



School of Medicine

ANNUAL REPORT

2018–2019

University of Minho

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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 2018-2019. The detailed data on the scientific and pedagogical activities are presented in individual attached reports.

The mission of the School of Medicine (EM) is to *improve healthcare through education and research to generate value*. In this report, and in alignment with our Mission, we will highlight the major events and achievements of the academic year 2018-2019.

During 2018-19, we continued the exciting challenge of renewing the curriculum of the medical degree with the same enthusiasm and integrative spirit. A first proposal of MinhoMD (attached at the end of this Report as Annex I), was approved by unanimous vote of all the governing bodies of the EM; it was submitted to the University bodies for approval (due in September 2019), after which it will go for analysis of the accreditation agency (A3ES). By now, we have a clear picture of the framework of the new curriculum, which we believe will face the ongoing changes in the practice of healthcare and the needs of the physicians to serve the healthcare force in the next decades. 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 the figure 1 we are now on 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).

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.

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 year we made efforts to reinforce internationalization. This included the exchange of several faculty members and students to other medical schools, namely Thomas Jefferson and 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 we have now submitted to the UMinho's governance bodies. 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 2018, we celebrated the graduation of our 12th class of medical students (since 2001, the EM celebrated the graduation of 1032 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; in line with previous years, the (average) performance of EM graduates was the highest in Portugal. This is certainly reassuring of the level of the training students received, and an important achievement in light of the 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). Notwithstanding this result, we congratulate the final announcement of a new model for the selection exam where, hopefully, clinical reasoning will be much more reliably assessed. Such change, for which the EM always advocated, was also accompanied by another important governmental decision – the use of a standardization method to rank the final graduation scores of the graduates of the distinct medical schools in Portugal. We believe that

these changes will provide fairness to the process and justice to the EM's graduates since, traditionally, they were ranked lowest due to lower absolute final graduation scores.

The External Advisory Committee visited the EM in October 2017. This is always a unique opportunity to foster reflection and to obtain feedback from international experts. Their report was very positive and promoted an important framework for reflection that led to specific responses as detailed in Annex II.

Another highlight of 2018 was the completion of a 2 year-long process that resulted in the recognition of compliance with the best international practices in PhD education advocated by ORPHEUS (Organization of PhD education in Biomedicine and Health Sciences in the European System), with the support by The Association of Medical Schools in Europe and by the World Federation for Medical Education. Specifically, the EM's PhD programs were awarded with the ORPHEUS certification for PhD education, a distinction restricted to very few institutions worldwide. The motivation of the EM to further strengthen initiatives to promote quality in advanced training led to the proposal to host the annual conference of ORPHEUS, which we will host in 2020 (April 2-4, <https://www.med.uminho.pt/en/ORPHEUS2020>).

The EM also kept the pace in continuous medical education and advanced training in medicine and in health sciences, which counted with several initiatives developed in close collaboration with Alumni Medicina. These further strengthened the position and visibility of the EM within the National Residency Programs but already expanded to residents from Spain and to the design of training initiatives to less privileged regions of the world. As for the international program of advanced training courses, the EM/ICVS offered, in 2018-2019, 36 courses/workshops which counted with over 800 participants, mostly from outside the UMinho.

Postgraduate education is a major mission of the EM, not only within formal Master and PhD programs, but also in advanced training for health professionals and biomedical researchers. In 2019 the EM launched the first edition of the Specialization Course on Ultrasound, a formal course of 30 credit units (ECTS). This is in line with the effort to train MDs with new state of the art methodologies and is expected to strengthen the technical competencies for point of care for the MinhoMD curricula.

In 2018-2019 the EM enrolled 38 additional students in the Master and PhD programs, 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 for the near future pertains with the end of the funded FCT-PhD programs, expected to terminate in 2018-2019 but further extended into the academic year 2019-2020. FCT discontinued this funding instrument and will allocate scholarships based on the evaluation given to the research institutions; a process that is still ongoing.

