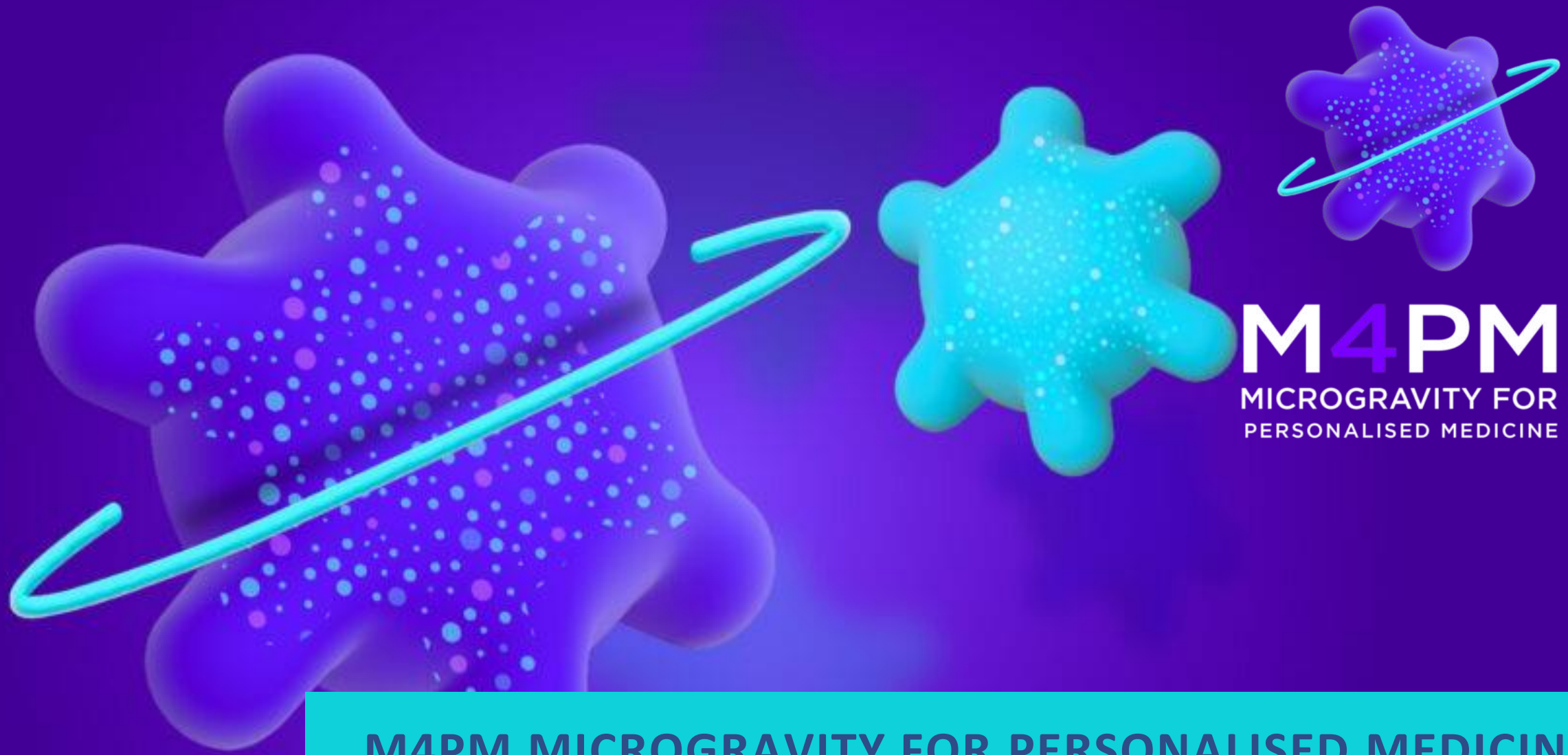

M4PM MICROGRAVITY FOR PERSONALISED MEDICINE
TUMOURS, ORGANOIDS & SPHEROIDS IN SPACE

06 Nov 2023

3D CELL – ORGANOIDS, SPHEROIDS, TUMOURS – CONTEXT

WHY NOW?

