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Roadmap for Advancements for Menstrual blood Management in reduced gravITY -AMMITY-

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Menstrual blood in spaceflight

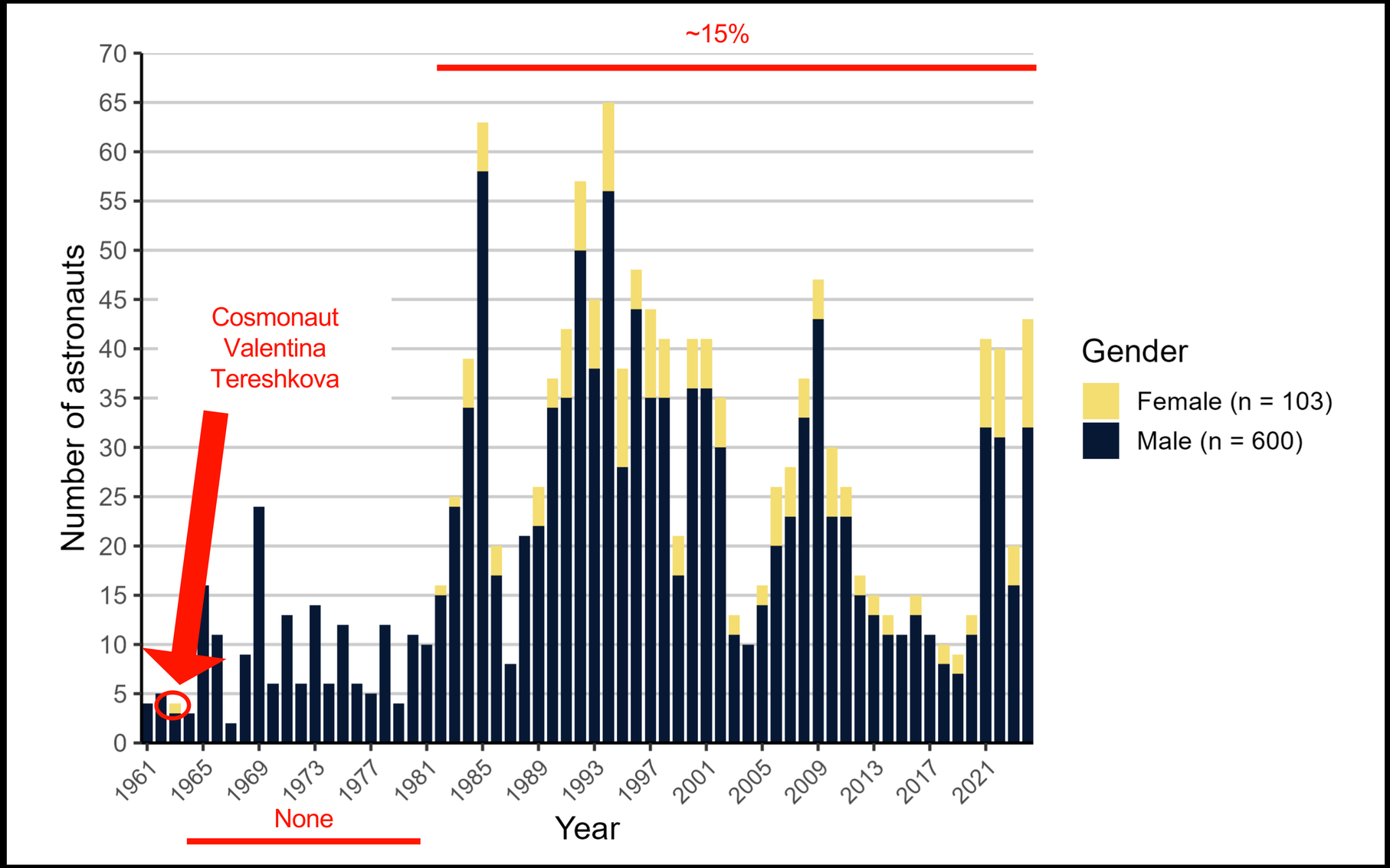

Figure 1: Astronaut launched to space by year and gender since the first Karman line crossing in 1961 until May 2025

Retrieved from “One Giant Leap for Womankind: First Menstrual Cups Tested in Space Flight Conditions”, F. Coelho et al. (2025) arXiv:2506.20718

Menstruation

Once per month, 5 days average, 60ml of menstrual fluid per cycle

from teens to ~50s

Currently:
Average age of menstruating astronaut: 37.1 years
Average time in space is 87 days
== on average 3 cycles in space

