

航向太空

中國載人航天之旅

A Voyage to Space

China's Manned Space Expedition



中國載人航天工程於1992年正式啟動，從第一次把航天員送上太空，到完成建造天宮空間站，成就驕人。

現在，就讓我們一起了解這些了不起的航天里程碑，開啟我們的太空探索之旅！

Officially launched in 1992, China Manned Space Program has made remarkable achievements — from sending its first astronaut into space to building the Tiangong Space Station.

Now, let's explore these incredible aerospace milestones together and embark on our journey into the cosmos!



中國載人航天工程
正式展開
China Manned Space Program
was officially launched

1992



神舟二十三號乘組中，首次有航天員在天宮空間站進行為期一年的長期駐留，亦首次有來自香港的科研人員參與載人航天飛行任務

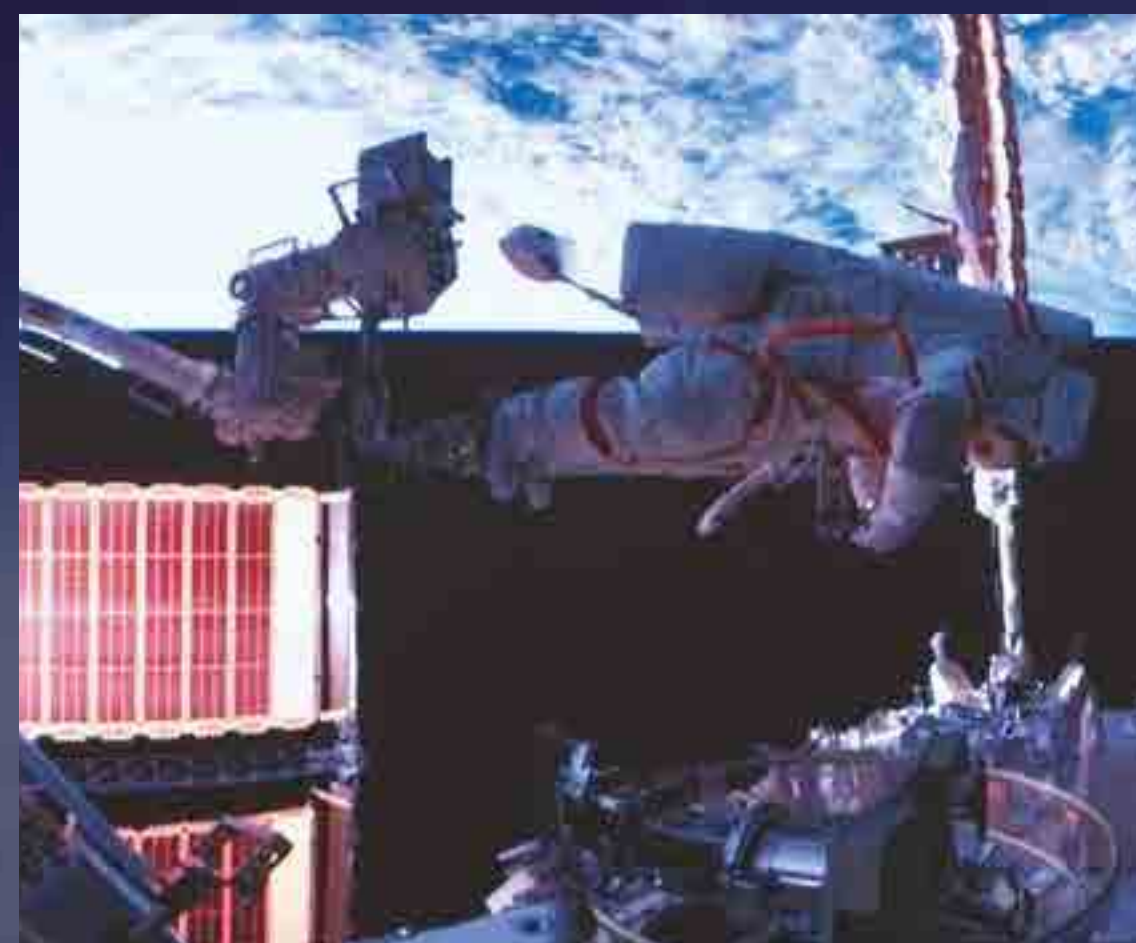
An astronaut from the Shenzhou-23 crew was set to carry out the first one-year-long stay aboard the Tiangong Space Station, while a scientific researcher from Hong Kong participated in a manned spaceflight mission for the first time

