

ASSOCIAÇÃO BIOPOLIS

Annual Activity Report

2023

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SUMMARY

This document presents the BIOPOLIS Association's Activity Report for 2023, as the managing institution of CIBIO - Centre for Research in Biodiversity and Genetic Resources, covering the main components of BIOPOLIS/CIBIO's operations, including Scientific Activities and Achievements; Education and Training; Facilities; Knowledge and Technology Transfer & Services, Communication and Dissemination; Fundraising and Sustainability and Social Responsibility.

INITIAL CONSIDERATIONS

The year 2023 corresponds to the second full year of activity for the BIOPOLIS Association, following its establishment in July 2021 and the European Commission's approval of the application for the project "BIOPOLIS – Teaming to Upgrade to Excellence in Environmental Biology, Ecosystem Research and Agrobiodiversity" submitted by CIBIO – ICETA, the University of Montpellier and Porto Business School to the Horizon 2020 Widespread – Teaming Programme.

The main objective of the BIOPOLIS project is to upgrade CIBIO, a research unit whose activity, until July 2021, was directly managed by ICETA – Institute of Sciences, Technologies and Agroenvironment of the University of Porto. To this end, the BIOPOLIS Association was established in 2021 – a non-profit scientific association to which the personnel, assets, liabilities and contractual responsibilities relating to CIBIO's activities were transferred under a spin-off agreement between ICETA and BIOPOLIS. Thus, by the end of 2021, a total of 63 projects and 16 service contracts had been transferred to this Association, with a total of 15 projects and 6 service contracts remaining at ICETA, due to their proximity to completion and the small amount of their respective budgets still to be executed. In addition, a total of 57 projects that had already been completed but were still awaiting final reimbursement remained at ICETA. As of 31 December 2023, 35 projects remain to be fully reimbursed at this institution.

The year 2023 was particularly challenging in terms of the Association's financial sustainability, as a result of significant investment in its infrastructure – notably the Quinta de Crasto project – and the conclusion of the BIOPOLIS funding programmes granted under the Portugal 2020 Framework Programme. In this regard, it was possible to secure the transition – still ongoing – to the new Portugal 2030 Framework Programme for funds not used in the BIOPOLIS-GERAL funding programme, thus guaranteeing the national funding component for the entire remaining time frame of the project 'BIOPOLIS - Teaming to Upgrade to Excellence in Environmental Biology, Ecosystem Research and Agrobiodiversity', which is due to be completed in 2027. In addition, the financial effort undertaken by the Association was facilitated by the provision of scientific research

services in the Kingdom of Saudi Arabia, as well as by the contracting of short-term financing instruments from the national banking sector. These combined initiatives enabled BIOPOLIS to overcome a particularly demanding year in 2023 in terms of its cash flow needs, ending the year in a solid financial position.

At the same time, during 2023, the process of organisational consolidation of the BIOPOLIS Association continued, in particular through the recruitment and strengthening of research teams and administrative and financial support areas. Also noteworthy is the reformulation of the institution's functional organisational chart, including the establishment of competency and remuneration grids for the various professional categories, as well as the reinforcement and modernisation of information technology resources and the rules for their use.

In addition, the governance structure and the various governing bodies that make up the Association were strengthened – with five new members joining the Association – while efforts to reformulate and update various internal procedures and regulations, which began in 2022, continued. This review of BIOPOLIS' entire regulatory and management framework will continue throughout 2024, together with the development of new management tools and instruments, with a view to providing BIOPOLIS with the necessary means to face future challenges, in particular those arising from the ambitious goals set by the TEAMING project.

Equally important, the activities carried out in 2023 further reinforced the articulation between the Association's mission and its statutory purposes of general, regional and local interest. Scientific research and innovation activities contributed to the advancement of knowledge and the development of evidence-based solutions for biodiversity conservation and sustainable development, directly serving the general interest. Advanced training programmes, doctoral education, continuous professional development, and outreach to schools and local communities demonstrated BIOPOLIS' contribution to building human capital of strategic relevance for society. At the regional and local level, investment in infrastructures such as the Quinta de Crasto headquarters, the Biological Station of Mértola, and the Branda Científica of S. Bento do Cando strengthened territorial cohesion and generated opportunities for local development. Partnerships with municipalities,

cultural institutions, schools and media outlets expanded access to scientific culture and promoted biodiversity awareness among citizens. These efforts demonstrate the explicit link between the Association's activities and its statutory aims, in line with the recognition of Public Utility Status awarded by the Portuguese Government in 2022, which remains a guiding reference for the pursuit of the Association's mission.