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. Two years ago, we acquired external consultancy services to assess the quality of the working environment (a summary of the results is presented in Annex III) and an intervention 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.

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 the Minho Healthcare Cluster (figure 2). In this figure it becomes clear that the mission of the EM is not confined to its educational activities, but it expands to **research** (biomedical - ICVS and clinical – 2CA), as well as to operations that **generate value** to the project – this includes healthcare activities (through the P5) and entrepreneurial operations (B.ACIS).

ICVS and other research institutions from the UMinho (with projects funded by the European Commission or nationally, by the FCT and FEDER). As an important indicator, the 2CA-Braga recruitment rate of patients has been consistently above 85%.

Importantly, during this year we have finished the setting of the new Animal House, and we have acquired new microscopes, ultrasound and MRI equipment, as well as we had the first Phase 1 clinical trials in the Clinical Academic Centre Braga Association (2CA- Braga). We believe that these investments represent added-value to the existing technical platform, which has not been renewed for a while, largely due to the absence of national investment in renewal of the scientific platforms and infrastructures. This effort run, in parallel, with the continuous commitment to support research, from fundamental to clinical. As for the latter, we continued to expand the activities of the 2CA- Braga, which translated into innovative therapeutic interventions provided to hundreds of patients in the region. 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 B.ACIS.

The third pillar of our mission is to add value to the community. This has probably been the less developed pillar so far, as it is highly dependent on the reputation generated by education and research. However, in the developmental program of this leadership, we have established as a milestone for the EM until 2020, the launching of healthcare services; such action, to be developed in close cooperation with our affiliated institutions, is designed to add value to the healthcare system. Thus, we are starting, together with our clinical partners, new initiatives (e.g. a digital healthcare center - P5 Medicine) designed to promote better 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 was inaugurated in April 2019, with the presence of the European Commissioner Carlos Moedas, and 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.

As innovation and entrepreneurship are in the core of our operations, we felt relevant to create another infrastructure within the EM's portfolio that would aggregate, and expand, the value of such activities – this is the main goal of B.ACIS. As for the P5 medical center, B.ACIS is a non-profit association, that has as stakeholders the EM and *Alumni Medicina*. B.ACIS, under the leadership of Jorge Pedrosa, has already stimulated an important set of initiatives that are promoting entrepreneurial activities, intellectual property registration, 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.

All these actions are produced within a scenario of financial restrictions (that are general to All Universities in Portugal). This less positive scenario was aggravated by the novel regulations for public contracts and acquisitions (a true nightmare of bureaucracy) that have imposed severe delays in our operations. However, a careful and balanced budget, an efficient and anticipated plan to face the novel regulations, along with our continuous efforts to maintain (and expand) the sources of competitive funding have mitigated the detrimental impact of low budgets and assured the conditions for the continuous development and consolidation of the EM/ICVS project.

A new external challenge has recently appeared in the horizon of the EM – the decision of the Portuguese government not to renew the public private partnership in the Hospital de Braga. As a consequence, from September 2019, there will a new (public) board leading the Hospital. While the collaborative atmosphere that was built with José de Mello Saúde (the private partner that managed Hospital de Braga) has been outstanding, we have been having conversations with the new board that made us confident that the future relationship with this nuclear hospital for our project will carry as fruitful as in the past decade.

It becomes clear from the summary of our yearly activities that there was a growth in the number and complexity of the activities of the EM. To assure that we are able to tackle these challenges, the EM has continued its efforts in stabilizing and expanding its working force (both academic and non-academic staff) and in increasing their satisfaction with the workplace culture and environment. In the academic year 2018-2019, there was a significant increase in recruitment of academic staff (namely to start preparing 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, and it's also a clear sign of alignment with our mission and vision. All these actions, are developed under our commitment with monitoring the performance of every staff member (academic and non-academic) in several academic domains (scientific, pedagogic and managerial).

