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HELLENIC REPUBLIC
H.Q.A.
HELLENIC QUALITY ASSURANCE AND ACCREDITATION AGENCY

EXTERNAL EVALUATION REPORT

Department of Pharmacy, University of Patras

May 2012

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External Evaluation Committee

The Committee responsible for the External Evaluation of the Department of Pharmacy of University of Patras consisted of the following five (5) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005:

1. Professor **Elias Lolis**, Ph.D., Coordinator
   Director of Graduate Studies
   Department of Pharmacology
   Yale University
   New Haven, Connecticut, USA

2. Professor **Athanassios Iliadis**, Ph.D.
   Laboratory of Pharmacokinetics
   Faculty of Pharmacy
   Marseille, France

3. Professor **Maria Lambros,** Ph.D.
   Department of Pharmaceutical Sciences
   College of Pharmacy
   Western University of Health Sciences
   Pomona, California, USA
   and Visiting Associate, Caltech, Pasadena, California, USA

4. Professor **Emmanuel A. Theodorakis**, Ph.D.
   Department of Chemistry and Biochemistry
   University of California, San Diego
   San Diego, California, USA

5. Professor **George A. Digenis**, Ph.D.
   Emeritus Professor Medicinal Chemistry and Pharmaceutics
   College of Pharmacy
   University of Kentucky
   Lexington, Kentucky, USA
   and Chief Scientific Officer US WorldMeds, LLC, Louisville, Kentucky, USA

Introduction

I. The External Evaluation Procedure

- Dates of the site visit

The visit was carried out from 4:15 pm of Monday May 14, 2012 until 7:00 pm of Wednesday May 16, 2012.

- Whom did the Committee meet?

Day 1, Monday, May 14, 2012:

At the beginning of the evaluation process the External Evaluation Committee (EEC) members met with the Rector, the Vice Rectors, the Dean of the School of Health Sciences, the Chairman of the Department and the members of the internal evaluation committees (OMEA, MODIP). During that time, the committee attended a general presentation of the research and future perspectives of the University of Patras (UoP). Specifically, the committee met with the following personnel:

Rector of the University of Patras: Prof. G. Panagiotakis
Vice Rector of the University of Patras (Academic Affairs, MODIP): Prof. A. Roussou
Vice Rector of the University of Patras (Strategic Planning and Research Development):
Prof. D. Kalpaxis
Vice Rector of the University of Patras (Financial Planning and Development):
Prof. H. Krondiras
Dean of the School of Health Sciences: Prof. V. Kyriazopoulou
Chairman of the Department of Pharmacy: Prof. S. Nikolaropoulos
Members of the internal evaluation committee: Professors C. Kontoyannis, A. Papapetropoulos, S. Tzartos, G. Patrinos

The EEC members also had the opportunity to visit the Central University Library where we had an overview of (a) the Department presented by the Chairman (Assoc. Prof. S. Nikolaropoulos); (b) the Undergraduate Studies curriculum (Prof. C. Kontoyannis); (c) Graduate Studies (Prof. A. Papapetropoulos); and (d) Professional Training Activities and Student/Faculty Mobility (Prof. S. Antimisiaris). The EEC members then had a short external tour of the new Department of Pharmacy building. All presentations were detailed and informative, questions were asked and problems discussed. All the presentations were given to the members of the EEC in printed form.

Day 2- Tuesday, May 15, 2012

The EEC members met with members of the faculty who presented short overviews of their educational and research activities. Specifically, we had the following meetings:

Pharmaceutical Technology (Prof. S. Antimisiaris, Assoc. Prof. K. Avgoustakis, Assist. Prof. P. Klepetsanis);
Pharmacokinetics (Assoc. Prof. G. Sivolapenko);
Instrumental Pharmaceutical Analysis (Prof. C. Kontoyannis, Prof. A. Tsarbopoulos, and Assist. Prof. M. Orkoula);
Molecular Biology and Immunology (Prof.S. Tzartos, Assist. Prof. K. Poulas, Assist. Prof. G. Patrinos);
Molecular Pharmacology (Prof. A. Papapetropoulos, Assoc. Prof. E. Papadimitriou, Assist. Prof. S. Topouzis);

Pharmaceutical Chemistry (Assoc. Prof. S. Nikolaropoulos, Assoc. Prof. P Magriotis, Lecturer M. Fousteris);

Pharmacognosy & Chemistry of Natural Products (Prof. P. Kordopatis, Assist. Prof. V. Magafa, Assist. Prof. F. Lamari);
Pharmaceutical Biotechnology & Molecular Diagnostics (Assoc. Prof. G. Sotiropoulou);
Biomolecular Simulations & NMR-based structural analysis (Assoc. Prof. G. Spyroulias)

Due to time limitations we postponed the prescheduled visits to the classrooms until Wednesday.

Day 3-Wednesday, May 16, 2012

The EEC members met with members of the faculty, administration, and technical support who presented short overviews of their activities. Specifically, we had the following meetings:

- All five members of the administrative staff
- All six members of the technical staff
- Post-doctoral fellows and graduate students
- Several fourth- and fifth- year undergraduate students

In the afternoon, the EEC members visited the educational/research laboratories (Pharmaceutical Technology, Pharmacokinetics, Molecular Biology & Immunology, Biomolecular Simulations & NMR, Molecular Pharmacology, Pharmacognosy & Chemistry of Natural Products, Pharmaceutical Biotechnology & Molecular Diagnostics, Instrumental Pharmaceutical Analysis, Pharmaceutical Chemistry) and classrooms.

