

# Towards a European Programme in Human Morphology - A Masters degree in Anatomy?

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## SUMMARY

Human morphological sciences are facing an “identity crisis” and, in Europe, there is an urgent need for a dedicated programme of training for teachers and researchers in anatomy. The “Bologna process” (which in 1999 proposed harmonization of academic curriculum in order to favour exchange of students and researchers inside the European Union) provides a unique opportunity to organise a common curriculum in anatomy. The first step could be the creation of modules for a European Master 2 course in anatomy/biomorphology. At the present time, in the University of Paris Descartes, there is no Master’s course in Anatomy (except in the osteo-articular part of the Master 2 Health and Life Science programme or in the neurobiology Master’s programme). Anatomists at the University of Paris Descartes are endeavouring to find other European universities to help organise a programme of training for future teachers of anatomy in France (and perhaps elsewhere in Europe).

## INTRODUCTION

The human morphological sciences are presently facing an “identity crisis”. This is due,

in part, to the difficulties of recruiting suitable persons to become anatomists. There is therefore an urgent need for a formal programme of training dedicated to teachers and researchers in anatomy/biomorphology. It is well understood that the nature of anatomy/biomorphology varies from country to country in Europe. For example, gross anatomy can be topographical, functional, surgical, radiological, biometrical, anthropological, etc. Furthermore, morphological sciences can include gross anatomy, microscopic anatomy (histology), and developmental anatomy (embryology and organogenesis). Consequently, academic departments specialising in human morphology define themselves in different ways, being more or less orientation into morphological sciences, molecular anatomy (proteomics), genetic anatomy (genomics), or others. Moreover, neurosciences are usually separated from the other anatomical fields in most countries.

Teachers of anatomy also come from diverse backgrounds. For example, human anatomy is only taught in medical schools in France and academics who teach anatomy are exclusively clinicians who also work in hospitals at the same time. Over the past fifty years, most of these clinicians have been surgeons (Plaisant et al., 2004).

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Recent developments within Europe make possible a European organisation of knowledge (European Higher Education and European Research Areas) and offer new training possibilities for students, giving the unique opportunity to organise a common training for future European anatomists.

The goal of this proposal is to set up a European Master's (or Master 1 and/or 2) degree in anatomy/ biomorphology for students in health sciences and medicine. The programme would entail teaching the fundamentals of anatomy to students who decide to pursue a teaching career in anatomy. The resulting pool of students, who would share a common knowledge, could become the future European group of anatomy teachers.

#### I. THE FACTS: AN EDUCATIONAL EUROPEAN PROGRAMME

In 1999, the Ministers of Education in the European Union held a conference at Bologna (Italy) and agreed to develop a process whereby academic curricula would be harmonized in order to favour exchange visits of students and researchers inside the European Union.

##### a) *The Bologna Process (1999)*

The Licence/Master/Doctorate curriculum, often referred to by its acronym LMD, is defined by the duration of each academic rank and is also known as the 3/5/8 year system. For the morphological sciences, the Bologna Process proposes that the first step should be the creation of a common Master's programme. To this end, consideration must be given to the creation of (or modification of existing) modules for MASTER (M1/M2) specific to anatomy/biomorphology. Accordingly, the same programme (common syllabus) must be offered, being intended for the same students (unified selection of candidates), and must allow mobility for research according to the requirements and regulations of each participating university.

##### b) *Master module - Proposal*

Obtaining a Master's degree requires a specific training, both theoretical (courses) and practical (initiation to research). A Master's degree is considered as the first step towards higher education in a scientific curriculum. It is defined by the field of study (e.g. «Sciences and Applications» or «Health and Life Sci-

ences») and is sanctioned by a diploma or an appropriate academic designation within the given field (e.g. «M1 Health»).

The programme extends over two years called M1 (mainly local training) and M2 (open course with the possibility of training abroad). M1 courses allow access to one or more M2 courses. M2 courses can be opened to one or more clearly defined M1 courses. The characteristics of each Master's degree are described below.

