

## Beschluss zur Akkreditierung

des Studiengangs „European Master of Science in Comparative Morphology“ (M.Sc.) (joint degree)

an der Universität Gießen,

in Kooperation mit: Universität Antwerpen, Veterinärmedizinische Universität Wien, Poznan University of Life Sciences, und Università degli Studi Napoli Federico II



Auf der Basis des Berichts der Gutachtergruppe und der Beratungen der Akkreditierungskommission in der 50. Sitzung vom 18./19.02.2013 spricht die Akkreditierungskommission folgende Entscheidungen aus:

1. Der Studiengang „European Master of Science in Comparative Morphology“ mit dem Abschluss „Master of Science“ an der **Universität Gießen** in Kooperation mit der Universität Antwerpen, der Veterinärmedizinischen Universität Wien, der Poznan University of Life Sciences und der Università degli Studi Napoli Federico II wird unter Berücksichtigung der „Regeln des Akkreditierungsrates für die Akkreditierung von Studiengängen und für die Systemakkreditierung“ (Beschluss des Akkreditierungsrates vom 23.02.2012) mit einer Auflage akkreditiert.

Der Studiengang entspricht grundsätzlich den Kriterien des Akkreditierungsrates für die Akkreditierung von Studiengängen, den Anforderungen der Ländergemeinsamen Strukturvorgaben der Kultusministerkonferenz, den landesspezifischen Strukturvorgaben für die Akkreditierung von Bachelor- und Masterstudiengängen sowie den Anforderungen des Qualifikationsrahmens für deutsche Hochschulabschlüsse in der aktuell gültigen Fassung. Die im Verfahren festgestellten Mängel sind durch die Hochschule innerhalb von neun Monaten behebbar.

2. Es handelt sich um einen **konsekutiven** Masterstudiengang.
3. Die Akkreditierung wird mit den unten genannten Auflagen verbunden. Die Auflagen sind umzusetzen. Die Umsetzung der Auflagen ist schriftlich zu dokumentieren und AQAS spätestens **bis zum 30.11.2013** anzuzeigen.
4. Die Akkreditierung wird für eine **Dauer von fünf Jahren** (unter Berücksichtigung des vollen zuletzt betroffenen Studienjahres) ausgesprochen und ist **gültig bis zum 30.9.2018**.

### Auflage:

1. Das Diploma Supplement muss vorgelegt werden

Die Auflage bezieht sich auf im Verfahren festgestellte Mängel hinsichtlich der Erfüllung der Kriterien des Akkreditierungsrates zur Akkreditierung von Studiengängen i. d. F. vom 23.02.2012.

Zur Weiterentwicklung des Studiengangs wird die folgende **Empfehlung** gegeben:

1. Vertreter der Berufspraxis sollten verstärkt in die Weiterentwicklung des Studienganges eingebunden werden.

Zur weiteren Begründung dieser Entscheidung verweist die Akkreditierungskommission auf das Gutachten, das diesem Beschluss als Anlage beiliegt.

Die Auflage wurde fristgerecht erfüllt.  
Die Akkreditierungskommission bestätigt dies mit Beschluss vom 17./18.02.2014.



# Gutachten zur Akkreditierung

des Studiengangs „European Master of Science in  
Comparative Morphology“ (M.Sc.) (joint degree)

an der Universität Gießen,

in Kooperation mit: Universität Antwerpen, Veterinärmedizinische Universität  
Wien, Poznan University of Life Sciences, und Università degli Studi Napoli Fe-  
derico II



**AQAS**

Agentur für Quali-  
tätsicherung durch  
Akkreditierung von  
Studiengängen

## Table of contents

<b>1</b>	<b>Executive summary</b>	<b>3</b>
<b>2</b>	<b>Introduction</b>	<b>6</b>
	2.1 Assessment Procedure	6
	2.2 Assessment Panel	6
	2.3 Preliminary Remarks	7
	2.4 Facts and Figures	8
<b>3</b>	<b>Assessment per Theme and per Standard</b>	<b>10</b>
	3.1 Aims and objectives of the programme (theme 1)	10
	3.2 Curriculum (theme 2)	13
	3.3 Staff (theme 3)	21
	3.4 Services (theme 4)	25
	3.5 Internal quality assurance system (theme 5)	27
	3.6 Conditions for continuity (theme 6)	30
	3.7 AQAS standards (theme 7)	32
<b>4</b>	<b>Assessments</b>	<b>35</b>
	<b>Annex 1: Panel</b>	<b>35</b>
	<b>Annex 2: Schedule of the site visit</b>	<b>38</b>
	<b>Annex 3: Documents reviewed</b>	<b>41</b>
	<b>Annex 4: Domain specific learning outcomes</b>	<b>42</b>
	<b>Annex 5: Abbreviations</b>	<b>44</b>

# 1 Executive summary

A panel of peers reviewed the new master's programme 'European Master in Comparative Vertebrate Morphology', a joined effort of five European universities being the University of Antwerp, Justus Liebig University Giessen, University of Veterinary Medicine Vienna, Poznan University of Life Sciences and Università degli Studi Napoli Federico II. Judgements are made about all 6 themes and 19 standards of the NVAO<sup>1</sup> assessment framework for initial accreditation: all NVAO themes and all standards are assessed as satisfactory. In addition, the panel assessed the new programme according to 7 additional standards of the AQAS<sup>2</sup> framework: all AQAS standards are judged as satisfactory. The general conclusion of the panel is positive.

In general, the panel finds the programme well-structured with a good coordination. The intended learning outcomes are clearly defined. It is a new master's programme with an innovative approach to education and the perspective for graduates is positive. The panel has met an enthusiastic and involved team. The quality of the programme is in general of a high level and meets international standards. Also, the quality assurance system is well-organized. Mobility (compulsory) for both students and lectures will increase their international cooperation skills. The panel appreciates the design of the dissertation where small groups of students will work together on a common research topic.

However, there are also some points for improvement. The contents and organizational aspects of the first semester, which solely exists of e-lectures, need adjustments. The panel misses a tutor, someone from teaching staff, who is specifically assigned to a small group of students during their stay abroad. The involvement of industry in setting up the programme is rather modest. It is positive the consortium has established an Advisory Board with representatives of alumni (future) and industry but the involvement of industry needs to be strengthened. The panel notices there is little time provided for supervising the master's thesis. A general outline per theme of the panel's conclusions and reviews is given hereafter.

The panel observed that the programme has aligned its goals with requirements set by international academic peers and professionals in the field of in vivo research, non-invasive imaging and molecular imaging. The programme is also aligned with the revised European directive on the protection of animals used for scientific purposes (Directive 2010/63/EU). The curriculum corresponds with current developments in the domain of comparative vertebrate morphology, through verifiable links with current scientific theories. Therefore, the panel assesses **the theme 'Aims and objectives of the programme' as satisfactory.**

The panel considers the intended learning outcomes of the programme as well-defined and appropriate for an academic master programme. The panel confirms that the **domain specific learning outcomes** of the new programme **comply with the Flemish qualification framework.** These are set at the appropriate level 7 being the **master level.** The panel also agrees with the content of the domain specific learning outcomes of the new programme.

The programme runs over a two-year period and comprises 60 ECTS credits compulsory courses, 30 ECTS credits imaging elective cluster or cell elective cluster, and 30 ECTS credits for the dissertation. The contents of the courses are internationally oriented and peer-reviewed. The organization and location of courses are based on the expertise of the involved universities. For example, the compulsory courses on morphology will take place in Antwerp (Belgium) and in Poznan (Poland). Students can choose where to study. All lectures are given in English and stud-

---

<sup>1</sup> NVAO = Accreditation Organisation of the Netherlands and Flanders

<sup>2</sup> AQAS = Agency for Quality Assurance through the Accreditation of Study Programmes (Germany)

ying abroad at least one semester is compulsory. The second and third semester can be switched, which means that it is possible to run the elective course before the student has passed all compulsory courses. The panel advises to evaluate this order of courses thoroughly but does not think this makes the programme impracticable. The first semester exists solely of e-lectures. The evaluation of the e-courses with dummy students is much appreciated but was still evolving. This will probably give valuable input to adjust the e-courses, which seemed at time of site visit not yet of top-level and need more improvement. Therefore, the panel advises to consider professional support for the further development of the e-courses. The panel values the approach of three to five students working together for the master's thesis but this team work needs to be monitored carefully. Besides that, the panel suggests to reconsider the necessity of the study of the 'local language' given the short period abroad. The workload of the programme is in accordance with legal requirements and the admission procedure is clearly defined. The panel assesses **the theme 'Curriculum' as satisfactory.**

The panel was impressed by the enthusiasm and engagement of the staff team it met during the site visit. Researchers who contribute to the development of their specific research domain will provide teaching. Where necessary, guest lecturers will be invited because of their specific expertise. Every institution has already assigned a deputy in case key staff resigns or is not (longer) available. The panel has been reassured that the expertise required to deliver the programme is available within the consortium. During the site visit it became clear the accomplishment of this programme is a result of team work among all members of the consortium. The panel assesses **the theme 'Staff' as satisfactory.**

The panel considers the facilities of the University of Antwerp, the Justus Liebig University Gießen and the University of Veterinary Medicine Vienna as being up to standards. Members of the consortium and a representative from industry have ensured that adequate equipment is (or will be made) available in both Poznan University of Life Sciences and Università degli Studi Napoli Federico II. Tutoring is well organized at various levels, though the panel recommends appointing a tutor (someone from the teaching staff) who is specifically assigned to a small group of students during their stay abroad. All the involved universities have assured the panel that their departments of internationalization are experienced in supporting students from abroad (for example with housing and administrative procedures). The consortium has already developed an attractive and informative website for this new programme. The e-learning platform (Blackboard) is up to standards and will be used by all students. The panel assesses **the theme 'Services' as satisfactory.**

The consortium will use one quality assurance system, coordinated by the academic coordinator of the University of Antwerp. All relevant stakeholders (lecturers, students, alumni and professionals) are taken into account. There is a central role for the Academic Board, which consists of seven members (one lecturer of each participating university, one student and one representative of the Advisory Board) and the academic coordinator presides the Academic Board. The Advisory Board consists of representatives of alumni (in the near future) and the professional field. The involvement of industry is rather modest and needs to be strengthened. Nevertheless, the panel appreciates the already well-structured design of the quality assurance system and therefore assesses **the theme 'Internal quality assurance system' as satisfactory.**

During the site visit the representatives of the board of the involved institutions expressed their commitment to the programme, assuring that students can complete the programme. The coordination agreement is signed by all partners. The panel concludes that the facilities are adequate to start the programme but it is crucial to evaluate the level of facilities available at least yearly. There are neither extra investments nor financial provisions for this programme. The consortium has been selected for five years of funding by the Erasmus Mundus programme of the European Commission. The panel assesses **the theme 'Conditions for continuity' as satisfactory** but

recommends the consortium to start thinking of financial provisions in case the funding of Erasmus Mundus stops.

All parts of the application file were formulated in English. All universities have a policy regarding students with special needs. Each module accounts for at least five ECTS credits except 2 elective courses. These two courses deal with highly specialized topics, which build further on previous course contents and skills. The 3 ECTS credits covered by these two courses reflect the number of hours teaching and practical and the associated workload. Each module is concluded with an examination and, if necessary, a re-examination. The website of Eucomor (<http://www.eucomor.net>) provides information about the availability and location of modules which can be followed. The cooperation agreement is documented and signed by all partners of the consortium. Each student will receive a joint Master's degree and a diploma supplement presenting the details of the participant's academic programme and academic achievement. Students can be granted special educational facilities or recognition of previously acquired competencies, credits or qualifications to the student concerned. The panel assesses **the theme 'AQAS' as satisfactory.**

Given these considerations, the panel advises the NVAO and AQAS to take a positive decision regarding the quality of the new programme.