We ended our visit with a meeting with the Chairman of the Department, the members of the internal evaluation committee and the Vice Rector for Academic Affairs and Personnel.

Summary: The Department of Pharmacy is commended for being one the best departments of the University of Patras. In addition, the Department should be commended for putting together a very efficient EEC program that allowed meetings and discussions with members of the faculty, staff, postdocs and students. In general, the EEC visit was very well organized and its members were very well received. The committee appreciated the transparency of the meetings. We were given access to all information and time we needed to complete the evaluation. Importantly, the meetings were scheduled in the absence of an official supervisor and departmental leadership, and thus we believe that we have received unbiased information. Overall, we believe that this is a very good Department that, given the circumstances, can compare favorably with many other European and US Departments. We also believe that it has a significant potential to improve even further. Recommendations are given throughout the text and repeated at the end of the report.

II. The Internal Evaluation Procedure

- *Appropriateness of sources and documentation used*

The documentation concerning the internal evaluation until 2011 was received by the EEC members about 4 weeks prior to the evaluation process. Additional information concerning several research and educational aspects and activities was received during the EEC visit.

- *Quality and completeness of evidence reviewed and provided*

The EEC members appreciated the effort by the Department to create an extensive package with hard copies of all presentations. This made it easier for

the EEC members to follow the presentations and ask more detailed questions.

The descriptions of the Internal Evaluation Report were in certain areas extensive (e.g., report on the department, research activities of faculty members) but in other areas several specific questions were not addressed (e.g., Internal Evaluation Report, Appendix V, pages 95-142).

- *To what extent have the objectives of the internal evaluation process been met by the Department?*

Overall the Internal Report was professionally compiled, met its objectives, and was helpful to the EEC committee.

A1. Undergraduate Curriculum

Goals and objectives of the Undergraduate Curriculum (UGC)

The UGC has as the goal of providing students with basic and applied knowledge in the science of pharmacy. To this end, the UGC strives to create competent pharmacists with excellent written and verbal communication skills who are critical thinkers and life-long learners.

- *What is the plan for achieving excellence?*

The plan to achieve excellence relies on the modernization of teaching and research facilities and the improvement of mentoring. The expected move to the new Pharmacy building will help in this regard. To achieve this plan, the administration and the State should lend their support.

- *How were the objectives decided? Which factors were taken into account?*

The UGC is composed of a five-year (10-semester) program. The first four years of study have a standard didactic and laboratory curriculum. During the fifth year of study, the students need to conduct an undergraduate thesis in the form of either an experimental research project or a literature review. Depending on this choice, the students are asked to register in appropriate courses.
The attendance of lectures is, as usual in academic institutions, not mandatory. The undergraduate laboratory training is mandatory, often creating problems with the limited space given the amount of students. The move to the new building is expected to eliminate the space problem.

Recommendation #1: The UGC is heavy in courses that, in some cases, have overlapping material and needs updating. The committee recommends the following changes:

- The applied mathematics course (1st semester) should be focused in statistics, probability, and risk evaluation instead of the current curriculum in this course (differential equations etc). Furthermore, the course should include training in appropriate software (e.g., Mathematica, Maple, Matlab).
- The synthetic organic chemistry course (3rd semester) should be eliminated or combined with a pharmaceutical chemistry course (4th, 5th or 7th semester).
- The natural product chemistry course (5th semester) should be combined with pharmacognosy I or II courses (6th or 7th semester).
- Pharmaceutical chemistry (four semesters in total) should be condensed in two or three semesters.
- The course of clinical pharmacy (7th semester) has a lot of information and appears to be too condensed for one semester.

- The EEC members agree with comments from the undergraduate students who have proposed to expand the pharmacology course to 3 semesters. The 3rd semester should also have elements of clinical pharmacy, thus alleviating part of the load from the clinical pharmacy course of the 7th semester. Ideally, this course should be reinforced with rotations in hospitals.

IMPLEMENTATION

- *How effectively is the Department's goal implemented by the curriculum?*

As stated above, the UGC should be revised. After these modifications, the undergraduate training of students will produce professionals who can adequately meet local, State, European, and international needs.

- *How does the curriculum compare with appropriate, universally accepted standards for the specific area of study?*

After the recommended modifications, as stated above, the UGC should compare well with the universally accepted standards.

- *Is the structure of the curriculum rational and clearly articulated?*

The curriculum is online. The EEC members understood the structure of the curriculum but, as stated above, found it to include overlapping material. The Department is applauded for the effort to provide an orderly operation of classrooms and laboratories under the current circumstances in which the appropriate space and funding is lacking. The use of e-class software represents a major innovation in education.

Recommendation #2: The lecturers or course directors should upload all course material (syllabus, presentation material, class location, and representative exams) online through e-class (or similar software). This material should be available at least one month before the beginning of the class.

- *Is the curriculum coherent and functional?*

Yes, based on the above considerations.

- *Is the material for each course appropriate and the time offered sufficient?*

In general this is adequate and should be significantly improved after the proposed revisions are implemented. Some concerns have been noted regarding the reliability and quality of the printed material from the Patras University Press. This issue should be addressed.

- *Does the Department have the necessary resources and appropriately qualified and trained staff to implement the curriculum?*

The professors and course directors have excellent subject knowledge, a visible enthusiasm for teaching, and are very well qualified to perform their teaching responsibilities. It is regrettable that only a very small amount of financial support is available from the Research Committee of the University of Patras for graduate teaching assistants, although they play a vital role in undergraduate education. The departmental facilities provide classrooms of barely acceptable quality and the laboratories are congested. This situation is expected to improve dramatically upon moving to the new Pharmacy building. Computer instrumentation, library and resources are appropriate.

