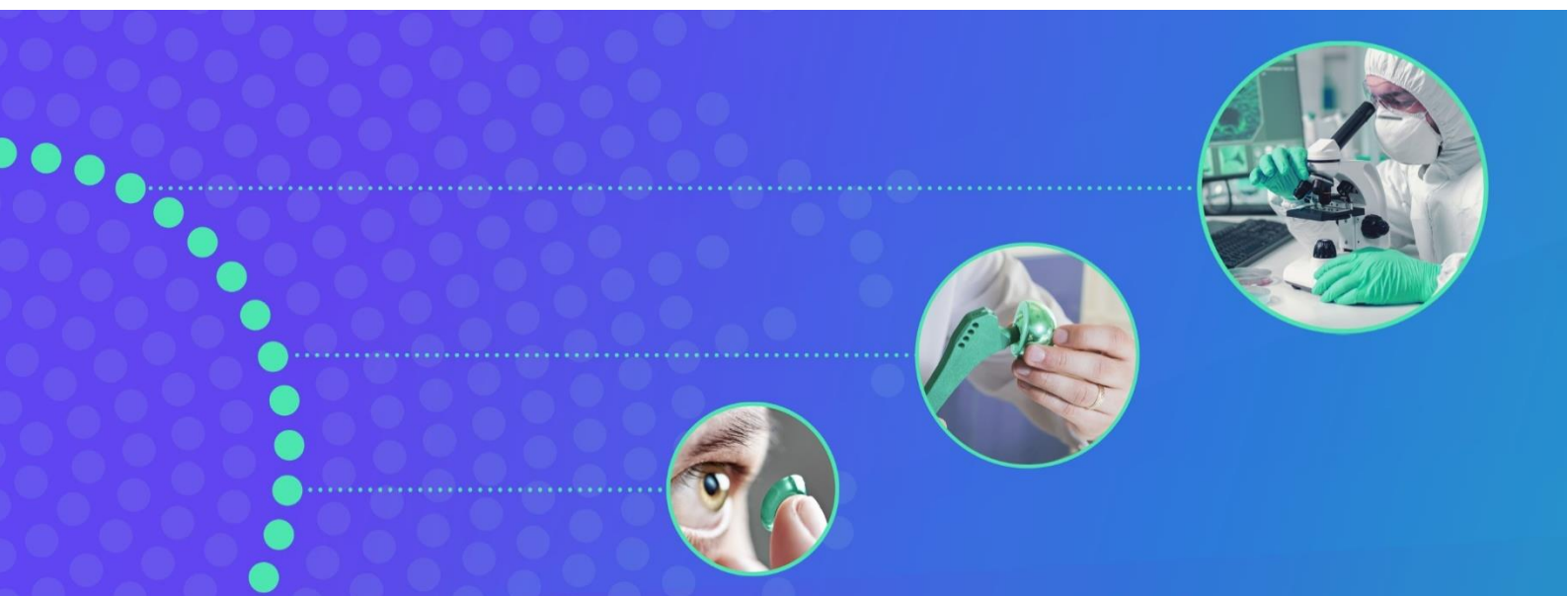




BIOMATDB

ADVANCED DATABASE FOR BIOMATERIALS WITH DATA ANALYSIS AND
VISUALISATION TOOLS EXTENDED BY A MARKETPLACE WITH DIGITAL ADVISORS

Grant Agreement: 101058779

D2.4 Updated stakeholder survey



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Document history

Version	Date	Beneficiary	Description
0.1	16.05.2024	M&S	Initial version of the deliverable and structure
0.2	20.05.2024	UPC	Collection of Results and Drafting Interview feedback
0.3	24.05.2024	UIO	Drafting Survey feedback
0.4	29.05.2024	UIO	Finalized report
0.5	30.05.2024	NUIG	Reviewed and approved
1.0	31.05.2024	SYNYO	Submitted

Executive Summary

This report, titled the "D2.4 Stakeholder Survey," presents the outcomes of Task 2.4. The aim was to engage stakeholder groups more effectively by using our improved understanding of their interests and incorporating insight into the current design and envisaged capacities of the two webtools. Thus, we gathered input on the requirements for the BIOMATDB database and marketplace through quantitative surveys and qualitative interviews.

The report outlines the survey objectives and methodological approach, including the identification of targeted stakeholders, contact strategy, distribution channels, and questionnaire design. The survey results were analyzed and interpreted across two main areas of interest: participants' workflows and use cases for the database and marketplace. The second section of the deliverable covers qualitative interviews, following the same structure as in the first section. It includes descriptions of the methodology and the analysis of the results.

The deliverable concludes with a summary of the core findings and their implications on the design of the database and marketplace, providing a foundation for the development of the BIOMATDB web solutions.

By incorporating these insights and feedback, we aim to ensure that the BIOMATDB database and marketplace are tailored to meet the needs of potential end users, maximizing the overall effectiveness and relevance of the project's technical solutions.

Contents

Executive Summary	5
1 Introduction.....	9
1.1 Overview.....	9
1.2 Relation to other tasks and deliverables.....	10
1.3 Structure of the deliverable	11
2 Online Surveys (Quantitative research)	12
2.1 Aim	12
2.2 Analysis and Results	16
3 Interviews (Qualitative research)	23
3.1 Aim	23
3.2 Methodological Approach	23
3.3 Analysis and Results	24
3.4 Discussion	24
4 Core Findings and Implications	26
4.1 Challenges identified	26
5 Conclusions.....	28
References.....	29
Annex.....	30
Database Survey Questionnaire	30
Marketplace Survey Questionnaire.....	35

Figures

Figure 1. The main steps of the human-centered design approach. Adapted from ISO, 2010 [1]	9
Figure 2. Screenshot from the project website promotion banner with direct links to the surveys....	12
Figure 3. Cover page of the database survey (displayed when clicking the survey link)	13
Figure 4. Screenshot from the EATRIS Facebook account promoting the survey.....	14
Figure 5. Demographics related questions: Database (left) and Marketplace (right)	15
Figure 6. Biocompatibility related questions: Database (top) and Marketplace (bottom).....	16

Tables

Table 1. D2.4 Input from other tasks and deliverables	10
Table 2. D2.4 Output for other tasks and deliverables	10

Acronyms & Abbreviations

Term	Description
ATMP	Advanced Therapy Medical Product
D	Deliverable
KPIs	Key Performance Indicators
M	Month
PhD	Doctor in Philosophy
PI	Principal Investigator
R&D	Research & Development
SMEs	Small and Medium Enterprises
T	Task
WP	Work Package

1.1.1 Target Groups

As previously described (in D2.2), to maximize usefulness and usability of the input in the design of the webtools, the consortium has identified the five different stakeholder groups who are potential future users of the two core applications. Thus, the needs and requirements of the following groups were considered:

- **Demanders** (medical & hospital organizations, health professionals, medical procurers, patients)
- **Investors/policy makers** (governmental & regulatory authorities, public bodies, investors)
- **Researchers** (academia, research institutions, scientific communities)
- **Enablers** (societies, associations, networks, foundations)
- **Suppliers** (SMEs, start-ups, industry)

1.2 Relation to other tasks and deliverables

This deliverable is related to the following other BIOMATDB tasks and deliverables:

Receives inputs from:

Table 1. D2.4 Input from other tasks and deliverables

Deliverable	Due Date	Input for D2.4
D1.1	31.07.2022	Workshop session about stakeholders and categorization
D2.1	31.01.2023	Knowledge and stakeholder collection
D6.2	31.10.2022	Definition of relevant target groups
D2.5	30.09.2024	Biomaterials landscape and stakeholder collection
D2.3	31.1.2023	Meta use cases and requirements
D2.4	31.5.2024	Updated stakeholder surveys and interviews
D3.1	28.2.2023	Advanced biomaterial database, data tools, marketplace and digital advisors' concept

Provides outputs to:

Table 2. D2.4 Output for other tasks and deliverables

Deliverable	Due Date	Output from D2.4
D4.3	31.08.2024	Database and marketplace application frontend and backend (Phase 2)
D4.4	31.10.2024	Data integration, content creation and label integration report
D4.5	31.10.2024	Online knowledge base (KB) with manuals, FAQ, and screencast video tutorials

1.3 Structure of the deliverable

In the first section, following a short introduction, an overview of the relation of the delivered report to current tasks and previous deliverables is provided. The aims, objectives and methodological approach of the quantitative analysis of the online surveys, including the identification of targeted stakeholders, contact strategy, distribution channels, and questionnaire design, are presented. The second section covers the targeted interviews, that were used as a proxy of qualitative information gathering, and follows the same structure, including descriptions of the methodology and the analysis of the results. The deliverable concludes with a summary of the core findings and their implications for the design of the database and marketplace, providing a foundation for the development of the BIOMATDB web solutions.

