



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ	HELLENIC REPUBLIC
Α.ΔΙ.Π.	H.Q.A.A.
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΠΟΙΟΤΗΤΑΣ	HELLENIC QUALITY ASSURANCE AGENCY
ΑΝΩΤΑΤΗΣ ΕΚΠΑΙΔΕΥΣΗΣ	FOR HIGHER EDUCATION

EXTERNAL EVALUATION REPORT

ARISTOTLE UNIVERSITY OF THESSALONIKI

SCHOOL OF BIOLOGY

MAY 3, 2010

External Evaluation Committee

The Committee responsible for the External Evaluation of the School of Biology of the Aristotle University of Thessaloniki consisted of the following four (4) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005 :

1. **THEOHARIS C. THEOHARIDIS, M.Sc., Ph.D., M.D.** (Chairman)
Professor of Biochemistry, Pharmacology and Internal Medicine
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2. **VASSILIS I. ZANNIS, Ph.D.**
Professor of Medicine and Biochemistry,
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3. **MILTIADES S. TSIANTIS, D. Phil.**
Professor of Plant Developmental Genetics
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4. **PAUL CHRISTOU, Ph.D.**
Professor of Plant Molecular Biology and Biotechnology
University of Lleida, Lleida, SPAIN

Introduction

Internal evaluation

The members of the External Evaluation Committee (EEC) felt that the evaluation report prepared by The Internal Evaluation Committee (OMEA) was informative and accurately reflected the current status of the School of Biology of the Aristotle University of Thessaloniki (AUT). We would like to commend the Chair (Proedro) of the School, as well as the chair and members of the OMEA for providing a thoughtful and comprehensive report which was also accompanied by a number of additional documents as follows:

1. E- and hard-copies of all Power Point presentations of the three day program.
2. Strategic Academic Development
3. Research Strategy for period 2008-2013
4. School members' Resumes
5. Course Catalogue (under- and post-graduate)
6. Report of Dept activities since 1984
7. Copy of The Journal of Biological Research (JBR) produced and edited by the School and its mission statement
8. Information Technology (IT) resources for teaching and research support
9. Central IT services
10. Organization of Administration and other Support Services
11. Educational, Research and Social Outreach Activities (2003-2007)
12. Special Research Account (Idikos logariasmos)
13. Number of School members due to retire starting 2010
14. Harmonization of Curriculum with European Course Credit System (ECTS)

PROGRAM VISIT

The EEC tried to prepare a program that allowed open meetings with ALL Departments of the School, including all OMEA members, the School members, students and student representatives in the absence of School members, as well as the junior School members in the absence of senior School members, in an open forum style of multiple meetings over the course of 3 days.

DAY 1-MONDAY APRIL 12, 2010 (3:30 to 8 pm)

(10 min presentations, 5 min discussion each except for the last session 25 min presentation and 5 min discussion)

- Meet with the Rector and Vice Rector of Academic Affairs
- Meet with the School Chair, the OMEA Chair and OMEA members
- Presentation by the School Chair on the mission, structure and function of the School
- Presentation by the OMEA Chair on the methodology of the evaluation and statistical data
- Presentation by the School Chair on the Undergraduate Program
- Presentation by the Director of the Graduate Program
- Presentations of the Research Programs and the Office of Research Support and Data Storage
- Presentation of Practical Training
- Presentation of the School Chair on Administrative support, and of Central University-wide web support
- Presentation by the School Chair on Strategic Academic Development and Improvement Plans

DAY 2-TUESDAY APRIL 13, 2010 (8 am to 8 pm)

(40 min presentations, 20 min discussion each)

- Discussion with OMEA members
- Presentation of the Department of Botany
- Presentation of the Department of Molecular Biology and Genetics
- Presentation of the Department of Zoology
- Presentation of the Department of Ecology
- Meeting with the School Chair and Department Heads to discuss administrative and student services issues
- Visit the Departments' offices, laboratories and exhibits
- Visit the basement and one animal room
- Meeting with the School Chair and Vice-Chair, as well as the OMEA members and the Committee of Undergraduate Studies to discuss the academic program and their needs
- Meeting with the Directors of the Graduate Programs to discuss the goals, development and needs of the programs

DAY 3-WEDNESDAY, APRIL 14, 2010 (8 am to 4 pm)

(30 min discussions)

- Visit the library and presentation of "Blackboard," classrooms
- Meet with the undergraduate students in the auditorium (about 250 present)

- Meet with the graduate students in the auditorium (about 120 present)
- Presentation of the University IT services
- Presentation of the Erasmus program
- Meeting with the representatives of various personnel categories (EEDIP, ETEP, IDAX), and administrative personnel (public and private sector)
- Presentations of the student exchange program, the European Credit Transfer System (ECTS) and the Office of Educational Programs, Supplement
- Meeting with the undergraduate and graduate student representatives
- Meeting of the EEC Coordinator with students from a number of different groups
- Meeting with the School members and their research staff on the status, needs and aims of the research activities
- Discussion with the members of the various School Committees
- Meeting with members of the cleaning staff
- Concluding statements from the OMEA Chair, review of additional information requested, explanations on the preparation of the EEC report

DAYS 4 & 5, THURSDAY and FRIDAY, APRIL 15 & 16, 2010 (10 am to 8 pm)