Recommendation #3: The EEC members noticed contradictory remarks from trained personnel (technicians) and students related to the role of technicians in maintaining the undergraduate labs. At present labs are maintained mainly by

the professors and certain senior graduate students. Based on this, the EEC members recommend establishing/refining the job description for all technical personnel.

Recommendation #4: The committee noted some overlap in the laboratory exercises. The EEC members recommend integrated laboratory exercises.

RESULTS

- *How well is the implementation achieving the Department's predefined goals and objectives?*

The Department has made some effort toward the revision of the UGC. This effort should continue as proposed above.

IMPROVEMENT

- *Does the Department know how the Curriculum should be improved?*

Recommendation #5: The changes of the UGC are approval by the General Assembly. With this in mind, we recommend that the General Assembly implements a yearly meeting to study and address any issues related to the UGC.

A2. Postgraduate Curriculum

Goals and objectives of the General Post-Graduate Program (GPP).

Program description: The GPP was founded in 1993 and revised in 2011-2012. This program has two directions:

A) Post graduate Diploma of specialty (M.Sc. with thesis)

B) Ph.D. Diploma

The postgraduate Diploma has an expected duration of 1.5 years and contains four sub-disciplines: (a) Design and development of small molecules with pharmaceutical interest; (b) industrial pharmacy-pharmaceutical analysis; (c) clinical pharmacy-pharmacotherapy; and (d) pharmaceutical marketing.
The Ph.D. Diploma has a minimum duration of 3 years after the M.Sc. Degree.

- *What is the plan for achieving excellence?*

The plan to achieve excellence relies on a combination of postgraduate courses and research activities that result in publications.

- *How were the objectives decided? Which factors were taken into account?*

The objectives of the program are decided based on the research interests and funding of the individual faculty members. Factors such as the societal needs play a role in the decision.

Recommendation #6: To increase the mobility of graduate and postgraduate students we recommend that the graduate course be taught in English. The graduate level books and notes should also be in English. Any laws limiting the use of English at the graduate level should be relaxed.

Recommendation #7: The EEC noted that there are few scientific seminars. Implementation of a more robust seminar program will enhance the scientific knowledge of both faculty members and students. Furthermore, it will help with the development of collaborations and will facilitate the mobility of young scientists. The Department should implement a seminar program (biweekly or monthly) and, if possible, invite scientists from abroad.

Recommendation #8: We recommend that every Ph.D. student present one seminar on a topic decided by the chair of his/her Ph.D. committee. This seminar should take place about one year after admission to the Ph.D. program, it should be open to the general audience and, ideally, it should not be directly related to the student's own research topic. Implementation of such a program will accomplish two goals: (a) the Ph.D. committee will have the opportunity to evaluate the overall knowledge and presentation skills of the Ph.D. candidate; and (b) the Department will have a steady pool of seminars for the general education of the students.

Recommendation #9: The graduate students (and postdoctoral associates) should take the initiative to have a monthly journal club meeting. A member of the faculty could be present to provide guidance, especially when the journal club is initiated. This initiative will expose students to different areas of pharmaceutical/biomedical science and improve their mobility and general education.

IMPLEMENTATION

- *How effectively is the Department's goal implemented by the curriculum?*

Both diplomas are driven by research. The high number of publications in high-impact international journals attests to this drive. The M.Sc. diploma without continuation to a Ph.D. diploma satisfies most needs of the Greek industry that in many cases does not require a Ph.D. degree. The latter degree is more appropriate for supervisory and managerial industrial positions, academic positions, or post-Ph.D. research positions. The success of both programs is evidenced by their effectiveness in previous years.

- *How does the curriculum compare with appropriate, universally accepted standards for the specific area of study?*

The GPP is comparable to those of well-respected Pharmacy schools in Europe and USA.

- *Is the structure of the curriculum rational and clearly articulated?*

There is sufficient information regarding the GPP at the University website. This information should be updated regularly.

- *Is the curriculum coherent and functional?*

Yes, based on the above considerations.

- *Is the material for each course appropriate and the time offered sufficient?*

In general this is adequate.

- *Does the Department have the necessary resources and appropriately qualified and trained staff to implement the curriculum?*

The upcoming move to the new Pharmacy building will centralize and enhance the required resources. Most of the professors and research directors are intimately involved with teaching and have the enthusiasm to revise and update the GPP. Additional faculty members should be hired in the areas of need, such as clinical pharmacy and biopharmaceutics/pharmacokinetics.

RESULTS

- *How well is the implementation achieving the Department's predefined goals and objectives?*

All faculty members should be commended for their efforts to raise significant

amounts of funding from Greek/European agencies and industry, thus maintaining a high quality graduate program. This effort should continue since it may be increasingly difficult to receive funding, particularly from national (State) agencies.

IMPROVEMENT

- *Does the Department know how the Curriculum should be improved?*

The General Assembly should implement a yearly meeting to study and address any issues related to the GPP (see **recommendation #5**).

Recommendation #10: The Director will be responsible for monitoring the educational component of students and program with the help of administrative staff, make recommendations to the General Assembly, and communicate with students about new initiatives. In this regard, the Director of Graduate studies should also hold an annual, informal meeting with graduate students to get their perspective about the curriculum, individual courses, and the graduate program. This meeting should also give the opportunity to the Director of Graduate Studies to explain the rationale of the entire program including the curriculum, content in specific courses, etc., and also allow the Director of Graduate Studies to acknowledge good ideas from the students that could be implemented in the program and the difficulty of implementing other ideas.

