



M.A.R.S. UCLouvain

SPONSORSHIP PROPOSAL

Simulation of a human mission on Mars,
conducted by UCLouvain students

Mars Desert Research Station
Utah, United States



Welcome

Dear Madam, Sir,

Thank you for considering the sponsorship of the **M.A.R.S. UCLouvain** project. This year and for the eleventh time, our crew will fly out to Mars, simulating a scientific expedition to the Red Planet. By sponsoring this crew, you will be part of this big project sending 8 students and researchers at the Mars Desert Research Station (MDRS) in the Utah desert.

M.A.R.S. stands for **Mars Analog Research Simulation**. Indeed, our project consists of simulating a martian mission in a analog facility, the MDRS, in order to conduct scientific research. During the mission in Utah, each member has a specific task related to the proper functioning of the MDRS : food production, tool maintenance, health care, communication, etc. More importantly, each member will conduct a **scientific experiment** to learn more about the extreme environment of Mars. Aware that conditions on Earth are dramatically evolving due to climate change, we are insisting on the fact that our experiments have to be reproducible on our planet itself and could benefit humankind. We have therefore designed our experiments to fulfill **Sustainable Development Goals (SDGs)** of the United Nations. M.A.R.S. UCLouvain exists since 2010 and many Belgian and international companies have sponsored the design and the implementation of these experiments. It would be a real asset for the success of this mission to involve your company as a sponsor.

Youth, motivation and energy will only get us so far. To reach our goals, we need YOU ! Your **material, intellectual and/or financial support** could play a crucial role in the success of our mission abroad. Without the generous support and necessary supplies provided by sponsors, we would not be able to carry out this exciting expedition.

Thank you again for considering this sponsorship and we hope to be able to **proudly count your company among our sponsors**. Further information is provided in this folder, but if you are left with any unanswered question or concern, please visit our website marsuclouvain.be or contact us at contact@marsuclouvain.be.

Sincerely,

The M.A.R.S. UCLouvain 2023 crew

Introduction

« *I wasn't destined to be an astronaut. I had to turn myself into one.* »

- Chris Hadfield, *An Astronaut's Guide to Life on Earth*

A motivated and dynamic team

Since 2010, the crews of M.A.R.S. UCLouvain, previously known as "UCL to Mars", are participating in a life-on-Mars simulation in collaboration with the Mars Society. These crews are composed of 8 PhD, Master and Bachelor students of the Université catholique de Louvain (UCLouvain).

In 2018, M.A.R.S. UCLouvain became a non-profit organization and developed several scientific collaborations with companies from the public and private sectors. We would like to increase the number of scientific collaborations to obtain more valuable results from our experiments.

Our crew for the 2023 mission covers a wide range of interests : from the microscopic scale of microbiology to the study of psychology and the relationships between crew members, through the protection of space radiation. Our crew will of course benefit from the previous teams' experience, allowing us to further develop the project.

A scientific project

The Mars Society has established in 2001, with the support of NASA, a Mars analog habitat in the Utah desert, called the Mars Desert Research Station (MDRS). This station aims at educating researchers, students and the general public about the many challenges humans will face to survive on the Red Planet and how they may be overcome. Aside from this first objective, the MDRS crews have to propose, elaborate and perform several experiments during their stay in the station, providing answers to some of the key challenges of a Martian mission. The location of the station and its design have been carefully selected to get as close as possible to the true Martian environment with a Mars-like terrain in the area surrounding the station, spacesuits for extravehicular activities, a GreenHab to grow fresh vegetables and a recycling system for wastewater. Our diverse backgrounds will help us to fulfill the two main goals behind the development of the MDRS.

Education and awareness

Our goal also consists in promoting the many topics related to space exploration via several interviews, articles in newspapers, seminars and workshops in schools.

We try to reach a younger audience via social media and via seminars at the UCLouvain and in schools. Indeed, we will present several seminars in high schools to promote the many interesting job opportunities offered in Belgium in the scientific fields. A range of topics will be discussed during these seminars. A closing seminar will also be organized after the mission at the MDRS, allowing us to present our main results and to invite actors of the Space and Technologies sectors.

Sponsoring

Our team is composed of extremely motivated students, but a project of this scope requires also external support. We estimate a total budget of around 32 000 EUR for the logistics, MDRS fees, scientific equipment and project promotion.

Being a Sponsor of our project will increase your visibility to a broader audience and boost your image to tomorrow's scientists, decision-makers and space enthusiasts.