2026



楊利偉成為中國第一位進入太空的航天員
Yang Liwei became China's first astronaut to enter space

2003



神舟十九號飛船乘組蔡旭哲和宋令東創造了單次出艙活動時間最長的世界紀錄，歷時9小時6分鐘

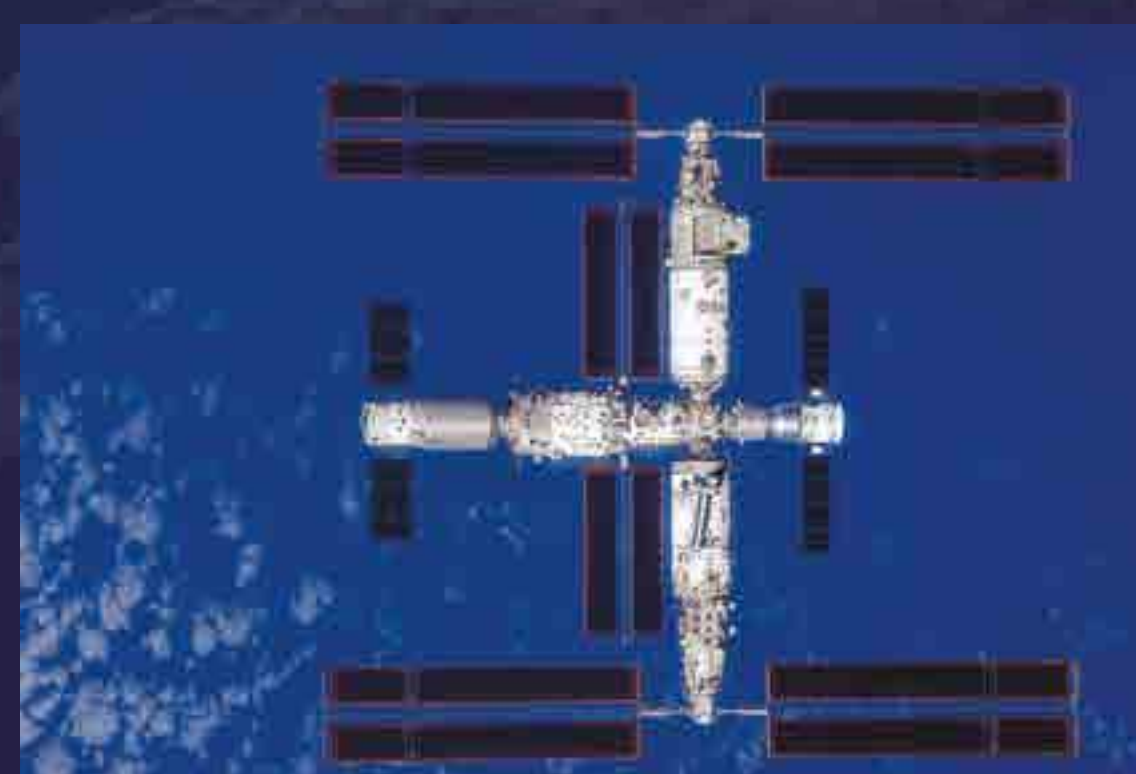
The Shenzhou-19 spacecraft crew members, Cai Xuzhe and Song Lingdong, set a world record for the longest single extravehicular activity, lasting 9 hours and 6 minutes

2024



神舟七號飛船航天員翟志剛完成中國首次太空漫步（又稱出艙活動）
Astronaut Zhai Zhigang of the Shenzhou-7 spacecraft completed China's first spacewalk (also known as an extravehicular activity)

2008



中國「天宮空間站」完成在軌建造，成為航天員在太空工作及生活的家

The in-orbit construction of China's Tiangong Space Station was completed, becoming a home for astronauts to work and live in space

2022



航天大家族 The Space Crew

中國載人航天工程匯聚各方專家，從在太空中執行任務的航天員，到在地面支援的專家團隊，他們緊密合作，確保任務能夠圓滿成功。來看看這些了不起的航天專家們的工作吧！

China Manned Space Program brings together professionals from various fields — from astronauts carrying out missions in space to expert teams on the ground. They work hand-in-hand to ensure the success of every mission. Let's explore the work of these remarkable aerospace professionals!

航天員 Astronauts

航天駕駛員 Spacecraft Pilot

監測和操控飛船、執行交會對接等任務，確保飛行安全

Monitor and control the spacecraft, execute rendezvous and docking to ensure safe flights



航天飛行工程師 Flight Engineer

檢查、測試、保養和維修系統設備，確保飛船正常運作

Inspect, test, maintain and repair facilities of spacecraft systems to ensure proper operation of the spacecraft



載荷專家 Payload Expert

通常由科研人員擔任，負責進行太空科學實驗、研究和技術試驗

Typically performed by researchers who are responsible for conducting space science experiments, research and technical tests



專家團隊 Expert Teams

火箭設計師 Rocket Designer

設計、開發和測試火箭的不同系統，包括引擎、結構、控制系統、導航系統等

Design, develop and test different systems of a rocket, including engines, structures, control systems and navigation systems



航天飛行控制中心技術人員 Aerospace Control Center Technical Personnel

與航天員密切配合，監控火箭發射、飛船交會對接、出艙活動等任務

Collaborate closely with astronauts to keep close watch over spacecraft operations, such as launching, docking maneuvers and extravehicular activities



降落傘裁縫師 Parachute Tailor

縫製出巨大的降落傘，在返回艙重返地球時展開，幫助返回艙減速以安全著陸

Craft massive parachutes that deploy as the re-entry module descends back to Earth, reducing the speed of re-entry module and ensuring safe landing



航天食品研究員 Space Food Scientist

為航天員設計營養均衡的食譜，食物衛生安全須符合空間站特殊要求

Design recipes with balanced nutrition for astronauts, ensuring that food hygiene and safety meet the special requirements of the space station



著陸場區搜索隊 Landing Site Search and Rescue Team

搜索著陸地面的返回艙，協助航天員離艙

Search for the re-entry module upon its landing and assist astronauts in leaving the module



香港首位載荷專家

Hong Kong's First Payload Expert

黎家盈博士踏上太空之旅

2026年5月，黎家盈博士入選為神舟二十三號乘組，以載荷專家身份執行空間站任務，成為香港特別行政區首位航天員。任務期間，她負責進行各種科學研究，操作不同的太空科學實驗設備，其中包括由香港科技大學研發的「天韻相機」。她亦會和其他航天員一起處理空間站的日常工作。

Dr Lai Ka-ying's Journey to Space

In May 2026, Dr Li Ka-ying was selected as a payload expert for the Shenzhou-23 crew and participated in the space station mission, becoming the first astronaut of Hong Kong Special Administrative Region. During the mission, she is responsible for conducting scientific research and operating space science experiment equipment such as the Multi-Spectral Imaging Carbon Observatory (MUSICO) developed by the Hong Kong University of Science and Technology (HKUST). She also supports crew members in routine space station operations.