GOVERNANCE

The main governing bodies of BIOPOLIS, Board of Directors (BoD), Supervisory Board (SB), General Assembly (GA), Science Council (SC) and International Advisory Board (IAB), were previously established.

Board of Directors

The composition of the BoD remained unchanged, including Nuno Ferrand as President and Pedro Beja, Gabriel Marais, and Luís Folhadela as Associate Directors.

Executive Commission

The Executive Committee, composed by Pedro Beja, Luís Folhadela and Gabriel Marais steering the daily operation of BIOPOLIS. This commission met 13 times during 2023 (24/01/2023; 08/02/2023; 03/03/2023; 07/03/2023; 15/03/2023; 28/04/2023; 09/05/2023; 20/06/2023; 04/07/2023; 13/07/2023; 10/08/2023; 23/10/2023; 20/11/2023).

Supervisory Board

The Supervisor Board (SB) operated with representatives of the four Promoter Founding Associates: chair – Luís Filipe Reis (PBS), vice-chair – Pedro Rodrigues (UP), François Pierrot (UM), and Baltazar Romão de Castro (ICETA).

During 2023 the SB met three times (27/03/2023, 06/06/2023, 09/10/2023, 14/12/2023). The SB meetings involved the participation of BoD members and included updates on BIOPOLIS activities, the approval of annual activity plan and budget for 2023, the analysis of the management report and accounts for 2022, approval of BIOPOLIS participation in other organizations, and the approval of new members of the International Advisory Board, among others.

General Assembly

The 5th GA of BIOPOLIS was held during 2023 (07/06/2023) with the participation of the four Promoter Founding Associates (UP, UM, ICETA and PBS). It approved unanimously the Management Report and Accounts for the year 2022, and the integration of six new associates - REN – Redes Energéticas Nacionais, SONAE, FBA – Fundação Belmiro de Azevedo, EDIA - Empresa de Desenvolvimento e Infraestruturas do Alqueva, S.A and Ciência Viva, which have thus become members of the GA.

International Advisory Board

The International Advisory Board (IAB) was formally established on the 9th meeting of the SB (25/11/2022). It included two components, the International Advisory Board for Science (IABS), with four members (Scott Edwards, Harvard University; Jeremy Searle, Cornell University; Luigi Boitani, University of Rome – La Sapienza; and Craig Moritz, The Australian National University), and the International Advisory Board for Business (IABB), with six members (Cláudia Azevedo, SONAE; Rombout Swanborn, HyET group; Fernando Freire de Sousa, University of Porto; Paul Symington, Symington Family Estates; Jorge Moreira da Silva, Platform for Sustainable Growth; and Jo.o Nuno Palma, Millenium BCP). Following the recommendations of the European Commission (received on 31/03/2023), the membership of the IAB was increased and gender balance improved, with the approval by the SB (06/06/2023) of two new members of the IABS (Peggy Oti-Boateng, African Academy of Sciences; Maria Manuel Mota, Instituto de Medicina Molecular) and two new members of the IABB (Tatiana Kourotchkina, Quo Artis; Rosalia Vargas, Ciência Viva).

The IABs had an important advisory role, with activities including visits of some of its members to BIOPOLIS (February and November/December 2023), participation in HR recruitment, providing inputs on organisation and operation, meetings with BoD members, researchers and staff.

Nevertheless, it was considered important to improve the configuration and operation of the IAB, namely by aligning it with the requirements of national legal requirements for scientific institutions (Article 23 a) of DL no. 63/2019, of 16th May). Specifically, it was considered important to enhance the independence of the IAB in relation to other governing bodies of Associação BIOPOLIS, namely by excluding the Director of BIOPOLIS and electing the chair among its members. This change was discussed and agreed upon in a meeting of the IABS on 17/03/2023. Accordingly, a revision of the bylaws was produced and latter approved by the GA.

SCIENTIFIC ACTIVITIES AND ACHIEVEMENTS

Highlights

Scientific research activity at BIOPOLIS – including not only employees directly affiliated with the Association, but also those included in the InBIO Associated Laboratory and in the regional delegations of CIBIO in Lisbon and the Azores – is carried out by a group of 497 researchers (193 of whom hold PhDs), organised into a total of 35 research groups, distributed across three thematic areas: Evolution, Genetics & Genomics; Biodiversity, Ecology & Conservation; Sustainability, Ecosystems & the Environment.