2 Online Surveys (Quantitative research)

2.1 Aim

The goal of the second iteration of the quantitative surveys was to gather insights from potential future users regarding their requirements for the upcoming design and development of the web tools. To collect as much information as possible, a wide range of stakeholders was contacted and invited to participate in online surveys. The insights gathered will be utilized to design and fine-tune the frontends as well as to guide the overall development of the project's technical solutions. This approach ensures that both the database and marketplace are tailored to the needs of their potential end users.

The second iteration of the surveys was carefully designed, considering the stakeholder groups that were underrepresented in previous surveys. Survey preparation and final query shortlisting were led by UIO and UPC, whereas input was gathered from all partners, who also helped distribute the surveys to ensure broad participation.

2.1.1 Recruitment Strategy

To facilitate and maximize the distribution of surveys by the partners, templates were created for email, social media messages and posts. These included key information about the project, the survey link, and the reason for contacting the recipient. Additionally, dedicated resources such as the project website and social media channels were linked to provide interested individuals with more information about the project and its objectives.

In addition, as the response ratio for people identifying as male was higher than for participants identifying as female previously, the consortium efforts focused in favour of females -or other- in this iteration for a more balanced audience reach-out approach.

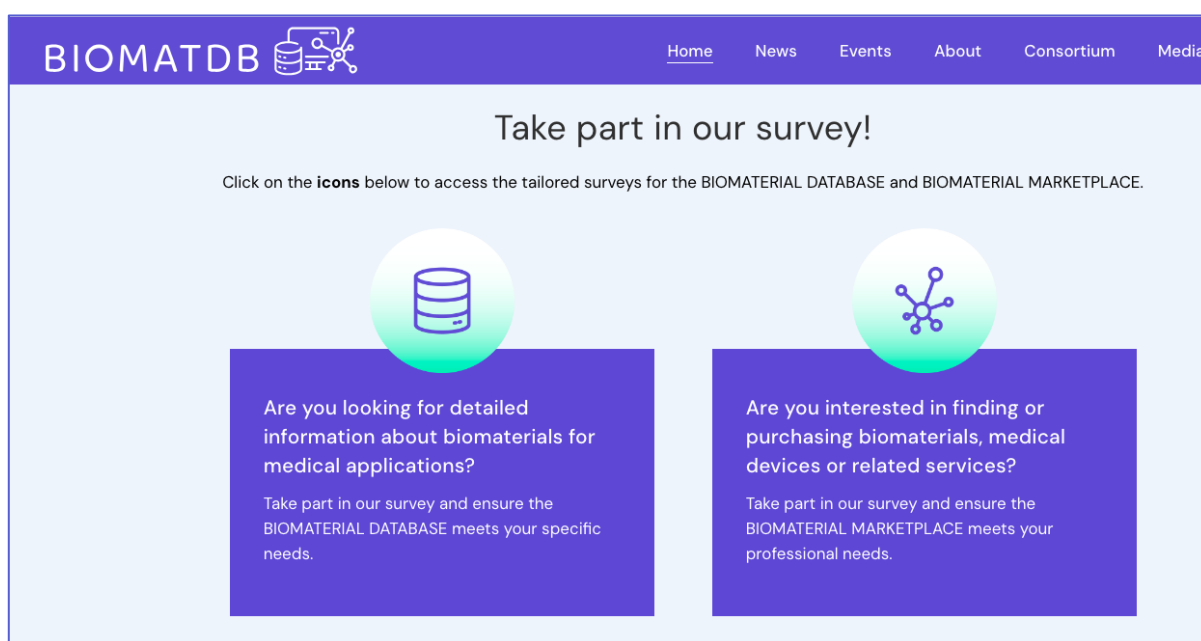


Figure 2. Screenshot from the project website promotion banner with direct links to the surveys

When participants opened the survey link, they were presented with the most important information about the project, the funding body, and the reasons for their participation. It was emphasized that their participation was crucial being potential end users of the developed biomaterials database and marketplace, as their answers could exemplify current tool limitations and research or market needs, with a focus on the specific role of their target group.

Contribution ID: 7f196a3d-5973-41da-85c2-6d475e9a1360
Date: 30/05/2024 12:08:18



BIOMATDB Database Survey 2024

Fields marked with * are mandatory.

Introduction

Thank you for agreeing to take part in this survey. It is planned to take less than 15 mins to complete.



BIOMATDB: Advanced Database for Biomaterials with Data Analysis and Visualisation Tools extended by a Marketplace with Digital Advisors

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Participant Information

The BIOMATDB project aims to create an advanced, web-based biomaterial database, providing insights into the properties of biomaterials, as well as flexible data analysis and visualisation tools. Furthermore, the project will also establish a web-optimised marketplace to assist companies, especially SMEs, in facilitating market access for their products. To support companies even further, BIOMATDB will create a label of biocompatibility that reflects biomaterial quality standards for application in a medical device or advanced therapy. More information can be found at www.biomatdb.eu.

You are invited to take part in this survey carried out as part of the Horizon Europe funded BIOMATDB project. This survey is part of Task 2.2 which informs Deliverable 2.4 'Updated stakeholder survey' of the BIOMATDB project. The design and the analysis of the questionnaire will be carried out by the task leader Universitat Politècnica de Catalunya (Spain) in collaboration with the coordinator of the BIOMATDB project

Figure 3. Cover page of the database survey (displayed when clicking the survey link)

Moreover, UIO further facilitated survey communication through dedicated biomaterial experts' channels, such as the Scandinavian Society for Biomaterials and EATRIS, further extending the reach and impact of the survey distribution efforts.

