, Guy Butler Theatre
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
SATURDAY, 10 MARCH						
10h00	13h00	**Science Picnic in the Park**	All	300	Free	Makana Botanical Gardens, Lucas Avenue
10h30	11h30	**Educational Theatre/Science Shows/Virtual Tours** *A Pollutants Tale*	Gr 4+	900	R25	Monument, Guy Butler Theatre
12h30	13h30	**Educational Theatre/Science Shows/Virtual Tours** *Wonders of the Earth*	All	900	R25	Monument, Guy Butler Theatre
13h00	16h00	**City on a Journey!**	All	800	R5	Makana Botanical Gardens Main Entrance, Lucas Avenue
13h00 17h00	15h00 19h00	**Cooking with Science**	All	30	R25	The Rustic Route, 1 Scotts Avenue
15h00	16h00	**Educational Theatre/Science Shows/Virtual Tours** *NAUTILUS Live*	All	200	R25	Monument, Olive Schreiner Hall
16h00	17h00	**Educational Theatre/ Science Shows/ Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
18h00	20h00	**Star Party** *Innovate!*	All	200	R25	National English Literary Museum, Foyer
20h00	22h00	**Murder at NELM**	Gr 8+ and Adults	40	R25	National English Literary Museum, Auditorium
SUNDAY, 11 MARCH						
10h00		**Soap Box Derby**	Gr 8+ and Adults	8 teams (4 people per team)	R40 per team	Monument, Front Entrance

10h30	11h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Kitchen Chemistry Seconds*	Gr 3+	900	R25	Monument, Guy Butler Theatre
12h30	13h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
16h00	17h00	**Educational Theatre/ Science Shows/ Virtual Tours** *Wonders of the Earth*	All	900	R25	Monument, Guy Butler Theatre
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
18h00	20h00	**Comedy Night**	18+	50	R50 for two	Monument, Restaurant
20h00		**Film Festival** *Transformers: The Last Knight (2017)*	PG13	200	R25	Monument, Olive Schriener Hall
MONDAY, 12 MARCH						
09h00 11h00 13h00	10h00 12h00 14h00	**Scikids**	Gr R-3	45	Free, Booking Essential	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Str)
10h00	12h00	**Rhodes University High School Quizzes** *Junior Final*	All	200	Free, Booking Essential	Monument, Olive Schreiner Hall
10h30	11h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Wonders of the Earth*	All	900	R25	Monument, Guy Butler Theatre
11h00 15h00	12h30 16h30	**Museum Treasure Hunt**	Gr 7-9 Gr 10-12	40	R25	Albany Science Museum, Foyer
11h00	12h00	**Paper Aeroplane Competition**	Gr 4-7	24	R25	Monument, Sun Gallery
12h00	13h00	**Speed-Date-a-Scientist**	Gr 8-12	24	R5	Monument, Fynbos Hub
12h30	13h30	**Educational Theatre/Science Shows/Virtual Tours** *A Pollutants Tale*	Gr 4+	900	R25	Monument, Guy Butler Theatre
14h30	16h30	**Rhodes University High School Quizzes** *Senior Final*	All	200	Free, Booking Essential	Monument, Olive Schreiner Hall
15h00	16h00	**STEM Olympics** *Brain Massage*	Gr 4-12	24	Free, Booking Essential	Monument, Fynbos Hub
16h00	17h00	**Educational Theatre/ Science Shows/ Virtual Tours** *Kitchen Chemistry Seconds*	Gr 3+	900	R25	Monument, Guy Butler Threatre
17h00	17h45	**Sunset Show**	All	200	R5	Monument, Olive Schreiner Hall
17h00	18h00	**Talkshop** *Innovative Words*	Gr 10+	100	R25	National English Literary Museum, Activity Room 2
19h00 till late		**Pub Science**	18+	40	Free, Booking Essential	The Rat & Parrot, 59A New Street
20h00		**Film Festival** *The Theory of Everything (2014)*	PG 13	200	R25	Monument, Olive Schreiner Hall
TUESDAY, 13 MARCH						
09h00 11h00 13h00	10h00 12h00 14h00	**Scikids**	Gr R-3	45	Free, Booking Essential	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Str)
10h30	11h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Kitchen Chemistry Seconds*	Gr3+	900	R25	Monument, Guy Butler Theatre
11h00	12h00	**Paper Aeroplane Competition**	Gr 4-7	24	R25	Monument, Sun Gallery
12h00	13h00	**Speed-Date-a-Scientist**	Gr 8-12	24	R5	Monument, Fynbos Hub
12h30	13h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
12h30	13h30	**Educational Theatre/ Science Shows/ Virtual Tours** *Walking Tall: The Tree of Life*	Gr 8+	900	R25	Monument, Guy Butler Theatre
15h00	16h00	**Science Olympics** *Eggciting Egg Drop*	Gr 4-12	24	Free, Booking Essential	Monument, Fynbos Hub
16h00	17h00	**Educational Theatre/Science Shows/Virtual Tours** *A Pollutants Tale*	Gr 4+	900	R25	Monument, Guy Butler Theatre

ACTIVITY ZONES

Activity zones allow children to role play as scientists in order to gain a better understanding of concepts, topics and processes of thinking in scientific disciplines, while providing an experiential base and motivation for further activity and learning.

A JOURNEY TO SPACE AND COSMIC COLLISION

DATE:	Daily
TIME:	09h00-09h45, 10h00-10h45, 11h00-11h45, 12h00-12h45, 14h00-14h45, 15h00-15h45, 16h00-16h45
VENUE:	Monument, Thomas Pringle
AUDIENCE:	All
CAPACITY:	35
PRICE:	Free, Timed Entry

The StarLab is an inflatable planetarium geared towards the introduction of the basic principles of astronomy and is a fun way for children to learn about the subject. Enter space and discover our Universe, galaxy and solar system.

www.saasta.ac.za

KIDS DIG

DATE:	Daily
TIME:	11h00-12h30, 15h00-16h30
VENUE:	Monument, Fort Selwyn Grounds
AUDIENCE:	Grade R-7
CAPACITY:	16
PRICE:	R25

Developed by Children's Discovery Museum, Australia, the Kids Dig encourages children to grab safety gear and tools, start digging to unearth historical artefacts and fossils, and help tell the story of the geological, paleontological and archaeological past of Grahamstown.

www.childrensdiscovery.org.au

A CONVERSATION WITH...

DATE:	7 March
TIME:	19h30 for 20h00
VENUE:	Saint's Bistro, 131 High Street
AUDIENCE:	18+
CAPACITY:	30
PRICE:	R180 per person

Unwind after a hectic day at Scifest Africa with good food and good company. Learn about the secret lives of our high-profile scientists over dinner at the Saint's Bistro. The ticket price includes entrance to the event, a meal and a soft drink.

CARDBOARD CHALLENGE

DATE:	9 March
TIME:	11h00-13h00
VENUE:	Monument, Sun Gallery
AUDIENCE:	All (under 10 - Adult supervision)
CAPACITY:	24
PRICE:	R25

The Global Cardboard Challenge is an annual event that invites the world to build anything awesome out of cardboard, recycled materials and imagination. The challenge aims to instil creative thinking as a core skill and social value, give children opportunities to create and learn based on their passions, foster a community of creative makers, introduce social entrepreneurship at a young age, and use storytelling to celebrate exceptional children and inspire communities. Using the materials supplied, let your imagination go where no imagination has gone before. Visit cainesarcade.com to watch the video that inspired this movement.

CITY ON A JOURNEY!

DATE:	10 March
TIME:	13h00-16h00
VENUE:	Makana Botanical Gardens Main Entrance, Lucas Avenue
AUDIENCE:	All
CAPACITY:	800
PRICE:	R5

Takkies, walkers, stilts, rollerblades, skateboards, prams, tricycles, bicycles, and even mobile science centres. Bring your own "wheels" and join us for a fun walk as we celebrate innovation and its journey towards success.

FILM FESTIVAL

Celebrate the collision of entertainment and science in our science film festival, which presents films related to this year's science festival theme, and aims to inspire a passion for art and science through film. Bring your spare change for the refreshments on sale.

TIME:	20h00
VENUE:	Monument, Olive Schreiner Hall
CAPACITY:	200
PRICE:	R25

I, ROBOT (2004)

DATE:	7 March
DURATION:	115 minutes
AGE:	PG 13

In 2035, a technophobic cop investigates a crime that may have been perpetrated by a robot, which leads to a larger threat to humanity.

Directed by: Alex Proyas
Starring: Will Smith, Bridget Moynahan, Bruce Greenwood

TRANSFORMERS: THE LAST KNIGHT (2017)

DATE:	11 March
DURATION:	154 minutes
AGE:	PG

Autobots and Deceptions are at war, with humans on the sidelines. Optimus Prime is gone. The key to saving our future lies buried in the secrets of the past, hidden history of Transformers on Earth.

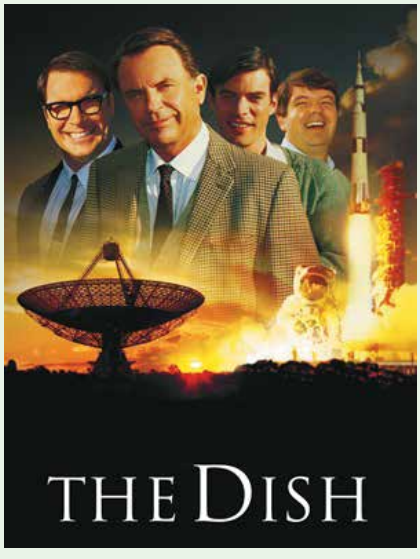
Directed by: Micheal Bay
Starring: Mark Wahlberg, Anthony Hopkins, Josh Duhamel

THE THEORY OF EVERYTHING (2014)

DATE:	12 March
DURATION:	123 minutes
AGE:	PG 13

A look at the relationship between the famous physicist Stephen Hawking and his wife.