While we are fulfilling the mission and vision of our project, it becomes clear that there are conditions that may restrict its growth. One of these relates with the structure of the EM's organization. With this in mind, we decided to request a study to an external entity (Porto Business School) to analyze the structure of our organization (namely to pinpoint its bottlenecks) and the

impact of our project. As a result of this exercise (that will be finished by the end of 2019), we will be able to setup a plan for the next 4 years.

2. OBJECTIVES AND STRATEGIES IN 2018-2019

The vision of the EM's project has been established, continuously revisited, and progressing as planned. As a corollary, we have achieved significant successes in the educational programs and research activities. To keep a permanent commitment to the benchmark of quality at the highest international level, we need to continuously improve, seeking to assure the best conditions to reinforce the EM dynamism with its engagement in new educational and research initiatives, building on existing strengths and capacities.

In line with the past, this year 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;
- 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;
- 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 the 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 B.ACIS.

3. ACTIVITIES AND ACHIEVEMENTS IN 2018-2019

Medical Degree Course

Six-year Integrated Master Program in Medicine

A separate report (Snapshot Medical Degree-Assessment of the Academic Year 2018-2019), prepared by the Medical Education Unit, detailing the pedagogical activities and results undertaken in the academic year 2018-2019 is presented in annex IV. 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 decrease throughout the curriculum. The minimum approval rates in courses in the 3rd year of original track is of 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 2018-2019, 120 new students were admitted via the national admission process (111 under the general regime and 9 under the special regime for students from the Azores and Madeira Autonomous Regions, immigrants or with disabilities). There were 864 applicants to this Program (7 applicants/place, representing a 9% reduction to the previous year). For the national admissions process (general contingent), the lowest entrance grade for the newly admitted students was

180.5 out of 200 (3rd in the ranking of medical degree and 10th in total of higher education degree. Eighty one percent of the students admitted under the general admission regime chose EM as their first option.

The gender distribution of the novice students in 2018-2019 continued biased towards women (73%). Enrolled students originate mainly from the region, maintaining the same pattern as previous years: 64% come from the District of Braga and 21% from the District of Porto, which is thought to be driven by economic reasons.

Four-year Graduate Entry Program in Medicine

In 2018-2019, 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 2018-2019 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 141 applicants to this Program (8 applicants/place, representing a 25% reduction to the previous year). The top-scoring 27 students were admitted to the ATS. From these, 5 students were excluded from the final step due to inappropriate performance in the ATS after expert’s opinion consensus. The best 18 students with all with valid registrations and selection criteria were admitted to the “Four-year Graduate Entry Program” in 2018-2019.

Global number of undergraduate students in the medical program

The global number of undergraduate students registered in the medical program in the this academic year (2018-2019) was of 135 in the first year, 123 in the second year, 149 in the third year & first year Graduate Entry Program, 135 in the fourth year, 140 in the fifth year and 133 in the sixth year. The total number of medical students of the EM amounts to 815.

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 17 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 27 incredibly motivated members managed to surpass what was proposed at the beginning of this mandate. Thus, the year 2019 has been a complete and enriching year, not only for NEMUM board members, but also for all EM-UM students.

“Aldeia Feliz” is a project that took 30 participants walk from door to door, from house to house trying to visit the most isolated people, aiming to evaluate 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 such as blood pressure measurement, capillary glycemia monitoring and evaluation of nutritional status. In addition, students were also able to test their communication skills with a complex target audience which are the elderly population. “Procurar Saúde - Baião” is a project that took 25 students to Baião. It is a similar activity to “Aldeia Feliz”, however, instead of walking from door to door, this activity was performed in nursing homes.

The Professor Joaquim Pinto Machado Cultural Week, a week that was dedicated to promote culture among students, being filled with moments for film sessions and a famous Talent Gala where students shared their talents. In this week, the transition from 3rd grade students from the basic years to the clinical years was also celebrated in a ceremony organized by NEMUM. Also, NEMUM organized a Solidarity Sunset that aimed to raise funds for the “Operação Nariz Vermelho”, a social solidarity institution.

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, as well as providing them the opportunity to learn new technical, personal, medical and clinical skills. Furthermore, NEMUM organized the XII Minho Medical Meeting, this time focusing on Medicine Without Age.