The Hague, 30 November 2012

On behalf of the panel,

Em. prof. dr. Bert van Zutphen  
(Chair)

Ruth DeVreese, MSc  
(Secretary)

## 2 Introduction

### 2.1 Assessment Procedure

The assessment of a new programme starts with the application of the higher education institution (5 June 2012) providing NVAO with an information dossier. This document (4 October 2012) is submitted to a panel of international peers reviewing the programme on the themes and standards of the NVAO and AQAS framework. NVAO is the Accreditation Organization of the Netherlands and Flanders where AQAS is the Agency for Quality Assurance through the Accreditation of Study Programmes of Germany.

The panel has based its assessment on the themes and standards described in NVAO's Accreditation Framework (Flanders) of 14 February 2005. This report is extended with seven more standards (see also point 3.7 AQAS) and the panel is enlarged with an expert of the working field as part of the recognition procedure of Germany. An observer from the Agency for Quality Assurance and Accreditation Austria (AQ Austria) joined the panel to comply with ECA (European Consortium for Accreditation) principles for accreditation procedures regarding joint programmes.

In a preliminary meeting (17 October 2012), the chair, the secretary and the process coordinator exchanged information of this dossier and made agreements on the work method for this initial accreditation. An answer of the consortium to a formulated question, based on the preliminary meeting, is by e-mail received prior to the site visit (31 October 2012).

Due to the international composition of the panel it was decided to have a preliminary meeting with the whole panel the day before the site visit (6 November 2012). There the panel had time to discuss the applications and to formulate the questions to be addressed during the various rounds of interviews the next day. The applicant presented a short overview of the programme and their approach towards quality assurance which was considered very informative. During the site visit (7 November 2012; see also Annex 2 'Schedule of the site visit') the panel met representatives of the board, management of the programme, staff, representatives of the working field, read relevant documents, examined learning materials and visited some of the school's facilities. During the interviews, the panel obtained more detailed information on, amongst others, the questions they had prepared beforehand.

After completion of the review the panel passes judgement on all NVAO and AQAS standards including the achieved learning outcomes resulting in an overall assessment of the programme's quality. The panel reports the outcomes of the review to NVAO and AQAS describing the programme's strengths and weaknesses. The report also reflects on the maintenance and enhancement of quality of the ambitions and achievements of the programme under review. The panel report should enable NVAO and AQAS to advise on accrediting this programme.

### 2.2 Assessment Panel

Preliminary meeting	17 October 2012 (NVAO, The Hague: chair, secretary, process coordinator)
Panel meeting and	6 November 2012 (Antwerp)
Site visit	7 November 2012 (Antwerp)
Panel report	30 November 2012
Expert panel	

- Em. prof. dr. Bert van Zutphen, Veterinary Faculty of Utrecht University (chair of the panel);
- Dr. Karl Klisch, Lecturer of Clinical Veterinary Anatomy, School of Veterinary Medicine and Science, University of Nottingham;
- Prof. dr. med. vet. Alois Boos, Director Institute of Veterinary Anatomy, Vetsuisse Faculty, University of Zurich;
- Dr. med. vet. Mahtab Bahramsultani, research associate, Institute of Veterinary Anatomy, Faculty of Veterinary Medicine, University of Leipzig;
- Anton Schuurmans, BA, Law student, Katholieke Universiteit Leuven.

#### Assisting staff

- Ruth DeVreese, MA, NVAO secretary to the panel;
- Ronny Heintze, MA, process coordinator AQAS;
- Michèle Wera, MA, process coordinator NVAO;
- Natalie van den Dobbelsteen, logistics.

#### Observer

- Michael Ofner, AQ Austria (Agency for Quality Assurance and Accreditation Austria)

The composition of the panel reflects the expertise deemed necessary by NVAO and AQAS. Short CVs of the panel members are included in annex 1. All the panel members signed a statement of independence. The panel has based its assessment on the themes and standards described in the NVAO Initial Accreditation Framework supplemented with standards of AQAS.

The panel formulated its preliminary assessments per standard immediately after the site visit. These are based on the findings of the site visit, and building on the assessment of the programme documents. On 21 November 2012, the draft version of this report was finalised taking into account the available information and relevant findings of the assessment. Where necessary the panel corrected and amended the report. The panel finalised the report on 30 November 2012.

### 2.3 Preliminary Remarks

The application file of the ‘European Master of Comparative Vertebrate Morphology’ was well-prepared. During the preliminary meeting, the chair of the panel assessed a discrepancy between the overall aim and the contents of the curriculum. This related in particular to one of the formulated objectives, being ‘*The graduate must be able to give advice on the use of laboratory animal-related biomedical research*’, which is a rather broad field and requires knowledge on several aspects which were not sufficiently covered by the programme. As a consequence, the consortium reconsidered the objective and modified the objectives as formulated in the application file by e-mail (31 October 2012). The panel found the answer of the consortium adequate.

Prior to the site visit, the members of the panel shared their first impressions and comments of the application file by e-mail. The first day of the site visit (6 November 2012), the panel discussed the compilation of these preliminary remarks and prepared a list of questions to be asked during the sessions. The applicant presented, also the first day, a general outline of the programme and elucidated the structure of the quality assurance system. The panel found this presentation very useful.

The panel appreciated the information available (e.g. possible master thesis topics, literature list, Eucomor newsletters, access to e-courses etc.) during the site visit. The sessions were well organized and the panel met an enthusiastic and involved team. The panel was impressed by the representation of all involved universities but recommends to organize teleconference in a better way. The consortium should get familiar with a proper use of videoconference given the international context of this programme.

## 2.4 Facts and Figures<sup>3</sup>

Programme	European Master of Science in Comparative Vertebrate Morphology
Level	Academic master
Orientation	Academic orientation
Specialisations	Not applicable
Field of Study	Life Sciences
Credits	120 ECTS
Degree	- degree: Master
	- qualification: of Comparative Vertebrate Morphology
	- specification: Master of Science

Institutions	Countries	Locations
University of Antwerp	Belgium	Antwerp
Justus-Liebig-Universität Giessen	Germany	Giessen
Veterinärmedizinische Universität Wien (Vetmeduni)	Austria	Vienna
Poznan University of Life Sciences	Poland	Poznan
Universita degli Studi di Napoli Federico II	Italy	Naples

Five European universities (see table above) have joined efforts in an international, collaborative Master of Sciences – European Master of Comparative Vertebrate Morphology (EUCOMOR). The participating institutions were involved in an Erasmus curriculum development project (2010-2013) that enabled to list the specific needs of European biomedical and pharmaceutical companies, organizations (e.g. laboratory animals, morphology), Life Sciences students and institutes and to translate these needs into learning outcomes and a coherent master programme. This master's programme is a Life Sciences programme and falls within this reference field. For this master of Comparative Vertebrate Morphology no domain-specific learning outcomes were available. Therefore, the international consortium used amongst others the guidance of the VLIR/VLHORA to jointly define the learning outcomes (see annex 4).

This Master's degree answers to the need of the international biomedical environment for an expert who can innovatively contribute to animal research, the development of alternatives and imaging techniques and provide scientific arguments for e.g. revised legislation or position papers regarding the use of animals and animals for research purposes. Thus, the programme focuses on forming master students who can give advice on specific aspects of the use of laboratory animal-related biomedical research particularly in the field of comparative morphology and animal-free techniques on the basis of analyses, interpretation and decision.

The five institutions were selected on the basis of their key research domains, specialized facilities/equipment and the ability to integrate the different disciplines into a joint educational programme. The course content and structures make optimal use of the areas of excellence of each partner. The consortium decided to make a curriculum, draft teaching material, use teaching methods and assessment methods and criteria that are competency-based, student centred and activating.

The master in comparative morphology needs to possess a number of competences ensuring that the EUCOMOR graduate can develop a career in industry, in academia, in governmental services and as a lifelong learner. The focus of this programme is mainly research oriented, comprising knowledge gathering, but also practical skills and attitudes. The domain of in vivo, non-invasive imaging and molecular imaging is rapidly evolving. This needs to be backed up by a similar increasing knowledge regarding the morphological structures that are visualised via these new techniques. The mobility periods exert positive effects from the socio-cultural and personal devel-

<sup>3</sup> Information dossier (June 2012) and website [www.eucomor.be](http://www.eucomor.be) (last consulted on 15 November 2012)



opment point of view and add to the competences and competitiveness of the EUCOMOR graduates.

The programme is taught in English and runs over a two-year period (120 ECTS credits). Each year is divided in two semesters of 30 ECTS credits each. In a semester the courses are offered in a package (cluster). The programme comprises 60 ECTS credits compulsory courses, 30 ECTS credits imaging elective cluster or cell elective cluster, and 30 ECTS credits for the dissertation. The combination between the expertises the EUCOMOR graduate has gained regarding vertebrate morphology on the macro- and microscopic level and the technical skills via the elective clusters (imaging and cell) guarantees that he can identify the structures that are visualised and can advise and design the imaging techniques for visualising certain structures. This programme requires the enrollment of a minimum of 15 students and a maximum of 25 students.

Finally, the programme of the 'European Master of Comparative Vertebrate Morphology' is complementary to other master programmes offered in the European area of Higher Education, e.g. Master of Molecular Imaging, Master of Science in Technische Biologie (Darmstadt University of Technology), and Master in Animal Biosciences & Biomedical Sciences. The EUCOMOR consortium yearly monitors how other master programmes relate to the European Master of Comparative Vertebrate Morphology. Students receive input on ongoing research projects via their dissertation and on possibilities for a PhD-project after graduation.

### 3 Assessment per Theme and per Standard

This chapter presents the evaluation by the assessment panel of the six themes and nineteen standards of NVAO. For each standard the panel presents (1) a brief outline of its findings based on the programme documents, on documents provided by the institution and on the interviews during the site visit, (2) the considerations the panel has taken into account and (3) the conclusion of the panel. The NVAO framework is extended with 7 standards from AQAS. The panel presents a conclusion for each standard and theme.

#### 3.1 Aims and objectives of the programme (theme 1)

##### 3.1.1 Level and orientation (standard 1.1)

*The intended learning outcomes of the programme correspond with the following descriptions of a master's degree:*

- *general competences at an advanced level such as the ability to reason and act in an academic manner, the ability to handle complex problems, the ability to reflect on one's own thoughts and work, and the ability to convert this reflection into the development of more effective solutions, the ability to communicate one's own research and solutions to professional colleagues and laymen, and the ability to develop an opinion in an uncertain context*
- *general academic competences at an advanced level such as the ability to apply research methods and techniques, the ability to design research, the ability to apply paradigms in the disciplines of the sciences or the arts and the ability to indicate the limits of paradigms, originality and creativity regarding the continuously expanding body of knowledge and insight, and the ability to collaborate in a multi-disciplinary environment*
- *advanced understanding and insight in scientific, discipline- specific knowledge inherent to a certain domain of the sciences or the arts, insight in the most recent knowledge in the subject/discipline or parts of it, the ability to follow and interpret the direction in which theory formation is developing, the ability to make an original contribution towards the body of knowledge of one or several parts of the subject/discipline, and display specific competences characteristic for the subject/discipline such as designing, researching, analysing and diagnosing*
- *the competences needed for either independent research or the independent practice of the arts at the level of a newly-qualified researcher (in the arts), or the general and specific professional competences needed for independent application of academic or artistic knowledge at the level of a newly-qualified professional*

#### *Outline of Findings*

The graduate student will be able to innovatively contribute to animal research and teaching, the development of alternatives and imaging techniques and provide scientific arguments for e.g. revised legislation or position papers regarding the use of animals for research purposes, particularly in the field of comparative morphology and animal-free techniques. Thus, the programme specifically focuses on forming master students who can conduct research and/or give advice on specific aspects of the use of laboratory animal-related biomedical research particularly in the

field of comparative morphology and animal-free techniques on the basis of analyses, interpretation and decision.

