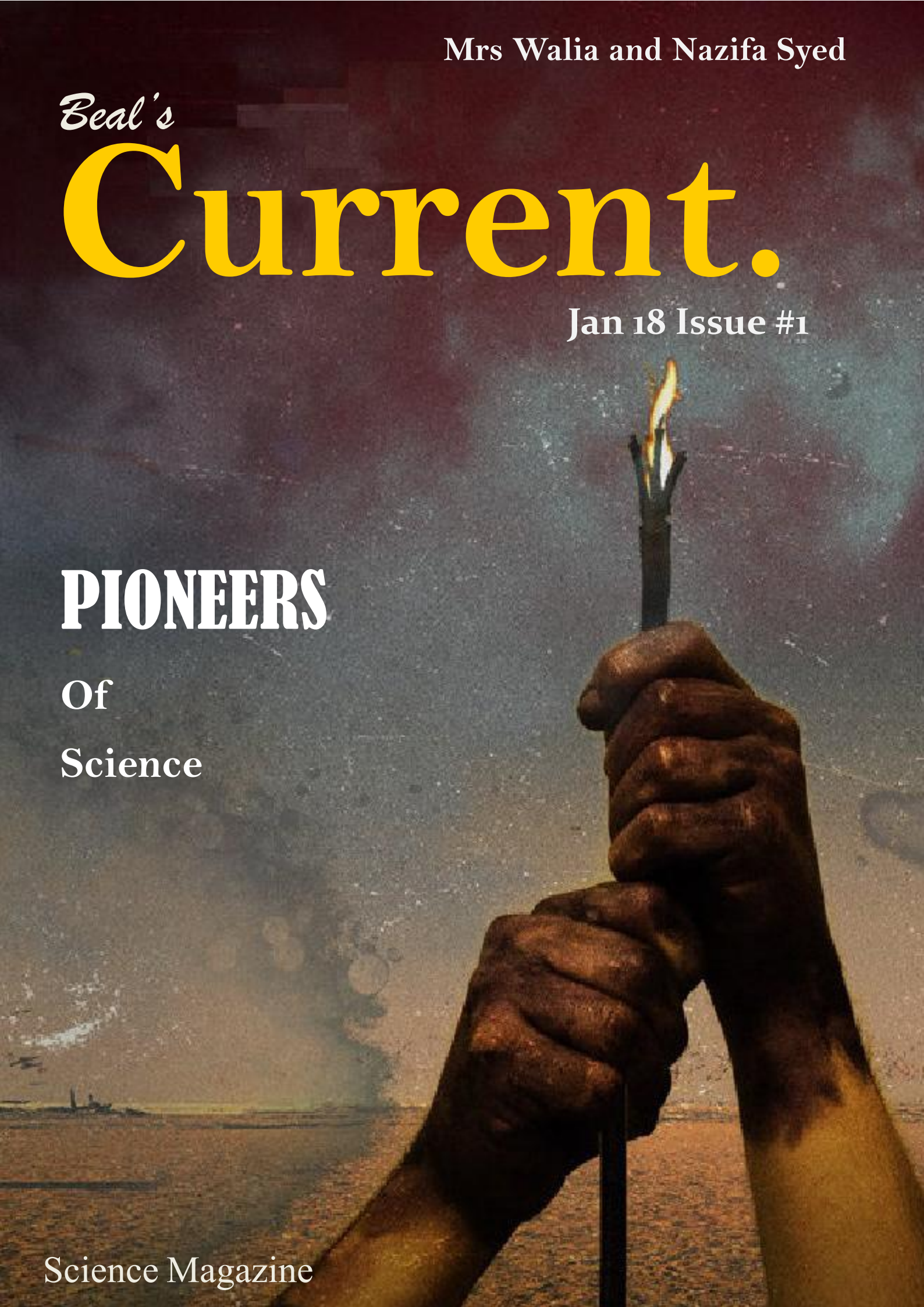
Mrs Walia and Nazifa Syed

Beal's

# Current.

Jan 18 Issue #1

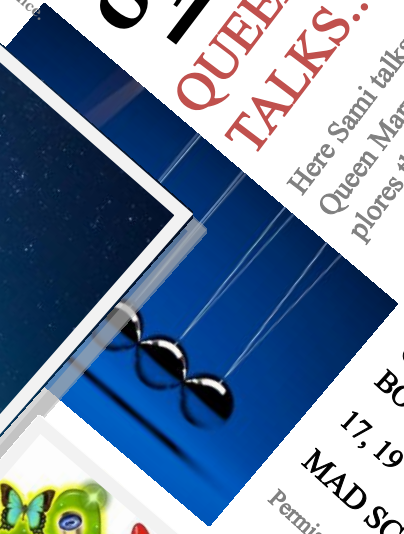


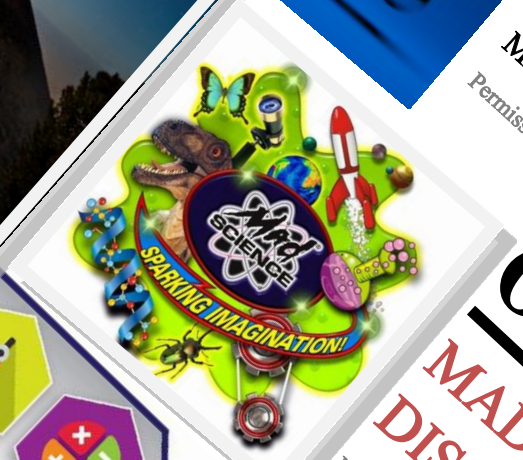
## PIONEERS

Of

Science

Science Magazine



# Scientist Of the Term

⇒ Albert Einstein was born on the 14th of March 1879 and died on the 18th of April 1955. He was a theoretical physicist.

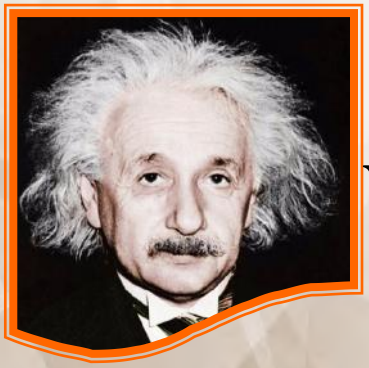
⇒ Einstein won the 1921 Nobel Prize in Physics for his work on theoretical physics.

⇒ He worked on many influential theories and projects including: the deflection of light by gravity, the quantum theory of atomic motion in solids, Brownian motion, an explanation for capillary action and much more.

⇒ He produced perhaps one of the most famous equations ever: $E = mc^2$ (energy equals mass multiplied by the speed of light squared).

⇒ In 1920s Einstein started the new science of cosmology and predicted that the universe was expanding and that it was not static. This was eventually confirmed in 1929 by the celebrated astronomer Edward Hubble.

⇒ Einstein's success mostly came from visual experiments he used to conduct in his mind. He rarely went to lab to test his theories.



Written By **Rabia Zia**

# Want to live forever?

All cells have an expiry date; this is when they cease to carry out their biological functions. Whenever your cells divide, they copy their chromosomes, these divisions happen on average 50 – 70 billion times a day (approximately) in adult humans.

Chromosomes are copied and due to the way this occurs, a tiny bit of DNA from the chromosomes break off; this can be catastrophic.

To protect themselves genes have long segments of DNA called telomeres. They sort of act like shoe lace aglets, "which are the hard plastic bits on the end of the shoe lace which prevent the lace from fraying" this is sort of similar to how it works. A caveat is that with each cell division they shrink. Some cells after a number of divisions can lose their telomeres and become rogue agents or senescent cells.

The senescent cells linger around and don't die. As time passes and the older you get, the more of them are inside of you. They harm the tissue around you and cause a whole host of issues "I know it sounds like the plot of a zombie horror movie". These problems could include a lot of diseases that come alongside old age such as diabetes, kidney failure or dementia. But what if we could kill them off?

