

MIT Startups Delegation – Nov 2023

8th November 10:00-12:30

CDTI (Council room)

Calle Alfonso XI, 6. 28014 Madrid

AGENDA

- 10:00-10:15** **Introduction and welcome**
CDTI
[Klaus Schleicher](#), Director, MIT Corporate Relations (MIT)
- 10:15-11:00** **MIT Startup Ecosystem**
[Catarina Madeira](#), Directora de Startup Exchange (MIT)
- 10:15-11:00** **MIT Startup presentation**
[Pablo Lapuerta](#). CEO. 4M Therapeutics.
[Ines Herrero](#). Founder. BIOMIXING.
[Heather E. Williams](#). Vice President. Cache DNA.
[Jose Wong](#). Chief Product Officer. Dynocarida, Inc.
[Carlos Castro-Gonzalez](#). CEO. Leuko Labs.
- 11:00-11:15** **Ways of technological collaboration**
CDTI
- 11:15-11:30** **Discussion (all)**
- 11:30-12:30** **Meetings B2B (CDTI – MIT Startups)**

MEETINGS WITH SPANISH COMPANIES

Madrid, November 2023

Company information:

Name: 4M Therapeutics	
Contact person: Pablo Lapuerta, MD	Position: Chief Executive Officer
Address: 5 Seminole Rd, Skillman NJ 08558	Tel.: +1-609-216-3513
	E-mail: pablo@4mtx.net
	Web: https://www.4mtx.net/
Activity: Developing new treatments for psychiatric and neurologic disorders.	

Brief company description:

4M Therapeutics (4MTx) develops targeted therapies for the central nervous system. Our founders at MIT used stem cells to generate living human brain cells. They identified key pathways involved in psychiatric and neurological disorders, and they developed new small molecules and peptides.

Our initial program is in acute bipolar mania. 4MT2001 is an orally administered small molecule with broad pre-clinical data indicating its potential to provide an effective and safer alternative to lithium. The same pathway is also important in Alzheimer's disease, Parkinson's disease, and traumatic brain injury. We aim to start a clinical trial in 2025.

Other pipeline programs at 4MTx offer broad therapeutic potential addressing other central nervous system targets. The study of living human brain cells at 4MTx represents an important advance in neuroscience drug discovery.

Company interest:

4MTx is interested in scientific collaborations. Our leaders have extensive prior experience in alliances with US, European, and global pharmaceutical companies. 4MTx can apply its novel scientific platform to strengthen the pipeline of a partner. 4MTx can do this in a capital efficient manner. We have mature technology with drug candidates showing cellular target engagement and animal efficacy. In 2024 and 2025 we will focus on advancing our lead compound into clinical trials. We intend for Spanish investigators to participate in clinical development.

4MTx has a strong interest in collaborating with a European partner for clinical development and commercialization. Pablo Lapuerta, MD (CEO) is a Spanish citizen. 4MTx connections in Spain include Angel Cebolla, CEO of Onestx, a startup neuroscience company in Seville. We are actively discussing potential collaborations. Our investor Monica Rosoff, PhD recently moved to Spain and is using her senior level US biotech experience to help Spanish companies with business development, licensing, and alliance management.

MEETINGS WITH SPANISH COMPANIES

Madrid, November 2023

Company information:

Name: BIOMIXING	
Contact person: INES HERRERO	Position: Founder
Address: c/ Pablo Iglesias, 7- 41928 Palomares del Río (Sevilla, Spain)	Tel.: +34 625 738 488
	E-mail: iherrero@biomixing.com
	Web: www.biomixing.com
Activity: Design and optimization of bioreactors for pharma, food biotech or other biotech companies.	

Brief company description:

Biomixing is a firm **focused on optimising bioreactors which are** the essential equipment to manufacture biological compounds, such as cancer treatments, vaccines, food biotech or many pharma drugs. We have developed **new patent-pending agitation/aeration systems for bioreactors that reduce mixing times** by around 70% and shear stress. Our product offerings include our agitator/aeration system to retrofit existing bioreactors and a whole bioreactor with our system inside. We can boast of a high **client satisfaction**. At the industrial scale, the better mixing allows a reduction in energy consumption (up to 50%). Additionally, we can help with the **scaling processes**.

Company interest:

Our products have been validated by our clients but we would like to set some pilots to take more precise measures of the advantages of our devices reach to an standardization of our device for the most common cultures.

