



**School of Medicine**

**ANNUAL REPORT**

**2019–2020**

**University of Minho**



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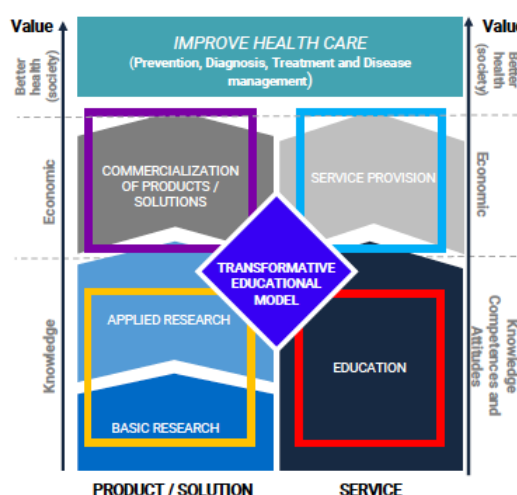
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## 1. INTRODUCTION & GENERAL OVERVIEW

The present report provides an overall view of the School of Medicine, including its Research Institute (the ICVS – Life and Health Sciences Research Institute), and the main strategies and progresses in the academic year 2019-2020. The detailed data on the scientific and pedagogical activities are presented in individual attached reports.

This year (2020) the School of Medicine (EM) will complete 20 years of activity! Along this pathway we have strived to accomplish our Mission “**to improve healthcare through education, research and value generation**”. This contribution translates into the impact that EM is able to generate through its four components of mission: Education, Research, Healthcare Services (social value generation) and Entrepreneurship (economic value generation).

*Mission: “To improve healthcare through education, knowledge generation and value generation”*



The alignment with our Mission allowed us to design a strategy, whose success was based on developing a cluster of activities which will provide Learners with a Transformatory Educational Model, and doing so on an ongoing basis. We are aware the management of the cluster capacity will be a central challenge, so that EM will seek to be an orchestrator of change in collaboration with a diversity of internal and external players that are also open to innovation and able to anticipate the future of healthcare. Such orchestration makes it possible to reinforce a number of EM’s Core Competencies, namely “Bench-to-bedside and vice versa”, “Culture of Excellence” and “Synergistic Management of a Health Cluster”. The combination of these competences with a cluster structure constitutes a strong strategic combination of differentiation and sustainability,

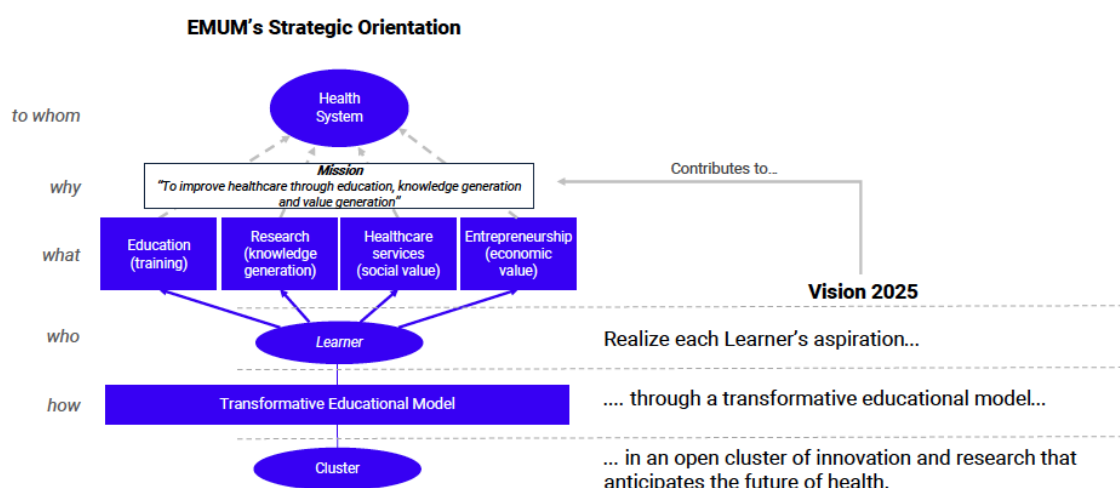
which is hard to replicate and which therefore will reinforce the indispensability of EM for the Health System.

Despite being a non-profit organization, it is important to the school to ensure that the internal cluster and resources structure grows sustainably. The market strategy will encourage customer growth opportunities (to offer more solutions to Learners over time) to capture postgraduate income and advanced training, but also to attract venture capital funds, or even foreign students' enrollment. The success of a market strategy and associated recognition will influence stakeholders' willingness to partner with EM.

Based on this rationale, EMUM's Vision 2025 was determined: ***“Realize each Learner’s aspiration through a transformative educational model, in an open cluster of innovation and research which anticipates the future of health.”*** This Vision is not only based on EM’s established core values and identity, but also seeks to serve the strategic plan of the University of Minho, by incorporating a number of its principles such as: innovation in methods, fostering of research and interaction with the business environment.

### Illustrative model of EMUM’s strategic orientation

Articulating EMUM’s Vision 2025 and its Mission



In this report, and in alignment with our Mission, we will highlight the major events and achievements of the academic year 2019-2020.

During 2019-2020, we continued the exciting challenge of renewing the curriculum of the medical degree with the same enthusiasm and integrative spirit. A final proposal of MinhoMD (attached at the end of this Report as Annex I), was submitted to the University bodies for approval, after which it was submitted to the analysis of the accreditation agency (A3ES). This final version greatly benefitted from the input by the School governing bodies and the continuous involvement of the rectorate team, was approved by A3ES on June 30<sup>th</sup>, 2020. This collective and participative effort was launched in May 2016 and has progressed accordingly to the plan proposed by the Steering Committee (summarized in figure 1).



Figure 1 – Time flow for the implementation of the MinhoMD

As depicted in figure 1 we are now on the final stage of Phase III, but already preparing Phase IV, of this multistep project. This phase was preceded by an extensive inquiry of the multiple stakeholders, both internal and within the community, (Phase I), by the work produced by Concept groups (Phase IIa) and by five working groups that planned the overall organization of the curriculum that provided guidance to the following steps (Phase IIb).

Some of the highlights of the new curriculum are: i) Addressing the needs of the physician of the future; ii) Centered in patients and health systems; iii) Flexible and promoting mobility (e.g. each student builds a customized curriculum or allowing students to finish the MD in shorter periods); iv) Promoting basic and clinical research; v) Collaborative and conferring additional degrees (e.g. Majors and Minors in addition to the MinhoMD).