However:
With Moon and Mars ambitions, Spaceflight is expected to increase to multiple months/years (>6 months one way to Mars)

Stop menstruating in space
A.k.a Hormonal suppression
(Majority of cases)

(+) Don't have to think about it

(-) Increased loss of bone density

(-) Other increased risks of hormone suppression : sleep issues, decrease in mental health ==> decreased performance

(-) Increased risk of thrombosis (even more in spaceflight)

(-) Modified pharmacokinetics (poorly studied during spaceflight)

Keep menstruating in space

(+) No increased risks from hormonal suppression

(-) Waste created (tampons, pads)

(-) "Spotting" can occur

AND/OR

(-) no appropriate waste disposal (menstrual cup)

What if menstrual fluid,
as of now considered WASTE ,
can be used as a RESOURCE?

-> Research goal of **AMMITY** (Advancements for Menstrual blood Management in reduced gravITY)

2022

MELiSSA conference - Toulouse

Ideation of valorising menstrual blood for spaceflight (Case study of stem cells)

2022

MELiSSA conference - Toulouse

Ideation of valorising menstrual blood for spaceflight
(Case study of stem cells)

How to **collect the menstrual blood** in a reduced gravity environment in a safe, reusable and sustainable way?

2023

Prototype v1:

F

Device solution & Design

Design of require
report

Cleaning and sterilisation procedure

Claripharm™
LABORATOIRE

Re-valorising menstrual fluid
(nutrients, stem cells, non-invasive diagnostics)

2023

2024

Prototype v1: suction syringe

Parabolic flight campaign #1

Prototype v2: re

e

ostics)

Design of requirements and report


Claripharm LABORATOIRE

SPECIFICATIONS COUPE MENSTRUELLE ADAPTEE AUX CONDITIONS SPATIALES

E202
Version D
A : le 08/03/2017
Page 1/51

Tâche 4_Spécifications d'une coupe menstruelle adaptée aux conditions spatiales_VA

SUIVI DES MODIFICATIONS

Date / Date	Paragraphes concernés / Relevant paragraphs	Version	Nature de la modification / Nature of change
13/05/2024	Tous / All	A	Création du document / Document creation

Les modifications sont signalées par un trait rectiligne en marge de la partie modifiée
Modifications are indicated by a straight vertical line in the margin of the modified parts

	Rédacteur / Writer	Approbateur / Approved by
Nom / Name	Nolwenn KERHERVÉ	Clarisse LE COURT
Fonction / Title	Scientific project manager	CEO
Date / Date	05/08/2024	14/08/2024

2024

2025

Pro

Prototype v2: removable lining

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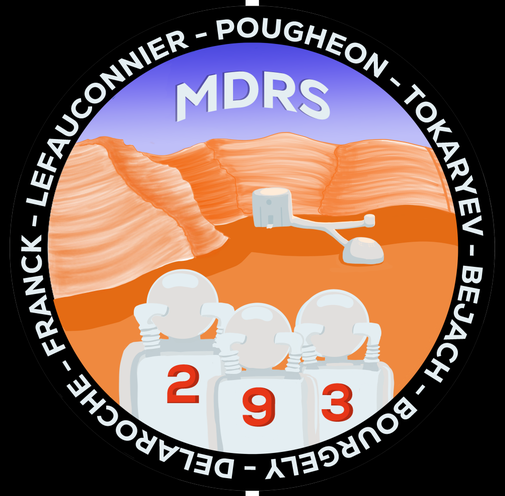
Test in MDRS analogue mission



Parabolic flight campaign #2

2025

Prototype(s) v3: mechanical closing

ETH
GLOBAL
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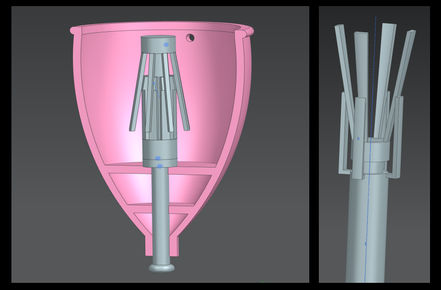
ENGINEERING