So scientists genetically engineered mice so that they could destroy senescent cells as they please. Older mice without senescent cells were more active, had better heart and kidney function, and were less prone to cancer. Overall, they lived for 30% longer and in better health than the average mouse.

Despite this promising discovery, this would not be very practical for an adult human as we could not genetically engineer every cell in the human body as there are approximately 100 trillion cells. Most cells in the body initiate a process called apoptosis (programmed cell death) when they are damaged, but senescent cells do not this; which means that they stay around to cause problems mentioned previously. There is a certain protein that initiates this process of programmed cell death, but the senescent cells don't have that specific protein which causes them to linger.
So in 2016 some mice were injected with this protein it killed 80% of senescent cells and it almost caused no harm to the healthy cells. The treated mice became generally healthier and regrew lost hair. As a result there are a number of companies looking at treatments involving senescent cells and the first human trials are starting soon.

Well there is a down side, it may sound all good and dandy for mickey mouse but there is no guarantee that this will work to the same extent but this is a proof of a concept which is a bright light in the darkness about what we know about life extension, which will help us with creating medicines or therapies to extend life.

Written By **Humza Hussain**

# STEMettes

On Thursday the 19th of October, a group of Year 13 female Chemistry students attended a Monster Confidence STEMettes event at the Plexal in Stratford.

STEMettes is an award winning social enterprise working across the UK and Ireland to inspire and support young women into Science, Technology, Engineering and Maths (STEM). Stemettes was set up to help combat the lack of women in STEM in a new and unique way.

Beal High School attended one of their events where STEMettes encouraged young women by showing them the careers that are available via a series of panel events, hackathons, competitions, exhibitions and mentoring schemes.

During the course of the day, there were several keynote speeches where successful women, already in STEM, took the time out to give a short presentation about what motivated them to pursue this area of work and what their job consists of. For example, the CEO of Starbucks, an international coffee company, talked about her past experiences and how she got where she was today.

The series of panel events consisted of women who were willing to answer questions about their journey, their job and where they hope to be in future. The mentoring schemes were especially useful as students were able to make informed decisions about careers in STEM. The girls spoke to different mentors on a one-to-one basis enabling them to get specific advice and help in the direction they want to go.

Just under 15,000 young women have attended events, workshops and STEMettes experiences for free across the UK & Ireland. Studies show that 95% of attendees have increased their interest in Science, Technology, Engineering and Maths, after just one Stemettes event.

Many opportunities were presented throughout the day to educate young women that diversity in a business is key to a successful business.

It was inspiring for the students and teachers to see that women can be equally as successful as men in STEM.

Written By **Mikisha Makwana**

# guest speaker

## Connect Physics with Queen Mary University of London

On the 30th of November, two students of Queen Mary University, named Georgie and Alexander and who are currently doing a Physics degree, came to teach 8a/Sc1 Mrs Walia's class about Physics.

The lesson was constructed with the purpose of introducing us to Physics, what it is and why it is important. The lesson was intriguing; they taught us and showed us many things in the short space of an hour e.g – how everything can be linked by Physics.

A student was asked to summarize the lesson in three words and they said:

**"Competitive, Fun and Interesting"**

The feedback was all positive!

Before the lesson we were tasked with a simple quiz asking questions about science and our point of view of it. It asked what benefits we thought it would have for us and etc.

This isn't the last lesson we will have with them as there is another one soon to come. We have been given another quiz for the lesson and are eager to see what comes next!

Written By **Sami Vieru**

## Interviews, Engineers and Bubbles

I had the pleasure of meeting and interviewing engineer Cyril Moloney. Moloney is not a typical electrical engineer and would rather describe himself as a curious engineer then an electrical one. It was that curiosity and passion that led him to be the successful engineer that he is today- being one of eight engineers to help develop MRI scanners. Cyril is an advocate for inspiring young people to take a career in STEM, as was his intention when he came to visit.