During this final stage of preparation, all educational activities were prepared namely the design, development and testing of CBL cases, the development of assessment tools (remote assessment, self-assessment, portfolios and workplace-based assessment) and extensive training of the faculty in active learning/teaching techniques. From the logistical point of view, the final version of schedules and careful balance of workload was developed, facilities were adapted to the demands of the new curriculum and we acquired audiovisual material and equipment. In parallel, the communication strategy and outreach activities were developed and presented. As said before,

these have been exciting days for the entire community, and even if nothing would change, we would have already gained the enthusiasm of reappraising the mission and the vision of the EM – the fact is that it changed and now we have the opportunity to implement a vibrant innovative curriculum that fits perfectly our Mission and Vision.

One of the benefits of engaging in a curriculum review relates with the possibility of expanding networks. An institution that aims to be recognized internationally depends on its ability to create networks. In light of this view, during the past years we made efforts to reinforce internationalization. This included the exchange of several faculty members and students to other medical schools, namely Thomas Jefferson, Penn State, where novel medical curricula are being implemented. Besides these, we kept the promotion of students and faculty exchange programs (ERASMUS and the Global Education in Medicine Exchange) and our continuous commitment with other institutions that have aligned mission – in this regard, a note to the collaborative project of creating an International Institute for Assessment, jointly with the National Board of Medical Examiners (NBME®, USA) and the Foundation for Advancement of International Medical Education and Research (FAIMER, USA), that obtained approval during this year. Of relevance, the work of the curricular reform has also provided unique opportunities to expand our network in the medical education field, by hosting guests from different institutions and also by promoting visits of our students to other medical schools.

In October 2019, we celebrated the graduation of our 13<sup>th</sup> class of medical students (since 2001, the EM celebrated the graduation of 1161 medical students). This is certainly always a major moment for our community as it represents one of the pinnacles of our mission. The level of preparation of our students (at least their knowledge) was again tested in the national residency selection examination (for the first time with a new format, more focused on clinical reasoning); in line with previous years, the (average) performance of EM graduates was the highest in Portugal. This is reassuring of the level of the training students received, and an important achievement in light of the recent change in the landscape of access to residency programs in Portugal (now that a high percentage of students does not have access to those residency programs).

As planned, we have received the visit of the External Advisory Committee in October 2019. It was again a critical moment of reflection and debate with international experts. Their report was very positive and promoted an important framework for reflection that led to specific responses, as detailed in Annex II. Based on this model, we have created another Board to provide guidance on the efforts of our Clinical Academic Center (2CA-Braga), our Digital Medical Center (P5) and our Association for Science, Innovation and Health (B'ACIS).



Another highlight of the academic year 2019/2020 was the submission of the Master in Assessment in Health Professions Education, which received approval by the National Accreditation Agency (A3ES). Of notice, this Master program counts with the collaboration of the National Board of Medical Examiners (NBME, USA) and with renowned teaching staff formally affiliated with the Foundation for Advancement of International Medical Education and Research (FAIMER). This program constitutes an opportunity to further promote assessment of quality in medical education and is expected to foster research in medical education. The first class is expected to enroll in 2021.

Another relevant milestone achieved in 2019/2020 was the result of the evaluation of the current PhD programs in Medicine and in Health Sciences, which were accredited for additional 6 years by the National Accreditation Agency

As for the advanced training in medicine and in health sciences, which counted with several initiatives developed in close collaboration with Alumni Medicina, it progressed with 40 courses that counted with 621 participants. One of these courses was selected to integrate the offer of the Network of European Neuroscience Schools (NENS), which represents recognition of quality and internationalization and exchange of students. The COVID-19 pandemics forced the postponement of 12 courses/workshops. Of notice, the formal launching and starting of operations of the B'ACIS will bring novel opportunities for entrepreneurship activities and for advanced training given its flexible management structure. It is with great enthusiasm that we foresee advanced training in medicine and in health sciences to become part of the B'ACIS umbrella.

The EM/ICVS expertise in advanced training will also mutually contribute and profit from the new MinhoMD curricula, specifically by providing medical students the possibility to include courses/workshops in their portfolio and benefit from the interaction with other participants. This is a new venue expected to be further developed in 2021.

In 2019-2020 the EM enrolled 41 additional students in the Master and PhD programs and in the Specialization Ultrasound Course, many of them through Portuguese Science Foundation (FCT) – and regional (CCDRN)-funded programs to the EM, but also through the national call for individual scholarships.

A challenge and concern pertains with the number of PhD fellowships given to the EM/ICVS by the Portuguese Science Foundation FCT. In fact, FCT decided to discontinue the support to PhD programs, in which we have been extremely successful. This implies that most funding will be given

through the national call for PhD scholarships, precluding the possibility that the EM/ICVS selects the students by the criteria that best fit the defined aims of the institution.

A final note, at the University level, is the launching of a doctoral college, that integrates all schools of the University of Minho. This college, led by a member of the EM, intends to foster the quality and the opportunities of the PhD programs. The EM will certainly contribute and benefit from the experience and expertise of colleagues and students from other schools, and novel training opportunities are likely to emerge.

The most important element of a project like ours is the people. Thus, the creation of an appropriate working culture and environment conditions is amongst the priorities of the EM. Several progresses have been made to improve the conditions of the facilities, and to promote educational actions of value to the faculty, non-faculty staff and researchers. Additionally, the EM supports efforts that promote the well-being of all its members, in particular its students. Data resulting from these actions/research is used to develop preventive/corrective actions as well as publishing scientific reports. During last year, we maintained our efforts to improve the quality of the working environment and to promote literacy and awareness of the relevance of mental health amongst the EM community. These efforts were complemented by other initiatives, in collaboration and in alignment with students that were very well perceived and improved the general satisfaction with the living environment in the EM ecosystem. The pandemic forced us to implement several alterations in school facilities to guarantee compliance with health policies and to ensure safety conditions for our students, faculty, non-faculty staff and researchers. We are now hosting smaller classes in larger rooms in order to provide adequate distance between individuals and providing distance learning in addition to in-person classes. Communal spaces were also improved to ensure adequate distancing during meals.

It is our vision that a medical school is a cluster that includes distinct institutions. More specifically, the EM has been the pivotal and catalytic element in the construction of a Healthcare Cluster at Minho (figure 2) that is the support to our Mission and Vision.

