# OVERVIEW
# **2020/2021**

The University of Malta
Research, Innovation
& Development Trust

THE UNIVERSITY OF MALTA
RESEARCH, INNOVATION
& DEVELOPMENT TRUST

# WELCOME TO THE RIDT OVERVIEW 2020-21

Felt in every corner of the world, the impact of the COVID-19 pandemic has caused a seismic shift in the way we, as a species, approach almost everything.

Here at RIDT, just the fact that this Report incorporates two years instead of one speaks to how things have changed. As with most events and industries globally, the pandemic interrupted or even halted progress of research in Malta, with some of the local projects only recently re-finding their collective feet.

Yet, as the momentum of research generally slowed, at the same time humanity recognised the real value of research and scientific innovation as never before. The world watched with renewed interest as scientists collaborated in a bid to fight and contain the virus, using unprecedented private and public funding to focus completely on the endeavour.

In the end, it was the application of Messenger RNA (mRNA) – studied over more than a decade in the field of cancer research – that led to the superhero act of creating a COVID-19 vaccine in just 10 months. New discoveries made in the process now propel cancer research ever further forward; science supporting science.

Indeed, unlike the near-instantly visible results of most charitable donations, it was research funded over years by aspirational contributions from people just like you, which came to fruition at just the right moment.

Donating towards research is, as such, funding hope for our future.

Although its full impact may only come to light later, every donation – made as an individual or as a group, through birthday gifts or a work event, for example – has the potential to make a huge difference.

We thank you for your continued support and for putting your faith in research to help create a better tomorrow.

# IMPACTING OUR FUTURE NOW

MESSAGE FROM THE CHAIRMAN

Creating knowledge is a distinguishing part of the mission of the University of Malta. Knowledge impacts us all, and it impacts all areas – from student success to economic advancement. The main driver to the creation of knowledge is research, and we need to keep investing in this activity if we want to impact our future for the benefit of the generations to come.

Research is an expensive undertaking, and it gives me great satisfaction to note a gradual increase in the State's financial contribution towards university research funding. Is it enough? Definitely not, but we can sense an encouraging message that we acknowledge with joy. Our advancement as a modern, 21st century university will depend on our ability to create excellence and to grow our research portfolio.

The sustenance of our research activity is dependent on a steady revenue stream that comes from different sources – the State as the primary contributor, external funding mechanisms such as the European Commission Research Programmes, and last but definitely not least, the contributions that our university receives from our small community.

Ten years ago, the University of Malta set up the Research, Innovation and Development Trust (RIDT), with the specific aim of reaching out to various sectors of the Maltese community and to seek their support for our mission. It was a pioneering effort, given that the University of Malta had never before sought the support of its community. Over these 10 years the RIDT has established itself as an integral arm in the sustainment of our research activity and this report is intended to give you a clear picture of how we have been using your contributions.

Like in so many other organisations dependent on outreach and personal contact, the onset of the COVID-19 pandemic has slowed down the momentum of the RIDT's activity, but not its resolve to be a change agent and to help the University of Malta in its objective to impact the future of our country.

I invite you to go through the report and to find out more about how you can help the University of Malta by visiting our website **www.ridt.org.mt**.

Thank you for all your support.

Prof. Alfred J. Vella
CHAIRMAN

# FORGING AHEAD

MESSAGE FROM THE CEO

Nobody has been spared the disruption, the uncertainty, the fear and the sadness brought about by a devastating pandemic that changed our lives, perhaps forever. And while we salute those who have been taken away from us, we give thanks to the real heroes of our lives – the medical staff and the frontliners who have worked relentlessly to ensure our safety.

Around the globe and across all philanthropic causes, the fundraising sector has been hit hard by the COVID-19 pandemic and the RIDT has not been spared from this negative impact. 2020 was a very difficult year, during which we saw major donors taking a step back, while almost all our planned initiatives were either cancelled or put on hold for better times. As a result, donations decreased by more than 60% in comparison to 2019.

And while the world around us was put on pause, we used the time to rethink our position, our strategies and our way of doing things. The old way was gone and nobody knew whether one day it would be back. For us, the biggest challenge was the fact that COVID-19 restrictions did not allow us to engage with our public. At the same time, our researchers at the University of Malta continued with their world-class research, despite the difficulties they face – particularly the serious lack of adequate funding.

With 2021 came the first signs of recovery. As pandemic restrictions gradually lifted, we could once again reach out to our donors and start to dream again. We embarked on a number of collaborations with other entities to generate more awareness and to reawaken the appetite for giving towards research. We also set out to look for new sources of revenue and new potential donors. The pandemic made it very clear to us that the future of fundraising lies in digital platforms and we are determined to explore and maximise their use to the benefit of our researchers.

More than ever, we are determined to continue showcasing the brilliant work conducted by the researchers of the University of Malta and to appeal to you for your support to be able to sustain this work. One lesson that COVID-19 has taught us is that most of the solutions for our day-to-day challenges are given to us by science and research. That investment in research will ensure a better quality of life for our generation – and for the ones that will come after us.

I take this opportunity to thank all our supporters who have sustained the RIDT during the past 10 years since our launch. Thanks to you, we have been able to finance no less than 65 research projects, including 10 PhD scholarships. We are also proud to have secured the financing of the University's Mobile Dental Clinic that, apart from doing splendid work in terms of oral health, was instrumental in ensuring that the COVID-19 vaccination programme reached every corner of the Maltese islands.

Thank you once again for your support.

Wilfred Kenely
CHIEF EXECUTIVE OFFICER

# WHO WE ARE

The Research, Innovation and Development Trust (RIDT) of the University of Malta was established in 2011 to create a supporting structure that sustains and expands this research, by providing additional funds that supplement the existing modest resources. The future of the University's research activities will rely heavily on funding resources. To date, thanks to the generosity of the Maltese community, the RIDT has raised around €4 million which is financing research projects in all areas of study, projects include PhD scholarships in cancer research, in ALS and in other non-medical areas such as climate change and criminology.

Today, the RIDT also supports research projects in engineering and art conservation, a fully-fledged Mobile Dental Clinic and has facilitated the first ever Maltese scientific experiment on the International Space Station

## VISION

Reinventing ourselves to thrive in tomorrow's world

The yearning to discover what lies beyond – to ask why, what, how, and more importantly, what if – has gripped mankind since the earliest dawn of our species. The innate imperative to unravel the workings of all that fascinates us and to determine the complex links between cause and effect has sped us along the journey of evolution. Discovery can be a painful process, almost always entailing perseverance and patience. Those who have given us the greatest inventions often waited their entire lives to live the Eureka moment: a fleeting point in time when that individual's curiosities suddenly reveal the ultimate truth.

The RIDT was set up specifically to engage with the community and encourage its various sectors to embrace the emerging need of supporting research at the University of Malta. The results of our first ten years are very encouraging, but this is just the beginning. In a sense then, our journey has just begun.

# OBJECTIVES

The RIDT shall apply the Trust Fund with the object of furthering the advancement of research, innovation and development in all areas of study, knowledge and activity in Malta. The application of funds may be directed to:

- Encourage research, thought, analysis, academia, innovation and development;
- Organise, participate, sponsor, co-sponsor, facilitate, encourage, market, support and promote conferences, seminars, symposia, workshops and similar deliberations and ventures;
- Publish the results of research, studies, proceedings of conferences and seminars in the appropriate form, including that of one or more periodical publications, and to engage in other appropriate activities for the development and dissemination of knowledge and skills;
- Seek and promote cooperation with academic and similar institutions to progress its aims.

# ADMINISTRATION

**The Board of Trustees is composed of:**

- Professor Alfred Vella
  Rector of the University of Malta – ex officio
- Perit Karmenu Vella
  President of the Council of the University of Malta – ex officio
- Professor Edward Scicluna
  Governor of the Central Bank of Malta – ex officio
- Mr. Alfred Camilleri
  Permanent Secretary, Ministry of Finance – ex officio
- Mr. Mario Grech – appointed by the Prime Minister
- Professor Saviour Zammit – appointed by the Prime Minister

**Executive**

- Mr. Wilfred Kenely
  Chief Executive Officer
- Ms Sarah-Lee Zammit
  Senior Executive

Prof. Joseph Borg, Maleth project leader

# PROJECT MALETH: MALTA'S FIRST SPACE BIOSCIENCE MISSION

A historic project that has seen Malta's first mission to space is currently progressing at lightning speed.

Through the mission, named Project Maleth, a team at University of Malta set up a ground-breaking bioscientific experiment on the International Space Station (ISS), to gather valuable data on samples from diabetic patients, both on Earth and in microgravity.

## MAKING HISTORY FOR MALTA

Project Maleth, which launched into outer space in August 2021, is Malta's first space bioscience mission – and the first time that the nation has escaped Earth's gravity and reached the orbiting ISS at around 408km above Earth.

While the mission makes national history in space, it also serves another life-changing purpose here on Earth: to better understand the adaptation and composition of bacteria and microorganisms present on human skin tissue samples. The findings could have the potential to better design therapeutics aimed at treating diabetic foot ulcers.

The first mission in this ambitious programme aims to identify the effects of spaceflight, microgravity and solar radiation on human skin microbiome, using a range of molecular biology tools and techniques present at the University of Malta and partners abroad.

## AN INTRICATE PLAN TO REACH THE ISS

In its first stage, Project Maleth involved sending a 'biocube' containing human skin tissue samples from patients with diabetic foot ulcers to the ISS, which was monitored for 50 to 60 days before it returned to Earth.

Alongside the scientific experiment, the team digitally embedded inside the biocubes' own hard disk around 1000 contributions from children and organisations across Malta and Gozo, ranging from songs and poems to artwork and messages. This formed part of a large STEAM (Science, Technology, Engineering, Arts and Mathematics) exercise to instil passion and creativity on various subjects related to science and art. Once in space, a mission control centre managed by Arkafort in Qormi shared these pieces onto various social media platforms, while a dedicated website streamed live events as they occurred.

The team assembled, packed and repacked the biocube, before sending it to NASA Kennedy Space Centre, where it was prepared for launch on a Space-X rocket (Falcon 9) to the ISS. Multiple astronauts handled the biocube upon its arrival, including French Aerospace Engineer Thomas Pesquet, whose outreach to the Maltese nation was facilitated by the Malta Council for Science and Technology.

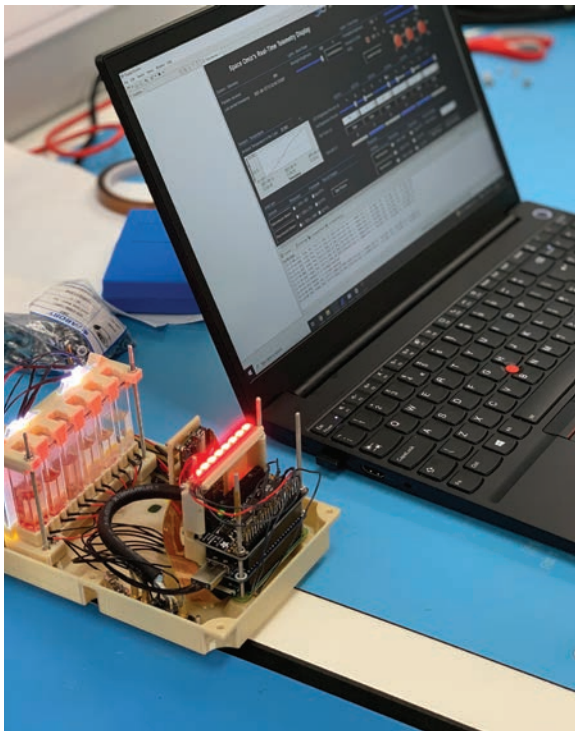
## FIGHTING DIABETES USING SPACE AS A TOOL

The scientific experiment on the human skin samples, known as the SpaceOMIX investigation, has the potential to impact the lives of hundreds of people affected by complications brought about by Type 2 Diabetes Mellitus.