Undoubtedly, one of the most interesting topics covered was the possibility of specifically targeting cancer cells with the use of microbubbles. This would be a new approach to deliver drugs both improving treatment efficacy and reducing the risk of side effects. This developed method entails delivering cancer drugs by encapsulating them inside microbubbles. In conventional chemotherapy, less than 1% of the total injected dose makes it to the tumour, but by using microbubbles and ultrasound, the doctors can control when and where a drug gets released, targeting the tumour precisely.

**"Improve your weaknesses, Failure is not an option, and have fun!"**

The message of choosing what you love doing and being aware of the practicalities within your profession, were two of the most important ideas Cyril emphasised, which I hope potential engineers students where able to take on.

Written By **Nazifa Syed**

**Full Interview Transcript with Cyril available on website.**

# astro

In the December of 2016 the astronomy club took a trip to the Institute of Astronomy at Cambridge University. It was the perfect night for the occasion due to the clear skies. We travelled up on the cold December evening and were greeted by a professor of astronomy Carolin Crawford. It was fascinating to be standing amongst of the best professionals in the field all at once. After this we were seen into our own private room where we were given a private lecture and discussion on exoplanets. The presentation was given by a postgraduate student from New Zealand. It was truly fascinating listening to his journey of how he came to study such a competitive subject at one of the most prestigious universities in the world. The session was thoroughly interesting and relevant to our GCSE which thoroughly helped.

After our private presentation we were taken into a large lecture hall and were given a lecture on dark matter and energy. A thoroughly interesting subject since no one really knows what it actually is! This was given by an American professor and was open to the public which meant it was very busy.

After the lecture we were all lead down a red-lit path (as red light does not harm your 'night vision') to see the gargantuan telescopes that were dotted around a dark path. I was able to see the moon from so many different angles and perspectives. There were also some more expert astronomers giving a presentation on stars using their scientific telescopes which were connected to a computer and projector. Due to it being around nine o'clock we had to sadly head back after an informative evening out.

I am thoroughly looking forward to going on the trip again this winter.

Written By **Vieran Khag**

# o n o m y

Image Taken By **Vieran Khag**

Astronomy Club is by far the best extracurricular club there is. Not only is it Physics-based it also focuses on Maths. Astronomy also helps develop an eye for detail, which helps in a lot of other subjects like Art or DT.

It takes place on Wednesdays after school, run by the excellent maths teacher Mr. Yates and the fabulous science teacher Ms. Augustin, located in the modern Sixth Form building.

Not only does one learn about the universe and all the mysteries and wonders within it but one also gains an extra GCSE in the process.

This GCSE will help anyone that wants to do Maths, Engineering, Science or Technology in the future. It is a two-year course and as it is not compulsory, it will look really good on your CV.

Astronomy organises three trips within the year. The first two trips will be visiting Cambridge University's Observatory and the other will be going to the Royal Observatory in Greenwich.

During the Cambridge trip, we will be given a lecture by a Cambridge lecturer and will be able to use professional telescopes to view the stars away from the light pollution in London.

The Astronomy course teaches you about the Earth, the moon, the Sun, the Solar System, comets and meteors, solar discoveries, galaxies, exoplanets, constellations, stars and intelligence on other planets (aliens).

Written By **Risithia**

# DIY Science Experiments


## make your own volcano

You will need:

- A volcano (made yourself!)
- A small container
- Food colouring (optional)
- Vinegar
- Liquid dish soap.

Method:

1) Go outside or prepare for some clean-up inside

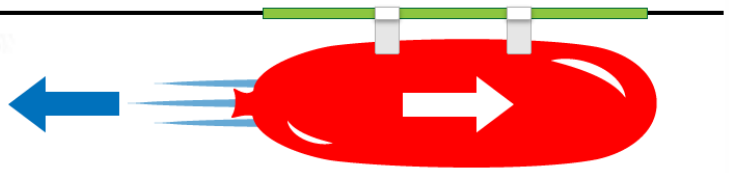
2) Put the container into the volcano at the top

3) Add two spoonful's of baking soda

4) Add about a spoonful of dish soap

5) Add about 5 drops each of the red and yellow food colouring

6)Add about an ounce of the vinegar into the container and watch what your volcano erupt!