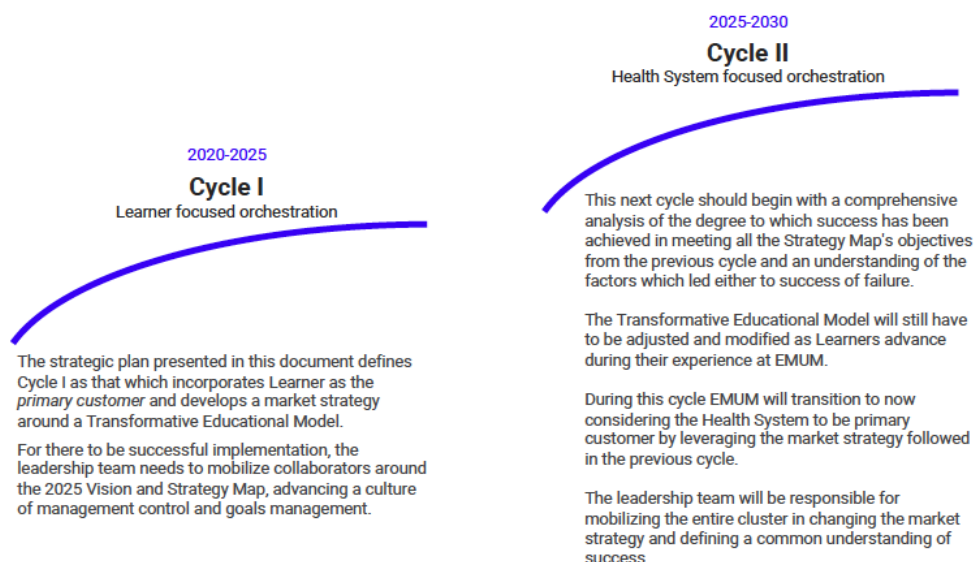


Figure 2 – Medical School in the Minho Healthcare Cluster (HealthCluster@Minho).

We have, now, finished the basic construction of the four pillars of our Cluster. It is now the moment to consolidate this Cluster and to permanently adjust it to the ever-changing challenges. By doing this, we aim to evolve our impact in the long-term and to assume a pivotal role in the healthcare System.

## Evolution cycles in the long term

EMUM has the ambition of assuming the Health System as the *primary customer*



In what concerns research, there is a note of clear consolidation of both the ICVS and the 2CA-Braga. A first note to highlight the new leadership in both ICVS, now led by Jorge Correia-Pinto,

that succeeds to Jorge Pedrosa, and 2CA-Braga, now being led by Nuno Sousa, that succeeds to João Ferreira.

In 2019 the ICVS expanded its activities. Indeed, the number of peer-reviewed international publications reached 272 papers in international peer-reviewed journals – referenced in ISI, Scopus or in PubMed, in addition to 4 international book chapters and 7 proceedings. Importantly, regarding intellectual property, in 2019, the research developed at ICVS resulted in the submission of 2 new patents. Moreover, the competitive funding secured by the ICVS researchers through competitive calls should be highlighted. In fact, ongoing research grants correspond to 21.7 million € (3 years of accumulated value), of which 2 million € relate to funding obtained in 2019 (with 72% from abroad).

The 2CA-Braga clinical/scientific research encompasses: (i) trials (both industry- and investigator-driven); (ii) observational studies (both industry- and investigator-driven); (iii) translational research projects; (iv) clinical validation studies (for procedures or devices). During the year of 2019, a total of 146 clinical research projects were carried out in the 2CA-Braga, divided as follows by study type: 63 investigator-driven clinical studies (5 clinical trials, 48 observational studies and 10 medical device clinical studies) and 83 industry-driven clinical studies (70 clinical trials, 13 observational studies). As an important indicator, the 2CA-Braga recruitment rate of patients has been consistently above 85%. The 2CA-Braga is a results-oriented institution with a strong reputation among its partners and stakeholders. After 8 years of growth and consolidation, and since opening its Phase 1 Clinical Trials wing, it supports more than 30% of all the Phase 2-4 commercial clinical studies performed in Portugal as registered by the Infarmed (Portuguese Authority in Medical Products) and it is one of the few units in the Iberian Peninsula to be able to conduct research throughout the entire drug development pipeline, from cells and animal models to clinical trials. Member of the national scientific system, integrating national and international clinical research networks, 2CA-Braga is certified under ISO 9001:2008 Caspe Healthcare Knowledge Systems (CHKS).

In addition, the 2CA-Braga developed research projects in partnership with the ICVS and other research institutions from the UMinho (with projects funded by the European Commission or nationally, by the FCT and FEDER). Through the 2CA-Braga we further expanded a network of collaboration with respect to consultancy and clinical research services to other healthcare providers, academic institutions and companies (including several MedTech spin-offs, many of which based in Braga). This is now being further supported by our novel infrastructure, the Center for Health Innovation B'ACIS.

A central component of our mission is to add value to the community. This component is highly dependent on the reputation generated by education and research. However, in the developmental program of the first mandate of this leadership, we have established as a milestone for the EM to launch impactful healthcare services and entrepreneurial actions.

In 2019, we launched a digital healthcare center (P5 Medicine) designed to promote better (and digital) healthcare to populations, namely in the link between primary and hospital care and for the promotion of health and monitoring of chronic diseases. The P5 medical center represents an opportunity for us to move further into the core of the healthcare arena and to promote further sustainability and impact to our project. For more detailed information on P5, see Annex III.

In parallel, and given that innovation, knowledge transfer and entrepreneurship are in the core of our operations, we created another infrastructure within the EM's portfolio - B'ACIS - that aggregates, and expands, the value of our knowledge transfer and entrepreneurial activities. As for the P5 medical center, B'ACIS is a non-profit association, that has as stakeholders the EM and *Alumni Medicina*. B'ACIS has already stimulated an important set of initiatives that are promoting intellectual property registration, entrepreneurial activities, services to internal and external scientific communities and to health-tech companies, that will certainly also secure the adequate context for the development of a HealthCluster@Minho. For more detailed information on B'ACIS, see Annex IV.

All these actions took place from March onwards in a very complex and unexpected context triggered by the Covid19 pandemic. The reaction of the entire EM community has been exceptional at all levels. We have: i) restructured, together with our students and faculty, all our pedagogical activities (including the move to proctored online assessment) with minimal impact in students learning and progression, ii) repositioned our research activities, with the commitment of our researchers and staff (largely on a voluntary basis), to help the National Health System in diagnostic procedures and in creating novel medical devices while keeping the research operation even more active, iii) restructured our clinical research operations to promote several innovative clinical studies and iv) offered, together with our students, an impressive set of healthcare actions that were of paramount importance to face this unprecedented challenge. There is no best example of an agile and mission-oriented community than the one we have at EM.

