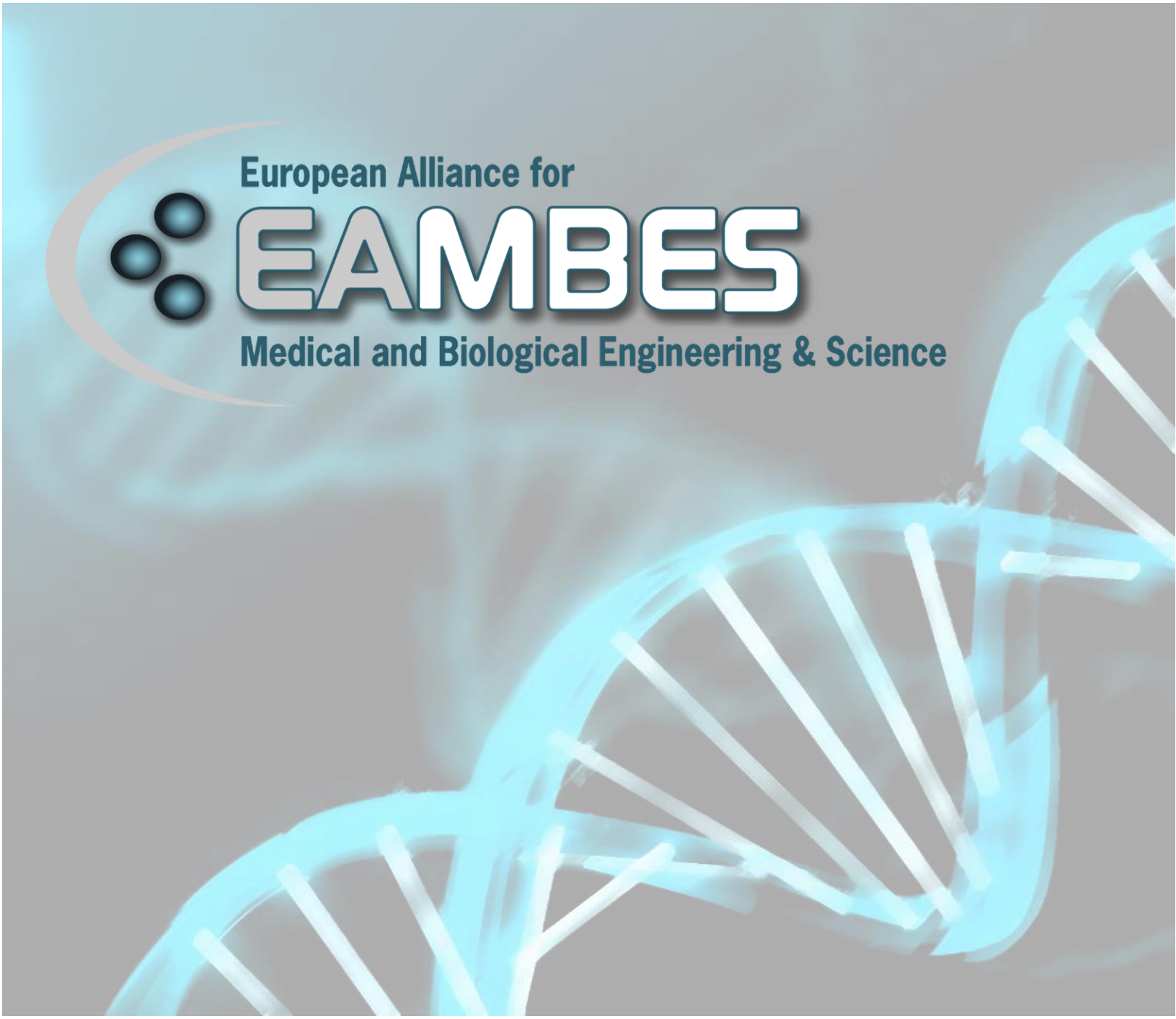
EAMBES 2024: State of the Alliance



European Alliance for Medical and Biological Engineering and Science (EAMBES)

https://eambes.org/

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EAMBES 2024: State of the Alliance

Dear Members of EAMBES, and all European Biomedical Engineers and Scientists,

The 2024 Nobel Prizes in Physics and Chemistry, both recognizing groundbreaking advancements in machine learning, herald the dawn of a new era where machine learning and artificial intelligence (AI) will permeate and reshape nearly every facet of science and society. Within this transformative landscape, **biomedical engineering stands at the forefront**, poised to leverage these AI-driven innovations to revolutionize healthcare and enhance human well-being.

