

Monitoring Report
PhD Programme in Biomedicine

Department / UCA of Experimental and Health Sciences
Universitat Pompeu Fabra

Assessed academic year: 2012-2013, 2013-2014, 2014-2015

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1. Identification data

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Responsible body for approval	Doctoral and Postgraduate Studies Commission
Approval date	12/12/2017

2. Presentation of the programme

The PhD Programme in Biomedicine is the PhD programme of the Department of Experimental and Health Sciences (*Ciències Experimentals i de la Salut* -CEXS) at the Universitat Pompeu Fabra (UPF). This programme forms part of the UPF Doctoral School and provides graduate students a training framework to develop a research project and complete a doctoral thesis in the fields of health and life sciences that allows them to become scientists.

The UPF-DCEXS centre, in which this doctoral programme is developed, is located at the Barcelona Biomedical Research Park (*Parc de Recerca Biomèdica de Barcelona* -PRBB) and includes a large number of [research groups](#) organized into the following research programmes:

- Cell and Molecular Biology
- Molecular Medicine
- Evolutionary Biology and Complex Systems
- Biomedical Informatics
- Genetics and Neurosciences
- Public Health and Education in Health Sciences
- Systems Bioengineering

We welcome graduate students from natural and medical sciences such as Biology, Physics, Medicine or Biochemistry, as well as from quantitative sciences such as Mathematics, Statistics or Computer Science. Given the presence of other research institutions in the life sciences at the PRBB, such as the Hospital del Mar Medical Research Institute (*Institut Hospital del Mar d'Investigacions Mèdiques –IMIM*), the Centre for Genomic Regulation (*Centre de Regulació Genòmica –CRG*) or the Barcelona Institute for Global Health (*Institut de Salut Global Barcelona –ISGLOBAL*), the location of UPF-CEXS at the PRBB is strategic because doctoral students have the opportunity to listen and interact with a large number of senior researchers with a solid scientific track record and, likewise, these researchers may participate in thesis monitoring committees and examination boards. On the other hand, our PhD programme enrolls doctoral students from those institutions, and even from a few other ones outside the PRBB, raising the current number of doctoral students to nearly 400 and having over 200 thesis supervisors, most of which are affiliated with research institutions outside the UPF. The high number of students and supervisors, and their distribution across different research institutions, increase the complexity in managing and monitoring this doctoral programme, and often constrain its activities and procedures to only those that scale to these dimensions.

Our doctoral programme carries out all of its activities in English and every year attracts a large number of students from abroad. These activities aim at preparing students to become independent researchers pursuing a scientific career.

Since the academic year 2012-13, the PhD Programme in Biomedicine follows the latest regulations for doctoral studies in Spain, the so-called Royal Decree (RD) 99/2011, which were introduced to comply with the guidelines and recommendations of the European Higher Education Area (EHEA) on doctoral studies. Accordingly, this annual report summarizes the activity of our programme during the period comprised between the academic years 2012-13 to 2014-15 and includes only data from doctoral students enrolled under the RD 99/2011.

3. Assessment of standard achievement

Standard 1: Quality of the training programme

The design of the programme (research lines, skills profile and training activities) is updated according to the requirements of their discipline and reflects the level of training required in MECES.

1.1 The accepted doctoral students have the appropriate access profile and their number is coherent with the characteristics and distribution of the programme research lines, and the number of offered places.

Every year the PhD Programme in Biomedicine offers 100 places and every year receives a higher number of applications. Table 1 below shows summary figures for offered places, applications and enrolments in the programme. It also includes the rate of students with scholarship.

Table 1. Summary figures for places, applications and enrolments in the doctoral programme.

	Nr. of offered places (O)	Nr. of appl. (A)	Ratio A/O	Nr. of students enrolled first time	Cumulative total enrolled	Number of part-time enrolments	Number of part-time enrolments (%)	Nr. students with scholarship	Nr. students with scholarship (%)
Curs 2012-13	100	181	1.81	102	102	0	0.00	38	37.25
Curs 2013-14	100	170	1.70	119	209	1	0.48	105	50.24
Curs 2014-15	100	124	1.24	92	271	1	0.37	119	43.91
Curs 2015-16	100	157	1.57	121	388	1	0.26	144	37.11

We observe that the ratio A/O of applications (A) to offered (O) places is well above one. The highest ratio A/O occurred the first two academic years, 2012-13 and 2013-14, of the new regulation RD 99/2011, because a number of students transferred their enrolment from older regulations to the newer one. Excluding these two academic years, we observe that the A/O ratio grows through the other two. We consider these results very satisfactory as they reflect an increasing interest to join our PhD programme.

We only consider applications from students who have been already accepted by a research laboratory that has funds to guarantee the viability of the research project. This means that the selection of candidate students takes place by the research faculty who decides to give support to a particular prospective doctoral student by means of a support letter that the supervisor should submit to the doctoral programme at the time the student is applying to join it. Our doctoral programme does not require candidate students to have additional experience or training over what RD 99/2011 regulations specify, but the research faculty who recruits the students may establish their own requirements to join their laboratories.

The cumulative total number of enrolled students in Table 1 is lower than the cumulative sum of new students enrolled at every academic year. This occurs because a substantial number of the students are simultaneously applying for a scholarship at the time they are joining the programme

and want to start following its training activities. Unfortunately, a fraction of them will not obtain that scholarship and, consequently, they often cancel their enrolment within the first academic year and apply again to enter the program on the next one. Another fraction of students may drop out from the programme for personal reasons.

The number and rate of students with scholarship shown in Table 1 are actually lower bounds due to the fact that at the moment we can only estimate this information on the basis of those students whose scholarship is directly paying the tuition to enrol the doctoral programme. However, an important number of students, mostly doing their research in research institutions other than the UPF, have scholarships that do not pay the tuition directly to the UPF and are not being considered as scholarship awardees. We are not satisfied with this situation and we plan to attempt to record this information in a more comprehensive way.

In Table 2 below we show that more than half of our students have followed MSc Programmes at universities different from UPF, and about a third of our students have a foreign citizenship. These two figures indicate that our doctoral programme is able to attract a substantial number of students outside the UPF and particularly from abroad, and we consider them very satisfactory.