The focus of the programme is mainly research oriented, comprising knowledge gathering, but also practical skills and attitudes. Emphasis is put on arming the student with transferable skills that are required to function as researcher in an international, multidisciplinary and biomedical research environment.

#### *Considerations*

Clearly, derived from the dossier, students develop their knowledge through the interaction between education and research. The objectives correspond with current developments in the domain of in vivo research, non-invasive imaging and molecular imaging, through verifiable links with current scientific theories.

#### *Conclusion*

The panel assesses standard 1.1 'Level and orientation' as satisfactory.

### 3.1.2 Subject/discipline specific requirements (standard 1.2)

*The intended learning outcomes of the programme correspond with the requirements set by professional colleagues, both nationally and internationally, and the relevant discipline concerned (subject/discipline and/or professional practice or practice of the arts). In the case of regulated professions, the requirements correspond with the regulation or legislation concerned.*

*For academic master's programmes the learning outcomes stem from requirements set by the academic and/or artistic discipline, international academic practice and, for programmes to which this applies, practice in the relevant professional field.*

#### *Outline of Findings*

The aims and objectives of the programme correspond to a need of the international biomedical environment for an expert who can contribute to animal research and the development of alternative and imaging techniques. A number of competences have been developed ensuring that the graduate can develop a career in industry, in academia, in governmental services and as a life-long learner. The recent European directive regarding the use of laboratory animals (2010/63/EU), strives to a further reduction in the use of laboratory animals and a more refined use of animals. The master of Comparative Vertebrate Morphology can significantly contribute to this aim by advising and designing ex vivo/in vitro alternatives to animal experimentation, the most adequate experimental setting for an animal model, and the precise interpretation of morphological data of an animal experiment in biomedical industry, in academia and towards animal welfare organizations or governmental services.

The domain of in vivo, non-invasive imaging and molecular imaging is rapidly evolving. This needs to be backed up by a similar increasing knowledge regarding the morphological structures that are visualised via these new techniques. The combination between the expertises the EU-COMOR graduate has gained regarding vertebrate morphology on the macro- and microscopic level and the technical skills via the elective clusters (imaging and cell) guarantees that he can identify the structures that are visualised and can advise and design the imaging techniques for visualising certain structures.

#### *Considerations*

The panel had formulated a preliminary remark about the objectives of the programme in relation to the contents of the curriculum. As a consequence, the consortium has adjusted the objective of the programme (as formulated in the application file) into (adjusted words are marked in bold):

*The programme specifically focuses on forming master students who can give advice on **specific aspects** of the use of laboratory animal-related biomedical research **particularly in the field of comparative morphology and animal-free techniques** on the basis of analyses, interpretation and decision.*

This new formulated objective of the programme fulfills the link between aims and objectives. This objective is more realistic where the curriculum reflects this. The intended learning outcomes (included in Annex 4) put a basis on the knowledge which is needed to do research in the field of comparative morphology in general. It adds to that specific aim the possibility to be an advisor in the field of biomedical research when it comes to avoid the use of animals and the graduate will be able to purpose the usage of alternative techniques.

The consortium shows in several ways that the intended learning outcomes of the programme correspond with the requirements set by professional colleagues. First of all, there is clear evidence that the number of A1 papers in the field of in vivo imaging and animal model has increased significantly the last ten years. Secondly, the consortium conducted a survey in which target groups comprising students, academia, organizations and biomedical companies were asked about the need for the creation of this educational programme (this was part of the Erasmus Curriculum Development project). Thirdly, future employers and other peers are consulted to develop the aims and objectives of the new programme. Unfortunately, the involvement of the industry in setting up this programme is still rather modest (see also standard 5.2 'Involvement stakeholders'). The consortium has taken into account the consequences of the European directive 2010/63/EU, a changing legislation regarding the use of laboratory animals. The programme is tuned with this directive to form graduates who can fulfill an advisory function. The panel advises the consortium to highlight this advantage in the advertisement of the programme to future (potential) students.

The panel considers the correspondence between the intended learning outcomes and the requirements set by professional colleagues, the relevant discipline and professional practice as satisfactory.

#### *Conclusion*

The panel assesses standard 1.2. 'Subject/discipline specific requirements' as satisfactory.

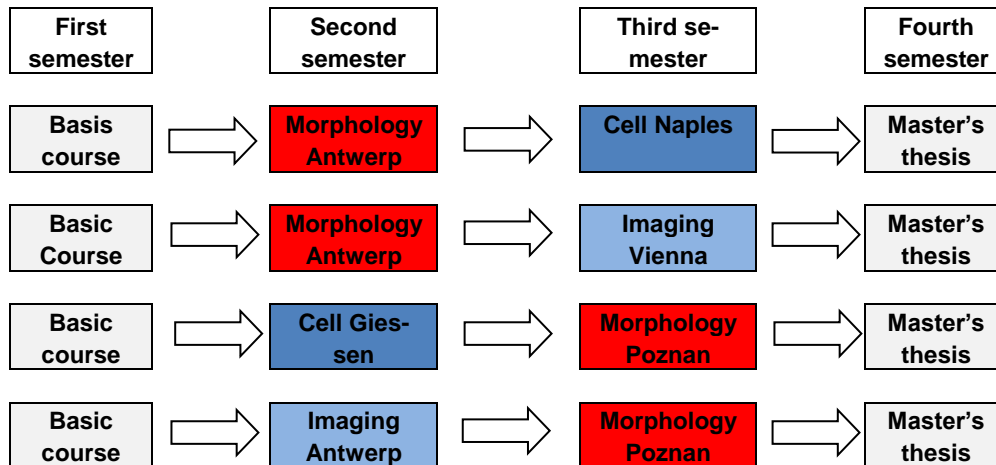
### 3.1.3 Summary of the judgments of Theme 1 "Aims and objectives of the programme"

The panel assesses the two standards of the first theme as satisfactory. Overall, the panel therefore assesses theme 1 'Aims and objectives of the programme' as satisfactory.

The panel also confirms that the domain specific learning outcomes of the new programme comply with the Flemish qualification framework. These are set at the appropriate level 7 being the master level. The panel also agrees with the content of the domain specific learning outcomes of the new programme as specified in Annex 4.

### 3.2 Curriculum (theme 2)

The programme consists of four semesters and runs over a two-year period. In a semester, the courses are offered in a package (cluster). The programme comprises 60 ECTS credits compulsory courses, 30 ECTS credits imaging elective cluster or cell elective cluster, and 30 ECTS credits for the master's thesis. A schematic overview of the different possibilities for students to follow the programme is printed below.



The first semester intends to provide a theoretical basis for the entire programme and consists of 30 ECTS credits compulsory courses, which are offered as e-lecturers (this can be followed at the five different institutes). The students will be guided and monitored via scheduled feedback sessions and peer-discussions of the e-instructions via the e-learning platform (Blackboard). This ensures the students are 'involved' in the courses.

In the second and third semester, the mobility tracks chosen by the students come into play. During these semesters, three clusters are offered simultaneously at different institutions: morphology core, imaging elective and cell elective cluster. This curriculum schedule facilitates students to apply for mobility funding and makes optimal use of the expertise present in the different universities.

The compulsory courses related to morphology of vertebrates can be chosen in either the second semester (University of Antwerp) or third semester (Poznan University of Life Sciences). The compulsory courses on morphology are mainly focused on transferring knowledge and applying this knowledge and constitutes for a large part of lectures. During the lab sessions, students are trained in applying this knowledge and in gaining insight in the matters taught.

The elective clusters can be chosen in either the second semester (cell elective cluster at the Justus Liebig University Giessen or imaging elective cluster at the University of Antwerp) or third semester (cell elective cluster at Università degli Studi Napoli Federico II or imaging elective cluster at the University of Veterinary Medicine Vienna). Two elective clusters were installed based upon the outcome of the need analysis and a careful comparison between this and other master programmes. The students will be trained in highly specialized techniques. The research internship, which forms a crucial part of the elective cluster (9 ECTS credits) trains the communication, reporting and collaborative skills of the students.

The fourth semester consists of the dissertation (30 ECTS credits). During this period, students work in a team of three to five students under the coordination of one institution on a common research topic. Each of them is responsible for a subtopic covering a different discipline within the field of comparative morphology. For example, one student can be responsible for designing a new probe, another one needs to fit this to an automated image analysis system and a third student needs to work out an in vitro screening assay using stem cells in which the probe for estimat-

ing e.g. glucose transport can be evaluated. During the thesis, students need to bring all the knowledge and technical skills into practice, need to get acquainted with current developments in the various disciplines of comparative morphology and fully use their acquired competencies for functioning as a researcher or advisor in a professional context. The scientific experimental work that is carried out for the dissertation needs not to be related to the research internship of the elective course and needs not to be conducted in the same research lab/institution. Thus the dissertation offers the students another interesting possibility for a mobility period including a placement in one of the participating institutions or associated partners.

### 3.2.1 Requirements for academic orientation (standard 2.1)

*The proposed curriculum meets the following criteria for an academic orientation:*

- *Students develop their knowledge through the interaction between education and research (including research in the arts) within relevant disciplines;*
- *The curriculum corresponds with current developments in the relevant discipline(s) through verifiable links with current scientific theories;*
- *The curriculum ensures the development of competences in the field of research and/or the development and practice of the arts;*
- *Where appropriate, the curriculum has verifiable links with the current relevant professional practice.*

#### *Outline of Findings*

The programme establishes a clear interaction between research and education within the discipline of comparative morphology. Teaching staff is active in the scientific domain. Their research track is excellent, which ensures the curriculum will correspond with current developments in the relevant disciplines.

The curriculum ensures the development of research competences in several courses, but main evidence for this standard is found in the courses research internship and master's thesis. The final four weeks of the elective clusters consists of a research internship during which the students participate in an active manner in a research lab affiliated with the 'organizing' institution, with an expertise related to the elective cluster that was chosen. This ensures that the students acquire a more in depth training and integration of the knowledge, skills and attitudes regarding the elective cluster course's contents. Additionally, the research internship provides the student with the skills for conducting an own research topic/protocol during the placement for their dissertation during the final semester. The thesis is the corner piece of the programme, where students need to bring all the knowledge and technical skills into practice, need to get acquainted with current developments in the various disciplines of comparative morphology and use the acquired competencies for functioning as a researcher or advisor in a professional context.

#### *Considerations*

The panel has studied the curriculum and study material and concluded there is adequate interaction between research and education. The study material such as study books is of a high level. The panel would like to recommend the study book 'Histology: a Text and Atlas (author: Michael H. Ross)' for the purpose of this international programme. The study material of the e-courses is not yet fully developed. At first sight, the developed course material is not yet optimal and should be more inspiring. In this matter, the panel gives the consortium the benefit of the doubt because the material has not been fully developed and is still under evaluation with 'dummy' students. The approach of evaluating the e-courses by dummy students is very much appreciated. The panel requests the consortium to develop e-courses with (more) professional support.

The panel doubts whether the approach in the first semester, where students only follow e-courses, fully meets the requirements for academic orientation. Also, there is a chance that students feel isolated by this kind of education and drop-out. The consortium tries to involve students by giving assignments during the e-lectures where students need to cooperate. The objective is to let them work on group assignments across borders. In this way, the consortium wants to achieve a community feeling among the 'EUCOMOR' students. The e-learning concept of the first semester is a consequence of the diversity of its students. This way of approach is difficult in monitoring students reach an adequate level of its intended competences. The students can study the courses to a certain level, at their own pace and develop a learning center style. The panel advises the consortium to monitor carefully the approach with the e-courses and the achievement of the level of a master degree. Since the level of students could vary a lot, it might be a solution to organize a preparatory programme or summer course(s). By doing so, the level of students that enter the programme can be more focused.