Malta has the third highest diabetes case rate in Europe, with 12.2 per cent of the population suffering from the disease. Around 400 amputations are performed in Malta each year, with a 70 per cent mortality rate for diabetic amputees within five years of surgery.

The Project Maleth team worked hand-in-hand with another at Mater Dei Hospital led by Prof Kevin Cassar and co-workers, who obtained skin samples from diabetic foot ulcers containing various bacteria (collectively known as a microbiome) for further investigation and research by exposing them to spaceflight conditions and microgravity within the ISS environment.

By studying the effects of this environment on both human skin tissue and the microbiome in space – which studies have shown instigates a variety of changes to the cell mechanisms and molecular machinery – the team hopes to learn more about their genetic changes and modulation.

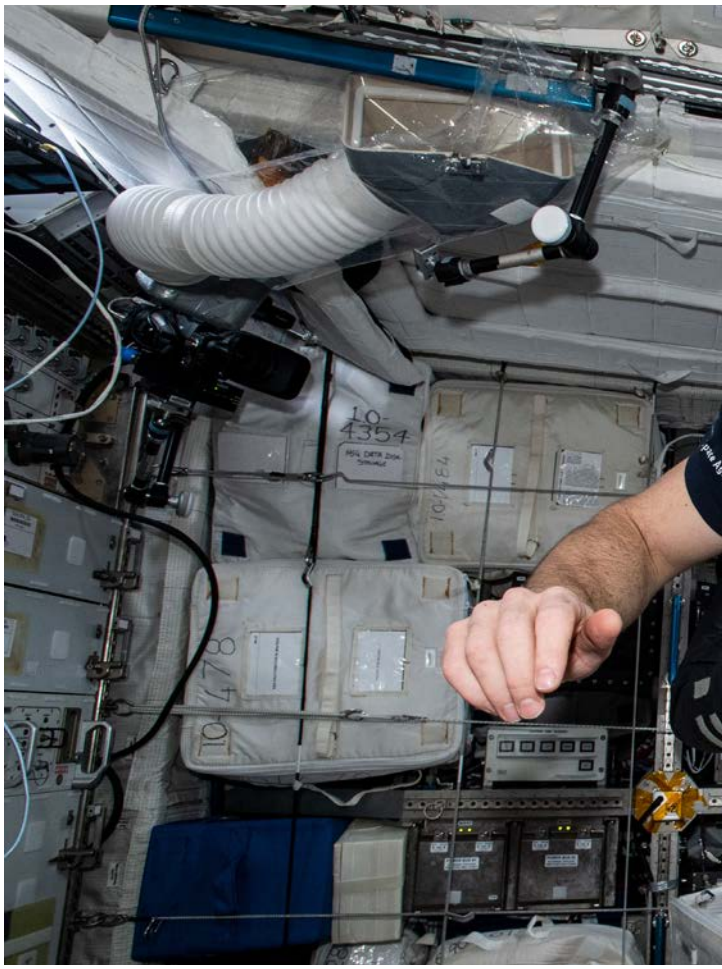


## A COLLABORATION OF EXPERTS IN THEIR FIELDS

Spearheading Project Maleth is Prof Joseph Borg, Associate Professor of Applied Biomedical Science at the University of Malta.

A phenomenal team of experts in their respective fields are behind the project. These include Graziella Zahra from Molecular Diagnostics of infectious diseases at Mater Dei Hospital, Gordon Grech and Glenn Sciortino from Arkafort Ltd, Nicolas Clémencin and Hilde Stenuit from Space Applications Services, Christopher E Mason from Weill Cornell Medicine and Afshin Beheshti from NASA Ames Research Centre.

The mission also forms part of an ongoing PhD project by Christine Gatt, supervised by Prof Borg and Dr Zahra at the University of Malta, looking at the human skin microbiomes of diabetic foot ulcers from hundreds of patients in Malta. While Ms Gatt led the sample handling of human skin microbiome in the laboratories, the project also offered a training opportunity for two BSc students from the Department of Applied Biomedical Science and one prospective MSc student also at the University of Malta.

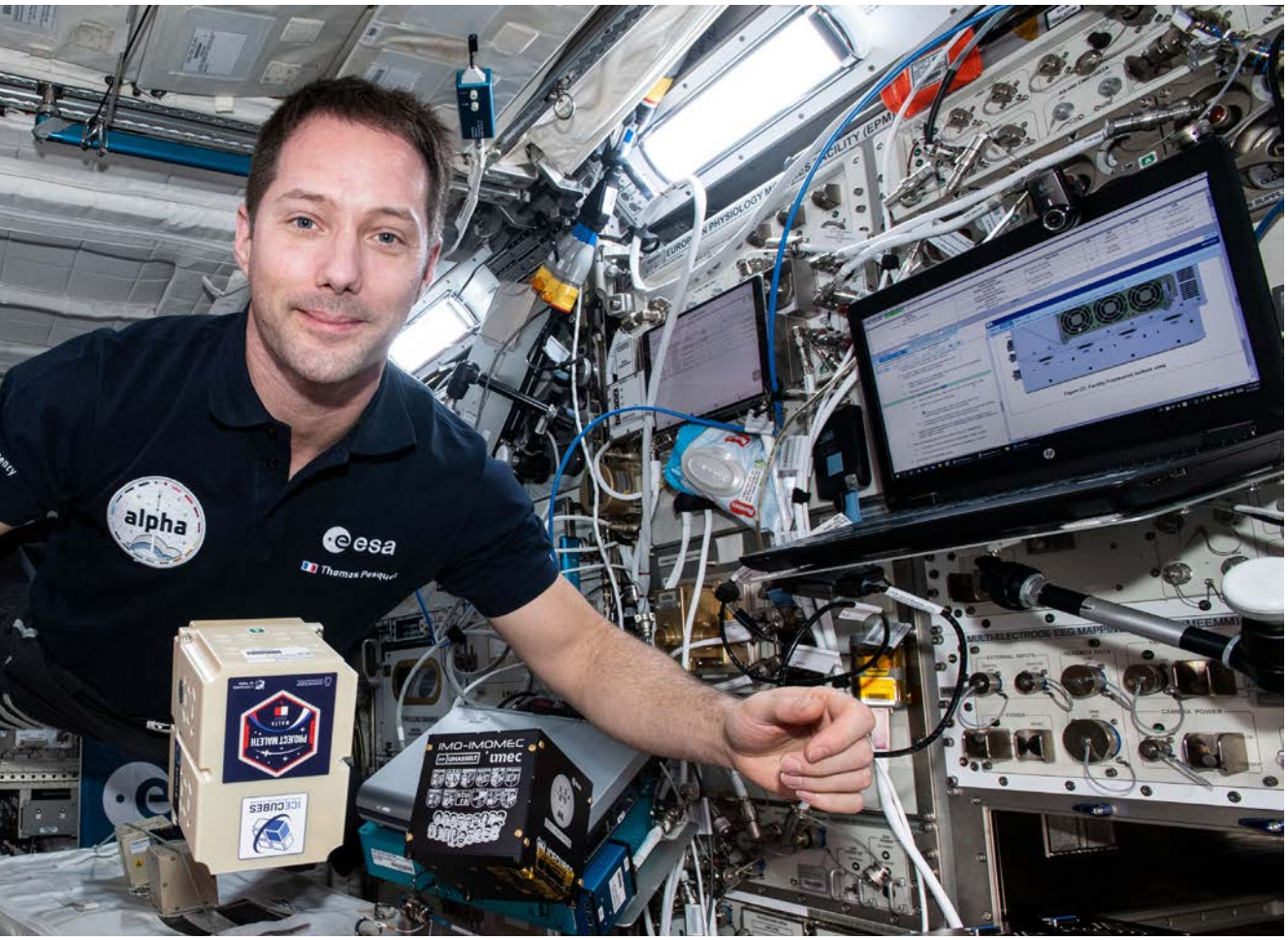


## LIGHTSPEED PROGRESS THROUGH A PANDEMIC

Project Maleth now progresses at an extraordinary rate, despite the pandemic, thanks to the team's commitment and the support of Prof Kevin Cassar and their clinical colleagues at Mater Dei Hospital, as well as the patients themselves.

On the same day they returned from Maleth's first mission returned, Ms Gatt processed the samples using microbiology techniques before leaving them to incubate overnight. The next day, she observed the first growth of bacteria back from space – a history-making moment.

Moving forward, the analysed data will form part of a special edition publication in early 2022. The project's success has prompted requests for the team to present at international conferences and workshops, including at the annual NASA Gene Lab and the Festival of Genomics and Biodata. Public talks are also planned to disclose parts of the Maleth I project, while making way for a follow-up mission, Maleth II, set for May 2022.




European Space Agency Astronaut Thomas Pesquet seen with Maleth biocube

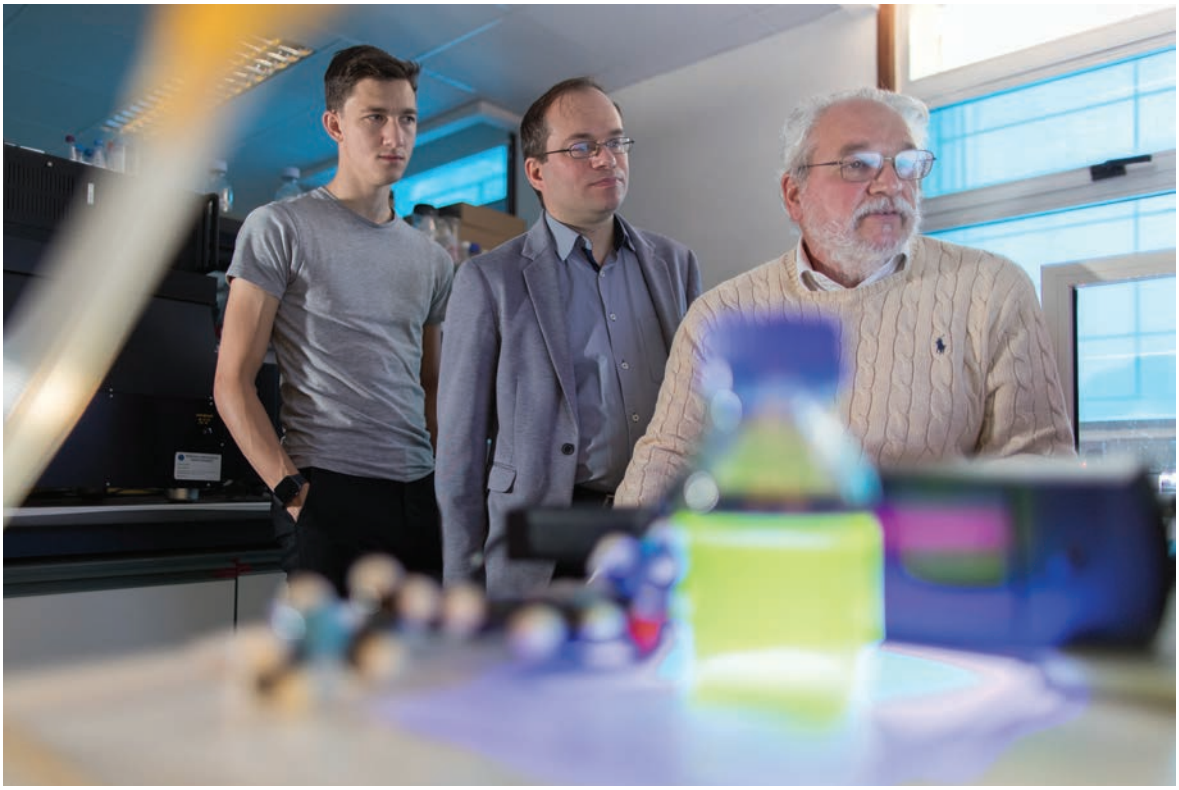
## FUNDING THE FUTURE OF MALTA IN SCIENCE AND SPACE

Project Maleth is made possible through the generous sponsorship of two Malta-based companies, Evolve Ltd and Arkafort Ltd, as well as funding received from the Ministry for Foreign and European Affairs, all facilitated by RIDT.