黎家盈博士是一位資訊科技及電腦專家
Dr Lai Ka-ying is an information technology and computer expert

2022

參與國家第四批預備航天員選拔

Participated in the recruitment of country's fourth batch of preparatory astronauts

2024

以載荷專家身份正式入選國家預備航天員

Being selected as a preparatory astronaut, specialised in payload expert



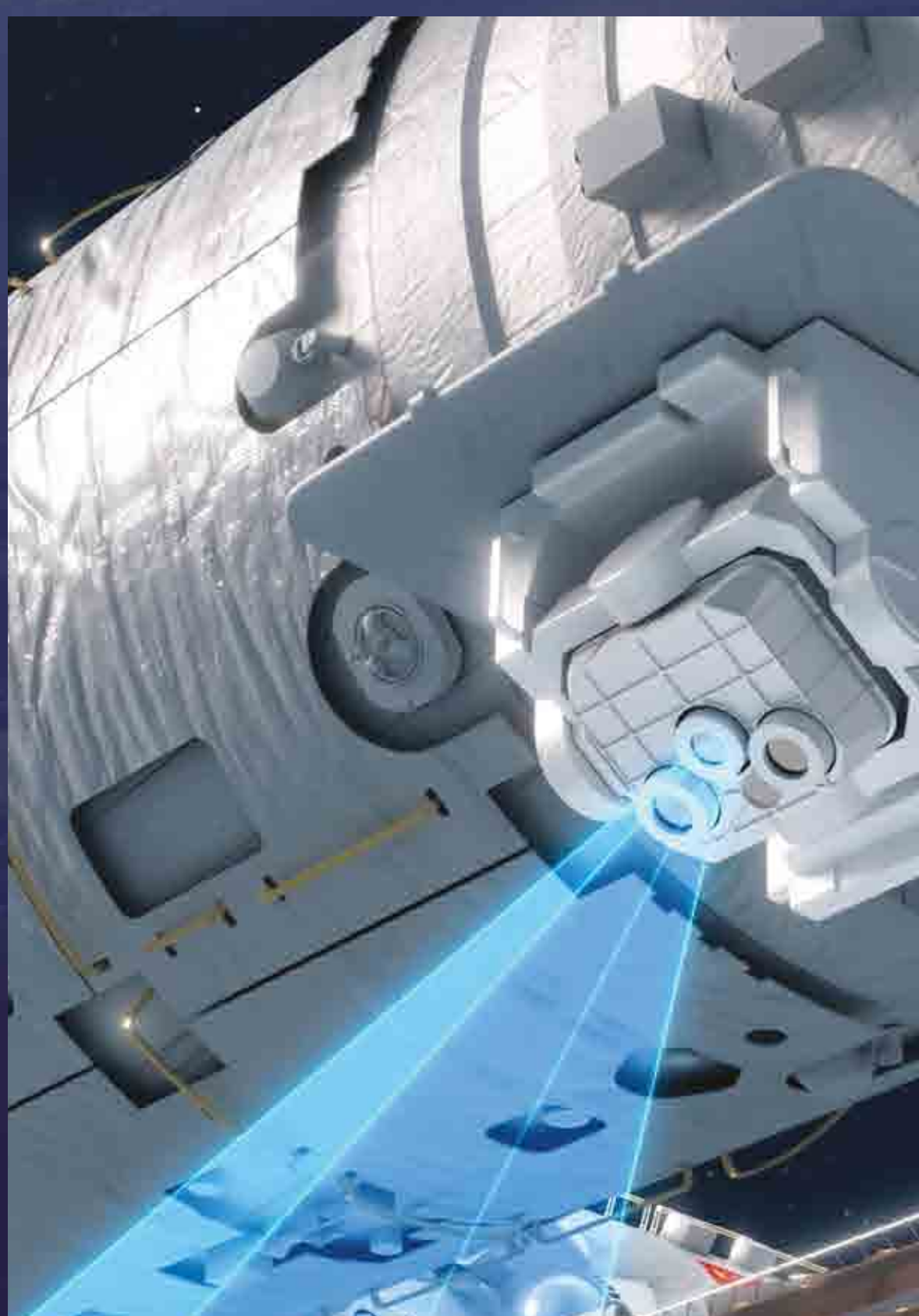
2026

入選神舟二十三號乘組，成為首次參與飛行任務的香港科研人員

Being selected as a member of the Shenzhou-23 crew, becoming the first Hong Kong scientific researcher to participate in a spaceflight mission



貢獻香港科研力量 Contributing Hong Kong's research excellence



天韻相機
MUSICO

相片鳴謝：香港科技大學
Image credit: The Hong Kong University of Science and Technology

本地多所大學及科研機構一直積極參與國家航天科研項目，香港大學、香港理工大學及香港中文大學等院校相繼參與天宮空間站科學實驗、探月工程及火星探測任務，貢獻國家航天科技發展。

以香港科技大學牽頭研發的「天韻相機」為例，它是香港首個安裝於天宮空間站的科研載荷。「天韻相機」能識別地面二氧化碳及甲烷的排放源，猶如「太空之眼」監測溫室氣體，支援國家實現「碳達峰、碳中和」和應對全球氣候變化。

Various local universities and research institutions have been actively participating in the country's aerospace research projects. Universities including the University of Hong Kong, the Hong Kong Polytechnic University, and the Chinese University of Hong Kong have successively taken part in scientific experiments aboard the Tiangong Space Station, as well as lunar and Mars exploration missions, contributing to the advancement of the country's aerospace technology.

A notable example is the MUSICO — Hong Kong's first scientific payload deployed on the Tiangong Space Station — led by HKUST. Capable of identifying carbon dioxide and methane emission sources on the ground, MUSICO serves as a "Space Eye" that monitors greenhouse gases, supporting the country's goals of achieving carbon peak and carbon neutrality while addressing global climate change.