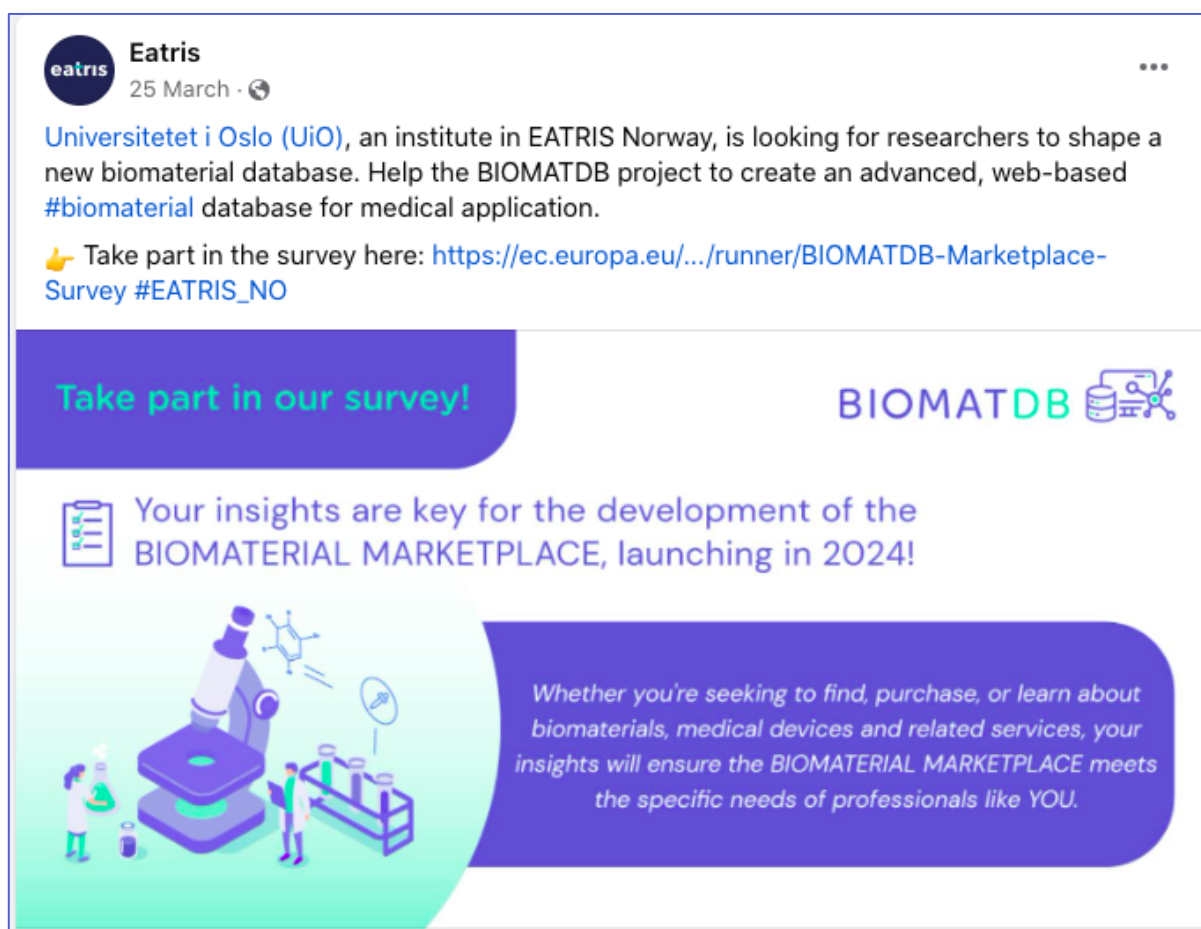


Figure 4. Screenshot from the EATRIS Facebook account promoting the survey.

2.1.2 Design and Questions

The online surveys were developed using a unified core approach, but targeting via the different questions, the different audiences of the biomaterials database and marketplace tools. The survey questions were created and validated via a collaborative approach and multiple iterations, brainstorming towards the final version.

In brief the EUSurvey tool was utilized by UPC for the creation, distribution and collection of the results of the surveys. EUSurvey is the European Commission's official survey management tool and can be accessed via <https://ec.europa.eu/eusurvey>. The surveys had been previously vented by the UIO department of education for language, length and content, to maximize user participation.

In brief, a front page briefly described the project, and its objectives were outlined in order to explain the purpose and importance of the survey, while the second page collected demographics. The first two questions were shared among the two surveys. Participating in the database survey and identifying as researcher opened a third question, where researchers -which were the main responders of the previous iteration- could define whether they are based in industry, university or other kind of institution. Participants in the marketplace survey were also asked to indicate the purpose they would use a biomaterials and medical devices marketplace, and whether that would align more with products or services. At that stage they had the option to declare their interest to list/present their company, products, or services on the marketplace.

Figure 5. Demographics related questions: Database (left) and Marketplace (right)

The main part of the survey included questions, designed in the format of a Likert scale. Thus, participants were asked to indicate their rating of a range of statements on a scale from “1 – less relevant” to “5 – most relevant”, allowing for a ranking of the most important entities and aspects that need to be considered for the development of the BIOMATDB biomaterials database and marketplace.

The surveys remain available online and will be monitored for feedback in the future at set time intervals. Notably participation in the first survey iteration, already in 2023, had surpassed the KPIs for surveys and interviews (50 in total) for all stakeholder groups. Policy makers and high-end pharma companies were not as eager to participate in these surveys. The consortium has made great efforts to contact high end investors and relevant policy makers with low success, as previously reported, and we will further describe this challenge at a later stage, and as advised at “feedback to policy”. Survey questions are also available in the Annex of this report.

Of note, the concepts of biocompatibility and the biocompatibility label were among the questions but phrased differently in both surveys. The answers remain pivotal to the project. In addition, the marketplace survey participants were asked at the end of the survey for their opinion on limitations of current marketplaces in an open-ended format for greater answer flexibility.

15 How could biocompatibility data and adverse effects be showcased in the biomaterials database?
Between 1 and 2 selections

- ☐ Regulatory aspect: listing of safety and quality standard of biomaterials
- ☐ Development context: assessment level and stage of development
- ☐ Clinical insight: patient demographics and adverse effects for clinical studies
- ☐ Database capabilities: comparisons/visual representation of similar studies
- ☐ Other
- ☐ The question does not apply to me

Previous

Next

*** 19 Label of Biocompatibility**

On the BIOMATERIAL MARKETPLACE, the biocompatibility of a product will be indicated by a "Label of Biocompatibility".

What information concerning biomaterial products or medical devices would you like to have visually displayed on the "Label of Biocompatibility"?

- ☐ The development phase in which the product is currently in (Pre-clinical, Phase 1, Phase 2, Phase 3, Approved)
- ☐ The regulatory bodies that have approved the product for human use.
- ☐ The testing methods that the product has been tested in (In vitro, Ex vivo, In vivo,...)
- ☐ The standards that the product fulfills (e.g., ISO 10993, ...)
- ☐ Other

*** 21 What functionalities or features do you often find lacking in other biomaterial or medical device marketplaces?**

22 Would you like to share any additional comments or suggestions? Please feel free to use the field below.

Previous

Next

Figure 6. Biocompatibility related questions: Database (top) and Marketplace (bottom)

2.2 Analysis and Results

2.2.1 Analysis Method

The questions related to characterizing stakeholder groups were analyzed by quantifying responses per single or compound option, with results presented as units (for transparency) or percentages. We analyzed the suggestions or requirements as rated by the participants, similarly.

2.2.2 Database Survey Results

We analyzed the data from 81 participants. There were 44 vs 35 responses from participants that identified as female vs male, and 2 that preferred not to disclose their gender. Of the 81, 2 were policy makers in the field of biomaterials for medical devices, 6 suppliers of biomaterials, medical devices or related services, 6 purchasers of biomaterials, medical devices or related services, 5 that opted for 'other' (and identified as an employee at a regulatory authority, an employee of a notified body, a manufacturer and 2 students), 2 members of a biomaterial or medical devices society or network, 1 Investor in the field of biomaterials or medical devices, whereas in total 59 consider themselves as researchers. Of the 59, 43 only opted to identify as researchers whereas others defined themselves with a composite title, with 8 for example being researcher/member of a biomaterial or medical devices society, a purchaser/supplier, a supplier/society member, and other combinations. This only

showcases how the roles of biomaterial researchers interwind, how relevant these tools are for researchers and how marketplace users might be identifying themselves as researchers/suppliers.

44 of 81 participants that answered regarding their affiliation, declared that are based at a secondary or higher education establishment (e.g., University), 6/81 at a company, and 17 at a research organization. As previously, some of them had a double affiliation or compound description of their role.

67 of 81 search for data about biomaterials or related products for the purpose of research & development. Among single-hit and compound answers, 27 search for data for regulatory documentation & patient safety, 23 for product improvement & trends 22 for educational purposes, 17 for clinical trial design and monitoring, 12 to identify collaboration opportunities, whereas 2 have not answered.

72/81 seek insight in published research papers, whereas 42 currently get informed on biomaterials or related products from conferences and exhibitions, 37 look for information on manufacturer catalogues/specifications, 31 would also consult with colleagues / peers for recommendations, 17 would rely on established suppliers 16 would inquire patent databases, 8 would perform extensive research during procurement process 6 would also be guided by historical preferences and existing contracts.

51/81 ranked as important the lack of standardised data, 45/81 the difficulty comparing different biomaterials, 35/81 mentioned insufficient data on long-term performance, 31/81 admitted lack of awareness about available databases, 24/81 ranked important the difficulty comparing different biomaterials, 22/81 chose the insufficient detail in available databases, whereas 12/81 reported the current user-unfriendly interfaces.