The panel concludes that the development of research skills is of a high level. Students will be trained in several courses to develop this skill in an adequate way. Also, the approach of the master's thesis where small groups of students work together on a common research topic is appreciated by the panel.

#### *Conclusion*

The panel assesses standard 2.1 'Requirements for academic orientation' as satisfactory.

### 3.2.2 Correspondence between the aim and objectives and the curriculum (standard 2.2)

- *The intended curriculum, the educational concept, the study methods and the learning assessments reflect the intended learning outcomes.*
- *The intended learning outcomes are adequately transferred into the educational goals of the curriculum or parts thereof.*

#### *Outline of Findings*

The consortium made an overview of the competencies of the curriculum in function of the elective courses, compulsory courses and master's thesis. From this overview it becomes clear that the learning outcomes are covered by more than one and different courses at different time points in the curriculum. The compulsory courses focus on providing the students with knowledge. Additionally, these courses train the student in becoming a scientific expert within the domain of comparative morphology and to provide the student with the elementary basis (i.c. knowledge) for doing so. The assessment method for these courses is prominently assessing the knowledge of the students using a written exam with open questions. The morphology compulsory courses give a more in depth and specialized training, resulting in a graduate that can function as a scientific advisor and communicator. Accordingly the assessment methods include, besides an assessment of the knowledge and understanding of the course content, a continuous and peer assessment for the lab sessions and group assignments. During the elective courses, the students are trained more in depth in specific morphologic techniques and animal alternatives, and also in research skills during the research internship. The latter confronts the student with his/her skills/attitude as a professional expert of comparative morphology. In consequence continuous and peer assessment are the core method for assessing the student's progress, skills and knowledge. The corner

piece of the programme, the master's thesis, combines all knowledge, skills and attitudes and enables the student to show he/she has acquired all the learning outcomes.

Thus, the programme gradually shifts from a more 'classic' concept of teaching and learning towards a placement during which the student is self-responsible for the acquirement of the necessary skills, attitudes and competences (competency based). Moreover, since teaching methods focus on peer assessment and group work, this programme can be considered as a predominantly student-centered education.

#### *Considerations*

Based on the information file, the panel was of the opinion that basic knowledge on birds, reptiles and fish was missing. However, in the session with teaching staff it became clear this was not the case. Nevertheless, study material about the specific morphology was not included. Also information on genetically modified animals was not presented. The consortium explained that theory about genetically modified animals is already covered in a lot of bachelor programmes. The practical exercises are designed to put theory into practice where the topic of genetically modified animals certainly will be addressed..

Student assessments of the e-courses will be organized at the institution. The panel made reservations about assessing identical courses at different locations, but it became clear there will be sufficient consultation between teaching staff to effectuate such assessment to be of the same level. As mentioned before, the panel would like the consortium to evaluate the approach of e-courses thoroughly. For example, virtual microscopy organized as an e-course will need sufficient instructions and annotations.

The panel has the feeling students will be well prepared for the role as researcher by several courses focusing on research. According to the revised EU Directive, advisors designing procedures and projects must be specifically educated and trained (art 23 and Annex V). The consortium has studied the EU Directive and included the topics as mentioned in Annex V into several courses. Once the programme is running, they will contact the responsible of the EU Directive, and hope that graduates will be legally certified for designing and performing animal-based research. If this will be the case, the panel advises the consortium to advertise this to potential students (see also standard 1.2).

#### *Conclusion*

The panel assesses standard 2.2 'Correspondence between the aim and objectives and the curriculum' as satisfactory.

### 3.2.3 Consistency of the curriculum (standard 2.3)

<i>The contents of the curriculum are internally consistent.</i>
--

#### *Outline of Findings*

The compulsory courses of the first semester are focused on transferring knowledge and to a lesser extent insight. The compulsory courses on morphology can be chosen in either the second or the third semester. As a consequence, the elective clusters can be chosen in either the second or third semester (see schematic overview of the programme as shown under 3.2 Curriculum).

The research internship, which forms a crucial part of the elective clusters, trains the communication, reporting and collaborative skills of the students. The placement during the dissertation consists of addressing and working at a complex research question from different viewpoints in a team of master students supervised by different assessors.



At the level of the individual courses, teachers are asked to discuss the course information, the course content, teaching and assessment methods with their 'peer-teachers' from the involved universities. These discussions are organized within the Academic Board. It is imperative that the validity and authenticity of the methods need to be kept up-to-date.

#### *Considerations*

The panel doubts the logical order of the semesters because the compulsory courses on morphology can be studied after the elective clusters. The consortium has given a reasonable explanation how this can work. Nevertheless, the panel requests the consortium to evaluate and pay sufficient attention to the logical order of the courses. Especially in the case a student has chosen the elective cluster 'imaging' prior to the mandatory courses on morphology.

The panel worried about the comparability of identical clusters offered at different locations. The consortium clarified that the content of clusters won't be exactly the same but they assure the learning outcomes will be reached. The consortium will make use of the expertise of the different institutions and students can make their choice upon this expertise. During the site visit the consortium convinced the panel that there will be sufficient collaboration and consultation between 'peer-teachers'.

The contents of the curriculum are internally consistent and the programme is well-structured. The last part of the programme (30 ECTS credits) is research oriented. There is clearly a gradual shift from knowledge to insight. The programme has been built up in such a way that the student is able to apply knowledge for solving more complex problems and for carrying out research. Working in small groups as to solve scientific problems not only contributes to a critical attitude but also improves teamwork. The panel demands to rethink the necessity of the study of the 'local language' for the short period of the master's thesis (see also standard 2.7). English is the scientific language. Speaking English in the laboratory avoids misunderstandings, rather than speaking local language in a basic and fragmentary way.

#### *Conclusion*

The panel assesses standard 2.3. 'Consistency of the curriculum' as satisfactory.

### 3.2.4 Workload (standard 2.4)

<i>The programme meets the legal requirements.</i>
--

#### *Outline of Findings*

The master curriculum complies with the regulations. Student workload is reflected in the ECTS points (1 ECTS = 25 – 30 h student work load; 25 h vs. 30 h depends on the teaching method and involvement of the student according to ECTS guidelines). The student workload is in accordance with the Flemish legislation and ECTS guidelines (between 1500 and 1800 h/academic year)

One of the tasks of the internal quality assurance system is to monitor the student work-load. Nevertheless the number of hours lecture time, lab sessions and contact time for the assignments (instruction, feedback, discussion) is agreed and part of the course information. Additionally, each of the lecturers is made aware of the student workload that is calculated. It is his/her responsibility to assure that the actual student workload is in accordance with these data. Focus group discussions and quick scans are tools with which the student workload will be monitored (see also standard 5.1 'Internal quality assurance system').

#### *Considerations*

The workload of the programme is in accordance with the legal requirements (between 1500 and 1800 hours). The consortium should be aware of the different level of its students. This can affect the workload significantly.

#### *Conclusion*

The panel assesses standard 2.4 'Workload' as satisfactory.

#### 3.2.5 Admission requirements (standard 2.5)

*The structure and contents of the intended curriculum are in line with the qualifications of the incoming students: a bachelor's degree, with a qualification or qualifications specified in more detail by the management of the institution, possibly supplemented with an individualised curriculum, a preparatory programme or a bridging programme.*

#### *Outline of Findings*

Students can apply online through a standard application form, which can be downloaded at the website [www.eucomor.net](http://www.eucomor.net) and where the selection criteria are clearly stated. Bachelor students in Life Sciences (e.g. chemistry, biology, biomedical sciences, bioengineering, biochemistry, veterinary medicine, medicine, dentistry, zoology, pharmacy, State examination of Veterinary Medicine in Germany etc.) are admitted. The bachelor programme should have contained a minimum of 6 ECTS credits of cell biology, biology and/or animal morphology. Students in their last year of such a bachelor programme will also be considered. A minimum of 180 credits (equivalent to the ECTS credit system i.e. corresponding to a minimum of 3 years of bachelor study) are required.

The online application form includes all elements necessary for further selection (such as a letter of motivation, detailed description of all the courses attended and grades obtained during the bachelor studies as well as the achieved percentile class rank and language skills). Furthermore, two recommendation letters and a detailed CV are requested together with an English certified copy of the diploma, including language certificates (when applicable). Additionally the student needs to indicate the 'home university' where he will enroll and his mobility track.

The coordinator collects all application forms and distributes the duly completed forms to the Academic Board. The board evaluates and ranks the applicants (both students and scholars). The selection procedure will be based on the applicant's academic record, letter of motivation and recommendation indicating the applicant's scientific quality and potential. The applicants, considered as eligible, will be interviewed (via videoconferencing) in order to assess the academic record, motivation and language proficiency and an online aptitude test is organized as well. In case the number of applicants shortlisted exceeds the second step selection procedure, scores will be used to rank the students. A minimum of 15 students is necessary to start the programme and a maximum of 25 students is set.

#### *Considerations*

The selection procedure is very transparent and well written down. Yet, it remains vague for the panel how bachelor degrees of different specializations will be compared and ranked. The panel also doubts, whether students with a Bachelor Degree of Chemistry have gained sufficient knowledge to start this master programme. They are afraid this will influence the level and orientation of the programme. The consortium should evaluate the possibility of organizing a summer course or a preparatory year for students with insufficient knowledge. At the other side, due to the strict selection procedure, the Academic Board can filter students who will not be capable to follow the programme.

The maximal intended amount of students is limited to 25. With the intention to run the non-elective modules in two locations and with four different 'mobility tracks', it might be difficult to

have at least five students (the minimal student number for a module to be run) for each of the modules. The panel advises the consortium to aim for a slightly higher number of students, which would enhance the likelihood that all of the elective modules will actually be organized, which again would make the programme more attractive.

#### *Conclusion*

The panel assesses standard 2.5 'Admission requirements' as satisfactory.

### 3.2.6 Credits (standard 2.6)

*The programme meets the legal requirements regarding the range of credits:*

*Master's programme: at least 60 credits*

#### *Outline of Findings*

The master curriculum comprises 120 ECTS credits. Therefore, it complies with the legal requirements.

#### *Considerations*

The minimum requirement of 60 ECTS credits has been met. The panel is sufficiently convinced that the stated 120 ECTS credits are realistic.

#### *Conclusion*

The panel assesses standard 2.6 'Credits' as satisfactory.

### 3.2.7 Master's thesis (standard 2.7)

*The master's programme is concluded with the master's thesis.*

*The master's thesis corresponds to at least a fifth of the total number of credits with a minimum of 15 and a maximum of 30 credits.*

#### *Outline of Findings*

The second semester of the last year is totally devoted to the dissertation, which is awarded 30 ECTS credits and thus forms a corner piece of the programme. A thesis handbook is made available to the students when entering the second year of the programme.

The thesis is part of a larger research project and consists of a document of approximately 70 pages of publishable quality. Research groups involved in the master programme post a multidisciplinary – but nevertheless related to comparative morphology - research topic in which a minimum of three and a maximum of five students need to be involved. Each of the students will be involved in one of the disciplines and is responsible for his/her subtopic (e.g. macroscopic evaluation, microscopic evaluation, probe design) but nevertheless needs to interact with his/her peers in order to keep an overview of the whole research topic. The research topic should deal with the analysis, development and/or design of a new animal model or in vitro/ex vivo alternative. The work during the placement will be continuously assessed by the supervisor and local staff involved (10%).

Research groups, who offer placements, need to provide a short description of the scientific project, methods involved and the equipment they have at their disposal. This is put on the website [www.eucomor.net](http://www.eucomor.net). This information needs to be approved by the Academic Board before students can register for a certain placement/dissertation topic. The Academic Board selects the 'placement' places based upon the scientific quality of the project, the tutoring and the quality and

relevance for the programme of the research facilities. During the site visit the panel was able to look into a list of possible thesis subjects.