航天員訓練 Astronaut Training



航天員須完成以下八大範疇，共二百多項的訓練：
Astronauts must complete over 200 training tasks across eight key areas as below:

基礎理論 Fundamental Theory



航天員學習操作及維修電腦
Astronauts learning computer operation and maintenance

學習載人航天飛行的基礎知識

Study the basic knowledge of manned spaceflight

相片鳴謝：新華社
Image credit: Xinhua News Agency

航天專業技術 Aerospace Professional Skills



航天員在水中進行艙外活動訓練，模擬在失重環境中工作
Astronauts conducting extravehicular activity training underwater to simulate working in a weightless environment

學習有關航天器的飛行及操作技術，例如駕駛與控制飛船，以及操作相關設備

Master spacecraft flight and operation techniques, including piloting and controlling spacecraft, as well as operating related equipment

相片鳴謝：新華社
Image credit: Xinhua News Agency

航天環境適應性 Space Environment Adaptation



航天員在轉椅上快速旋轉，以訓練內耳能力，減輕進入失重環境時出現眩暈
Astronauts spinning in high speed to train their inner ear function, helping reduce dizziness when entering a weightless environment

提高航天員適應太空環境的能力，以及返航後再次適應地球環境的能力

Enhance astronauts' adaptability to space environment and readaptability on return to Earth

飛行程序與任務模擬 Spaceflight Operation and Mission Simulation



航天員通過飛船程序操作訓練，掌握飛船從發射到返回地球的操作程序
Through spacecraft operation procedures training, astronauts can master the spacecraft operation procedures, from launch to return to Earth

掌握飛行程序，以及操作特定任務

Master the flight procedures as well as the operations specific to their missions

心理 Mental Strength



航天員在洞穴中進行訓練，以提升團隊合作能力，並在極端環境下培養穩定的心理素質
Astronauts train in caves to strengthen teamwork and develop stable mental strength in extreme environments

提高航天員的心理韌性
Boost astronauts' inner resilience

體質 Physical Strength



航天員鍛鍊體能，強化肌耐力與心肺功能
Astronauts undergoing physical training to improve muscular endurance and cardiovascular fitness

鍛鍊體能，增強航天員的體魄及對疾病的抵抗力

Strengthen astronauts' physical fitness and resistance to illness through workouts

救生與生存 Lifesaving and Survival



海上生存訓練能加強航天員與搜救人員的協作，以應對返回艙於海上緊急降落的情況
The lifesaving drill at sea enhances coordination between astronauts and rescue teams, preparing them for emergency sea landing of re-entry module

掌握在特殊情況下救生和生存的技能

Equip astronauts with lifesaving and survival skills for special situation

相片鳴謝：新華社
Image credit: Xinhua News Agency

大型聯合演練 Large-scale Joint Drills



聯合演練可確保所有人員熟悉任務流程
Joint drills ensure that all personnel are familiar with mission procedures

讓航天員和地面工作人員熟悉任務的流程，並提升其處理突發情況的能力

Familiarise astronauts and ground crew with the mission flow and to strengthen their capacity to handle unexpected situations

相片鳴謝：新華社
Image credit: Xinhua News Agency

天宮空間站

Tiangong Space Station

- 中國自主建造的國際級太空站，在距離地面約400公里的軌道上運行
- 空間站是航天員在太空中生活和工作的地方
- 同時是一個科學實驗室，航天員可在失重環境下進行地球上無法完成的實驗
- 在2022年完成在軌建造，基本構型包括一個核心艙和兩個實驗艙

- An internationally recognised space station independently built by China, operating in orbit approximately 400 kilometres above Earth's surface
- The space station is a place where astronauts live and work in space
- It also serves as a scientific laboratory, where astronauts can conduct experiments in a weightless environment that cannot be performed on Earth
- The in-orbit construction of the space station was completed in 2022, with basic configuration consisting of a core module and two laboratory modules

神舟載人飛船 Shenzhou Manned Spacecraft

神舟載人飛船最多可接載三名航天員往返空間站。

Shenzhou Manned Spacecraft is capable of carrying up to three astronauts to and from the space station.

夢天實驗艙 Mengtian Lab Module

航天員除了在夢天實驗艙內進行實驗，還會把樣本安裝在艙外的展開式暴露載荷平台上，讓樣本暴露於太空中，以測試太空環境對其的影響。

Besides conducting experiments inside the Mengtian Lab Module, astronauts can also install specimens on the deployable exposure payload platforms outside the module. The effects of space conditions on the exposed specimens can be studied.

天和核心艙 Tianhe Core Module

天和核心艙是空間站的控制中心和管理中心。它亦是航天員主要的生活空間，內有睡房、洗手間、用餐區等設施。

Tianhe Core Module serves as the control and management hub of the space station. It is also the main living space for astronauts, which includes facilities such as bedrooms, a bathroom and a dining area.

問天實驗艙 Wentian Lab Module

問天實驗艙配備了多個實驗櫃，並有生活設施供航天員交接換班時短期居住。問天的氣閘艙，是航天員進行艙外活動的主要出艙口。

Wentian Lab Module is equipped with experiment racks and living facilities for short-term accommodation of astronauts during crew handovers. Wentian's airlock cabin is the main exit-entry point for extravehicular activities.

天舟貨運飛船 Tianzhou Cargo Spacecraft

天舟貨運飛船是無人駕駛飛船，到空間站運送食物、配件和推進劑等物資。

Tianzhou Cargo Spacecraft is an unmanned spacecraft, which delivers supplies, such as food, parts and propellants to the space station.