B. Teaching

APPROACH

The most important principle in the teaching philosophy of the department is to provide basic knowledge of pharmaceutical sciences through core courses in the first four years, to be followed with elective courses and internship/Diploma thesis in the fifth year. For further specialization, the Department offers graduate courses in the M.Sc. program.

- *Teaching methods used, course updates, student participation, grades, and average duration for the undergraduate degree*

The EEC noticed the use of laptops and projection facilities in teaching. Certainly, these facilities will be improved in the new Pharmacy building. The departmental website is available but should be updated and enhanced to include more information on teaching. Unfortunately the EEC was not able to observe any teaching due to the student elections that were taking place during the evaluation dates.

With respect to the previous year, the number of undergraduate students increased by 30% but the number of graduating students decreased by 40%. The number of Ph.D. students remained almost constant. The opinion of the EEC is that the increased number of undergraduate students imposes additional difficulties to the faculty (e.g., space in classrooms and laboratories, the teaching process and the student/teaching ratio, and administration management).

Recommendation #11: We recommend equipping the new building with modern teaching facilities, such as wireless internet and video recording. We recommend the use of webinars and the web posting of course lectures, lecture notes, and homework assignments.

- *Teaching staff/student ratio, interactions of faculty and students, and faculty teaching hours per week*

The statistical data show a good ratio of didactic courses reinforced by laboratory courses. The workload of each faculty member is about 1.7 classes per semester and one lab class per year. On the other hand, the workload of each student is about 20 class-hours/week and about 11 lab-hours/week. These data look reasonable, although the committee thinks that they are underestimated in the case of the students.

Based on the data provided, the teaching staff/student ratio for course work is about 1:25, which is rather unfavourable and provides a teaching burden for the staff. The teaching staff for course work consists of 23 faculty members. The technical staff consists of six members who are distributed to different laboratories.

- *Teacher/student collaboration*

According to the interview with the students, this collaboration is satisfactory. This is also evident by the large number of students who are interested to join the labs as research interns and by the large number of publications they are co-authors.

- *Adequacy of means and infrastructure resources*

The Pharmacy Department is spread over five buildings, considerably affecting the teaching. Moreover, the absence of a local shuttle makes it difficult for students to move from one classroom to the next. The move to the new Pharmacy building should alleviate this problem, but it is our understanding that the new building was planned for 70 new students, not for about 170 students imposed by the Ministry of Education. In the new building both classrooms and the teaching laboratories should be properly equipped. Since we could not enter the new building, we were unable to determine its infrastructure. We were informed, however, that the new classrooms have all modern resources needed for teaching.

- *Use of information technologies*

The Pharmacy Department maintains an informative website that describes the undergraduate and graduate curriculum. This site also provides information on the research activities of each laboratory. As stated above, the EEC applauds the efforts of faculty in the use of e-class software for teaching purposes.

- *Examination system and assessment of course work by the students*

Multiple methods of assessing students are applied. The performance of students in each class is carried out through written and oral exams offered at the discretion of the instructor. There is a student questionnaire for the assessment of the quality of each course. This is not required and its completion at desirable levels must be improved.

Recommendation #12: We recommended the number of new students is reduced to the actual number the newly constructed building was designed to accommodate.

Recommendation #13: We recommend the implementation of 1 to 2 additional exams per class that, in total with the final exam, will produce the overall grade for a student.

Recommendation #14: The EEC members were told that oral exams were effective because they prevent cheating, they do not require trained personnel for the monitoring and proctoring of the exams, and they do not require

significant space to be administered. There are some concerns concerning the reliability and fairness of the oral exams that were expressed by the students and are echoed by the EEC. In view of these concerns, we recommend limiting the oral exams to midterms.

IMPLEMENTATION

- *Quality of teaching procedures*

The EEC members are very satisfied with the overall quality of teaching and with the experience, dedication, and excellence of the teaching staff. These qualities were also identified during our interview with M.Sc. students.

- *Quality and adequacy of teaching materials and resources.*

The teaching material and resources are appropriate, updated frequently with international standards, and serve the departmental mission for excellence. However, the reliability and quality of material offered by the University of Patras Press should be examined.

- *Quality of course material. Is it brought up to date?*

The quality of the course material generally is regarded as high. As recommended above, the overall quality will improve dramatically with the use of web-based teaching methods (see **recommendation #2, 11**).

- *Linking of research with teaching*

During the fifth year of undergraduate studies the students are exposed to research through the thesis program. At that time, the students have the option to join a research laboratory and perform a research thesis or they can choose a literature-based review (literature thesis). Also, practical activity and experience in applied research is available to students.

Recommendation #15: Efforts should be increased to introduce students to research (clinical, laboratory) and internships (pharmacies, pharmaceutical industry, other laboratories abroad, etc.). The Department of Pharmacy should compile a list and be in contact with pharmacy preceptors (the pharmacists who train students). At the end of their internship, the pharmacists should provide a paragraph commenting on the interns.

- *Mobility of academic staff and students*

We applaud the faculty members for participating in many programs, such as ERASMUS, that prompt collaborations with academic and research institutions in Greece and abroad. These efforts should be maintained and increased in the future.

- *Evaluation by the students of (a) the teaching and (b) the course content and study material/resources*

The Department is commended for its effort to create an evaluation process for the faculty, the staff, and the courses. We heard several positive comments about this from everybody and thus, we believe that the process is fair and unbiased. The evaluation takes place through a questionnaire presented to the students, in a hard copy form, at the end of the semester. This process can be further improved by creating a systematic evaluation that would be available electronically via access to a secure university website and ensure anonymity. In addition, provisions can be made that will assure a high degree of student participation in these surveys.