In order to improve the interaction with the local staff at the placement location, students not proficient in the local language, need to follow language courses before starting their placement. The proficiency in the 'local' language will be assessed as well.

#### *Considerations*

The master's programme is concluded with the master's thesis corresponding with 30 ECTS credits. This meets the requirements. Students will be engaged to work in a 'multidisciplinary' team, which means the master's thesis will be executed in groups of three to five students. The panel values this (new) approach but wants to underline that there must be sufficient supervision for this way of working. The staff should get sufficient time to supervise the involved students: the engagement and support of staff in this kind of project is crucial.

The panel appreciated the list of possible subjects for master's thesis although they were not very focused. Unfortunately, possible topics from the Poznan University of Life Sciences were not already documented. Nevertheless, during the session with the teaching staff, the representative of Poland could give an idea of possible dissertation's topics. Another positive point is the availability of a handbook for students providing information on projects, contact persons, guidelines, assessment criteria etc.

As stated before (see standard 2.3 'Consistency of the curriculum') the panel questions what the added value is of the learning of the local language for the quality of the thesis? The panel also believes this could discourage (foreign) students to do their dissertation for example in Poland. The panel demands the consortium to reconsider this element.

#### *Conclusion*

The panel assesses standard 2.7 'Master's thesis' as satisfactory.

### 3.2.8 Summary of the judgments of Theme 2 'Curriculum'

The evaluation panel has assessed the six standards of the theme 'Curriculum' of which all of them as being satisfactory. Since all six standards have been assessed as satisfactory, the evaluation panel assesses the theme 'Curriculum' overall as satisfactory.

### 3.3 Staff (theme 3)

#### 3.3.1 Requirements for academic orientation (standard 3.1)

*The programme meets the following criteria for the deployment of staff for a programme with an academic orientation:*

- *Teaching is principally provided by researchers who contribute to the development of the subject/discipline (including research in the arts)*
- *In addition, and where appropriate, sufficient staff will be deployed with knowledge of and insight in the professional field or practice of the arts concerned.*

##### *Outline of Findings*

The staff which is involved is part of the academic staff of each of the partner institutes. Where necessary, lecturers outside the consortium are invited because they have a specific expertise. The academic staff has been selected on the basis of the relevance of their teaching experience, scientific expertise and especially when lab sessions and/or research internships are scheduled, also on the basis of the proximity of technological and animal facilities with a multidisciplinary approach. The latter ensures that the research activities of the students are embedded in up-to-date scientific research in a multidisciplinary environment. Additionally, this entails the programme to have an international character and necessitates student and teacher mobility.

##### *Considerations*

The panel values the sharing of expertise and experience in setting up this international programme. According to the CVs of the teaching staff (included in the application dossier), the panel ascertains researchers who contribute to the development of their specific discipline will provide teaching. It appears that there is no explicit statistical expertise but all teachers are researchers and therefore familiar with statistics and setting up a research design. Moreover, students should have gained adequate statistical insights during their bachelor's studies. Students with poor statistical insights will not be admitted to the programme, due to the selection procedure.

##### *Conclusion*

The panel assesses standard 3.1 'Requirements for academic orientation' as satisfactory.

#### 3.3.2 Quantity of staff (standard 3.2)

- *Sufficient staff is deployed to be able to start the proposed programme*
- *Sufficient staff is deployed to be able to continue the proposed programme.*

##### *Outline of Findings*

The student to lecturer ratio of this programme varies between the different courses. It needs to be mentioned that in the measurement of ratio only the academic staff is included and invited lecturers. Technical personnel and assisting academic staff involved during the lab sessions or internships/placements are not taken into account. Thus, in reality there is more support for the students because research assisting staff such as PhD students is not taken into account.

In case 25 students enroll, the student to lecturer ratio is 15.6 (on average) for the first semester. When consulting the statistics of various countries, this figure is in accordance with the average of about 1/15 calculated by the OECD. It is below the ratio mentioned for tertiary education in Belgium, Italy and Poland, but above the ratio generally seen in Germany. No data are available for Austria.

In the second and third semester, students need to choose one cluster out of three. A minimum of five students need to follow a cluster. If this is not the case, the cluster will not be organized and students are referred to the other semester for following the courses. The calculations of the lecturer/student ratio show that for the elective cluster 'cell' the lecturer/student ratio is lower compared with the elective cluster 'imaging'. About a double amount of hours training during lab sessions in the 'cell' elective cluster explains this difference. In the 'imaging' elective cluster some of the lab sessions are demonstrations and need less guidance of the students.

During the placement for the research internship and dissertation, students need to discuss their results with their promoter and with the research staff (technical staff and researchers, e.g. PhD students) that is involved. This results in an average (whereby this average refers to the duration of the placement) of 1.5 lecturer/student. The work during the master's thesis will be continuously assessed by the supervisor and local staff involved (10%).

#### *Considerations*

The representatives of the universities' boards ensured the panel of their support towards the programme. This new European master fits into their strategy for internationalization, research and interdisciplinarity. Nevertheless, the panel has noticed this will put a lot of extra workload to the staff, where there are no supplemental investments foreseen. The panel has positive feelings towards the new way of approach of the dissertation where students will need to work together (see also standard 2.7 'Master's thesis'). As a consequence, the panel urges the consortium to give supervising staff sufficient time for a decent follow-up.

The panel was worried about the situation that, if staff members who are crucial for the master programme would leave the university, this would negatively affect the programme. Yet, the already devised back-up plan of the consortium regarding staff, leaving the programme, has reassured the panel of the continuity of the programme (see also standard 6.1 'Graduation guarantee').

#### *Conclusion*

The panel assesses standard 3.2 'Quantity of staff' as satisfactory.

### 3.3.3 Quality of staff (standard 3.3)

*The staff to be deployed are sufficiently qualified to ensure that the aims and objectives regarding content, didactics and organisation of the programme are achieved.*

#### *Outline of Findings*

The University of Antwerp is responsible for the organization of the 'core cluster on morphology courses' and the 'elective cluster of imaging' (both during the second semester). Two departments coordinate and teach the core cluster on morphology courses: the department of Biology which has an international renowned expertise in ecological and functional morphology, and the department of Veterinary Sciences, which has many years of experience in laboratory animal sciences and animal biosciences. Imaging is one of the key research domains at the University of Antwerp. It is largely clustered within the laboratory network EGAMI (Expert Group Antwerp Molecular Imaging) involving the Biomedical Microscopic Imaging, the Bioimaging Lab, the Molecular Imaging Centre Antwerp, the MicroCT Lab and Vision Lab. These centres provide theoretical and

practical input in the elective cluster 'imaging'. Additionally they are fully equipped to host the research internship.

Poznan University of Life Sciences coordinates the 'core cluster of morphology courses' during the third semester. Three departments of the Faculty of Animal Breeding and Biology in collaboration with the Poznan Zoo provide expert input: department of Animal Anatomy, department of Histology and Embryology and Department of Inland Fisheries and Aquaculture.

The Veterinärmedizinische Universität Wien coordinates the 'elective cluster imaging' offered during the third semester. The Institute of Anatomy, Histology & Embryology has a longstanding teaching experience in cell biology, anatomy, histology and embryology to Veterinary and Biomedicine and Biotechnology students. Within these courses, modules like research internships have been organized by the researchers/teachers of the Institute since 2005. The Veterinärmedizinische Universität Wien can rely on the expertise and participation of a core facility 'VetImaging' (VetCore facility for Research) for theoretical, practical and research input as well as the respective equipment.

The elective cluster 'cell' is coordinated by Justus Liebig University Giessen (third semester) and by the Università degli Studi Napoli Federico II (second semester). Both partners have the expert laboratory facilities for organizing these clusters. The expertise of the Justus Liebig University Giessen is more related towards stem cells, whereas the Università degli Studi Napoli Federico II focuses more on the molecular techniques within this cluster. The expertise of Justus Liebig University Giessen has been acquired over the last 15 years working with embryonic stem cells as well as with adult stem cells from various species. The research topics are on one hand focused on basic research like unraveling the differentiation potential of the various stem cell populations. On the other hand there is also application-oriented research carried out in order to develop stem cell based therapeutic options.

The internal lecturers are appointed bi-annually and are chosen based upon their expertise. Their teaching in the programme of the master is evaluated annually and needs to be confirmed. This annual appointment is decided upon in the Academic Board. The Academic Board considers this as a means for ensuring the curriculum is up-to-date and fast adjustable to what is happening in the scientific field of comparative morphology. It does not hamper the continuity and efficiency of the programme, since lecturers having received a 'negative' assessment can be appointed again on the condition that their plan of improvement is considered realistic and effective. In order to keep the content of the curriculum up to date, external lecturers are invited to contribute to certain courses (e.g. Morphology of non-human primates, Experimental Embryology and Morphology). The external lecturers are appointed annually.

Besides the staff of the consortium, several partners from academia and industry have expressed their willingness to contribute to the programme (see also standard 5.2 'Involvement stakeholders').

#### *Considerations*

The panel is much impressed by (mostly) voluntary engagement of the staff, which, on the other hand, can also be mentioned as a weakness of the programme. A strong point of this programme is the extensive research experience of teaching staff. The panel is convinced lecturers will provide students with up-to-date study material. The yearly evaluation of the lecturers by the Academic Board is also a positive element to assess quality of staff as satisfactory.

#### *Conclusion*

The panel assesses standard 3.3 'Quality of staff' as satisfactory.

#### 3.3.4 Summary of the judgments of theme 3 'Staff'

The evaluation panel has assessed the three standards of the theme 'Staff'. All standards have been assessed as satisfactory. Overall, the evaluation panel therefore assesses the theme 'Staff' as satisfactory.



### 3.4 Services (theme 4)

#### 3.4.1 Facilities (standard 4.1)

*Intended housing and facilities are adequate to achieve the learning outcomes.*

##### *Outline of Findings*

##### E-learning environment

Since this is an international master programme requiring mobility with offering courses at different locations, a common e-learning environment is created. Students will be able to download the e-lectures and additional course information, to post assignments, to upload reports, to receive and provide feedback (from lecturer to student and vice versa), to run exercises, for discussion fora or to communicate directly by e-mail with the group of students registered for a specific course.

##### Classrooms – laboratories - dissection rooms

Each of the participating universities has for this programme classrooms, laboratories and dissections rooms at his disposal. The website [www.eucomor.net](http://www.eucomor.net) contains weblinks to the partner universities pages describing their facilities. The panel has consulted the webpages of the involved universities but did not find satisfying information about all the facilities regarding this programme.

##### Library

The students can make use of the universities' libraries. Nevertheless, a vast amount of the scientific papers is electronically available. The welcome package of each university should include the necessary documentation on the accessibility of the institutional library and the online databases that are accessible.

##### Course material

Hard copy course materials are produced and distributed by the universities at moderate prices.

##### Extra-curricular facilities

Once students are enrolled at one of the participating universities, they are given student cards that provide access to all student facilities. The student information services offer students assistance in searching for accommodation. These include sport facilities, student restaurants, student services, the student doctor etc. A welcome package is offered to them for that purpose. During their mobility period, students will be offered the same facilities as the internal students. The Administrative coordinator will – in close contact with the institutional Erasmus coordinators or personnel involved in student mobility – prepare documentation for Erasmus grant applications and documentation containing detailed information regarding the extra-curricular facilities and especially accommodation of the receiving institute.

##### *Considerations*

Every student will use the e-learning environment Blackboard, which is up to standards and adequate to achieve the learning outcomes. Based on the site visit, the panel also considers the facilities of the University of Antwerp to be up to standards. Some panel members are familiar with the facilities of Justus Liebig University Giessen and the University of Veterinary Medicine Vienna. Based on their opinion these facilities are also satisfactory for this programme. Unfortunately, objective information of state-of-the-art equipment in both Poznan University of Life Sciences and Università degli Studi Napoli Federico II is missing. The panel relies upon the members of the consortium and industry who stated the facilities are adequate.