The scientific output of Associação BIOPOLIS during the year 2023 was outstanding. In this reporting period more than 100 national and international projects were running and these activities generated 451 papers in SCI-journals, including Nature, Science and PNAS, among others.

Our researchers contributed to a study published in Proceedings of the National Academy of Sciences revealing that large predatory fish, such as sharks, tunas, and swordfish, frequently dive into the ocean's mesopelagic zone (200-1,000 meters deep). This "twilight zone" has been overlooked as a crucial habitat. Using data from 344 electronic transmitters tracking 12 species over 46,659 days in the North Atlantic, the study found that many predators align their behavior with the daily movements of the deep scattering layer (DSL). The findings highlight the need to protect this zone from threats like fishing and climate change, as exploitation could cause irreversible damage.

An international team, including BIOPOLIS' researchers, conducted the most comprehensive study on the genomic history of Bantu-speaking populations. Analyzing 1,763 individuals from 147 populations across 14 African countries, they traced the Bantu language expansion from the Nigeria-Cameroon border throughout sub-Saharan Africa over the past 5,000 years. The research, published in Nature, included ancient DNA sequencing, revealing migration routes, interactions with local hunter-gatherers, and a consistent pace of migration. The study also identified regions like Zambia where different migration streams intersected, offering new insights into a major event in human history.

Finally, 2023 was the first full year of activity for two new research groups at BIOPOLIS: Ecology and Conservation of Tropical Rainforests - RainForests and Wildlife Conservation Ecology - WILDEcol.Educação & Formação

Collaborative Research and Capacity Building in Africa

In 2023 there were positive developments in the consolidation and expansion of InBIO TwinLab network in Africa, with interactions with stakeholders and research projects carried out in Angola, Benim, Botswana, Guinea Bisau, Mozambique, Namibia, and São Tomé and Príncipe, among others. Of particular note is the signing of protocols with Supernova Technologies Ltd. (03/12/2023) to finance (6 M€) the establishment of the Gulf of Guinea Research Program, including the creation of two new field stations on Príncipe Island (São Tomé and Príncipe) and in the Cabinda enclave (Angola). Following the creation of research capacity and facilities in the region, equipment, and technical support in Equatorial Guinea, protocols were signed with the Afro-American University of Central Africa (AAUCA) and the National University of Equatorial Guinea. Another important protocol was signed with African Parks, to analyze the application of water environmental DNA (eDNA) methodologies within protected areas across Africa managed by this private conservation organization.

EDUCATION AND TRAINING

BIOPOLIS-CIBIO is a host institution for several doctoral students from different programmes at the University of Porto and other national universities, notably students from the Doctoral Programme in Biodiversity, Genetics and Evolution (BIODIV), given the number of students and the fact that BIOPOLIS -CIBIO is the main research unit associated with this doctoral programme. It should be noted that in 2023, the evaluation process of this programme by A3ES (Higher Education Monitoring and Evaluation Agency) was completed, resulting in the decision to accredit the 3rd Cycle in Biodiversity, Genetics and Evolution for 6 years and to approve the proposed curriculum change.

During the academic year that began in 2023, 29 new students enrolled in this doctoral programme, including 14 international students from 12 different countries.

We would also like to highlight that during 2023, 14 BIODIV students completed their doctorates.

Table 1 – BIODIV Programme Students

BIODIV	2018/19	2019/20	2020/21	2021/22	2022/23	2023/2024
TOTAL (registered)	94	83	101	110	123	136
New students	18	14	25	21	26	29
New international students (%)	39%	14%	40%	29%	42%	48%
Concluded	11	9	14	7	14*	--

*year 2023

We also welcomed 3 new students from other doctoral programmes that have BIOPOLIS-CIBIO as their host institution.

Table 2 – Students from other doctoral programmes

OtherProgramms	2019	2020	2021	2022	2023
TOTAL (registered)	9	13	13	16	19
New students	2	4	3	3	3
Concluded		2	1	0	2

On 31 December 2023, the total number of doctoral students hosted by BIOPOLIS-CIBIO was divided between 136 BIODIV students and 19 students from other programmes.

With regard to doctoral scholarships, in the academic year beginning in 2023, 36 candidates applied for the FCT individual doctoral scholarship competition, with BIOPOLIS-CIBIO as the host institution, and scholarships were awarded to 18 of the applications submitted. In addition to the FCT individual competition scholarships (50% success rate), 20 doctoral scholarships were also awarded under other competitions and protocols.