天宮生活

Living in Tiangong



航天員唐勝傑的「太空視角」
Astronaut Tang Shengjie's perspective from space

相片鳴謝：新華社
Image credit: Xinhua News Agency

天宮空間站每90分鐘繞地球一圈，即航天員每24小時會經歷約16次日出日落。航天員不會按日出日落作息，而是以北京時間為準安排作息，方便與地面控制中心作實時通訊，執行各項任務。

The Tiangong Space Station orbits the Earth once every 90 minutes, meaning that astronauts experience as many as 16 sunrises and sunsets every 24 hours. Rather than scheduling their daily routines around sunrises and sunsets, astronauts follow Beijing Time, facilitating real-time communication with the ground control center for the execution of various missions.

航天員的太空餐 Astronaut's space meals



神舟二十一號乘組在空間站烤雞翼，太空餐單日趨豐富
The Shenzhou-21 crew barbequed chicken wings at the space station — space menus are becoming increasingly diverse.

- 航天員在太空生活會維持一日三餐，每天需要攝取2,600至3,200卡路里的熱量
- 航天員長期在失重環境生活，會導致骨骼流失鈣質和肌肉萎縮，因此他們的餐單會以「高鈣、高蛋白、低鈉、均衡膳食纖維」為原則
- 中國航天食物逾百款，例如：麻婆豆腐、滷蛋等傳統中式料理，還有專為節日準備的月餅和糰子。這些食物大多以冷凍乾燥或真空包裝方式保存
- Astronauts maintain a routine of three meals a day while living in space, consuming an average of 2,600 to 3,200 calories per day
- Since long-term exposure to a weightless environment can lead to loss of bone calcium and muscle mass, their menus are based on the principles of “high calcium, high protein, low sodium and balanced dietary fibre”
- Chinese space food includes over a hundred varieties, such as traditional dishes like Mapo tofu and braised eggs, as well as festive items like mooncakes and glutinous rice dumplings. Most of these foods are preserved through freeze-drying or vacuum packaging

太空健身

Staying fit in space

航天員每天花兩小時做運動，包括有氧運動和阻力訓練，好讓身體在失重狀態下保持骨骼強壯，同時減少肌肉萎縮。

Astronauts exercise for two hours a day, including both cardiovascular and resistance exercises, to maintain bone strength and reduce muscle loss.



空間站內設有健身區，配備太空跑步機、單車機（左）和阻力訓練裝置（右）的等設備
The space station features fitness areas equipped with facilities such as space treadmill, cycle machines (left) and resistive exercise devices (right)

航天員的工作：太空種植

Working in Tiangong: Growing Plant in Space

為甚麼航天員會在空間站種植植物？

Why do astronauts grow plants on the space station?

- 探索植物在太空的生長周期，掌握未來太空糧食生產技術
 - 植物透過光合作用吸收二氧化碳、釋放氧氣，有助淨化艙內空氣
 - 生產新鮮蔬果，為航天員補充維生素和膳食纖維
 - 照料植物有助緩解航天員長期處於密閉環境帶來的心理壓力
- Explore the growth cycles of plants in space to master future technologies for space food production
 - Plants absorb carbon dioxide and release oxygen through photosynthesis, purifying the air inside enclosed cabins
 - Produce fresh fruits and vegetables to provide astronauts with vitamins and dietary fibre
 - Looking after plants helps relieve the stress of spending long periods in a confined environment



航天員已成功在天宮空間站培植水稻
Astronauts have successfully cultivated rice on the Tiangong Space Station

相片鳴謝：新華社
Image credit: Xinhua News Agency

在太空失重環境種植的挑戰

The challenges of growing plants in space weightless environment

在地球，重力就像植物的「導航員」，讓莖往上長，根向下扎。但在失重環境下，沒有了重力「導航」，植物難以分辨方向，導致根莖朝四方八面生長。這種「失向」現象會影響植物的正常生長和發育。

科學家通過精準調控光源位置和水分的供應，配合特別設計的培養系統，成功在空間站引導植物有序地生長。

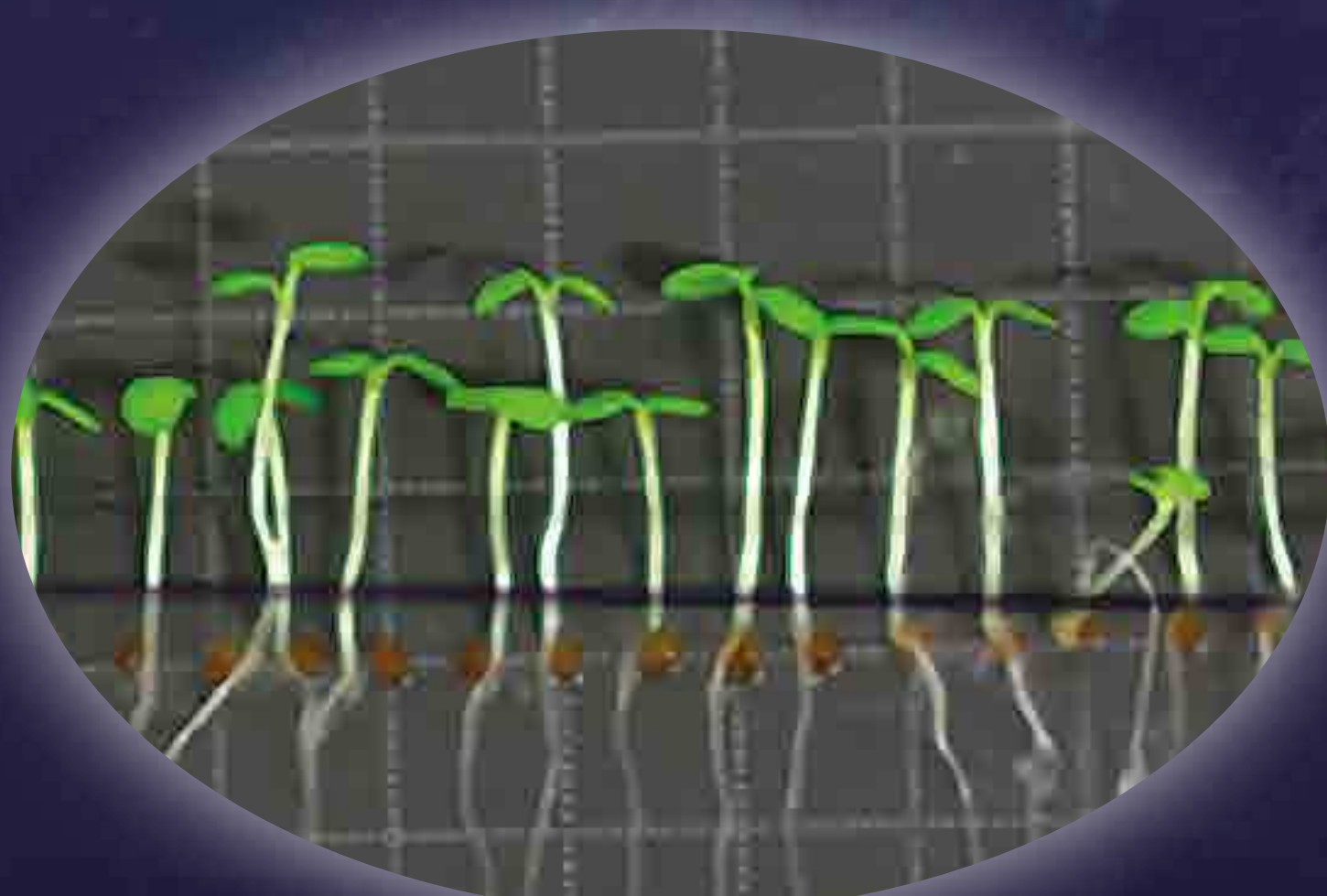
On Earth, gravity acts as a “navigator” for plants, guiding stems to grow upward and roots to grow downward. However, in a weightless environment, the absence of gravity’s “navigation” makes it difficult for plants to discern direction, causing their stems and roots to grow in all directions. This “loss of orientation” disrupts normal growth and development and may even alter the plant’s life cycle.

