

ABC  
COMMERCIAL



# MARS:

Our Second Home  
& The Hunt For Life

CATALYST

# EXPLORING THE LURE OF THE RED PLANET



HD 2 x 60'  
Catalyst  
Australian Broadcasting Corporation

Humans are explorers, and our insatiable determination to push further afield has led to great advances in science and technology. Having spread to every corner of the planet, the time has come to spread out into the galaxy – almost.

In the first of a two-part Mars special, astrophysicist Professor Tamara Davis and astronomer Greg Quicke meet the scientists on a mission to solve the many challenges of putting people on the red planet.

From mitigating the effects of microgravity on the body and growing nutritious food in space, to autonomous robots working together to map and search for survivors, the barriers are many – but it's a journey to eclipse all other journeys. Could Mars be our second home?

The second special tackles one of humanity's biggest questions...is there life on Mars?

As an ambitious new quest to find life on the red surface kicks off, Tamara and Greg set out on a Martian adventure like no other, exploring the clues around our blue planet that inspire the search for life on the red planet.



# EPISODE 1: OUR SECOND HOME

Mars has long held our fascination – we have sent probes and rovers, now the time has come to send humans. In the first of a two-part special, astrophysicist Professor Tamara Davis and astronomer Greg Quicke meet the scientists who are reaching for the stars as they attempt to overcome the many challenges involved in human missions to Mars.

Leaving planet Earth is the first major hurdle. Tamara gets a taste of what it's like to be an astronaut launching into space as she takes flight in a jet fighter, experiencing high G forces and the feeling of weightlessness. In Broome, Western Australia, astronomer Greg Quicke takes a ride into the bush to demonstrate just how easy it is to find Mars in the night sky.

Ever seen an astronaut confidently walk out of a capsule after months in space? In reality it's more of a crawl. In the nation's capital, Tamara meets a team of scientists working out ways to measure and mitigate the effects of micro-gravity on the body. Tamara even puts her body through the paces to determine whether she has what it takes to be an astronaut.

In Far North Queensland, one of the longest continuous lava flows from a single volcano that erupted 190,000 years ago may provide answers for human shelter on Mars. Escaping the heat of the day, Tamara joins the Ewamian Rangers on country to explore the lava tubes with astrogeologist, Dr David Flannery.

Artificial intelligence has long held promise to perform tasks humans can't or won't do. Given the hostile conditions on Mars, robots should be perfect for maintenance, reconnaissance and repair – leaving more time for human exploration and discovery. Tamara joins the CSIRO team in Brisbane as they put 'Kitten' and 'Rat' to the ultimate test of searching and locating a human survivor.

Getting to Mars with fuel from Earth is one thing, making it back is a whole other enterprise. The good news is, Mars has icy, salty water which can be converted to fuel. Astronomer Greg Quicke takes us through the art of electrolysis step-by-step – splitting oxygen and hydrogen from water, all in an effort to get humans home.

Finally, Tamara rolls up her sleeves to join a Mars analog simulation exercise. With no way of knowing how a team will cope with a 3-year inter-planetary mission, analog simulations have been conducted the world over to test human resilience.



## EPISODE 2: THE HUNT FOR LIFE

In this second episode of this two-part special, astrophysicist Professor Tamara Davis and beloved astronomer Greg Quicke explore a question we've longed to answer – is there life on Mars?

For as long as we've admired the 'red planet' in our skies, we've been inspired to imagine what might live there. But even after decades of space exploration, we've not found any signs of life. So why do we still think that it could exist there? Tamara and Greg each set out on their own adventure to discover why we believe we can find life on Mars. They discover clues scientists have found, hidden in the surface of our sister planet.

While Tamara visits our iconic Great Barrier Reef to see the conditions required for life to exist, Greg journeys to the county's west, to the rusty red Pilbara desert, a very Martian-looking landscape. The ancient Pilbara has been gaining the attention of scientists the world over for the clues it offers in how life on Earth – and potential life on Mars- might have begun.

As a new generation of spacecraft launch in a renewed effort to find life on Mars, Tamara meets the space mission scientist who helped build NASA's most capable rover yet. They take a virtual trip to the red planet's surface, to the site the rover will explore in unprecedented detail, looking for signs of life, which researchers will be studying with vigour back on Earth.

At an ancient crater site near the notorious Nullabor Plain, Greg goes looking for a type of lifeform that's challenging perceptions about what life requires to exist. Buried in naturally occurring salt acid lakes, these unique lifeforms called extremophiles, can thrive in harsh environments like that of Mars.

For decades, the thinking has been that if we can find water on Mars, we can find life. Tamara meets an individual involved in an exciting new discovery of the first body of liquid water ever detected on Mars, offering the possibility that life could be living on Mars right now.