Table 3 – Doctoral Scholarships

Funding source	BIOPOLIS-CIBIO				
	2019/20	2020/21	2021/22	2022/23	2023/24
FCT national grants	15	15	21	24	25
Structural Funds (CCDR-N)	-	-	10	-	6
Research projects (FCT)	-	-	1	1	3
Own funds (FUI/FCT)	2	-	3	2	5
CEBICNA	-	-	6	4	4
Other Funds	3	5	5	-	4
TOTAL	20	20	44	31	38

BIOPOLIS-CIBIO also hosts the Master's Degree in Biodiversity, Genetics and Evolution of the Faculty of Sciences of the University of Porto (M BGE). Classes are held at the BIOPOLIS-CIBIO

facilities, and most students develop their final master's thesis as part of ongoing research projects. It should be noted that, in 2023, 12 students completed their master's degree, 18 began their dissertation (research project) and 15 began their master's degree. In 2023, we welcomed 45 M BGE students.

Also in 2023, the process initiated by BIOPOLIS-CIBIO in close collaboration with the Faculty of Sciences of the University of Porto to create a new 2nd cycle course, the Master's in Biodiversity, Genetics and Conservation, in association with Mandume ya Ndemufayo University (UMN), was finalised. A3ES decided to unconditionally accredit this curriculum for six years.

This is a joint course, which will take place at UMN's facilities in Angola, and which confers a double degree from the University of Porto and Mandume ya Ndemufayo University (Angola). Also in 2023, the necessary steps were taken to ensure that the first edition would start in the 2024/25 academic year.

Finally, during 2023, 15 Advanced Courses in Biodiversity and Evolution were held as part of the BIODIV doctoral programme. These were attended by 258 participants, the majority of whom (59%) were BIODIV students. It should be noted that of the 258 participants, 42% were international participants.

BUILDING AND FACILITIES

Rehabilitation of facilities at Campus de Vairão

Infrastructure was one of the main priorities for the BIOPOLIS Association during 2023. Work continued on the renovation of Quinta de Crasto, which is expected to be completed in early 2024, behind the initial completion date (third quarter of 2023). This project, with a total value of €7.9 million, will enable Quinta do Crasto to house the Association's headquarters and bring together all of BIOPOLIS's administrative, financial and technology transfer services, as well as new technical and laboratory areas, in particular Portugal's first Ancient DNA laboratory.

Biological Station of Mértola

At the same time, work continued in 2023 on the construction of the future Mértola Biological Station, a project resulting from a joint initiative promoted by the municipality of Mértola and BIOPOLIS, in partnership with the University of Porto and EDIA. Located in a semi-arid Mediterranean climate zone, this station, which is scheduled for completion in the second half of 2024, will be the first of a series of similar projects to be promoted by BIOPOLIS and other partners in different types of ecosystems.

Biological Station in São Bento do Cando

Under a protocol signed in 2022 between the Municipality of Arcos de Valdevez, the Diocese of Viana de Castelo and BIOPOLIS, work on the installation of a new Biological Station in São Bento do Cando, in the heart of the Peneda-Gerês park, is expected to begin during the second half of 2024. These stations will be complemented by other similar initiatives on the African continent, within the scope of the UNESCO Chair's scientific programmes 'Life on Land' and the 'Gulf of Guinea Research Programme', which are being developed by the BIOPOLIS Association with local and international partners.

KNOWLEDGE, TECHNOLOGY TRANSFER AND SERVICES

In 2023, 27 new service contracts were signed in the areas of consulting, applied ecology and environmental monitoring, for a total contracted amount of approximately €1.6 million. Among these, seven contracts with five renewable energy companies, both in Portugal (EDP Renováveis, BPLightsource, Movhera) and abroad (Naturgy, Spain, and Cabeólica, Cape Verde), worth €498,000, are particularly noteworthy. A second contract was also signed with the managing entity of a nature reserve in the Middle East, worth approximately €884,000.

Also noteworthy is the consortium's securing of three framework agreements for consultancy services with European agencies (EFSA, EEA and EIB), which will represent future revenues of varying amounts, subject to the formalisation of specific agreements in response to specific requests for support from one of these agencies. The remaining contracts are of a diverse nature, mostly with Portuguese entities, and are for small environmental or archaeobotanical consulting services.