The transformative potential of AI in biomedical engineering is amplified by landmark regulatory advancements in Europe during year 2024: the AI Act to govern ethical development and deployment of AI; the European Health Data Space (EHDS), to facilitate secure and efficient utilization of health data; and the consultation for improvements on the Medical Devices Regulation (MDR) and the In Vitro Diagnostic Medical Devices Regulation (IVDR), both rigorously governing the translation of biomedical engineering to the market and the patient.

On 1 August 2024, the **European Artificial Intelligence Act (AI Act)** entered into force. **The AI Act,** Regulation (EU) 2024/1689 of the European Parliament and of the Council, is the **first-ever worldwide legal framework on AI**, which addresses the risks of AI and positions Europe to play a leading role globally. The new rules aim to foster trustworthy AI in Europe and beyond by ensuring that AI systems respect fundamental rights, safety, and ethical principles, and by addressing the risks of very powerful and impactful AI models. The European AI Office, established in February 2024 within the Commission, oversees the AI Act's enforcement and implementation with the member states.

Within the same year, on 15 March 2024, the European Parliament and the Council of the EU reached a political **agreement on the European Health Data Space (EHDS)**, a key component of a strong European Health Union. The new rules will grant citizens immediate and easy access to their digital health data from anywhere in the EU. Additionally, health professionals will be able to access a patient's medical records for treatment purposes in any Member State, enabling evidence-based decision-making while fully complying with EU data protection rules. The EHDS also establishes a robust legal framework for the re-use of health data in research, innovation, and public health initiatives. On January 21, 2025, the European Council adopted the EHDS, and the regulation will now be formally signed by the Council and the European Parliament. It will take effect 20 days after its publication in the EU's Official Journal.

Finally, on 23 October 2024 the European Parliament adopted resolution calls on the European Commission to complete an **impact assessment and propose changes** to the Medical Devices Regulation (**MDR** (EU) 2017/745) and In Vitro Diagnostic Medical Devices Regulation (**IVDR** (EU) 2017/746), two crucial regulations that govern the safety and performance of medical devices and in vitro diagnostic devices in the EU. These regulations took full effect in May 2021 and May 2022. While comprehensive, they have significantly altered the regulatory landscape, posing challenges for some stakeholders due to the complexity of the new rules and the operational impact of the transition. As a response, the EC opened a consultation to stakeholders on December 12, 2024, providing them with the opportunity to submit responses until March 21, 2025 – **interested parties can contribute to the consultation online.**

Building upon past accomplishments, **in 2024, EAMBES persisted with strategic initiatives and a range of activities designed to bridge the gap between cutting-edge research and impactful policy, ensuring that the biomedical engineering community plays a vital role in shaping the future of healthcare within the evolving European landscape**. From fostering relationships with newly elected MEPs to contributing to crucial discussions on data governance and medical device regulations, EAMBES has solidified its position as a key stakeholder in the European health ecosystem.