Scientists succeeded in guiding plants to grow in an orderly manner on the space station by precisely adjusting light source positions and water supply, along with using specially designed cultivation systems.

你觀察到根的生長有甚麼不同嗎？

Can you observe the differences on the growth of roots?

在地面重力及有光照環境下
Under Earth gravity and illuminated conditions



在太空失重及有光照環境下
Under space weightless and illuminated conditions



資料來源 Source:
Medina, F. J. (2021). Space explorers need to be space farmers: What we know and what we need to know about plant growth in space. *Metode Science Studies Journal*, (11), 55-62. <https://doi.org/10.7203/metode.11.14606>

航天員的工作：生命科學實驗

Working in Tiangong: Life Science Experiments

航天員在天宮空間站進行生命科學實驗，研究生物在太空極端條件下的生長和發育。一些「動物航天員」已被選派到空間站作為研究對象。

Astronauts conduct life science experiments on the Tiangong Space Station, studying the growth and development of organisms under extreme space conditions. Some “animal astronauts” have been sent to the space station as research subjects.

天宮「動物航天員」小檔案 Profiles of “Animal Astronauts” on Tiangong

神舟十八號、神舟二十號
Shenzhou-18 and Shenzhou-20

斑馬魚
Zebrafish



- 淡水魚類
- 與人類基因有超過 70% 的相似性
- 用於研究失重對脊椎動物的生育、行為及身體功能的影響
- Freshwater fish
- Share over 70% genetic similarity with humans
- For the study of the effects of weightlessness on the reproduction, behaviour, bodily functions of vertebrates

神舟二十號
Shenzhou-20

渦蟲
Planarian



- 扁形動物
- 擁有強大的再生能力
- 用於研究太空環境對生物的修復能力的影響
- Flatworm
- Possess an exceptional regenerative ability
- For the study of the effects of space conditions on organisms’ repair abilities

