



### **P1: Saving the living world (aired 6 Jan)**

In order to enjoy life we need to keep ourselves and our environment healthy. This week X-LAB takes a close look at the way some creatures of the earth prefer to live. We find out what is being done in Malta to safeguard bird habitats and to preserve the number of fish in the Mediterranean. And we also learn about the research which is being done to help us keep our hearts healthy.

Experiment: What do woodlice like?

Interviews:

Mr David Spiteri, Ghadira Nature Reserve

Prof. Connie Bezzina & Mr Brandon Scicluna, Academic Medical Centre, Amsterdam

Dr Robert Vassallo Agius, Malta Centre for Fisheries Sciences

### **P2: DNA around us and inside us (aired 13 Jan)**

Every living thing is made up of cells which contain DNA. This DNA holds specific information on how our bodies are formed, like the colour of our hair and our eyes, and is unique to each of us. This week X-Lab introduces us to scientists who's work involves studying DNA either to find out more about inherited diseases and how to cure them, or to try and catch people who have committed a crime. In the studio we also get to extract and touch fruit DNA.

Experiment: How can we extract and touch DNA from fruit?

Interviews:

Mr Joseph Borg, PhD Molecular Biology

Dr Mario Debono, Molecular Geneticist

Ms Tessabelle Sultana & Ms Marisa Cassar, forensic analysts

### **P3: Pollution in the air (aired 20 Jan)**

When we emit toxic substances in the air we are harming ourselves and our environment for many years to come. Today X-Lab introduces us to scientists who are researching ways to avoid, lessen or repair the damage done by pollutants in the air. The experiment today teaches us how to test whether a substance is alkaline or acidic.

Experiment: creating a red cabbage pH indicator

Interviews:

Dr Claire Baluci, Mr Daniel Vella, Mr David Bugeja – Heritage Malta

Dr Darren Caruana, microfluidics chemistry researcher

Engineer Nicholas Vella, waste management engineer

### **P4: Light and energy (aired 27 Jan)**

We take energy for granted but without it we would not be able to live our lives as comfortably as we do today. This week X-Lab will introduce us to engineers who are using solar energy to operate cars and boats, we will meet a scientist who is smashing atoms to find out what they are made of and we will marvel at the wonder of laser machinery. In the studio we will find out how to build a lava lamp.

Experiment: Building a lava lamp

Interviews:

Dr Cyril Spiteri Staines, Mr John Licari, Mr Neville Azzopardi, Mr David Grixti – Electrical Power Engineering Department, University of Malta  
Dr Nicholas Sammut, accelerator technology engineer, CERN  
Methode Electronics Malta Ltd

### **P5: Atmosphere and astronomy (aired 3 Feb)**

Our fascination with life beyond our planet drives our exploration of space and the building of complex machines with which to see the stars. X-Lab this week introduces us to the first and biggest telescope in England. We discover how to build our own rocket and then go on a planet walk in Qawra. Finally we go to Gozo to find out how scientists are monitoring changes in the air to predict how the climate of the world is changing.

Experiment: Building our own rocket!

Interviews:

Prof. Raymond Ellul, atmospheric physicist / Martin Saliba, atmospheric researcher  
Dr Kristian Zarb Adami, radio astronomer  
Astro Club Malta

### **P6: Aerodynamics and lift (aired 10 Feb)**

Aerofoils are structures that lift upwards or press downwards by changing the flow rate of the air passing around them, like the wings on aircraft. X-Lab this week takes us to Birmingham to meet with a scientist working on improving the surfaces of structures, while back in Malta we meet with University students who are working on avoiding plane collisions and with MCAST students who maintain and fix aeroplane parts. In the studio this week we do our own experiment to figure out which shapes are best suited as aerofoils.