Directed by: James Marsh
Starring: Eddie Redmayne, Felicity Jones, Tom Prior



THE DISH (2000) FREE SCREENING - BOOKING ESSENTIAL

DATE:	8 March
DURATION:	101 minutes
AGE:	PG 13

Based on a true story, *The Dish* takes a sometimes comical look at the differing cultural attitudes between Australia and the U.S. while revisiting one of the greatest events in history. It depicts the activities in a control room of a radio telescope doing a job it was not originally expected to do, but in the end did very well. The film dramatises the team-work of a few technicians, who sometimes nearly lose their cool with each other, painted against a backdrop of proud Australian town folk, with visiting dignitaries hoping nothing will go wrong at the crucial moment.

Directed by: Rob Sitch
Starring: Sam Neill, Billy Mitchell, Roz Hammond

Free public screening, brought to you by the Australian High Commission in Pretoria.

Australian High Commission

DISCOVERY TRAIL

DATE:	7-9 March
TIME:	15h00-16h00
VENUE:	National English Literary Museum, 25A Worcester Street
AUDIENCE:	All
CAPACITY:	20
PRICE:	R25

Join Basil Mills on a journey of discovery through NELM. Observe like a naturalist, guess like a historian and imagine like a poet, as he guides you through bush and bush lore. On this short and gentle hike, you will learn more about Grahamstown's unique natural environment, but also hear tales of some of the authors, playwrights and actors that have passed through the City of Saints. Basil Mills and his Kalahari Ferrari are legendary in Grahamstown. South Africa's Steve Irwin, Big Bas was born one of twins in a sanctuary, nursed by a chimpanzee, performed in a circus as a stunt rider, lived with the San learning their language and tracking skills, and worked as a game ranger in Mpumalanga.

Basil is an Education Officer at the National English Literary Museum and is respected for his extensive knowledge of South Africa's natural and human history, animal rescue and rehabilitation work, restoration projects and historic battle re-enactments, and his use of storytelling to encourage an interest in literature and reading.

LASER SHOW

DATE:	Daily
TIME:	09h00-09h30; 14h30-15h00
VENUE:	Monument, Guy Butler Theatre
AUDIENCE:	All
CAPACITY:	900
PRICE:	R25

Let LaserX take your breath away as they recreate the best of the Laser Show using a dramatic combination of lasers, ice fog and live performers.

www.laserx.co.za

Please note: Ticket sales for this event close 30 minute prior to each show. Visitors must be seated by 08h55 and 14h25, respectively for the morning and afternoon show. No latecomers will be allowed entry into the venue.

FUN FAMILY MATHS EVENING

DATE:	8 March
TIME:	18h00-20h00
VENUE:	St Andrew's Prep, Memory Hall
AUDIENCE:	Grade 4-9 and Adults
CAPACITY:	150
PRICE:	R25

Join us for a Fun Family Maths Evening. It will be an exciting evening of brainteasers and stimulating problems. The living maths team are at it again with their whacky antics. Bring something to write with and a pair of scissors. Crazy is the new normal.

MURDER AT NELM

DATE:	10 March
TIME:	20h00-22h00
VENUE:	National English Literary Museum, Auditorium, 25A Worcester Street
AUDIENCE:	Grade 8+ and Adults
CAPACITY:	40
PRICE:	R25

Join us tonight at NELM, where the eccentric (and somewhat abrasive) book binder and amateur environmentalist Dr Willy Helmsford will be introducing his latest tract: "Death of the Orange River." We invite the sharp, investigative minds of amateur sleuths and armchair Sherlocks to assist us in unpacking Dr Helmsford's analysis of the river's murder. However, we must warn audience members that Dr H's views have not always been popular with the corporate concerns making use of this national waterway, and threats have been received against his person by groups ranging from Agricor to Zeek River Tours.

MUSEUM TREASURE HUNT

DATE:	12 March
TIME:	11h00-12h30 (Grade 7-9) 15h00-16h30 (Grade 10-12)
VENUE:	Albany Science Museum, Foyer
CAPACITY:	40
PRICE:	R25

Explore the Eastern Cape's oldest Museum and hunt for clues in its information packed galleries. Along the way learn about the solar system, the story of water, African fishing methods and the diversity of birds. Go deeper into the Eastern Cape's unique fossil heritage, its mammals and invertebrates, and the AmaXhosa use of indigenous plants. Use the information found on your journey through the Albany Natural Sciences Museum to find your next clue, and eventually, hidden treasure!

PAPER AEROPLANE COMPETITION

DATE:	7,8, 12, 13 March
TIME:	11h00-12h00
VENUE:	Monument, Sun Gallery
AUDIENCE:	Grade 4-7
CAPACITY:	24
PRICE:	R25

Learn more about the aviation industry, from aircraft design and maintenance to careers in aviation. Choose your call sign and make your own paper aeroplane to enter the Paper Aeroplane Competition. Prizes are up for grabs.

PUB SCIENCE

DATE:	12 March
TIME:	19h00 till late
VENUE:	The Rat & Parrot, 59A New Street
AUDIENCE:	18+
CAPACITY:	40
PRICE:	Free, Booking Essential

Because you needed an excuse to go to The Rat & Parrot on a Monday night.

Grab a pint, meet our Scifest Africa 2018 contributors, talk to them about their work, watch as they do science using only what they can find in the pub, and later (much later), tell them of your crazy idea to save the world. Cash bar available.

REVENGE OF THE SMARTY PANTS

DATE:	8 March
TIME:	19h30 for 20h00
VENUE:	Monument, Restaurant
AUDIENCE:	18+
CAPACITY:	10 teams
PRICE:	R150 per team (max 6 people per team)

Scifest Africa presents its very own Battle of the Brains. Locals are invited to enter teams in a general knowledge challenge with a difference and show our visiting geniuses a thing or two… or three. Cash bar available and supporters are welcome.

SANSA SATELLITE BUILDING COMPETITION

DATE:	9 March
TIME:	10h00-12h00
VENUE:	Monument, Shakespeare Pub
AUDIENCE:	Grade 4-6
CAPACITY:	30
PRICE:	Free, Booking Essential

What is a satellite? What are the uses of a satellite? Do you think you know what goes into building a great satellite? Given the time pressure, do you think you could build one? Book your spot and get building!

RHODES UNIVERSITY HIGH SCHOOL QUIZZES

JUNIOR FINAL

DATE:	12 March
TIME:	10h00-12h00
VENUE:	Monument, Olive Schreiner Hall
AUDIENCE:	All
CAPACITY:	200
PRICE:	Free, Booking Essential

SENIOR FINAL

DATE:	12 March
TIME:	14h30-16h30
VENUE:	Monument, Olive Schreiner Hall
AUDIENCE:	All
CAPACITY:	200
PRICE:	Free, Booking Essential

Bells, that deer-in-the-headlights look, flashing lights, whispers from the audience and flat panic, are the tell-tale signs of the Rhodes University High School Quiz at Scifest Africa.

Support the brightest in the country, as the top four teams in each category battle it out for the title of champion!

Great prizes are up for grabs and the winning team in the Senior High School Quiz will each win a one-year scholarship to Rhodes University to study science. (Ts & Cs apply)

DATE:	7-9, 12, 13 March
TIME:	15h00-16h00
VENUE:	Monument, Fynbos Hub
AUDIENCE:	Grade 4-12
CAPACITY:	24
PRICE:	Free, Booking Essential

STEM OLYMPICS

7 March - The Tower Challenge

Your team will be given a box of straws. Using only the straws and nothing else, you will need to build the highest free-standing tower that you can. It may not lean on anything for support. It has to be free-standing for a minimum of one minute. Go too high and you stand the risk of collapse. Go too low you stand the risk of being defeated. Think carefully about your strategy.

8 March - Brain Power

Each team will receive a fun set of puzzle type activities. Using your teams combined brainpower, will you be able to outsmart the opposing teams? Thinking outside of the box is essential!

9 March - Brain Crunch

Take a little bit of logic, a little bit of thinking outside of the box and a never-give-up attitude. We dare you to complete tricky tasks. Show the other teams what you are made of!

12 March - Brain Massage

Each team will receive a fun set of puzzle type activities. Using your teams combined brainpower, will you be able to outsmart the opposing teams? Thinking outside of the box is essential.

13 March - Eggciting Egg Drop

With the limited items that your team is given, the challenge is on to build a protective housing for your precious egg. You will then drop your egg from various heights. The egg that survives the drop in the best condition will win the challenge.

EDUCATIONAL THEATRE/SCIENCE SHOWS/ VIRTUAL TOURS

VENUE:	Monument, Guy Butler Theatre
CAPACITY:	900
PRICE:	R25

NASA Johnson Space Center

NASA Robotics Lab Virtual Tour

AUDIENCE: All

NASA does some amazing things! Using robots to explore space is one of NASA's cutting-edge technologies. They use robots and robotic tech to explore the entire solar system. Robotic tech has long been used from rovers on Mars to deep space probes out on the edges of our solar system. Robotic tech is now advancing to become assistance for astronauts as we begin sending humans deeper into space! Located in Houston, Texas USA, the NASA Johnson Space Center has been at the centre of this effort since the 1990s! What will the robots of the future look like? How might this advanced space technology change the robots we will be using here on Earth? What does the future hold for man-machine collaboration? NASA JSC invites you to take an exciting tour of NASA's famous Building 9 where all of this is happening. Come and meet the robots of the future!

https://www.nasa.gov/centers/johnson/home/index.html

Palaeontological Scientific Trust (PAST)

Walking Tall: The Tree of Life

AUDIENCE: Grade 8+

A professional physical theatre production and science workshop presented by PAST's acclaimed Walking Tall Educational Theatre Project. The theatre production depicts the shared origins of life and humankind, taking audiences on a 4.6 billion-year journey through time from the origins of the Earth to present day, focusing on the major stages of human evolution. It shows how an understanding of the shared origins of humankind is a powerful tool for combatting discrimination, and how the shared origins of all living things help to promote the conservation of nature and biodiversity. Walking Tall has reached over 1.3 million school children and teachers across Africa and abroad". The workshop addresses aspects of the Life Sciences curriculum related to evolution, including genetics, natural selection and deep time.