Regarding most important features available in a database, 57/81 would like to access linked toxicological and clinical performance data from different sources, 44/81 would like to see medical applications of a biomaterial on the market or in clinics, 36/81 rank as important the display of quality assurance and regulatory compliance data, 35/81 would like the option of historical tracking and surveillance of a biomaterial or biomaterial-related product, 28/81 Inclusion of raw data (when available), 16/81 chose the feature of automatic clustering by shared features, 14/81 would be interested in ranking candidates by similarities, 10/81 were interested in the inclusion of patents, and 4 considered the question was not applicable to them (N/A).

As far as the data visualisation tools that would be most useful when analysing biomaterials information, 53/81 participants would like the output as a list of documents with publication or DOI links, 41/81 would like a PDF report, 40/81 would appreciate statistical analysis, 29/81 chose excel/CSV download options, 25/81 were interested in comparative bar charts, 22 of 81 chose the interactive dashboard option, 13 of the 81 like among others the heat maps and network graphs, and 14/81 would go for tree charts, respectively, whereas 6 did not find the question applicable to them (N/A).

When asked for the search criteria they would like to use when searching information for biomaterial-related research, 54/81 would like to be able to do a medical application-based search but only 18/81 would go for a medical product-based search, 48/81 opted for free text search, 47 would aim for evaluation state (in vitro, in vivo, clinical, etc.)-based search, 43 for chemical composition-based search but only 27 for a material processing-based search, 30 for an experimental method-based search, 25

for regulatory compliance-based search, only 14 chose an adverse effect-based search, and only 5 were interested in the option of time period-based search; 5 did not find the question applicable to them (N/A).

Of the customisable features that would increase the usability of the database, 62/81 chose the feature that would allow comparing data from different studies between them, 52 participants chose the save and search options, however, only 13 thought that individual user profiles would enhance usability and only 8 suggested sharing space among users, 40 suggested the level of details and information, only 8 considered updates (notifications) as a means to increase usability and 4 did not express an opinion (N/A).

Finally, when asked how biocompatibility data and adverse effects should be showcased in the biomaterials database, 59 suggested the regulatory aspect and the listing of safety and quality standard of biomaterials, 30 would like information on the development context, that is the assessment level and stage of development, 28 of providing patient demographics and adverse effects for clinical studies and giving clinical insight, and 19 of the database capabilities, ie. the comparisons/visual representation of similar studies. Participants also suggested that all the options were equally important and there was a suggestion of regulatory aspects to include ecotoxicity. (4 participants did not express an opinion (N/A)).

2.2.3 Marketplace Survey Results

We analyzed data from 49 participants. There were 26 vs 20 responses from participants that identified as female vs male, 1 nonbinary and 2 that preferred not to disclose their gender. Of the 49, 29 were researchers on biomaterials or medical devices, 7 suppliers of biomaterials, medical devices or related services, 10 demanders of biomaterials, medical devices or related services, 6 purchasers of biomaterials, medical devices or related services, 4 policy maker in the field of biomaterials for medical devices 5 that opted for 'other' (and identified as an employee at a spin-off, 2 students and 2 lecturers), 4 members of a biomaterial or medical devices society or network, 1 Investor in the field of biomaterials or medical devices. The majority of participants identifying as researchers were affiliated with secondary or higher education establishments, followed by those from research organizations and public bodies.

Regarding the question indicating the purpose for which they would use a marketplace for biomaterials and medical devices, 43 respondents replied that they would like to find or purchase biomaterials, medical devices, or related services. Additionally, 17 stated that they would like to list or present their company, products, or services on the marketplace; 11 indicated that they would like to both find or purchase biomaterials, medical devices, or related services and list or present their company, products, or services on the marketplace.

From the data provided, the participants' purposes for using a marketplace for biomaterials and medical devices, their company size, sales range, and headquarters location are summarized below:

- **Large Companies (>250 employees, numbers of responses: 3):** Purpose: Finding/purchasing and listing/presenting products and services. Sales Range: International (Global Level). Headquarters: Europe.

- **Middle-Sized Companies (50-250 employees, numbers of responses: 2):** Purpose: Finding/purchasing and listing/presenting products and services. Sales Range: International (Global Level). Headquarters: Europe.
- Among **small companies (with fewer than 50 employees)**, there were 13 responses. These companies would use the marketplace both for finding and purchasing products and services, listing and presenting their own products and services, and both finding/purchasing and listing/presenting products and services. The sales range for these companies spans international (global and European levels) and national markets. The headquarters for these small companies are mostly located in Europe (1 declared response from Asia).

When asked to indicate their Product Areas, not all participants responded but those that did chose a wide product range including general biomaterials, tissue engineering, polymers, drug delivery, ceramics, orthopaedic devices or implants, wound healing, medical devices for dentistry, cardiology, ophthalmology, and cosmetic implants. Additionally, services like contract manufacturing, biocompatibility testing, and regulatory consultancy were also denoted. Company responders primarily use direct sales (18/27) and distributors (9/27) to distribute their products; few also utilize wholesalers and other methods such as tenders and online platforms.

The main **revenue streams of the responders** included mainly product sales (both biomaterials and medical devices), service fees (consulting, studies, testing, infrastructure, laboratory services), contract manufacturing services, and funding from research projects and national funding.

When asked how they currently get informed on and evaluate biomaterials for medical applications, responders ranked

- Reading scientific literature and clinical study reports (37)
- Relying on established suppliers of raw biomaterials or medical devices (26)
- Going to Conferences & Exhibitions (22)
- Consulting with colleagues for recommendations (20)
- Being guided by experiences and existing contracts (17)
- Competitive bidding process (1)
- whereas the question was not answered as N/A by 3 responders. Of note, consulting databases that list the properties of biomaterials was only chosen by 7 participants.

Regarding Product Development and Marketing Authorization in the EU:

- 10 companies reported their products have received marketing authorization in the EU.
- The numbers of products with marketing authorization range from 0 to 40 per company.
- The majority (around 8 companies) have between 0 to 4 products authorized.

Regarding Product Development and Products in R&D Phase:

- 14 companies provided data on products still in the R&D phase.
- The number of products in development varies from 0 to 36 per company.
- Most companies (around 9) have between 1 to 5 products in development.

Regarding their Digital Marketplace Presence and the Digital Marketplaces Used:

- Companies are listed on various digital marketplaces, with specific mentions including:
- Qmed+ directory: 1 company

- scientist.com: 1 company
- Medical EXPO: 4 companies
- AMI2030: 1 company
- MedicaEx: 2 companies
- BONEZONE: 1 company
- Other platforms or unspecified: Several companies mentioned using other digital platforms or their own websites, with specific numbers not disclosed.
- Several companies indicated they are not currently listed on any digital marketplaces.

The type of information participants would like to see on the biomaterials' marketplace, their answers ranked as following:

- Material properties (35)
- Biocompatibility data (33)
- Composition of materials (32)
- Product specifications (31)
- Compliance with standards (e.g., ISO 10993) (19)
- Clinical applications (18)
- Testing and quality assurance data (14)
- Phase in the development process (Pre-clinical, Phase I, Phase II, ...) (13)
- Manufacturing techniques (10)
- Type of study (In silico, In vitro, Ex vivo, In vivo) (10)
- Risk classification according to the MDR EU (Class I, IIa, IIb, III) (4)
- Information on the certification of products (4).

When asked about the existing digital marketplaces/portals participants find most useful to procure biomaterials or biomaterial-related products they ranked Medical EXPO first (20), followed by the Qmed+ directory (4), scientist.com (7), BONEZONE (3), Chamfr (2), MedicaEx (1) while among 'others' (22) responders mentioned Afera, Adhesives and Sealants Council and AMI 2030.