This scenario has augmented significantly our recurrent financial restrictions (that are general to all Universities in Portugal). In parallel, there has been an exacerbation of the regulations for public contracts and acquisitions that impose severe delays in our operations. However, a careful and

balanced budget, an efficient and anticipated plan to face restrictive regulations, along with our continuous efforts to maintain (and expand) the sources of competitive funding continue mitigating the detrimental impact of low budgets and assure the conditions for the continuous development and consolidation of our operations.

As reported previously the Portuguese government decided not to renew the public private partnership in the Hospital de Braga. As a consequence, from September 2019, a new (public) board has been governing the Hospital. While the collaborative atmosphere that was built with José de Mello Saúde (the private partner that managed Hospital de Braga) was excellent, we have been building a similar cooperation with the new leadership of the Hospital. Thus, there has been no detrimental impact as a result of this shift and, we have been able to continue to expand our common efforts to improve healthcare to our populations. An additional note to highlight, that the same fruitful collaboration has been established with the other Hospitals and healthcare institutions within our network.

In summary, the 2019-2020 period has been instrumental to establish, and consolidate, our Cluster and to assure that we are in a good position to face challenges. Our portfolio of activities has grown significantly in number and complexity but our efforts to stabilize and expand our workforce (both academic, research and non-academic staff) and to create the best possible workplace culture and environment, have proven to be successful. In the first mandate of this leadership there has been a significant increase in recruitment of academic staff (namely to face the challenges of MinhoMD) and of researchers to more stable conditions, including tenure research positions; this will balance more appropriately the faculty profile (with different profiles being proposed) and is relevant to increase diversity. As previously announced we have undergone an external assessment exercise of the EM's organization and impact. This exercise has proven to be instrumental for the entire community of the EM to design the Vision of the future - it is now time for its implementation. It will be exciting!

## **2. OBJECTIVES AND STRATEGIES IN 2019-2020**

The objectives and strategies for 2019-2020, presented in a previous report, were defined on the premise of our responsibility to keep benchmark of quality at the highest international level as well as on our need to continuously improve and expand the portfolio of activities to assure the best conditions for the future.

In line with these premises, in this period we renewed our commitment on the:

- continuous improvement of the pedagogic and scientific quality of the EM project;
- adjustment and implementation of new pedagogic methods, namely in the preparation process to launch MinhoMD;
- expansion of our ability to conduct remote assessment and training, both through the in-house-development and the subscription of several online platforms.
- incorporation of new pillars (namely Health System Sciences) in our curricular plans and a greater visibility of medical Humanities;
- introduction of training programs that promote the acquisition of skills on the usage of novel medical technologies;
- continuous usage of best practices in medical assessment, namely through an effort to expand formative assessment opportunities and feedback;
- active participation in international medical education networks;
- restructuring and reorganization of medical residency training program and clinical fellowships programs;
- active recruitment and promotion of academic, research and non-faculty staff;
- promotion of the awareness of the quality of our educational and research programs, nationally and internationally;
- continuous search for the best practices in pre and postgraduate training;
- launching of a Master Program in Assessment for Health Professionals;
- offer of advanced courses/workshops and other scientific events through the B'ACIS;
- positive and constructive interaction between all stakeholders involved in the project;
- creation of the best working environment, by improving physical and logistic conditions, by promoting development and education activities for all collaborators, but also by promoting a safe and vibrant working environment for students, researchers, non-faculty staff and faculty;
- continuous improvement in management and in creating efficient processes in the EM, namely guided through a detailed analysis performed by external experts;
- mitigation of the detrimental impact of the externally-imposed bureaucratic load and of the unpredictable financial scenarios;
- support fundamental, translational and clinical research efforts, with renewal of our research platform;
- creation of a digitally health service center – P5;
- creation of conditions that assure the future sustainability of the EM project, namely through the action of the Center for Health Innovation B'ACIS.

### **3. ACTIVITIES AND ACHIEVEMENTS IN 2019-2020**

#### **Medical Degree Course**

##### *Six-year Integrated Master Program in Medicine*

A separate report (Snapshot Medical Degree-Assessment of the Academic Year 2019-2020), prepared by the Medical Education Unit, detailing the pedagogical activities and results undertaken in the academic year 2019-2020 is presented in annex V. A brief summary of the academic achievements follows.

The academic performances showed no striking variations from the previous year. The success rates in the majority of the curricular units of the first 3 years were equal or above 90%. Failure rates were higher in the first and third years of the Medical Degree and progressively decreased throughout the curriculum. The minimum approval rate in courses of the 3rd year of the original track is 94%, supporting that, in terms of academic performance, students who successfully perform in the first years continue to thrive in the remaining of the curriculum.

In the year 2019-2020, 121 new students were admitted via the national admission process (114 under the general regime and 6 under the special regime for students from the Azores and Madeira Autonomous Regions, Portuguese emigrants or students with disabilities). There were 989 applicants to this Program (8 applicants/place, representing a significant increase from the previous year, after 3 years of decline). For the national admissions process (general contingent), the lowest entrance grade for the newly admitted students was 182.2 out of 200 (3rd in the ranking of medical degree). Eighty-two percent of the students admitted under the general admission regime chose EM as their first option. There were 8 additional students enrolled: 2 athletes and 6 from the Portuguese speaking countries in Africa.

The gender distribution of the novice students in 2018-2019 continued biased towards women (71%). Enrolled students originate mainly from the region, maintaining the same pattern as previous years: 61% come from the District of Braga and 14% from the District of Porto, which is thought to be driven by economic reasons.

##### *Four-year Graduate Entry Program in Medicine*

In 2019-2020, we continued with the track “Four-year Graduate Entry Program” for graduate



students. In this program, the selection process is within the full control and responsibility of the EM. The 2019-2020 graduate entry track selection procedure to the 18 places was identical to that in previous years and included 4-steps: (1) administrative selection for absolute merit - which included holding a previous degree with a final graduation grade point average equal or above 14/20 points; (2) written examination of knowledge – a Basic Sciences Admission Test with 100 multiple choice single best answer items on biology, mathematics, chemistry and physics; (3) Assessment of Transversal Skills (ATS) – a Multiple Mini-interview exam (MMI) composed of a series of 10 stations, intended to assess personal attributes and skills relevant to the medical practice (Communication, Empathy, Critical thinking, Integrity, Ethical values, Teamwork, Scientific knowledge, Management, Creativity, Self-assessment) ; (4) analysis of *curricula vitae*. There were 174 applicants to this Program (9,6 applicants/place, representing a significant increase from the previous year). The top-scoring 27 students were admitted to the ATS. The best 18 students with valid registrations and selection criteria were admitted to the “Four-year Graduate Entry Program” in 2019-2020. The UMinho was top preference for most of the 18 new graduate entry students (63%).