Inspired by its success, three more sponsors have approached the project team to support the 2022 Maleth II mission, which include two other local sponsors and one international sponsor from Germany. Future missions to outer space for Malta have even received financial support from the public, via a campaign on local crowdfunding platform, Zaar.

With continued funding, research projects such as Project Maleth can make breakthroughs in science, explore space as a nation, inspire a new generation of scientists and creative minds in Malta and prove that even the sky is no limit to the potential of Maltese scientific discovery. ■

***Project Maleth is led by Prof Joseph Borg from the University of Malta who forms part of the SpaceOMIX team, funded by the Ministry for Foreign and European Affairs of Malta, biotech company Evolve Ltd and Arkafort Ltd and supported by the Malta Council for Science and Technology and Esplora. More information about Malta's first space mission can be found online at www.spaceomix.com.***



From L to R - PhD student Alex Johnson, Prof. David Magri, Prof. Gary Hunter

# A PROJECT TO DESIGN, PRODUCE AND TEST SMART ANTI-CANCER DRUGS

An ongoing research project at the University of Malta, launched through funds secured via the RIDT, could mark a new frontier in breast cancer research and treatment.

The Smart Logic Gates study aims to design and synthesise novel smart anti-cancer drugs and test their effects on breast cancer cells.

## ADDRESSING THE INCREASINGLY URGENT NEED FOR TARGETED BREAST CANCER TREATMENT

Breast cancer is the second most common cancer among women.

Some types of breast cancers are treatable using hormone therapies. However, triple-negative cancers – which do not have the receptors for estrogen, progesterone and human epidermal growth factor – are not treatable by hormone therapy. At least 20 per cent of diagnosed breast cancers are triple-negative, with these patients receiving chemotherapy as an alternative treatment.

The goal of the Smart Logic Gates project is to engineer new anti-cancer drugs that could, in principle, target and kill the cancer cells, while leaving healthy cells unaffected.

## USING SMART LOGIC GATES IN CANCER TREATMENT

This innovative project has produced new molecules by rational molecular design that target DNA, bind to it and degrade it by initiating the production of free radicals; powerful destructive species that our cells usually try to avoid.

Beyond this key function, the molecules are also 'AND logic gates' – digital gates that follow mathematical binary logic. As such, they emit a fluorescence signal on binding to DNA molecules and activation of free radicals inside the nucleus of the cancer cells.

Once the team understands how the smart logic gates function as potential therapeutic DNA binding agents, their next step will be to test the cytotoxicity activity of the molecules on various types of breast cancer cells.

## A PROCESS THAT CHANNELS LOGIC INTO CANCER RESEARCH

Through the Smart Logic Gates project, the team has designed and engineered a series of new molecules by strategically mixing specific chemicals to make new chemical entities.

For each new compound, the team confirms its identity and purity using a technique known as nuclear magnetic resonance (NMR) spectroscopy.

This technique involves placing the sample in a magnetic field and irradiating the sample with radio waves. From the analysis, the team can determine the three-dimensional representation of the molecule.

In vitro cytotoxicity studies involve testing the novel chemicals on various cells, while using existing drugs as a positive control. The team has selected various cancer cell lines that are triple-negative, as well as other cancer cell types that are not.

## CANCER INNOVATION, LED AND SUPPORTED BY SPECIALISTS

Leading the Smart Logic Gates project is Prof David C Magri from the Department of Chemistry, within the Faculty of Science at the University of Malta.

The project progresses in collaboration with Prof Gary Hunter from the Department of Physiology and Biochemistry.

Meanwhile, PhD candidate Alex Johnson conducts the synthesis of the compounds in the Department of Chemistry.

The project launched at the start of 2021, so the Smart Logic Gates project is already halfway through its planned timeline. The team has made many new molecules and is currently studying their interaction with DNA molecules – a project phase they plan to conclude by early 2023.

Due to the COVID-19 pandemic, the cost and delivery time of chemicals and consumables increased significantly, quickly impacting the project's planned budget. Disappointment also followed when a published literature procedure did not work for the project. Nevertheless, the project team explored alternative methodologies for making the desired molecules such as using a conventional microwave oven to heat reactions, which itself resulted in unexpected breakthroughs in the synthesis process.

## GROUND-BREAKING FINDINGS

The Smart Logic Gates project has already displayed encouraging results.

Besides the manufacture of the new molecules, the team is investigating the interactions of the molecules with DNA molecules using a technique named circular dichroism spectroscopy – and seeing evidence that many of the new molecules interact with DNA molecules as predicted.

Likewise, preliminary studies with one type of breast cancer cell indicate that some molecules are indeed cytotoxic, while the fluorescent light they emit shows that they accumulate in the cell nucleus, where the DNA molecules are located.
With continued research and innovation, projects such as Smart Logic Gates have the potential to transform treatment and quality of life for cancer patients the world over. ■

***This project commenced thanks to a donation of €36,000 received from sponsors sourced by RIDT, including the Marigold Foundation, Europa Donna Malta and the Ministry for Energy.***

# A PROJECT TO ESTABLISH MALTA'S EYE HEALTH

A research study to understand the prevalence of eye disease and visual impairment across Malta and Gozo continues.

Launched by ophthalmic surgeon Francis Carbonaro in 2019 through funds secured via RIDT, the project aims to establish reliable data on eye health in Malta that could be game-changing for local health services.

## ADDRESSING A NATIONAL HEALTH LOOPHOLE

Once complete, the Malta Eye Study promises to boost the island's records on eye health.

While studying for his PhD at King's College in London, lead researcher Francis Carbonaro noted that other European countries keep governmental records of the eye health of their respective populations – yet Malta does not have easily accessible data on ophthalmology.

This lack of robust, reliable data available on blindness and common eye diseases such as cataracts, diabetic retinopathy and glaucoma, and the prevalence of eye disease across the Maltese islands, has far-reaching implications regarding the nation's health as a whole.

The Malta Eye Project will address this public healthcare loophole through the streamlined collection of eye health data from around 2000 individuals from across Malta and Gozo, (approximately one per cent) between the ages of 50 and 80, looking to both improve local health services and determine if there are any genetic or environmental factors, such as climate, that may impact the overall health of the population.

## A TARGETED DEMOGRAPHIC PROCESS

Since the project specifically targets eyes diseases such as glaucoma and cataracts and hopes to determine the prevalence of blindness or visual impairment, it focuses on an older age range who may be more prone to these eye health issues.

The team invites individuals within this key demographic, randomly selected via the Census, to attend a Health Centre for a brief visit in which they are asked to complete a questionnaire, before receiving a full eye test, completely free of charge.

Through the detailed testing process, images are taken of the retina and optic nerve, while details are noted of glasses prescriptions and a DNA sample taken via a harmless saliva swab. As such, all the study's subjects receive free, specialised optical medical care through the project, and are referred onwards as necessary. Meanwhile, their individual DNA sample is sent for expert examination to uncover any genetic traits that may directly impact the healthcare needs of themselves or their immediate family.

Mr. Francis Carbonaro

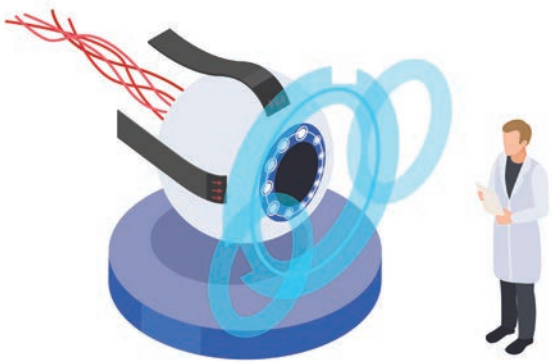
## AN EXPERT TEAM

At the helm of the Malta Eye Project is Francis Carbonaro, an ophthalmic surgeon and consultant ophthalmologist trained in Malta and at prestigious UK institutions including King's College in London. Alongside many research papers in several peer-review journals, he has also published a book on Glaucoma surgery.

Under the supervision of Mr Carbonaro and Prof Julian Mamo, PhD student and Higher Specialist Trainee in Ophthalmology Dr David Agius is carrying out the study and collecting the eye health data from the 2000 randomly selected subjects.

The project also offers a valuable opportunity to make a real difference to public healthcare for training medical students, who also assist Dr Agius in the data collection process.

Further project support is offered by leading geneticist Stephanie Bezzina Wettinger, who oversees the delicate storage and genetic testing of the subjects' DNA samples.



## PROGRESS POST-PANDEMIC

While the Malta Eye project officially launched in late 2019 and the team intended to start the process of data collection shortly afterwards, the onset of the COVID-19 pandemic in early 2020 halted the project's progress due to restrictions.

Nevertheless, as COVID-19 protocols eventually eased in September 2021, the team could at last begin the data collection phase of the project, welcoming around 75 study subjects a month – a process that continues to gain momentum and is now expected to be completed in 2023.

## FUNDING THE FUTURE OF EYE HEALTH IN MALTA

The Malta Community Chest Fund (MCCF) Foundation generously financed the initial testing stage of the Malta Eye research project through an agreement with the RIDT in 2017.

Yet, similar studies carried out abroad require tens of millions in funding, with most having a permanent team on board who can liaise with the subjects, go out into the field and collect data, using expensive specialist equipment throughout.

Today, continued funding for this vital project is required for the equipment and expertise to complete the study and realise its full benefits for public healthcare – from channelling this powerful data into targeted care for common eye disorders to establishing the role genetics and environmental factors have to play in the nation's overall health.

Through the RIDT's vision and the collaboration and generosity of private sponsors, research projects such as these can continue to make a substantial impact on the health of people both in Malta and across the globe. ■

***This project launched through a generous donation from The Malta Community Chest Fund (MCCF) Foundation in agreement with the RIDT. Further funding is now required to complete the Malta Eye Study and fully utilise its findings for the benefit of public health.***

Dr. Pierre Ellul and Dr. Martina Sciberras

# COMBATTING COELIAC DISEASE THROUGH RESEARCH

Ongoing research at the University of Malta aims to find the prevalence of coeliac disease across the Maltese Islands and to study the microbiota composition of coeliac patients.

Launched through funding received via RIDT from Dr Schaer – the company behind a huge range of gluten-free products – the project will study data from coeliac disease patients, which may help to develop a better understanding of this disease.

## AN INCREASINGLY PREVALENT DISEASE

Coeliac disease is a growing problem worldwide. This chronic, multiple-organ autoimmune disease affects the small intestine in genetically predisposed individuals exposed to an environmental trigger: gluten.

The rising number of coeliac disease cases is attributable to better diagnostic tools, greater awareness of the condition and screening of at-risk groups – although coeliac disease still represents a statistical iceberg, with far more undiagnosed than diagnosed cases from country to country. In fact, most cases may remain undetected without active screening.

Even patients who considered themselves asymptomatic at the time of diagnosis have found that a long-term, strict gluten-free diet leads to improvement in their quality of life. However, there is still scope for finding new scientific pathways to therapeutically treat coeliac disease.

