

## 10 questions for a scientist

Dr. Graça Carvalho



*Graça Simões de Carvalho is full professor of the Institute of Education of the University of Minho, Braga, Portugal, since 1998. She has graduated in Biology (University of Coimbra), obtained a MSc degree in Biology (University of Cambridge, UK), another MSc in Health Education and Health Promotion (King's College London, UK), a PhD degree in Biology (University of Aveiro) and the title of Aggregate in the area of Health Education (University of Minho). She has developed research and post-graduate training in health education and health promotion, with a particular focus on schools. Apart from having coordinated nine Portuguese projects, she was the coordinator, in Portugal, of 11 European and Brazilian projects and was the general coordinator of a European project on "Education in Biology, Health and Environment for better Citizenship" (Biohead-Citizen: STREP, FP6 CIT2CT2004506015) involving 19 countries. She has also participated in various Portuguese and international projects. She has published in Portugal and abroad: 6 books as author, 12 books as editor / coordinator, 66 book chapters, 111 papers in journals and more than 170 papers in proceedings of scientific meetings. Currently, her work and publications concern Health Education and Biology Education.*

**1. Prof. Graça, please give us some advices for those who want to start a researcher career. In the case someone wishes to go to Europe, do you have any specific suggestions?**

Prof. Graça: The main characteristic for anyone who wants to start a researcher career is to be motivated and enjoy his/her activity. He/she must have a mentor / tutor with whom he/she has a good personal relationship with whom can also develop a good professional relationship.

To come to work in Europe, and in the case of not being in Portugal, he/she needs to know well the language of the country where he/she is going to work or English, which is the international language. Apart from this, he/she must be prepared to understand the culture of the country where he/she will work and adapt himself/herdelf in the best way to the new reality in which he/she is going to live.

From the experience that I have in Portugal, I can say that PhD students and postdoc researchers who come for the first time from Brazil, arrive very

anxious, but they get integrated very soon due to the facility of having the same language, and a culture which somehow is very similar in many aspects. Furthermore, with many Brazilian students at the University of Minho, the newcomers are quickly integrated in this network where they keep contact with their countrypersons.

## **2. What are the features that you seek in a researcher who wishes to have your supervision?**

Prof. Graça: First of all, as I mentioned in the previous question, the main feature for anyone who wants to start a research career with me is to be motivated to work and enjoy what he/she does. There is no need to be exceptionally intelligent, however, he/she should be persistent and interested in the pursuit of knowledge. In this sense, he/she must have an ethical and professional attitude while seeking the truth.

A general condition to all my graduate students and postdoc researchers is that, right from the start, we design their research work, defining the research question, objectives, the methodology to be implemented and the chronology of the activities. Once this situation is defined, some researchers being very autonomous requiring only occasional short meetings with me to develop their work; others, due to their personality and the need to feel more secure, like to meet and discuss with me more often. One situation that becomes very clear right from the beginning of our relationship is that it is of their responsibility to contact me, by email or by phone, whenever they want to meet me: I am not supposed to look for them. The entire production of publications resulting from the work carried out under my supervision is published in co-authorship and, for this purpose, I review carefully their manuscripts once or twice, depending on the level of complexity of the text, especially if it is in English.

Other important aspects are the honesty and transparency in the relationship as well as the punctuality and the sense of efficiency.

## **3- Tell us a bit about your career until your academic position at the university and international research.**

Prof. Graça: It is not easy to refer my whole trajectory in a short time. Broadly speaking, after having graduated in Biology at the University of Coimbra (1978), I became Assistant Lecturer at the University of Aveiro, where I taught Biology to future biologists and future biology teachers of Basic Education (5 to 15 years old pupils) and Secondary Education (16 to 18 years old students). After two years, the University of Aveiro provided me a scholarship to study for three years (1980-1983) at the University of Cambridge, in England, where I got

my first MSc in Biology (Immunology). In 1986 I obtained my PhD degree in Biology. At the end of the 80s and early 90s of the 20th century, I developed a high number of studies in the area of the biocompatibility of materials used for orthopedic and dental implants. It was then that I started to participate in European funding projects, in collaboration with engineering colleagues at the University of Porto who worked on improving metal alloys for implants, and I and my team analyzed these materials biocompatibility.

However, with the fact that I always kept teaching future biology teachers, I began to dedicate myself to the Health Education field, since the mid-90s. In 1994, I had the opportunity to come to University of Minho, where I developed this area of Health Education and Health Promotion. I have currently a large group of PhD students and postdoc researchers working with me in this field of Health Education with children and young people and with teachers and future teachers of basic and secondary education, as well as with health professionals who work with children, such as nurses, speech therapists, among others.

Currently, my collaboration with foreign teams develops in two main areas, the Health Education and Health Promotion area and the teacher training area; the first one is stronger within Europe and the second one within Brazil.

In Brazil, I have been working more intensely with UNIJUI (Ijuí, RS), with UEM (Maringá, PR) and the UNIFOR (MG).

## **4. It can be seen a great integration between Portuguese and Brazilian researchers, as experienced by yourself. In your experience, what is the greatest virtue and what is the main difficulty of the Brazilian researcher?**

Prof.. Graça: Yes, fortunately, I have been lucky to work with many researchers from various states of Brazil. In addition to those mentioned above, I have cooperation with São Paulo, Rio de Janeiro, Bahia and Santa Catarina.

The greatest virtue is the enthusiasm and motivation to work. The main difficulty is undoubtedly the weak or no fluency in English, which makes their own internationalization very difficult.