With regard to the provision of genetic analysis services carried out by the Molecular Testing Centre (CTM), which are of a diverse nature but exclusively using molecular biology techniques routinely performed in the laboratory, in 2023 a total of €296,500 in services was contracted from the CTM by 39 clients, the vast majority of which were entities or individuals residing in Portugal, 14 of whom used the services of this BIOPOLIS platform for the first time.

On the other hand, five R&D contracts were signed in 2023, totalling €2.3 million, for three clients, one of which was the aforementioned entity in the Middle East, thus demonstrating a greater alignment of service provision and consulting activities with BIOPOLIS's main mission, which is scientific research. The work to be carried out aims to monitor the Iberian wolf, develop molecular methodologies for monitoring small mammals, and study the interaction between predators and prey.

Finally, it is also worth highlighting the collaborations established with non-academic entities that directly finance research projects to be developed by BIOPOLIS researchers. In this category, two new Invited Chairs applications were submitted to FCT, totalizing 6 submissions so far. These are funded by Fundação Belmiro de Azevedo (Invited Chair in Rewilding), and by a consortium including Brava S.A., Bondalti130, Sociedade Agrícola do

Vale de Perditos S.A., ANPC – Associação Nacional de Proprietários Rurais (Invited Chair on Hunting and Biodiversity).

Two new contracts were signed in 2023, representing future revenues totalling €623,000. One of the contracts involves a new application in partnership with the Belmiro de Azevedo Foundation to the FCT Guest Professors programme for the study of Rewilding in North-East Portugal (currently awaiting approval by the ministry), and the other aims to develop a research programme on game species in the Azores, funded by the Regional Directorate for Forest Resources.

COMMUNICATION AND DISSEMINATION

Biopolis published a total of 451 articles in international peer-reviewed scientific journals (ISI) in 2023, corresponding to the second highest annual record to date, and a consequence of the sustained increase in the volume of its scientific output.

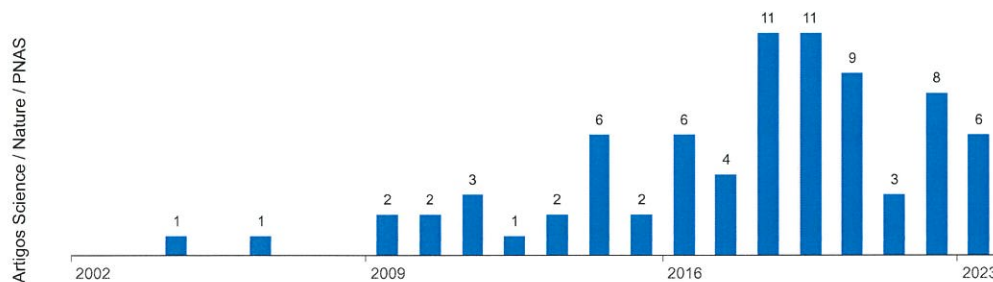


Figure 1 – Total articles published in Science, Nature and PNAS

This increase has been accompanied by growth in publications in prestigious international peer-reviewed scientific journals. In 2023, 79 articles were published in high-impact journals ($IF > 6$), with particular emphasis on 21 articles published in top journals ($IF > 12$), such as Science, Nature, Trends in Ecology & Evolution, Nature Ecology & Evolution, Trends in Plant Science and Molecular Biology and Evolution.

In 2023, BIOPOLIS carried out a comprehensive set of communication and dissemination activities aimed at both internal and external researchers, students, and the broader public. A total of 48 scientific seminars were organised in biodiversity and evolution, alongside two periodic workshops in collaboration with the University of Montpellier: “Evolutionary Genomics for Plant Models and Crops” (15–19/05/2023; average of 24 participants) and “Models in Invasion Science: From Theory to Practice” (26–29/06/2023). Additionally, three spring/summer schools were held: the 6th CIBIO-Açores Spring Seminar (1–2/06/2023), the 2nd Azores Summer School in Marine Island (Palaeo)Biogeography (9–21/07/2023), and the co-organisation of the “1Health1Welfare Summer Research School” (10/07–08/09/2023).

Table 4 – Total number of seminars held

Seminars	ICETA-CIBIO		BIOPOLIS-CIBIO			
	2018	2019	2020	2021	2022	2023
Seminars in Biodiversity and Evolution	14	44	17	27	28	39
Seminars for students	5	17	10	8	8	9
Total	19	61	27	35	36	48

Notable international events included the 12th edition of TIBE (Trends in Biodiversity and Evolution), organised jointly with the University of Montpellier, which brought together researchers and students in evolutionary biology; the V International Shrike Symposium, focused on avian evolution, ecology, and behaviour; and the XIII International Symposium on Littorinid Biology and Evolution (ISOLBE), addressing the evolutionary significance of marine molluscs. Other highlights included the 8th International Anthracology Meeting, workshops on epigenetics, plant-animal design thinking, monitoring Iberian viper populations, and high-throughput genetic analyses of tropical crops.