#### *Global number of undergraduate students in the medical program*

The global number of undergraduate students registered in the medical program in this academic year (2018-2019) was of 134 in the first year, 132 in the second year, 143 in the third year & first year Graduate Entry Program, 136 in the fourth year, 137 in the fifth year and 145 in the sixth year. The total number of medical students of the EM amounts to 827.

## **Medical Students Associations: NEMUM and *Alumni Medicina***

### *NEMUM Report*

NEMUM (Núcleo de Estudantes de Medicina da Universidade do Minho) is a non-profitable organization founded by medical students in 2002. Over the last 18 years, NEMUM has represented all medical students at the University of Minho, among other aims, as to offer them a series of opportunities that complement their curriculum and their academic experience. Thus, NEMUM is focused in areas that are important and interesting to a medical student, such as the community health and awareness, science, soft-skills acquisition, culture, leisure, medical education and international mobility.

After the last few years, where such high goals were achieved, the bar for this year was high. However, this team made up of 29 incredibly motivated and capacitated members managed to surpass what was proposed at the beginning of this mandate. Due to the COVID-19 pandemic, the school year 2019/2020 has been an untypical year, not only for NEMUM board members, but also for all EM-UM students, affecting all of our activities.

Since the year 2006, NEMUM organizes annually the “Hospital dos Bonequinhos”, translated as Dolls’ Hospital, an activity that gathers around 200 students from Minho’s University and 1000 children from different kindergartens in Braga. This activity consists on a pretended hospital, to where children take their sick dolls to see a doctor, in this case a medical student. The aim of the “Doll’s Hospital” is, in the first place, to develop the communication skills of medical students with children and, doing it, demystify the children’ fear of doctors and white coats. This activity has the collaboration of Braga’s Hospital, the Town Hall of Braga and other health care students too.

“Aldeia Feliz” is a project that took 30 participants to walk from house to house trying to visit the most isolated people, aiming to evaluate the health of elderly population, their access to health care and their social environment, leading to the report of critical cases to the competent entities who would then support the people in need. In this activity, students were able to practice some techniques and test their communication skills with a complex target audience which are the elderly population. This year’s edition took place at Celorico de Basto and helped nearly 200 people.

During the year, many lectures and skills workshops in several areas related to medicine occurred, challenging students to reflect and discuss about medical education and other themes. Furthermore, NEMUM is already organizing the XIII Minho Medical Meeting, on the 6th, 7th and

8th of November of 2020, this time focusing on the future of the medical profession and the Medicine of the Future. Plus, NEMUM is also organizing the V Meeting Medical Education (Meeting ME), a medical education congress that will be focusing on the evolution of the medical education curriculum on the 8th of December of 2020.

NEMUM owes quite a big part of its activity and intervention to the School of Medicine of University of Minho (EM-UM), which is one of its greater partners of our association. The Medical Alumni Association is another relevant partner, along with the University of Minho Students' Association (AAUM) and the Portuguese Medical Students' Association (ANEM-Portugal), which support the execution of many of NEMUM's initiatives.

Because NEMUM wants to always continue the excellent work carried out by the previous committees, NEMUM will continue to make every effort to represent EM-UM students in all circumstances, as well as to provide them with activities that can make their academic journey memorable.

NEMUM's Executive Board for 2020: José Diogo Soares (President); Pedro Lopes Fernandes (Vice-President for External Affairs); Nádia Açafrão (Vice-President for Internal Affairs); Inês Castro (Vice-President for Administration); Teresa Nogueira (Treasurer).

The NEMUM's President

José Diogo Soares

### *Alumni Medicina Report*

*Alumni Medicina* (Núcleo de Antigos Estudantes de Medicina da Universidade do Minho) is a non-profit association composed by the *alumni* of the School of Medicine of the University of Minho. The mission of this association is to support the project of the School of Medicine and to promote the interaction between its members and their *Alma Mater*.

In the last years a significant effort was devoted to increase the quality of the scientific sessions (courses and workshops) organized by *Alumni Medicina*. The aims of this scientific program are to offer more diversity and opportunities for Continuous Medical Education to healthcare professionals and to promote the interaction between the School and the professionals from different universities and healthcare institutions. *Alumni Medicina* has also been offering courses addressing specialized training of competences residents from various medical specialties must

acquire for their clinical practice (InAnestesia, iPsiquiatria and iNeurologia) as well as activities in the field of basic competencies in Orthopedics and specialized courses in Clinical Communication skills. These events are an important financial support to the project of *Alumni Medicina*.

In 2019, *Alumni Medicina* stood as a partner of EM in the development of P5 Medical Digital Center, an initiative that aims to improve the quality of medical care in Portugal. We were also involved in the activities of B'ACIS, Science, Innovation and Health Association.

Besides the scientific initiatives, *Alumni Medicina* also organized the “ExpoIAC” – a meeting where young doctors transmit their experience to recent graduates about the best places for training during the “common year internship”, an opportunity for the recent graduates to have their first contact with our association.

In 2019-2020 *Alumni Medicina* kept the cooperation between alumni and current students through their association (NEMUM). From a social perspective *Alumni Medicina* kept the social emergency program, a fund created to help current students with financial difficulties.

In order to promote cultural exchange inside the walls of the EM, *Alumni Medicina* organized photography and painting exhibitions in the main hall of the School.

The *Alumni Medicina* President  
Marina Gonçalves

### **Post-graduation**

A brief summary of the activities is provided in the next paragraphs (for detailed analysis, please consult Annex VI).

The formal advanced training at the EM presently encompasses the following programs:

- *Master program in Health Sciences*: a total of 31 students, of which 15 enrolled in 2019-2020; 2 students defended their theses.
- *PhD program in Health Sciences*: a total of 63 students, of which 19 enrolled in 2019-2020; 5 students defended their theses.
- *PhD program in Medicine*: a total of 20 students, of which 1 enrolled in 2019-2020; 4 students defended their thesis.

- *Aging and Chronic Diseases (PhDoC)*: this inter-institutional (with University of Coimbra and Nova University of Lisbon) FCT PhD program finished, as such, there was no further recruitment. From the 15 students registered, 4 defended their thesis.
- *Specialized Ultrasound Course*: in its first edition, 6 students enrolled.

Altogether, in the academic year 2019-2020, 31 Master and 98 PhD students were developing their activities within the post-graduate programs of EM.