Table 2. Summary figures for the origin of the students enrolled at the doctoral programme.

	Total enrolled	Students from MSc Programmes of other universities	Students from MSc Programmes of other universities (%)	Students with foreign citizenship	Students with foreign citizenship (%)
2012-13	102	57	55.88	43	42.16
2013-14	209	126	60.29	81	38.76
2014-15	271	178	65.68	102	37.64
2015-16	388	203	52.32	109	28.09

The research lines of the PhD Programme in Biomedicine, introduced in the validated programme proposal approved by the Universities Council, are shown in Table 3 jointly with the number of new enrolments per research line and academic year. The research line of *Cell and Molecular Biology* has between a 75% and 140% more students than the other research lines. We are aware that a fraction of those students would better fit in other more specialized research lines and, as matter of fact, the UPF-CEXS has been expanding in the last few years its research programmes. For these reasons, we are not entirely satisfied with the current distribution of students across research lines and we plan to expand and update them to better match the current research conducted by our doctoral students and their supervisors.

Table 3. Number of new enrolments by research line and academic year. The column ‘Dropouts’ indicates dropout enrolments without depositing and defending the thesis. The column ‘Total’ indicates the total number of students without those who dropped out from the programme.

Research line	2012-2013	2013-2014	2014-2015	Dropouts	Dropout (%)	Total	Total (%)
Biomedical Informatics	18	11	13	4	9.52	38	14.02
Cell and Molecular Biology	37	45	32	22	19.30	92	33.95
Evolutionary Biology and Complex Systems	16	18	24	8	13.79	50	18.45
Genetics and Neurosciences	19	25	11	3	5.45	52	19.19
Public Health and Education in Health Sciences	12	20	12	5	11.36	39	14.39
Total	102	119	92	42	13.42	271	100.00

The column 'Dropouts' in Table 3 indicates the number of enrolments at the end of the analysed period that were either cancelled or withdrawn from the programme and will not lead to a defended thesis. This number of dropout enrolments may be slightly larger than the actual number of students who dropped out from the doctoral programme, since a student may have cancelled the enrolment in the first academic year and enrol again the programme in the following year (see Table 10 and related main text).

1.2 The programme has appropriate mechanisms to supervise doctoral students and, if applicable, of the training activities.

Following RD 99/2011 regulations, the PhD Programme in Biomedicine is managed by an Academic Committee (AC). The specific regulations of the Doctoral School at the UPF establish that this AC is formed by the doctoral programme coordinator, who chairs it, the coordinators of master programmes at the UPF-CEXS, and other doctors up to a maximum of eight, proposed by the director of the UPF-CEXS. The AC defines the training activities of the programme and the mechanisms to supervise doctoral students. These mechanisms are the following:

- **Project defence:** This is a training activity in which students must present their research project for the following three years in front of a committee formed by three experts, which will assess the viability of the research plan and give constructive comments to identify possible shortcomings and improve it. After the discussion, the committee also interviews individually the student and the thesis supervisor to assess the degree of satisfaction with the working conditions and freely discuss possible discrepancies in how the doctoral project is perceived separately by the student and the supervisor. The committee submits a structured report to the doctoral programme informing whether its members believe that the project is viable and that there is good communication between student and supervisor. The committee gives also a mark that can be either *pass* or *fail*.
- **Research seminars:** This is a training activity in which the students attend research seminars. The students must write up a summary abstract for ten of those seminars and they must upload those abstracts to their activities document.
- **Scientific integrity:** This is a training activity that takes form of a conventional subject of a graduate program under the name "Science in Action". Students must analyse and discuss a case study on scientific integrity, which is evaluated by the instructors who communicate the result to the programme.
- **Research mobility:** This is an optional training activity in which students carry out a research stay in a research group different from their own, either within Spain or abroad. At the end of the research stay the students upload a short report to their activities document that is evaluated by the AC.
- **Research plan:** At the end of every academic year, students must upload a research plan to their activities document, describing the research conducted during that academic year and their plan for the next academic year.
- **Supervisor evaluation:** Once students have submitted their research plan, thesis supervisors must evaluate them positively, or negatively.
- **Programme evaluation:** Once these and other training activities have been finished, the AC of the PhD Programme in Biomedicine, evaluates all these items, positively if all of them have been satisfactorily completed, or negatively, otherwise.

Following the current regulations of RD 99/2011, two consecutive negative evaluations lead to the permanent withdrawal of the student from the doctoral programme.

Standard 2: Appropriateness of public information

The institution appropriately informs all the stakeholders about the characteristics of the doctoral programme and about the management processes that guarantee its quality.

2.1 The institution publishes truthful, complete and up to date information about the characteristics of the doctoral programme, its operative development and the achieved results.

There are three main institutional bodies in direct contact with the PhD Programme in Biomedicine that provide up to date information on their corresponding websites about their activities:

- The PRBB at <http://www.prbb.org>
- The UPF-CEXS department at <http://www.upf.edu/cexs>
- The UPF Doctoral School at <http://www.upf.edu/escola-doctorat>

Moreover, our doctoral programme provides truthful and up to date information through the website <http://www.upf.edu/phd-biomedicine>. More concretely, our website provides the following information accessible through pull-down menus but for which we also include here the corresponding direct links:

- **Access to the doctoral programme**
 - Presentation and goals of the programme: <http://www.upf.edu/web/phd-biomedicine/presentation>.
 - Admission profile: <http://www.upf.edu/web/phd-biomedicine/admission>.
 - Enrolment period and procedure: <http://www.upf.edu/web/phd-biomedicine/annual-enrolment>.
 - Requirements and admission criteria: <http://www.upf.edu/web/phd-biomedicine/admission>.
 - Scholarships: <http://www.upf.edu/web/phd-biomedicine/scholarships-and-grants>.
- **Organization**
 - Research lines: <http://www.upf.edu/web/phd-biomedicine/presentation>.
 - Training activities: <http://www.upf.edu/web/phd-biomedicine/academic-activities>.
 - Procedure to elaborate and defend the research project: <http://www.upf.edu/web/phd-biomedicine/project-defence>.
- **Operative planning**
 - Academic regulations: <http://www.upf.edu/web/phd-biomedicine/regulations-and-government>.
 - Duration of the doctoral studies and time extensions: <http://www.upf.edu/web/phd-biomedicine/academic-procedures#13>.
 - Internal quality assurance system: <http://www.upf.edu/web/phd-biomedicine/quality-assurance>.
- **Doctoral thesis**
 - Regulations and general framework of evaluation
<http://www.upf.edu/web/phd-biomedicine/doctoral-thesis>.