The European programme requires an infrastructure supporting students logistically (e.g. housing), possibly also financially. At each institution, a well-functioning department of internationaliza-

tion will support the students of the programme. Besides that, the consortium already developed a well-structured, attractive and informative website.

#### *Conclusion*

The panel assesses standard 4.1 'Facilities' as satisfactory.

#### 3.4.2 Tutoring (standard 4.2)

*There is adequate staff capacity to provide tutoring as well as information provision for students, and these are adequate in view of study progress.*

#### *Outline of Findings*

Upon enrollment the student receives the student agreement and the education and examination regulations. In these agreements, all procedures are clearly explained and the functioning of the Academic Board, coordinator and ombudsperson are explicit mentioned. The ombudsperson yearly reports to the Academic Board about the activities that were undertaken and the problems encountered. However, swift communication between the local staff, the ombudsperson and the Academic coordinator ensures that problems can be solved rapidly. Additionally, activities in view of the internal assurance policy, can be viewed as measures of study guidance: the focus group discussions that are organized by the Academic coordinator during each semester and for each cluster serves as an early warning mechanism, alerting the Academic board about potential difficulties participants may encounter, and enabling to assist them with possible remedial measures.

At each of the participating universities, the faculties' general facilities for tutoring, and particularly those provided for foreign students, will also be available to the exchange Master students. These facilities include access to the responsible persons for international relations both at faculty and central level, and the ombudsperson.

The consortium intends to appoint a 'buddy' to help new students finding their way around at a new location. Such a buddy will be a voluntary master student of a similar programme. The consortium has already positive experience with the (informal) system of buddies to support students from abroad.

#### *Considerations*

Tutoring is well organized at various levels. Communities in the e-learning semester and the buddy system ensure foreign students to have sufficient social contact. Buddies are students from the local university taking care of international students helping them with many daily matters.

The system for tutoring and information provision is well developed. The panel evaluates the capacity of teaching staff to provide tutoring as well as the information provision for students as satisfactory. Although, the panel would like to make a suggestion: it might be valuable involving someone from the teaching staff who is specifically assigned to a small group of students during their stay abroad. It should be someone different from the ombudsperson because the ombudsperson is rather official and not always easy to approach.

#### *Conclusion*

The panel assesses standard 4.2 'Tutoring' as satisfactory.

#### 3.4.3 Summary of the judgments of Theme 4 'Services'

The panel has assessed the two standards of the theme 'Services' as satisfactory. Overall, the assessment panel therefore assesses the theme 'Services' as satisfactory.

### 3.5 Internal quality assurance system (theme 5)

#### 3.5.1 Systematic approach (standard 5.1)

*A system of internal quality assurance is in place, which uses verifiable objectives and periodical evaluations in order to take measures for improvement.*

##### *Outline of Findings*

On the first day of the site visit (see Annex 2) the academic coordinator presented the structure of the quality assurance system. Quality assurance will be based on both internal and external assessment measures. One quality assurance system will be used for this new programme and the coordination will be carried out by the University of Antwerp (the academic coordinator). The overall responsibility for internal quality assurance is vested in the Academic Board. The academic coordinator presides the Academic Board and as such assures the daily academic coordination of the programme, governs the quality and coherence of the programme, ensures an adequate selection and enrollment of the students and formulates suggestions with regard to these topics to the Academic Board. The academic coordinator carries out these tasks with the aid of the administrative coordinator who additionally assures the document flow amongst the partner institutes regarding enrollment of students, transcript of records, learning agreements and delivery of the degree.

The QA Manager of the University of Antwerp is member of the Academic Board. The Academic Board is responsible for the development, the implementation, the follow-up and the improvements of the programme. Therefore, the Academic Board meets at least twice a year. Each meeting of the Board the outcomes of the evaluations will be discussed. Based on the outcome of the evaluation of the applicants it will be possible that the Board meets more frequently. Urgent problems can be solved by the responsible persons within the different institutions of this new master programme.

The internal system of quality assurance of the programme will use different tools whereas quick scan methodology, focus group discussion and programme evaluation. All courses will be evaluated using an electronic quick scan questionnaire. Evaluation via focus group discussion will be used to evaluate the coherence of the courses within a cluster. The representative of the academic staff of the partner institute involved in teaching in one of the cluster courses will be responsible for the organization of these discussions and for the report to the Academic Board. The QA Manager of the coordinating institute will ensure a similar approach of focus groups. A specific survey will be used to evaluate the quality of the master's thesis (set-up, supervision study load, cooperation within the team etc.).

Bi-annually a programme evaluation will be conducted as a more in depth evaluation of the programme as a whole. Alumni will receive a survey in order to assess whether the programme prepared them sufficiently for their job and requesting input on how the programme could be improved, in the light of the professional experience they gained afterwards. The results of this survey will be reported to both the Advisory and Academic Board.

The results of the quality assurance procedures are discussed in the Academic Board meeting and reported on the website ([www.eucomor.net](http://www.eucomor.net)). Remediating measures are decided during this board meeting and will be part of the next evaluation.

##### *Considerations*

The explanation of the quality assurance system by the academic coordinator was informative. The consortium has carefully considered the systematic approach of the quality assurance system. The panel values the way in which the quality assurance is organized: the consortium will use one quality assurance system and the overall coordination of quality assurance by the Uni-

iversity of Antwerp. The quality cycle is guaranteed but the panel would like to stipulate one minor remark: evaluate the use of the quick scan towards a more extensive questionnaire. Besides that, a positive remark is that course material will be evaluated by 'dummy' students and already will be improved, even before the start of the programme (see also standard 2.1).

#### *Conclusion*

The panel assesses standard 5.1 'Systematic approach' as satisfactory.

### 3.5.2 Involvement of staff, students, alumni and the professional field (standard 5.2)

*Staff, students, alumni and the relevant professional field will be actively involved in the internal quality assurance system.*

#### *Outline of Findings*

The internal quality assurance system includes four categories of actors: the lecturers, the students, the alumni, and the professional field. The lecturers and students are represented in the Academic Board. Students give feedback on the courses by filling out the quick scan after each course and they have the opportunity to provide feedback via the focus group discussions. The results of these quality assessments are discussed in the Academic Board, so student representatives will receive immediate feedback on all evaluations.

The Academic Board will be advised regarding the overall quality of the programme, content of the programme, dissertations, etc. by an Advisory Board. The Advisory Board consists of representatives of the professional field and alumni. The Advisory Board will meet annually. The importance of their input is believed to increase once graduated students have become professionals (alumni). The project consortium also aims to organize the Alumni in a network (e.g. with access to the website and course content information). Via a newsletter they will be informed of developments within the programme.

Additionally, the Koninklijke Maatschappij voor Dierkunde Antwerpen (KMDA-Royal Society of Zoology Antwerp) together with the CRC (Centre for Research and Conservation) provides expert input in various highly specialized topics of the programme. The advisory partners from academia (e.g. CRC) and industry (e.g. Covance) contribute to the Master programme by providing state-of-the-art lectures on specific topics (e.g. use of non-human primates in biomedical research) and hosting students for their research internships or during the dissertation placement.

Besides the staff of the consortium, several partners from academia and industry have expressed their willingness to contribute to the programme by taking actively part in the Advisory Board. Each of the full partners has developed expertise and educational activities in one of the clusters that together constitute the master programme and that is based on their complementary research activities, centers of excellence and contacts with associate partners. For example, Justus Liebig University Giessen cooperates closely with many distinguished horse clinics in Germany and research activities in this domain are also linked with various partners from human medical departments. The consortium believes this international collaboration also will enhance quality by exchanging expertise and attracting top-level international students.

#### *Considerations*

All relevant stakeholders are taken into account. There are no alumni yet, but the design is already prepared for their involvement. The website and newsletter is positive for the external communication with the stakeholders. There is a central role for the Academic Board, which consists of seven members (one lecturer of each participating university, one student and one representative of the Advisory Board) and the academic coordinator presides the Academic Board. The

Advisory Board consists of representatives of alumni (future) and the professional field. This is an adequate structure to guarantee involvement of all relevant parties. The involvement of the professional field (industry) is rather modest and needs to be strengthened. The academic coordinator mentioned during the site visit that there are several partners from industry willing to contribute but concrete evidence misses.

During the site visit, the panel had some doubts about the involvement of the representatives of the working field in the Advisory Board. The panel advises to establish the Advisory Board as soon as possible with a formal chair and with sufficient representatives of the professional field (also industry). Nevertheless, the panel values the way in which the Academic Board and Advisory Board already have been structured and assesses the involvement of stakeholders as satisfactory.

#### *Conclusion*

The panel assesses standard 5.2 'Involvement of staff, students, alumni and the professional field' as satisfactory.

### 3.5.3 Summary of the judgments of theme 5 'Internal quality assurance system'

The panel has assessed the two standards of the theme 'Internal quality assurance system'. Both standards have been assessed as satisfactory. Overall, the panel therefore assesses the theme 'Internal quality assurance system' as satisfactory.

### 3.6 Conditions for continuity (theme 6)

#### 3.6.1 Graduation guarantee (standard 6.1)

*The higher education institution ensures that its students can complete the programme.*

##### *Outline of Findings*

All five participating institutes have signed the cooperation agreement which shows their engagement towards the programme.

##### *Considerations*

During the site visit, the representatives of the board of the involved institutions, have reassured the panel that students can complete the programme. Each institution has appointed a deputy, which can take over in case an employee, involved in the programme, leaves the organization (see also standard 3.2 'Quantity of staff').

In Germany, there are legal restrictions about organising courses together with students in Veterinary Medicine. The consortium has checked this out and the limited number of students of the 'European Master in Comparative Vertebrate Morphology' won't have any effect to the capacity of the students in Veterinary Medicine in Germany (Justus Liebig University Giessen). On the contrary, with this programme some new elective courses will be introduced in the veterinary programme in Giessen. This means Veterinary Students also will benefit from this new programme.

##### *Conclusion*

The panel assesses standard 6.1 'Graduation guarantee' as satisfactory.

#### 3.6.2 Investments (standard 6.2)

*The proposed investments are sufficient to realise the programme (including the facilities and tutoring)*

##### *Outline of Findings*

The consortium is convinced no additional infrastructural investments are required. The material facilities available at the different locations suffice for the purpose of the programme. The universities don't invest in academic staff nor educational support staff. When the programme starts, it will be financed on the basis of existing facilities and staff. Additional costs will be covered by the tuition fee.

##### *Considerations*

The material facilities of the University of Antwerp, Justus Liebig University of Giessen and Veterinärmedizinische Universität Wien are of a high level. Based on the application file and the additional documentation the panel could not conclude if the material facilities of Poznan University of Life Sciences and Università degli di Napoli Federico II are sufficient. However, the answers during the sessions have convinced the panel this are or will soon be of an adequate level. Nevertheless, the panel would like advice the consortium to carefully monitor the level of available facilities during the programme.

The panel concludes that the facilities suffice to start the programme but it is essential to evaluate, at least yearly, the level of facilities available.

##### *Conclusion*

The panel assesses standard 6.2 'Investments' as satisfactory.

#### 3.6.3 Financial provisions (standard 6.3)

*The financial provisions are sufficient to offer the full programme.*

#### *Outline of Findings*

Students from EU Member States pay a tuition fee of 3,000 euro per year of study and students from third countries (non-EU Member States) pay a tuition fee of 6,000 euro per year of study. The tuition fees are paid to the coordinating institute, which is responsible for the budget and annual financial reporting. These incomes will partly be redistributed amongst the participating universities based upon their input in the coordination of the programme and the number of students that enroll. For each enrolled student, the coordinating institution of the programme receives 200 euro per year to cover the expenses related to administration and coordination.

