UK Scientists on a mission to Venus

Researchers from Royal Holloway, University of London, the University of Oxford and Imperial College London will make key contributions to the mission, called EnVision, which has been selected as the fifth Medium Class mission in the European Space Agency's (ESA) Cosmic Vision programme. With ESA mission costs of €610 million, EnVision aims to investigate Venus by researching past and present volcanic activity and tracking the key volcanic gases that sustain its clouds and hostile environment.

Working with European and American scientists, the UK team will compare geologic and atmospheric processes to those on Earth and other planets and aim to discover more about how interactions between its interior, surface and atmosphere have shaped its evolution.

The UK, through the UK Space Agency, plays a leading role in ESA, which is not a European Union institution.

Venus is the most Earth-like planet in size, composition and distance to our Sun. When they initially formed, Earth and Venus were probably once quite similar, with oceans of molten rock and thick atmospheres of carbon dioxide and steam. But Earth evolved to become the habitable planet we enjoy today; Venus may or may not have had a habitable phase with liquid water oceans before developing a runaway greenhouse effect which today cooks its surface to an inhospitable 450 degrees Centigrade. The EnVision mission has been designed to study how geological activity throughout time has driven the evolution of Venus' climate and habitability.

Science Minister Amanda Solloway said:

> I'm proud that once again, British scientists have been chosen to play a leading role in a mission that will expand humankind's understanding of the universe.
>
> It is fascinating to consider just how many similarities Venus shares with our Earth, and what its secrets could tell us about our climate as well as what makes our planet so special to be able to sustain life.

Richard Ghail, Earth Sciences, Royal Holloway, who is the Lead Scientist on the project, said:

> Europe's Earth Observation programme – the Sentinels – show us just how interconnected the geology and climate of our planet are. EnVision will take that experience to Venus to make sense of our most unearthly neighbour, and so help us understand what makes our own world so special.

Colin Wilson, Department of Physics, University of Oxford, one of the mission's two Deputy Lead Scientists, said:

> It's great news that we will be getting back to Venus. The selection of this mission, along with the two Venus missions selected by NASA last week, shows the widespread recognition of how important Venus is in understanding how Earthlike planets evolve to be the way they are.

Philippa Mason, Department of Earth Science & Engineering, Imperial College London, VenSAR Science Investigator on the project said:

> With not one but three new missions to Venus, we now have the beginnings of a long-term exploration programme, which will enable important multi-scale observations of Venus's interior, surface and atmosphere over many years to come. We therefore hope that EnVision will stimulate interest among a whole new generation of planetary scientists.

Data will be collected by an orbiter called EnVision, which is expected to launch in 2031. It will take 15 months to reach Venus, where it will take a further 16 months of aerobraking to get into its low circular orbit. Once this stage is achieved, the satellite will start its 4-year scientific study.

The equipment on board will include:

- An imaging Synthetic Aperture Radar which will see through the clouds to map the surface of the planet.
- A Subsurface Radar Sounder to penetrate the top kilometre of the subsurface, and search for underground layering, structures and buried geological features.
- Three spectrometers will map surface geologic composition and track key gases, including searching for volcanic gas plumes above and below the clouds, supported by radio measurements of cloud composition.

The mission is an international collaboration consisting of a Science Study Team of three British, six other European and two American scientists working closely with the Instrument teams from five different nations.

Venus

- Venus is the second closest planet to the sun at a distance of about 67 million miles.
- One day on Venus lasts 243 Earth days because Venus spins backwards, with its sun rising in the west and setting in the east.
- Venus' solid surface is a volcanic landscape covered with extensive plains featuring high volcanic mountains and vast ridged plateaus.
- Venus has no moons.
- The planet's surface temperature is about 465 degrees Celsius.

UK Scientists are currently playing a leading role in several other space exploration missions.

Supported by over £400,000 in funds from the UK Space Agency, researchers at Imperial College London and the Natural History Museum are deciding which samples are sent to Earth from the Mars Perseverance mission which aims to explore and collect samples for future return to Earth from diverse ancient environments on Mars.