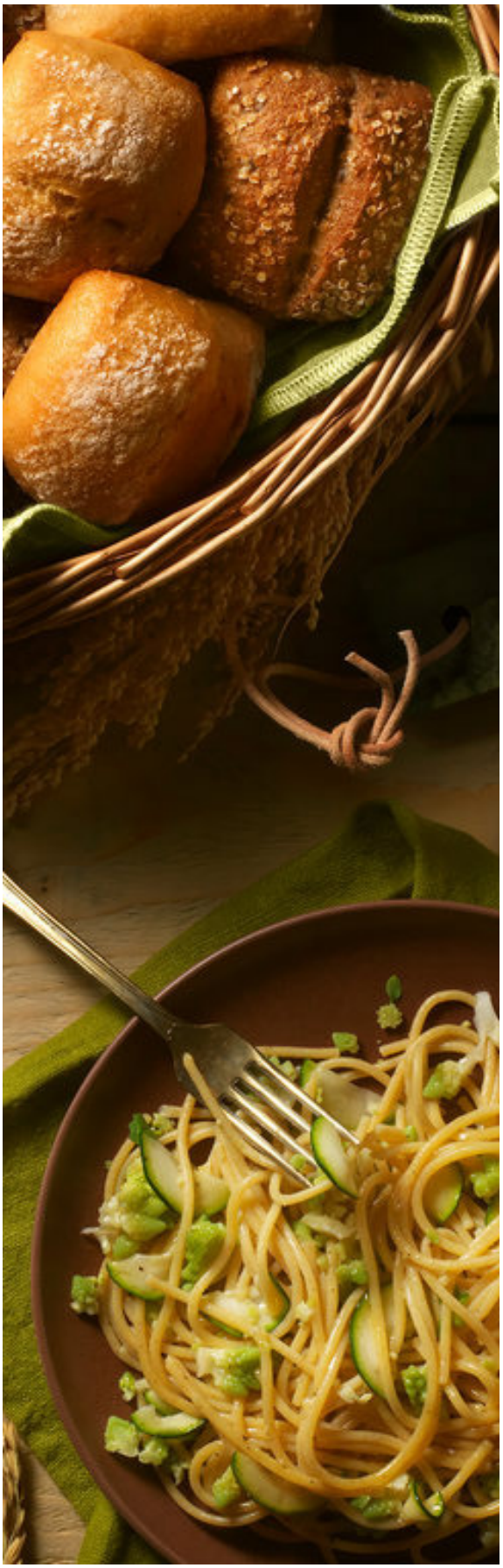
## A SPOTLIGHT ON COELIAC DISEASE ACROSS MALTA

The project, named The Prevalence and Faecal Microbiome of Coeliac Disease in the Maltese Islands, aims to show how commonplace coeliac disease is across the Maltese population.

It also builds on other global research that has studied the role of the human microbiome in healthy and disease states, and the ability to utilise that data to create new treatments. This found that the interaction co-evolves between the microbiome and the host immune systems, affecting both. Ongoing research continues to answer questions about how human genomes and gut microbiomes influence the metabolic state of an individual based on their diet, lifestyle and gut microbial interactions, known as their metabolic phenotype.

Through analysis of the faecal microbiota composition of newly diagnosed coeliac disease patients and comparing it to healthy controls, the project hopes to identify differences between these ecosystems and the key role they play in healthy and disease states.

As a secondary objective, the research will also examine the prevalence in Malta of Irritable Bowel Syndrome (IBS), which is a group of



chronic functional bowel disorders where no clear structural or biochemical cause is found on investigation and, like coeliac disease, can have significant impact on quality of life.

## PART OF A GROWING GLOBAL RESEARCH COMMUNITY

Conducted in the Faculty of Medicine and Surgery at the University of Malta, the project is the PhD research of Dr Martina Sciberras, a gastroenterologist in Mater Dei Hospital.

Prof Pierre Ellul, Head of the Division of Gastroenterology at Mater Dei Hospital, supervises the research, as does Prof Andre Franke from the Institute of Clinical Molecular Biology in Kiel, Germany.

Having begun her research in October 2020 on a part-time basis, Dr Sciberras plans to complete it – including data collection, microbiota analysis and thesis – within the next three years.

Beyond investing in the bright future of a Maltese researcher and encouraging more female participation in the field of academia and gastroenterology, the project will also birth unique research skills in biomedicine and faecal microbiome analysis. These will increase opportunities and cooperation between Malta and other international research consortia, while contributing to a global effort to better understand coeliac disease.

## A PROCESS OF DATA COLLECTION AND ANALYSIS

In coeliac disease, multiple pathways involving the innate and adaptive immune system lead to the generation of a cytotoxic reaction and the production of antibodies. Diagnosis involves testing for autoantibodies and confirming with histology from intestinal biopsies of the small intestine via endoscopy.

The project uses a point-of care testing kit, which shows tissue transglutaminase antibodies with a simple pinprick. To date, the research has focused upon literature review and finding the data available on this topic and its relevance to the Maltese Islands, as well as researching the kits used in the study, particularly those used to test asymptomatic people with coeliac disease.

To analyse the faecal microbiota composition of patients, data collection of stool samples from both newly diagnosed coeliac disease patients and healthy controls is ongoing, with more than 35 samples already collected alongside participants' questionnaires. Although the COVID-19 pandemic impacted both sample collection and patient willingness to take part, reduced restrictions now allow the project's data collection phase to build momentum.

In fact, the initial screening of asymptomatic patients has already led to the diagnosis of three patients with coeliac disease, who have since followed a gluten-free diet to combat it.

## VITAL FUNDING TO BEAT COELIAC DISEASE

This research is possible through funding received through RIDT from the renowned producer of gluten-free foods, Dr Schaer, as well as university funding received via the TESS scholarship unit.

Besides leading to an increased awareness of coeliac disease across Malta in both healthcare professionals and the public, the project will also detect the disease in asymptomatic individuals – and help prevent possible complications.

Publications from the research will likewise place Malta at the frontline of research and development initiatives for local patients, while it channels financial support from sponsors into tangible discoveries about the characteristics of coeliac disease and potential future therapies for patients the world over. ■

This project has been fully funded through a generous donation from Dr Schaer.

From L to R - PhD student Nathalie Bonello, Dr. Edith Said, Prof. Jean Calleja Agius, Dr. Graziella Zahra

# RESEARCHING THE GENETICS OF KIDNEY DISEASE

A research project into polycystic kidney disease is making progress, as it looks to establish a link between patients' genes and their clinical condition and family history of the disease.

Sponsored by the LifeCycle Malta Foundation through RIDT, the Genotype-Phenotype of Autosomal Dominant Polycystic Kidney disease in Malta project promises to discover the genetic aetiology and prevalence of inherited polycystic kidney disease in Malta.

## FINDING NEW WAYS TO TACKLE COMMON GENETIC DISORDERS

Polycystic kidney disease (PKD) is one of the most common genetic disorders. Caused by a spontaneous gene mutation or defect, it leads to the growth of fluid-filled cysts in the kidneys.

While simple kidney cysts formed later in life are usually harmless, PKD cysts can cause kidneys to enlarge or lose function over time, leading to other complications such as high blood pressure, liver cysts, or even blood vessel malfunction in the brain or heart.

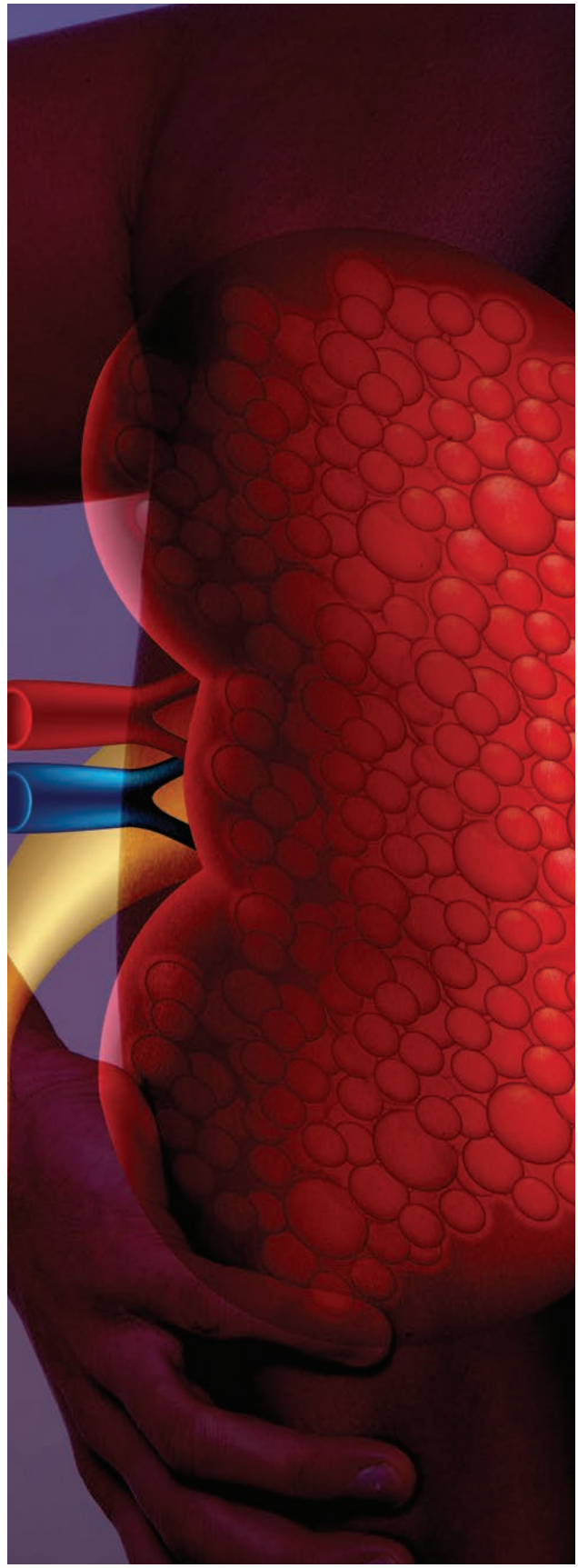
Symptoms of the disease depend on age and severity but will usually develop in patients aged between 30 and 40 and become progressively worse. Autosomal dominant polycystic kidney disease (ADPKD) is PKD inherited in a dominant manner – and affects one in every 400-1000 people in the world.

Linking patients' genotype and phenotype
The interdisciplinary research project, launched in 2021, set out to study adults with polycystic kidney disease who also have a positive family history consistent with ADPKD.

By characterising this population, and identifying its prevalence in Malta, the project hopes to contribute to the implementation of fact-based healthcare.

The project determines the patients' individual collection of genes, known as their genotype, and correlates the genetic findings to the individual's phenotype: onset of disease, renal function and end-stage renal disease. These results will help families to develop a better understanding of their condition and the risk of recurrence.

Through this process of genetic discovery, the project will help to define the genetic make-up of the Maltese population, which is often unique, and may lead to important scientific knowledge and global contributions to this field of research.



## A CUSTOMISED PROCESS

Following the project's receipt of ethical approval, a total of 65 patients who fit the criteria have thus far consented to be a part of the study. In the ongoing process, the team studies the samples from the participating patients' genetic tests using a customised gene panel for genes known to cause ADPKD. The genetic diagnosis in the patient presenting with the disease will enable the identification of individuals in these families who are at risk of developing PKD, so that doctors can monitor and adjust their specific healthcare needs accordingly.

Through the next generation sequencing genetic analysis, the team has already found known, rare and new pathogenic mutations in several patients.

Although the patients have already received a clinical diagnosis, those who test negative in the customised gene panel then undergo a more extensive genetic investigation to identify novel genes in patients with ADPKD.

The team has selected a subgroup of patients in whom no genetic defect has been identified to study them further genetically using whole exome sequencing. This technique includes all known clinic genes and is much larger than the gene panel.

## RESEARCH LED BY EXPERTS IN THEIR FIELD

The University of Malta's Anatomy and Cell Biology Department leads the project in collaboration with the Departments of Medicine and Pathology at Mater Dei Hospital. Meanwhile, the contribution of Mater Dei Hospital's Nephrology Department has been vital in the recruitment of patients.

Led by Prof Jean Calleja Agius, the team of specialists includes Dr Edith Said, Dr Graziella Zahra and Prof Emanuel Farrugia.