BIOPOLIS maintained a strong digital presence, producing over 100 posts across Facebook, YouTube, Twitter, LinkedIn, and Instagram, including permanent access to webinars via YouTube. Furthermore, 51 newsletters were disseminated to the BIOPOLIS community and beyond.

Community engagement and public outreach included six dissemination activities with elementary schools in Vila do Conde and three additional initiatives with civic organisations, as well as participation in the University of Porto Showcase 2023 and the 93rd Lisbon Book Fair through the publishing brand “Arte & Ciência”.

Scientific dissemination was also advanced through non-technical publications, including books such as *Strategic Opportunism: What Works in Africa, Twelve Fundamentals for Conservation Success*, *Ecology of Angola: Terrestrial Biomes and Ecoregions*, the field guide *Guia de Campo – Invertebrados do Parque das Serras do Porto*, and *Women in Herpetology: 50 Stories from Around the World*, featuring BIOPOLIS researchers. BIOPOLIS researchers also published key works making scientific knowledge accessible to a broader audience, such as

The Canary: Natural History, Science and Cultural Significance, highlighting the evolution, ecology, and research importance of canaries,

In addition, BIOPOLIS researchers delivered over 100 presentations at conferences, workshops, and other scientific events in 2023, fostering networking and visibility. These include presentations by the Director of BIOPOLIS on the 30th meeting of the GBIF Governing Board in Canberra, Australia, from 15-20/10/2023, and in the associated event Biodiversity Symposium, as well as in the University of Macau (23/10 to 05/11/2023) and in São Tomé e Príncipe (4-10/10/2023).

A major demonstration of in-house biologging technology was organised at the FCT annual meeting (Aveiro, 5-7/07/2023), attracting scientists, schools, media, and the general public, including a visit from the Prime Minister of Portugal and coverage by national TV and international science media.

Finally, it is also worthy to mention initiatives to repurpose decommissioned equipment for educational or museum use, including donations to the Museum of Natural History and Science of the University of Porto.

FUNDRAISING

In 2023, the Project Support Office continued to play a central role in assisting researchers with competitive funding applications, organising training sessions for both research and administrative staff, advertising funding opportunities, and providing direct support in the preparation of proposals. A total of 11 training sessions on project management were delivered through the Research and Innovation Community Platform and PERIN. In addition, a specialised training session led by the consultancy Innovayt was held in June 2023 on “*How to prepare a successful RIA/LA proposal in Horizon Europe*”, attended by 27 researchers. To ensure continuous access to relevant opportunities, the Office also circulated a weekly newsletter highlighting 23 Horizon Europe calls of potential interest, with details on deadlines, budgets, scope, and expected outcomes.

During 2023, BIOPOLIS began its participation in three Horizon Europe RIA projects (*ANERIS*, *wildE*, *REDUCE*), one MSCA project (*Isladapt*), and two LIFE projects (*Safeline4Birds* and *Wild Wolf*), with a combined budget of €2.24M for BIOPOLIS. A major achievement was the approval of the REDUCE project, dedicated to promoting sustainable fishing practices and mitigating bycatch of threatened marine species in the Eastern Central Atlantic. With an overall budget of nearly €9M, funded by Horizon Europe, REDUCE brings together 13 partners from Spain, Portugal, France, Senegal, and the UK. The BIOPOLIS team, led by researcher Nuno Queiroz, is responsible for quantifying shark and sea turtle mortality caused by fisheries interactions and for developing predictive models to assess bycatch risks.

At the national level, FCT awarded BIOPOLIS researcher José Melo Ferreira with a €250k project under the programme targeting researchers who reached the final evaluation stage but were not awarded ERC grants. In late 2023, BIOPOLIS researchers submitted 28 exploratory project proposals (up to €50k each) and 47 full project proposals (up to €250k each) to the new FCT call. Moreover, FCT funded the national participation of three Biodiversa+ projects involving BIOPOLIS researchers (€240k), with two additional proposals still under evaluation.