This public information is however not complete and we are working and planning to add missing items such as information on admission criteria, academic calendar, faculty of the programme and theses defended during the last few academic years. Likewise, we also plan to incorporate indicators for the following types of information:

- Quality of the training programme
- Suitability of the faculty
- Efficacy of the learning support systems
- Quality of the results

We are working on a new website of the UPF-CEXS department to improve the access to the currently available information and more easily incorporate the aforementioned missing items and indicators. This new website, which we plan to make public during 2017, will better guarantee the access to information about the characteristics of the doctoral programme, its operative development and the achieved results.

2.2 The institution guarantees an easy access to the relevant information about the doctoral programme for all stakeholders, including the results of monitoring and, if applicable, of its accreditation.

The website of UPF includes a specific section about quality assurance where the institution publishes the main indicators of the doctoral programmes, following the AQU recommendations about public information, and the results of its internal and external evaluation (verification, modification, monitoring, accreditation and quality stamps or mentions). The contents and accessibility of this section are considered very satisfactory, since they make available to all stakeholders the necessary information to know the development of doctoral programmes and their main results.

In the website of the PhD Programme in Biomedicine we provide a direct link to this section, at <https://www.upf.edu/web/phd-biomedicine/quality-assurance>, so that any person interested in the quality of the doctoral programme can quickly find the necessary information in a single space. Regarding the particular results of monitoring and accreditation, it is possible to consult this report, which constitutes the first monitoring report of the doctoral programme, while the information related to the accreditation of this programme will be available at the corresponding moment. This section also provides access to the annual reports that we have been releasing since the academic year 2013-14 with the main figures and results of our PhD Programme.

2.3 The institution publishes the SIGQ in which the doctoral programme is included.

The improvement plan of 2015 on the quality assurance internal system (*Sistema Intern de Garantia de la Qualitat –SIGQ*) considered the publication of the SIGQ not only within the intranet of the UPF but also in a public website. Currently, the section on the website of this doctoral programme about quality assurance includes a link, concretely <https://www.upf.edu/web/phd-biomedicine/internal-quality-assurance-system>, to the SIGQ followed by all doctoral programmes at the UPF, providing specific access to all elements that form part. We consider the contents and accessibility of the public information about the SIGQ very satisfactory.

Standard 3: Efficacy of the quality assurance internal system

The institution has a quality assurance internal system formally established and implemented that ensures, in an efficient manner, the quality and continuous improvement of the programme.

3.1 The implemented SIGQ facilitates the processes of design and approval of the doctoral programme, the monitoring and the accreditation.

The UPF-CEXS is responsible for guaranteeing the quality of its training programmes (bachelor, master and doctorate) and their continuous improvement. The design of the SIGQ, which forms an integral part of these programmes, was certified by the Catalan University Quality Assurance Agency (*Agència per a la Qualitat del Sistema Universitari de Catalunya –AQU*) in 2011 at the university level, while its implementation at the centre level was externally evaluated for the first time in the accreditation process of 2015, and later, in the one of 2016.

The UPF-CEXS has the process B0427 of the SIGQ to design and pass a proposal for a new doctoral programme. Once such a proposal is endorsed by the Department Council, it has to be approved by the Postgraduate and Doctoral Committee and the Steering Council of the UPF before it is sent to the evaluating agency. This process suits perfectly its goals because it takes into account the participation of the main stakeholders, national regulations and international points of reference, which guarantees the quality and relevance of new proposals. An evidence of this suitability is the Mention of Excellence obtained by this doctoral programme on 2011 (MEE2011-0323) under the regulation of the previous RD.

To perform the monitoring of the development of the programme, the UPF-CEXS has the process B0438 that facilitates the persons in charge the analysis from a set of quality indicators. These indicators are facilitated by the UPF Unit of Projects, Studies and Quality (*Unitat de Projectes, Estudis i Qualitat –UPEQ*) through a so-called Information System for Management (*Sistema d'Informació per a la Direcció –SID*), which in the case of doctoral programmes we have detected deficiencies that will have to be improved (see Section 3.2). We disseminate the results of these analyses in this first monitoring report of the doctoral programme that has been approved by the AC of the PhD Programme in Biomedicine. We consider that the monitoring process is a useful tool to identify strengths and weaknesses, and design, implement and evaluate improvement actions within the doctoral programme, as well as within the UPF-CEXS. The evolution of indicators shows indeed that the process contributes to the attainment of the expected goals.

In the next review of our quality assurance system, we plan to include a new process in the SIGQ to facilitate the application of renewal of accreditation of doctoral programmes, which will take place in the next academic year. The usefulness of this new process will be assessed at the corresponding point in time but we know that in the case of undergraduate and master programmes there is, since 2014, an accreditation process (B0437) completely implemented that has been shown to be effective, as demonstrated by the results of previous accreditations. In this revision of the SIGQ, we will also incorporate a process for the modification of the doctoral programme, and another for its termination and possible re-verification, in case that the conducted analysis requires it. Until now, the adaptation of these processes, present already in undergraduate and master degrees, was not necessary for the doctoral programme.

3.2 The implemented SIGQ guarantees the collection of information and results that are relevant for the efficient management of the doctoral programme.

The main support to the management of training programmes lies in the availability of complete, up to date and accessible information for their systematic analysis and decision making. With this goal, the UPF-CEXS has different instruments and mechanisms, including the SID as a main tool, to collect information on the academic results and on the satisfaction of stakeholders.

Throughout the years, these instruments have been strengthened and expanded. For instance, the improvement plan of the quality assurance system on its own, elaborated in 2015, incorporated a new satisfaction survey for the faculty and the persons in charge of academic responsibilities, as well as the satisfaction survey for doctoral students. The deployment of all these instruments is considered sufficient and satisfactory to identify aspects to improve in the doctoral programme. Nevertheless, the UPF-CEXS keeps working to improve how information is collected, as demonstrated by some of the proposed actions included in the improvement plan at the end of this report. On the one hand, we plan to add a satisfaction survey for thesis supervisors. On the other hand, given that we have detected some incoherence among the indicators provided by the SID and the available data at UPF-CEXS, we consider that it is necessary to improve the coordination and communication between UPEQ, who is managing the SID, and UPF-CEXS.