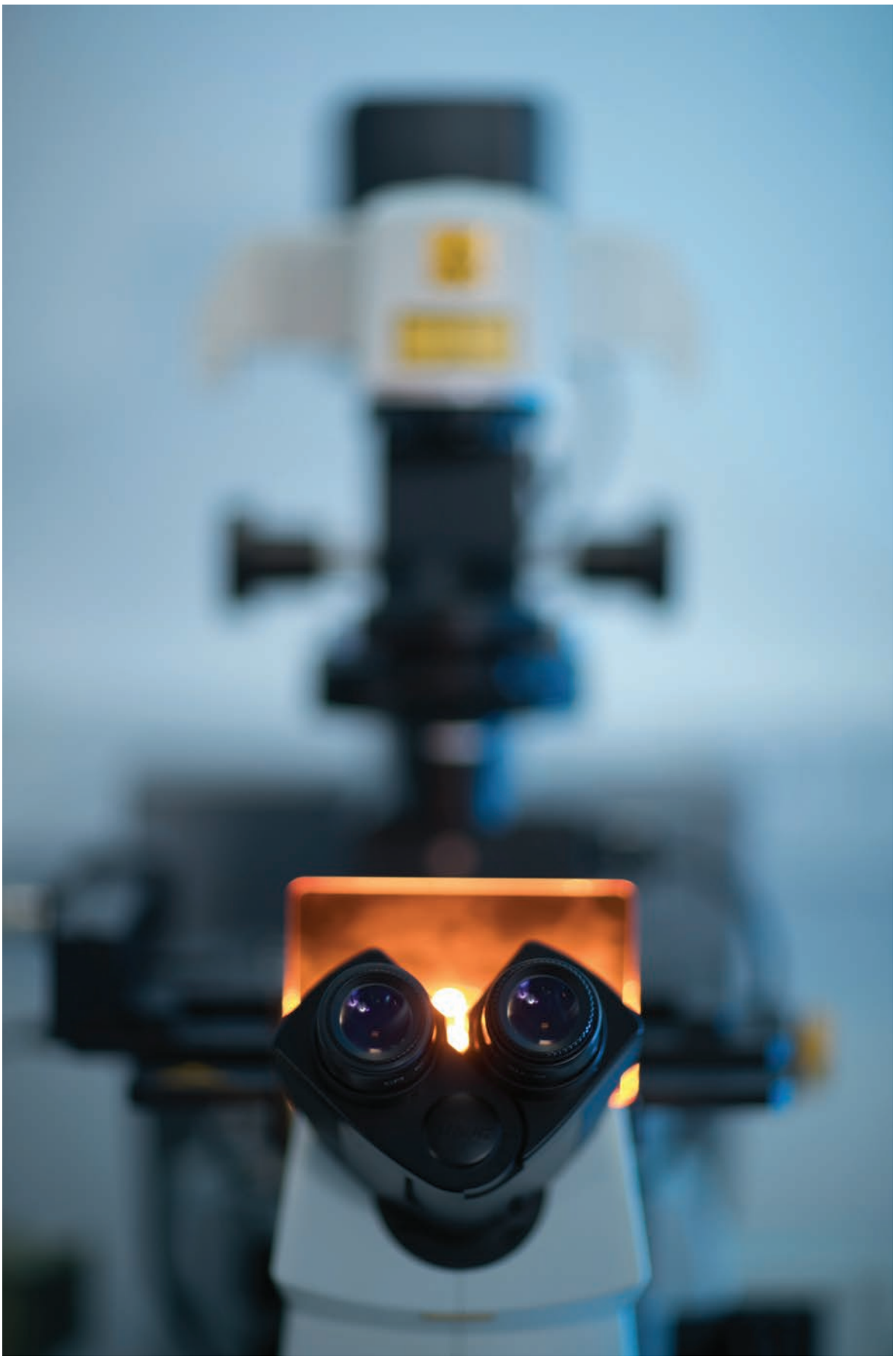
The project has also offered a valuable training opportunity to PhD student Nathalie Bonello, who was awarded an Endeavour scholarship. Although one of Ms Bonello's supervisors, Dr Zahra, heads the Molecular Diagnostics Laboratory at Mater Dei Hospital – the national COVID-19 testing laboratory – she was nevertheless able to continue her studies during the pandemic through dedication and determination.

## FINDING THE SOLUTION IN SCIENCE

The project's discovery of ground-breaking genetic data has been made possible by the support and funds of the LifeCycle Malta Foundation, the only NGO in the Maltese Islands raising money specifically to research and treat renal disease.

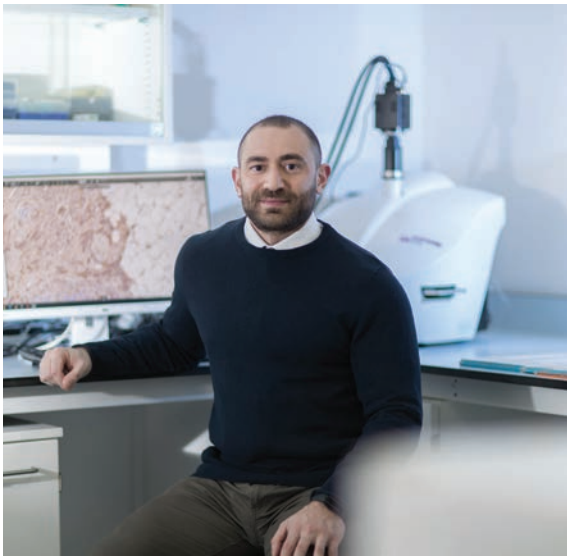
With further study, and the generous support of sponsors such as the LifeCycle Malta Foundation, researchers can continue to work together to shed more light on kidney disease – and follow the science to find solutions.

This project is being supported thanks to donations by the Lifecycle Malta Foundation through the RIDT.



# RIDT DRIVES RESEARCH THROUGH AWARDING PHD SCHOLARSHIPS

Thanks to the generous support of various sponsors, RIDT has been able to award PhD scholarships to several students, enabling them to pursue their unique research goals.



**"HAVING A SCHOLARSHIP IS OF GREAT HELP TO SUSTAIN THE RESEARCH AND PAY THE BENCH FEES REQUIRED FOR SUCH A PROJECT. WITHOUT THIS SCHOLARSHIP FROM EUROPA DONNA, IT WOULD NOT HAVE BEEN POSSIBLE TO CARRY OUT THIS IMPORTANT BREAST CANCER RESEARCH."**

*Dr Istvan Mifsud*

**Dr Istvan Mifsud is a full-time MPhil/PhD student at the University of Malta, following his graduation as a medical doctor and a Master of Science degree in Medical Genetics and Genomics at the University of Glasgow, Scotland. His PhD study, enabled by a scholarship sponsored by Europa Donna Malta through the RIDT, aims to identify biomarkers associated with early metastatic breast cancer.**

"My master's degree in Scotland was part-taught, part-research, covering the basics of human genetics, inheritable disorders, cancer, and current diagnostic techniques. After obtaining my master's degree, I wanted to further develop my skills and techniques in the laboratory and eventually opt for doctoral studies. However, with the pandemic in full swing, it was initially very difficult to find a position to make this possible. When the situation eased, I had the opportunity to visit the Laboratory of Molecular Genetics at the University of Malta to observe and learn new skills such as library preparation in next-generation sequencing.

Following my successful application for a PhD scholarship, I am currently six months into my research project, which aims to identify biomarkers associated with early metastatic breast cancer.

Breast cancer is the most commonly diagnosed cancer in women with more than two million cases reported annually worldwide and it is expected to overtake lung cancer as the most common type of cancer in most countries. Breast cancer metastasis, which refers to the spread of cancer, initially occurs to the lymph nodes in the underarm. The presence of breast cancer in the lymph nodes is associated with a higher risk of spread to other parts of the body and thus is a higher risk of negative outcomes. Identifying cancer cells with biomarkers associated with lymph node spread should help in finding patients who are at higher risk, thus the aim of this research is to earlier identify these markers and monitor their level in patients undergoing therapy to assess the response. My research also explores the very promising field of liquid biopsies, which detect and analyse cancer-related material circulating in the bloodstream.

The world needs scientific research and innovation to solve our current problems and address our biggest questions in life. Through biomedical research, we aim to continue improving our health and quality of life."

**"I FEEL EXTREMELY GRATEFUL TO HAVE BEEN AWARDED A SCHOLARSHIP WITH RIDT'S ASSISTANCE. GOOD RESEARCH TAKES TIME AND MONEY – IT IS POINTLESS HAVING EXCELLENT IDEAS WITHOUT ANY FINANCIAL ASSISTANCE. I BELIEVE THAT SUCH SCHOLARSHIPS WILL ENCOURAGE YOUNG PROFESSIONALS TO ENROL IN PHD PROGRAMMES THAT WILL ULTIMATELY TRANSLATE INTO BETTER ACADEMICS AND MORE RECOGNITION FOR OUR PRESTIGIOUS UNIVERSITY."**

*Dr Mark Abela*

**Dr Mark Abela is a cardiologist at Mater Dei Hospital. A member of the Royal College of Physicians of London, a University of Malta graduate and an MSc graduate from the University of Edinburgh, he also has an MSc in Sports Cardiology from St George's University, London – a specialisation that led to the BEAT-IT project, funded by RIDT and Malta Heart Foundation. Dr Abela now reads for a PhD in Medicine with the University of Malta, supported by RIDT, and a research scholarship sponsored by Beating Hearts Malta and the Tertiary Education Scholarship Scheme (TESS).**

"I am a Cardiology registrar practicing at Mater Dei Hospital, having finished specialty training in Cardiology and undergone a fellowship in Sports Cardiology and Inherited Cardiac Conditions at St George's Hospital in London. My main academic and clinical interests are athletic cardiac adaptation, cardiac screening, inherited cardiac conditions and cardiac rehabilitation. As part of my subspecialty training, I opted to embark on an MSc in Sports Cardiology – a landmark moment in my career, as I gained knowledge and expertise in sports cardiology and inherited cardiac conditions, leading to several opportunities locally and internationally.

Thanks to funding by RIDT and Malta Heart Foundation, I was able to set up BEAT-IT. A first of its kind, the project was a nationwide cardiac screening programme inviting adolescents to undergo cardiac screening with a questionnaire and ECG, attempting to identify high-risk individuals at risk of Sudden Cardiac Death. This cohort ultimately serving as the backbone of my MSc dissertation. There is no 'I' in research: this was a massive team effort and I thank all the professionals involved. With the exposure and expertise in this very specific area of cardiology, I wanted to make a difference by providing high quality care to this unique subgroup. This led me to set up a sports cardiology clinic at Mater Dei Hospital, for which I am now the clinical lead.

Most adverse cardiac events in young individuals are preventable with cardiac screening. The aim of my PhD is to assess the feasibility of a national cardiac screening programme in a single age bracket, something that has never been replicated on such a national scale anywhere in the world. I am also looking at other more specific factors including logistics, education in schools, diagnostic yield, clinical outcomes, family screening and genetic testing.

Cardiac research is incredibly important, since a diagnosis in a young individual has several lifelong implications, ranging from career options, early treatment, long-term surveillance, exercise restriction, family planning, and so on. Knowing who is at risk earlier on can help prevent a tragedy, while at the same time potentially decreasing the negative impact of a diagnosis in the teenage years.

My PhD scholarship award was the first of its kind with respect to cardiovascular medicine locally and I am truly privileged and honoured to be given this excellent opportunity."


**"THIS SCHOLARSHIP WAS OF UTMOST IMPORTANCE TO OUR RESEARCH ON MOTOR NEURON DISEASE, WHILE ALSO BEING A GREAT SUPPORT TO MY PHD RESEARCH. IT WOULD NOT HAVE BEEN POSSIBLE WITHOUT RIDT'S ASSISTANCE, FOR WHICH I AM IMMENSELY GRATEFUL."**

*Dr Rebecca Borg*

**Rebecca Borg has worked as a Senior Scientist at the Molecular Diagnostics laboratory, Mater Dei Hospital, for almost seven years. She holds a BSc (Hons) in Applied Biomedical Science and an MSc in Biochemistry, during which she collaborated with the prestigious CNRS/Institute of Molecular Genetics in Montpellier, France. She is the first recipient of the Bjorn Formosa Advanced Scholarship into Amyotrophic Lateral Sclerosis (ALS)/Motor Neuron Disease, a PhD supported by a partnership between RIDT and ALS Malta Foundation.**

"Research projects linked to both my degrees focused on characterising genes that cause an early onset form of degenerative motor neuron disease (MND). Similarly, my PhD focused on identifying genes linked to the most common form of MND, Amyotrophic Lateral Sclerosis (ALS) – a mid-adulthood disorder that leads to progressive neuronal degeneration and atrophy of skeletal muscles.