Regarding the main obstacles product or service suppliers encounter when trying to reach potential customers for their products or services, the survey also identified

- Competition from larger suppliers (14)
- Regulatory hurdles delaying product introduction (12)
- Difficulty with establishing trust with potential customers (11)
- Difficulty with establishing trust with potential customers (10)
- Targeting the right audience in healthcare (5)
- Brand recognition (5)

Of note, for the visualization of the "Label of Biocompatibility" and relevant information concerning biomaterial products or medical devices, responders would prefer the display to be informative of

- The development phase in which the product is currently in (Pre-clinical, Phase 1, Phase 2, Phase 3, Approved) (33)
- The testing methods that the product has been tested in (In vitro, Ex vivo, In vivo, etc.) (31)
- The standards that the product fulfils (e.g., ISO 10993, etc.) (28)
- The regulatory bodies that have approved the product for human use (26)

- The regulatory bodies that have approved the product for human use (26)

Whereas a third of them would like the Biocompatibility label to contain all the above information.

2.2.4 Database Survey Discussion

We analyzed responses to the database survey from 81 participants, consisting of 44 females, 35 males, and 2 who preferred not to disclose their gender. Key findings are as follows:

Stakeholder Roles:

- 59 respondents identified as researchers, with various overlapping roles.
- Other roles included policymakers (2), suppliers (6), purchasers (6), regulatory authority employees (1), notified body employees (1), manufacturers (1), students (2), society/network members (2), and an investor (1).

Affiliations:

- 44 participants were based at universities or higher education establishments.
- 6 participants were from companies, and 17 from research organizations.
- Some participants had multiple affiliations.

Data Usage:

- 67 participants sought biomaterials data for research and development.
- Other purposes included regulatory documentation (27), product improvement (23), education (22), clinical trial design (17), collaboration opportunities (12).

Information Sources:

- 72 participants used published research papers.
- Other sources included conferences (42), manufacturer catalogs (37), colleagues/peers (31), established suppliers (17), patent databases (16), procurement processes (8), and historical preferences/contracts (6).

Challenges:

Key challenges included lack of standardized data (51), difficulty comparing biomaterials (45), insufficient long-term performance data (35), and lack of awareness of available databases (31).

Database Features:

Important features for the database included linked toxicological and clinical performance data (57), medical applications (44), quality assurance/regulatory compliance data (36), historical tracking (35), and inclusion of raw data (28).

Visualization Tools:

Preferred visualization tools included document lists with publication links (53), PDF reports (41), statistical analysis (40), Excel/CSV downloads (29), and comparative bar charts (25).

Search Criteria:

Preferred search criteria were medical application-based (54), free text (48), evaluation state (47), chemical composition (43), and experimental method-based searches (30).

Customizable Features:

Desired features included data comparison from different studies (62), save and search options (52), and level of detail/information customization (40).

Biocompatibility and Adverse Effects:

Participants suggested showcasing regulatory aspects and safety standards (59), development context (30), patient demographics/adverse effects (28), and database capabilities for comparisons and visual representation (19).

2.2.5 Marketplace Survey Discussion

The analysis of the marketplace survey results included data from 49 participants, with a majority identifying as female. Participants primarily consisted of researchers, suppliers, demanders, purchasers, policymakers, and others affiliated with biomaterials or medical devices. The majority expressed interest in both procuring and presenting products or services on a marketplace, with a focus on international markets, especially in Europe. Product areas varied widely, including biomaterials, tissue engineering, polymers, and medical devices for various specialties.

The participants primarily relied on scientific literature, supplier recommendations, conferences, and colleague consultations for information on biomaterials. In the EU, several companies reported products with marketing authorization, while many were in the R&D phase. Digital marketplace presence varied, with a preference for platforms like Medical EXPO and scientist.com. Desired marketplace information included material properties, biocompatibility data, and product specifications. Obstacles for suppliers included competition, regulatory hurdles, and establishing trust. Participants emphasized the importance of informative labelling for biocompatibility, including development phase, testing methods, standards compliance, and regulatory approvals.

3 Interviews (Qualitative research)

3.1 Aim

The main objective of the qualitative interviews was to deepen the understanding of the requirements of different stakeholder groups. Unlike surveys with predefined answers, the open-ended questions in interviews allowed participants to share detailed insights. This approach enabled the consortium, already a multidisciplinary team of biomaterial experts, to better understand how a biomaterials database and marketplace might be used, what information would be most useful, and identify areas that might not have been considered in survey development. Interviews targeted user groups represented within the consortium, extending outreach to more researchers to focus on database design, whereas suppliers and marketplace enablers were mostly targeted regarding the marketplace tool. Given the aim to collect personal perspectives and specific requirements, fewer interviews were conducted compared to surveys. This allowed for in-depth analysis of each interview, maximizing the value of the insights gained.

3.2 Methodological Approach

3.2.1 Recruitment Strategy

To gather insights from stakeholders of diverse backgrounds, several criteria were established. For suppliers, the focus was on including both SMEs and larger companies, ensuring representation from different countries, and covering various materials (metals, ceramics, polymers, and composites) for different applications. For demanders, it was crucial to interview individuals with specializations in fields such as cardiology, traumatology, dentistry, and others.

Consortium members used their own network contacts through preferred channels (mail, telephone, etc.). Additionally, they reached out to external stakeholders identified in the stakeholder collection process. Before each interview, participants were informed about the project's aim, the reason why they were contacted, and the interview's objective. To ensure interviewees were aware of how their data would be processed and their rights, each participant signed an informed consent form before the interview (the form is included in the Annex).

3.2.2 Design and Questions

In contrast to the survey questions, the questions in the qualitative interviews were open-ended, allowing participants to freely provide and elaborate on their answers. This approach enabled the interviews to dive in and gather more personal perspectives, and requirements than is possible in a quantitative survey targeting a larger group.

The interview questions were drafted and finalized by UPC. The ten interview questions covered five key aspects needed to identify the requirements of end users:

Background and Familiarity: Questions 1 and 2 aimed to determine the background and familiarity of the interviewees with the biomaterials field and the types of biomaterial-related products they typically work with.

Information Needs: Questions 3 and 4 focused on identifying the type of information the interviewees needed about their final product and the purposes for which they sought this information.

Current sources and Limitations: Questions 5, 6, and 7 aimed to identify the main types of documents and sources the interviewees used to find this information, as well as the primary limitations they encountered.

Biomaterial Composition related questions: Questions 8 and 9 sought to identify the specific information about the users needed related to biomaterial composition and the challenges they faced in obtaining it.

Optimal Tools and Functionalities: Question 10 aimed to reveal specific tools or functionalities that the interviewees wished to have in the webtools to aid their data research.

This structured yet open-ended approach allowed for a comprehensive understanding of user requirements, facilitating the development of a database and marketplace that effectively meets the needs of its potential end users. The standard setup also facilitated standardization in the possibility participants were unavailable for a videoconference or in person discussion.

3.2.3 Interview Process

A total of fourteen interviews were conducted. As previously, some of the interviews took place by videoconference following the questionnaire included in the Annex, which took up to 30 minutes. The questionnaire was also sent out by email for manual completion by the interviewee, if a videoconference could not be arranged.

3.3 Analysis and Results

Among the 14 interviewees, 8 (57.14%) identified as researchers, 3 as suppliers (21.43%), 2 enablers (14.29%), and 1 demander (7.14%). Reflecting this, the types of organizations where they worked were mostly universities (42.86%) and research institutions (21.42%), followed by companies (21.42%) and university hospitals (14.29%). Additionally, most of these organizations were public (71.43%), with only the companies and 1 institution being a public-private partnership.

Regarding their background, 6 of them (42.56%) were biomaterial developers, 3 (21.43%) were engineers, 3 (21.43%) were bioengineers, and 1 was a medical doctor familiar with medical devices (7.14%). Most of the interviewees were used to working with biomaterials (64.29%) or implantable medical devices (14.29%), but also with sensors (21.43%), modeling materials (7.14%), and medical device software (7.14%).

