



YURI



SPACE BIOTECH
FOR A BETTER LIFE

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PORTFOLIO
**HARDWARE
& SERVICES**



LAB-AS-A-SERVICE

Whatever your requirements are, we help you to perform research in microgravity **quickly and affordably**.

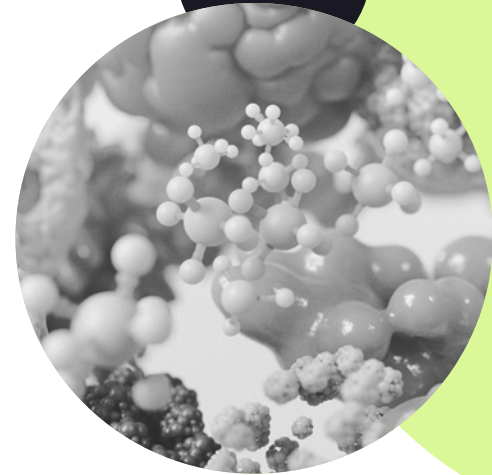
No space experience needed.

Project execution in 6-9 months.

Starting at 90,000\$.

PROCESS

- 01 Define Experiment
- 02 Select Hardware
- 03 Test & Train on Ground
- 04 Execute Mission
- 05 Analyze Samples



With our technical and scientific consultants, you can define parameters such as microgravity duration, temperature, live data or fluid exchange.



Choose from a variety of flight-proven experiment hardware for cells, crystals, plants, fruit flies or fish. Customized hardware is also possible.



You receive extensive training on the hardware and can perform enough dry runs in your lab before your experiment goes into space.



We organize all launch logistics, such as export control, safety, and launch bookings for you. For ISS missions, we will watch the launch together in Florida.



After your experiment returns from space, we will ship it back to you for your analysis. You can also receive certain live data while in space.

SCIENCETAXI

Your Space Incubator

Maidenflight experiment profile

- Open spots on microgravity static position
- Open spots on centrifuge
- Centrifuge will run with 1G (earth gravity)
- Mission temperature 37°C (98.6 F)
- Fixing at 4°C (39.2 F)
- Adaptable timeline for fluidic system for each Scienceshell



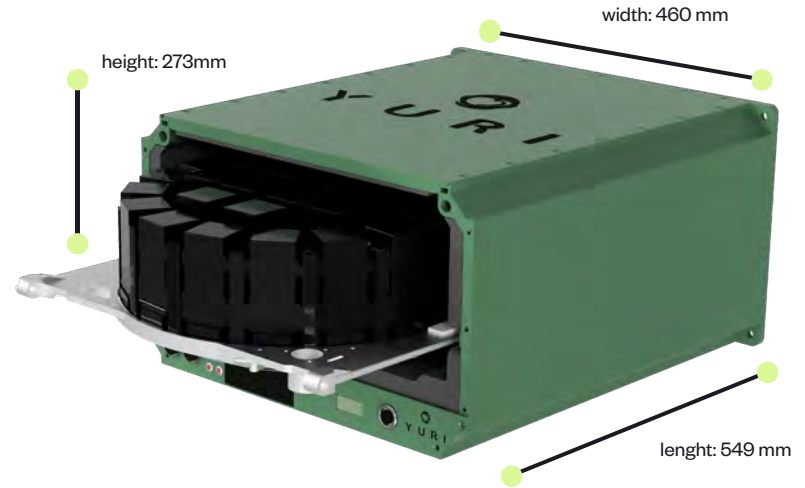
**Modular Design
for
Experiments**

Internal Volume:

length: 400mm

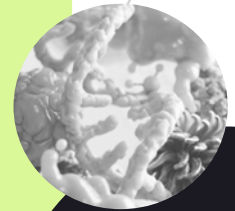
width: 380mm

height: 190mm



CAPABILITIES

- 🕒 Hosts up to 38 experiment units (ScienceShells)
- 🕒 Designed for orbital platforms (Dream Chaser, Dragon, ...) but also fits suborbital or parabolic flights
- 🕒 Independent from ISS
- 🕒 Temperature range +4°C to +40°C
- 🕒 Fully automated, no crew interaction needed
- 🕒 Centrifuge up to 16 ScienceShells with Earth, Moon, and Mars gravity (0G to 1G)
- 🕒 Real-time Housekeeping-Data monitoring and commanding
- 🕒 Modular Design: Different Experiment Platforms possible
- 🕒 Seamless power transmission for experiments