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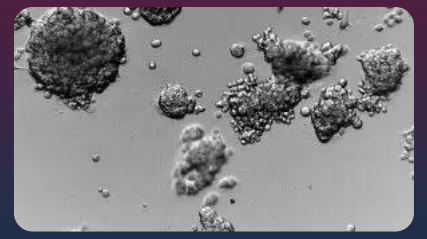
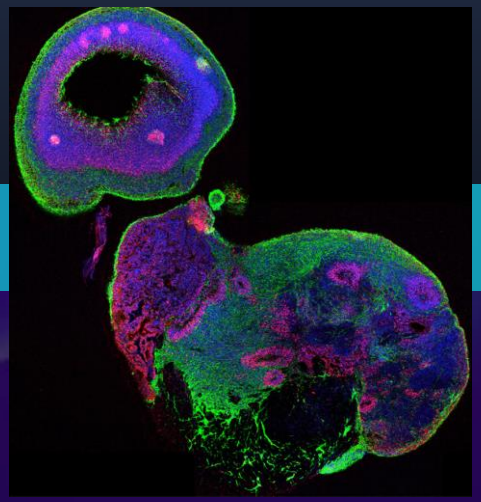
- 3D cell vs 2D cell
- Personalized medicine / Patient derived organoids
- Paradigm shift in drug development (FDA Modernization Act 2.0)
- Fast-track direct space access

2D



3D



CREDIT: M. LANCASTER, IMBA

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TUMOURS, ORGANOIDS & SPHEROIDS IN SPACE

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- Multi-user high-throughput drug screening platform in space
- Contract Research Organisation (CRO) service with lab / platform in space
- Contract Manufacturing Organisation (CMO) service producing organoids / tissue models in space

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Commercial service for

growing high-quality spherical 3D organoids, spheroids & tumours in low shear conditions

in space

for personalised medicine, disease modelling, drug research like high-throughput screening and toxicity testing

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M4PM MICROGRAVITY FOR PERSONALIZED MEDICINE – WHY SPACE?

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Customer Pains on Earth:

- Heterogeneous sizes
- Limited sizes
- Too mild phenotypes / Not the right phenotypes
- Necrotic cores
- High shear conditions which make the formation of 3D constructs in 1g more difficult
- Necessity to use scaffold materials with contamination risk and batch-to-batch variability

Added value through Space:

- Increased sizes
- Better quality / more homogenous
- Specific phenotype (Space-specific, e.g. accelerated ageing, protein aggregation related)
- Less / no necrotic cores
- Easier 3D cell models formation e.g. No/ less necessity to use scaffolds or Matrigel
- Space organoids biobank

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These Space-grown tumours, organoids and spheroids will be used for a wide range of applications and areas of research:

- Drug testing: efficacy and toxicity
- Drug development: (high throughput) screening of new substances
- Disease modeling (incl. study of infectious diseases)
- Modeling of ageing processes
- Toxicity of substances
- Personalized Medicine
- Regenerative medicine

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SERVICE MODEL

Phase 0: Pilot / MVP setup and space validation mission

Phase 1 : Direct Sales service model = fee for service of platform access & mission execution
Customers: Research Labs, Biotech companies, Academics

Phase 2: CRO service model & scale-up= terrestrial model for outsourced R&D known to pharma
Customers: Terrestrial CROs, Larger Labs, Pharma & Biotech companies

Phase 3: CMO model = manufacturing large organoids not possible to be grown on Earth
Customers: Terrestrial CMOs, Pharma & Biotech companies

M4PM MICROGRAVITY FOR PERSONALIZED MEDICINE – COMMUNITY

Community charter signed by ~42 members from 17 countries

Small, Medium and Large commercial companies
Academics, University Labs, Research Institutes
NGOs, Foundations, Non-Profits
Industry Associations, Clusters (health)
Contract Research Organizations
Technological / biological suppliers
VCs/Private Equity/Capital

- Feature key thought-leaders in field
- Develop & promote programmes on 3D cell cultures / tumours / organoids / spheroids for drug testing and discovery and for the development of personalised medicine.
- Work in a research & very early-stage preclinical
- Community Members focus on common interests and their individual corporate goals.