3.4 Discussion

The feedback from the interviewees provided valuable insights into the types of data and evidence they were most interested in. The highest priority was insight on

- biomaterial features, particularly physicochemical properties,
- biocompatibility, and
- manufacturing specifications.

These three were identified by the interviewees as the most crucial targets.

Additionally, interviewees expressed their need for detailed protocols, product and material applications, and characterization techniques. Of note, these were also anticipated internally as essential to provide.

From a commercial standpoint, interviewees were most interested in identifying

- suppliers,
- product availability, and
- pricing.

They also highlighted the importance of regulatory compliance data. As a result, our decision to create a biocompatibility label, focusing on the supplier's country and the level of assessment (e.g., in vitro, approved for human use), proved to be a sound strategy.

Regarding the sources interviewees used to search for data, almost all replied that

- they prioritized journal repositories,
- followed by patent databases as the second source,
- clinical trial repositories as the third,
- and product catalogues as the fourth.

It was especially relevant for the project that some of them mentioned company databases such as PitchBook (<https://pitchbook.com/>), Crunchbase (<https://www.crunchbase.com/>), and GlobalData (<https://www.globaldata.com/>), which were not initially considered to be included. Related to this, the main type of document they consulted were scientific papers, followed in second place by patents, and finally clinical reports and product catalogues.

The main limitations identified by the interviewees from the current data sources and data collection methods in the biomaterials field were the following three: difficulty in comparing product characteristics, lack of standardization, and struggling to connect data from different data sources and development scenarios. Finally, interviewees were asked about their preferred visualization tools for the database, where the main response was that the database should provide a summary table linked to the referenced documents and with comparative tools. They also asked for the connection of different data, especially biomaterials, medical devices, and companies. The interviewees also appreciated different options of visualization, and networks to identify the relationship of concepts.

4 Core Findings and Implications

The online surveys focused on gaining insight into the development of these two webtools. The results of the database survey showed that the majority of participants were researchers, highlighting the importance of the database to the academic and scientific community. The key challenges identified include standardization, data comparison, and the availability of long-term performance data. The essential database features highlighted were toxicological data, medical applications, and quality assurance information. Participants preferred visualization and search tools such as document lists with publication links, free text searches, and application-based searches. Customization for usability was also a top priority, with a focus on the ability to compare data from different studies and to incorporate save/search functionalities. Of note, user profiles and online user interactions were not prioritized.

Respondents to the marketplace survey emphasized several functionalities and features that they often found lacking in other biomaterial or medical device marketplaces. These include the absence of clear indications regarding risks related to animal-derived products, insufficient information on case use and testing methods across different phases, and lack of user-friendly interfaces. Specific demands revolved around detailed specifications concerning material testing, biocompatibility, and sterilization, with concerns regarding the absence of data or clarity on product composition. Additionally, respondents expressed challenges with early marketing strategies and navigating industry demands, citing difficulties in answering certain questions due to the lack of relevant available online information. Others further highlighted areas for our webtool developers, such as biocompatibility label and clinical use, access to comparative data on performance, clarity on biomaterial composition, mechanical properties, and the need for long-term studies with scientific backing. Users also expressed interest in data-sharing functionalities, easy data-sorting options, and concerns about potential exaggeration of product results.

Users' feedback suggested that the primary purposes for future end users of the database and marketplace were to design their own protocols, identify regulatory requirements, assess patentability, evaluate costs and benefits, and find suppliers. They expressed strong interest in comparing features of different biomaterials. To accommodate this need, experts have identified examples of similarly behaving or applied biomaterials and medical devices provided to the consortium developers. Future plans include the development of a comparative tool for the biomaterial marketplace. We also intend to provide comprehensive pricing information, although the specifics depend on advertised suppliers' decisions. The marketing team will inform the suppliers of the survey results to guide these decisions.

4.1 Challenges identified

The usage scenarios regarding the testing and training of the technical tools will take into consideration the results of the surveys and the limitations identified by the participants. Furthermore, in the current phase of development, factoring the results into the meta-use cases approach, as previously described, is one of the main objects of discussion among consortium -Experts and Developers. These meta-use cases aim to go beyond the simple and advanced searches of the expert-curated, ML-based database and the advanced marketplace to maximize and integrate user profile and user involvement. More

specifically, in the case of the database, some of the options explored based on user feedback, involve automatic updates on user-saved searches, and options to identify experts and collaborators.

An example audience showcasing the importance of this option would be journal editors looking for reviewers, or researchers looking for grant submission partners. The team also explores the possibility that users seek relevant words or concepts for focused reading, aiming to reach the capacity for knowledge summarization, hypothesis generation, and advanced biomaterials knowledge discovery. One such example, as discussed among external survey participants and experts, would be a search for a specific biomaterial, combined with its adverse effects or disease specific information, leading users to summarize the literature and discover therapeutic or species-specific knowledge.

The marketplace web tool is in dynamic development, and the key features discussed in the survey and interviews are either already included or can be added. Two preferred tools of other marketplaces, namely Advanced RFQ and AI features, present challenges for implementation. The RFQ, which allows standardized requests to suppliers based on user needs, and might not be feasible in its current form. Instead, a product finder based on category attributes can be added, enabling users to contact suppliers about specific products. Users can still leave individual messages via the supplier detail page, though not as advanced as platforms like Medical EXPO or Chamfr. While scientist.com uses extensive AI features, the Biomaterial Marketplace will not implement non-search-related AI features, such as AI assistants. However, adding basic modules like videos, educational programs, and buying guides is technically possible, with buying guides potentially being incorporated as help articles in the system.

5 Conclusions

In conclusion, the qualitative insights of the interviews supplement the quantitative survey data by adding context and details to the findings. Together, the surveys and interviews form the foundation for future testing and training, taking into consideration the definitions of the meta-use cases and the facilitation of the biocompatibility label in the web tools, as the project proceeds to the final phase of the demonstration and validation of the database and the marketplace (WP5). Future plans among others include contacting several of the interview participants (of both iterations, for a testing/training session), showcasing how their feedback and suggestions shaped the frontend and fine-tuned specific elements, and probing for their thoughts on the finalized technical solution.

References

- [1] International Organization for Standardization [ISO] (2010). ISO 9241-210:2010 Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems. [online] ISO. Available at: <https://richardcornish.s3.amazonaws.com/static/pdfs/iso-9241-210.pdf>

Annex

Database Survey Questionnaire

Contribution ID: 7f196a3d-5973-41da-85c2-6d475e9a1360
Date: 30/05/2024 12:08:18



BIOMATDB Database Survey 2024

Fields marked with * are mandatory.

Introduction

Thank you for agreeing to take part in this survey. It is planned to take less than 15 mins to complete.



**BIOMATDB: Advanced Database for Biomaterials with Data Analysis and Visualisation Tools
extended by a Marketplace with Digital Advisors**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.



Participant Information

The BIOMATDB project aims to create an advanced, web-based biomaterial database, providing insights into the properties of biomaterials, as well as flexible data analysis and visualisation tools. Furthermore, the project will also establish a web-optimised marketplace to assist companies, especially SMEs, in facilitating market access for their products. To support companies even further, BIOMATDB will create a label of biocompatibility that reflects biomaterial quality standards for application in a medical device or advanced therapy. More information can be found at www.biomatdb.eu.

You are invited to take part in this survey carried out as part of the Horizon Europe funded BIOMATDB project. This survey is part of Task 2.2 which informs Deliverable 2.4 'Updated stakeholder survey' of the BIOMATDB project. The design and the analysis of the questionnaire will be carried out by the task leader Universitat Politècnica de Catalunya (Spain) in collaboration with the coordinator of the BIOMATDB project

SYNYO GmbH (Austria) and the consortium partner MINDS & SPARKS GmbH (Austria).

Why we need your inputs

The results of the following survey will strongly guide the **development of the BIOMATERIAL DATABASE** that will be launched in the **first half of 2024**.

Are you interested in using the biomaterial database? Take this opportunity to help **shape the database** to better meet YOUR needs.

Participation in this questionnaire is **completely voluntary** and you can withdraw at any point before submitting your responses.