We have several thousand people following us on our social media pages (Facebook, LinkedIn, Instagram). Your company's name will be associated with this unique experience and in addition, we will promote your company in public and scientific communications as well as during our events attended by hundreds of students.

Budget	
Travel cost	9 200 €
MDRS fees	8 000 €
Experiments	6 800 €
Logistics	4 000 €
Activities & Advertising	4 000 €
Total Budget	32 000 €



Sponsoring Packages



"Spirit Rover" Sponsor (from €1000)

- referencing on social media
- your logo on our website

"Opportunity Rover" Sponsor (from €2000)

- includes previous package
- your logo on our mission flag
- your description on our website
- referencing in our promotion videos

"Curiosity Rover" Sponsor (from €3500)

- includes previous packages
- dedicated reference on social media
- referencing in publications
- referencing as sponsors during seminars
- access to a stand to promote your company during our closing seminar

"Perseverance Rover" Sponsor (from €5000)

- includes previous packages
- referencing of striking news of the company in social media
- your logo on our mission clothing (appearing on most of our photos and videos)
- seminar or similar activity at your company

Do not hesitate to contact us for further details about our organization, the experiments or the sponsor packages at contact@marsuclouvain.be .

They already support us, join the team!



Avec le soutien de la



Wallonie

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Members

Antoine de Barquin
Crew Commander

Bioengineering Nutrition & Health



I am currently doing a master's degree in the Faculty of Bioengineering of the UCLouvain with a major in nutrition and health. I am passionate about nutrition, space and project management so I am very happy to be able to combine everything through this mission. As the commander of the crew, I am responsible for the overall safety, organization and management of the mission. My job is to help each member of the crew to develop and reach their goals.

Experiment at the MDRS :

Thanks to an experiment previously carried out on astronauts, we know that containment has an impact on our microbial flora that we call our "second brain". But containment will not be the only parameter to have an impact on our micro-organisms. The specific food of the astronauts is obviously a major element and my experiment will consist in studying the changes on our microbiota caused by this specific food

Agnès Dekeyser
Crew Executive Officer

PhD Student



I graduated this year with a master's degree in Biomedical Sciences and I am currently pursuing my studies with a PhD at the Institute of Experimental and Clinical Research (IREC, UCLouvain, Brussel). Space has always been part of my passions. I will not say that I am a professional on the subject, however it has always triggered my interest and curiosity. As the XO of this mission, I am responsible for the team welfare, I will support the Commander in his tasks as well as each crew member.

Experiment at the MDRS :

Terraforming Mars? Why? Well, because life as we know it cannot survive to Mars' extreme conditions. But that may not be entirely true. Indeed, some organisms on Earth have the ability to survive conditions that are lethal to most other organisms, they are called extremophiles. But could they withstand Mars' extreme conditions ? This is the question this study aims to answer. Extremophiles will be exposed to the environmental conditions found at the MDRS site simulating the pressure, temperature and radiation found on Mars. At different time points, their viability will be assessed and compared to that of their unexposed analogues. Understanding how these organisms manage to survive such extreme conditions could lead to interesting research, such as studying how we could use their ability to facilitate habitation on Mars for humans as well as for plants or animals.

Thomas Stinglhamber

Crew Scientist

Medical Physics



Graduated as a Physicist in 2021, I specialized in medical physics and analog & digital electronics. I'm performing my Master's thesis on the quantization log-based QA uncertainties based on measurements in proton PBS beams. I am also a teaching assistant in classical physics and electromagnetism in the Sciences faculty.

Experiment at the MDRS :

The radiation is invisible and odorless. The martionauts on mars will have to face this invisible enemy much more than we on earth. So how do you protect them? By deploying a whole series of dosimeters. Each person will have 1, 1 will be put outside, 1 inside, 1 underground and 1 in Belgium to compare the different doses to a reference. All this will allow me to calculate the effectiveness of the shielding of the station as well as of the ground and above all to establish a threshold for the martionautes. In addition, thanks to a NaI scintillator, I will map the surroundings of the base to make a 3D map. I will collect samples from the places with the most radiation to do analyzes in Belgium to find out what the isotopes are and in what proportion.