##### *Master 1 Academic programme*

This degree consists of 30 ECTS (European Credit Transfer System) per semester. One ECTS represents a certain number of hours of lectures, combined with personal study. The module can be compulsory, compulsory with choice, or optional. Each module corresponds to a given number of ECTS (2-9). M1 requires a minimum of 60 ECTS in order to be valid. The aims of this module are to familiarise the student with bibliography survey, to initiate the student to experimental research, to provide the bases of analysis and methodology, and to help acquire the basic tools for discussion.

##### *Master 1-2 Research programme*

This two-part course must be undertaken in partnership with a recognised research laboratory. Consequently, the host laboratory must have an official academic designation, an appointed director, a team of researchers, and a physical location. The first part, M1, would proceed in the laboratories of a given university (normally the *alma mater*) and the second part, M2, could be conducted in a laboratory located anywhere within Europe (through ERASMUS).

##### c) *Example: University of Paris Descartes*

In France, there are two different academic processes dedicated to the training of students according to their study area (Table 1). Thus, there is a route leading to the award of a PhD for most academic disciplines but another route leading to the award of an MD degree for health sciences and medical subjects.

At the University of Paris Descartes, a LMD programme in health and life sciences is offered. Medical students at this university can plan a research career integrating both the medical and classical academic systems under certain conditions.

In order to validate M1, students must take two kinds of courses: compulsory courses and

electives. At the M1 level, students who intend to continue onto the next level must choose their electives according to the prerequisites for their selected study at M2.

If medical students want to continue into research, they have to validate complementary courses (electives) in compliance with the degree requirements for the M2 selected and they must attend laboratory practice during their medical studies in addition to their medical training. This complementary research training, combined with the second step of medical studies (DCEM1-4), is recognized as a scientific M1 (Table 2). Many students, however, prepare a M1 degree during the third or fourth year of medical school before registering for the M2 programme. Consequently, to complete a research Master's degree, a specific curriculum of M1 and M2 is proposed after the Licence that can be taken in parallel with the medical curriculum.

*M1*

In the current curriculum, the first year (M1) 'Health and Life Sciences' is organised into 6 different routes: genetics, virology / immunology, cellular biology, physiology / pharmacology, chemistry, and public health.

Paris Descartes and Paris Diderot universities offer a M1 in Cell biology, physiology and pathology (<http://www.biomedicale.univ-paris5.fr/M1-bcpp.html>).

At the moment, there is no biomorphology course. We propose an additional route for a specific European M1 of biomorphology. The required 30 ECTS could be divided into 18 ECTS from lectures, plus 2 months training in a laboratory for 12 ECTS per semester. One EU (European Unit) would amount to 3 to 6 ECTS. ECTS is based on the principle that 60 credits measure the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe amounts in most cases to around 1500-1800 hours per year and in those cases one credit stands for around 25 to 30 working hours. ([http://ec.europa.eu/education/programmes/socrates/ects/index\\_en.html#1](http://ec.europa.eu/education/programmes/socrates/ects/index_en.html#1))

*M2 Degree*

M2 comprises 80 hours of work over 2 semesters. In addition, training in individual research is required under the supervision of a tutor from a recognised research team (6 months). Before registration, candidates are interviewed about the feasibility, the scientific