All responses are **anonymous** and no personal data is collected during the completion of the questionnaire. All answers will be analysed in an aggregated format.

BIOMATDB may use the information provided in the survey responses to inform other research, technical developments and deliverables within the scope of the project only.

Data Subject Rights

Pursuant to Article 15 of the EU GDPR, you have the right to access all data being processed, including the right to receive a copy. In case you have any questions and concerns or if adverse effects occur after this research activity feel free to contact us via email at office@biomatdb.eu.

☒ I wish to participate in the survey under the conditions set out in the information above.

Demography

All mandatory questions are marked with a red asterisk* in the survey.

* 1 Gender

- ☒ Female
- ☐ Male
- ☐ Nonbinary
- ☐ Other
- ☐ Prefer not to answer

* 3 Stakeholder Type

between 1 and 2 choices

- ☒ **Researcher** on biomaterials or medical devices
- ☐ **Member** of a biomaterial or medical devices society or network
- ☐ **Policy maker** in the field of biomaterials for medical devices
- ☐ **Investor** in the field of biomaterials or medical devices
- ☐ **Purchaser** of biomaterials, medical devices or related services
- ☐ **Supplier** of biomaterials, medical devices or related services
- ☐ Other

* 5 Please indicate in which organisation type you work as a researcher

Maximum 2 selection(s)

You have the option to choose up to 2 answers. E.g., for a "Public research organisation" you can select "Public body" and "Research organisation".

- ☒ Company
- ☒ Public body
- ☐ Non-profit organisation
- ☐ Research organisation
- ☐ Secondary or Higher education establishment (e.g., University)
- ☐ Other

Questionnaire

1 With what aim do you search for data about biomaterials or related products?

between 1 and 3 choices

- ☒ Research & Development
- ☐ Product Improvement & Trends
- ☐ Regulatory Documentation & Patient Safety
- ☐ Clinical Trial Design and Monitoring
- ☐ Educational Purposes
- ☒ Identify collaboration opportunities
- ☐ Other
- ☐ The question does not apply to me

3 How do you currently get informed on biomaterials or related products?

between 1 and 5 choices

- ☐ Published research papers
- ☒ Manufacturer catalogues/specifications
- ☒ Conferences and Exhibitions
- ☐ Journal repositories
- ☐ Rely on established suppliers
- ☐ Guided by historical preferences and existing contracts
- ☒ Extensive research during procurement process
- ☒ Patent databases
- ☐ Consult with colleagues / peers for recommendations
- ☒ Clinical trial repositories
- ☐ Other
- ☐ The question does not apply to me

5 Which are the main challenges that you face in your biomaterials or related products search?

between 1 and 5 choices

- ☐ Limited access to comprehensive information
- ☒ Difficulty comparing different biomaterials
- ☐ Insufficient data on long-term performance
- ☒ Lack of standardised data
- ☐ Difficulty in data interpretation
- ☒ Insufficient detail in available databases
- ☐ User-unfriendly interfaces

- ☒ Lack of awareness about available databases
- ☒ Absence of assistance and help features like chat bots
- ☐ Inflexible search options
- ☐ Other
- ☐ The question does not apply to me

7 Which features would you find most valuable in a biomaterials database?

between 1 and 4 choices

- ☐ Historical tracking and surveillance of a biomaterial or biomaterial-related product
- ☒ Link toxicological and clinical performance data from different sources
- ☒ Display quality assurance and regulatory compliance data
- ☒ Display medical applications of a biomaterial on the market or in clinics
- ☐ Inclusion of raw data (when available)
- ☐ Inclusion of patents
- ☐ Ranked candidates by similarities
- ☒ Automatic clustering by shared features
- ☐ Other
- ☐ The question does not apply to me

9 What types of data visualisation tools would be most useful for you when analysing biomaterials information?

between 1 and 5 choices

- ☐ List of documents with publication or DOI links
- ☒ PDF reports
- ☒ Statistics
- ☒ Interactive dashboards
- ☐ Heat maps
- ☐ Bubble charts
- ☐ Tree charts
- ☒ Network graphs
- ☒ Comparative bar charts
- ☐ Excel/CSV downloads
- ☐ Other
- ☐ The question does not apply to me

11 Which search criteria do you want to use when searching information for your biomaterial-related research?

between 1 and 5 choices

- ☐ Free text search
- ☐ Chemical composition-based search
- ☐ Medical application-based search
- ☐ Evaluation state (in vitro, in vivo, clinical, etc.)-based search
- ☐ Experimental method-based search
- ☐ Regulatory compliance-based search
- ☐ Time period-based search
- ☐ Adverse effect-based search
- ☐ Material processing-based search

- ☐ Medical product-based search
- ☐ Other
- ☐ The question does not apply to me

13 What type of customisable features would increase the usability of the database?

between 1 and 3 choices

- ☒ User profiles
- ☐ Save and search options
- ☐ Level of details and information
- ☒ Compare data from different studies between them
- ☐ Updates (notifications)
- ☒ Sharing space between users
- ☐ Other
- ☐ The question does not apply to me

15 How could biocompatibility data and adverse effects be showcased in the biomaterials database?

between 1 and 2 choices

- ☒ Regulatory aspect: listing of safety and quality standard of biomaterials
- ☒ Development context: assessment level and stage of development
- ☐ Clinical insight: patient demographics and adverse effects for clinical studies
- ☐ Database capabilities: comparisons/visual representation of similar studies
- ☐ Other
- ☐ The question does not apply to me

Thank you for your participation!

Would you like to be one of the first ones to get access to the BIOMATERIAL DATABASE? Let us know and contact us at office@biomatdb.eu.

We would also be happy if you consider [subscribing to our newsletter](#). This way you will stay informed about the launch of the BIOMATDB biomaterial database or biomaterial marketplace, along with other project updates.

Contact

[Contact Form](#)

Marketplace Survey Questionnaire

Contribution ID: bac951fb-3e2d-4488-887f-8211cf61774c

Date: 30/05/2024 22:22:01



BIOMATDB Marketplace Survey 2024

Fields marked with * are mandatory.

Introduction

Thank you for agreeing to take part in this survey. It is planned to take less than 15 mins to complete.



**BIOMATDB: Advanced Database for Biomaterials with Data Analysis and Visualisation Tools
extended by a Marketplace with Digital Advisors**

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Participant Information

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SPARKS GmbH (Austria) and the task leader Universitat Politècnica de Catalunya (Spain).

Why we need your inputs

Your input in our survey will play a crucial role in the the **development of the BIOMATERIAL MARKETPLACE** (www.biomaterialmarketplace.com) that will be launched in the **first half of 2024**.

Whether you're seeking to find, purchase, or learn about biomaterials and related services or medical devices, your insights will ensure the marketplace **meets the specific needs of professionals like you**. Join us in this collaborative effort and make a difference in just a few minutes!

Participation in this questionnaire is **completely voluntary** and you can withdraw at any point before submitting your responses.

All responses are **anonymous** and no personal data is collected during the completion of the questionnaire. All answers will be analysed in an aggregated format.

BIOMATDB may use the information provided in the survey responses to inform other research, technical developments and deliverables within the scope of the project only.

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☒ I wish to participate in the survey under the conditions set out in the information above.

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All mandatory questions are marked with a red asterisk* in the survey.

* 1 Gender

- ☒ Female
- ☐ Male
- ☐ Nonbinary
- ☐ Other
- ☐ Prefer not to answer

* 3 Stakeholder Type

Maximum 2 selection(s)

- ☐ **Researcher** on biomaterials or medical devices
- ☐ **Member** of a biomaterial or medical devices society or network
- ☐ **Investor** in the field of biomaterials or medical devices
- ☒ **Policy maker** in the field of biomaterials for medical devices
- ☐ **Demand**er of biomaterials, medical devices or related services
- ☒ **Supplier** of biomaterials, medical devices or related services
- ☐ Other

* 7 Please indicate for which purpose you would use a marketplace for biomaterials and medical devices between 1 and 2 choices

"products" include biomaterials, medical devices or related services

"related services" include e.g., biocompatibility testing, contract manufacturing, regulatory consultancy

☒ I would like to **find or purchase** biomaterials, medical devices or related services.