PAST is a public benefit organisation based in Johannesburg dedicated to the protection preservation and promotion of scientific evidence for our shared origins in Africa and to making this evidence valuable to the future of humankind. PAST's vision is to inspire curiosity and appreciation for ancient heritage among Africa's youth, and to develop global scientific leadership by African origin scientists. Since 1994, the organisation has brought together scientists, business, government and communities to support research, education and public awareness in the sciences related to our origins.

www.past.org.za

Sci-Bono Discovery Centre

Wonders of the Earth

AUDIENCE: All

The Earth is a system of complex interactions with an enormous amount of processes that shape it into what it is now. From the gases that make up our atmosphere, to the sun which provides us with energy and the natural disasters like earthquakes, floods, tornadoes and volcanic eruptions that strike without warning, join us as we explore the wonders of our earth and investigate nature's might in this exciting show that will leave you on the edge of your seat.

Sci-Bono is a world-class science centre that supports maths, science and technology education and offers innovative, dynamic learning experiences that contribute to building South Africa's science, engineering and technology capacity.

www.sci-bono.co.za

University of Bristol, UK

A Pollutant's Tale

AUDIENCE: Grade 4+

Join us on a journey through the Earth's atmosphere, where we discover why it has so unique a composition in comparison with the others in the solar system. We will use exciting demonstration experiments to aid the journey as we consider stratospheric ozone depletion, air pollution and climate change. Latest data on all three topics will be presented and discussed. The talk is aimed at a general audience and is suitable for primary and secondary school children and the general public.

Dudley Shallcross is a Professor of Atmospheric Chemistry and CEO of the Primary Science Teaching Trust. He has wide ranging interests in atmospheric science and science education. One of his children will start as a primary school teacher in September, two are training to be Pharmacists and the last is a football referee.

www.bristol.ac.uk

VENUE:	Monument, Guy Butler Theatre
CAPACITY:	900
PRICE:	R25

University of East Anglia, UK

Kitchen Chemistry Seconds

AUDIENCE: Grade 3+

Dr Stephen Ashworth returns with his second set of dramatic experiments using everyday materials and items you might find in your grocery cupboard, under your bed, in the bottom of a drawer, under the sink, or in the garage as a chemistry set. See how to rip stuff apart, burn without air, make new materials, stabilise ultrathin layers of water, speed up chemical reactions, and use chemistry to generate electricity.

Dr Stephen Ashworth obtained his D.Phil. in Chemistry from Oxford University. He is currently a Reader in Chemistry, and Head of Natural Sciences at the University of East Anglia in Norwich. He became an adopted SAffie after his three month Kitchen Chemistry tour of South Africa in 2013.

Dr Ashworth has been involved in science communication for nearly two decades and has presented over 600 public demonstration lectures to audiences around the world.

www.kitchenchemistry.eu

This presentation has been sponsored by the University of East Anglia.

NAUTILUS

Nautilus Live

DATE:	10 March
TIME:	15h00-16h00
VENUE:	Monument, Olive Schreiner
AUDIENCE:	All
CAPACITY:	200
PRICE:	R25

In a world with lightning fast satellite and optical fibre connections, it is possible to broadcast real-life, real-time, scientific explorations. The Ocean Exploration Trust (OET) shares the forefront of ocean research with everyone around the world from three kilometres underwater. How do they do it? And what mysteries await us at the bottom of the ocean? Rachel Rayner was part of the OET's Corp of Exploration from 2015 – 2017. At this show, meet members of the team bringing marine science, robotic technology, geology and aquatic archaeology into public view, and hear tales of innovation and adventure from the deep sea.

https://nautiluslive.org/

	7 March	8 March	9 March	10 March	11 March	12 March	13 March
10:30-11:30	Kitchen Chemistry Seconds	Walking Tall	Wonders of the Earth	A Pollutants Tale	Kitchen Chemistry Seconds	Wonders of the Earth	Kitchen Chemistry Seconds
12:30-13:30	Walking Tall	Kitchen Chemistry Seconds	Walking Tall	Wonders of the Earth	Walking Tall	A Pollutants Tale	Walking Tall
16:00-17:00	Wonders of the Earth	A Pollutants Tale	NASA Robotics Lab Virtual Tour	Walking Tall	Wonders of the Earth	Kitchen Chemistry Seconds	A Pollutants Tale

SCIENCE CAFÉ

DATE:	8 March
TIME:	17h00-18h00
VENUE:	Handmade Coffees, Festival Gallery, 38 Somerset Street
AUDIENCE:	Grade 12+
CAPACITY:	20
PRICE:	R25

Topic: *Embracing the Fourth Industrial Revolution… is South Africa ready?*

Science Café is a global initiative that brings the general public together with scientists and experts together to talk about science topics that are interesting, timely and often controversial.

Hosted in a chilled setting by a local personality and open to those with an enquiring mind, these sessions are bound to unravel into lively conversation, raucous laughter and heated debate.

SCIENCE PICNIC IN THE PARK

DATE:	10 March
TIME:	10h00-13h00
VENUE:	Makana Botanical Gardens, Lucas Avenue
AUDIENCE:	All
CAPACITY:	300
PRICE:	Free

Bring a picnic basket and blanket and join our Scifest Africa 2018 contributors for a day of interactive, playful and fun science activities in Grahamstown's Botanical Gardens, including arts and crafts, a discovery trail, games, live entertainment, and science demonstrations.

SCIKIDS

DATE:	7- 9, 12, 13 March
TIME:	09h00-10h00, 11h00-12h00, 13h00-14h00
VENUE:	Victoria Girls' High School, Templeton Gymnasium (Entrance on Huntley Street)
AUDIENCE:	Grade R-3
CAPACITY:	45
PRICE:	Free, Booking Essential

Scikids is the first introduction to science for our younger visitors. Fun science demonstrations and activities run by High School pupils for Foundation Phase pupils to spark a love of science and learning. Offered in English, Afrikaans and isiXhosa.

SOAP BOX DERBY

DATE:	11 March
TIME:	10h00
VENUE:	Monument, Front Entrance
AUDIENCE:	Grade 8+ and Adults
CAPACITY:	8 teams
PRICE:	R40 per team

Do you have what it takes to build the next generation automotive model? Teams of four will be required to design, build and race a soap box car with a difference in this thrilling full-day workshop.

SPEED-DATE-A-SCIENTIST

DATE:	7-9, 12, 13 March
TIME:	12h00-13h00
VENUE:	Monument, Fynbos Hub
AUDIENCE:	Grade 8-12
CAPACITY:	24
PRICE:	R5

Learn more about science, scientists and science careers in this fast-paced event. Groups of two to four learners will be coupled with a scientist, and will then have three minutes to introduce themselves to the scientist, and finally ask the questions they have always been dying to ask. After three minutes, learners will move to the next scientist, and the fun starts all over again.

This event is presented in association with the Rhodes University Biotechnology Innovation & Engagement Centre

STAR PARTY

DATE:	10 March
TIME:	18h00-20h00
VENUE:	National English Literary Museum, Foyer, 25A Worcester Street
AUDIENCE:	All
CAPACITY:	200
PRICE:	R25

Innovate!

Scifest Africa and the Rhodes University Astronomy Society (AstroSoc) invite you to a Star Party! Look out for the games, arts and crafts and the opportunity to look through a telescope… stargazing!

SUNSET SHOW

DATE:	7-12 March
TIME:	17h00-17h45
VENUE:	Monument, Olive Schreiner Hall
AUDIENCE:	All
CAPACITY:	200
PRICE:	R5

Saturated after a hectic day at Scifest Africa? Miss one of the science shows on the programme? Just in the mood for some fun? Join some of our top science show presenters for your daily barrel of laughs.

COMEDY NIGHT

DATE:	11 March
TIME:	18h00 - 20h00
VENUE:	Monument, Restaurant
AUDIENCE:	18+
CAPACITY:	50
PRICE:	R50 for two

Drawing on his sleight-of-hand and magical knowledge, Prof Blumenthal will wow the audience with his comedy skills. Looking for a good laugh in science, then bring a friend and join us during this eventful evening.

COOKING WITH SCIENCE

DATE:	10 March
TIME:	13h00-15h00, 17h00-19h00
VENUE:	The Rustic Route, 1 Scotts Avenue
AUDIENCE:	All
CAPACITY:	30
PRICE:	R25

Cook up a storm and learn the basics of food using science in preparing the perfect meal.

BOOK LAUNCH: SKIN WE ARE IN
PALAEONTOLOGICAL SCIENTIFIC TRUST (PAST)

DATE:	9 March
TIME:	12h00-14h00
VENUE:	National English Literary Museum, Auditorium, 25A Worcester Street
AUDIENCE:	All
CAPACITY:	100
PRICE:	Free, Booking Essential

'Skin We Are In' is a book on the origins of our skin colour. It is inspired by the need in South Africa for accessible, authoritative scientific education on human physical diversity and concepts of race targeted for children and the youth. The book explains that skin color is an adaptation to sunlight, and that it is genetically unrelated to other traits. The book is about understanding the unity and diversity of humans through the lens of evolution.

Authors: Nina J. Jablonski and Sindiwe Magona

TALKSHOPS

COUNCIL FOR THE BUILT ENVIRONMENT

BUILDING BLOCKS FOR A CAREER

DATE:	Daily
TIME:	13h00-14h00, 15h00-16h00
VENUE:	Monument, Shakespeare Pub
AUDIENCE:	Grade 7-12
CAPACITY:	50
PRICE:	R25

The Council for the Built Environment (CBE), located in Pretoria, is a government body under the Department of Public Works. It promotes awareness on careers available in the building construction sector – these being architecture, engineering, landscape architecture, construction project management, property valuation, and quantity surveying.

NATIONAL ENGLISH LITERARY MUSEUM

INNOVATIVE WORDS

DATE:	8 March
TIME:	13h00-14h00
DATE:	12 March
TIME:	17h00-18h00
VENUE:	National English Literary Museum, Activity Room 2, 25A Worcester Street
AUDIENCE:	Grade 10+
CAPACITY:	100
PRICE:	R25

The National English Literary Museum presents an evening of South African poetry inspired by science. This is an opportunity to listen to some poetry, share poems you love or to read or perform your own work. Science and poetry have a closer link than you might think. Many poets work in the field of science and technology or are inspired by such themes. The natural world is a constant inspiration for writers.