## THE BALLOON ROCKET EXPERIMENT

You will need:

- A balloon
- Some String
- Tape
- Straw

Method:

1) Tie one end of the string to a chair, door knob, or other support.

2) Put the other end of the string through the straw.

3) Pull the string tight and tie it to another support in the room.

4) Blow up the balloon (but don't tie it.) Pinch the end of the balloon .

5) Tape the balloon to the straw as shown above.

6) Let go and watch the rocket fly!

Written By **Numra Ahmad**

| Date (Mon) | Teachers |
|---|---|
| 25th December 2017 | Christmas Holidays |
| 1st January 2018 | Christmas Holidays |
| 8th January 2018 | GJ (Lab 16) |
| 15th January 2018 | KS4/5 Progression Evening |
| 22nd January 2018 | RS (Lab 6) |
| 29th January 2018 | Year 9 Parents' Evening |
| 5th February 2018 | Year 11 Parents' Evening |
| 12th February 2018 | Half Term |
| 19th February 2018 | RS (Lab 6) |
| 26th February 2018 | KS3/4 Progression Evening |
| 5th March 2018 | SK (Lab 8) |
| 12th March 2018 | SK (Lab 8) |
| 19th March 2018 | AU (Lab 13) |
| 26th March 2018 | Year 10 Parents' Evening |
| 2nd April 2018 | Easter Holidays |
| 9th April 2018 | Easter Holidays |
| 16th April 2018 | NR (Lab 17) |
| 23rd April 2018 | Year 7 Parents' Evening |
| 30th April 2018 | CV (Lab 1) |
| 7th May 2018 | Bank Holiday |
| 14th May 2018 | Year 8 Parents' Evening |
| 21st May 2018 | GJ (Lab 16) |
| 28th May 2018 | Bank Holiday |
| 4th June 2018 | RS (Lab 6) |
| 11th June 2018 | SK (Lab 8) |
| 18th June 2018 | FE (Lab 19) |
| 25th June 2018 | FE (Lab 19) |
| 2nd July 2018 | WA (Lab 18) |
| 9th July 2018 | WA (Lab 18) |

## Term Highlights:

- Volcano experiment,
- Slime making,
- Chocolate experiment,
- Rocket experiment,
- Popcorn maker experiment,
- Chemical reaction experiment,
- Rainbow lava lamp experiment,

# Mad Scientist's Discoveries

On our first day of Mad Science we made a volcano! First we made a dough for the rock part of the volcano and then dyed it a greyish- black colour so it looked like real rocks. We molded it to a volcano shape and put a plastic container in the middle for the lava and put it on top of a tray. To make the lava, we then mixed vinegar and red food colouring then poured it into the container. Finally we added small amounts of baking soda and then huge amounts of red foam and liquid poured out which smelt horrible! Overall, this was good experiment.

The second time we made slime. It turned out great but some didn't go so well but others did. So we took a small container with some glue in it. Then we added sodium borate and some yellow or green food colouring. All of them were different because some of them would stretch and some would snap. To conclude this was a favourite in the first half term.

Another experiment was the red cabbage indicator. We started with red cabbage juice in a beaker and then with a pipette we dropped in a couple drops of different chemicals and acids like lemon juice. The main aim was to change the colour of the red cabbage juice, which is a VERY deeply pigmented crimson and dark magenta colour into something else like red which indicates an acid. This experiment was so fun!

There are many more fun experiments to come. If you would like to join, please see Mrs Walia in Lab 18 to get a letter. Alternatively, a letter is attached on page 18 of this magazine.