At present, no specific budget is available for this new programme. Lecturers (internal) involved in the programme, conduct their teaching activities as part of their academic assignment. Mobility of external and internal lecturers will be covered via Erasmus and institutional grants for teacher mobility. Student mobility will be ensured via the timely application for Erasmus grants funded by the institution where the student is enrolled.

Expenses for students will be paid by the Erasmus Mundus Programme. The consortium has a recognition for five years, which means 17 to 19 students will get a scholarship. The profit of the tuition fee will be used for providing travel and subsistence to internal lecturers; to external lecturers and mobility grants to students in case the grant applications organized at the local and Erasmus levels are unsuccessful. This mobility funding (offered by the consortium) will be organized by the Academic Board and will involve an application. The board will take its decision on a competitive basis.

#### *Considerations*

The panel concludes there will be no financial problem at short notice because of the funding of the Erasmus Mundus Programme. Nevertheless, the panel urges to seek for additional financial provisions for the continuity of the new programme. The consortium needs to consider a plan for what will happen when the Erasmus funding ends because the tuition fee won't be sufficient to organize the programme and attract students who are in need of some financial support.

The teaching staff will conduct their teaching activities as part of their academic assignment. The panel has met an enthusiastic and involved team (see also standard 3.3) but would like to urge the board of participating universities to provide extra time for the engagement of staff in this Master programme.

#### *Conclusion*

The panel assesses standard 6.3 'Financial provisions' as satisfactory.

#### 3.6.4 Summary of the judgments of theme 6 'Conditions for continuity'

The panel has assessed the three standards of the theme 'Conditions for continuity' as satisfactory. Therefore, the panel assesses this theme as a whole as satisfactory.

### 3.7 AQAS standards (theme 7)

#### 3.7.1 Equal opportunity

- *Regulations are provided for compensating disadvantages of handicapped students. These regulations are documented and published.*
- *The interests of handicapped students are taken into consideration throughout the study process.*
- *Compensating disadvantages of handicapped students with regard to time-related and formal guidelines in the studies as well as in the final performance tests and those during the studies is ensured.*
- *The concepts of the Higher Education Institutions for gender justice and for the promotion of equal opportunities of students in special situations such as students having health impairments, students having children, foreign students, students with migration background and/or from so called educationally disadvantaged classes are implemented at the level of the programme.*

During the site visit, it became clear that the different institutions all have a policy regarding students with special needs. For example, at Justus Liebig University Giessen there are facilities of childcare for students with children. All universities have an internationalization department supporting foreign students.

The Education and Examination regulation of the master programme allows special educational and special examination facilities for certain students:

*A student may, on account of exceptional personal circumstances (top-level sports, top-level arts, special needs due to functional impairments), submit a request to the Academic board for special educational facilities. How to submit such a request is explained in the enrolment procedure. The request can be submitted together with the one for special examination facilities.*

Besides that, during the application the Academic Board will actively strive to ensure that students or scholars of any gender, race, colour, nationality, religion and ethnic origin are most welcome to study in the framework of this programme.

The panel assesses the standard 'Equal opportunity' as satisfactory.

#### 3.7.2 Formal requirements

- *A module is generally concluded with ONE examination and should account for at least five ECTS credits (otherwise: reasoning).*
- *Master programmes should be assigned to one of the categories "consecutive study courses" or "study courses providing further education". Depending on the type of the programme the character of the programme shall reflect this nature.*

Each module accounts for at least five ECTS credits except 3-Dimensional rendering (imaging elective cluster) and Stem cells (cell elective cluster). These two courses deal with highly specialized topics, which built further on the course contents and skills covered in respectively Image Analyses (6 ECTS credits) and Cell culture (6 ECTS). The 3 ECTS credits covered by these two courses reflect the number of hours teaching and practical and the associated work load. The



curriculum is logical and the panel foresees no issues concerning these modules. Each module is concluded with an examination and a re-examination. A re-examination can be arranged reasonably short after the first examination, so that student's mobility will not be negatively affected. Furthermore, the master programme can be assigned to consecutive study course since one of the application requirements is having obtained an academic bachelor degree comprising 180 ECTS credits or a degree equivalent to this.

The panel assesses the standard 'Formal requirements' as satisfactory.

### 3.7.3 Modules

*Module descriptions shall also list:*

- *Workload of the module (total hours expected)*
- *Frequency of the offer*

For each module is documented:

- Amount of ECTS credits;
- Name lecturer(s);
- Amount of contact hours;
- Requirements of prerequisites;
- Learning outcomes;
- Course contents;
- Teaching method;
- Assessment method;
- Study material.

The coordinating university and the website of Eucomor (<http://www.eucomor.net>) provides information about the availability and location of modules which can be followed.

The panel assesses the standard 'Modules' as satisfactory.

### 3.7.4 Cooperation agreement

*The cooperation agreement must be documented.*

The cooperation agreement is documented and signed by all five partners of the consortium.

The panel assesses the standard 'Cooperation agreement' as satisfactory.

### 3.7.5 Diploma supplements

*The Diploma supplements must be documented.*

Each student will receive a joint Master's degree and a diploma supplement presenting the details of the participant's academic programme and academic achievement. The consortium is still working on the document of the diploma supplement but they have already a clear vision how it will be finalized.

The panel assesses the standard 'Diploma supplements' as satisfactory.

### 3.7.6 Recognition of competencies

*There shall be information on the recognition of competencies acquired at other universities / outside of universities (Lisbon Convention).*

As stated in the Education and Examination regulation, a student may, on account of exceptional personal circumstances or on the basis of proof of previously acquired competencies, credits or qualifications, submit a request to the Academic Board for special educational facilities. The Academic Board may grant special educational facilities or recognition of previously acquired competencies, credits or qualifications to the student concerned.

The panel assesses the standard 'Recognition of competencies' as satisfactory.

### 3.7.7 English language

*All parts of the SER shall be in English language.*

All parts of the Self Evaluation Report are formulated in English. Some parts of the dossier are also available in Dutch, due to the procedure of the NVAO.

The panel assesses the standard 'English language' as satisfactory.

### 3.7.8 Conclusion

As all additional standards for AQAS are assessed as satisfactory, the panel assesses the theme 'AQAS' as satisfactory.

## 4 Assessments

The table below contains the judgments of the panel for each theme and standard in Chapter 3.

Theme	Judgment	Standard	Judgment
<b>1 Aims and objectives</b>	<b>Satisfactory</b>	1.1 Level and orientation	Satisfactory
		1.2 Subject/discipline specific requirements	Satisfactory
<b>2 Curriculum</b>	<b>Satisfactory</b>	2.1 Requirements for academic orientation	Satisfactory
		2.2 Correspondence between aims and objectives and curriculum	Satisfactory
		2.3 Consistency of the Curriculum	Satisfactory
		2.4 Workload	Satisfactory
		2.5 Admission requirements	Satisfactory
		2.6 Credits	Satisfactory
		2.7 Master's thesis	Satisfactory
<b>3 Staff</b>	<b>Satisfactory</b>	3.1 Requirements for academic orientation	Satisfactory
		3.2 Quantity of staff	Satisfactory
		3.3 Quality of staff	Satisfactory
<b>4 Services</b>	<b>Satisfactory</b>	4.1 Facilities	Satisfactory
		4.2 Tutoring	Satisfactory
<b>5 Internal Quality Assurance System</b>	<b>Satisfactory</b>	5.1 Systematic approach	Satisfactory
		5.2 Involvement stakeholders	Satisfactory
<b>6 Conditions for Continuity</b>	<b>Satisfactory</b>	6.1 Graduation guarantee	Satisfactory
		6.2 Investments	Satisfactory
		6.3 Financial provisions	Satisfactory
<b>7 AQAS standards</b>	<b>Satisfactory</b>	7.1 Equal opportunity	Satisfactory
		7.2 Formal requirements	Satisfactory
		7.3 Modules	Satisfactory
		7.4 Cooperation agreement	Satisfactory
		7.5 Diploma supplements	Satisfactory
		7.6 Recognition of competencies	Satisfactory
		7.7 English language	Satisfactory

### Annex 1: Panel

*Chair*

**Em. prof. dr. Bert van Zutphen**

**Utrecht University, The Netherlands**

Bert van Zutphen graduated at Utrecht University, The Netherlands (MSc ,1969; PhD, 1974). From 1974 until 1983 he was Associate Professor at the Department of Animal Husbandry of the Veterinary Faculty of Utrecht University. In 1976 – 1977 he worked as visiting investigator (NIH Forgyat Fellow) at the Jackson Laboratory in Bar Harbor (USA). In 1983 he was appointed as Full Professor at the Veterinary Faculty of Utrecht University where he established the Department of Laboratory Animal Science and organized courses for students/young scientists (three week graduate course) and veterinarians (one year postgraduate course). In the Netherlands these courses have been made mandatory by law.

As emeritus professor of Utrecht University (since 2004) he is still involved in several activities, e.g. chair Research Committee at the National Institute of Public Health (RIVM); chair Program Committee at the Netherlands Organization for Health Research and Development (ZonMw).

He is author/co-author of >200 scientific papers in internationally refereed journals and editor of several books. He has been member of the editorial board of international journals and received several awards, among others the Doerenkamp/Zbinden Award (Animal Welfare), the ICLAS Ben Cohen Award (Laboratory Animal Science) and the Russell&Burch Award (Animal Alternatives).

He is Honorary Member of the European Society of Laboratory Animal Veterinarians and the recipient of the Royal Decoration 'Ridder in the Orde van de Nederlandse Leeuw'.

***Member***

**Dr. med. Vet. Mahtab Bahramsoltani**

**University of Leipzig, Germany**

Dr. Mahtab Bahramsoltani studied Veterinary Medicine at the Freie Universität Berlin where she defended her PhD thesis. The thesis 'Quantitation of angiogenesis and antiangiogenesis in vitro' was in cooperation with the Institute of Biometry and Information Processing. After the thesis she was a research assistant at the Freie Universität Berlin and in 2008 she became a specialist for veterinary anatomy. Since 2010 she is a research associate at the University of Leipzig. She also has a certificate of didactics and academic teaching, and a certificate of § 15 Abs. 2 Satz 1 Nr.3 GenTSV (Gene Technology, Biosafety and Biosecurity).

***Member***

**Prof. Dr. med. vet. Alois Boos**

**University of Zurich, Switzerland**

Prof. Dr. med. vet. Alois Boos studied the pre-clinical course of Veterinary Medicine at the Free University of Berlin. He finalized his clinical course at the School of Veterinary Medicine Hannover. In 1979 he obtained his licence to practice veterinary medicine and was engaged in research and teaching at the University of Veterinary Medicine Hannover until 2000. He has also worked at the Public Veterinary Health Service in Rotterdam (2001) and teaches all aspects of veterinary anatomy, histology and embryology to undergraduate veterinary students at the Institute of Veterinary Anatomy of the University of Zurich since 2002. Currently, he is an Associate Professor in Veterinary Anatomy and Director of the Institute of Veterinary Anatomy (Vetsuisse Faculty, University of Zurich). He received the "SIMIC-GRAU Research Award" at the 17th congress of the European Association of Veterinary Anatomists at Regensburg. His main fields of research are morphology, function and pathology of the female reproductive organs and intestines in several species.