☒ I would like to **list/present my company**, products, or services on the marketplace.

Since you have selected that you are a supplier ...

* 1 What is the size of your company?

- ☒ Small company (<50 employees)
- ☐ Middle-Sized Company (50-250 employees)
- ☐ Large company (>250 employees)

* 2 What is your range of sales?

- ☐ Regional
- ☒ National
- ☐ International (European Level)
- ☐ International (Global Level)

* 3 Where is your organisation headquartered?

- ☒ Europe
- ☐ North America
- ☐ South America
- ☐ Asia
- ☐ Africa
- ☐ Oceania
- ☐ Global

* 4 What is your product area?

Choose one or more of the following answers

- ☐ General biomaterials
- ☐ Metals
- ☐ Ceramics
- ☐ Polymers
- ☒ Natural biomaterials
- ☐ Composites
- ☐ Orthopedic devices or implants
- ☐ Medical devices for cardiology
- ☐ Medical devices or implants for dentistry
- ☐ Medical devices or implants for ophthalmology
- ☐ Neural implants or devices
- ☐ Wound healing
- ☐ Tissue engineering
- ☐ Cosmetic implants or medical devices
- ☐ Drug delivery
- ☐ Extracorporeal circulation

- ☐ Services (e.g., contract manufacturing, biocompatibility testing, regulatory consultancy, ...)
- ☐ Other

6 How do you distribute your products?

Choose one or more of the following answers

- ☒ Direct sales
- ☐ Wholesalers
- ☐ Distributors
- ☐ Other

8 What are your main revenue streams?

Choose one or more of the following answers

- ☒ Product sales (biomaterials)
- ☐ Product sales (medical devices)
- ☐ Service fees (consulting, studies, testing, etc.)
- ☐ Service fees (infrastructure, laboratory, etc.)
- ☐ Service fees (equipment, 3D printers, etc.)
- ☐ Contract manufacturing services
- ☐ Funding (research projects, national funding, etc.)
- ☐ Other

- * 10 Approximately how many of your products have achieved marketing authorization in the European Union? Please answer in **absolute** numbers (e.g., 1,2,3,50).

2

- * 11 Approximately how many of your products are still in the R&D phase? Please answer in **absolute** numbers (e.g., 1,2,3,50).

3

- * 12 On which existing digital marketplaces/portals are your products or your company currently listed?

Choose one or more of the following answers

- ☒ Medical EXPO
- ☐ MedicaEx
- ☐ Qmed+ directory
- ☐ Chamfr
- ☒ scientist.com
- ☐ BONEZONE
- ☐ Other

Questionnaire

- * 1 How do you currently **get informed on** and **evaluate** biomaterials for medical applications?

Choose one or more of the following answers

between 1 and 8 choices

- ☒ Rely on established suppliers of raw biomaterials or medical devices
- ☒ Guided by experiences and existing contracts
- ☒ Competitive bidding process
- ☐ Consult with colleagues for recommendations
- ☐ Consult databases that list the properties of biomaterials
- ☒ Consult marketplaces where suppliers exhibit their products
- ☐ Read scientific literature and clinical study reports
- ☒ Conferences & Exhibitions
- ☐ Other
- ☐ The question does not apply to me.

*** 3 What types of **information** would you like to see on the biomaterials marketplace?**

Maximum 5 selection(s)

- ☒ Product specifications
- ☒ Material properties
- ☐ Composition of materials
- ☒ Compliance with standards (e.g., ISO 10993)
- ☐ Testing and quality assurance data
- ☐ Manufacturing techniques
- ☐ Biocompatibility data
- ☒ Risk classification according to the MDR EU (Class I, IIa, IIb, III)
- ☒ Phase in the development process (Pre-clinical, Phase I, Phase II, ...)
- ☐ Type of study (In silico, In vitro, Ex vivo, In vivo)
- ☐ Clinical applications
- ☐ Information on the certification of products
- ☐ Other

*** 5 What types of **features** would you like to have in the biomaterials marketplace?**

Maximum 4 selection(s)

- ☐ **Periodic news** from biomaterials or medical device **suppliers**
- ☒ **News** on **regulatory** updates and changes
- ☒ **Recommendations** on current **funding opportunities**
- ☐ **Recommendations** about related **EC projects (R&D)**
- ☒ **List** of companies providing **biocompatibility testing services**
- ☐ **Recommendations** on European **tenders**
- ☒ **List** of potential **partners for R&D projects**
- ☐ **List** of companies providing **regulatory consulting services**
- ☐ Other

*** 7 What are the **main obstacles** you encounter when trying to reach potential customers for your products or services?**

between 1 and 3 choices

- ☐ Brand recognition
- ☒ Difficulty with establishing trust with potential customers
- ☐ Targeting the right audience in healthcare
- ☒ Competition from larger suppliers

- ☒ Regulatory hurdles delaying product introduction
- ☐ Other
- ☐ The question does not apply to me.

* 9 Which **functionalities** of a marketplace would help you to **better showcase** your products or services?

between 1 and 3 choices

- ☒ User-friendly product listing
- ☐ Management tools (easy to upload/update)
- ☒ Analytics for user engagement and marketing strategy
- ☒ Highlighting certifications and quality standards
- ☐ Promotional feature for events and trainings that you provide
- ☐ Other
- ☐ The question does not apply to me.

* 11 What **existing digital marketplaces/portals** do you find most useful to **exhibit** biomaterials or biomaterial-related products? Please indicate them below.

between 1 and 2 choices

- ☒ Medical EXPO
- ☐ MedicaEx
- ☐ Qmed+ directory
- ☐ Chamfr
- ☒ scientist.com
- ☐ BONEZONE
- ☐ Other

* 13 What **existing digital marketplaces/portals** do you find most useful to **procure** biomaterials or biomaterial-related products? Please indicate them below.

between 1 and 2 choices

- ☒ Medical EXPO
- ☐ MedicaEx
- ☐ Qmed+ directory
- ☐ Chamfr
- ☒ scientist.com
- ☐ BONEZONE
- ☐ Other

15 Are there **existing digital marketplaces/portals** that adequately address the **regulatory and policy requirements** within your industry or sector? Please indicate them below.

16 What **policy-related considerations** should be considered on a best-practice marketplace? Please indicate them below.

- * 17 In which **existing digital marketplaces/portals** do you find the categorisation of products particularly useful? Please indicate them below.

between 1 and 2 choices

- ☒ Medical EXPO
- ☐ MedicaEx
- ☐ Qmed+ directory
- ☐ Chamfr
- ☒ scientist.com
- ☐ BONEZONE
- ☐ Other

- * 19 **Label of Biocompatibility**

On the BIOMATERIAL MARKETPLACE, the biocompatibility of a product will be indicated by a "Label of Biocompatibility".

What information concerning biomaterial products or medical devices would you like to have visually displayed on the "Label of Biocompatibility"?

- ☒ The development phase in which the product is currently in (Pre-clinical, Phase 1, Phase 2, Phase 3, Approved)
- ☒ The regulatory bodies that have approved the product for human use.
- ☒ The testing methods that the product has been tested in (In vitro, Ex vivo, In vivo,...)
- ☒ The standards that the product fulfils (e.g., ISO 10993, ...)
- ☐ Other

- * 21 What **functionalities** or features do you often **find lacking** in other biomaterial or medical device marketplaces?

pricing

- 22 Would you like to share any additional comments or suggestions? Please feel free to use the field below.

Thank you for your participation!

Would you like to be one of the first ones to be listed on the biomaterial marketplace? Let us know and contact us at office@biomatdb.eu.

We would also be happy if you consider [subscribing to our newsletter](#). This way you will stay informed about the launch of the BIOMATDB biomaterial database or biomaterial marketplace, along with other project updates.

Contact