Written By **Raiana Tasnin**

# HALL OF FAME

## Students of the Autumn half-term are…

*Raiana Tasnin*

*7BG*

*Hashim Ali*

*7MH*

*Inaya Qureshi*

*8SB*

*Kaisan Husain*

*8PT*

*Amman Kettory*

*9GT*

*Imaan Khaliq*

*9HD*

## Students of the Winter half-term are…

*Enayah Ahmed*

*7BF*

*Adam Zahri*

*7WD*

*Isabelle Chan*

*8SB*

*Sami Goni*

*8LZ*

*Diya Chugh*

*9GT*

*Garv Pundir*

*9HD*

# COMPETITION

**Harry and Margaret Kroto Prize for Innovative Use of Technology in Science Learning.** This prestigious science communication competition, for children aged 11-18, has been established by Nobel Prize Winner, Professor Sir Harold Kroto (1939-2016), and his wife Lady Margaret and is supported through a generous donation by the Jacobs Foundation.

To enter, students must create a short (maximum duration 4 minutes) online video about science, mathematics, engineering or technology. Schools may only submit one entry and all entries must be in English.

To get a feel for the kind of videos we are looking for, this year's winning entries were:

1st Prize: Cheltenham Ladies' College - The Science of 3D printing: 3D Industrial Revolution
2nd Prize: Beaumont School - Machine Learning - Explained
3rd Prize: The James Allen's Girls' School - Why is Global Warming Real?
Prize for students for whom English is not their first language: The Leys School - Bonding and Anti Bonding

To view these entries, please visit: http://www.sheffield.ac.uk/ris /ecr/kri/jacobs

**Further information and deadlines**

For more details about how to enter and the judging criteria for the competition, please see the attached PDF or visit the competition's webpage.

**Deadlines for registration**: To participate, please register your interest via the online form on the competition's webpage by **Wednesday 31 January 2018**.

**Deadline for submission:** All entries must be submitted by **Friday 23 March 2018** and sent directly to thinkahead@sheffield.ac.uk using the form available on the website.

# A Level Leader Board

## As Biology:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Shrinija Mohan | 81 | A |
| 2 | Aneeka Rahman | 71 | A |
| 3 | Mohammad Munawar | 70 | A |
| 4 | Georgia Georgiou | 68 | B |
| 5 | Hasan Bhatti | 68 | B |

## A2 Biology:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Gurveer Kandola | 79 | A |
| 2 | Jansher Mahmood | 79 | A |
| 3 | Kaval Patel | 79 | A |
| 4 | Talvin Ramnah | 70 | A |
| 5 | Deelan Gopaul | 66 | B |
| 6 | Salman Khan | 65 | B |

# A Level Leader Board

## AS Chemistry:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Elysia Folkes | 87 | A |
| 2 | Luxa Mahenthiran | 77 | A |
| 3 | Aleeyah Zuberi | 77 | A |
| 4 | Hasan Bhatti | 73 | B |
| 5 | Yusuf Chaudhry | 73 | B |
| 6 | Aneeka Rahman | 73 | B |
| 7 | Arrish Ponnampalam | 70 | B |
| 8 | Tayyba Zia | 70 | B |
| 9 | Neluxsan Jeyakumar | 67 | B |
| 10 | Shrinija Mohan | 67 | B |

# A Level Leader Board

## A2 Chemistry:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Kaval Patel | 95 | A* |
| 2 | Jansher Mahmood | 93 | A* |
| 3 | Adnan Petkar | 90 | A* |
| 4 | Salman Khan | 88 | A* |
| 5 | Hussain Memon | 88 | A* |
| 6 | Salman Naseer | 88 | A* |
| 7 | Anisa Bangura | 83 | A |
| 8 | Printha Kugan | 80 | A |
| 9 | Rajiv Patel | 80 | A |
| 10 | Vinoja Ravindran | 80 | A |
| 11 | Trishan Sivathasan | 80 | A |