Support for individual researchers also advanced in 2023. FCT funded 10 research contracts (five Junior, one Assistant, and four Principal Researchers) and awarded 17 PhD grants to BIOPOLIS, representing over €1M. In addition, three new employment contracts, totalling

approximately €1M, were secured under the FCT Institutional Call to Scientific Employment for Associate Laboratories, to be developed over the next 3–6 years.

Overall, 2023 was marked by significant achievements in competitive funding: BIOPOLIS secured the coordination of several major Horizon Europe proposals, strengthened national and international project portfolios, and expanded its research community through new contracts and doctoral fellowships. In total, 31 new project applications were approved during the year, confirming BIOPOLIS as a leading institution in attracting competitive research funding.

Table 5 – Main research projects started in 2023

1. ANERIS - operAtional seNsing life technologies for maRIne ecosystems	
Funding:	<i>Horizon Europe (call HORIZON-INFRA-2022-TECH-01-01).</i>
Execution period:	01/01/2023 a 31/12/2027
Total budget:	10 million Euros
Biopolis budget:	392 thousand Euros

2. WildE - Climate-smart rewilding: ecological restoration for climate change mitigation, adaptation and biodiversity support in Europe	
Funding:	<i>Horizon Europe (call HORIZON-CL5-2022-DI-02-05)</i>
Execution period:	01/01/2023 a 30/06/2026
Total budget:	8.5 million Euros
Biopolis budget:	454 thousand Euros

3. Life Wild Wolf - Concrete actions for maintaining wolves wild in anthropogenic landscapes of Europe	
Funding:	<i>LIFE programme (call LIFE21-NAT-IT-101074417)</i>
Execution period:	01/01/2023 a 30/06/2027

Total budget:	7 million Euros
Biopolis budget:	453 thousand Euros

HUMAN RESOURCES

The BIOPOLIS Association's staff grew significantly throughout 2023, particularly in terms of the total number of researchers and, in particular, in the junior category, which represented 61.7% of the Association's total researchers at the end of the year.

Table 6 – Staff and scholarship holders

Category	2021	2022	2023
Board of Directors	4	4	4
Researchers	108	102	128
Coordinators	2	3	3
Senior (IP)	9	11	13
Assistant	22	26	31
Junior	75	61	79
Other	0	1	2
Grant holders	28	27	18
Administrative and technicians	36	59	79
Administrative and Financial Support	19	25	33
Technicians	17	34	46
TOTAL	176	192	229

In parallel with the increase in the number of researchers, the total number of administrative staff and research support technicians also rose sharply, to a total of 20 employees.

Finally, the number of scholarship holders fell again, confirming the trend that has been occurring since the publication of Decree-Law No. 57/2016 and the Statute of Scientific Research Scholarship Holders and respective Regulations in force. While the former favours the hiring of PhD graduates, the latter severely limits the hiring of postdoctoral fellows and restricts research fellows to student status.

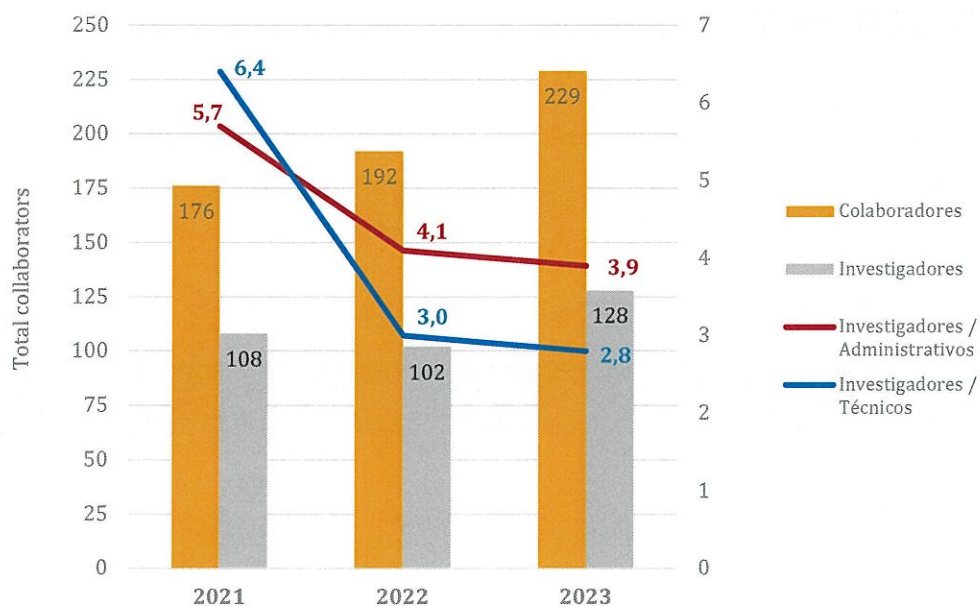


Figure 2 – Ratio of employees per researcher

Personnel costs are financed from various sources, as described in the following figure:

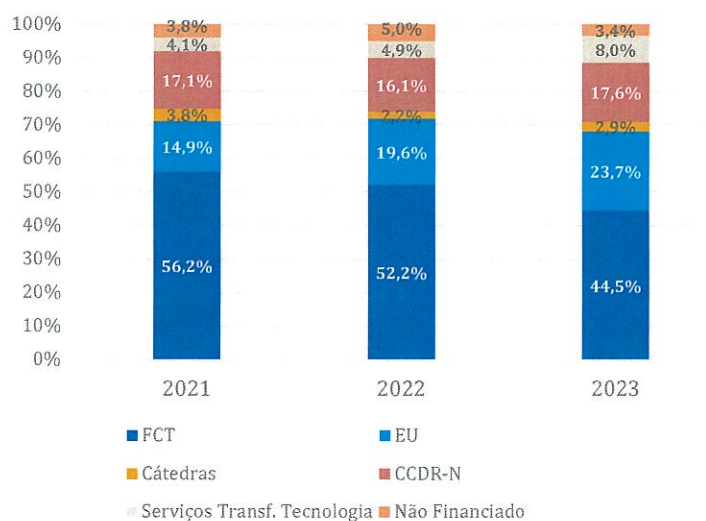


Figure 3 – Sources of financing for personnel expenses from 2021 to 2023

CHALLENGES AND FUTURE PROSPECTS

The year 2024 is expected to be a decisive year in the consolidation of the BIOPOLIS Association project, starting with the completion of the new Quinta de Crasto facilities, which are crucial to meeting the needs arising from the sharp growth of our research teams and their scientific activities. This growth also requires the continued strengthening of research support teams and areas, as well as the improvement and refinement of the Association's set of rules and procedures. This review of the entire regulatory and management framework of BIOPOLIS will continue throughout 2024, together with the development of new management tools and instruments, such as the improvement of the management information system and the review and updating of the Association's business plan, with a view to equipping and empowering BIOPOLIS with the necessary means to face future challenges, in particular those arising from the ambitious goals set by the project 'BIOPOLIS – Teaming to Upgrade to Excellence in Environmental Biology, Ecosystem Research and Agrobiodiversity'.

Although an investment effort comparable to that of the previous year is not anticipated, 2024 will be an equally demanding year from the point of view of the Association's financial sustainability, especially until the transition process from national funding for the TEAMING and TROPiBIO projects to the new Portugal 2030 Framework Programme is completed. In this regard, BIOPOLIS's ability to strengthen its membership base will be fundamental to its long-term sustainability, continuing a process that has already begun and which should lead to the entry of new members in 2024 and subsequent years. At the same time, the Association should continue to strengthen its capacity to generate its own revenue, whether through new service contracts or the establishment of chairs and partnerships with the private sector and public entities. In this context, the work carried out by BIOPOLIS research teams in the Kingdom of Saudi Arabia is particularly important, as it has already resulted in the acquisition of new projects to be developed in that country throughout 2024.

At the same time, the ability to secure new publicly funded projects will be crucial to continuing the Association's infrastructure rehabilitation and renovation efforts, which will not end with the completion of the rehabilitation of Quinta do Crasto and the Mértola Biological Station. Therefore, in addition to the Branda Científica de S. Bento do Cando, the renovation of the main CIBIO building – equipping it with new features and, at the same time,

promoting greater sustainability and energy efficiency – should receive special attention from the management team.

FINAL CONSIDERATIONS

The strong growth in BIOPOLIS's activity in 2023, together with the major investment made in new research infrastructure – the ongoing renovation of Quinta do Crasto and the construction of the future Mértola biological station – and the gradual growth of its team of researchers, enable the BIOPOLIS Association to face future challenges with the confidence and ambition necessary for the successful completion of the project “BIOPOLIS – Teaming to Upgrade to Excellence in Environmental Biology, Ecosystem Research and Agrobiodiversity”. Almost three years after its establishment, BIOPOLIS has achieved consolidated growth in its research excellence, supported by the strengthening of its teams, processes and scientific infrastructure.