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STATUS

- Feasibility Study completed (2022):
  - Market and customer needs refined / Business model refined
  - Technical concept
  - Community of ~42 key thought leaders
- Development of M4PM platform (2023-2024)
- First M4PM demonstrator mission (2025)
- Commercial service (2025)

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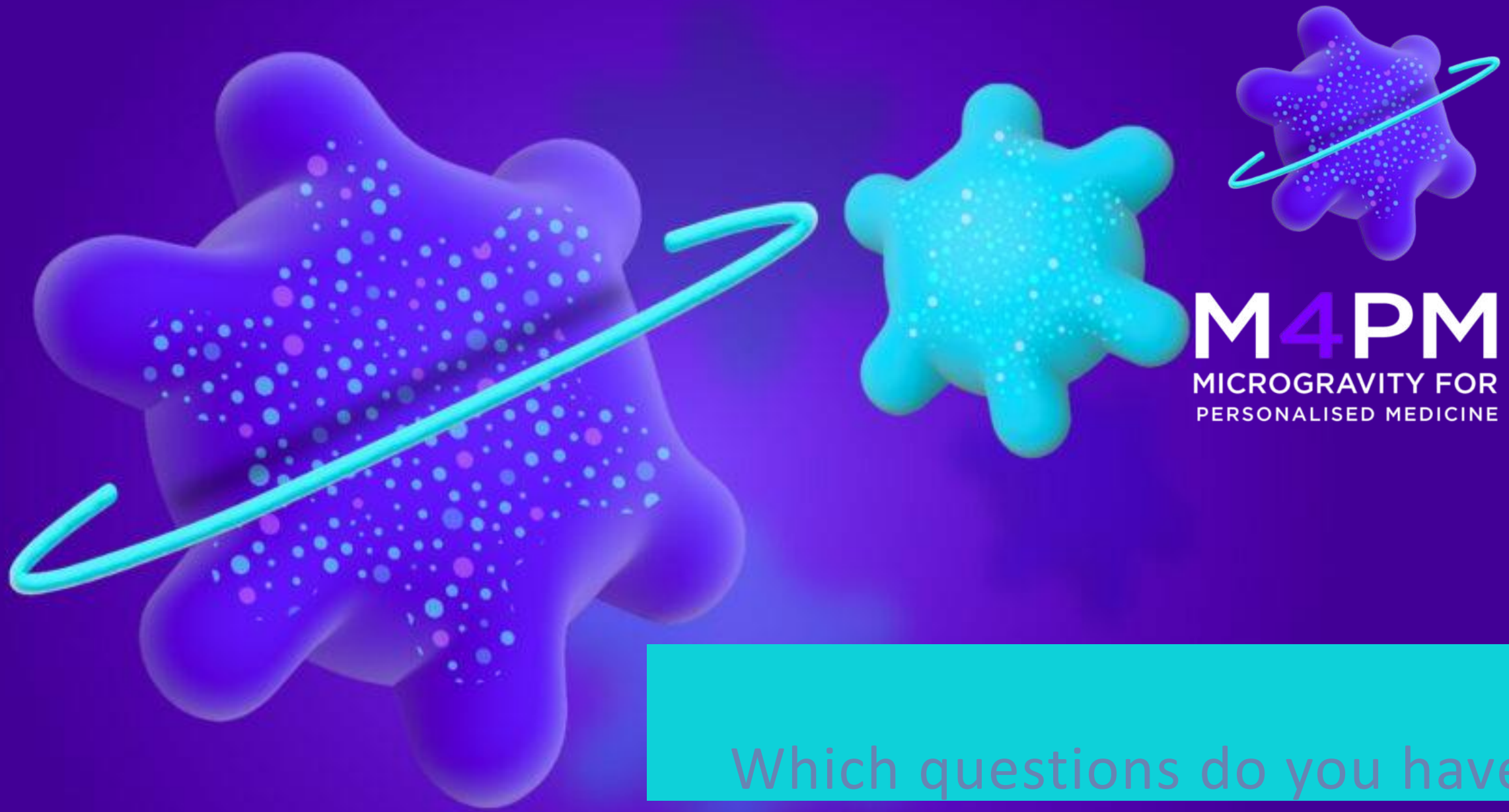
INVITE

- M4PM community of key thought leaders
- User representative partner
- Investment
- User



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Which questions do you have?