TYPE IV SCIENCE SHELL



- 🧠 Our most commonly used ScienceShell
- 🧠 It has flown several times to the **ISS**
- 🧠 On a variety of cell culturing experiments
- 🧠 Including cancer, immune and stem cells

ALL OUR OPTIONS IN ONE GLANCE



Our flight-proven hardware portfolio (**SCIENCE SHELLS**) consists of experiment containers (**OUTER SHELLS**) and specific experiment inserts (**INNER SHELLS**).

We provide you with ground models for testing and flight models that will be launched to space.

Our ScienceShell portfolio is compatible with ISS facilities of the following partners:
Space Tango, Bioserve, LaMont, Ice Cubes, Kayser Italia.

We also provide options to **simulate microgravity** on Earth :

RANDOM POSITIONING MACHINE
(formerly Airbus)



CLINOSTAT



SCAN TO WATCH

ScienceShells in action

01

Type - V
Active Cell Culturing in
Microgravity



02

Type - IV
Active Cell Culturing in
Microgravity



03

2x2 - Chamber
A Petri Dish for Microgravity
Research



04

4 - Chamber
A Petri Dish for Microgravity
Research



05

8 - Chamber
A Petri Dish for Microgravity
Research



06

Mini Aquarium
Aquatic System for
Microgravity Research



07

Greenhouse
Growth of Higher Plants



DON'T MISS OUT

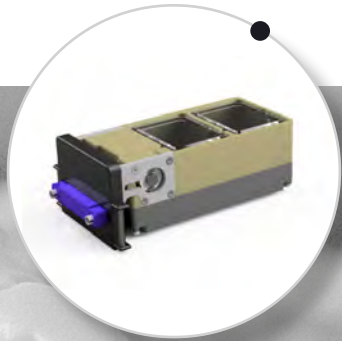
Features coming soon

- ❑ In-flight image and sensory data download
- ❑ In-flight adaptation of experiment timeline
- ❑ Sensors (O₂, pH, pressure)
- ❑ Microscope imaging with resolution < 5μm
- ❑ Fluorescence imaging
- ❑ Active fluidic exchange for cells or bacteria
- ❑ Passive O₂ exchange
- ❑ Complex fluidic systems (lab on a chip)



TYPE - V

Active Cell Culturing in Microgravity



- Two culture chambers with a volume of 10.8 ml \pm 0.3ml each
- One tank for nutrient or fixation media with a volume of 22 ml \pm 0.3ml
- Duration of media exchange: approx. 10 min
- Flexible configurations: Fluidic System, Scientific Insert, Window Type

TYPE - IV

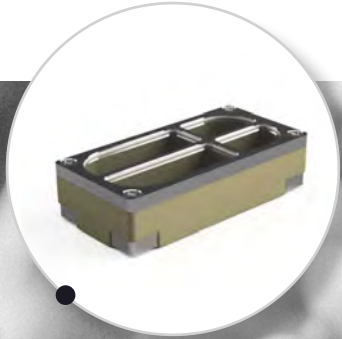
Active Cell Culturing in Microgravity



- One culture chamber with a volume of 13.5 ml \pm 0.3 ml
- Two media exchanges: Refreshment Medium and Fixative
- Two tanks with a volume of 11ml \pm 0.3 ml each
- Duration per media exchange: approx. 5min

2x2 - CHAMBER

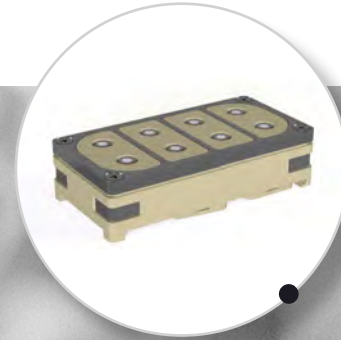
A Petri Dish for Microgravity Research



- Four individual culture chambers: two big ones and two small ones
- All culture chambers covered with a gas-permeable membrane to enable gas exchange for the samples
- Serves as a passive petri dish for a microgravity environment