Table 1



Comparison of two systems

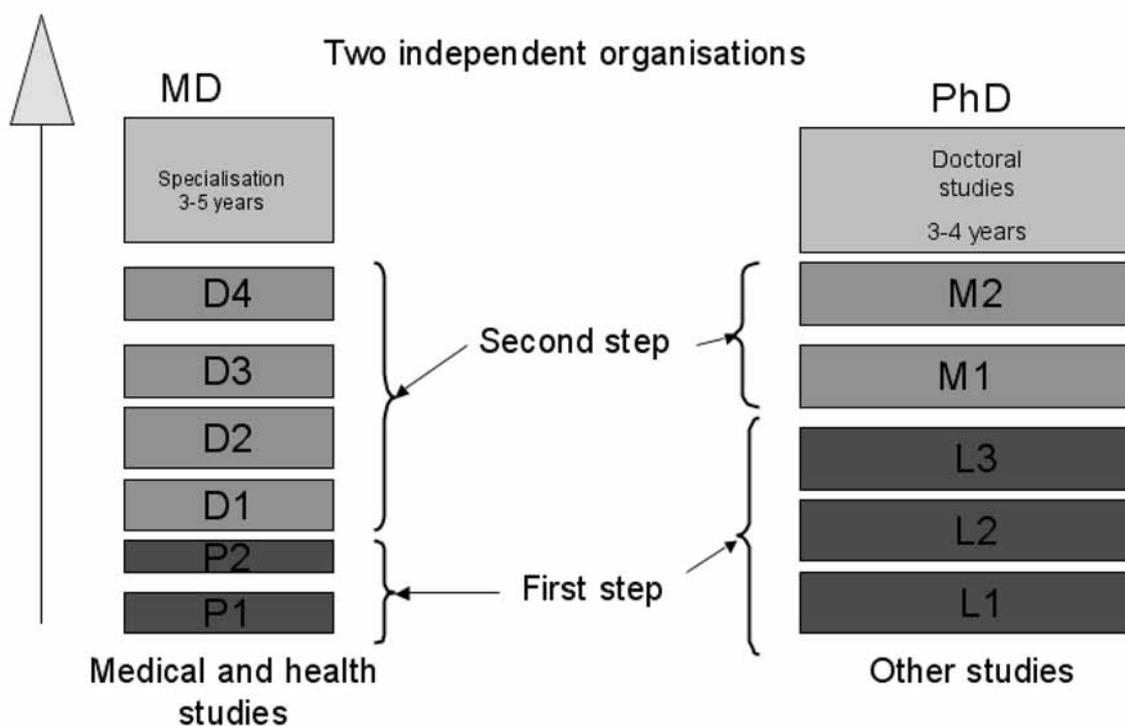
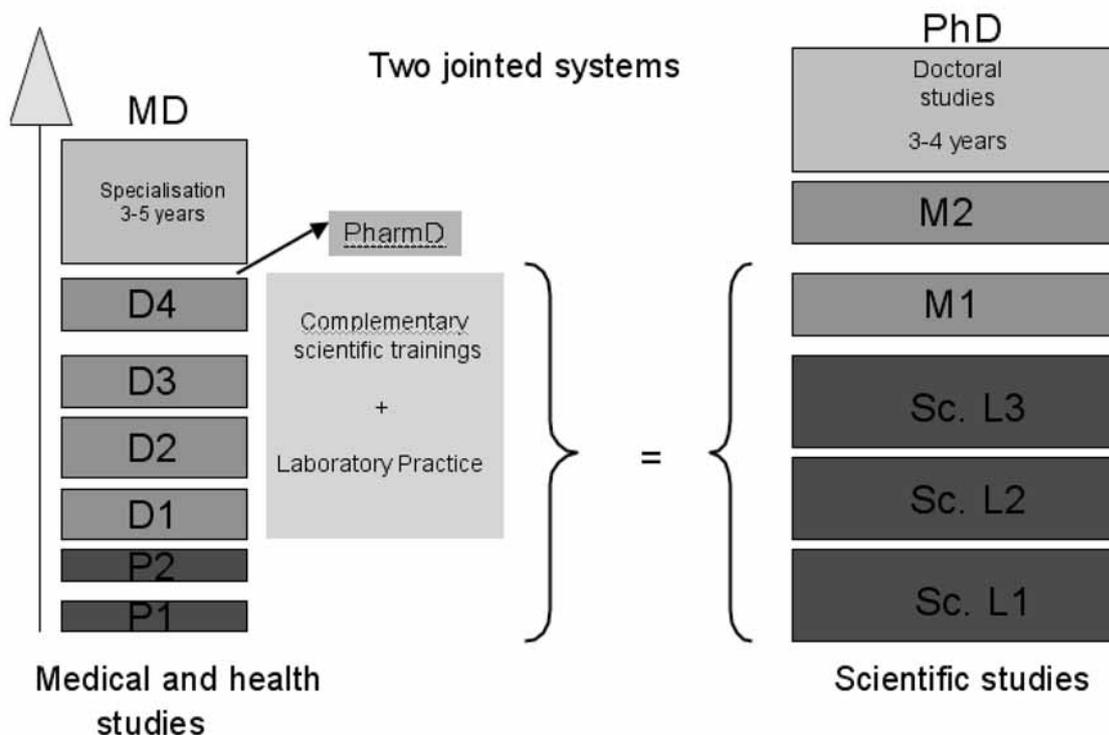