- In response to the June 2024 European Elections and the formation of the new Parliament, the **EAMBES Public Affairs Working Group (PAWG)** strategically developed new relationships with newly elected MEPs to advance its advocacy goals.
- The **5th European Parliament Interest Group on Biomedical Engineering** (EPIG BME), organized by EAMBES, will be convened on March 25, 2025, in the European Parliament to address the role of biomedical engineering in strengthening Europe's leadership and enhancing the MedTech sector's competitiveness and autonomy.
- The European Parliament responded in writing to the two targeted **parliamentary questions** that were tabled at the initiative of EAMBES: (1) on enhancing gender parity and inclusion and (2) on the European Health Data Space
- EAMBES has been actively engaged in the **Informal Working Group on Capacity Enhancing Innovation (CEI) in the Health Sector**.
- EAMBES established the **Early Career Award** and secured funding from the Computational and Structural Biotechnology Journal for the inaugural award in 2025.
- EAMBES marked **successful progress in the 2nd European project** funded by the European Innovation Council, in which we are participating as a partner.
- As a direct result of our participation in the EIC project, EAMBES is proud to announce a new platform that allows **EAMBES Fellows to offer advance mentoring services** to support research and innovation in Europe.
- EAMBES received invitations to participate in **more compelling EU proposals**. We believe that EAMEBS has a unique position in supporting EU Projects' dissemination and exploitation at the highest-level fostering dialogue among scientists and policymakers.
- EAMBES elected the new **Class 2024 of 7 Fellows** and **Class 2025 of 7 Fellows**.
- EAMBES welcomed **1 new member.**
- IFMBE/EAMBES **Conferences** held and planned:
    - **EMBEC2024**, Ljubljana, Slovenia, 9-13 June 2024.
    - **NBC 2025** & PCBBE 2025, Warsaw, Poland, 16-18 June 2025.
    - **WC 2025**, Adelaide, Australia, 29 September – 4 October 2025.
- EAMBES supported **11 scientific events.**

More details are reported below. Stay tuned for a continuous feed of updates!

EAMBES European Parliament Outreach and Event

The 2024 European Parliament elections resulted in a significant turnover of Members of the European Parliament (MEPs), necessitating a strategic realignment for EAMBES's advocacy efforts. The departure of previous MEP collaborators required EAMBES to proactively identify and engage with newly elected officials. This involved initiating outreach activities to introduce EAMBES's mission, establish new relationships, and foster collaborations to ensure the organization's continued effective voice in European policy making.

The **5th European Parliament Interest Group on Biomedical Engineering** (EPIG BME), organized by EAMBES, will be convened on March 25, 2025, in the European Parliament to address the role of biomedical engineering in strengthening Europe's leadership and enhancing the MedTech sector's competitiveness and autonomy. The event will be hosted by MEP Nicolás González Casares (S&D, Spain) and co-hosted by MEP Laurent Castillo (EPP, France).

We thank the EAMBES Policy Affairs Working Group (PAWG) for the extraordinary work they have done since 2016, when the EPIG was established, and encourage more EAMBES members to get involved in those activities.

Parliamentary Questions

During 2023 and early 2024, EAMBES has developed targeted Parliamentary Questions; two of them were tabled by MEPs R. Maxova, E. Stavrou, S. Kympouropoulos, and L. Fourlas and subsequently answered in writing by the European Commission:

PQ1. **On enhancing gender parity and inclusion:** The need to upgrade measures to ensure greater gender parity and inclusion in STEM fields[1]

European Commission's response summary (24.05.2024):

[1] https://www.europarl.europa.eu/doceo/document/E-9-2024-000838_EN.html

The European Commission is actively promoting gender equality in STEM through policy, funding, and monitoring. Key initiatives include:

- Strengthening gender equality provisions in Horizon Europe, requiring **Gender Equality Plans for eligibility**.
- Supporting projects like **STREAM IT** and **Women TechEU** to empower women and diverse groups in STEM.
- Addressing gender equality and diversity in research careers through the **Council Recommendation on talent in Europe**.
- Acknowledging and accommodating **career breaks** in funding programs like Marie Skłodowska-Curie Actions and the European Research Council.

PQ2. **European Health Data Space**: The need to ensure access to data for researchers in the European Health Data Space[2]

European Commission's response summary (23.04.2024):

- The European Commission is finalizing the legislative process for the European Health Data Space (EHDS) proposal, focusing on interoperability and data sharing. To this end, **44 new projects funded by the EU4Health Programme will support the rollout of EHDS-related infrastructures, such as MyHealth@EU and Health Data Access Bodies (HDABs).**
- Despite the General Data Protection Regulation (GDPR) providing consistent data protection rules, national laws for processing special categories like health data may cause fragmentation. Henceforth, the Commission is **preparing the second report on the application of the GDPR, where it will take stock of the implementation, including the level of fragmentation.**
- EHDS will establish clear rules for data holders' obligations, balancing privacy and security through measures like HDABs.
- European Research Infrastructure Consortia (ERICs) and European Digital Infrastructure Consortia (EDICs) are encouraged to participate, **facilitated by the EHDS Board to foster collaboration with the research community**.