3.3 The implemented SIGQ is regularly reviewed to analyse its suitability and, if applicable, an improvement plan is proposed to optimize it.

The UPF-CEXS has the SIGQ process B0442 to review and update the SIGQ itself with the goal of ensuring its validity, usefulness and continuous improvement. Since its deployment, the reviews of the SIGQ have led to improvement proposals that the UPF-CEXS has been implementing throughout these years, or it is about to implement.

The UPF-CEXS approved in November 2014 the first update of the SIGQ, formally describing all of the implemented changes. Likewise, in July 2015 and January 2017 the UPF-CEXS approved, respectively, the second and third updates of the SIGQ. This last version of the SIGQ empowers the UPF-CEXS to implement processes, providing a flexible model that facilitates its adaptation and responds to the current needs derived from the new organisation of the UPF academic units, initiated by the UPF governance. The next update of the SIGQ is expected to incorporate some processes associated with doctoral programmes, which are currently not implemented, such as the modification, extinction and accreditation of these programmes.

The usefulness of the process to revise the SIGQ and the efficacy of the implemented actions of improvement are considered very satisfactory. Jointly with the internal evaluation, it is also important to highlight the usefulness of external evaluations of the UPF-CEXS to revise and improve the SIGQ.

Standard 4: Suitability of the faculty

The faculty is sufficient and suitable, according to the characteristics of the doctoral programme, the scientific area and the number of students.

4.1 The faculty has an accredited research activity.

In the period comprised between the academic years 2012-13 and 2014-15 a total of 215 researchers from more than 10 different institutions formed the faculty of the PhD Programme in Biomedicine supervising one or more PhD theses. In Figure 1 below, we can see this number broken by the institution to which faculty researchers have their main affiliation, where the largest number of them is affiliated to the UPF.

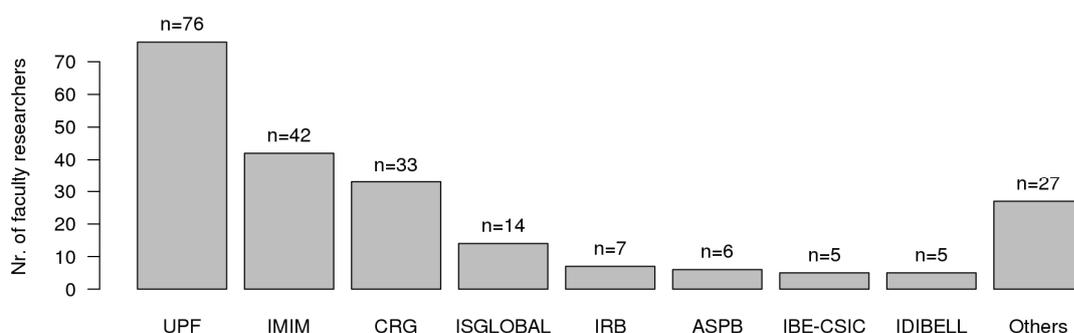


Figure 1. Number of faculty researchers who supervised doctoral thesis between the academic courses 2012-13 and 2014-15, by affiliated institution. Above each bar, the number of individuals is specified. UPF: Universitat Pompeu Fabra; IMIM: Institut Hospital del Mar d'Investigacions Mèdiques; CRG: Centre de Regulació Genòmica; ISGLOBAL: Institut de Salut Global de Barcelona; IRB: Institut de Recerca Biomèdica de Barcelona; ASPB: Agència de Salut Pública de Barcelona; IBE-CSIC: Institut de Biologia Evolutiva - CSIC; IDIBELL: Institut d'Investigació Biomèdica de Bellvitge; Others: other research institutions to which fewer than five thesis supervisors belong to.

Some of the faculty researchers may have a double appointment with the UPF and another research institution. Those investigators typically develop most of their research in the other institution and have a part-time or adjunct professorship appointment with the UPF. In Figure 1 we have counted as UPF only those researchers whose appointment is exclusively at the UPF and double appointments have been assigned to the non-UPF research institution. The resulting distribution shows that more than half of our faculty researchers supervising doctoral theses have their main appointment outside the UPF, at research centres and hospitals, and therefore, a UPF-CEXS faculty member also acts as tutor of the corresponding supervised thesis. This reflects the extent to which nowadays research in the health and life sciences is conducted outside the university, and how the PhD Programme in Biomedicine at the UPF is able to adapt to that situation and to the complexity that it conveys in managing the interaction with such a large number of faculty researchers outside the UPF.

In Table 4 below we show summary figures on the participation and leadership of faculty researchers in competitive projects in the period between 2012 and 2015. We may see that a large majority of them (73.49%) were participating in competitive projects and about 2/3 had a

leading role as principal investigators (PIs). A total of 19 faculty researchers were grantees of the European Research Council (ERC). Given that during this period 96 ERC projects were awarded to Catalan public research institutions (see Fact Sheet ERC Catalonia October 2016, at <http://agaur.gencat.cat>), about 1/5 ERC awardees in Catalonia were supervising a doctoral thesis in the PhD Programme in Biomedicine during this period.

Table 4. Faculty researchers and their involvement in competitive research projects.

Faculty Researchers	Project participants	Project participants (%)	PIs	PIs (%)	ERC grantees	ERC grantees (%)
215	158	73.49	141	65.58	19	8.84

In Table 5 below we show summary figures of the scientific productivity of the faculty researchers between 2012 and 2015.

Table 5. Scientific productivity. Total number of faculty researchers, median number of publications (articles and reviews) indexed in SCOPUS per faculty researcher, between 2012 and 2015. Median number of citations per faculty researcher during that period and median h-index. Number of faculty researchers that were ICREA Research Professors or were ICREA Academia awardees during that period. In this latter case, the percentage (% *) has been calculated with respect to the number of faculty researchers working at the UPF (76).