Crystal Warren is manager of the Curatorial Division at NELM. The division collects and preserves South African literature. Crystal is one of the facilitators of the ISEA short course in creative writing and has run a number of creative writing workshops. She has edited *New Coin* poetry magazine and is also a published writer, with a new collection of poems coming out in 2018.

NNA LE BOKAMOSO SCIENCE AND ARTS ACADEMY

MY SCIENCE TEACHER IN MY POCKET

DATE:	7 March
TIME:	11h00-12h00
VENUE:	Monument, Olive Schreiner Hall
AUDIENCE:	Grade 10+
CAPACITY:	200
PRICE:	R25

What is a teacher in the fourth industrial revolution? With the dominant use of computers today, it is not farfetched to question the place of a teacher and the school in the learning and teaching of Science. Teacher agency has become a thing of the past, with the growing self-deterministic norm of learning about the world and the systems related to it. This talk addresses complex issues relating to teaching, learning and the importance of interdisciplinary research in Science. The talk provides a three dimensional model of how the relationship between humans and machines may be enhanced without compromising one for the other.

DID YOU KNOW?

POISON DART FROGS DON'T MAKE THEIR OWN POISON. THEY GET IT FROM EATING ALKALOID-RICH MITES AND ANTS, AND THEY WILL BECOME LESS TOXIC IF THEIR DIET IS CHANGED.

EXHIBITIONS

Scifest Africa is proud to host interactive exhibitions by institutions all working in the field of science, technology, engineering, mathematics and innovation. Is there a career here for you? All exhibitions are hosted in the 1820 Settlers National Monument unless otherwise specified.

Entrance to all exhibitions is free.

ALBANY MUSEUM

The Albany Museum, established in 1855, is the second oldest museum in South Africa. It consists of the History Museum, Science Museum, Drostdy Arch, Fort Selwyn, the Observatory Museum and the Provost. It is also home to the Makana Biodiversity Centre and houses many valuable research collections, attractive and informative displays, and has an active education Department.

ALBANY HISTORY MUSEUM (SOMERSET STREET)

Permanent exhibitions at the Albany History Museum include a display of contact and conflict on the eastern frontier in the 18th and 19th centuries, the popular 1820 Settlers Gallery, and an exhibition on the history of clay.

ALBANY SCIENCE MUSEUM (SOMERSET STREET)

As part of its 150th birthday celebrations in 2005, the Albany Science Museum opened a Palaeontology Gallery, which provides visitors with a unique glimpse into how the environment and life forms in South Africa have evolved over the last 400 million years. Visit Kirky, the first African dinosaur with an isiXhosa name, and marvel at the size of the stegosaur found in the Bushman's River Valley. The Museum also has comprehensive permanent exhibitions on the Solar System, a bird gallery, a mammal gallery, a "touch and hear" children's gallery, and the old-world Hewitt Gallery.

DROSTDY ARCH (SOMERSET STREET)

The Drostdy Arch was built in 1842 as the gateway and guardhouse for the Drostdy and military barracks which were located where Rhodes University is situated today. The Drostdy Arch contains a coffee shop and craft shops.

FORT SELWYN (MONUMENT GROUNDS)

The seven-pointed star fort was built on Gunfire Hill in 1836 but was never involved in any military action. The semaphore mast was intended as a signalling system, connecting the town with Fort Beaufort and Fort Peddie. Visitors by appointment only. Contact the Albany Museum on 046 622 2312.

OBSERVATORY MUSEUM (BATHURST STREET)

The Observatory Museum contains exhibitions on the role of Grahamstown in the Anglo-Boer War and the story of the discovery of diamonds in South Africa. Of great interest to national and international tourists is the only working Victorian camera obscura in the southern hemisphere. Climb the winding staircase to the turret in the tower, and find the town doctor in the mirrored images of Grahamstown reflected on a circular table.

THE PROVOST (LUCAS AVENUE)

This unusual building served as an early prison, and was based on the panopticon system, which means that prisoners could be watched continuously from the windows of the central tower. The Provost contains a coffee shop.

AMATHOLE MUSEUM

The International Union of Biological Science (IUBS) is uses the Shortridge Mammals Collection, housed at Amathole Museum in King William's Town, to promote the study of biological sciences. The Shortridge Mammals Collection contains several fascinating and important specimens and is extensively used for research both locally and globally. Activities of the IUBS are coordinated under a secretariat at the National Research Foundation (NRF). View some of the specimens and artefacts on loan from the museum and learn more about the natural heritage and people of the Eastern Cape.

www.amatholemuseum.za.net

BASF HOLDINGS SOUTH AFRICA (PTY) LTD

DATE:	Daily
TIME:	09h30-10h30, 11h30-12h30, 13h30-14h30, 15h30-16h30, 17h00-17h30
VENUE:	Monument, Fountain Court
AUDIENCE:	Grade 3-8
CAPACITY:	20
PRICE:	Free, Booking Essential

BASF Kid's Lab is an interactive chemistry programme that focuses on educating today's children about the role of chemistry in building a sustainable future. Our Clever Foodies programme, especially designed for learners between the ages of 8 and 12, gives them an opportunity to participate in explorative and interactive chemical experiments to detect and identify vitamins and secondary metabolites (pigments).

www.basf.co.za, www.basf.com

BAYWORLD

Bayworld is situated on the Port Elizabeth beachfront and incorporates the Museum, Reptile Park, Oceanarium and Port Elizabeth Museum School. The school is unique and is registered with the Eastern Cape Department of Education. The passionate education team will teach the young and old about the wonders of nature. This year they present "The Venom Diaries" an interactive exhibition that lifts the lid on venomous snakes in South Africa. It promises to be an educational treat. Come talk about these fascinating creatures, their distribution across our country, habitats, diet, reproduction and environmental significance. All snake lovers, phobics or fear facers are invited!

www.bayworld.co.za

COUNCIL FOR THE BUILT ENVIRONMENT

The Council for the Built Environment (CBE), located in Pretoria, is a government body under the Department of Public Works. It promotes awareness on these careers available in the building and construction sector – these being architecture, engineering, landscape architecture, construction project management, property valuation, and quantity surveying. Mathematics and Physical Science are key subjects required to pursue these careers at tertiary level. CBE assists individuals during their tertiary study in these fields with their internship requirement with government departments and private sector host employers. Upon completion of their studies students are mentored through their candidacy phase, and encouraged to register as professionals with the relevant council of their discipline, which entitles them to practice as a built environment professional in South Africa. CBE can be contacted for more information on Tel: 012 346 3985

www.cbe.org.za

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

Discover vast science, engineering and technology career options in the field of agriculture, forestry and fisheries that you never knew existed where you can make a meaningful contribution to the economy while doing what you love most – applying science and technology to the living world of plants, soil, water, animals etc.

www.daff.gov.za

ENGINEERING COUNCIL OF SOUTH AFRICA (ECSA)

The Engenius programme was established by the Engineering Council of South Africa to highlight the importance of the engineering field to primary and high school learners especially from grade 10. The education programme does school visits and exhibitions around the country. We interact with learners by allowing them to take part in exciting activities such as the Bloodhound activity where they get to build a mini rocket using everyday things like balloons.

Engenius strives to promote the engineering profession nationally to 20 000 primary and high school learners annually through its driving message 'Engineering Makes It Happen'. So far, Engenius has reached over 12 million learners at roughly 6 000 high schools across South Africa.

www.ecsa.co.za

www.daff.gov.za

DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

ACADEMY OF SCIENCE OF SOUTH AFRICA (ASSAF)

Quest: Science for South Africa: Igniting conversations around recent developments in the science arena and assisting science learners in contextualizing science and mathematics content.

www.assaf.org.za

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (CSIR)

The Council for Scientific and Industrial Research (CSIR) in South Africa is one of the leading multi-disciplinary scientific and technology research, development, innovation and implementation organisations in Africa. Engage with the ground-breaking work done by researchers in the various units of the CSIR, as well as the many exciting career opportunities available at the CSIR.

www.csir.co.za

ITHEMBA LABS

iThemba LABS is a national research facility administered by the National Research Foundation, which is committed to unleashing SA potential through knowledge creation, innovation and human building capacity.

www.tlabs.ac.za

NATIONAL ZOOLOGICAL GARDENS OF SA (NZG)

The National Zoological Gardens (NZG) of South Africa is the largest ZOO in the country and includes the largest inland marine aquarium in the country, a reptile park, and the third largest collection of exotic trees. Visit the NZG to learn more about Animal Sciences and South African Biodiversity. Learn more about the research and scientific services conducted at NZG.

www.nzg.ac.za

A JOURNEY TO SPACE AND COSMIC COLLISION

An interactive astronomy presentation in a mobile planetarium. The presentation covers basic astronomy concepts while entertaining. Participants will discover space and learn the science of the birth and death of stars. Cosmic collision – a radical change from our peaceful night sky. Cosmic collisions presents the spectacular results of gravity pulling together planets, stars and galaxies.

www.saasta.ac.za

SCIQUEST

The SciQuest is an interactive mobile science educational exhibition. It consists of various units that teach different concepts in all the fields of science, engineering and technology in a fun and entertaining way. The exhibition appeals to both young and old.

DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

SOUTH AFRICAN ASTRONOMICAL OBSERVATORY (SAAO)

South African Astronomical Observatory's prime function is to conduct fundamental research in astronomy and astrophysics. It does so by providing a world-class facility to scientists. The SAAO promotes astronomy and astrophysics in Southern Africa, by sharing research findings and discoveries.

www.saao.ac.za

SOUTH AFRICAN ENVIRONMENTAL OBSERVATION NETWORK (SAEON)

The South African Environmental Observation Network (SAEON) is a National Research Facility of the National Research Foundation. As global climate change tightens its grip on our planet, people's lives and livelihoods are placed at risk by the natural disasters caused by these changes in our climate. Society needs reliable information to understand why and how our world is changing so that we can plan for the future. This is why SAEON exists. Understand how SAEON initiates and maintains a network of observations to execute the long-term monitoring of ecosystems

www.saeon.ac.za

DST-NRF CENTRE OF EXCELLENCE IN PALAEOSCIENCES

Imagine being able to travel through time. See the big bang formation of the solar system, and formation of the Earth. Watch how life forms, simple animals appear and then as the continents shift, and the climate changes from global warming to ice age, again and again, we see four legged fish, the evolution of plants, insects, dinosaurs, mammals and eventually –right at the end- humans appear!!! This exhibition allows visitors to travel through time but also explains how science and technology have revealed these fascinating stories which offer insights into our common future.

http://ancient-earth.co.za/

SOUTH AFRICAN COUNCIL FOR NATURAL SCIENTIFIC PROFESSIONS

Our exhibition will talk to the diversity that exists within the science community and just how science affects all of our lives. We will showcase how many careers can be engaged in that are exciting and different. We will hand out leaflets on science and have discussions about science in our lives. SACNASP has 24 fields of practice associated with it and our aim is to show scientists the need to register with a professional body to maintain their standards of the industry. We will show scientists how they can continue their studies throughout their career and encourage professional natural scientists to become mentors to those just starting their careers. We will also help to guide the parents of young learners though their choices they need to make during their study years.

www.sacnasp.org.za

SOUTH AFRICA RADIO ASTRONOMY OBSERVATORY (SARAO)

The South Africa Radio Astronomy Observatory (SARAO) was established in 2017 and incorporates the Hartebeesthoek Radio Astronomy Observatory (HartRAO) in the North West province, and all instruments and projects currently operated by Square Kilometre Array South Africa (SKA SA), including MeerKAT and the Karoo Array Telescope (KAT-7) in the Karoo, the African Very Long Baseline Interferometry Network (AVN) programme in nine African countries, as well as the associated human capital development and commercialisation endeavours. Stay a while and learn more about radio astronomy and space geodesy through interactive activities, or embark on a virtual tour of the SKA site in the Northern Cape, our Solar System and the Milky Way.

www.hartrao.ac.za; www.ska.ac.za

ESKOM'S ENERGY EDUCATION PROGRAMME

Eskom's Energy Education Programme aims to educate school children about the value of electricity and the important role it plays in bringing so much comfort into the home. It aims to bring awareness to the fact that 'flicking a switch' is so quick and easy that one almost never considers the huge positive impact electricity has on our daily lives.

www.eskom.co.za/sites/idm/SchoolYard/

ESKOM EXPO FOR YOUNG SCIENTISTS

The Eskom Expo for Young Scientists is South Africa's prestigious and only existing international science fair that affords learners the opportunity to enter a project to exhibit their own scientific investigation. The project aims to inspire and develop young scientists who are able to identify a problem, analyse information, find solutions and communicate findings effectively. Learners must first enter a project into one of 35 regional finals held between July and September every year, then a select few are chosen to represent their region at the Eskom Expo International Science Fair in Pretoria, Gauteng in the spring school holidays, and from there to represent South Africa at international science fairs around the world.

www.exposcience.co.za

FRENCH SOUTH AFRICAN INSTITUTE OF TECHNOLOGY (F'SATI)

We will illustrate models of our heritage 1U nanosatellite, ZACUBE-1 (TshepisoSAT), and the succeeding generation 3U nanosatellite, ZACUBE-2. South Africa's most advanced CubeSat to date. In addition, there will be a few project demonstrations by our innovation hub, Africa Space Innovation and the newly formed engineering club, the Space Cadets.

www.cput.ac.za/fsati

FOSST DISCOVERY CENTRE, UNIVERSITY OF FORT HARE

FOSST Discovery Centre will be bringing exciting and cutting edge interactive exhibits that are curriculum based. Our interactive exhibits will assist and enhance the understanding, skills and knowledge of the learners. These will also give them challenges to manipulate, visualize, and apply the cognitive skills to integrate the knowledge that they already possess.

www.ufh.ac.za/centres/fosst

GOVAN MBEKI MATHEMATICS DEVELOPMENT CENTRE, NELSON MANDELA UNIVERSITY

The Govan Mbeki Mathematics Development Centre will exhibit its TouchTutor range of applications which include a full range of curriculum aligned learning resources for maths and science including videos, tests, experiments and applets. Hands-on features include science and maths quizzes on mobiles, GeoGebra applets for learners to explore, puzzles to solve and structures to build. The exhibit includes STEAM materials and activities, an integrated approach to integrating creativity across disciplines.

http://mbeki-maths-dev.nmmu.ac.za/Home

IZIKO MUSEUMS OF SOUTH AFRICA

IZIKO MOBILE MUSEUM

Iziko Mobile Museum is an ongoing outreach project designed to take educational museum resources to schools and communities that are unable to visit the museums. It is a customised vehicle with interactive modules that complement the natural sciences and social sciences learning areas of the National Curriculum Statement for grade 4-9. Visit the Mobile Museum and learn about our country's social and natural heritage of which we are proud of.

IZIKO PLANETARIUM

The Iziko Planetarium and Digital Dome, situated alongside the Iziko Museum in Cape Town, is used to recreate and take learners and the general public on a journey through the wonders of the Universe. Staff of the Iziko Planetarium will teach visitors, both young and old, about indigenous astronomy and starlore and modern astronomy.

www.iziko.org.za

EXHIBITIONS

MINTEK

Mintek is South Africa's national mineral research organisation and is one of the world's leading technology organisations specialising in mineral processing, extractive metallurgy and related areas. Mintek works closely with industry and other R&D institutions and provides service testwork, process development and optimisation, consulting and innovative products to clients worldwide. The technical programmes at Mintek are aimed at generating high economic returns for the national and regional economies while social programmes focus on skills development and educational initiatives. An important target is the nurturing of self-sustaining local economies in areas of South Africa where smaller minerals extraction and beneficiation enterprises have the capability to generate broad-based employment and wealth.

www.mintek.co.za

www.mintek.co.za

NASA JET PROPULSION LABORATORY (JPL)

Africa as Art

In 1960, the United States put its first Earth-observing environmental satellite into orbit around the planet. Over the decades, these satellites have not only provided invaluable information, but the vantage point of space has provided new perspectives on Earth. This exhibition, inspired by the NASA publication, Earth as Art, celebrates Africa's aesthetic beauty through the shapes, patterns, colours and textures of the land, oceans, ice, and atmosphere of our continent.

This exhibition is supported by NASA

www.nasa.gov/connect/ebooks/earth_art_detail.html

NATIONAL ENGLISH LITERARY MUSEUM

DATE:	7-9,12,13 March
TIME:	10h00-11h00, 12h00-13h00, 14h00-15H00
VENUE:	National English Literary Museum, 25 Worcester Street
AUDIENCE:	All
CAPACITY:	30
PRICE:	Free, BOOKING AT THE REGISTRATION DESK ESSENTIAL

The National English Literary Museum houses the world's most comprehensive collection of resources relating to South African literature in English. The new National English Literary Museum building is the first museum in South Africa to be assessed by the Green Building Council of South Africa. The design achieved a 5-Star rating and the 'as built' assessment is currently underway.

www.nelm.org.za

NATIONAL METROLOGY INSTITUTE OF SOUTH AFRICA

NMISA uses additive manufacturing systems to print/manufacture prototypes and final products for measuring systems. The exhibition will highlight critical elements of the standards and measurements in 3D printing in order to achieve safe, reliable products of high quality.

www.nmisa.org.za

NELSON MANDELA UNIVERSITY (NMU)

Nelson Mandela University (NMU) has the vision to see beyond today, to lead you to a brighter tomorrow. NMU is a new generation university, offering students the best of both theory and practice from entry certificate level right through to doctoral research. Founded on more than a century of quality higher education, Nelson Mandela University nurtures innovation, foster creativity embraces technology and develops people to meet the challenges of tomorrow. The university has already established itself as a leader in fields such as automotive engineering, ecology, marine studies, community health, the built environment, art & design, accounting & auditing, education and IT, offering students a wide choice of stimulating and market oriented courses, and opening up a variety of career opportunities.

www.mandela.ac.za

DID YOU KNOW

WHAT IS 5 TIMES HOTTER THAN THE SUN?

THE BOLT OF LIGHTNING IS HEAPS HOTTER THAN THE SUN. THE SURFACE OF THE SUN HAS A TEMPERATURE OF 5726.66 °C. WHEREAS A LIGHTNING BOLT CAN REACH A TEMPERATURE OF 29726.66 °C WHICH IS 5 TIMES HOTTER THAN THE SUN!

SCIENCE STARS

Science Stars magazine is a bi-monthly magazine that promotes science. The magazine offers career options, a list of companies that provide bursaries and scholarships, tertiary institution contact details, science tips and fun-with-science pages.

www.sciencestars.co.za

SOL PLAATJIE UNIVERSITY

The Sol Plaatje University in Kimberley draws on the distinctive strengths and heritage of the Northern Cape, stimulating provincial and national development and has the potential to inject new life and purpose into Kimberley and the Northern Cape – a place bursting with energy, attracting people from all over Southern Africa and from other continents.

www.spu.ac.za

SOUTH AFRICAN INSTITUTE OF PHYSICS (SAIP)

The SA Institute of Physics (SAIP) is a non-profit, voluntary and professional physics society that was established in 1955. SAIP is registered with SAQA as a professional body and our mission is to be The Voice of Physics in South Africa. It has a membership made up of professionals, academics, students and institutions.

www.saip.org.za

SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE

There is an amazing amount of Biodiversity in each garden. You can touch and feel magnificent plants. Catch colourful insects, and feel the scaly reptiles. You can cuddle mammals, and as people contribute to their sustainability. How do you do it? Dealing with threats to our Biodiversity.

www.sanbi.org

SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED (SANRAL)

SANRAL prides itself in delivering a high standard of road infrastructure nationally. We support students at tertiary institutions across the country and award scholarships and bursaries to learners, to enable them to access further educational opportunities. We also promote interest in stem subjects – science, technology, engineering and maths. We work closely with universities involved in advanced research on aspects of transportation, engineering, construction and road safety.