Lastly, NEMUM received more than thirty incoming students and sent more than thirty four outgoing students, a number never reached before, from and to all over the world, within the Professional and Research Exchange programs of the International Federation of Medical Students Association (IFMSA).

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, supporting all activities and decisions throughout the year. 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 be always more, in order to 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 be only just to relax a little from the study or to become even more skilled, as well as to ensure that they always feel welcomed and at home.

NEMUM's Executive Board for 2019: José Filipe Costa (President); Beatriz Couto (Vice-President for External Affairs); Carolina Miranda (Vice-President for Internal Affairs); José Diogo Soares (Vice-President for Administration); Carina Monteiro (Vice-President for Fundraising and Partnerships), Teresa Nogueira (Treasurer).

*The NEMUM's President,
José Filipe Costa*

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 (InAnesthesia, 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 2018, *Alumni Medicina* stood as a partner of EM in the creation of P5 Medical Digital Center, an initiative that aims to improve the quality of medical care in Portugal. We were also involved in the creation of B.ACIS, Science, Innovation and Health Association.

Besides the scientific initiatives, *Alumni Medicina* also organized the “ExpolAC” – 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 2018-2019 *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 three photography exhibitions and two 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 V).

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

- *Master program in Health Sciences*: 17 students enrolled in 2018-2019 and 11 students defended their theses.
- *PhD program in Health Sciences*: 12 students enrolled in 2018-2019. 8 students defended their theses.
- *PhD program in Medicine*: 4 students enrolled in 2018-2019 and 6 students defended their thesis.
- *Aging and Chronic Diseases (PhDoC)*: In this inter-institutional (with University of Coimbra and Nova University of Lisbon) FCT PhD program, 5 students selected the EM to develop the PhD project and 2 defended their thesis.

Altogether, in the academic year 2018-2019, 40 Master and 158 PhD students were enrolled in the post-graduate programs of EM.

As for the continued advanced training in medicine and in biomedical sciences, 2018-2019 counted with 811 participants (courses run until end of June), distributed among 34 courses and workshops. Of these participants, 68% originated from national institutions outside the University of Minho and 10% from foreign institutions; 72% were medical doctors. Ninety nine percent of the respondents classified the courses as excellent or very good. These numbers indicate that the EM/ICVS is a recognized institution for advanced training and continuous medical education. The close and fruitful collaboration with Alumni continued in 2018-2019 with respect to a relevant offer of training for residents, within the national residency programs; specifically, in Anesthesiology, Neurology, 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. The site-visit of the international FCT evaluation panel took place in November 2018 but the process of evaluation exercise is not yet closed. This process is of high relevance since it will result in potential alterations in the basal/programmatic funding for the ICVS/3B's – AL.

Of notice, in the beginning of 2018, under the framework of the ICVS/3B's – AL, the ICVS established a joint ORBEA (Organism Responsible for Animal Welfare) in association with the 3Bs. In this context, the ICVS/EM signed the Public Agreement on Quality and Transparency in Science Involving Laboratory Animals.

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

The 2CA-Braga results from a partnership with the *Grupo José de Mello Saúde/Braga Hospital* and the Eurotrials, 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 2018, 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) and opened the second phase I clinical trials unit in the country. We also hosted more than 60 investigator initiated trials, including academic clinical trials, and several validation studies for medical devices (from both local and international companies and research groups). 2CA-Braga also acquired a new 3T MRI machine dedicated to clinical research. Finally, we provided training in clinical research and validation of medical devices to more than 40 participants.

The Life and Health Sciences Research Institute (ICVS)

A detailed description of the ICVS activities and achievements during 2018 is reported in the ICVS Annual Report 2018 (annex VI) (a note here, the ICVS annual report refers to the civil year of 2018, while the present EM report refers to the academic year 2018-2019, 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 2018.