神舟二十一號
Shenzhou-21

小鼠
Mouse

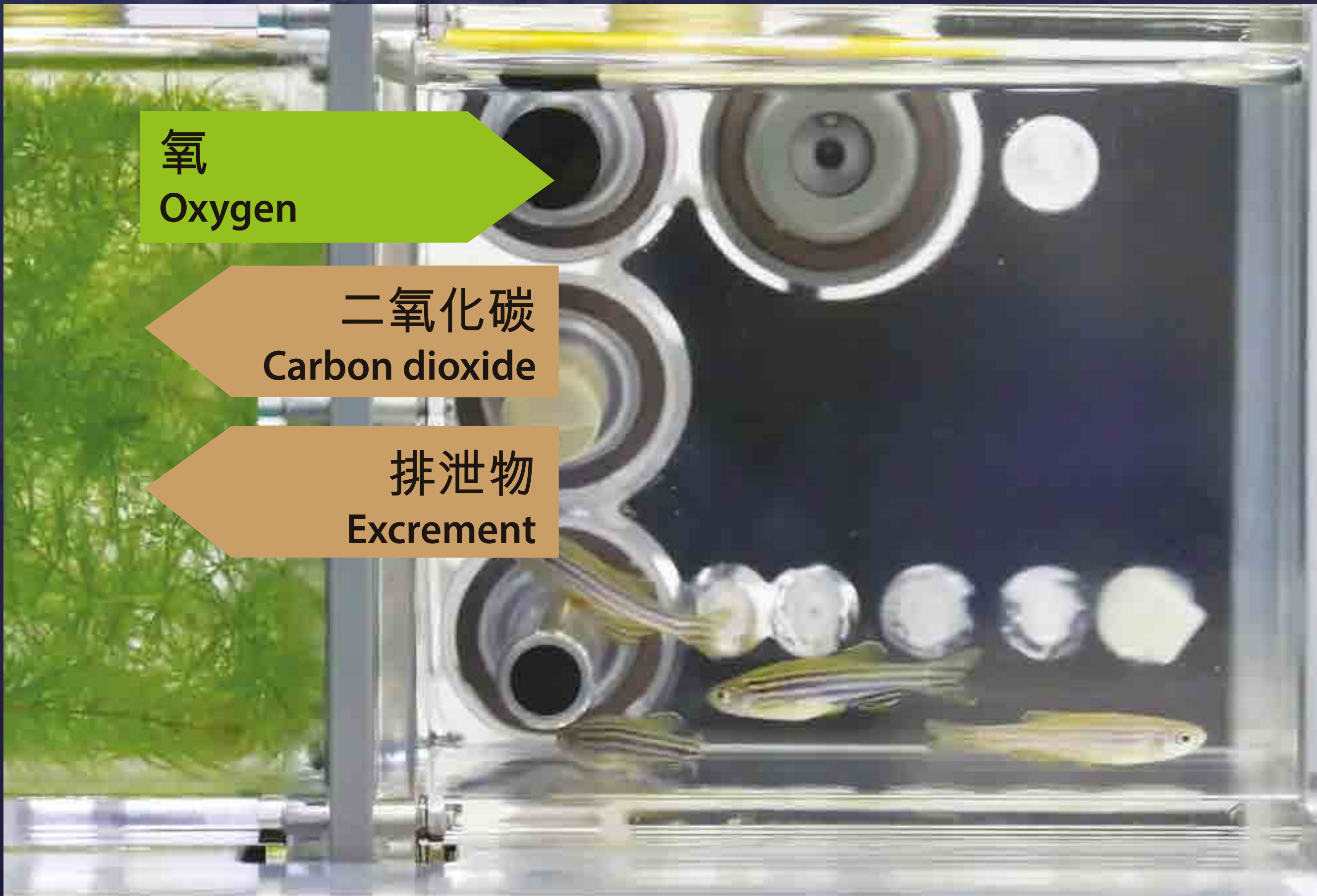


- 哺乳動物
- 在基因和生理結構上與人類高度相似
- 用於研究失重、密閉等環境對小鼠行為模式的影響
- Mammal
- Highly similar to humans in terms of genetic and physiological structure
- For the study of how weightlessness and an enclosed environment influence mouse behaviour

「太空水族箱」 The “Space Aquarium”

「太空水族箱」是一個特別設計的密閉水生生態系統，養殖了斑馬魚與金魚藻。金魚藻在燈光下進行光合作用，為斑馬魚提供氧氣，而斑馬魚釋出的二氧化碳則成為金魚藻進行光合作用的原料。金魚藻還能吸收和分解斑馬魚的排泄物，淨化水質。

The “space aquarium” is a specially designed closed aquatic ecosystem raising zebrafish and hornworts. The hornworts perform photosynthesis under lighting to provide oxygen for the zebrafish, while the carbon dioxide released by the zebrafish provides the raw material for the hornworts to carry out photosynthesis. Hornworts can also absorb and break down the excrement produced by zebrafish, thereby purifying the water.



航天員的工作：艙外任務

Working in Tiangong: Extravehicular Missions

除了在空間站內工作，航天員還要進行出艙活動，亦即「太空漫步」。為了應對太空的嚴峻環境，航天員會在空間站內穿上名為「飛天」的艙外航天服，然後出艙安裝、檢查和維修空間站。

Apart from working inside the space station, astronauts also perform extravehicular missions, commonly known as “spacewalks”. To cope with the harsh environment of space, astronauts will put on the “Feitian” extravehicular spacesuits inside the space station, then step out of it to carry out installation, inspection and maintenance of the space station.

第二代「飛天」艙外航天服

Second-generation “Feitian” Extravehicular Spacesuit

頭盔
Helmet

照明燈
Helmet Light

電控台
Electrical Control Panel

設有電子屏幕、壓力錶和各種裝置的開關。
It is equipped with a digital display, a pressure gauge and switches of various devices.

安全繩
Safety Tether

可繫於艙外的扶手，確保出艙活動安全進行。
It can be attached to the handrails outside the module to ensure extravehicular activities are performed safely.

舒適層
Comfort Layer

備份氣密層
Backup Pressure Bladder

主氣密層
Main Pressure Bladder

限制層
Restraint Layer

隔熱層
Thermal Layer

外防護層
Outermost Protective Layer

背包
Backpack

內有便攜式環境控制及生命保障系統，當中包括氧氣瓶和淨化裝置等。
It contains a portable environment control and life support system, including oxygen tanks and a purification device.

面窗
Helmet Visor

最外層的防護面窗鍍上純黃金膜，能有效反射陽光，保護航天員的眼睛。
The outermost layer of the visor is a protective gold film that reflects sunlight effectively and protect the astronaut's eyes.

手套
Glove

手套的手腕位置設有小鏡子，方便航天員察看視野盲點。
The small wrist-mirror on the glove allows the astronaut to observe blind spots.

氣液控制台
Gas and Liquid Control Panel

用來調節航天服內的氧氣供應、溫度和通風狀況。
It regulates oxygen supply, temperature and ventilation within the spacesuit.

電臍帶
Electrical Umbilical

在準備出艙活動的階段用來供電和通信。
It provides electrical power and communication in the preparation phase of extravehicular activities.