RESULTS

- *Efficacy of teaching*

(see above in the **APPROACH** and **IMPLEMENTATION** sections)

- *Discrepancies in the success/failure percentage between courses and how they are justified.*

Based on the information we received, we consider that there are no major discrepancies.

- *Differences between students in (a) the time to graduation, and (b) final degree grades*

There are a large number of undergraduate students who are considered "active" but have exceeded the (n+2) years of studies. We expect that within the next year these students will be eliminated from the active list.

Based on extensive discussion with faculty members and instructors, they are fully aware of their strengths and weaknesses. They also recognize the challenges that certain students face when they need to work so as to support their academic studies. It appears that most faculty members try to accommodate the needs of such students and encourage them to complete their studies.

Recommendation # 16: Students who have exceeded the (n+2) years of studies should be eliminated from the list as soon as possible.

IMPROVEMENT

- *Does the Department propose methods and ways for improvement*?

All faculty members displayed and enthusiasm in regards to teaching. This is evident by: (a) the large number of courses they want to teach; (b) their interest to introduce the most modern teaching methods and tools; (c) their efforts to maintain a manageable staff/student ratio; and (d) their efforts to improve the interactions among faculty, undergraduate and graduate students. We applaud their efforts.

The recommendations we have proposed above are expected to improve the teaching activities and bring the Department of Pharmacy at the forefront of research and education.

- *What initiatives does it take in this direction?*

As stated above, the EEC members were impressed with the overall quality of teaching. Our recommendations reflect our strong belief that the teaching can be easily improved by considering the following issues: (a) the curriculum should be constantly updated to reflect the evolution of pharmaceutical sciences; (b) the teaching methods should incorporate web-based material and information; (c) the evaluation process should be conducted online and should be performed for all members of the department, including staff, students and faculty members; (d) the implementation of seminars will enhance the scientific horizons and will pave the way for collaborations; and (e) the internships will help apply theoretical knowledge to practice and strengthen the ties between academia and society.

C. Research

APPROACH

- *What is the Department's policy and main objective in research?*

The objective of the department's research is, in general, to advance pharmaceutical and biomedical knowledge. The faculty members have decided to solely run their own lab or collaborate with other faculty in the department. The department offers masters and doctoral degrees to graduate students. These students will be part of the research labs that carry out the research objectives. The enthusiasm, perseverance, and dedication to excellence in research were evident throughout the presentations of research activities, interviews, and laboratory visits.

- *Has the Department set internal standards for assessing research?*

There are a number of standards the Department presented to assess the quality of the research productivity and significance of the faculty's research work. Among those were the number of publications, the journals the manuscripts were published, the h-factor (an index used to measure researchers' productivity and significance of their work), and funded research applications.

IMPLEMENTATION AND RESULTS

- *How does the Department promote and support research*?

Every effort has been made to provide space for researchers by the Department and the University. The current research and lab space is spread out among five buildings with a total of 1545 m^2. Without the department's support, the space would have been inadequate both in quality (formerly military barracks) and adequacy. In this regard, pre-fabricated space has recently been provided to faculty to support their funded research.

- *Quality and adequacy of research infrastructure and support.*

The quality and adequacy of the research infrastructure is barely appropriate. This should change in the near future when a new building (6920 m^2) will be operational.

- *Scientific publications.*

The EEC has information on the number of publications from 2005 to 2010. In 2005 the number of publications was less than 40 and increased to 40-50 per year between 2006 and 2009. There was a 50% increase in 2010 with 74 publications. Currently, the number of publications per faculty member from the Department is among the top three of all Departments at the University of Patras.

- *Research projects.*

Research projects are chosen based on the individual faculty's interests. These include Drug Delivery Systems, Nanotechnology, Drug Solubility, Synthetic Chemistry, Natural Products, Peptide Synthesis, Drug Analysis and Stability Evaluation, Pharmacogenetics and Pharmacogenomics, Pharmaceutical and Molecular Biotechnology, Chemistry of Amino Acids, Structure-Activity Relationships, Drug Design, Angiogenesis, Tumor Biology, Cancer and Metastasis, Proteases and Protease Inhibitors in Disease, Molecular Immunology and Autoimmune Diseases, Vascular Biology, Molecular Immunology and Autoimmune Diseases, NMR, Protein Crystallography, and Monoclonal Antibodies.

- *Research collaborations*

There are many intra-departmental collaborations. In addition, individual faculty

members have collaborations within the University, other Greek Universities and Research Centers (i.e., Demokritos, National Hellenic Research Foundation, Hellenic Pasteur Institute, Biomedical Research Foundation of the Academy of Athens, Institute of Molecular Biology and Biotechnology, and others). Of note, there are collaborations with prominent European and US laboratories. Due to these collaborations there are many significant research publications and funding.

- *Is the Department's research acknowledged and visible outside the Department? Rewards and awards.*

Overall the faculty members have produced 630 publications that have been cited ~17,500 times. The faculty members have been invited to several conferences and colloquia and have organized such events with success. They have also been invited to write reviews and book chapters. This is excellent measure of achievement.

Recommendation #17: The Department should highlight the recent accomplishments of the faculty members on its website.

IMPROVEMENT

- *Improvements and initiatives in research proposed and undertaken by the Department.*

The University has built a ~7000 m^2 building that will be able to increase the research activity of the faculty. This building will be able to house animals for in vivo experiments as well as a 700 MHz NMR for protein studies. The Department has noted they would like to add core facilities.