Faculty Researchers	Median nr. of pubs.	Median nr. of citations	Median h-index	ICREA	ICREA (%)	ICREA Academia	ICREA Academia (% *)
215	19	202	26	33	15.35	12	15.79

During 2014-15, 8 PhD students out of the 102 that enrolled the doctoral programme for the first time in 2012-13 successfully defended their doctoral thesis, supervised by other nine different faculty researchers, two of them co-supervising one of the theses. One of these thesis supervisors is full professor at UPF with 4 six-year research periods recognized by the National Committee for the Evaluation of the Research Activity (CNEAI). Two of them are ICREA Research Professors also working at UPF. The other six were investigators at research centres outside the UPF, five of them leading their own research group. During the analysed period, all nine supervisors participated in competitive research projects and all of them were principal investigators of some of these projects, except for the one participating in the co-supervision of one of the doctoral theses.

Another relevant aspect to take into account is the fact that, among the research institutions to which our faculty researchers belong to, UPF-CEXS has been recognized with the *Maria de Maeztu* Unit of Excellence distinction, and CRG and IRB have been recognized with the *Severo Ochoa* Centre of Excellence distinction. These distinctions, awarded by the Spanish government, recognize centres with highly competitive strategic research programmes in the frontiers of knowledge and more than half of our faculty researchers (116/215) have their main affiliation in one of these three research institutions.

In the light of these indicators we consider that the research faculty has, on average, an excellent scientific productivity and research experience, which warrant a suitable profile to act as supervisors of doctoral students in the PhD Programme in Biomedicine.

4.2 The faculty are sufficient and have the appropriate dedication to develop their duties.

As shown in Figure 1, more than half of the faculty in our PhD programme work at research centres and hospitals, and therefore, the focus of their work is on research and, consequently, also the research conducted by their PhD students. The rest, working at UPF, devotes an important fraction of time to teaching duties. However, in one hand the full-time teaching load at the UPF is 120 hours per academic year, much less than in the rest of Catalan and Spanish universities. On the other hand, the UPF implements a policy to regulate this teaching load, described in this URL:

https://seuelectronica.upf.edu/normativa/upf/comunitat/personal_academic/regula.html

This policy attempts to reduce the amount of teaching to faculty who are actively involved in research. More concretely, this policy rewards the supervision of PhD theses, the condition of principal investigator in a competitive grant, distinctions such as ICREA Academia or ERC grants and a very good or excellent outcome in the internal evaluation conducted by the UPF-CEXS every five years on the research output of its faculty.

We consider that the dedication of our faculty to research and, consequently, to the supervision of doctoral theses, is very satisfactory.

4.3 The doctoral programme has appropriate actions to foster thesis supervision.

The admission procedure in our PhD programme establishes that every student must have the explicit support of a faculty researcher, who will act as the thesis supervisor, to join our PhD programme. The policy by the UPF described in the previous section, rewards the thesis supervision in the teaching load and the internal evaluation of the department also takes that parameter into account. Therefore, in our case, are UPF and CEXS, who are taking action to foster thesis supervision among our faculty. From our PhD programme, we do organize once a year an informative session on the opportunities of supervising PhD theses in the framework of the Industrial Doctorates Plan from the *Govern de la Generalitat*. A news clip for the last session can be found in the following URL, https://www.upf.edu/cexs/news/doctorat_industrial.html.

4.4 The degree of involvement of faculty of foreign citizenship and international doctors in the monitoring committees and thesis examining boards is appropriate to the scientific area of the programme.

Among the 215 faculty researchers at the PhD Programme in Biomedicine, 54 have a foreign citizenship (see Table 6 below), which yields a participation of faculty of foreign citizenship in 1/4 doctoral theses. Among the training activities at our programme, the students must attend 10 research seminars at the PRBB. In Table 6 we show that more than half of those seminars, which took place between 2012 and 2015, were given by speakers from foreign institutions. Finally,

among the examination boards of the 8 defended theses during the 2014-15 academic year, 3 of them (37.5%) included at least one member from a foreign institution.

Table 6. Information on foreign citizenship of faculty researchers, number and percentage of research seminars at the PRBB by speakers from foreign institutions and fraction of examination boards from theses defended during the academic year 2014-15 that included at least one member from a foreign institution.

Faculty Researchers	Foreign citizenship	Foreign citizenship (%)	Research seminars	Speakers from foreign institutions at research seminars	Speakers from foreign institutions at research seminars (%)	Defended theses	Examination boards with at least one member from a foreign institution
215	54	25.12	1,404	787	56.05	8	3 (37.50%)

The degree of involvement of faculty of foreign citizenship among thesis supervisors is very satisfactory, as well as the fraction of seminars at the PRBB given by researchers from foreign institutions, among which doctoral students must choose to attend, as one of their compulsory training activities. The participation of international doctors in examination boards is somewhat lower than we would expect for health and life sciences, although the sample size of 8 defended theses is too small to provide a reliable estimate. We do not record at the moment the foreign citizenship of the members of the project defence committees (see Section 1.2) and we need to do it for the examination boards in a more systematic way. We plan to improve these two aspects in the near future.

Standard 5: Efficacy of the learning support systems

Material resources and services needed for the development of the activities planned in the doctoral programme and for the training of the doctoral student are sufficient and appropriate to the number of students and to the characteristics of the programme.

5.1 The available material resources are appropriate to the number of doctoral students and to the characteristics of the doctoral programme.

In the admission procedure we require that the thesis supervisor declares in the application that he/she has funding for the required material and technical resources that are needed to develop the thesis project, as well as to facilitate attending conferences and research stays.

The UPF offers different resources such as IT and Library (<https://www.upf.edu/bibtic>) and, jointly with other institutions at the PRBB, it maintains and offers a number of core facilities (<https://portal.upf.edu/web/sct>). More concretely, the UPF implements a so-called CRAI model (*Centre de Recursos per l'Aprenentatge i la Investigació*), which integrates all services and resources associated with information technologies available to doctoral students. This facilitates the addition of new services and equipment with an integrative view of their management.

The UPF Library/CRAI is present in all UPF buildings where teaching takes place. It has wide opening hours, from Monday to Sunday, offering different types of rooms and equipment for group and personal work.