We are also interested in reaching potential customers to start collaborating.

MEETINGS WITH SPANISH COMPANIES

Madrid, November 2023

Company information:

Name: Cache DNA “Cache”	
Contact person: Heather E. Williams, PhD, MBA, MS, PgD, ErCLG, CG(ASCP)SMMBSM	Position: Vice President, Clinical Genomics Operations & Chief of Staff
Address: 733 Industrial Road, San Carlos, CA, USA 94070	Tel.: +16143779647
	E-mail.: heather@cache-DNA.com
	Web: https://www.cache-dna.com/
Activity: B2B	

Brief company description:

The precipitous drop in the cost of synthesizing and sequencing nucleic acids has spurred the "genomics revolution." Human genomic DNA is sequenced at scale through direct-to-consumer kits, offering insight into our genetic heritage and the likelihood of developing certain diseases. As sequencing becomes commoditized, the cost bottleneck is now other parts of the value chain (interpretation/reporting, data management, sample preparation, storage, etc.)

Our biology-inspired approach stores nucleic acids in microcapsules comparable to the size of a single cell. The microcapsules provide an impervious shell to nucleic acids, enabling millennium-scale storage at room temperature and protection against environmental insults.

In select application areas with multi-billion-dollar markets, nucleic acids play a central and mission-critical role in developing products and services. The impervious encapsulation reduces the storage footprint of nucleic acids by at least 1000-fold compared to conventional tube-based storage, thus providing a scalable and low-cost solution for the storage and access of nucleic acids.

Company interest:

As a startup biotechnology company focused on the storage of biological materials (i.e., Deoxyribonucleic acid (DNA) and Ribonucleic acid (RNA)), Cache is interested in establishing operations in Spain for several compelling reasons:

1. **Significant Government Investment:** The Spanish government's commitment to invest €25 million into precision medicine, genomic medicine, and data science (2020-2023) under the Precision Medicine Infrastructure Associated with Science and Technology (IMPACT) project signals a robust environment for biotech initiatives in the country (2023-future).
 - a. **Centralized Data Integration:** The IMPACT initiative seeks to create a centralized, integrated clinical and genomic data infrastructure, facilitating ease of data access and ensuring more streamlined research processes. This will (and has) accelerated the use of precision medicine tools in the country.
 - b. **Renewed Government Priority:** The current Spanish government has emphasized science and innovation, dedicating €77.3 million for a broader set of actions, which showcases a conducive environment for biotech enterprises to continue to engage in the country.
 - c. **Several target academic medical-research centres:** For example, Carlos III Institute of Health (ISCIII): As the leading entity managing the IMPACT initiative and is the primary funding agency for biomedical research in Spain, ISCIII presents a strategic partner or liaison for Cache in the country.
2. **National Cohort for Research:** The development of a national multipurpose cohort, including clinical, epidemiological, and biological data (genomic), offers a vast resource for research and development activities using Cache's biological storage technology.
3. **Ambitious Data Science Initiative:** The goal to establish a system for collecting, integrating, and analyzing clinical and molecular data, considering Spain's regional variations, presents a valuable opportunity for Cache, as an organization focused on biological material storage, to align their services with supporting this infrastructural development for the country.
4. **Genomic Medicine Emphasis:** With the focus on building infrastructure and protocols for genomic analysis and making genomic medicine available nationally, Cache can provide essential services (e.g., 'Genome sequencing') and products (e.g., long-term storage of biological specimens) to support this objective, especially concerning the molecular diagnosis of rare diseases.
5. **Regional Variations:** Despite the advancements in some regions like Catalonia or Madrid, the variance in services and informatics tools among Spain's 17 autonomous regions highlights the potential areas where the Cache can offer its expertise and solutions. Cache provides a low-cost platform to store nucleic acids that are mission-critical to biobanking, precision medicine, biopharmaceutical assets, and massive DNA-based file systems for archival data storage. An average biobank consumes 4M kWh of electricity, produces 1,800 metric tons of CO₂, and costs \$16M annually (Stanford, 2010). Data centers are so energy intensive that they contribute to 2-3% of the world's electricity consumption, exponentially growing with our data-driven applications. Lowering specimen storage and research costs can address health equity by representing diverse populations in studies. Cache's disruptive solution is poised to bring these solutions to a room-temperature ambient state.
6. **European Connectivity:** Spain's involvement in European research initiatives like the 1+ Million Genomes Initiative positions it at the forefront of genomic research in Europe, providing a gateway for Cache to accelerate collaborations. Cache currently employs a European Board of Medical Genetics (EBMG) certified Clinical Laboratory Geneticist (CLG) [\[credentials recognized within the country\]](#) with education, training, and experience in the application of genomic medicine across Europe, which will broaden collaborations with partners across the field for partnerships established with the company.
 - a. **Learning & Offering:** While Spain seeks to learn from other nations in some aspects of genomic research, it also has much to offer, signaling two-way opportunities and growth for Cache.
7. **Growing Landscape:** The proactive steps and investments in the field indicate a rising trajectory for genomic and precision medicine in Spain, creating a fertile ground for Cache, which specializes in the storage of biological materials.