Recommendation #18: The Department should request a budget to maintain the animal facility, NMR and other instruments.

D. All Other Services

APPROACH

- *How does the Department view the various services provided to the members of the academic community (teaching staff, students).*

The effectiveness of the Pharmacy Department administrative service is satisfactory. The academic community in the Department of Pharmacy at the University of Patras appears to have a large proportion of intellectually satisfied staff members. The technical and the cleaning services are provided by private companies supported by the central administration.

The Department does not have a dedicated library in the field of pharmaceutical sciences. The central library at the University of Patras, when judged by international standards (European and US), is well equipped with books, electronic communication, access and apparently a highly competitive and dedicated staff.

The department recognizes that there are financial difficulties related to the transport of students to the University. The monthly bus pass is relatively expensive (because of private transport companies) as compared to the other city universities.

- *Does the Department have a policy to simplify administrative procedures? Are most procedures processed electronically?*

The admissions of students and the recording of course grades are handled in the

Pharmacy Department by a capable, overworked, administrative staff. It seems that things are working well considering the limited number of personnel. Within 5 years, a central electronic management of all administrative procedures will be applied.

The accepted Numeric Jump software will facilitate the administrative processes by a centralized online procedure. This electronic facility should allow handling student admissions, student grades and other student-related inquiries. This will alleviate the heavy load currently handled by the department secretarial staff. The grades for a given course should be available online and secured for online students' inquiries.

IMPLEMENTATION

- *Organization and infrastructure of the Department's administration (e.g. secretariat of the Department).*

The administration staff involves 3 subgroups: the first subgroup supports 23 academicians and 6 technical personnel, the second supports the status of about 800 undergraduate students, and the third subgroup supports the 250 postgraduate students.

The organization of a given department according to several disciplines (TOMEIS) was never applied to the Department of Pharmacy because it has never been approved by the Ministry of Education.

No supportive secretariat services are available. Common tasks such as word processing, agendas and planning, follow-up of international programs, travel arrangements for the Department personnel, procurement of equipment spare parts, connections with the pharmaceutical industry, etc. are not supported by any secretarial assistance. These tasks are dispatched to each laboratory and they are performed either by professors, technical personnel or postgraduate students.

Technical support by the University necessary to address specific safety issues for a Pharmacy Department seems to be inappropriate, causing a lot of operational problems. This is intensified by the technical conditions of the building that are, in a lot of cases, antiquated.

Recommendation #19: Functions and responsibilities have to be clearly defined for each member of the technical staff either for administrative tasks or for laboratory tasks.

Recommendation #20: Follow-up of international programs should be supported by specialized administrative personnel.

- *Form and function of academic services and infrastructure for students (e.g. library, PCs and free internet access, student counseling, athletic- cultural activity etc.).*

The student secretariats are quite efficient and the library is well organized. Free internet access is available in all labs and buildings in the Department. Online access to journals from home is not clearly evident. Sport facilities are available within the university campus (also available to the city of Patras). Cultural activities are regularly organized. Intensive political activities are always present.

RESULTS

- *Are administrative and other services adequate and functional?*

The services are adequate and quite functional. The activities and dedication of

the rector and the vice rector are impressive and refreshing.

- *How does the Department view the particular results?*

The Department is aware of the problems concerning both the students and staff.

IMPROVEMENTS

- *Has the Department identified ways and methods to improve the services provided*?

The provided services are quite satisfactory (see above).

Recommendation #21: The Department should obtain an electronic database concerning the professional status of alumni and an electronic database for the proposed jobs within the European pharmaceutical firms. In this way, the Department will explore all available opportunities for its students and the department itself.

- *Initiatives undertaken in this direction*

Many impediments and place problems will be solved by the move of the department to the new building. However, the move to the new location should be planned according to a global process proposed from the central administration and validated by the Department.

Collaboration with social, cultural and production organizations

Members of the Department of Pharmacy participate in various local cultural activities in the city of Patras. They also present various public lectures related to Pharmaceutical sciences. A number of the faculty members actively participate in the councils of various Greek and international scientific unions. It should also be noted that one of the laboratories has been ISO certified.

E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors

- *Potential inhibiting factors at State, Institutional and Departmental level, and proposals on ways to overcome them*

One of the most important issues noted by EEC is the regulations, rules, and laws that at times seem contradictory and block the research plans and the educational component of the University and Department. The EEC cannot verify the validity of the laws but it is important to note how they may affect the educational and research mission of the University and Department. For example, the EEC suggested tuition is charged for industry employees and foreign students enrolled in courses or educational program. However, the EEC was told that this is a strict regulation of the University of Patras Senate (and that other Greek universities have the same regulation). It is the opinion of the EEC that the use of tax money to support the education of foreign students or corporation employees is unwarranted and counterproductive to the department/university. At this time of financial crisis tuition money could be used for educational and research purposes. Another example is the inability of the Ministry to process grants efficiently so that postdoctoral associates could receive their salaries in a timely manner. These delays often take more than a year. This inefficiency puts undue stress on the postdoctoral associates, leading to loss of productivity and delays, and could destroy promising careers. It seems these laws were passed to prevent fraud and mismanagement but in the view of the EEC they have backfired, negatively affecting the educational and research mission of the Department and

University, and consequently is not in the national interest of Greece.