Generally, rare diseases are often overshadowed by other, more well-known disorders with regards to funding. An increased awareness on ALS has highlighted the importance of these disorders, even though they are not as common.

Due to the small size and compact genetic pool of the Maltese Islands, it is intriguing to hunt for founder ALS-causing genes, or those that influence disease progression among Maltese individuals suffering from motor neuron degeneration.

My PhD research has been a valuable opportunity to decipher the mechanisms that are central to the physiology and survival of the motor system, which for some reason are being set off course by such devastating disorders. The knowledge gained can inform on potential disease 'hotspots', which may serve as drug targets, with the aim of developing effective treatments.

So far, evidence with respect to the Maltese ALS cohort has highlighted a different genetic architecture when compared to that of neighbouring European countries. This accentuates the need for personalised medicine therapy for these patients. To single out potential therapeutic targets for tailor-made treatment strategies, it is crucial to identify ALS-linked genes that are exclusive to Maltese patients and understand their contribution to disease pathogenesis.

After my PhD graduation, I look forward to further enriching my research capabilities and my expertise through collaboration with both local and foreign scientists within the field, while exploring the many potential scientific opportunities the future may hold."

**"I AM GRATEFUL FOR THE TRUST THAT RIDT PLACED IN ME TO WORK ON SUCH AN IMPORTANT PROJECT, WHICH HAS ALLOWED ME TO CONTRIBUTE TO THE LONG JOURNEY TOWARDS FINDING NEW TREATMENT OPTIONS FOR CANCER. THESE RESEARCH PROJECTS WOULD NOT BE POSSIBLE WITHOUT THE SUPPORT AND COORDINATION OF RIDT, WHICH BRINGS COMMON GOALS OF RESEARCHERS AND CHARITIES LIKE ALIVE CHARITY FOUNDATION TOGETHER."**

*Dr Giulia Vassallo Eminyan*

**Giulia Vassallo Eminyan holds a BSc (Hons) in Biology and Chemistry and has worked as an analyst and project manager at a GMP-certified pharmaceutical company. Following a Master's in Business Administration at the University of Chester and Global College Malta, in 2017 she began a postgraduate scholarship in cancer research with the University of Malta under the supervision of Prof Pierre Schembri Wismayer. This PhD scholarship, which seeks to develop new treatments for neuroblastoma, has been possible through funding from the ALIVE Charity Foundation secured by RIDT.**

"My PhD focuses on finding chemical combinations that could eventually lead to new treatments for neuroblastoma, a solid tumour occurring prevalently in children under five years of age. Neuroblastoma is the most common solid extra-cranial (occurring outside of the brain) tumour in infants, accounting for around 15 per cent of paediatric cancer deaths.

In neuroblastoma, the tumour is formed because cells called neuroblasts fail to progress along the normal path to develop neurons, modifying through a genetic mutation to multiply without control. As the cells grow in number, they result in the formation of a tumour mass, unlike the controlled and limited growth of normal or non-cancerous tissues, in which the number of new cells produced and cells dying is balanced. In neuroblastoma, the cells have lost their path to specialisation or differentiation and so do not age and die; this balance has been lost.

The aim of my PhD research is to try and return the cancer cells to this path of specialisation or differentiation, as once this occurs, cells age and die naturally. To develop a system that can detect when such a favourable change has occurred in the cancer cells, I subjected neuroblastoma cell lines (cells that continue to grow indefinitely), cultured in the laboratory, to different chemicals or natural extracts. Having found promising combinations, I then must confirm that a chemical or extract that has affected the cancer cells is not harmful to normal cells – an important feature for any potential combination to be of use clinically.

It was a truly rewarding moment when I found the first chemical combination to effectively reduce the numbers of neuroblastoma cells; even more so when this chemical, when exposed to non-cancerous cells, did not harm normal cells. These findings were presented at the 2018 Malta Medical School Conference.

I hope that this research, conducted with the support and guidance of my supervisor Prof Schembri Wismayer, will pave the way to the development of new and more effective treatments for this type of cancer and that I may continue working towards bringing such treatments closer to being available to patients. Thanks to the generosity – and the faith in the potential of research – of ALIVE, RIDT and all those who donate, important research can take place at the University of Malta and allow Maltese researchers to make a difference to the healthcare problems we face."

# CONSERVING THE GREAT SIEGE WALL PAINTINGS CYCLE

The conservation continues of a wall paintings cycle by renowned Italian artist Matteo Perez d'Aleccio, which depicts in detail one of Malta's most famed historic events: the Great Siege of Malta in 1565.

The project, launched and progressing through funds secured via RIDT, assures the future of this extraordinarily important document for generations to come.

## ONE OF MALTA'S MOST SIGNIFICANT HISTORICAL ARTEFACTS

Set in the Grand Council Chamber of the Grand Master's Palace in Valletta, the wall paintings cycle offers a unique – and historically accurate – depiction of the Siege, when the far-outnumbered Maltese, led by the Knights Hospitaller, successfully defended the island from attempted invasion by the Ottoman Empire.

Great Siege veteran Grand Master Fra Jean de Cassiere (1572-1581) invited artist Matteo Perez d'Aleccio (1547-1628) to Malta in 1577 to depict the four-month siege. Using eyewitness accounts and written reports, d'Aleccio created a narrative sequence of the Siege across a series of 12 scenes, thus recording in exquisite and true detail one of the key moments in Malta's history.

Today, these paintings serve as an enduring symbol of Maltese identity and a threshold in the history of art in Malta.

## A PROJECT TO PRESERVE HISTORY

Launched in 2018, the conservation project is the result of a partnership between the Department of Conservation and Built Heritage of the University of Malta and Heritage Malta, under the auspices of the Office of the President of Malta.

An expert team of professional wall paintings conservators from the Department of Conservation and Built Heritage, led by Prof JoAnn Cassar and including Ms Jennifer Porter, Dr Chiara Pasian and Ms Roberta de Angelis, manages and supervises the project's conservation efforts. Heritage Malta conservators and historians also make up an essential part of the team, advising on the project's historical and art historical aspects.

Together, they focus on completing the conservation of the final third of the extensive wall painting cycle, with two thirds already conserved between 2001 and 2005 by the Fine Arts Academy Dresden.

## AN EXPERT CONSERVATION PROCESS

The d'Aleccio wall painting cycle also reveals compelling insights into the painting techniques and materials the artist used to create it: important information that is being slowly revealed as the project progresses.

Following full documentation of the paintings using a combination of multispectral imaging and photogrammetry – which allows investigators to detect, distinguish between, and often newly identify original painting, restoration and deterioration materials – the team conducted further non-invasive surveys to establish the condition of the paintings.

Using these valuable observations from their preliminary studies, the team could decide on the best approach for the conservation of this masterpiece and begin the process with a clear understanding of the sensitivity of the original materials, most important when choosing cleaning techniques. Equipped with these data, the team is currently cleaning and removing earlier restoration materials such as varnishes and paint added in the early 20th century, while stabilising areas of plaster that have detached over time.

Ms Jennifer Porter, project leader

## A SPRINGBOARD FOR FUTURE CONSERVATORS

While the project moves forward thanks to the teamwork of local and international professionals as well as interns with complementary backgrounds, it also offers a rare opportunity for future conservators to learn their profession. It is an essential component of the academic programme for students following an MSc in the Conservation of Decorative Architectural Surfaces at the Department of Conservation and Built Heritage.

As the master's programme cycle draws to a close and students cease their involvement in the project in a training capacity, it also offers them another life-changing development: the first project of their careers as professional conservators.

Indeed, the project has been key in training a new generation of professional conservators to the latest standards of practice and skillsets. These early-stage professionals are not only essential for the preservation of Maltese cultural heritage but are also vital for the future of quality conservation worldwide.

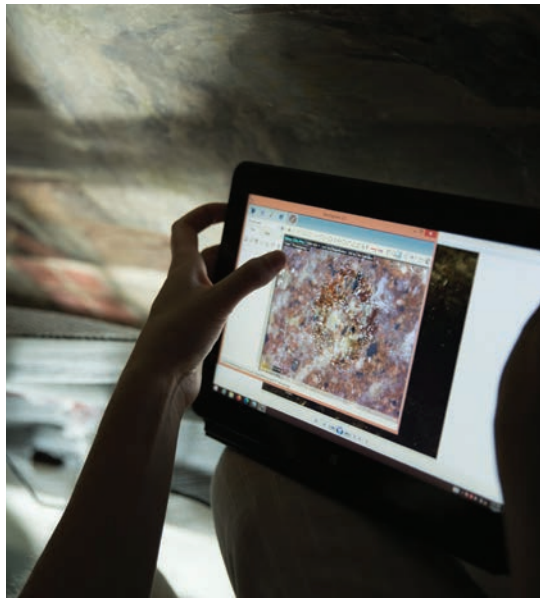
## AN INTERNATIONAL IMPACT

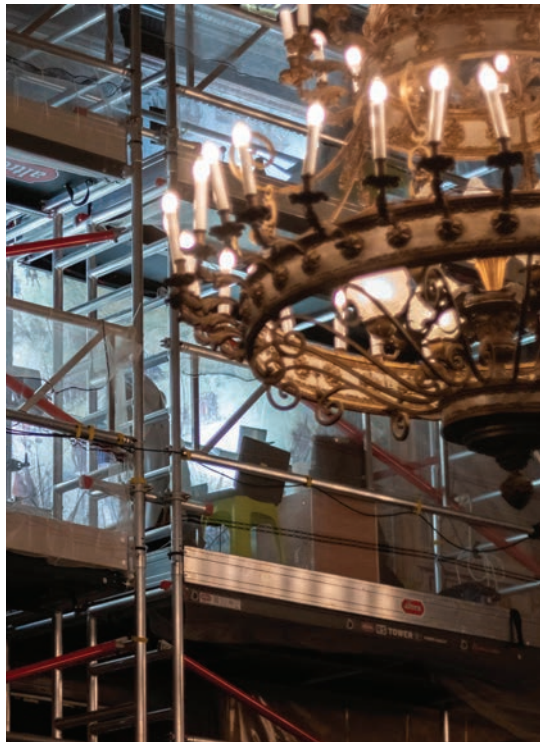
The project continues despite understandable setbacks due to the COVID-19 pandemic.

Its research phase – which considered events since the cycle was painted, such as earlier restorations or war damage – compiled the physical history of both the cycle and the Throne Room, as evidenced by documents in Malta's archival collections. The results of this work were presented as part of a National Library of Malta public lecture series.

In fact, the d'Aleccio wall painting cycle conservation team's ongoing publication of valuable research material and focused training of conservators spotlights the far-reaching impact potential of projects such as these – and the importance of sustaining them with time, resources and funding.

The project will publish further results in international conferences and journals, inform innovative new approaches for global art intervention and conservation, offer a window into the process of one of Italy's most acclaimed artists, and launch the global careers of young professional conservators – all while preserving a hugely significant piece of Maltese heritage. ■





***This project commenced thanks to a generous donation of €75,000 from the Gasan Foundation to the RIDT in 2019 and continued with a further €75,000 from the Planning Authority's Development Fund and €10,000 from the Melita Foundation, both secured through RIDT. Additional sponsorship is now required to complete the conservation of the d'Aleccio wall painting cycle later this year.***

# MEET OUR SUPPORTERS

The RIDT is indebted to its supporters. To those of you who donated financially, to those who have donated equipment and to all of those who have attended our fund-raising events, we only have one word for you – GRAZZI! Your generosity helps us achieve our objective – to attain excellence in research for the benefit of society.