As for the continued advanced training in medicine and in biomedical sciences, 2019-2020 counted with 621 participants (courses run until end of July), distributed among 27 courses and workshops. Of these participants, 409 originated from national institutions outside the University of Minho and 49 from foreign institutions; 348 were medical doctors. 86% of the respondents classified the courses as excellent or very good. The collaboration with Alumni continued in 2019-2020 with respect to a relevant offer of training for residents, within the national residency programs; specifically, in Anesthesiology, Neurology, Introduction to the Gynecology and Obstetrics, Psychiatry and Clinical Communication.

## Research

The EM research activities are developed in the context of the ICVS | Life and Health Sciences Research Institute (member of the ICVS/3B's - Associate Laboratory) | and the 2CA-Braga | Clinical Academic Centre – Braga, Association.

The ICVS is a research subunit fully incorporated within the EM, integrated in the national system of science since 2003. The research activities in the ICVS are centered in four multidisciplinary Research Domains: i) Microbiology and Infection; ii) Surgical Sciences; iii) Neurosciences; and the recently launched domain of iv) Population Health - which are supported by laboratorial core technical units/facilities.

The distinctive aspects of the ICVS development strategy are: i) an integrated, flexible and collegial organization, aiming at high-quality scientific outputs; ii) the quality/differentiation of human resources, focused on a small number of research domains with high critical mass; iii) the connection to health care institutions – namely through the 2CA-Braga – reflected in the clinical scope of its research and in the training of physicians and other health professionals; iv) the interaction with research institutions in the areas of health technology, particularly within the context of the ICVS/3B's - Associate Laboratory (ICVS/3B's AL).

### *The ICVS/3B's-PT Government Associate Laboratory*

The ICVS/3B's AL was launched in 2011 to produce highly competitive research in the interface Health Sciences/Technologies, pursuing the goal of expanding the boundaries of current knowledge and developing translational activities on innovative prophylactic, diagnostic and therapeutic solutions.

In the context of the ICVS/3B's – AL, an application for the period 2018-2022 was submitted in the first quarter of 2018 to the evaluation process of R&D units implemented by the FCT. In the meanwhile, the ICVS/3B's – AL was informed that the classification granted by the FCT evaluation panel was “Very Good”. The ICVS/3B's Direction Board considered that the evaluation process occurred with both administrative errors (namely, regarding the composition of the evaluation panel and the absence of the due reports from specialists, as defined in the process regulation) and scientific flaws and has, therefore, presented a rebuttal seeking to obtain the maximum grade of “Excellent”, which is still awaiting response.

### *The Clinical Academic Centre – Braga, Association (2CA-Braga)*

The 2CA-Braga results from a partnership with the *Grupo José de Mello Saúde* and the Braga Hospital (now back to public administration), aiming at developing clinical research, including clinical trials in collaboration with international industrial partners. The 2CA-Braga combines a team of researchers, physicians and other health professionals, to which is associated a team of project managers, nurses, pharmacists, neuropsychologists, imaging technicians and clinical trials coordinators/monitors, ensuring a professional management of all the operations.

The two main axis of 2CA-Braga's activity are the conduction of clinical research and the training of clinical researchers. In 2019, 2CA-Braga kept its leading position as clinical trial site in Portugal: it was home to 1 in every 3 commercial clinical trials (1 in every 2 for phase III trials). We also hosted more than 80 investigator initiated trials, including academic clinical trials, and several validation studies for medical devices (from both local and international companies and research groups). Finally, we provided training in clinical research and validation of medical devices to more than 100 participants.

### *The Life and Health Sciences Research Institute (ICVS)*

A detailed description of the ICVS activities and achievements during 2019 is reported in the ICVS Annual Report 2019 (annex VII) (a note here, the ICVS annual report refers to the civil year of 2019, while the present EM report refers to the academic year 2019-2020, so some numbers may slightly differ - for instance, the number of post-graduation students).

In this section of the EM report, we summarize below the main achievements attained in 2019.

#### *ICVS Human Resources*

The ICVS kept actively involved in R&D activities a differentiated research team, pursuing a strategy of reinforcing the productivity of its body of PhD members. In 2019, the total number of ICVS members was of 281, including 113 PhDs (45 EM Faculty, 55 Researcher Contracts, 1 Research Fellow and 12 Post-Docs), 14 Research Fellowships and 129 post-graduation students (98 PhD students and 31 Master students) and 25 non-academic staff (7 administrative and 18 specialized technicians, with salaries supported by the EM).

Globally, we highlight the increase in the number of contracts for research staff. Indeed, the ICVS was able to define a policy of differentiation of its body of PhD researchers. In fact, their profile

positively evolved, with an increase in the number of Post-docs that succeeded in competitive applications for researcher contracts – the total number of researcher contracts increased from 14 in 2014 to 55 in 2019 (funding sources such as FCT and P2020). Presently, taking advantage of the governmental policy defined for the “Scientific Employment”, the conditions are created for a new cycle of growth in the body of PhD researchers with contracts. In this context, we are planning to increase the number of researcher contracts in 2020 by at least 8 new contracts, including three positions for researchers with tenure. Additionally, the four spin-off companies associated with the ICVS are financially viable and, most importantly, generating alternative career pathways for researchers.

#### *ICVS Financial Resources*

In 2019, the ICVS secured relevant amounts of competitive funding from research grants, involving a total sum of about 21.7 million € in ongoing projects (3 years of accumulated value) from calls at the international and national levels. The level of funding granted through competitive sources and from contracts with leading industrial partners has been reinforced, namely through 90 ongoing projects (50 from FCT; 3 from NORTE2020; 8 from other national sources; 2 from H2020; 22 from other international sources and 5 from contracts with the national industry).

In 2019, industry-sponsored R&D has been performed in areas of mutual interest, namely with sponsors such as BIOGEN PORTUGAL, GILEAD SCIENCES, KARL STORZ and TECNIMEDE.

#### *ICVS Infrastructure*

At the ICVS facilities, all the scientific equipment from the installed technological platform is shared amongst the Research Domains. In addition, this equipment is also available under request to other research units from the University of Minho and to the Portuguese scientific community in general. Specifically, the ICVS provides: fully operational Functional Cores for Animal Housing, Microscopy, Histology, Molecular Biology and Endoscopy/Minimally Invasive Surgery, and Shared Technical Facilities for Cytometry, Cell and Tissue Culture, Bio Banking, Electrophysiology and Biosafety Level 2 and 3. Some of these Functional Cores, such as Histology, Microscopy and Animal Housing also provide external services.



