



## U3A Science Network 2020 Meeting Presenters, Demonstrators & Workshops

### 1. **The rise, fall and rise again of aspirin**

60 minutes

*Mike Trevethick*

*Thanet U3A*

In this session Mike will trace the history (and controversy) of the discovery of aspirin and its use in relieving pain and inflammation. It was superseded by Ibuprofen (Nurofen) in the 1970s despite the fact no one new how either drug worked! Subsequently we will discuss how drugs like aspirin and ibuprofen work and the resurgence of aspirin as a treatment following heart attacks and in preventing cancer and other diseases.

### 2. **Therapeutic drugs – how do they (usually) work?**

60 minutes

*Roger McFadden*

*Moseley and Kings Heath U3A (Birmingham)*

Therapeutic drugs are ubiquitous, especially in the older population. People happily take medicines prescribed by their GP, trusting that these drugs will reduce their blood pressure, prevent cardiovascular events, relieve their pain etc. Few however, pause to ask how the tablets they take actually produce the therapeutic effect for which they have been prescribed. This presentation takes a brief excursion into the mechanism of drug action with a closer look at a few commonly prescribed drugs.

### 3. **Science and Myths of the Mediterranean Diet**

60 minutes

*Clive Askew*

*Canterbury U3A*

The Mediterranean diet was first noted pre-WW2 for the large number of healthy active centenarians in Crete. Only later did it become the corner stone of low-fat advice for avoiding heart disease. In the process it became mis-represented in a number of important ways, so that many descriptions of it today have lost sight its key features.

### 4. **Vulcan's Temple – the story of Soho foundry**

90 minutes

*Andrew Lound*

*A costumed historical presenter*

Matthew Boulton and James Watts were commissioned to construct the Soho Foundry in 1795 to build all the components of a steam engine. It became the main place for pumping engines, power engines and marine engines including the screw for Brunel's Great Eastern. The company was James Watt and Co till 1895 when W T Avery of weighing machine fame bought the site and transformed it. It has coped with two wars, shipping disasters and technological changes. With stunning period images and evocative music, Andrew in 18<sup>th</sup> century costume relives the history of Vulcan's Temple.

See [www.andrewlound.com](http://www.andrewlound.com)

### 5. **Aston Brain Institute**

60 minutes

*Professor Paul Furlong*

*Aston University*

Imaging brain waves

### 6. **Principles of Flight**

60 minutes

*Jane Giffould*

*Halstead U3A*

This is a power point course that I have used with my air cadets and which I will be using with my local U3A Sci/Tech group. It looks at some of the scientific principles of flight. I would hope it to be interactive so that there is some participation by the audience. It would be good for members to have the workbook to be filled in but this would require a lot of photocopying/running off from the computer which I cannot do.

7. **Benford's Law** 30 minutes  
*Max Beran* *Didcot and District U3A*  
 Concerning the distribution of the First Significant Digit of naturally arising numbers  
 A quirky corner of mathematics starting from a counterintuitive property of numbers, includes some interesting history, and concludes with a real-world application. Does not require deep immersion in mathematics – just a recollection of logarithms.
8. **The Fascinating World of Radiology : Fifty Shades of Grey** 60 minutes  
*Gill Baynes* *Lancaster and Morecambe U3A*  
 Gill's presentation will give an overview and brief explanation of the different methods that can be used to image the body e.g. CT, RNI, Ultrasound, MRI and PET.  
 She will discuss the role of Radiology in various screening programmes e.g. for Breast Cancer and Abdominal Aortic Aneurysm and then explain the role of medical imaging in specialised areas such as forensic and veterinary radiology and also its role in the localisation of foreign bodies.  
 Her lecture will be aimed at the level of a non-medical specialist audience and will be interspersed with humour.
9. **Introduction to ARCHA** (Aston Research Centre for Healthy Ageing) 30 minutes  
 PhD students, James Thomas, Nikki Ngombe *Aston University*
10. **Darwin the Geologist** 60 minutes  
*John Marriage* *Lyme Regis U3A*  
 Charles Darwin was a geologist before and during his Beagle trip. This background led to his later interest in biology and, of course, evolution. We shall see in particular how some errors in his geological conclusions forced him to re-think his philosophical approach to science.
11. **BeeWatch: U3A walking groups and citizen science** 60 minutesç  
*Rodney Buckland* *U3A Adviser for Research*  
 At its monthly meeting in October 2015, Meopham U3A invited Dr Nicky Gammans of the *Bumblebee Conservation Trust* to tell us about her work. The rest is history.  
*BeeWatch* is the U3A community's contribution to the Trust's *BeeWalk* programme which involves volunteers walking the same fixed route (transect) once a month between March and October, counting the bumblebees seen and identifying species and caste where possible.  
 Our observations contribute to a database of bumblebee abundance and distribution in the UK, allowing long-term monitoring of population changes in response to land-use trends and climate change.
12. **Universal Sundial - details awaited** 30 minutes  
*Peter Read* *Salisbury U3A*  
 Types of sundials and their drawbacks with a little history. Demo of a 'crude' model.
13. **Why is Chocolate – Chocolate?** 60 minutes  
*A taste of the science that makes chocolate what it is.* *Haxby and Wigginton U3A*  
 Mike Gray  
 A look at some of the physical and chemical reasons why chocolate behaves the way it does.

## Tuesday evening session

- Coronavirus 2019: just another flu?** 60 minutes  
 Dr Jane Sellwood *Reading U3A*  
*The many aspects of clinical flu – why do we keep getting them?*  
*With an update on the Coronavirus.*

## Demonstrations

### 1. Let's Experiment ( Grandma's kitchen science)

Avril Dossetter

*Beeston U3A*

A series of small tasks, originally put together for Girl Guide leaders and Trefoil members

### 2. Principles of Flight model

Jane Giffould

*Halstead U3A*

I can take my larger model over to the demonstration evening so that people can play around with the controls and have fun seeing if they can label all the parts.

### 3. Introduction to ARCHA (Aston Research Centre for Healthy Ageing)

*Aston University*

**Aston PhD students** James Thomas and Nikki Ngombe will be discussing their work on healthy ageing and how you might like to help!

### 4. The Spaghetti Marshmallow Challenge

*U3A Science Adviser*

Mike Hollingsworth

This is a fun team activity where the aim is to build the tallest free-standing tower just using 20 sticks of 'uncooked' spaghetti, one marshmallow and sellotape. It takes 20-30 mins to do. One of the members present will be invited to explain the engineering principles underlying the tower.

## Workshops

### Workshop A: Tomorrow's world - The world of 2040

*led by Mike Hollingsworth*

There have been major technological changes in the last 20 years. What will the changes in the next 20 years be?

Members will work in teams to explore the question and each team will discuss a different topic:

- Communications
- Energy
- Food
- Health & Social Care
- Transport
- The World of Work

A member of each team will report to the other teams.

### Workshop B: Using Jelly babies to understand DNA, genes and junk DNA *led by Mike Trevethick*

Not long after Watson and Crick deduced a model to explain the structure of DNA, scientists began to think about --what a gene is and how it works.

Crick coined what became known as the Central Dogma of Molecular Biology:

DNA makes RNA which makes Protein

Today we would modify this statement as: DNA is transcribed into RNA which is then translated into protein.

*Working in groups each team will build their own section of DNA using jelly babies.*

Using our Jelly Baby model we will explore:

- The basic structure of DNA
- What is RNA and how DNA is transcribed
- How is RNA translated into protein?

From this we can ask and discuss

- What is a gene?
- Junk DNA - what is it?
- Principles of gene therapy

At the end you then can eat your DNA!