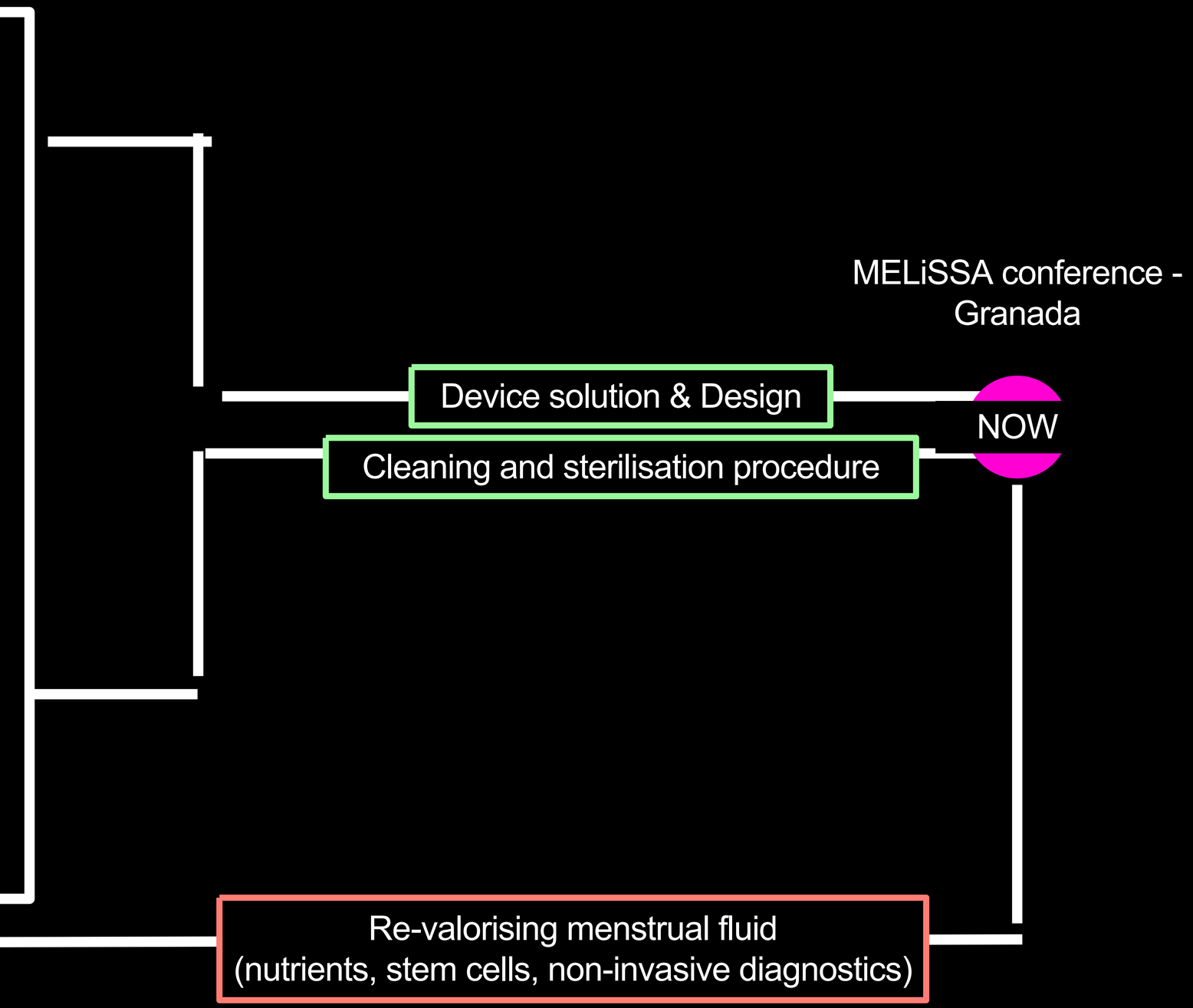
v3.1: umbrella mechanism



v3.2: Flower mechanism

Parabolic flight campaign #3 for Spring 2026

Autumn 2025-


MELiSSA conference - Granada
Device solution & Design
Cleaning and sterilisation procedure
NOW
Re-valorising menstrual fluid
(nutrients, stem cells, non-invasive diagnostics)

Call for collaboration

MELiSSA conference - Granada

Device solution & Design

Cleaning and sterilisation procedure

NOW

Re-valorising menstrual fluid
(nutrients, stem cells, non-invasive diagnostics)

Valorisation of menstrual blood

1) Food production: Nutrients
2) Plant health: Fertiliser
3) Human health: Stem cells

Want to learn more or contact us, scan this QR code:

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Expected integration to LSS in 2026-2027