Experiment: Testing aerofoils

Interviews:

Dr David Zammit Mangion, Mr Marc Azzopardi, Mr Brian Zammit , Mr Andrew Sammut -  
Aeronautics Engineering Department, University of Malta  
Mr Joseph Buhagiar, Surface Engineering , University of Birmingham  
Enginee Mario Cassar, Mr Mario Reno Cauchi, Mr Brandon Debrincat, Mr Sean Bugeja -  
Institute of Mechanical Engineering MCAST

### **P7: Detecting biological samples – CSI (aired 17 Feb)**

This week X-lab will show you how to pick up fingerprints and detect blood stains! We meet Dr Mark Micallef, a forensic scientist who now specialises in veterinary science and cancer research in Japan. In Cambridge Theresia introduces us to a group of engineers whose job is to test products and we go to a local company which produces materials for the medical sector.

Experiment: DIY CSI

Interviews:

Dr Mark Micallef - veterinary and pharmaceutical scientist  
Mr Reuben Cutajar /Mr Franklyn Borg / Ms Josefa Vella / Mr Jason Demicoli – product engineers  
Baxter (Malta) Trading Company Ltd

### **P8: Plants: growing and using them (aired 24 Feb)**

Did you know that there are more than 350 thousand different types of plants on earth? X-Lab this week takes us to the Argotti botanic garden where research on different plant uses is carried out. We'll also visit a company which extracts substances from seaweed and then go to Germany to find out how new inventions get verified at the European Patent Office. In the studio Corazon shows us how to separate out the colours which make up a some natural plant colours.

Experiment: chromatographic separation of colours

Interviews:

Mr Joseph Buhagiar, Botanist and Cell Biologist / Daniela Attard - MPhil Student  
Dr Alain Camilleri, Patent Examiner EPO  
Mr Chris Caruana, Research Chemist

### **P9: Nanotechnology and polymers (aired 3 Mar)**

X-Lab this week is all about different materials. We will be meeting Prof. Joseph Grima and his students who are experimenting with materials in the Chemistry Department at University and Dr Danielle Franke who is working with nanotechnologies in Germany. Noah will take us to a factory which uses advanced technology in the manufacture of its product and Corazon will make a mixture from cornflour which is both solid and liquid at the same time! How could this be?

Experiment: Chemical dough

Interviews:

Prof. Joseph Grima, materials engineer / Daphne Attard, PhD student  
Dr Danielle Franke, research chemist  
Mr Ronald Attard Pullicino, quality control engineer

### **P10: How we move (aired 10 Mar)**

We move all the time, but have you ever stopped to think about how your body moves? X-Lab this week introduces us to a group of bio-medical engineering students who are doing just that. We go to Switzerland to meet a Maltese scientist who is finding out how our memory works and back in Malta we'll be meeting another group of students who have managed to build a car and compete in a race with it in Italy. In the studio Corazon and the students will test to see who has the quickest reflexes.

Experiment: Testing our reflexes

Interviews:

Ms Amy Zahra, Mr Gareth Gilson, Mr Alistair Camilleri - Engineering students, University of Malta.  
Dr Gertrude Rapinett - Developmental psychologist  
Dr Mario Farrugia, Engineer Faculty Advisor Formula SAE / Mr David Vella, Mr Olen Terribile, Mr Marlon Chircop - Engineering students, University of Malta

### **P11: IT and artificial intelligence (aired 17 Mar)**

Are you aware of how easier our lives are thanks to developments in IT? X-Lab this week focuses on people who have made a career out of IT and artificial intelligence. We meet a programmer who has developed programmes to help people with a disability, an industrial software programmer and two engineers, one of whom works in hardware production in industry in Switzerland and the other in software development in the University of Manchester. In the studio Corazon and the students build a robot hand!

Experiment: Building a robot hand

Interviews:

Ms Dawn Borg Costanzi - Programmer  
Mr Brian Pulis - Manufacturing engineer / Dr Alexander Lanzon - Control engineer  
Mr Dino Mifsud - Programmer

| All episodes can be viewed on [www.xlab.tv](http://www.xlab.tv) |