Next year the Rosalind Franklin rover – named after the pioneering British chemist and built by Airbus in Stevenage – will go to Mars as part of the European Space Agency's ExoMars mission to examine the subsurface geological environment on Mars and search for signs of life, past or present.

Last year the UK-built Solar Orbiter spacecraft produced the closest, most detailed images ever taken of the Sun. These images provide crucial information about how our star's volatile activity affects its atmosphere. This knowledge will help improve predictions of space weather events, which can disrupt and damage satellites and infrastructure on Earth.

Major River Thames flood alleviation project passes key milestone

Thousands of homes across Surrey and the surrounding area are set to be better protected from flooding, after the government approved the latest stage of the River Thames Scheme.

The Environment Agency and Surrey County Council are leading the partnership which will deliver the River Thames Scheme. The scheme will reduce the flood risk for 11,000 homes and 1,600 businesses in communities along the river.

Today's announcement means that Defra and HM Treasury have approved the outline business case (OBC) for the scheme. The OBC lays out why the scheme is needed, how it will be built and its value for money. This approval unlocks the first £60m of the scheme's funding so that detailed design and planning work can begin.

Floods Minister Rebecca Pow said:

> As a vital part of the government's record investment in flood risk management schemes across the country, the River Thames Scheme will provide better protection for thousands of properties, including many which suffered the devastation of flooding in 2014.
>
> In addition to providing £285m in funding, by treating the scheme

> as a Nationally Significant Infrastructure Project we aim to streamline the planning and authorisation process and ensure that communities along the river can get the protection they need as quickly as possible.

The £501m River Thames Scheme will see two new flood relief channels constructed at Runnymede and Spelthorne, together with capacity increases at Sunbury, Molesey and Teddington weirs and the Desborough Cut. The scheme's wider benefits will include new walking and cycle paths, parks and wildlife habitats.

Environment Agency Chair Emma Howard Boyd said:

> The River Thames Scheme will help to protect people and give businesses greater confidence in the resilience of the local economy in response to climate change.
>
> The scheme will also enable community access to green space, enhance nature and, by creating new walking and cycle paths, it will increase connectivity and promote active travel. It's a fantastic example of organisations working in partnership to help communities adapt and thrive.

Surrey County Council is supporting the scheme through the £270m Surrey Flood Alleviation Programme. Other local authorities are also delivery and financial partners.

Tim Oliver, Leader of Surrey County Council, said:

> This is great news for Surrey and its neighbours. The scheme means communities along the River Thames can look forward to a brighter future knowing that Surrey County Council, the Environment Agency, their partners and the project's team of expert engineers are working hard to reduce the likelihood of their homes and businesses flooding.

Detailed planning and design work is starting. The large scale of the project means the government has directed that it be treated as a Nationally Significant Infrastructure Project (NSIP). NSIPs require a type of consent known as 'development consent order' (DCO). A DCO removes the need to obtain several separate consents, including planning permission and is designed to be a quicker process than applying for these separately. The DCO must be granted before full funding is approved and construction can begin.

11-year ban for payroll boss in tax avoidance scheme

Scott Ian Rooney (40), of Leicester, was appointed sole director of Magnetic Push Limited in February 2017.

The company provided payroll services, trading from a serviced office in Liverpool, and was previously known as The Knowledgeshares Limited and My PSU Subcontractors Limited.

Magnetic Push Limited operated for just 11 months before it went into liquidation and was voluntarily wound up.

The liquidator, however, reported to the Insolvency Service that Scott Rooney refused to co-operate and failed to deliver up the company's books and records.

Scott Rooney's lack of co-operation and further information provided by the tax authorities that the company was part of a tax avoidance scheme triggered an investigation by the Insolvency Service.

The investigation found that Magnetic Push was playing an active role as an umbrella company in a wider tax avoidance scheme.

Scott Rooney declared a VAT liability of just £609 but the tax authorities claimed more than £4 million from Magnetic Push in the liquidation. The company also failed to declare PAYE and National Insurance contributions.