## **5. Do you notice some differences between the research developed in Brazil and in Portugal? If yes, which are they?**

Prof. Graça: Yes, there are some differences. I recognize that Brazil has had a very well organized structure (and supported financially) with a hierarchy starting with a senior researcher and then PhD

students, masters and PIBIDs. In Portugal, and particularly in recent years, the cutbacks in scholarships have been generalized so we have senior researchers (university professors) with few or no PhD students and postdoc researchers, and so with little or no "manpower" for the research development. Luckily, I personally do not find myself in this difficult situation.

**6. You led a major international project, BIOHEAD-CITIZEN, which was developed in several countries across continents. Tell us about the challenges and rewards that an investigation so wide has provided to you.**

Prof.. Graça: This was an extraordinarily challenging project in terms of coordination. In fact, we joined in one project consortium teams from the North, South, East and West of Europe, Middle East countries and North African countries. This cultural diversity was very interesting, but also corresponded to an immense difficulty of relationship. I say "relationship" because the difficulty was not the "communication", which fortunately I actually speak, besides Portuguese, English, French and Spanish with easy fluency. There was understanding of the transmitted and received information, the point was in the interpretation of it, the different ways of working with deadlines, work reported on time. In other words, the execution of tasks and the submission of reports, according to the previously established, was hard to achieve with some teams. On the other hand, the European Commission (funding entity) was, and still is, extremely demanding, so to deal with this double situation from both sides was extraordinarily difficult and tiring. Because of this, after finishing the project (2004 - 2008), I become a kind of "traumatized", and for a couple of years I didn't want to accept to take part in European projects ...

If on one side this was a difficult and complicated side of it, on the other side, the project provided me a great opportunity to know different cultures much different from ours, especially the Arab culture and the culture of Eastern Europe. It was a very rich experience, although also somehow painful

**7. You have been invited and agreed to join the editorial staff of Conexão Ciência Online Uniform, explain why did you accept this challenge in your career that had already so many achievements?**

Prof.. Graça: May I be honest? I accepted for two reasons, first because I have been collaborating actively and pleasantly with my colleague Hesley Machado Silva for many years now, who has invited me, and therefore, I felt compelled to also collaborate on this new project. The second reason has to do with

the fact that I think that I can probably contribute positively in the development of this project.

If there were not these aspects, I certainly would not have accepted, since my time available is too narrow. But I'll do my best to give my contribution whenever necessary.

**8. What are the advices for those that are already researching and intend to prepare and submit an article to a high-level academic journal?**

Prof.. Graça: There are many aspects to include, but in a brief way I can refer the following:

- The work has been well designed, with a clear research question and a correct methodology;
- The data are well addressed and exposed in an easy understandable way, and the writing should be addressed to the reader (not to the writer); the author has to put himself in the reader's position who does not know the work;
- Connecting pretty well the text with tables and figures, avoiding repetitive description in the text of what should be clearly presented in the table or figure, i.e. let the text refer only to the interpretation (not the description), to what is relevant from tables and figures data;
- Giving an introduction based on the international and national literature about the subject, starting in broader aspects and going tapering to reach the objectives of the work;
- Making the discussion of the results, relating with the international and national literature and avoid repeating the description of the results; findings and implications of the study must be mentioned;
- If possible, do a work with more than one author so that it can be more dynamic and less confined to one person.

**9. Describe to us some advantages for a Brazilian researcher who wants to do his academic career in Europe (Master's program or Ph.D), more specifically, at the University of Minho, Portugal?**

Prof.. Graça: Simply changing the environment is important for personal and professional growth. Being at the University of Minho or another Portuguese university has the advantage (compared to other European countries) of language and culture, which facilitates the integration and the process of adapting (which is of lower income) becomes significantly faster. Therefore, the total time becomes more productive.

Another great advantage is to use the communication links that we have with other European institutions, where the researcher can make short term internships, keeping the connection with

the University of Minho and the Brazilian university, if there is one.

**10. Give some suggestions to our readers, about topics on education, biology and health, which you judge to be "controversial" topics for international research in the coming years.**

Prof.. Graça: The issue that I find most "controversial" is how the educational system works in most countries nowadays, where students are required to learn by heart all subjects. Each discipline increases systematically its contents as the knowledge increases in the scientific research area. The new contents are added to the curriculum, not replacing other contents. On the other hand, students need to know everything for the exams, and after them, they forget everything (they have to forget! ...)so that soon after, they start to memorize other things for new exams, and so on.

In this digital era where we are living now, this is an absurd! The information is all launched on the Internet, on scientifically correct pages, but also unfortunately in pseudo-scientific content pages. In

my point of view, what students need is teachers who are able to guide them to the correct platforms and websites and that students develop their own knowledge by themselves, always, of course, with the teacher's support.

The teacher is no longer the "knowledge owner", it is all the digital environment that provides this knowledge (books, magazines, official documents, etc.) and the student needs to know how to seek this knowledge, and must be able to create his own knowledge.

But to make it happen, a huge shift in the rigid traditionally curricular structure is required, which has the main goals for exams based on the pure and simple memory. It has to be a revolution ... and I'll say no more !!!

**On behalf of Conexão Ciência Journal, I wish to thank you for your collaboration, and your support and competence, which I can attest by the long collaboration as a research fellow and currently by your postdoc supervision.**

*Dr. Hesley Machado Silva – Co-editor da revista Conexão Ciência.*