***Member***

**Prof. dr. Karl Klisch**

**The University of Nottingham, United Kingdom**

Dr. Klisch graduated from the University of Veterinary Medicine Hannover, Germany in 1994. After a few month in general veterinary practice he started in 1995 postgraduate studies for a doctoral thesis at the Institute of Veterinary Anatomy, Justus Liebig University Giessen, Germany. The doctorate (Dr. med. vet.) was granted in 1998 with the highest possible grade (summa cum laude). From 1999 until 2007 Dr. Klisch worked as a postdoc at the Centre of Anatomy, Hannover Medical School, Germany. His research was centered at the glycosylation of pregnancy-associated glycoproteins (PAGs) of the ruminant placenta. His teaching was primarily in histology and cell biology, but also included all aspects of human gross anatomy. In 2007 Dr. Klisch joined the School of Veterinary Medicine and Science, University of Nottingham as a Lecturer of Clinical Veterinary Anatomy. His research is on aspects of glycosylation in reproductive organs. His teaching is mainly gross anatomy of domestic mammals in lectures and dissection practicals, but also includes some aspects of histology.

***Student-member***

**Mr. Anton Schuurmans**

**Catholic University Of Leuven, Belgium**

Currently student of Law (Master Degree Programme) at KU Leuven, Mr. Schuurmans has ample experience in representative and governing bodies, with responsibilities in the domains of quality assurance, internationalization, and student affairs. He has been vice president of the Leuven Student Council (2009-2010). During the academic year 2010-2011, he was on the board of the Flemish Student Association. He has been a member of several NVAO initial accreditation panels.

***Secretary***

Ruth DeVreese

***Policy advisor AQAS***

Ronny Heinzze

***Policy advisor NVAO***

Michèle Wera

***Observer AQ Austria***

Michael Ofner

The panel members, the observer, the policy advisors and the secretary have all signed a statement of independence.

## **Annex 2: Schedule of the site visit**

The panel undertook a site visit on 6 and 7 November 2012 as part of the external assessment procedure regarding the initial accreditation of the 'European Master of Science in Comparative Vertebrate Morphology' submitted by a consortium of five universities. The visit itself took place in the coordinating institution (University of Antwerp) of the Master's programme. The schedule of the site visit is composed as follows:

### **Tuesday 6 November 2012**

<b>14.00 – 15.00:</b>	<b>Panel meeting</b>	
<b>15.00 – 15.15:</b>	<b>Short presentation of the programme applicant</b>	
	Prof. C. Van Ginneken	University of Antwerp Academic coordinator
	Prof. L. Maes	University of Antwerp Dean
<b>15.15 – 18.30:</b>	<b>Panel meeting and documentation</b>	

### **Wednesday 7 November 2012**

<b>08.30 – 09.00:</b>	<b>Arrival + documentation</b>	
<b>09.00 – 09.30:</b>	<b>Session 1: representatives board</b>	
	Prof. J. Meeusen	University of Antwerp Vice-rector
	Prof. L. Maes	University of Antwerp Dean Faculty of Pharmaceutical, Biomedical and Veterinary Sciences
	Prof. K. Janssens	University of Antwerp Vice-president Education Board
	Prof. S. Arnhold	Justus Liebig University Giessen Vice dean study affairs
Via teleconference	Prof. M. Cutrignelli	University Federico II Naples Head Teaching Committee

		+390812536063
Via teleconference	Prof. P. Witter	Veterinary Medicine University Vienna Vice dean study affairs +43 676 93 40 148
<b>09.30 – 10.45:</b>	<b>Session 2: representatives management and QA</b>	
	Prof. C. Van Ginneken	University of Antwerp Academic coordinator
	Prof. S. Arnhold	Justus Liebig University Giessen Academic board member
	Prof. M. Egerbacher	Veterinary Medicine University Vienna Academic vice-coordinator
	Prof. N. Mirabella	University Federico II Naples Academic board member
	Prof. H. Jackowiak	University of Life Sciences Poznan Academic board member
	I. Verachtert	University of Antwerp QA-Board of Education
	Dr. M. Eyckmans	University of Antwerp QA-manager EUCOMOR
	M. Demuyne	University of Antwerp Administrative coordinator
	U. Schrober	Veterinary Medicine Univer- sity Vienna International Affairs
	Dr. M. Simon	Justus Liebig University Giessen Diversity officer
<b>11.00 – 12.15</b>	<b>Session 3: representatives staff</b>	
	Prof. S. Van Cruchten	University of Antwerp e-lectures
	Prof. P. Aerts	University of Antwerp Core morphology courses
	M. Cools	University of Antwerp

		Teaching assistant
	Prof. I. Walter	Veterinary Medicine University Vienna e-lectures and imaging elective
	Prof. C. Stazyck	Justus Liebig University Giessen Cell elective module
Via teleconference	Prof. C. Squillaciotti	University Federico II Napels Cell elective module +390812536113
Via teleconference	A representative for Prof. J. Mazurkiewicz	Life Sciences University Poznan +48 61 8487630
<b>12.15 – 12.45</b>		
<b>Visit of facilities</b>		
	Dissection room	
	Corrosion casting	
	Bioimaging lab	
	Physiology lab – experimental morphology	
<b>12.45 – 13.30</b>		
<b>Lunch and panel meeting</b>		
<b>13.30 – 14.00</b>		
<b>Session 4: representatives employers</b>		
	Prof. C. Wolschrijn	vice president EAVA
	Dr. K. D'Aout	KMDA-CRC
	Prof. Dr. Adriaensen	EGAMI – core facility - imaging
Via teleconference	Dr. A. Bodenteich	Marinomed,R&D +43 1 25077 4474
<b>14.00 – 16.00</b>		
<b>Final panel meeting</b>		



## Annex 3: Documents reviewed

### Basic information

- Information file of the applicant
- Procedure information by NVAO and AQAS

### Additional information

- Application TNO including regulations filed at 6.6.2012 (elaborate version)
- Policy documents
  - a. Draft language policy
  - b. Assessment policy
- Questions of the review panel and answers by the consortium
- Quality assurance documents
- List of research internships
  - a. List of subjects
- List of master thesis subjects
  - a. List of subjects
  - b. Master thesis assessment
  - c. Master thesis guidelines
- Literature list
- Short outline facilities
- Newsletters Multilateral project LLP-curriculum development
- Meeting reports Multilateral project LLP-curriculum development
- Accreditation documents Poland – Italy and Austria

### Electronic information

Website Eucomor	<a href="http://www.eucomor.net">www.eucomor.net</a>
Website e-learning platform	<a href="http://vetucation.vetmeduni.ac.at">http://vetucation.vetmeduni.ac.at</a>
Website virtual microscopy	<a href="https://studip.uni-giessen.de/studip/">https://studip.uni-giessen.de/studip/</a>

## Annex 4: Domain specific learning outcomes

The master in comparative morphology needs to possess a number of competences. Twelve key competences have been defined for this curriculum, which are in line with the so-called Dublin descriptors for a Master degree.

The graduate:

1. Is able to compare the different organ systems of vertebrates
  - a. Can recognize and describe on a macro- and microscopic level the development (embryogenesis, organogenesis), structure and parts of the different organ systems (incl. neuroanatomy) of vertebrates (lower vertebrates, lab animals and non-human primates will receive particular attention).
  - b. Can compare animal species and explain differences in function based upon the morphology of organ systems.
  - c. Can also design new research questions to explain the similar or different morphology of organ systems from a functional viewpoint.
2. Applies vertebrate cell biology
  - a. Can describe and identify the development, structure and parts of the vertebrate cell.
  - b. Can apply the suitable methods to visualize and/or study/analyse the function of vertebrate cells or their components related to their form and tissue/organ/organism they belong to.
3. Comprehends the general evolutionary patterns of vertebrate morphology
  - a. Can describe of the evolutionary lines of vertebrate morphology with emphasis on biodiversity.
  - b. Is able to extrapolate knowledge to changes, differences and similarities in vertebrate morphology, which were induced by evolution and ecological changes.
  - c. Can formulate research questions to explain the similar or different morphology due to evolutionary or ecological changes.
4. Is experienced with different morphological techniques
  - a. Is familiar with in vitro/ex vivo experimental techniques, stem cells, experimental embryology, microscopic techniques and image acquisition/analysis techniques.
  - b. Can select and apply the most suitable technique for scientific research in (comparative) morphology.
5. Interprets the scientific literature in vertebrate morphology
  - a. Can gather, discuss and reflect on scientific literature, i.e. complex scientific matters within the domain of vertebrate morphology.
  - b. Is able to integrate scientific literature in morphology in a research protocol and the reporting of research results.
6. Is able to conduct scientific research in the domain of vertebrate morphology
  - a. Can perform experiments independently and within a team by applying the gained knowledge and experience in a concrete scientific question in the domain of (comparative) morphology.
  - b. Can postulate a complex hypothesis, design a research plan (including advanced technical handling), analyse the results with the suitable methods. He/she can discuss the research results in the currently available scientific context.
7. Knows the legislation regarding animal/biomedical research and can use it.
  - a. Knows of the national, European and international legislation and guidelines regarding animal/biomedical research and can apply it in ongoing and future research activities.
  - b. Has an open mind for the cultural, ethical and scientific arguments that influence the legislation of animal/biomedical research, which allows him/her to provide advice in a scientific and ethical correct way.
8. Can develop animal/cell models
  - a. Is able to integrate knowledge and skills in order to develop/design and critically analyse new complex animal models
  - b. Can develop in vitro/ex vivo alternatives within biomedical research and education.
9. Is able to communicate and provide advice on the design, results and legislation of animal/research models

- a. Is able to report (written and verbally) his/her scientific research results and knowledge to colleagues, learners and non-experts from a national and international public.
  - b. Can substantiate his/her advice regarding animal experiments and biomedical research in a scientific and ethically correct manner.
  - c. Listens in an active manner and is able to debate about research models with colleagues, expert groups, policy makers and a broad audience
  - d. Can give convincing and complete advice regarding the value, accuracy and applicability of these models/alternatives.
  - e. Has a basic knowledge of at least 2 EU languages.
10. Can function as part of a multidisciplinary team
- a. Shows a flexible attitude and the social capability to function in a team
  - b. Possesses the required leadership capabilities to play an active role in a team in a corporate, academic or institutional setting.
11. Has a result focused, competitive attitude and critical mind-set
- a. Has an open, creative and critical mind-set and is focused on a professional approach, applying his/her knowledge in the domain of comparative morphology.
  - b. He/she is open-minded to the European culture.
12. Updates his/her knowledge and skills regarding the continuously evolving domain of vertebrate comparative morphology.

## **Annex 5: Abbreviations**

AQ Austria	Agency for Quality Assurance and Accreditation Austria
AQAS	Agency for Quality Assurance through the Accreditation of Study Programmes
CRC	Centre for Research and Conservation
CV	Curriculum Vitae
ECA	European Consortium for Accreditation
ECTS	European Credits Transfer System
EU	European Union
EUCOMOR	European Master of Science in Comparative Vertebrate Morphology
NVAO	Accreditation Organisation of the Netherlands and Flanders
QA	Quality Assurance
VLHORA	The Flemish Council of University Colleges
VLIR	Flemish Interuniversity Council

This panel report was commissioned by NVAO and AQAS with a view to assessing the proposal for a new programme 'European Master of Science in Comparative Vertebrate Morphology' of the University of Antwerp, Justus Liebig University Giessen, University of Veterinary Medicine Vienna, Poznan University of Life Sciences and Università degli Studi Napoli Federico II.

#### NVAO

Accreditation Organisation of the Netherlands and Flanders

Parkstraat 28

P.O. Box 85498

2508 CD THE HAGUE

The Netherlands

Tel. +31 70 312 23 00

Fax. +31 70 312 23 01

E-mail [info@nvaio.net](mailto:info@nvaio.net)

Web [www.nvaio.net](http://www.nvaio.net)

Application number #000585

#### AQAS

Agency for Quality Assurance through the Accreditation of Study Programmes

Hohenstaufenring 30-32

50674 Köln

Germany

Tel. +49 221 995006-0

Fax. +49 221 995009-99

E-Mail [info@aqas.de](mailto:info@aqas.de)

Web [www.aqas.de](http://www.aqas.de)