Capacity Enhancing Innovation (CEI) in the Health Sector

EAMBES is one of the founding members of the informal Working Group on Capacity Enhancing Innovation in the Health Sector. Other participants in the group include The European Patient Safety Foundation (EUPSF), the European Health Management Association (EHMA), the European Union of Private Hospitals (UEPH), The European Specialist Nurses Organization (ESNO, Philips, MedTech Europe AI Working Group, Edwads Lifesciences, and RPP Group as coordinators.

The kick-off meeting of the CEI Working Group was held online on 29 March, 2024 with the participation of EAMBES officers. Major **calls for action** include:

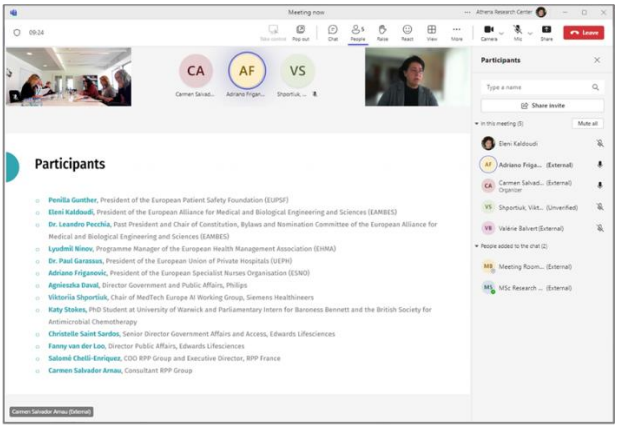
- develop a comprehensive healthcare workforce strategy, integrating health technology innovation as a solution,

[2] https://www.europarl.europa.eu/doceo/document/E-9-2024-000309_EN.html

- mobilize public funding and public-private partnerships,
- establish EU registries for efficiency scores, and
- advance regulatory, health technology assessment and funding systems for health technologies.

The CEI Working Group sustained its momentum through regular meetings and active communication. Looking ahead to 2025, the work plan is structured around three **core priorities**:

- profile the healthcare workforce crisis,
- establish relationships with key decision-makers, and
- raise the profile of the CEI Working Group.



CEI Working Group website: https://ceihealthworkforce.eu/

CEI Working Group LinkedIn: https://www.linkedin.com/company/cei-working-group/

EAMBES Early Career Award

Navigating the challenges of biomedical engineering as a young researcher requires resilience, perseverance, and a commitment to personal and professional growth. In 2024, EAMBES established an **Early Career Award** to recognize and support promising biomedical engineers in their first professional steps by highlighting outstanding contributions, promoting research excellence, and fostering community engagement. Eligible candidates, including Assistant Professors, Junior Researchers, and Postdoctoral Researchers, will be evaluated based on their CV and paper submissions, with a focus on originality, argument quality, and writing style. The award, consisting of a monetary prize between 1,000-3,000 euros, will be presented at an EAMBES-endorsed international conference in Europe. Industry sponsorship is encouraged, offering benefits such as brand visibility and recognition. The selection process will involve a committee of experts, and the award will be promoted through EAMBES's social networks.

EAMBES secured **funding from the Computational and Structural Biotechnology Journal** for the **inaugural award in 2025**.

EU Projects

EMBEic

Title	EMBEic EMBE Innovation Consortium
Programme	European Innovation Council Ecosystems Partnerships and Co-Investment Support Programme
Duration	2023-2027
EAMBES role	Consortium partner
Status	Ongoing
Summary	The EMBE Innovation Consortium (EMBEic) is based on Medtech4Health. Medtech4Health (MT4H) (www.medtech4health.se) is a Swedish national strategic innovation program (SIP) financed since 2016 by the Swedish government through Vinnova (www.vinnova.se). Internationalization is central for sustainable success of biomedical innovation projects. MT4H has in Sweden successfully financed and guided more than 100 BME projects and companies on the path to business establishment on the healthcare market. The aim is to use the Swedish experiences and expand the methodology and developed unique activities for the health care sector, to guide and help European innovators and ventures to accelerate the process of internationalization. In the first step, a matchmaking service engine will be built by MT4H. One target group for expertise matchmaking is EAMBES Fellows, who may have good access e.g. to specific laboratories.
Progress	The core of the EMBEic is the EAMBES network of Fellows, consisting of well renowned experts in most of the existing BME fields. The project established web service that allows the matching of selected EIC projects (Beneficiaries) with relevant Fellows based on their knowledge of expertise. The **EAMBES Fellows – Competence Amplification for Innovation** service is accessible online and supports different mentoring packages.