Gwenaël le Bussy

Crew Astronomer

Mechanical Engineering



I am a Master's student in mechanical engineering at UCLouvain and I specialize in aeronautics and manufacturing. I am currently doing my master's thesis as a trainee engineer at Safran Aero Boosters in Liège (Belgium). As you can see, I am really passionate about aeronautics and space but these are not my only passions ; indeed, I am also a certified diver and a big fan of photography. For this mission, I will combine my main passions and be the astronomer for a few weeks. During this time, I hope to capture beautiful images of the night sky to show everyone how fabulous the world we live in is.

Experiment at the MDRS :

The Martian environment is not suitable for the survival of human beings. So, what would happen if the protective layer around the astronauts were to be damaged? Then our astronauts would be exposed to the greatest of dangers. They must react fast to guarantee the mission survival. Therefore, a simple and explicit procedure must be defined if something were to happen inside the station. It will be based on multiple factors: participants personality, compilation on the safety standards, inventory on goods and equipment on site, implementation of fake scenarios, first aid procedures and so on. All the astronauts will participate actively in the development of this procedure to make it easy and durable.

Ttele Hiriart

Crew Health and Safety Officer

Medicine



I am currently ending my Master of Medicine at the University of UCLouvain and going to specialize in medical emergencies. During my course, I explored many fields of the medicine, but I still have a lot to see and learn. Research and scientific advances never end in the domain of medicine. It is an opportunity to be part of this amazing crew, I am going to discover another side of the evolution of medicine. Always interested by the unknown I am so excited by this stunning adventure.

Experiment at the MDRS :

I have always been interested in people's relationships and interactions. Creating a strong and unit crew is not easy when you start with a team of foreigners. By completing questions files, making several exercises, mental games and using actual psychological tools I would like to analyze the personalities, emotions, desires, expectations, and fears of my teammates. Also, studying people's behavior can lead to some answers in the interpretation of their reactions in front of different situations This would make easier the creation of our own tools to get well together and be able to resolve internal problems. I think it is essential to respect the wellbeing of everyone and to understand the different needs of one another. All that in the aim of creating a Working together team who can count on each other.

Ioana Dimitrova

Crew Engineer

Biomedical Engineering



I am currently finishing my Bachelor in Civil Engineering with a speciality in Biomedical Engineering. Space has always been my passion and goal in life so I am invested in several space projects and will pursue my Master's degree in Space Sciences. I also have a diploma for piano from the music academy.

Experiment at the MDRS :

Confinement and isolation is difficult for every crew that leaves the Earth. It leads to stress that can impact the body in a negative way, psychologically but also physically by increasing cortisol and blood pressure levels. One solution to this problem could be listening to music; it's pleasant and not a complicated strategy to implement! I will be thus be studying how listening to recorded and live music can help reduce this stress and how it can positively impact the astronauts stay in space!

Aglaé Sacré
Crew Journalist

Master in Information and Communication



I am currently studying for a master's degree in communication, specializing in digital communication and strategic organization. This year my thesis will focus on the cut-off of access to information and social networks. Before that, I was a graduate in human resources. I am also a co-organizer of a festival.

Experiment at the MDRS :

We are constantly connected to social media and information. So connected that sometimes our relationships with others are impacted. So what would be the impact on us and our relationships with others by being disconnected for 2 weeks as part of a life simulation on mars. To do this, I will study the individual use of each person before, study the relationships between us during and then analyze the after and our relationship to social networks and information. And how 8 people live together and build human relationships.

Augustin Tribolet
Crew GreenHab Officer

Particle Physics



I have just graduated in physics at UCLouvain where I studied particle physics and cosmology. I am currently completing another master's degree in space sciences in which I investigate more applied aspects of physics. As looking for challenges I am enrolled in the MARS UCLouvain Crew 2023, as the GreenHab Officer.

Experiment at the MDRS :

Radiation in space is one of the most challenging problems for long manned space missions. Recent proposals have been put forward to benefit from natural shielding, by implanting the astronauts' base in the Martian underground. The Martian caves should be chosen according to some criteria, such as the effectiveness of the shield, the presence of water,... How find the right place for a fast and good installation of the Mars base? This is the question I would like to investigate.

Financial Support Form

To be returned to M.A.R.S. UCLouvain:
M.A.R.S. UCLouvain
Place Louis Pasteur 1 - 1348 Louvain-la-Neuve - Belgium

E-mail: contact@marsuclouvain.be

Full Name (Person of Contact):

Company:

Address:

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Phone:

Email:

Amount of your contribution: (€)

I would like to get updates regarding the spending of my contribution

Date: Signature:

How to make the contribution:

M.A.R.S. UCLouvain

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