The Gasan Foundation board members

"Founded in 2016, the Gasan Foundation was initially set up with the scope of creating a more structured philanthropic and socially responsible plan in which to channel charitable funds which the Gasan Group has consistently contributed towards over the years. The overall vision of the Foundation is to provide both financial and non-financial support to existing non-profit organizations to assist them with their charitable activities. The main pillars on which the foundation is built focus on environment, heritage, and positive social initiatives. From overseeing the installation of a new public playground in Birkirkara to organising and establishing the Malta Social Impact awards, now a mainstream annual event, the Foundation has been busy over the past few years lending financial support to several projects among them the restoration of The Great Siege paintings at The Grandmaster's Palace, the new Malta Hospice centre and a number of vital Covid related initiatives to help provide essential items such as food to a number of vulnerable communities. For more information on the Foundation and the social projects it supports have a look on https://www.gasan.com/our-foundation/

The Gasan Foundation is co-funding the conservation of the Great Siege mural at the Grandmaster's Palace in Valletta through the RIDT. The project is being undertaken by the department of conservation and built heritage within the Faculty of the Built Environment of the University of Malta."

"Beating Hearts Malta (BHM) is an independent non-profit making organisation for adults and children born with Congenital Heart Defects (CHDs). CHDs are the most common malformation present at birth. Approximately 1 person out of every 100 people (0.8%) is affected, and this figure is about the same all over the world. While some individual heart defects may be insignificant and disappear over time, others may also be extremely serious and hence life threatening.

BHM started fundraising in 2013 primarily to raise awareness as well as, to purchase specialized equipment for the cardiac wing at Mater Dei. As a result, to date BHM has contributed to the funding of a number of specialized equipment for the cardiac lab at Mater Dei. In 2020, the Trustees of BHM decided to further expand their objectives and delve into the field of Research by donating a substantial amount of funds to the RIDT. This was an initiative to help fund a PHD in the field of Cardiology, more specifically Congenital heart disease. As a Board we believe that there is no better investment than that which is put towards enriching the knowledge of the Professionals within the field. Research in the field of Cardiology is ongoing and new medical advances are being made constantly."

Katrina Aquilina
Chairperson
Beating Hearts Malta

"Malta Enterprise takes great pride in its Corporation Social Responsibility. As an economic development agency we are highly committed to giving back to our community by also creating CSR events that can truly make a difference and can contribute actively to drive further the development and wellbeing of our society at large. The art exhibition: 'The Pandemic: Survival, Art & New Action' which we have successfully organised in aid of RIDT is a proof of this. Not only is it a great bringing together of artists, but also the cause is noble. Supporting another entity – namely the Research Trust at the University of Malta."

William Wait
Chairman
Malta Enterprise

"Our children are our future! Piscopo Gardens are honoured to be approached to support RIDT and their Superhero initiative. It's our way of paying it forward and supporting science that provides research with the tools they need. Through our fundraising campaign with the RIDT we wanted to, but also felt it was our duty to support this noble cause.

Together with our esteemed clientele and dedicated team, we helped to raise funds, which is an important part of medical research. Our way of helping to provide children of today and tomorrow with a better life.

Thank you to RIDT for this opportunity to collaborate with you!"

Vinny Piscopo - Director, Piscopo Gardens

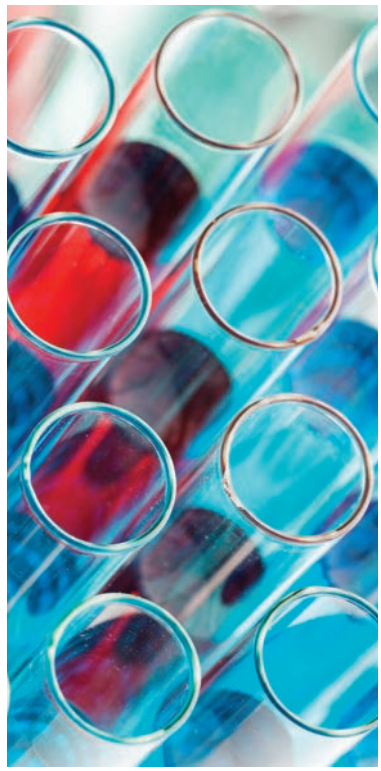
*Piscopo Gardens participated in the RIDT's Superhero Campaign to raise funds for medical research in areas that mainly affect children. Clients were encouraged to add a small donation of €1 or €2 to their bill in support of the campaign, while Piscopo Gardens matched the donations.*

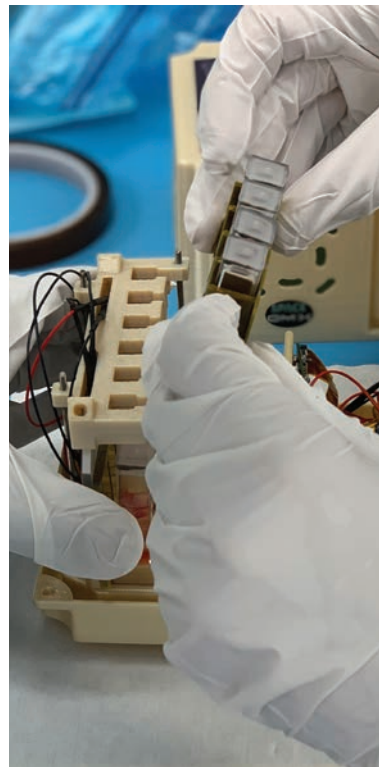
"Arkafort had been looking for ways to actively contribute to research in scientific and technology related areas for several years, however instead of contributing solely from a financial perspective, we also wanted to actively participate in the research activity.

Collaborating through RIDT was truly beneficial for us, not only did RIDT support us throughout the collaboration, Wilfred and his team, carefully analysed what our company's mission is and proposed a collaboration that was in line with what we believe and greatly beneficial for all parties.

We are honoured that through RIDT we had the opportunity to contribute towards Malta's first space mission, 'Project Maleth'."

Gordon Grech
Co-founder
Arkafort





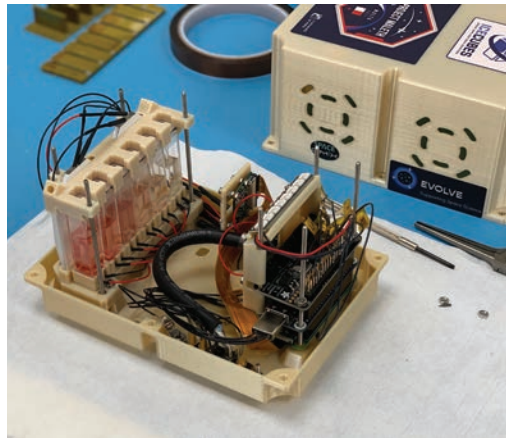
# COLLABORATION WITH INDUSTRY

2021 saw a number of projects kick off that were only made possible through the support of local and foreign industry, following discussion with the RIDT. The significance of such collaborations takes on a different dimension in light of the economic uncertainty brought about by the COVID-19 pandemic. Indeed, we are grateful to these corporate donors for their commitment towards research at the University of Malta and for believing in the talent and dedication of our researchers.

## SUPPORTING SCIENTIFIC RESEARCH IN SPACE

In another section of this report, we have highlighted Malta's first ever scientific project on the International Space Station.

Project Maleth was supported by two local companies – **Evolve Ltd** and **Arkafort**, both through RIDT. The project also received substantial financial backing from the **Ministry for Foreign and European Affairs** and was supported by the **Malta Council for Science and Technology.**



## A HOLISTIC APPROACH TO RESEARCH

A new milestone was reached in July 2021 when, for the first time ever, a private company committed to invest in the research and potential of a group of local academics and research students. Malta-based science company **Evolve Ltd** and the **Electromagnetic Research Group** (EMRG) of the University of Malta entered into an agreement that will sponsor the latter to conduct more research across a broad range of topics including antenna and sensor design, dielectric spectroscopy and EMF exposure studies.

From L to R - Prof. Alfred J. Vella, Chairman of RIDT, Minister Owen Bonnici, Mr Christopher Busuttil Delbrige, Managing Director, Evolve Ltd

## GETTING A GRASP ON GLUTEN

Industry support went international when the RIDT sealed an agreement with renowned producer of gluten-free foods **Dr Schaer**, based in Italy's South Tyrol region since 1981. Through the agreement, Dr Schaer will finance a study to determine the prevalence of coeliac disease in the adult Maltese population, using a point of care testing kit.

The three-year study will recruit a randomised cohort of adult healthy individuals between the age of 18 and 50, who will be screened for coeliac disease and asked to answer a questionnaire related to gastrointestinal symptoms.

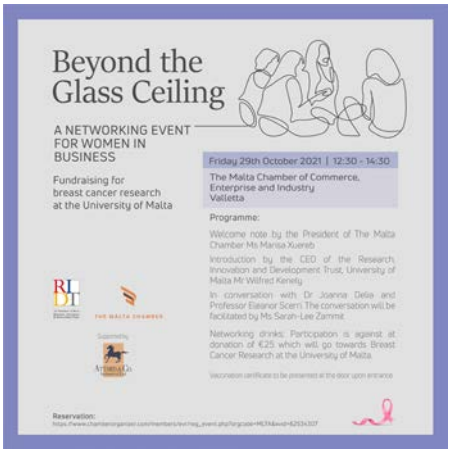
## SUPPLYING THE TOOLS TO FIGHT CANCER

Late in 2021 the RIDT signed a three-year agreement with local healthcare company **E J Busuttil Ltd**, which will ensure the provision of consumables and equipment related to oncological diagnostics. The agreement gives a precious boost to the various cancer research projects that are being conducted by research teams within the university's departments.

From L to R - Prof. Alfred J. Vella, Mr Edwin Busuttil, Managing Director, E.J. Busuttil Ltd, Mr Wilfred Kenely, CEO, RIDT


# RIDT EVENTS

Following an absence of more than a year due to COVID-19 restrictions, the RIDT gradually resumed its fundraising events late in 2021.




## BEYOND THE GLASS CEILING

Our first event was Beyond the Glass Ceiling, a networking event to raise funds for breast cancer research at the University of Malta. Hosted in collaboration with the Malta Chamber of Commerce, Enterprise and Industry in October 2021, the event welcomed the participation of two noteworthy women within their particular fields: Prof Eleanor Scerri, an evolutionary archaeologist working at the Max Planck Institute in Germany, and Dr Joanna Delia, a medical doctor, businesswoman and patron of the arts.

In conversation with Ms Sarah-Lee Zammit from the RIDT, the event's insightful discussion touched upon female role models, the definition of success and the road towards gender equality.

Malta Chamber President Ms Marisa Xuereb welcomed the guests and introduced the subject, before presenting a donation of €1,000 to RIDT CEO Mr Wilfred Kenely, who gave a brief overview of the role of RIDT, particularly in securing funds for cancer research projects at the University of Malta.


## MALTA CLIMATE ACTION AWARDS


The RIDT is honoured to have been one of the sponsors of the first Malta Climate Action Awards, organised by the Ministry for the Environment, Climate Change and Planning.

The RIDT presented the award in the Illuminator Category, aimed at academics that create new knowledge to inform about the effects of climate change.

In a ceremony held on 27 October, Mr Wilfred Kenely as RIDT CEO presented the award to Prof Joseph Buhagiar, Head of the Department of Biology at the University of Malta and project leader of the SiMaSeed project.

## A PANDEMIC-INSPIRED ART EXHIBITION

In December 2021, Malta Enterprise, as the government's agency for investments and economic development, organised an art exhibition with proceeds in aid of the RIDT.

The exhibition, named The Pandemic, Survival, Art and New Action brought together 44 artists who collectively exhibited over a hundred pieces of art, including paintings, sculptures and photographic work. Curated by Pamela Baldacchino, the exhibition was divided into two categories: a physical display in the foyer of Malta Enterprise exhibiting 71 pieces of art, while another 32 pieces were displayed in an online gallery.