靴子
Boot





加入這個航天大家族！ Be Part of the Space Crew！



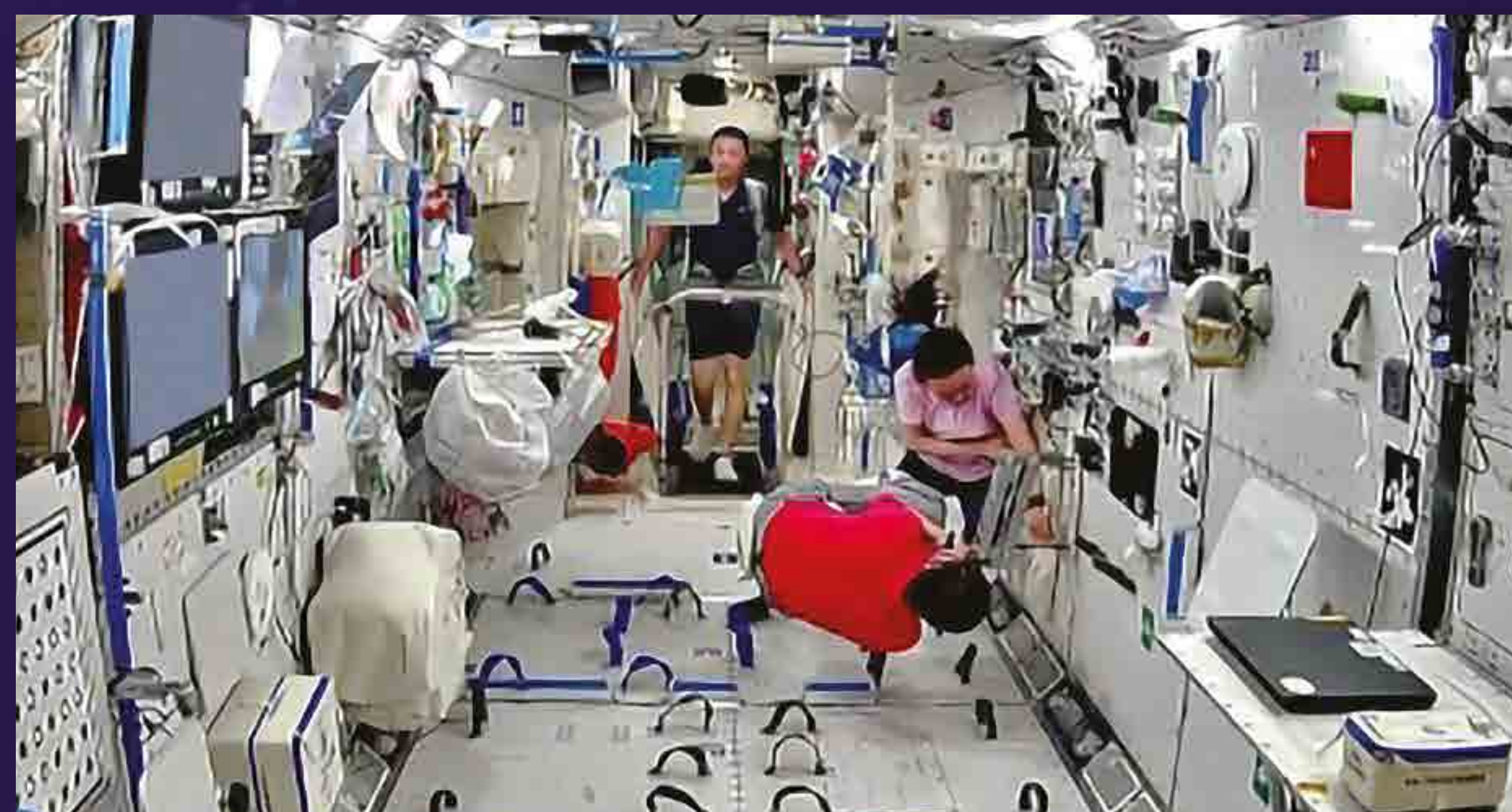
航天事業充滿挑戰，也充滿無限可能。無論你想成為國家航天員，還是在科研機構從事航天研究，只要保持好奇心、勇於探索，努力學習，你也能實現航天夢。

The space endeavor is full of challenges, but also limitless possibilities. Whether you aspire to become a country's astronaut or to conduct aerospace research at a scientific institution, as long as you stay curious, dare to explore and commit to learning, you too can make your space dream a reality.

你希望踏足天宮嗎？ Would you dream of visiting Tiangong?



神舟二十一號乘組與神舟二十三號乘組進行第八次「太空會師」
The crew of the Shenzhou-21 and Shenzhou-23 spacecraft carried out the 8th "rendezvous in space"



神舟二十三號乘組的在軌生活
Shenzhou-23 crew's life in orbit

你可以 You can...

- 參加少年太空人體驗營，與航天專家對話，充實知識

Take part in the Young Astronaut Training Camp and meet the experts, expanding your knowledge

- 修讀物理、化學、生物、醫學、資訊科技、工程或天文學等相關科目，有助於掌握航天技術所需的知識與技能，為未來從事航天工作奠定堅實基礎

Taking courses in physics, chemistry, biology, medicine, information technology, engineering or astronomy helps you acquire the knowledge and skills required for space technology, laying a solid foundation for a future career in the aerospace field



少年太空人體驗營學員參觀酒泉衛星發射中心(左)和中國航天員科研訓練中心(右)
Students of Young Astronaut Training Camp visited the Jiuquan Satellite Launch Center (left) and the China Astronaut Research and Training Center (right)



近視可以做航天員嗎？

Can people with short sightedness become astronauts?

中國首位參與航天飛行任務的載荷專家——來自北京航空航天大學的桂海潮教授，在執行神舟十六號任務時是戴着眼鏡的！載荷專家的選拔標準更具彈性，輕度近視者仍有機會獲選；但基於安全考量，航天員在不佩戴眼鏡時，基本視力仍須足以獨立完成各項基礎操作。

China's first-ever payload expert participated in a spaceflight mission, Professor Gui Haichao from Beihang University, wore glasses during the Shenzhou-16 mission! The physical criteria for payload experts are more flexible. Individuals with mild shortsightedness still have a great chance of being selected. However, even without glasses, an astronaut's vision must still be clear enough to handle basic operations.



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