The micromanagement of universities by the Ministry stifles innovation, detracts the attention of University from their primary mission, and is generally misdirected. Examples of this are: (1) the particularly alarming role of the Ministry in the reversal of faculty appointments, (2) the allocation of first-year students that is higher than the departmental resources (faculty, classroom and laboratory size) can handle. The EEC does not feel it needs to go on with further examples with what is well-known among Greek universities and academicians, and is a complete embarrassment to those who know about them worldwide.

The Police Department of the City of Patras fails to arrive on the Campus when requested by the Rector's office to provide police services. Consequently, there have been a number of thefts and vandalism that have not been investigated. This endangers the safety of the University students and personnel, and public property is lost. This is unacceptable.

In summary, the laws passed by the State and implemented by the Greek Ministry of Education are rigid, cumbersome, and block both the educational plans and research mission of the University. These laws have to be revised or, at the very least they have to be relaxed. The new laws should allow the following:

1. Allow the pharmaceutical sciences to be autonomous under the umbrella of a School of Pharmacy. This is important because otherwise the validity of the degree of Pharmacy will be downgraded and will not be equivalent to other international pharmacy programs.
2. Provide rules and regulations that are stable and have common sense, thus allowing the University to produce knowledge and education.
3. Protect the University property by providing better and responsive police security.
4. Protect intellectual property. The patent process should be supported by specialists. The existing patent office seems to be inaccessible.
5. Introduce transparent metrics, based on documented departmental excellence, for the distribution of funds.
6. Institute fellowships and teaching assistantships at the masters and doctoral levels.
7. Allow the Universities to initiate tuition for some graduate students (foreigners or industrial employees). Note: this issue is a regulation of the Universities and not a Greek law.
8. Initiate and sustain regular cycles of funding mechanisms from the Ministry of Education and the General Secretariat of Research and Technology.
9. Establish and coordinate intra- and inter-departmental research proposals for competitive external funding in order to promote the creation of internationally recognized centers of excellence.
10. Introduce meritocracy and excellence-based ranking for the faculty in the Department of Pharmacy. Reward the top faculty and particularly the younger of those highly ranked.

- *Short-, medium- and long-term goals.*

The short-term goal is to move to the new building. The focus on medium- and long-term goals can be perceived as futile due to the political and financial instability.

F. Final Conclusions and recommendations of the EEC

Conclusions and recommendations of the EEC on:

- *The development of the Department to this date and its present situation, including explicit comments on good practices and weaknesses identified through the External Evaluation process and recommendations for improvement*

In spite of the present financial difficulties, the Department of Pharmacy at the University of Patras has established an overall good educational program. The Department's present situation in the area of research is very good. There is a sufficient amount of funding for research projects by the European Union that has produced research results published in high impact journals. The excellent research performed at the Department also impacts the training of graduate and undergraduate students in pharmaceutical and biomedical research, giving them an exceptional exposure to laboratory research and the scientific process.

There are minor weaknesses in the Department. Courses for undergraduate students need some upgrading and modernization. The Curriculum Committee should propose changes to the General Assembly to resolve these issues. Director of Graduate Studies – currently, Professor Andreas Papapetropoulos – should have informal communication (once or twice a year) with graduate students, on how to continuously improve the educational program (and life at the University). It will also give the Director an opportunity to explain why certain student recommendations cannot be performed, either at a certain timetable or at all. The departmental requirements for the educational programs should be on the Department's website to avoid any confusion of the requirements and responsibilities for students. The course title, course director, time/day of each course, room number, etc should also be available on the website. The use of e-class by the Department is applauded in this regard but more information should be available.

In summary, the following observations are made:

1. Faculty members have active research programs. The younger members of the faculty have added vibrancy and research initiatives to those established by senior faculty.
2. Most M.S. and Ph.D. graduates have found jobs in industry, some at a delayed rate.
3. Almost all B.S. students have found jobs in pharmacies or own pharmacies.
4. The existing building facilities, experimental laboratories space for teaching and research, the classrooms, and the office space are inadequate and spread over 5 buildings. This should not be a problem in the near future when the Department moves into its new building.
5. While the existing experimental infrastructure appears generally satisfactory in most areas, it needs upgrading in other areas, particularly for undergraduate equipment.

The EEC has the following general recommendations:

1. A pharmacokineticist and a clinical pharmacist faculty should be hired.
2. Update courses and equipment for undergraduate education.
3. The departmental requirements for the educational programs should be on the Department's website to avoid any confusion of the requirements and responsibilities for students. The course title, course director,

time/day of each course, room number, etc. should also be available on the website.

4. The Directors of Undergraduate and Graduate Studies should have informal communication (once or twice a year) in a town-hall format with all undergraduate and graduate students, respectively, on how to improve the education program (and life at the University). It will also give the department's Directors an opportunity to explain why certain student criticisms/recommendation cannot be performed, either at a certain timetable or at all.
5. The State should establish funding sources for fellowships and teaching assistantships for masters and doctoral students.

- *The Department's readiness and capability to change/improve*

The readiness and capability to change were demonstrated by the Chairman of the Department and faculty by their openness to convey all information in order to receive constructive criticism.