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 2018, the total number of ICVS members was of 296, including 94 PhDs (41 EM Faculty, 20 Researcher Contracts, 3 Research Fellows and 30 Post-Docs), 16 Research Fellowships and 162 post-graduation students (127 PhD students and 35 Master students) and 24 non-academic staff (11 administrative and 13 specialized technicians, with salaries supported by the EM).

Globally, we highlight the increase in the number of contracts for research staff. Indeed, although the total number of PhD researchers stabilized in recent years (from 93 in 2014 to 94 in 2018), 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 20 in 2018 (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 2019 by at least 15 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

As an important achievement in 2018, the ICVS significantly increased the amounts of competitive funding from research grants, involving a total sum of about 22.3 million € in ongoing projects (3 years of accumulated value) from calls at the international and national levels, of which 8.1 million € correspond to funding obtained in 2018. Indeed, the level of funding granted through competitive sources and from contracts with leading industrial partners has been reinforced, namely through 84 ongoing projects (48 from FCT; 4 from NORTE2020; 3 from other national sources; 2 from H2020; 18 from other international sources and 9 from contracts with the national industry).

To be highlighted in 2018 was the funding obtained from the last call from the FCT with 28 projects approved, 18 with the ICVS as coordinator institution and 10 as participant, which corresponded to an amount of about 4.5 million € for the Institute.

In 2018, industry-sponsored R&D has been performed in areas of mutual interest, namely with sponsors such as BIOGEN PORTUGAL, FUNDAÇÃO BIAL, 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 2018 the ICVS launched an initiative to build a new area for “Terminal Animal Experimentation Rooms” (SEAT), to be located close to the clean zone of the “Biotério”/rodent Animal Facility, in order to perform terminal procedures with rodents. It will include 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 2018 are to be mentioned:

- Growth in the number of international publications.

During 2018, the ICVS significantly increased the number of publications in international peer-reviewed journals (referenced in ISI, Scopus or in Pubmed), in a total of 283 papers (from 236 in 2017), in addition to 14 international book chapters and 180 proceedings and communications in international congresses. Among the articles published in 2018, 263 were produced within the four research domains (Microbiology and Infection, Neurosciences, Surgical Sciences and Population Health), corresponding to 64% in Q1-Q2, with 42% in Q1, with an average Impact Factor (IF) of 4.8. Additionally, the ICVS published 20 articles in other fields. Importantly, the average IF of the 100 articles published in the journals with higher impact was 8.

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

The 2CA-Braga has developed clinical research with a growing impact, hosting 1 phase I, 6 phase II alongside with 80 phase III and 3 phase IV commercial clinical trials, in addition to 26 observational studies and 1 medical device clinical study (also commercial-driven). Moreover, the 2CA-Braga developed 70 other clinical studies (investigator-driven), specifically 56 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 14 validation studies of medical devices, mostly in collaboration with spin-offs and young startups, both Portuguese and from elsewhere in Europe.

- 47 international and national scientific awards.

The awards included: the “Prémio Santa Casa Neurociências – Melo e Castro” awarded by Santa Casa da Misericórdia de Lisboa; the MESCyT 2018 award for Achievement in Research, awarded by the Government of Dominican Republic; the 1st Prize - Ultrasound Imaging Prize 2018 awarded by Grupo Português de Ultrassonografia endoscópica (GRUPUGE); and the “Early Career Award”, awarded by the Governing Board of the International Society of Behavioral Medicine.

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

During 2018, special emphasis was given to a policy of establishment of strategic partnerships with other research institutions based on complementarity and excellence in research. In this context, the INL | International Iberian Nanotechnology Laboratory has been the focus of this policy in 2018, through the organization of a “Hackathon” initiative, from which have emerged 7 collaborative projects supported by internal funding. Importantly, this interaction already resulted in 5 R&D projects with funding obtained from national and international competitive calls.

4. ARTICULATION WITH THE NATIONAL HEALTH SYSTEM

As detailed in previous reports, the EM has set up an innovative articulation strategy with several 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*, *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 Health Centres in the Northern Regions of Portugal.