The exhibition focused on life during the COVID-19 pandemic and how individuals, including artists, coped with the new challenges and new fears it brought.

Speaking at the opening of the fundraising exhibition, the Chairman of Malta Enterprise Mr William Wait highlighted that while staff at Malta Enterprise were snowed under due to the pandemic's unprecedented pressures and challenges, they rose to the occasion and provided their clients with continuous support. He also commended Malta Enterprise staff for organising this exhibition in support of another entity – the RIDT.

# COMMUNITY SPIRIT

## RESEARCH STORIES SHARED ON CAMPUS FM

University researchers who benefited from RIDT funds were the protagonists of a regular radio slot on Campus FM's Campus Brunch, hosted by Colin Fitz.

RIDT CEO Wilfred Kenely accompanied the guests on the Thursday morning programmes, as they discussed their ongoing research projects and spoke about their personal academic journey and plans for the future.

## SUPERHERO CAMPAIGN RETURNS

Following the successful run of the Superhero with One Euro campaign in 2019, the RIDT teamed up with Piscopo Gardens in Burmarrad and launched the Superhero campaign on 31 March 2021.

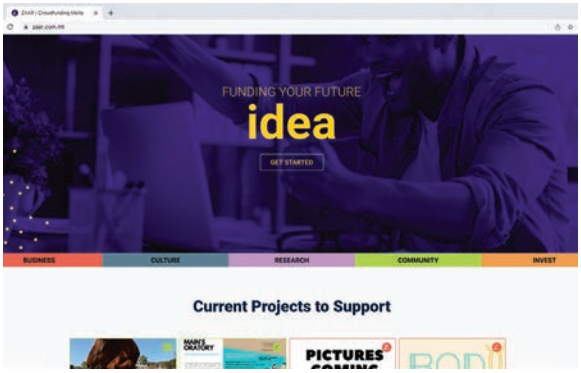
The campaign lasted until the end of June, with Piscopo Gardens customers encouraged to add €1 to their bill – a donation that will directly fund research in medical conditions that primarily affect children. In return, Piscopo Gardens pledged to match all funds received from their customers, thus doubling the campaign's impact.

At the end of the campaign, Director of Piscopo Gardens Ms Vinny Piscopo presented the proceeds to Prof Alfred J Vella, Rector of the University of Malta and Chairman of RIDT.


## CROWDFUNDING FOR RESEARCH

The RIDT has teamed up with local crowdfunding platform Zaar to raise funds for research projects.

This exciting collaboration aims to bring research projects closer to the community, creating a sense of ownership. Through the Zaar online platform, backers can contribute to a research project of their choice and receive regular updates about its progress.
The first project to be featured in this new initiative was Maleth, Malta's first scientific experiment in the International Space Station. More projects and campaigns launched to raise funds for research across all areas of study within the University of Malta will be announced in 2022.




zaar. funding ideas
zaar.com.mt

## A BIRTHDAY GIFT WITH A DIFFERENCE

An anonymous donor presented a generous donation to the RIDT towards cancer research. A cancer survivor herself, the donor raised the funds by appealing to her friends and family to contribute towards her cause in lieu of a birthday gift.

## MUSIC RECORD FOR CANCER RESEARCH

Tryst Arcane, a local duo made up of Alexia Baldacchino and Julian Grech, have released their AUTUMN vinyl record, originally recorded on CD in 2019.

Considered to be a collectors' item, this limited edition of their album was sold, with proceeds going towards cancer research at the University of Malta and towards cancer care provided by Puttinu Cares.

The RIDT is extremely grateful for this beautiful thought and for the generosity of local artists such as Tryst Arcane. Few copies are still available via **www.trystarcane.com.**

# WE THANK OUR SUPPORTERS WHO HAVE KEPT US GOING OVER THE YEARS

## CORPORATES

The Malta Freeport Terminals Ltd
E.J. Busuttil Ltd
Cherubino Ltd
Suratek Ltd
Rahuma International Ltd
Bart Enterprises
GlaxoSmithKline Malta Ltd
Express Group
Evolve Ltd
Riverdream Ltd
Alberta Group
Entropay Ltd
Ledger Ltd
ISL Ltd
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BPC International Ltd
Atlas Insurance Ltd
FIMBank plc
Ixaris Systems Ltd
3a Malta Ltd
Bit 8 Ltd
Alegria Dance Company
Pro-Health Ltd
Technoline Ltd
Foster Clark Ltd
Maltco Ltd
Malta University Holding Company
The Phoenicia Hotel
Medical Laboratory Services Ltd
ICP Ltd
World Express Logistics
T4B Ltd
Camilleri Paris Mode
Tipico Ltd
C&F Ent. Ltd
Demajo Group
Kitchen Concepts
Mvintage Jewellers
RCI Insurance
Class Optical
Arkafort
The Malta Chamber of Commerce, Enterprise & Industry
Dr. Schaer

## FOUNDATIONS

The Alfred Mizzi Foundation
ALIVE Charity Foundation
Action for Breast Cancer Foundation
Lifecycle Malta Foundation
The Malta Community Chest Fund
ALS Malta Foundation
Europadonna Malta
HSBC Malta Foundation
ADRC Trust
The Marigold Foundation
AX Foundation
Youth for the Environment
Gasan Foundation
Vodafone Foundation
Malta Heart Foundation
P. Cutajar Foundation
Beating Hearts Malta

## PUBLIC INSTITUTIONS

Central Bank of Malta
The National Lotteries Good Causes Fund
Teatru Manoel
Regulator for Water and Energy Services
The Planning Authority Development Fund
Malta Enterprise
Ministry for Energy, Enterprise and Sustainable Development

## INDIVIDUALS

Anna Maria and Paul Borg
Joseph and Rose Attard
Jose L. Ribera
Janatha Stubbs
Martin & Lucilla Spillane
Josette Fenech
Guzeppi Theuma
Cynthia Grech Sammut
Robert Arrigo
Paul Sant Cassia
Juanito Camilleri
Francis Gregory
Nicholas Sammut
Stephanie Kotes
Gertrude and Tony Abela
Alessio Magro
David Attard
Jackson Said
Godfrey Baldacchino
Jonathan Shaw
University Futsal Team
Philip Attard
Christine Zerafa
Tonio Casapinta
Anne Cadle & friends
Marcelle Abela
Alberta Group staff
RCI Insurance staff
St. Francis Secondary school
St. Martin's College
Chiswick House School
Stephanie Spiteri
Michelle Gialanze
Silvio Agius
Francis Nicholson
Alaine Handa
Betsson staff
Alexia Baldacchino
Julian Grech
Beatrice Axiaq
Marthese Caruana

# INVEST IN THE FUTURE

## HOW YOU CAN HELP

The RIDT is carving a path that calls for individuals, business, and corporations to move beyond incremental benevolence and to dare, to dream and to design a whole new way forward for Malta.

It is a unique catalyst for partnership across public, private and social sectors offering donors the opportunity to invest in the betterment of our society.

As a trusted broker of collaborative relations, the RIDT mobilises financial and human resources from individuals, grantmaking foundations, socially responsible corporations and social investors.

Our success depends on the involvement of the community we serve. All of us can get involved, today, by becoming part of the exciting journey to shape the future.

It's easy to get started – one can contribute individually, rally one's business, advocate our cause, donate equipment, or become a sponsor of specific events. No donation is too small, and each effort is gratefully acknowledged.

All of us have an important role to play this unique grassroots movement, as we transform our future through research.

### MAKE A DONATION

One can make a donation either online, via ridt.org.mt or by transferring funds to this account:

UNIVERSITY RES INNOVA AND DEV TR, Central Bank of Malta
MT37MALT011000040360EURCPE50001, MALTMTMT
Alternatively, one can send cheques by mail to:
RIDT, University of Malta, Valletta Campus, St. Paul's Street, Valletta, Malta

### OFFER ONGOING SUPPORT

Regular donations from individuals or companies, either in cash or in kind, are also very welcome. Please contact RIDT for more details of how to set this up.

### LEAVE A LASTING LEGACY

Leaving a lasting legacy – one can remember RIDT when drawing up a will, or make a donation towards research, in memory of a departed loved one.

### JOIN THE UNIVERSITY STAFF CONTRIBUTION SCHEME

All members of staff of the University of Malta, whether academic or non-academic, can contribute any amount from their salary. Such contributions are deducted before tax, which means they would cost the person making the contribution less.
Details are online at ridt.org.mt.

### GET IN TOUCH

We hope you enjoyed the stories in this report. If you would like to offer support, or learn more about any of the projects mentioned, please contact us at info@ridt.org.mt. You can also follow us on our facebook page and on our **website www.ridt.org.mt**

The University of Malta Research, Innovation and Development Trust

# Management Accounts December 2021

## Income and Expenditure

| | Year Ended 31st December 2021 | Year Ended 31st December 2020 |
|---|---|---|
| **Income** | | |
| Donations - Unrestricted | 31,558 | 18,207 |
| Donations - Specific | 290,505 | 171,264 |
| Capital Grant | - | 84,500 |
| Commission | 54,726 | - |
| | **376,789** | **273,971** |
| | | |
| Specific endowments | 290,505 | 171,264 |
| Donations | 4,500 | - |
| | **295,005** | **171,264** |
| | | |
| **Expenditure** | | |
| Salaries | 74,061 | 88,999 |
| Marketing | 3,392 | 15,705 |
| Fund raising expenses | - | - |
| Communications | 1,198 | 1,227 |
| Hospitality | 859 | 270 |
| Stationery | 195 | 386 |
| Transport | 14 | 84 |
| Other | 15 | 15 |
| Audit Fees | 1,250 | 1,250 |
| Depreciation | - | 84,500 |
| | **80,984** | **192,436** |
| | | |
| **Net Surplus / (Deficit)** | **800** | **(89,729)** |

The University of Malta Research, Innovation and Development Trust

# Management Accounts December 2021

## Balance Sheet

| | As at 31/12/2021 | As at 31/12/2020 |
|---|---|---|
| **Assets** | | |
| **Non-current assets** | | |
| Donated equipment (in use by beneficiaries) | - | 108,401 |
| | - | **108,401** |
| **Current assets** | | |
| Accrued income | 138,734 | **84,009** |
| Bank Balance | 3,438,428 | 3,140,531 |
| | **3,577,162** | **3,224,540** |
| **Total assets** | **3,577,162** | **3,332,941** |
| **Reserves and liabilities** | | |
| Specific Endowments | 740,314 | 479,809 |
| Capital account | 800,000 | 800,000 |
| Deferred Capital Grant | - | 108,401 |
| Reserves | (858,295) | (859,095) |
| | **682,019** | **529,115** |
| **Current liabilities** | | |
| Accruals | 6,250 | 5,000 |
| Other Creditors | 10,000 | 10,000 |
| Owed to University | 2,878,893 | 2,788,826 |
| | 2,895,143 | 2,803,826 |
| **Total reserves and liabilities** | **3,577,162** | **3,332,941** |


FIRE HOSE REEL
FIRE EXTINGUISHERS

**THANK YOU**
Your support keeps world-class research, education and innovation thriving.

**GET IN TOUCH**
We hope you enjoyed the stories in this report. If you would like to offer support, or learn more about any of the projects mentioned, please contact us at **info@ridt.org.mt**

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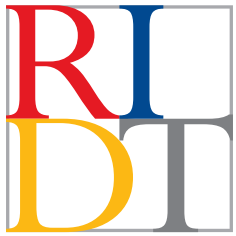

The University of Malta
Research, Innovation
& Development Trust

Everything that seems normal in today's world - from the technology that connects us, to the medical advances that keep us healthy - began in the minds of researchers around the globe. Donating to research today provides tomorrow's solutions.

RESEARCH, INNOVATION & DEVELOPMENT TRUST
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Valletta,
Malta
Tel: 2340 8201 Email: info@ridt.org.mt
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L-Università ta' Malta