www.sanral.co.za

SOUTH AFRICAN SOCIETY FOR BIOINFORMATICS STUDENT COUNCIL (SASBI SC)

Bioinformatics is the study of large amounts of biological information. It is done mostly with the help of computers. It is a relatively new branch of science that is accelerating as the data revolution comes to the natural science. Using tools from mathematics, statistics and computer sciences, bioinformatics sheds light on previously un-explorable biological problems. This allows us to predict the structures of proteins, perform genome assemblies and model the intricacies of chemical reactions within biological systems. This exhibition by the SASBi student council provides some insight into how bioinformaticians explore and solve these new and exciting problems.

http://www.sasbi.weebly.com/students.html

STENDEN SOUTH AFRICA

We offer 2 Degree Programs: B.Com Hospitality Management and BBA Disaster Management. Located in Port Alfred. Internationally recognizes and International opportunities full accredited with the CHE and DHET. 97% of graduates employed.

www.stenden.ac.za

DEPARTMENT OF WATER AND SANITATION

The Department of Water and Sanitation is the custodian of South Africa's water resources, and strives to ensure that all South Africans have access to clean water and safe sanitation. It is responsible for the formulation and implementation of policy governing our water resources, promotes effective and efficient water resources management to ensure sustainable economic and social development, and is responsible for water services provided by Local Government.

www.dwa.gov.za

UNIVERSITY OF SOUTH AFRICA (UNISA)

The UNISA College of Science, Engineering and Technology is the responsive, enabling and accessible provider of high quality, relevant, innovative Open Distance Learning Science, Engineering and Technology programmes, research and community engagement in Africa.

http://www.unisa.ac.za/sites/corporate/default/Colleges/Science,-Engineering-&-Technology

RHODES UNIVERSITY

Rhodes University is nestled in the heart of Grahamstown and is home to more than 7,500 students from around the world. The university owes its unique character among South African universities to a combination of architectural, cultural, geographical and historical factors. Its history is a chronical of those whose intellect, vision and courage created and sustained a university that grows form strength to strength each year. Successive generations of Rhodians have had an influence on Southern African and world affairs out of all proportion to their small number.

The Rhodes University Scifest Africa 2018 Programme is presented by the Faculty of Science. Find out more about the various departments, the world-class research done in each, and why Rhodes University is "where leaders learn".

Rhodes University
Somerset Street
Grahamstown
www.ru.ac.za

EXHIBITIONS

Rhodes University Biotechnology Innovation Centre
Advancing Biotechnology through 3D printing

Faculty of Pharmacy
Dermatologic health: Dangerous chemicals in skin lightening products

Start	End	Organisation *Title*	Audience	Capacity	Price	Venue
WEDNESDAY, 7 MARCH						
09h00	09h45	**Rhodes University Department of Chemistry** *Glassblowing Workshop Demonstration*	Gr 10	10	R15	RU Chemistry and Pharmaceutical Sciences Building, Glassblowing workshop

THURSDAY, 8 MARCH						
09h00	09h45	**Rhodes University Department of Chemistry** *Glassblowing Workshop Demonstration*	Gr 10	10	R15	RU Chemistry and Pharmaceutical Sciences Building, Glassblowing workshop
09h00 11h00	10h00 12h00	**Rhodes University Department of Chemistry** *Titrations*	Gr 11-12	20	R5	Rhodes University Chemistry and Pharmaceutical Sciences Building, Lower Ground level First Year Lab
FRIDAY, 9 MARCH						
09h00 11h00	10h00 12h00	**Rhodes University Department of Chemistry** *Funky Fun Organic Chemistry*	Gr 11-12	20	R5	Rhodes University Chemistry and Pharmaceutical Sciences Building, Lower Ground level First Year Lab
09h00	09h45	**Rhodes University Department of Chemistry** *Glassblowing Workshop Demonstration*	Gr 10	10	R15	RU Chemistry and Pharmaceutical Sciences Building, Glassblowing workshop
TUESDAY, 12 MARCH						
09h00	09h45	**Rhodes University Department of Chemistry** *Glassblowing Workshop Demonstration*	Gr 10	10	R15	RU Chemistry and Pharmaceutical Sciences Building, Glassblowing workshop
09h00 11h00	10h00 12h00	**Rhodes University Department of Chemistry** *Exothermic/Endothermic reactions*	Gr 9	50	R5	Rhodes University Chemistry and Pharmaceutical Sciences Building, Lower Ground level First Year Lab
WEDNESDAY, 13 MARCH						
09h00	09h45	**Rhodes University Department of Chemistry** *Glassblowing Workshop Demonstration*	Gr 10	10	R15	RU Chemistry and Pharmaceutical Sciences Building, Glassblowing workshop

WORKSHOPS

DEPARTMENT OF CHEMISTRY, CHEMISTRY AND PHARMACEUTICAL SCIENCES BUILDING, RHODES UNIVERSITY, ARTILLERY ROAD

GLASSBLOWING WORKSHOP DEMONSTRATION

DATE:	7, 8, 9, 12 and 13 March
TIME:	09h00-09h45
VENUE:	Glassblowing Workshop, Lower Ground Level
AUDIENCE:	Grade 10+
CAPACITY:	10
PRICE:	R15

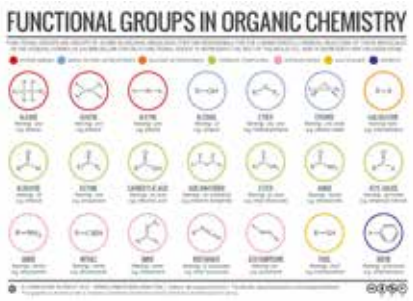
Watch a master at work and learn more about glass, its versatility and the art of glassblowing in this interactive demonstration.

TITRATIONS

DATE:	8 March
TIME:	09h00-10h00, 11h00-12h00
VENUE:	First Year Lab, Lower Ground Level
AUDIENCE:	Grade 11-12
CAPACITY:	50
PRICE:	R5

Do your own acid-base titrations, and learn more about studying chemistry at Rhodes University, in this practical workshop hosted in the university's laboratory.

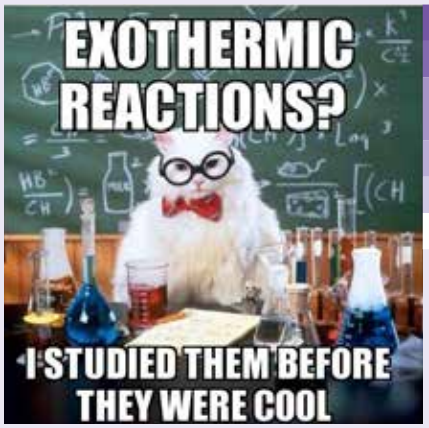
FUNKY FUN ORGANIC CHEMISTRY



DATE:	9 March
TIME:	09h00-10h00, 11h00-12h00
VENUE:	First Year Lab, Lower Ground Level
AUDIENCE:	Grade 11-12
CAPACITY:	50
PRICE:	R5

The most important skills a young scientist can develop are observation, accurate recording and reasoned deduction. These skills will be developed in the context of changing colours, making new compounds and even smelling strange smells! Organic chemistry shouldn't be so mysterious, so come and learn about how we test and "see" them.

EXOTHERMIC/ENDOTHERMIC REACTIONS



DATE:	12 March
TIME:	09h00-10h00, 11h00-12h00
VENUE:	First Year Lab, Lower Ground Level
AUDIENCE:	Grade 9
CAPACITY:	50
PRICE:	R5

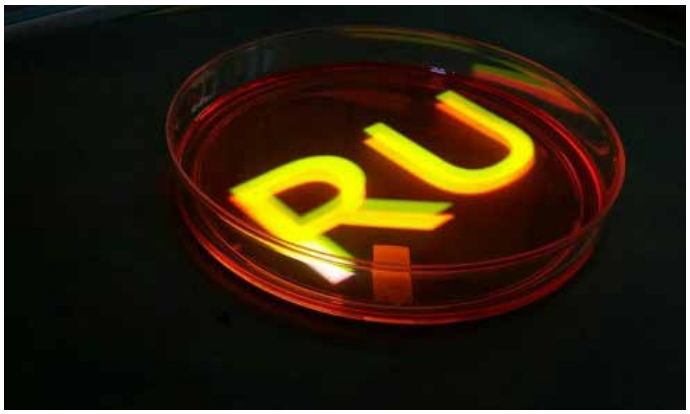
Hot or cold, In or out. Where does the energy flow in reaction? Come find out.

EXHIBITIONS

EDEN GROVE, RHODES UNIVERSITY, LUCAS AVENUE

RHODES UNIVERSITY BIOTECHNOLOGY INNOVATION CENTRE

UNIVERSITY BIOTECHNOLOGY INNOVATION CENTRE ADVANCING BIOTECHNOLOGY THROUGH 3D PRINTING



Rapid advances in three-dimensional (3D) printing has revolutionized biotechnology that will take mankind forward into a bold future. Come & see how the bioscientists at the Rhodes University Biotechnology Innovation Centre (RUBIC) are using 3D printing techniques to prototype & build tools to clean water, test for diseases and hopefully to even build lab grown human tissues.

www.ru.ac.za/biotechnology

FACULTY OF PHARMACY

DERMATOLOGIC HEALTH: DANGEROUS CHEMICALS IN SKIN LIGHTENING PRODUCTS

Current discussion within the dermatological community is about the safety and regulation of many chemicals that are used in dermatological products. Surprisingly, sparse information is available on the epidemiology of the health impacts of these practices among the general population. This is a perfect opportunity to present an overview of the practice of skin bleaching and to raise more awareness of the dangers of this practice on a cosmetic basis, primarily to lighten normal dark skin.

www.ru.ac.za/pharmacy/

More from Rhodes University...

Rhodes University exhibitions also feature in the Waterworld programme. These include the Department of Freshwater Invertebrates (Albany Museum), Department of Biochemistry & Microbiology (Marine Natural Products Research Consortium), Department of Ichthyology & Fisheries Science, Department of Zoology & Entomology (Centre for Biological Control), and the Institute for Water Research.