Importantly, in 2019 the ICVS concluded the construction of a new area for “Terminal Animal Experimentation Rooms” (SEAT), located close to the clean zone of the “Biotério”/rodent Animal Facility, in order to perform terminal procedures with rodents. It includes an animal preparation room, for anesthesia/sedation of animals, a room equipped for perfusion with hazardous chemicals and dissection, and a third room equipped for the preparation of primary cell cultures. These experimental rooms are essential for all research domains and follow a legal requirement to avoid the transportation of animals inside the research institute to laboratories away from the animal facilities.

In addition to the accomplishments reported above, the following major achievements of 2019 are to be mentioned:

- High number of international publications

In 2019, the ICVS published a relevant number of articles in international peer-reviewed journals (referenced in ISI, Scopus or in PubMed), in a total of 272 papers, in addition to 4 international book chapters and 7 proceedings, as well as 144 communications in international congresses. Among the articles published in 2019, 265 were produced within the four research domains (Microbiology and Infection, Neurosciences, Surgical Sciences and Population Health), corresponding to 82% in Q1-Q2, with 66% in Q1, with an average Impact Factor (IF) of 4.4. Additionally, the ICVS published 14 articles in other fields. Importantly, the average IF of the 100 articles published in the journals with higher impact was 6.4.

- Increase in the impact of the clinical studies developed in the 2CA-Braga

The 2CA-Braga has developed clinical research with a growing impact, with a significant move towards earlier research phases and more investigator-initiated clinical trials. It hosted 3 phase I (3 times more), 12 phase II (2 times more) alongside with 58 phase III and 2 phase IV clinical trials, in addition to 12 observational studies and 1 medical device clinical study (also commercial-driven). Moreover, the 2CA-Braga developed 70 other clinical studies (investigator-driven), specifically 5 clinical trials (none in previous years), 58 interventional and non-interventional studies in partnership with the ICVS and other research institutions from the University of Minho (with projects funded by the European Commission or nationally, by the FCT and FEDER) and 9 validation studies of medical devices, mostly in collaboration with spin-offs and young startups, both Portuguese and from elsewhere in Europe.

- International and national scientific awards

In 2019, 9 ICVS researchers, individually or as a team, received scientific prizes/awards, with two researchers being distinguished with the L'Oréal Portugal Award for Women in Science, and the Nature Research Awards for Driving Global Impact 2019 (Runner up).

- Establishment of a strategic partnership with the INL | International Iberian Nanotechnology Laboratory

Building robust national and international collaborative networks is a major pillar underpinning the ICVS research strategy. Pursuing this challenge, the ICVS has been developing initiatives to foster the establishment of strategic partnerships with other research institutions based on complementarity and excellence in research. In this context, during 2019, the INL | International Iberian Nanotechnology Laboratory and the CINBIO (Centro de Investigacións Biomédicas - Vigo, Spain) have been the focus of these initiatives. The organization of "Hackathon" initiatives with INL have resulted in 6 collaborative R&D projects with a total budget of 1 379 696,40 euros, funding obtained from national and international competitive calls. Regarding CINBIO, the 1st joined initiative: "ICVS – CINBIO 1st Meeting – Fostering bridges across the border", took place at ICVS, 15th October 2019, with a total of 43 participants from both institutions resulting in the identification of more than 12 potential collaborative interactions between participants.

- Selling of a patent

Based on research work developed from scratch at ICVS (Surgical Sciences) it was possible to develop a new intervention technique for urological procedures. Such work was patented by ICVS and sold to a leading company in the field, in 2019. It is from the financial, but mainly from the example, an important achievement that merits reference in this report.

#### 4. ARTICULATION WITH THE NATIONAL HEALTH SYSTEM

This component of this report highlights, as detailed in previous reports, the innovative articulation strategy of the EM with several healthcare institutions within (and beyond) the National Health System. The key element of the strategy is the multi-centre approach, based on inter-institutional partnerships within the legal framework concerning the articulation between the Medical Schools and the Health Services, a legal document (*Portaria 36/2002*). The EM is institutionally articulated, under the terms established by law, with the Regional Health Administration - North (ARS-N) and more specifically with *Hospital de Braga EPE*, *Hospital Senhora da Oliveira (Guimarães)*, *Unidade Local de Saúde do Alto Minho (Viana do Castelo/Ponte de Lima)*, *Hospital Santa Maria Maior (Barcelos)*, *Hospital Privado de Braga*, *Hospital CUF Porto*, *Hospital da Arrábida*, *Casa de Saúde do Bom Jesus (Nogueiró – Braga)* and with Primary Care Health Centres in the Northern Regions of Portugal.

This collaborative strategy has permitted the establishment of conditions to improve the quality of care in the region. In a setting of consolidation, it merits reference the level of commitment with academic (pedagogic and research) activities has persisted or expanded, despite the increasing number of editions of the medical degree. The renewal of the clinical staff involved in academic activities has also progressed at a steady level and the quality of the clinical teaching continued to be recognized by students and physicians, and the presence of the students in the affiliated hospitals continues to be extremely well appreciated. Hopefully, in the near future, together this healthcare network will be able to select the clinical outcomes that should be improved.

The governance structure of this interplay has been maintained very efficiently by the Coordinating Committees ("*Comissões Mistas*"). The Committees are appointed to decide on matters of relevance for the coordination of activities between the EM and the Health Services. The established Committees have adopted a Protocol that proved to be very efficient and became a central piece for the development of an efficient inter-institutional collaboration. This Protocol defines the model of cooperation (namely the Clerkship coordinating groups) in what concerns the clinical training of the medical students. These regulations cover the basic guidelines for the participation of the Health Services in the undergraduate clinical training, the competences and responsibilities of each of the participant institutions, and the term of office of the clinical supervisors and of the clinical tutors. The Clinical Coordinating Groups, Supervisors, Tutors at Affiliated Hospitals and Health Centres are listed in Annex VIII.

## **5. GOVERNING AND ADVISORY BODIES, SUBUNITS AND COORDINATING BOARDS**

In accordance with the bylaws of the University of Minho, currently the governing and advisory bodies, subunits and coordinating boards of the EM are as follows:

### *Governing bodies*

- The School's Council
- The School Presidency (President and Vice-Presidents of the School)
- The Scientific Council
- The Pedagogical Council

### *Advisory bodies*

- The External Advisory Council of the School
- The Advisory Council of the Scientific-Pedagogical Subunits
- The School Secretary

### *The School subunits*

- The EM Scientific-Pedagogical Subunits: the Scientific-Pedagogical Areas
- The EM Research Subunit: the Life and Health Sciences Research Institute

### *Coordination boards*

- The ICVS Directive Board
- The Course Committees
- The Coordination of the Organic Subunits and of the Units and Support Offices

The competences and the present composition of these bodies and boards are presented in Annex IX.