# A Level League Table

## AS Physics:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Niamh Butler | 88 | A |
| 2 | Lewis Cheung | 78 | A |
| 3 | Elysia Folkes | 78 | A |
| 4 | Neluxsan Jeyakumar | 77 | A |
| 5 | Hamza Suleman | 75 | A |
| 6 | Arrish Ponnampalam | 73 | B |
| 7 | Peter Hannes John | 69 | B |
| 8 | Adam Khalfi | 67 | B |
| 9 | Arunram Rama-Chanthiran | 67 | B |
| 10 | Fariha Nuzhat | 66 | B |
| 11 | Ziyad Jasimuddin | 65 | B |
| 12 | Aparna Kalhan | 65 | B |

# A Level League Board

## A2 Physics:

| | Student | Average % | Average Grade |
|---|---|---|---|
| 1 | Adnan Petkar | 77 | A |
| 2 | Christopher Lee | 70 | A |
| 3 | Abdul Al-Shateri | 69 | B |
| 4 | Alfred Soulsby | 68 | B |
| 5 | Sreja Thiruchelvam | 67 | B |
| 6 | Rithik Patel | 66 | B |
| 7 | Bahawal Mahmood | 64 | B |

**Do you want to discover more about Science by doing FUN experiments?**

All budding scientists in Years 7, 8 and 9 are welcome!


**Monday** after school **3.30-4.30pm**

See Mrs Walia in **Lab 18** to get a letter or for more information.

Beal Academy Trust
A COMPELLING VISION FOR SUCCESS

Beal High School
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www.bealhighschool.co.uk
Beal Sixth Form
Tel: 020 8551 9378
Email: vgoldreich@beal.redbridge.sch.uk

September 2017

Dear Parent / Guardian

In Science we are always looking for opportunities to challenge and broaden the knowledge of our students as well as looking for career progression.

We have created a 'Mad Science' club to engage students with fun scientific experiments. The club will run every Monday after school from 3.30pm to 4.30pm starting Monday 2nd October 2017. Students will receive a timetable so that they know when and where the sessions will be held.

If you would like your son/daughter to be involved and participate, please complete and return the slip below. Alternatively, if you would like more information please come and see Mrs Walia in Lab 18.