EST. 1996
Scifest Africa
SOUTH AFRICA'S NATIONAL SCIENCE FESTIVAL

WATER WORLD

hosted by the
South African Institute for Aquatic Biodiversity (SAIAB)

on Rhodes campus on the lawn between the DIFS and new LIFE SCIENCES building
Entry from the BARRATT CAR PARK in African Street

FREE ENTRY
Weekdays 9am-5pm

Fish tracking
Aliens in our water
Sharks
Aquatic invertebrates
Life on the sea floor
AND LOTS MORE!

Apprenticeships in the Lab & Estuary Excursion
with estuarine ecology expert
Prof. Alan Whitfield!

BOOKING ESSENTIAL
check the Water World programme for times

Book through the Scifest ticket office
www.scifest.org.za
Enquiries: 046 603 1106

WATER WORLD
on the lawn
7-13 March 2018

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation
SAIAB South African Institute for Aquatic Biodiversity

WATERWORLD

The South African Institute for Aquatic Biodiversity (SAIAB) is a National Research Facility of the National Research Foundation (NRF). SAIAB is a recognised centre for the study of aquatic biodiversity and serves as a major scientific resource for the knowledge and understanding of aquatic biodiversity and functioning of significant aquatic ecosystems. At your own pace, visit the exhibits at Water World to learn more about water and the incredible variety of life in water, from some of the tiniest organisms to some of the larger sharks. Find out about studying fish ear bones, extracting DNA, fish tracking, aquatic insects, life on the sea floor and the biocontrol of alien species! Visit the fish farm and the National Fish Collection or go on a field trip to the coast. Entrance to the Water World venue is from the Barratt Car Park on African Street.

www.saiab.ac.za

OPENING HOURS AND VISITOR INFORMATION:

7, 8, 9, 12, 13 March: 09h00-17h00 All welcome and entrance to the facility is free.

SAIAB
Somerset Street
Grahamstown

EXHIBITIONS DAILY - ENTRY IS FREE - REGISTER AT THE ENTRANCE
Albany Museum, Department of Freshwater Invertebrates *Exploring African freshwater insects*
Keep Fin Alive
KwaZulu-Natal Sharks Board
Rhodes University, Department of Ichthyology and Fisheries Science *Ear bones in fish and their secrets*
Rhodes University, Department of Ichthyology and Fisheries Science *Keeping fish in Grahamstown*
Rhodes University, Centre for Biological Control (Department of Zoology and Entomology) *Innovative control of invasive species!*
Rhodes University, Institute for Water Research *Water, the connector of all life*
Rhodes University, Marine Natural Products Research Consortium (Department of Biochemistry and Microbiology) *The unseen majority: a window on the marine microbial world*
SAEON *Monitoring change in SA environments*
South African Institute for Aquatic Biodiversity (SAIAB) *Growing our own timber!*
South African Institute for Aquatic Biodiversity (SAIAB) *Unravelling DNA*
South African Institute for Aquatic Biodiversity (SAIAB) *Life on the sea floor of South Africa*
South African Institute for Aquatic Biodiversity (SAIAB) *Of frogs and crabs and fish's fins*
South African Institute for Aquatic Biodiversity (SAIAB) *Tracking fish and sharks (and the cool technology behind it)*
South African Institute for Aquatic Biodiversity (SAIAB) *What is it?*
WESSA (Wildlife and Environment Society of SA) Grahamstown Branch *Get to know Grahamstown – a virtual tour of wildlife and environment*

Start	End	**Organisation** *Title*	Audience	Capacity	Price	Venue
TOURS - WEEKDAYS DURING SCIFEST - 7-9 MARCH & 12, 13 MARCH						
09h00 10h00 11h00 12h00 13h00 14h00 15h00	11h00 12h00 13h00 14h00 15h00 16h00 17h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *TOURS*	All	60	Free, Booking Essential	Water World SAIAB

WEDNESDAY, 7 MARCH						
09h00	12h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *Apprenticeship: Do you trust your sushi? An introduction to DNA Barcoding*	Gr 11-12	8	R25	SAIAB, Collections Management Centre
THURSDAY, 8 MARCH						
09h00	12h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *Apprenticeship: Do you trust your sushi? An introduction to DNA Barcoding*	Gr 11-12	8	R25	SAIAB, Collections Management Centre
09h00	12h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *Apprenticeship: DNA unravelled*	Gr 10-12	8	R25	SAIAB, Genetics Laboratory
FRIDAY, 9 MARCH						
08h15	14h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *Field trip: Where the river meets the sea*	Gr 8+ & Adults	20	R40	SAIAB, Reception
09h00	12h00	**South African Institute for Aquatic Biodiversity (SAIAB)** *Apprenticeship: DNA unravelled*	Gr 10-12	8	R25	SAIAB, Genetics Laboratory

TOURS

DATE:	7, 8, 9, 12, 13 March
TIME:	09h00-11h00, 10h00-12h00, 11h00-13h00, 12h00-14h00, 13h00-15h00, 14h00-16h00, 15h00-17h00
VENUE:	Water World, SAIAB
AUDIENCE:	All
CAPACITY:	60
PRICE:	Free, Booking Essential

Book for a guided tour through the Water World venue, accompanied by a Scifriend (recommended for school groups).

APPRENTICESHIPS

Spend a morning at SAIAB for a hands-on experience of what our scientists do in their day-to-day research.

DO YOU TRUST YOUR SUSHI? AN INTRODUCTION TO DNA BARCODING

DATE:	7, 8 March
TIME:	09h00-12h00
VENUE:	SAIAB, Collections Management Centre
AUDIENCE:	Grade 11-12
CAPACITY:	8
PRICE:	R25

Learn about this growing programme to identify each species on the planet using DNA sequences. Struggle to identify fish species the traditional way and then see how technology can help! Learn how DNA is extracted from tissue samples and how the DNA Barcode is generated. Play around with the DNA Barcoding database and use online tools to identify species. See how easy it can be to uncover food fraud and to be a forensic scientist!

Dr Gavin Gouws is a Senior Scientist at SAIAB. He has a PhD in Zoology and interests in Molecular Biology. His research revolves around the systematics and population genetics of marine fish and freshwater crustaceans, biogeography and evolutionary biology.

http://www.saiab.ac.za/dr-gavin-gouws.htm

DNA UNRAVELLED!

DATE:	8, 9 March
TIME:	09h00-12h00
VENUE:	SAIAB, Genetics Laboratory
AUDIENCE:	Grade 10-12
CAPACITY:	8
PRICE:	R25

Learn more about the structure of DNA by extracting DNA from fish in our Genetics Lab, and discover how valuable DNA is for biodiversity research.

Taryn Bodill is the Molecular Laboratory Manager at SAIAB and has eleven years' experience in molecular lab techniques.

www.saiab.ac.za/molecular-laboratory.htm

FIELD TRIPS

SAIAB

WHERE THE RIVER MEETS THE SEA

DATE:	9 March
TIME:	08h15-14h00
VENUE:	SAIAB, Reception
AUDIENCE:	Grade 8+ and Adults
CAPACITY:	20
PRICE:	R40

An estuary is the meeting place of a river and the sea, and is characterised by the interaction between the two. Join Professor Alan Whitfield an experienced estuarine ecologist, on his annual guided tour of the estuaries between the Great Fish and Kleinemonde Rivers, highlighting the different types of estuaries and some of the animals and plants that live in these specialised systems.

Prof Alan Whitfield is Chief Scientist at SAIAB. His research interests are centred on fishes in estuaries and he is the author of the book Biology and Ecology of Fishes in Southern African Estuaries.

Please note: The bus leaves promptly at 08h30 and this is a half-day excursion. Participants should bring a windbreaker, sun hat, sunscreen, a snack and drinks.

http://www.saiab.ac.za/professor-alan-whitfield.htm

EXHIBITIONS

DEPARTMENT OF FRESHWATER INVERTEBRATES, ALBANY MUSEUM

EXPLORING AFRICAN FRESHWATER INSECTS

What are freshwater insects, and why are they important? We cover early discoveries of African freshwater insects, naming of species and the importance of understanding biodiversity. Learners get hands-on experience of current techniques used to distinguish species. Practical uses of freshwater insects in biological monitoring are presented.

Dr Helen Barber-James is a freshwater biologist and Senior Curator of the National Collection of Freshwater Invertebrates at the Albany Museum, Grahamstown. Her research focuses on the systematics, biodiversity and biogeography of mayflies.

Mr Musa Mlambo is an aquatic biologist in the Department of Freshwater Invertebrates at the Albany Museum. His research focus is on the ecology of creatures inhabiting temporary water bodies.

Dr Alexandra Holland is a postdoctoral fellow at the Albany Museum where she is conducting research on the freshwater invertebrates of the Kruger National Park rivers, and the effects of pollution on the life in the rivers.

Dr Lyndall Pereira-da-Conceicoa is a postdoctoral fellow at the Albany Museum where she is conducting research on mayflies confined to the rivers of the Southern and Western Cape of South Africa, with relatives in Asia and Madagascar, and looking for innovative modern ways to study the creatures inhabiting rivers.

Ms Ina Ferreira is currently based at the Albany Museum where she will complete a one-year internship funded by the NRF before registering for her PhD in Zoology at Rhodes University in 2017.

Ms Nonkazimulo Mdidimba is a DSRAC funded intern, working to the end of 2017 before taking up a BSc (hons) at Rhodes University in 2018. She plans to do research on dragonflies.