CryoStore

Title	Innovation in Germplasm Cryopreservation for Improved Animal Breeding and the Conservation of Europe's Livestock Biodiversity
Programme	Marie Skłodowska-Curie Actions, under grant agreement No 101120454
Duration	2023-2027
EAMBES role	Associated partner
Status	Ongoing
Summary	CryoStore Doctoral Network aims to provide high-level training in the fields of cryobiology, reproduction/animal breeding and animal conservation to a new generation of high achieving early-stage researchers to provide them with the scientific and transferable skills necessary for thriving careers.

EU Proposals

EAMBES has actively participated as a full consortium member in several Horizon Europe proposal submissions. While funding was not yet secured, these experiences have been invaluable in refining our fundraising strategies and strengthening our prospects for future success.

Currently one proposal with EAMBES as a full partner is in the reserve list: SmartDRx, under HORIZON-WIDERA-2023-ACCESS-07-01.

Collaborations

EAMBES is an active member of **Health First Europe (HFE)**. HFE is a non-profit, non-commercial alliance of patients, healthcare workers, academics, healthcare experts and the medical technology industry. HFE is joining forces to transform health care through innovative solutions. http://healthfirsteurope.eu/.

Fellows

The current Fellows committee consists of Prof. Panicos Kyriakou (Chair), Prof Jari Hyttinen, Prof Karin Wardell, Prof Olof Lindahl, and Prof Marios Pattichis.

EAMBES Fellows elected the **Class of 2024** of 7 new Fellows:

- Andreas Demosthenous, University College London, UK
- Bart Vanrumste, KU Leuven, BE
- Christakis Damianou, Cyprus University of Technology, CY
- Christian Vergara, Politecnico di Milano, IT
- Eugenio Guglielmelli, Università Campus Bio-Medico di Roma, IT
- George Matsopoulos, National Technical University of Athens, GR
- Luca Faes, L'Università degli Studi di Palermo, IT

and the **Class of 2025**, who will be presented in the Fellows Seminar in March 2025:

- Leena Ukkonen, Tampere University, FI
- Simo Saarakkala, University of Oulu, FI
- Michalis Zervakis, Technical University of Crete, GR
- Despina Moschou, University of Bath, UK
- Richard Bayford, Middlesex University, UK
- Luca Dede, Politecnico di Milano, IT
- Ratko Magjarevic, University of Zagreb, HR

Members

EAMBES currently has a total of 67 members.

In 2024, EAMBES welcomed one new member: University of Sienna, Italy.

Conferences

IFMBE/EAMBES conferences in 2024-2025:

- **EMBEC2024**, in Ljubljana, Slovenia, 9-13 June 2024. https://www.embec2024.org/
- **NBC 2025** & PCBBE 2025 – 20th Nordic-Baltic Conference of Biomedical Engineering held jointly with the Polish Conference on Biocybernetics and Biomedical Engineering June 16 - 18, Warsaw, Poland https://nbc2025.ibib.waw.pl/
- **IUPESM WC 2025:** World Congress on Medical Physics & Biomedical Engineering, Adelaide, Australia, 29 September – 4 October 2025 https://wc2025.org/