## **6. HUMAN RESOURCES**

One of the priorities of the EM is to create a great team of collaborators and to set up the best possible conditions for their development.

### *Academic staff*

In the last years, a high priority was given to the renewal of the faculty, including recruitment and promotion of academic staff. For that purpose, the EM has reappraised its own benchmarks/recommendations for academic progression, which are known by all members of the faculty (and by those that express interest in joining the faculty). We keep committed to assure that the selected candidates are aligned with the institutional project and engaged in the development of its specificities, namely in what concerns seven essential aspects: (i) the alignment with the mission and vision of the EM; (ii) the proactive learning methodologies; (iii) the integration of multidisciplinary teams; (iv) the commitment with the permanent monitoring and quality assurance; (v) the relevance of medical education and faculty developmental processes; (vi) the role of research, as a crucial element for a research-based learning process, and (vii) the engagement in research activities (including submission of the research projects to the strategic guidelines and priority areas defined by the EM).

In this period, we have intensified our faculty development programs that target newly admitted academic staff but also provide continued training for the existing faculty. The program, based on workshops and supplemented with small team activities and informal discussions that create opportunities for addressing the topics related to the implementation of MinhoMD, but also that related with more general topics.

In the academic year 2019-2020, the School has a faculty of 102 members (23 Full Time) of which 60 are PhDs. The faculty includes: 5 Full Professors, 2 Associate Professors with Aggregation, 10 Associate Professors, 4 Assistant Professors and 81 invited teachers (5 invited Full Professor, 5 invited Associate Professors, 29 Invited Assistant Professors, 38 Invited Teaching Assistants and 4 Monitor). Additionally, the EM counts with 2 Emeritus Professors, 1 Associate Professor (cooperation with Faculty of Nutrition and Food Sciences from Oporto University), 2 Permanent Invited Professors, 8 Visiting Scholars and many other collaborators particularly related to the Clinical Residencies. The full composition of the regular teaching staff is listed in Annex X, together with their qualifications, academic/hospital position and scientific area (for a matter of precision, the academic position is indicated in Portuguese). The Clinical Supervisors and Tutors who supported the clinical training of students in the Hospitals and Health Centres during the academic year 2019-2020, in a total of around 800 clinicians, are listed in Annex VIII. In terms of the faculty profile, it is important to highlight that 75% (76 out of 102) of the academic staff are MDs.

### *Non-academic staff*

Annex X presents the non-academic staff members, in a total of 51 (38 are permanent staff and 13 are non-permanent staff), and their qualifications, position and allocation. The academic profile of the staff is above the average situation in the Portuguese higher education system (78% of the staff have a higher education degree). It's also worth mentioning that part of the staff is allocated to the research institute; this represents a significant effort from the EM to guarantee the best possible conditions for the research activities in the ICVS and an important challenge for the future. The EM is proud to say that a great care has always been given to assure that every member of the non-academic staff can also undergo educational activities to improve their qualifications.

## **7. FINANCIAL RESOURCES**

One of the most innovative aspects of the EM project was the celebration of a contractual program established with the University. This program defines an annual budget to be allocated to the EM to cover overall expenses (salaries, costs with healthcare units, current expenses and equipment). The initial budget allocated to the School in 2019 was of 5,773 638.00 €.

It is our responsibility to make a judicious use of the financial resources. This is a complex exercise given that on one hand, there is an obligation to respect to our fiduciary duties of maintaining the operations, and on the other, we need to plan strategic and generative actions that allow the transformations expected from an innovative Medical School and that assure the sustainability of the future. Following with rigour the plans approved for the period 2019-2020, we were able to accommodate the difficulties created by a turbulent regulatory environment, and simultaneously to invest in the renewal of the human resources and the technical platforms.

We are aware that the economical soundness of our project is critical for its success. Thus, we have established several key results for the future (2025), including: i) increase cluster's revenue by 3%/year; ii) obtain an annual revenue from P5+B'ACIS+2CA > €3M by 2025; iii) bring one industrial partner of reference to the cluster. Hopefully, we will achieve these results.

## 8. PLANS FOR 2020-2021

In alignment with our mission, the major goal for the near future is to keep a permanent commitment to the benchmark of quality at the highest international level. Thus, we pursue continuous improvement, seeking to assure the best conditions to reinforce the EM dynamism.

At the **educational level** we reinforce the commitment to:

- continue our efforts to adjust our educational activities to the changing landscape of healthcare (in particularly through MinhoMD);
- increase the offer of transferable skills to students in the MSc and PhD programs and to supervisors;
- strength our structure for the pedagogic activities and our support to continuous medical education, training and assessment of clinical and laboratory competences;
- further contribute to the structuring and organization of medical residency training program and clinical fellowships programs, as well as the development of new collaborations with healthcare partners;
- continue the internationalization of the EM project, namely through the establishment of new partnerships with other prestigious institutions around the globe, participating in several international collaborative efforts;
- maintain the offer of high-quality advanced training.

At the **research level** we emphasise the commitment to:

- perform internationally cutting-edge research in our Research Domains;
- continue expanding clinical research through the 2CA-Braga, in collaboration with national and international industrial partners;
- increase the impact of scientific publications, measured by impact factors and quartiles;
- reinforce the capacity to protect intellectual property and knowledge transfer;
- reinforce the body of research staff, namely by concluding the call for tenure research positions;
- expand the network of collaborating R&D institutions;
- apply for more sustainable and diversified funding sources for basic and clinical research, with emphasis for international competitive funding and entrepreneurship sources.

The construction and consolidation of the EM project will only be sustainable through the **generation of value**. We will reinforce the commitment to:

- expand the activities in the healthcare field through the P5 medical centre, increasing the recruitment of digital health users (at the individual and institutional levels);
- support the activities of B'ACIS to foster the interaction with the EM spin-offs and external companies, seeking to create new products with potential impact in healthcare and in the creation of value;
- be a critical leader in the HealthCluster@Minho.

## **9. FINAL REMARKS**

We are celebrating this year 20 years since the beginning of this project. We believe we have fulfilled our mission because “we have accomplished the objectives that were established at the launching of the EM”. This period has consolidated the EM cluster and hopefully we have also launched a strong basis for renewal and growth of our project, even when facing unprecedented challenges. Such endeavour is only possible because of the fantastic team that constitutes the EM community – to All a word of praise and gratitude!

Let's make the next 20 years even greater!

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