Mr Bayanda Sonamzi was an intern with the Albany Museum in 2015, and recently (2016) completed his BSc (hons) at Rhodes University. He is currently employed with the museum again, to help with databasing of information and imaging of the specimens in the museum's collection.

http://www.am.org.za/

RHODES UNIVERSITY

DEPARTMENT OF ICHTHYOLOGY AND FISHERIES SCIENCE

EAR BONES IN FISH AND THEIR SECRETS

Did you know that you can tell how old a fish is by looking at tiny ear bones in its head and that scientists can look at these ear bones to tell what species it is? Experts at the Department of Ichthyology and Fisheries Science will show you an amazing variety of fish ear bones and they will explain some of their other uses in science. You will be amazed how much you can detect from these little bones. It is almost like looking back in time through a microscope.

https://www.ru.ac.za/ichthyology/

KEEPING FISH IN GRAHAMSTOWN

Come and join us at the exciting Department of Ichthyology and Fisheries Science of Rhodes University. We will show you our lively fish, how we keep them healthy, breed them, feed them and make them grow. Explore our facilities with our friendly and knowledgeable guides and leave inspired and motivated to study ichthyology.

https://www.ru.ac.za/ichthyology/

CENTRE FOR BIOLOGICAL CONTROL (DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY)

INNOVATIVE CONTROL OF INVASIVE SPECIES!

Invasive species are threats to our landscape as well as our agricultural crops. Come find out more about invasive species and how they are being controlled. Biological control is by far the most innovative way of reducing invasive species infestations. Discover how biological control and proper management techniques are keeping the invasions under control and how science can help save our environment. Learn how YOU can be an environmental steward.

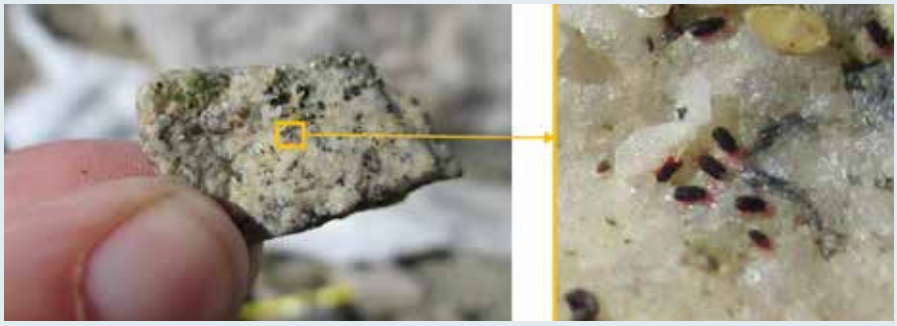
http://www.ru.ac.za/centreforbiologicalcontrol/

INSTITUTE FOR WATER RESEARCH

WATER, THE CONNECTOR OF ALL LIFE

What is a catchment and how do the actions of people living in a catchment affect downstream water quantity and quality for all living organisms, including people. We will also delve in the world of underground water and its dynamics. Research fields associated with the structure, function and components of natural water systems are introduced.

www.ru.ac.za/iwr



"Little Critters on a rock in Antarctica"

MARINE NATURAL PRODUCTS RESEARCH CONSORTIUM (DEPARTMENT OF BIOCHEMISTRY AND MICROBIOLOGY)

THE UNSEEN MAJORITY: A WINDOW ON THE MARINE MICROBIAL WORLD

Most of the organisms alive on our planet earth are so small they can't be seen with the naked eye. Even though they are small, these microorganisms are essential for healthy ecosystems. In the Southern Oceans for example, microorganisms (microscopic algae, bacteria, microzooplankton) form the basis of marine foodwebs. Without them, the bigger sea creatures (like the blue whales) would be very hungry indeed. In our laboratories, we use microbiology, biochemistry, virology, chemistry and botany to study these small creatures. We all work to put our pieces of knowledge together, like a jigsaw puzzle, to understand global processes. Our research on Sub-Antarctic environments allows us to understand the consequences of climate change.

https://www.instagram.com/dorrington_research_group/

KEEP FIN ALIVE

Fin is a soft shark on a mission and the mascot of the Keep Fin Alive campaign. This exhibition will take a light-hearted approach to help change the common misconception of sharks and drive more attention to shark conversation, ocean conservation and plastic pollution whilst demonstrating to the public the vital role that sharks play in keeping the oceans healthy.

www.keepfinalive.com

KZN SHARKS BOARD

The KwaZulu-Natal Sharks Board maintains shark safety gear at 38 localities and is the only institute of its kind in the world, offering safe bathing to tourists while also conducting research into shark life history and offering a public education programme. Sharks captured in shark safety gear provide the Board with a unique opportunity to gather scientific information that will assist in the understanding and conservation of these ocean predators. This interactive exhibition explores the fast facts and murky myths about sharks. The centre piece of the exhibition is a pair of life-size shark jaws! Sink your teeth into the truth about the ocean's oldest top apex predator and its critical role in the ocean environment, and learn more about a career in marine science.

www.shark.co.za

SAEON ELWANDLE NODE

WATER, THE CONNECTOR OF ALL LIFE

As global change tightens its grip on our planet, people's lives and livelihoods are put at risk by droughts, floods, storms, heat waves, loss of biodiversity, loss of productivity and land degradation. Amidst this uncertainty, society needs reliable information to understand why and how our world is changing to help us cope with these changes and plan for the future. This is why the South African Environmental observation network (SAEON) exists.

SAEON is a National Research Facility of the National Research foundation (NRF).

Learn more about how SAEON initiates and maintains a network of observations to execute the long-term monitoring of ecosystems, and how climate change is changing our world.

www.saeon.ac.za

SOUTH AFRICAN INSTITUTE FOR AQUATIC BIODIVERSITY (SAIAB)

GROWING OUR OWN TIMBER!

The African Coelacanth Ecosystem Programme (ACEP) Phuhlisa Postgraduate Programme is a strategic initiative led by the Department of Science & Technology that aims to accelerate transformation of the marine science research community. Come and find out how SAIAB is "growing its own timber", so to speak.

http://www.saiab.ac.za/acep-phuhlisa-programme.htm

UNRAVELLING DNA

How can the study of DNA help us to understand the diversity of aquatic life? How can genetics improve our understanding of evolution? This display will highlight some basic principles, provide some background to genetics and present some of the tools that geneticists use in their work.

http://www.saiab.ac.za/molecular-biology-&-systematics.htm

LIFE ON THE SEA FLOOR OF SOUTH AFRICA

Exploring the sea floor from the productive shallow habitats to the cold and dark expanses of the deep sea reveals a wealth of biodiversity and helps to inform and support the conservation and management of South Africa's marine environment. This exhibition will introduce you to the animals that inhabit the sea floor and to the technologies that allow us to observe them in the natural habitat. We will highlight the ecological and monetary value of the animal and mineral resources and their vulnerability to unsustainable exploitation. We will also provide an overview of South Africa's marine protected area (MPA) network and its importance to safe guard our biological heritage.

http://www.saiab.ac.za/marine-remote-imagery-platform.htm

OF FROGS AND CRABS AND FISH'S FINS

The time has come," the walrus said,
"To talk of other things.
Of shoes and ships and sealing wax
Of cabbages and kings
Of chemicals and fixatives
Of specimens and jars
Of frogs and crabs and fish's fins
And many stranger things!"
-Adapted from Alice in Wonderland – Lewis Carroll

Come and find out how specimens are preserved by fixing their tissues so they do not rot and start to smell! Learn about the different chemicals used for preserving aquatic specimens for future generations. Also get to meet a stonefish, a pineapple fish, an electric ray, a giant toad!

http://www.saiab.ac.za

TRACKING FISH AND SHARKS (AND THE COOL TECHNOLOGY BEHIND IT)

Fish are incredibly diverse. They comes in all shapes and sizes and move in every way imaginable! Since they live underwater, it isn't easy understanding or knowing about their movements. Visit the Acoustic Tracking Array Platform (ATAP) exhibition to find out more about how scientists unravel the riddle of fish movements and migrations, how fish, sharks and rays can be tagged and tracked and learn more about this research platform.

http://www.saiab.ac.za/atap.htm

WATER! WHAT IS IT?

Water is the most essential element to life on Earth. But what is water, what are the properties of water, how do these relate to aquatic life, and what makes water so important? Learn more about water at this exhibition, where you can do different experiments with water, including creating your own clouds!

www.saiab.ac.za

WESSA (WILDLIFE AND ENVIRONMENT SOCIETY OF SA) GRAHAMSTOWN BRANCH

GET TO KNOW GRAHAMSTOWN – A VIRTUAL TOUR OF WILDLIFE AND ENVIRONMENT

Participants will follow a virtual tour of Grahamstown – highlighting some of the environmental and wildlife features that can be found in and around the city. They will learn about the natural history of each of the selected features. They will annotate their own map of Grahamstown to take away.

www.ru.ac.za/environment/resources/local/wessa/

WESSA
PEOPLE CARING FOR THE EARTH

DID YOU KNOW?

BIOTECH COTTON IS NOW AVAILABLE ON THE MARKET, AND IS PLANTED OVER 9.8 MILLION HECTARES (24.2 MILLION ACRES) IN THE US, INDIA, CHINA, ARGENTINA, COLOMBIA, AUSTRALIA, SOUTH AFRICA, AND MEXICO. BIOTECH COTTON IS ENGINEERED TO BE BOTH INSECT-RESISTANT AND HERBICIDE TOLERANT.

VENUE MAP

1 1820 Settlers National Monument and Fort Selwyn
2 Makana Botanical Gardens
3 Albany History Museum
4 Albany Science Museum
5 Handmade Coffees, Festival Gallery, 38 Somerset Street
6 Saint's Bistro, 131 High Street
7 The Rustic Route, 1 Scotts Avenue
8 Rhodes University Department of Ichthyology and Fisheries Science
9 Rhodes University Chemical and Pharmaceutical Sciences Building
10 Water World (South African Institute for Aquatic Biodiversity)
11 National English Literary Museum, 25A Worcester Street
12 Victoria Girls High School, Huntley Street
13 St Andrew's Prep, Memory Hall
14 The Rat & Parrot, 59A New Street

We create chemistry that makes “wow” love “why”

Do you know kids’ most popular reaction to chemistry? It’s “Wow!” One simple word with great scientific experience behind it. We’ve heard it many times, in more than 30 countries, at BASF Kids’ Lab. For one day, kids become scientists. They experiment in a playful manner and learn why and how the world’s marvels work. Because we believe that one day these kids will wow us in return.

When science can be seen as a foundation of wonder, it’s because at BASF, we create chemistry.

www.wecreatechemistry.com

BASF

We create chemistry