Events Sponsored by EAMBES

- CMBEBIH 2025: International Conference on Medical and Biological Engineering, Sarajevo, Bosnia and Herzegovina, 11-13 September 2025.
- BMT 2025: Joint Conference of the Swiss (SSBE), Austrian (ÖGBMT) and German (VDE DGBMT) Societies for Biomedical Engineering, Basel, Switzerland, 9-11 September 2025.
- NBC 2025 & PCBBE 2025, Joint 20th Nordic-Baltic Conference on Biomedical Engineering and the 24th Polish Conference on Biocybernetics and Biomedical Engineering, Warsaw Poland, 16-18 June 2025.
- 11th Panhellenic Conference on Biomedical Technology, Athens, Greece, 21-23 May 2025.
- BIOSTEC 2025: 18th International Joint Conference on Biomedical Engineering Systems and Technologies, Porto, Portugal, 20-22 February 2025
- Bootcamp 2024: IoT and AI for Frugal Innovation, 6th edition, Jesus College Cambridge, UK, 26 Aug to 13 Sep 2024.
- Nordic Conference on Digital Health and Wireless Solutions, University of Oulu, Finland, 7-8 May 2024.
- Change the Bias in Biomedical Engineering Ed. 2024, part of the Change in Cardiology Conference Torino, 11-12 April 2024.
- BIOSTEC 2024: 17th International Joint Conference on Biomedical Engineering Systems and Technologies, Rome, Italy, 21-23 February 2024

Looking ahead

Building upon the momentum of a year marked by a new European Parliament mandate, significant regulatory advancements and the dawn of AI-driven innovation, EAMBES remains committed to positioning biomedical engineering at the heart of European healthcare transformation.

The groundbreaking AI Act, the pivotal European Health Data Space, and the ongoing efforts to refine medical device regulations underscore the EU's dedication to fostering a robust and ethical environment for technological advancement.

As we look ahead, **EAMBES will continue to champion the bioengineering sector**, advocating for policies that not only support innovation but also ensure the responsible and sustainable integration of cutting-edge technologies into healthcare. We recognize the critical importance of standardized practices, clear regulations, and consistent funding in translating research breakthroughs into tangible patient benefits. Moreover, we echo the call for the biomedical engineering community to prioritize environmental sustainability, mirroring the UN Sustainable Development Goals, and to contribute to the creation of environmentally responsible healthcare solutions.

With the continued dedication of our proactive Working Groups, Council, Executive Board, Administrators, members, and partners, EAMBES is poised to drive forward collaborative efforts that enhance health and well-being for all, ensuring that Europe remains a global leader in biomedical engineering and science.

We look forward to another year of strengthened partnerships and collective achievements, advancing biomedical engineering and science to deliver transformative improvements in health and well-being for all.

Eleni Kaldoudi, President

Leandro Pecchia, Past President

WHAT IS EAMBES?

European Alliance for Medical and Biological Engineering & Science

A non-profit scientific society to promote Biomedical Engineering (BME) and Medical and Biological Engineering and Sciences (MBES) in Europe.

Members are eminent scholars (EAMBES Fellows), National and international scientific societies, hospitals, universities or research institutions across Europe. Today, EAMBES counts 28 national & transnational societies and 37 academic and research institutions, and through them, thousands of biomedical engineers and scientists working in research and higher education or in hospitals (i.e., clinical engineers) in Europe. EAMBES is also affiliated to the International Federation of Medical and Biological Engineering (IFMBE), which is member of the International Union for Physical and Engineering Sciences in Medicine (IUPESM). EU BME societies represent the half of IFMBE members circa, and therefore the half of global BME and MBES community. This is a great honour, but also a great responsibility. Yet, we feel that we can do more to support global health and wellbeing. In fact, IFMBE is an NGO in official relations with the UN WHO, while the IUPESM is a member of the International Council of Science (ICS), which is the UN UNESCO umbrella organization fostering sciences. Many EAMBES members have been serving the UN, as independent consultants, or via IFMBE Divisions and working groups[3].

EAMBES VISION

Medical and biological engineering and science are major enablers of modern medicine, which has made its main advancements in the past decades mainly because of the main output of BME.

Our community has direct impact on quality of life, safety and cost-effectiveness of healthcare services, with our effort in research, innovation, assessment, procurement and management of biomedical engineering main products, which are biotechnologies and medical technologies (MedTech) such as medical devices, personal protective equipment and digital health.

[3] Further details on BME and UN collaboration (WHO and ILO), can be found at: https://www.sciencedirect.com/science/article/pii/S135045331930164X