Table 2



## From medical path to research studies in France



ic level and the expected results of their project, and can be rejected from the programme on the basis of their performance at the interview. At the end of M2, students are requested to produce a scientific report and give an oral presentation of their work. The candidates must also submit a publication in a peer-reviewed journal.

There is currently a biomorphology route in the osteo-articular programme of the M2 in Health and Life Sciences. Seven different specialities are available through M2 at the University of Paris Descartes: genetics, virology / immunology, cellular biology, physiology / pharmacology, chemistry, public health, and neurobiology (since 2007) organised in collaboration with the University of Paris Diderot.

It can therefore be seen that there is no M2 course specific to anatomy / biomorphology. Consequently, it is proposed that a European Master 2 degree is established that would be open to about 20 students per year, in order to form the future body of teachers in anatomy.

### *Licence degree*

To provide a full degree in anatomy, it will be good to consider beginning the teaching of anatomy at the level of a licence degree. At the

present time, anatomy is taught exclusively during the first year of medical school, when students have not made their choice to go to medicine, dentistry, or health and life sciences. In health and life sciences, there is no anatomy course at the licence level. This is most unfortunate, as the student could be drawn into morphological sciences as a logical and modern approach to evolving science, or progress in medicine. One can imagine that through lectures and interviews, dissection and interpretation of cadaveric material or imaging slides, the student would become interested in the morphological sciences. Indeed, it is also important for lecturers and teaching assistants in anatomy to become involved early on during their studies. In France, medical students are encouraged to train in morphology, although there is no licence degree in anatomy.

## II. TOWARDS A EUROPEAN PROGRAMME IN ANATOMY/BIOMORPHOLOGY?

### a) Objectives:

Objective 1: Realise a common programme for a Master's degree in Anatomy/Biomor-

phology that will gain approval from each participating university. The following is proposed:

1. combine ECTS of 30 to 60 hours on transversal subjects (developmental anatomy, biometrics, molecular anatomy, etc.), or by organ (maxillo-facial, uro-genital, osteo-articular, etc.), necessary to arrive at 300 hours of formal lectures and 200 hours of research;
2. establish a common faculty;
3. devise a common evaluation of training with external examiners.

Objective 2: Request for a European recognition of the programme. Prior to this, we suggest compliance to the two points below:

1. gain approval of the programme from each participating university;
2. successfully run the programme for a minimum of one year.

#### **b) Master Erasmus Mundus (MEM)**

The MEM is a European Master's degree, common to several universities, which means that:

1. selection of students is common (shared pool of candidates);
2. programme (lectures, teaching programme, training programme, etc.) is common. It should be feasible to hold a video-conference for the shared course/lecture, and possibilities should exist for exchange visits in partner research laboratories for 3, 6 or 12 months;
3. faculty is common (joint faculties and professionals).

## CONCLUSIONS

The goal of this proposal is to set up a European Master's degree in anatomy/ biomorphology for students within health sciences and medicine. A Master-2 degree could provide the basis for setting-up a curriculum in anatomy/biomorphology. A minimum of two European universities would be necessary to begin this venture. Anatomists at the University of Paris Descartes are trying to join with other European universities in order to organise the programme for education of future teachers of anatomy in France (and perhaps elsewhere in Europe).

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