Information resources

The UPF Library/CRAI provides access to more than 610,000 monographs (either in paper format, electronic or as audio and video media), more than 12,000 journals in paper format and more than 20,000 journals in electronic format. All the electronic resources can be also easily consulted from outside the UPF network using the UPF student credentials through a virtual private network (VPN) bridge.

The access to these information resources is provided through the following four entry points:

- The UPF Library Catalogue ([link](#)).
- The Unified Catalogue of Catalan Universities ([link](#)).
- The UPF Metasearch engine ([link](#)).
- The UPF Thematic Handbooks ([link](#)).

Equipment available to doctoral students

The UPF Library/CRAI at the Mar Campus offers 279 reading places mainly used by the students in the life sciences, and 1,908 reading places jointly with the other UPF libraries. This yields a ratio of 7.14 students per reading place, which is one of the lowest ratios within the Spanish university system. The students can also borrow laptops at each UPF Library/CRAI that include the same software installed as in the computer rooms at each campus. Doctoral students can also access campus-wide licences for *Matlab*, Microsoft Office 365 and *Mendeley*.

We consider that all these material resources are appropriate to the number of doctoral students and the characteristics of the doctoral programme.

5.2 The services available to the doctoral students support appropriately the learning process and facilitate their incorporation into the job market.

From our doctoral programme, we do not provide at the moment specific training for facilitating entering the job market once they graduate. However, the intramural training programme at the PRBB, called Intervals (<http://intervals.prbb.org>), does offer training in leadership and career development. These courses are available for PRBB residents including the students at our doctoral programme.

Moreover, the UPF Library/CRAI provides a number services specially suited for doctoral students, such as:

- Support in the editing process of the doctoral thesis.
- Publication of the doctoral thesis in the TDX public repository (<http://www.tdx.cat>), a digital repository of electronic versions of doctoral theses defended in universities from Catalonia and other ones from the rest of Spain.
- Consultancy regarding author copyrights.
- Support in using *Mendeley* as bibliographic management software.
- Support and consultancy to publish scientific articles using open access options.
- Support to create ORCID and other types of researcher profiles.

Our doctoral programme provides specific administrative support to all students and their supervisors with the following human resources:

- Two persons working full-time on doctorate administrative tasks and running a help-desk available online and by telephone during office hours, and on site at the PRBB premises from Monday to Friday between 11:00 and 13:00 hours.
- The UPF office for postgraduate and doctoral studies (<https://www.upf.edu/web/universitat/-/oficina-de-postgrau-i-doctorat>).
- The UPF Doctoral School (<http://www.upf.edu/escola-doctorat>).

The UPEQ has conducted this year the first edition of a survey on the satisfaction of doctoral students with respect to their studies, the organization, the university and the services and resources that the university provides to them (*Enquesta de Valoració del Sistema i l'Organització de l'Ensenyament –EVSOE*).

In the case of the PhD Programme in Biomedicine, the total number of students available for the survey was 440 and 138 responded to it, resulting in a participation rate of 31.4% with an error margin of 6.9%. Such rate and error margin make results not representative enough for the whole sample but they may still give useful information.

In Table 7 we have the percentage of students that would recommend a UPF doctoral programme in general and the programme in which they are enrolled, in particular. We observe that all these percentages are above 85% and a small additional fraction among our students seem to be more satisfied than the whole cohort of UPF students.

Table 7. Percentage of students that would recommend a UPF doctoral programme and the one in which they are enrolled.

Would recommend a UPF doctoral programme (UPF-Biomedicine students)	Would recommend a UPF doctoral programme (UPF students)	Would recommend my doctoral programme (UPF-Biomedicine students)	Would recommend my doctoral programme (UPF students)
93.8%	89.3%	94.6%	86.4%

In Table 8 we have a score indicator between 0 (worst) and 10 (best) about the satisfaction with the doctoral programme and about whether the doctoral programme has met the student's expectations. The scores for our doctoral programme are good but not excellent, and on par with the scores given by all the UPF students.

Table 8. Assessment in a scale of 0 (worst) to 10 (best), the satisfaction and expectations met by the doctoral programme.

I'm satisfied with the doctoral programme (UPF-Biomedicine students)	I'm satisfied with the doctoral programme (UPF students)	The doctoral programme has met my expectations (UPF-Biomedicine students)	The doctoral programme has met my expectations (UPF students)
7.4	7.3	7.1	7.0

In Table 9 we have again a score indicator between 0 and 10, this time assessing the satisfaction with the thesis supervisor, the department and research group, and the UPF. The results, without being excellent, reveal a fair level of satisfaction with the thesis supervisor, the department and research group, and the UPF. The largest difference between our students and all the UPF ones, lies in the satisfaction with the department and the research group, where our students seem to be more satisfied in this aspect.

Table 9. Assessment in a scale of 0 (worst) to 10 (best), the satisfaction with the thesis supervisor, the department and research group, and the UPF.

I'm satisfied with my supervisor (UPF-Biomedicine students)	I'm satisfied with my supervisor (UPF students)	I feel part of the department and of the research group (UPF-Biomedicine students)	I feel part of the department and of the research group (UPF students)	I'm satisfied with the UPF (UPF-Biomedicine students)	I'm satisfied with the UPF (UPF students)
7.8	8.0	7.6	6.2	6.8	7.3

From this survey, we may conclude that while our students would definitely recommend joining our doctoral programme, they are moderately satisfied with it. Because the response rate to the survey was not sufficiently high, we should see again next year whether this trend is confirmed. In the short term, we would like to improve these results and the satisfaction of our students, and we will try to improve the training activities described in Section 6.1.

Standard 6: Quality of the results

Doctoral theses, training activities and their evaluation are coherent with the training profile. The quantitative results of the academic and employment indicators are appropriate.