Mrs P Walia

Co-Director of Science

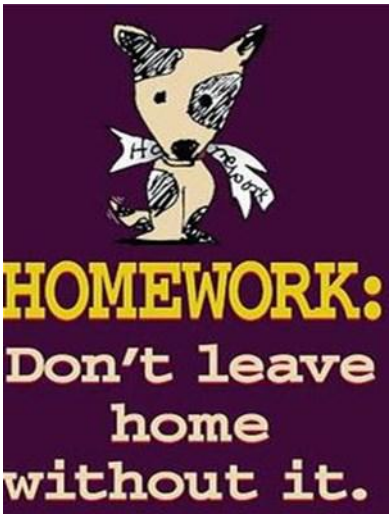
---

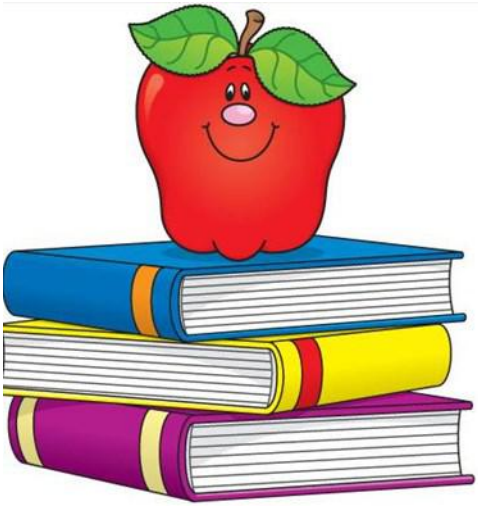
RE: 'MAD SCIENCE' CLUB

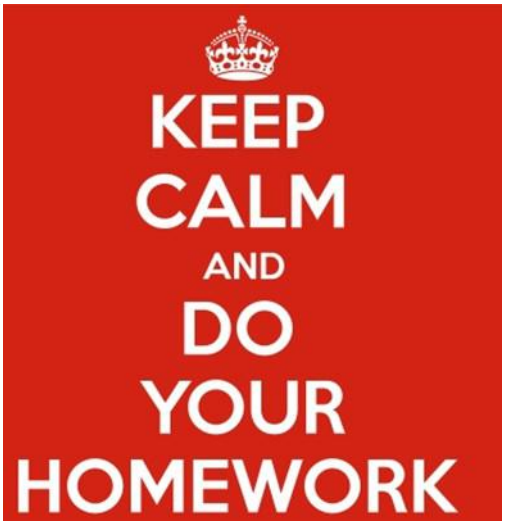
Please return to Mrs P Walia – Lab 18

Name of Student …… Form ……

I would like my son/daughter to participate in the 'Mad Science' Club to be held every Monday.






# Year 7-9

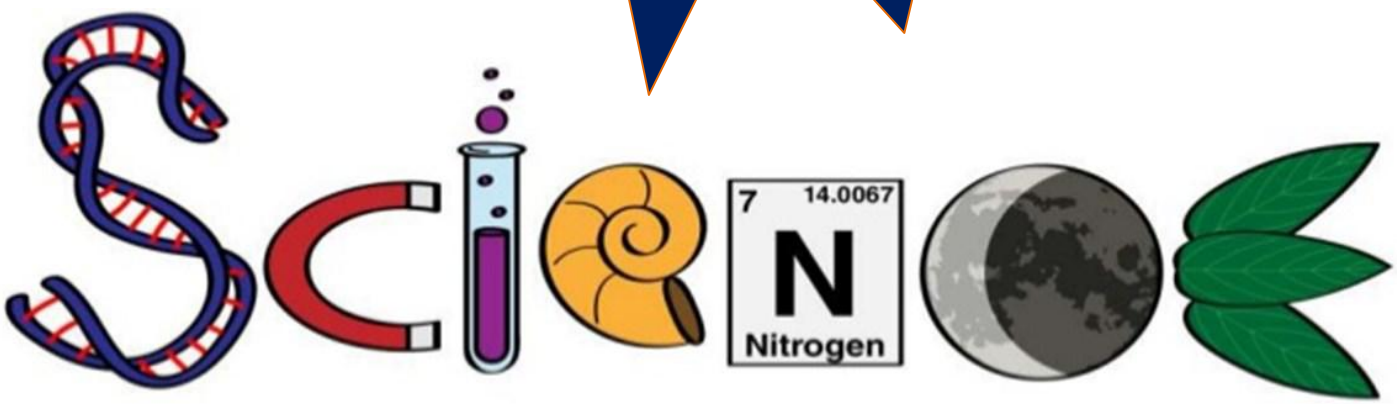
# Science Homework Club

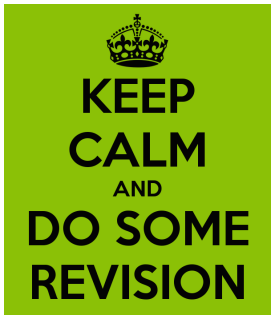
## In Lab 18

## Every Wednesday at 1.30 - 2pm

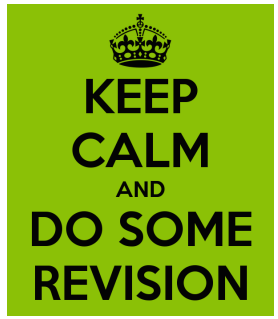
Need help with your homework?

Just want to do work in a quiet and friendly place?










# GCSE Revision Boosters

Find a topic you struggle with and sign up for the booster session (sign-up sheet in the Real Zone)

Every Wednesday 1:30- 2pm

REAL Zone


Editors:

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**Mrs Walia**

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**Vieran Khag**

**Mikisha Makwana**

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**Sami Vieru**

**Raiana Tasnin**

**Hamza Hussain**

Teachers:

**Miss Augustin**

**Miss Prabhakar**