4 - CHAMBER

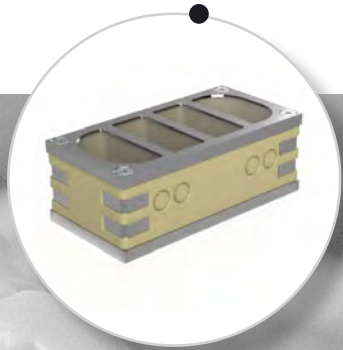
A Petri Dish for Microgravity Research



- 4 culture chambers with a volume of Volume: 6.5 ml each
- Pressure monitoring or gas exchange through gas-permeable membrane
- Serves as a passive petri dish for a microgravity environment

8 - CHAMBER

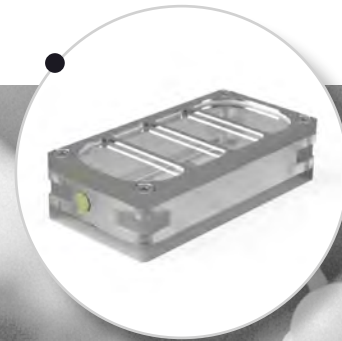
A Petri Dish for Microgravity Research



- ① 8 culture chambers with a volume of 6.7 ml each
- ① Gas exchange through gas-permeable membrane

MINI AQUARIUM

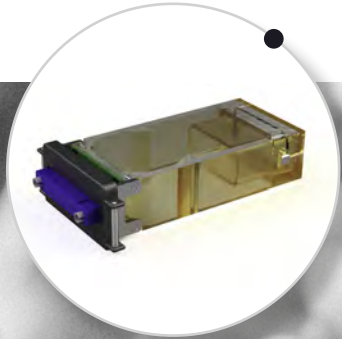
Aquatic System for Microgravity Research



- ① Miniature Aquarium with a volume of 41 ml
- ① Gas exchange through gas-permeable membranes
- ① Optional LED panel for day/night simulation

GREENHOUSE

Growth of Higher Plants in Microgravity



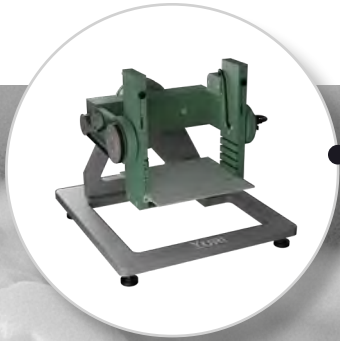
- Growth Chamber with a volume of 33.3 ml
- Agar Container with a volume of 9.5 ml
- Gas exchange through gas-permeable membranes
- LED panel for day/night simulation

Our ScienceShells have been launched on **SpaceX** and **Northrop Grumman** rockets for research groups from UCLA or Charité Berlin.



RPM

Simulate microgravity on 3 dimensions



- Fits into incubator
- Supports gravity levels between $10^{-3} g$ and $0.9 g$ (e.g. Moon or Mars gravity)
- PC and software are included to operate the RPM and monitor its parameters
- Former Airbus RPM that was used in >70% of all RPM publications

CLINOSTAT

Simulate microgravity on 2 dimensions



- Supports up to 45 samples
- Microgravity, Moon gravity and Mars gravity
- Wide range of compatible sample sizes (1-15ml)
- Control unit outside incubator for permanent surveillance & control
- Automated calculation for optimal rotation

TEAM

Global all-star team in space **engineering** and space **biology**

30

Yurinauts in GER, LUX, US, SPAIN

138

Space bio publications

151

Labs launched to space

SCIENTIFIC ADVISORS



Christopher Mason
Cornell University



Stefan Oschmann
Ex-CEO Merck



Afshin Beheshti
NASA, Broad





YURI

Space biotech for a better life

ABOUT US

yuri is a space biotech company with experience from 20+ ISS payloads for, among others, NASA, ESA, DLR.

The team of 30+ engineers and biologists enables life science research in microgravity for scientists worldwide.

Besides launching experiments to the ISS, yuri develops Random Positioning Machines and Clinostats for purchase and rental.



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yuri LUX GmbH

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