6.1 Doctoral theses, training activities and their assessment are coherent with the intended training profile.

Doctoral students must complete the following training activities:

- **Project defence:** This is a training activity that takes place within 6 months after starting the PhD, thus during the first academic year, in which students must write up a short project proposal (no more than one or two pages) describing the research they plan to conduct during the following three years. They also have to present this project proposal in front of a committee formed by three experts, one of which should be a researcher affiliated with the UPF-CEXS. The committee will assess the viability of the proposal and give constructive comments to identify possible shortcomings and try to improve it. After the discussion, the committee also interviews individually the student and the thesis supervisor to assess the degree of satisfaction with the working conditions and freely discuss possible discrepancies in how the doctoral project is perceived separately by the student and the supervisor. The committee submits a structured report to the doctoral programme, which becomes part of the activities document of the student, informing whether its members believe that the project is viable and whether they perceive that there is good communication between student and supervisor.
- **Scientific integrity:** This is a training activity on scientific integrity called "Science in Action" (SiA) and whose content is based on the [PRBB Code of Good Scientific Practice](#). This activity takes the form of a conventional subject of a graduate programme with

seminars and personal workload that involves a total of 27 hours of training. Attendance to seminars is compulsory to the students and monitored by the instructors. The personal workload consists of critical reading of given articles, watching online video material on the subject, discussing with class-mates on integrity issues proposed by the instructors through an online forum of the SiA Moodle site, and analysing and discussing a case study in scientific integrity. The instructors follow up the completion of these activities, and the students are also welcome to provide feedback on them. This feedback has been so far very positive as the majority of students evaluate it as very good or excellent.

- **Research Seminars:** This is a training activity in which the students must attend at least 10 research seminars among the ones taking place at the PRBB centres. This activity is supervised by requiring the PhD student to write a summary abstract for each research seminar that will become part of the activities document evaluated by the AC. In the validated programme proposal of the PhD Programme in Biomedicine, approved by the Universities Council, we initially planned to require 20 research seminars. We decided to reduce this number to 10 because through the last years we observed that students do attend anyway more than 20 seminars throughout their doctoral training and reducing the minimum requirement to prove attendance does not weaken the any of the competences of the doctoral programme.
- **Research mobility:** This is an optional training activity in which students carry out a research stay in a different research group from the one where they are doing their doctoral training, either in Spain or abroad. At the end of the research stay the students submit a short report that is evaluated by the AC.

We consider that these training activities contribute positively to the intended training profile of our students but, as we commented in Section 5.2, we will attempt to improve and expand them to increase the degree of satisfaction of our students.

6.2 The values of the academic indicators are appropriate to the characteristics of the doctoral programme.

In Table 10 below we show the main summary indicators of the outcome of our PhD program for the period between the academic years 2012-13 and 2014-15. During this period a total of 310 students were enrolled in our PhD programme, including 39 who dropped out from the programme. These are 3 fewer than the 42 dropout enrolments shown in Table 3 because those 3 corresponded to first-year cancellations followed by new enrolments in the following year. This means that about one every eight students drop out from the doctoral programme. While this rate is low, it is difficult at the moment to consider actions to improve it because we do not systematically record the specific reason for abandoning the programme, such as whether the research project turned out not to be viable, the research project was viable but the student did not acquire the basic competences required by the RD 99/2011 regulations, the student moved to another doctoral programme or the cause was some supervened circumstance affecting the student and/or the thesis supervisor. We are not satisfied with this situation and we will attempt to find a way to record that information.

Table 10. Summary indicators of the outcome of the PhD Programme in Biomedicine for the period between the academic years 2012-13 and 2014-15, concerning number and duration of the defended doctoral theses, and number of students who did a research stay.

Total students	Dropout students	Enrolled students (total-dropouts)	Research stays	Defended theses (full time)	Defended theses (part time)	Duration full time (years)	Duration part time (years)
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310	39 (12.58%)	271	28 (10.33%)	8	0	2.52	N/A
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Table 10 also shows that 8 students defended their PhD thesis during the academic year 2014-15 and all of them were full-time enrolled in our programme. The average time they spent from the date of first enrolment to the defence date was 2.52 years.

In Table 11 below we show the summary indicators for the qualifications and scientific output of the defended theses. More concretely, six from the eight defended theses obtained a “Cum laude” qualification, one was awarded an extraordinary prize by the UPF Doctoral School, two obtained the international mention (one of them was an european mention) and one was co-tutored and defended at the Université Paris Sud, France. Finally, these eight PhD theses led to a total of 20 articles including the student and his/her supervisor among the authors, published in scientific journals indexed in PubMed (<https://www.ncbi.nlm.nih.gov/pubmed>), and resulting in an average of 2.50 articles per thesis.

Table 11. Summary indicators of the outcome of the PhD Programme in Biomedicine for the period between the academic years 2012-13 and 2014-15, concerning qualifications and scientific output of the defended theses.

Defended theses	Cum laude	Extraordinary prize	International mention	Co-tutorship with a foreign university	Articles in scientific journals (PubMed)
8	6 (75.00%)	1 (12.50%)	2 (25.00%)	1 (12.50%)	20 (2.50 art/thesis)

These academic indicators summarize the results of the first three years of our doctoral programme operating under the latest regulations RD 99/2011. From the 102 students enrolled for the first time in the academic year 2012-13, only 8 defended their doctoral theses within this three-year period and, actually, we should count only 7 of them because the co-tutored student started already her doctoral training at the Université Paris Sud one year before, on October 2011. Therefore, only one every 14 students, has been able to complete the doctoral programme in what is considered its default timeframe of three years. These results may reflect the difficulty to adapt doctoral-level research projects in the health and life sciences to such time constraint. However, being the first three years of the RD 99/2011 regulations, these results should also be interpreted with caution and in the following years we should be able to confirm or refute this hypothesis. Likewise, only 25% of these theses earned an international mention and we shall see how this indicator evolves within a larger and more reliable number of defended theses. On the other hand, the productivity of these particular 8 theses, in terms of articles in scientific journals indexed in PubMed, can be considered very satisfactory with an average of more than 2 articles per thesis, but again given the sample size, we should wait to see how this productivity rate evolves in the following years to draw more reliable conclusions.

6.3 The values of the employment indicators are appropriate to the characteristics of the doctoral programme.

From the eight students that graduated during the academic year 2014-15 under the RD 99/2011, all of them are currently employed (100%) and, at the time this report was elaborated, all of them were continuing their career as a scientist in either a university, a hospital or a research centre. These results are very satisfactory but should be interpreted with caution given the limited number of students that graduated the academic year 2014-15 under the RD 99/2011.