In essence, Spain's strategic investments and vision to be at the forefront of genomic medicine make it an attractive location for Cache, given our aligned mission "**to store the biomolecules of today in order to unlock the possibilities of tomorrow,**" with the country's ambitions to advance precision medicine and data science for the people of Spain.

MEETINGS WITH SPANISH COMPANIES

Madrid, November 2023

Company information:

Name: Dynocarida, Inc	
Contact person: Jose Wong	Position: Chief Product Officer
Address: One Broadway, Cambridge MA 02142 USA	Tel.: +1 415.316.9035
	E-mail: josew@dynocardia.care
	Web: https://www.dynocardia.care
Activity: Dynocardia, a digital health company, is developing a new wearable device that accurately measures real-time blood pressure and advanced heart function parameters for use in a variety of healthcare markets.	

Brief company description:

Dynocardia is addressing the 100-year challenge of an unmet need for real-world, accurate, continuous non-invasive continuous blood pressure (cNIBP). ViTrack™, a wrist wearable optomechanical sensor and computer vision technology with AI/ML, is the first to measure cNIBP, respiratory, and advanced hemodynamic parameters directly with the accuracy of invasive arterial pressure without external calibration, irrespective of wrist position relative to the heart (hydrostatic pressure change). With state-of-the-art computer vision technology, Dynocardia has demonstrated the capability of ViTrack to identify, quantify and correct for motion artifacts in real-time and provide accurate readings irrespective of the body/hand movement in real-world settings. Dynocardia is targeting hospitals, remote patient monitoring (RPM), and consumer wearable markets, with hospitals as its primary focus. Dynocarida has successfully implemented its minimal viable product (MVP) in several prestigious hospitals across the United States, including Massachusetts General Hospital, Cleveland Clinic, and Baylor Medical Center, and Dynocardia is actively collaborating with the Mayo Clinic.

Company interest:

Our company is actively seeking partnerships with hospital patient monitoring companies to obtain regulatory approval and launch our product in the European market. We are also interested in collaborating with digital health organizations to facilitate remote patient monitoring and data analysis, as well as with consumer electronics companies to aid in product development and manufacturing. Furthermore, we are eager to meet with pharmaceutical and biotech companies to explore digital health and clinical trial collaborations.

Ideally, we would like to meet with key physicians and senior administrators at larger hospitals to gain insights into the market demand and potential opportunities.

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Madrid, November 2023

Company information:

Name: Leuko Labs	
Contact person: Carlos Castro-Gonzalez	Position: Co-founder & CEO
Address: 8 St Marys St #613, Boston, MA 02215	Tel.:
	E-mail.: carlos@leuko.com
	Web: www.leuko.com
Activity: Medical devices	

Brief company description:

Improving quality of life and outcomes for cancer patients, through the first medical device that can noninvasively monitor white blood cell levels. Spun out from MIT and Technical University of Madrid.

Company interest:

Our company currently has ongoing collaborations with Technical University of Madrid, Hospital Universitario 12 de Octubre and Telefonica. We are also currently exploring potential partnerships with the Spanish arm of pharmaceutical company GSK and Hospital Universitario Jiménez Díaz. We would be interested to expand these collaborations including:

- Cancer clinics and hospitals to perform clinical studies.
- Healthcare insurance companies to conduct pilots focused on clinical utility and healthcare outcomes.
- Pharmaceutical companies as a companion device to monitor drugs are administered safely and effectively.
- Medical device distributors.