Throughout the years, these partnerships have consolidated, in its multiple dimensions: i) pedagogical activities, through a high-standard and increasing involvement of health professionals in the EM; ii) research activities, as evidenced by the number of attending physicians engaged in academic and research activities and by the creation of Clinical Academic Centres; and iii) assistance care level, by the number of EM faculty members with dual affiliations with these health care institutions. Importantly, in a setting of consolidation it is to refer that the level of commitment with academic activities has persisted, 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.

The coordination of this interplay by the Coordinating Committees ("*Comissões Mistas*") has been very efficient. 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 VII.

5. EM GOVERNING AND ADVISORY BODIES, SUBUNITS AND COORDINATING BOARDS

At present the main 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 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 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 VIII.

6. HUMAN RESOURCES

There is nothing more relevant for a project than its people. In line with this view, the strategy to build the distinct groups of the Medical School was kept as a priority.

Academic staff

Once again great attention and care were devoted to the recruitment and promotion of academic staff. For that purpose, the EM has established 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). It is important to assure that the selected candidates have an adequate understanding of the institutional project and commit to contribute to 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 for the ICVS).

The Medical Education Unit has established annual faculty development programs that target newly admitted academic staff but also provide continued training for the existing faculty. The program is based on workshops, supplemented with small team activities and informal discussions that create opportunities for addressing individual issues.

In the academic year 2018-2019, the School has a faculty of 86 members (22 Full Time) of which 48 are PhDs. The faculty includes: 6 Full Professors, 10 Associate Professors, 5 Assistant Professors and 65 invited teachers (2 invited Full Professor, 5 invited Associate Professors, 24 Invited Assistant Professors, 33 Invited Teaching Assistants and 1 Monitor). Additionally, the EM counts with 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 IX, 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 2018-2019, in a total of around 800 clinicians, are listed in Annex VII. In terms of the faculty profile, it is important to highlight that 79% (68 out of 86) of the academic staff are MDs.

Non-academic staff

Annex IX presents the non-academic staff members, in a total of 37 (without including 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 (73% of the staff have a higher education degree). It's also worth mentioning that part of the staff is allocated to the research institute, given that the ICVS cannot hire personnel; 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

Since 2000, within a contractual program established with the University, an annual budget has been 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 2018 was of 5,724,747.00 €.

The judicious use of the financial resources is obviously a priority of the leadership. This is a difficult exercise of finding the adequate balance: on one hand, the obligation to respect to our fiduciary duties of maintaining the operations, and on the other the 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 2018-2019, we were able to accommodate the difficulties created by a turbulent regulatory environment, and simultaneously to invest in the reinforcement of the human resources and in the renewal of our technical platforms.

Such efforts could only be possible as the EM and the ICVS continue to foster the strategy of increasing and diversifying additional sources of funding. As a result of this effort, a significant amount of external/competitive funding was obtained, particularly from the Portugal 2020, international agencies and foundations, and other sources, including national and international industry.

8. PLANS FOR 2019-2020

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);
- complete the accreditation process for the MinhoMD reform for the national Accreditation Agency (A3ES) in 2019-2020;
- complete the accreditation process for the Master degree in Assessment for Health Professionals for the national Accreditation Agency (A3ES) in 2019-2020;
- 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;
- reinforce the body of research staff, namely by opening positions for tenure research positions;
- expand the network of collaborating R&D institutions;
- apply for more sustainable and diversified funding sources.

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

- initiate activities in the healthcare field through the P5 medical centre;
- support the activities of B.ACIS to foster the interaction with the spin-offs in the perimeter of the EM/ICVS 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

The mission and vision to build a medical school with high reputation in the medical education and research arenas has been guiding our activities. While this has been a successful year, in our perspective, as we have been able to achieve most of our goals and commitments, we have also launched a strong basis for renewal and growth of our project. This has only been possible by combining the appropriate mixture of competence, enthusiasm, commitment and team spirit. A strong word of praise and gratitude is due to all (students, researchers, non-faculty and faculty) who have contributed to the EM project.