A more reliable picture can be obtained if we analyse employment indicators from students who graduated under regulations preceding the RD 99/2011. Although this monitoring report is focused on the RD 99/2011 cohort, these indicators may provide useful information and we include them here for completeness.

The sources of information are two, an employment survey conducted by AQU in 2014 to students who graduated in 2009 and 2010, and an employment survey conducted by the UPF Postgraduate Office on 2014 to students who graduated in the academic years 2009-10, 2010-11 and 2011-12. The AQU and UPF surveys were answered by 35 and 57 former students, respectively. These response rates are unfortunately rather low and while they may not be considered representative, they may provide clues on the employment situation from our graduates. These two surveys analysed two employment indicators, the employment rate and the suitability rate.

Employment rate (percentage of students who, after obtaining their PhD degree, are working)

The AQU survey reports that the employment rate among the students who graduated in PhD Programme in Biomedicine is 88.6%, while the remaining 11.4% are unemployed. From a broader perspective, the employment rate in the area of experimental sciences is 91% (see Table 3.2.1 from the AQU report).

The UPF survey reports that the employment rate among the students who graduated in the PhD Programme in Biomedicine is 88%, in agreement with the AQU survey. This survey also reports that 100% of the employed students found their job either before completing their doctoral studies, or within the first year after graduation.

Suitability rate (percentage of students whose job suits their doctoral training)

Two aspects are assessed to estimate the suitability rate: the level of education required to access their current job, and whether the tasks developed within the job belong to doctorate-level tasks. The closer these two aspects are to the doctorate level, the more suitable is considered the job.

The AQU survey reports that 51.4% of students who graduated in the PhD Programme in Biomedicine have a job that required a PhD degree to be hired, 34.3% have job that required a specific non-doctorate higher-education degree and 14.3% have a job that required any kind of non-doctorate higher-education degree. On the other hand, 71.4% of students are developing tasks within their jobs that belong to doctorate-level tasks. In the area of experimental sciences, this rate is 68% (see Table 3.6.2 from the AQU report). The UPF survey reports that 80% of students who graduated in the PhD Programme in Biomedicine, have a job that is related to the skills and knowledge acquired during the doctorate studies.

We consider that both, the employment rate and the suitability rate, are somewhat lower than we had expected. We will attempt to obtain employment indicators for a larger fraction of former doctoral students to see whether this trend is confirmed or not.

4. Assessment and proposal of the improvement plan

Insert in the table the improvement proposals derived from the analysis of each standard or substandard

Diagnostic	Identification of the causes	Goals to achieve	Proposed actions	Priority	Person in charge	Deadlines	Involves modification?	Level (doctoral programme, centre, university)
Standard 1: Quality of the training programme								
We do not know the full extent of students with scholarship.	We lack this information for students outside UPF.	Estimate how many students in total have been awarded a scholarship.	Record scholarship for all the students.	High	Doctoral School and Doctoral Programme	Academic year 2016-17	No	University
Research lines do not accurately reflect the research of students and their supervisors.	We have not updated the research lines.	Update research lines of the programme and in the validated programme proposal.	Expand current research lines.	High	Doctoral Programme	Academic year 2016-17	Yes (of the validated proposal)	Doctoral Programme
Standard 2: Appropriateness of public information								
Incomplete public information about the doctoral programme.	We do not publish all information.	Make public all information and indicators about the programme.	Update our website with information.	High	Doctoral Programme Secretariat and Centre	First trimester academic year 2017-18	No	Centre
There is no easy access to all public information about the doctoral programme.	Website of UPF-CEXS is not well designed.	Improve access to public information by the stakeholders.	Build a new website of UPF-CEXS.	High	Centre	2017	No	Centre and University

Diagnostic	Identification of the causes	Goals to achieve	Proposed actions	Priority	Person in charge	Deadlines	Involves modification?	Level (doctoral programme, centre, university)
Standard 3: Efficacy of the quality assurance internal system								
We lack feedback from thesis supervisors on their satisfaction about the doctoral programme.	We have only informal contact with the thesis supervisors.	Obtain a structured and comprehensive feedback on the satisfaction of thesis supervisors with the doctoral programme.	Conduct a satisfaction survey for thesis supervisors.	High	UPEQ	Second semester of the academic year 2016-17	No	University
We have detected some incoherence between indicators provided by the UPEQ and data available at the UPF-CEXS secretariat.	Coordination between UPEQ and UPF-CEXS secretariat can be improved.	Ensure the coherence and reliability of data collected by UPEQ and UPF-CEXS about the doctoral programme.	1. Joint work between OTQ, UPEQ and UPF-CEXS to define data requirements	High	Doctoral School, OTQ, UPEQ, Centre	First trimester of the academic year 2017-2018	No	Centre and University
			2. Build a unique open web access with data for monitoring the programme.	High	UPEQ	Academic year 2016-17	No	University

Diagnostic	Identification of the causes	Goals to achieve	Proposed actions	Priority	Person in charge	Deadlines	Involves modification?	Level (doctoral programme, centre, university)
Standard 4: Suitability of the faculty								
Rate of foreign members in project defence committees and examination boards not well recorded.	Information is not recorded in a systematic way.	Record the rate of foreign members in project defence committees and examination boards.	Record committee member citizenship	Medium	Doctoral School and Doctoral Programme	Academic year 2017-18	No	University
Standard 6: Quality of the results								
We do not know why students abandon the doctoral programme.	We do not record that information.	Understand why students abandon.	Record reason for abandoning.	Medium	Doctoral School and Doctoral Programme	Academic year 2017-18	No	University
Employment indicators are lower than expected but data were based on a low response rate.	Contact with former students can be improved.	A higher response rate in the survey on employment indicators.	Engage former students to respond.	Medium	UPEQ and Alumni UPF	Academic year 2017-18	No	University
Students are moderately satisfied with the doctoral programme.	Lack of additional training and group activities.	Improve satisfaction of the students with the doctoral programme.	1. Improve training activities	High	Doctoral School and Doctoral programme	First trimester of the academic year 2017-18	Yes (of the validated proposal)	University and Centre
			2. Celebrate a PhD Symposium	High	Doctoral programme and centre	First trimester of the academic year 2017-18	No	Centre