The absence of books and records meant investigators could not establish genuine company expenses from almost £37 million that had left the company account between February and December 2017 nor the reasons behind the company's failure.

On 1 March 2021, at the High Court in front of Judge Jones, Scott Rooney was disqualified as a company director for 11 years.

Judge Jones increased Scott Rooney's ban to 11 years after he ruled a longer ban was appropriate due to the seriousness of failing to keep records in the context of the large sums the company dealt with, almost £37m in 11 months coupled with Scott Rooney's lack of co-operation.

Scott Rooney's ban started on 22 March and means that he is banned from directly or indirectly becoming involved, without the permission of the court, in the promotion, formation or management of a company.

Martyn Pettitt, Deputy Head of Insolvent Investigations at the Insolvency Service, said:

> Scott Rooney's significant ban shows how important it is for

> company directors to keep adequate books and records, and the measures that can be taken if they do not take this responsibility seriously.
>
> Directors like Scott Rooney cannot avoid scrutiny or sanctions when operating within a tax avoidance scheme by placing their company into insolvency and failing to co-operate and we will not hesitate to seek a ban where it is appropriate to do so.

Scott Ian Rooney is from Leicester and his date of birth is April 1981.

Magnetic Push Limited (Company Reg no. 10606473).

Disqualification undertakings are the administrative equivalent of a disqualification order but do not involve court proceedings.

Persons subject to a disqualification order are bound by a range of other restrictions.

Further information about the work of the Insolvency Service, and how to complain about financial misconduct, is available.

Media enquiries for this press release – 020 7674 6910 or 020 7596 6187

You can also follow the Insolvency Service on:

CMA issues IVF guidance on consumer rights

- New guidance to help address concerns such unclear pricing and misleading success rates
- CMA warns clinics that they could face enforcement action if they don't follow the rules
- CMA teams up with Lorraine Kelly in bid to ensure that IVF patients know their rights

As part of this, the CMA has teamed up with broadcaster Lorraine Kelly on a video that encourages people to read its guide for patients when buying treatment.

Fertility treatment: a guide to your consumer rights

Last February, the Competition and Markets Authority (CMA) raised concerns about some fertility clinics' practices, such as providing unclear price information and advertising misleading success rates. It also identified a

general lack of awareness that consumer law applies in the sector.

The CMA has therefore developed guidance, working closely with the sector regulator – the Human Fertilisation and Embryology Authority (HFEA). The guidance, which follows extensive public consultation, covers what clinics should do to:

- provide the information that patients need so they can make a genuine comparison of clinics, including on price and success rates
- ensure they don't mislead patients, for example around the effectiveness of their treatments and what they will be paying
- ensure they don't mis-sell treatments, such as 'add-on' treatments – these are optional extras offered by some clinics that can cost up to £2,500 per cycle
- make sure terms and practices are fair

The CMA is promoting the guidance – the first of its kind – to patients and people who may now be considering IVF, especially as more people are now paying for their own treatment.

It has also written to clinics to draw their attention to the guidance, in partnership with the HFEA and Advertising Standards Authority (ASA). The letter sets out the CMA's expectation that clinics review and, if necessary, change their terms and practices to ensure they are on the right side of the law. The CMA will be closely monitoring the sector and will consider taking enforcement action if it believes businesses are not complying.

Louise Strong, consumer director at the CMA, said:

> Buying fertility treatment is a big decision – it can be complicated, stressful and very expensive, with no guarantee of success. All patients deserve to have the information they need to make the right choices for them and be treated fairly.
>
> Our guidance should help clinics understand their legal obligations. In six months, we will be reviewing compliance in the sector and we will be ready to take enforcement action if businesses are breaking the law.

The ASA has today separately issued an enforcement notice to clinics that provides guidance on how clinics should advertise their services.

Further information on the CMA's IVF work is available on the case page and you can read the ASA's notice to the sector.