- *The Department's quality assurance*

The EEC has the following quality assurance recommendations:

1. A Committee for the Undergraduate Program exists and proposes changes for the curriculum that reflect advances in Pharmaceutical Sciences. This committee should propose a few changes that will modernize some of the current courses. These changes should be presented to and approved by the General Assembly.
2. The Directors of the undergraduate and graduate programs must create a student performance committee that will evaluate the student grades and decide on the dismissal of students who do not live up to the standards.
3. The General Assembly should evaluate all staff members and propose changes to their job description that reflect the departmental needs.
4. Establish a Pharmacy Clerkship Committee. This committee will be in contact with the Pharmacy preceptors who train the pharmacy students in their pharmacy stores. The preceptors should be recognized by the University as an integral part of the Pharmacy education. This committee will keep metrics of the students who pass the Pharmacy license exam and, if necessary, adjust the educational program and Pharmacy preceptors in order to achieve a higher passing rate of the license exam.
5. Institute a series of seminars with the purpose to improve the educational instructions and teach faculty and graduate students who want to become better teachers.
6. Follow the pharmacy alumni and create fundraising drives.
7. The Department should implement a reward mechanism for the staff members who excel in their job. This is the best mechanism to increase the morale of the employees.

In addition to the above, the EEC has made specific recommendations regarding the curriculum, teaching and research that are summarized below:

Recommendation #1: The UGC is heavy in classes that in some cases have overlapping material and needs to be updated. The committee recommends the following changes:

- Applied mathematics (1st semester) should be focused in statistics, probability, and risk evaluation instead of the current curriculum in this course (differential equations etc.). Furthermore, the course should

include training in appropriate software (e.g., Mathematica, Maple, and Matlab).

- The synthetic organic chemistry class (3rd semester) should be eliminated or combined with a pharmaceutical chemistry class (4th, 5th or 7th semester).
- The natural product chemistry (5th semester) should be combined with pharmacognosy I or II (6th or 7th semester).
- Pharmaceutical Chemistry (four semesters in total) should be condensed in two or three semesters.
- The class of clinical pharmacy (7th semester) has a lot of information and appears to be too condensed for one semester.
- The EEC members agree with comments from the undergraduate students who have proposed to expand the pharmacology class to three semesters. The third semester should also have elements of clinical pharmacy, thus alleviating part of the load from the clinical pharmacy course of the 7th semester. Ideally, this class should be reinforced with rotations in hospitals.

Recommendation #2: The lecturers or course directors should upload all course material (syllabus, presentation material, class location and representative exams) online through e-class (or similar software). This material should be available at least one month before the beginning of the class.

Recommendation #3: The EEC members noticed contradictory remarks from students related to the role of trained personnel (technicians) in maintaining the undergraduate labs. At present the labs are maintained mainly by the professors and certain senior graduate students. Based on this, the EEC members recommend establishing/refining the job description for all technical personnel.

Recommendation #4: The committee noted some overlap in the laboratory exercises. We recommend integrated laboratory exercises.

Recommendation #5: The changes of the UGC proceed after approval by the General Assembly. With this in mind, we recommend that the General Assembly implements a yearly meeting to study and address any issues related to the UGC.

Recommendation #6: To increase the mobility of graduate and postgraduate students we recommend that the graduate classes be taught in English. The graduate level books and notes should also be in English. Any laws limiting the use of English at the graduate level should be relaxed.

Recommendation #7: The committee noted that there are no scientific seminars. Implementation of a seminar program will enhance the scientific knowledge of both faculty members and students. Furthermore, it will help with the development of collaborations and will facilitate the mobility of young scientists. The Department should implement a seminar program (biweekly or monthly) and, if possible, invite scientists from abroad.

Recommendation #8: We recommend that every Ph.D. student present one seminar on a topic decided by the chair of his/her Ph.D. committee. This seminar should take place about one year after admission to the Ph.D. program, it should be open to the general audience and, ideally, it should not be directly related to the student's own research topic. Implementation of such a program will accomplish two goals: (a) the Ph.D. committee will have the opportunity to evaluate the overall knowledge and presentation skills of the Ph.D. candidate; and (b) the department will have a steady pool of seminars for the general education of the students.

Recommendation #9: Established a (a) Director of Undergraduate Studies (DUS) and (b) Director of Graduate Studies.

Recommendation #10: A journal club should be established.

Recommendation #11: The EEC recommends equipping the new building with modern teaching facilities, such as wireless internet and video recording. We recommend the use of webinars and the web posting of course lectures, lecture notes, and homework assignments.

Recommendation #12: We recommended the number of new students is reduced to the number this building was designed to accommodate.

Recommendation #13: One to two midterms per class that, in addition to the final exam, to produce the overall grade for the course should be implemented.

Recommendation #14: The EEC members were told that oral exams were effective because they prevent cheating, they do not require trained personnel for the monitoring and proctoring of the exams, and they do not require significant space to be administered. There are some concerns concerning the reliability and fairness of the oral exams that were expressed by the students and are echoed by the EEC. In view of these concerns, we recommend limiting the oral exams to midterms.

Recommendation #15: Efforts should be increased to introduce students to research (clinical, laboratory) and internships (pharmacies, companies, other laboratories abroad etc). The Department of Pharmacy should compile a list and be in contact with pharmacy preceptors (the pharmacists who train students). At the end of their internship, the pharmacists should provide a paragraph commenting on the interns.

Recommendation #16: Students who have exceeded the (n+2) years of studies should be eliminated from the list as soon as possible.

Recommendation #17: The Department should highlight the recent accomplishments of the faculty members on its website.

Recommendation #18: The Department should request a budget to maintain the animal facility, NMR and other instruments.

Recommendation #19: Functions and responsibilities have to be clearly defined for each member of the technical staff either for administrative tasks or for laboratory tasks.

Recommendation #20: Following up of international programs should be helped by specialized administrative personnel.

Recommendation #21: The department should obtain an electronic database concerning the professional status of old students and an electronic database for the proposed jobs within the European pharmaceutical firms. In this way, the department can explore all available opportunities.

The Members of the Committee

Name and Surname Signature

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