1. Media queries should be directed to: press@cma.gov.uk or 020 3738 6460.
2. The ASA's enforcement notice in particular relates to the way information is displayed on clinics' own websites. The enforcement notice instructs clinics to review their advertising to ensure

> compliance with the Advertising Code, provides guidance and sets out that if there are continued problems in this area after November 2021, the ASA will take targeted enforcement action to ensure a level playing field.

Dstl research behind trial of new blood test to predict sepsis

Clinicians at Portsmouth's Queen Alexandra Hospital are leading medical trials of a blood test that could help to save thousands of UK lives a year by predicting sepsis days before patients show any symptoms.

The test, originally researched over 10 years at the Defence Science and Technology Laboratory (Dstl), is now being developed by government spin-out company Presymptom Health which believes it could save billions of pounds globally and improve clinical outcomes for sepsis patients.

In August 2021, Presymptom Health received additional funding from Ploughshare Innovations and the UK Innovation and Science Seed Fund, which will enable the company to complete clinical trials at 2 more hospitals in the UK and advance the product towards registration and launch.

Sepsis is the immune system's overreaction to an infection or injury and is associated with life-threatening organ dysfunction. Worldwide, an estimated 49 million people a year contract sepsis, while in the UK almost 2 million patients admitted to hospital each year are thought to be at risk of developing the condition.

Presymptom Health believes the technology can predict whether a patient will develop sepsis around 3 days before symptoms appear, enabling clinicians to treat them much sooner and manage them more effectively.

Professor Dame Angela McLean, Chief Scientific Adviser for MOD, said:

> The announcement today is a great step forward in finding potential new ways to tackle sepsis, which causes up to 48,000 deaths and significant life-changing effects in nearly 80,000 people in the UK every year. The seminal work led by Dstl, now taken forward by Presymptom Health, has the potential to provide the technology capable of detecting sepsis early, enabling more rapid treatment, and saving lives.

The trials are being led by Dr Paul Schmidt and his team at Portsmouth Hospitals University NHS Trust, with 2 other sites anticipated to go live during the summer. Up to 600 patients admitted to hospital with respiratory

tract infections will be given the option to participate in the trial.

The promising technology has received £200,000 in funding from Ploughshare Innovations, which takes research created by world-leading government laboratories, such as Dstl, and commercialises it to deliver societal impact.

Iain Miller, CEO at Presymptom Health, said:

> This test may represent a significant step in the prediction of sepsis.
>
> A substantial investment from Ploughshare Innovations has enabled us to rapidly develop this test to get to the clinical trial stage. We are very grateful for their backing, and for the support of the clinicians at Portsmouth Hospitals University NHS Trust. We are confident that this trial will confirm our test's ability to provide vital and life-saving results when they are most needed.

Hetti Barkworth-Nanton, CEO at Ploughshare Innovations, said:

> This is a tremendously exciting technology that could save lives and provide a valuable tool for use in future disease control. It is unusual for Ploughshare to make R&D investments in its spin-out companies, but the potential impact of Presymptom Health's work is so great that we saw a huge value in accelerating its development so that these trials could happen.
>
> I am immensely proud of the achievements Ploughshare makes in getting government innovations such as this to market, and of how our work benefits society as a whole.

Dr Roman Lukaszewski, the lead Dstl scientist behind the innovation, said:

> It is incredible to see this test, which we had originally begun to develop to help Service personnel survive injury and infection on the front line, is now being used for the wider UK population, including those fighting COVID-19.

Anoop Chauhan, executive director of research at Portsmouth Hospitals University NHS Trust, said:

> I am delighted that PHU are leading on this exciting, innovative and vital research using state of the art pioneering technology.
>
> We are incredibly grateful for the support and involvement of our patients in research to help with the fight against COVID and sepsis. This research will be vital in identifying sepsis quickly

and early in order to help save many more lives.

The initial trials will last approximately 12 months and will include samples taken from patients alongside samples collected in a Dstl biobank. The data collected will be independently assessed and used to refine and validate the test, which may be available for broader NHS use within 2 years. If successful, this test could also identify sepsis arising from other infections before symptoms appear, which could potentially include future waves of COVID-19 and other pandemics.