(Preparation of the report)

General Comments:

1. OMEA recognized that the process of self-evaluation was very important and provided a realistic picture of the current status of the School, including strengths and weaknesses. The EEC and the School administration and OMEA discussed the internal evaluation report extensively at many different meetings. The School members, as a whole, have confidence that this process will be helpful for improvement and has already helped them formulate concrete goals for the future that could be implemented counting on appropriate support from the Government. This view was shared by the Rector and the Vice-Rector for Academic Affairs of the University.
2. It would have been more useful to have concise (2 page) CVs of Academic School members much earlier in the process (in the form of the template that had been communicated-see attachment at end of this report). The EEC felt that ADIP should also be aware of this point for future reference. It would be helpful if ADIP could collect biographical data for Schools from all life sciences in an appropriately similar two page format.
3. Additional material requested by the EEC was provided promptly and all OMEA and School members were extremely cooperative and forthcoming.
4. OMEA made it clear that they did not have the infrastructure, expertise, trained personnel, administrative support and financial resources to collect

and analyze all the requested data. This created heavy workload for the OMEA and the School members. The EEC concurs with this assessment and commends OMEA and the Chairman of the School for their extraordinary effort in preparing the internal report.

5. OMEA indicated that the late availability of the questionnaires and absence of guidelines by ADIP for analysis of the data collected made their work more complicated.
6. OMEA also indicated the questionnaires for the evaluation of the courses were not in standardized forms used elsewhere, making it difficult to make meaningful comparisons with other institutions. OMEA recommended and the EEC concurs, that some of the following forms suggested by OMEA may be considered, instead. To this effect, OMEA suggested the following forms for student evaluations (e.g. Keane & Labhrainn 2005 “Obtaining Student Feedback on Teaching & Course Quality Centre for Excellence in Learning & Teaching”).

http://www.nuigalway.ie/celt/documents/evaluation_ofteaching.pdf:

- a. The Students' Evaluation of Educational Quality (SEEQ)
- b. The Course Experience Questionnaire (CEQ)
- c. The Module Experience Questionnaire (MEQ)
- d. The Postgraduate Research Experience Questionnaire (PREQ)
- e. The Experiences of Teaching and Learning Questionnaire (ETLQ)

7. The EEC was impressed with the maturity, civility and public spirit of the undergraduate and graduate student body in the course of the assessment.

A. Curriculum

Undergraduate program

OMEA stated that at the onset of their evaluation process there was no clear educational mission statement in the Governmental Decree establishing the School.

The internal evaluation process helped the School formulate its mission.

EEC's findings

From our review of the curriculum, extensive discussions with the School members, as well as open forum with the undergraduate students (ca: 250) as well as their elected representatives, the following issues emerged:

Current status

- Total number of courses: 65, nine of which do not include a laboratory component.

- General descriptive courses, several including a laboratory component (ca 20)
- Specialized courses, some including a laboratory component (ca 25)
- 80% of the students participate in optional practical training which involves ca: 100 outside organizations
- Undergraduate senior thesis, optional (diplomatiki)
- The curriculum is divided into three study majors: (a) Environmental Biology; (b) Molecular Biology Genetics and Biotechnology; and (c) General Biology/Education.

Critical points

- The present structure reflects a general shortcoming of the curriculum with a multitude of descriptive courses emphasizing detail rather than critical thinking.
- There are too many courses, especially in the first two years, thus creating an overload for the students.
- OMEA recognized that 93% of the teaching is based on theory and should be changed to include applied didactic teaching models.
- No courses were offered on bioethics, on critical review of papers and scientific writing.
- Significant conceptual overlap (up to 20%) among courses offered by different study majors and sometimes within the same study major.
- The current study major of General Biology/Education was perceived by both School members and students to be confusing.
- Practical training is an important element that is subscribed by 80% of the students.
- OMEA indicated that the viability of the practical training is directly dependent on financial support through the University by funds provided by the Ministry of Education (EPEAC Program); because of financial and legal issues, the program entails extensive bureaucratic procedures that constitute a burden.
- The senior thesis, elective (diplomatiki) is an important element and it is useful for both students as well as School members.
- Field work is offered in several courses, e.g., botany and aquatic ecology.
- Classrooms are too few, too small and clearly substandard, not even meeting minimum health and safety standards. This is a clear liability for the University.
- The School utilizes the EU Socrates and Erasmus mobility programs for exchanges of students.
- OMEA provided evidence that they made major efforts to harmonize the curriculum in line with EU regulations (ECTS implementation).
- There is a physical chemistry elective course but there is no introductory

chemistry course that would provide necessary background to the biology students.

- The School members recognized the need to improve the curriculum.
- Biochemistry is taught only for one semester.

Recommendations

- Some of the early descriptive courses could be eliminated and a number could be offered as optional in the senior year.
- Conceptual overlap that currently exists among courses should be eliminated and fewer focused courses should be introduced with the same conceptual framework (e.g. ecology of land, water and air systems). Such courses could include “hands on” experience.
- A few core courses could be offered by combining important elements presently offered, to be taught by a group of School members.
- Short courses should be offered as early in the curriculum as possible on: (a) critical review and presentation of scientific papers, (b) scientific writing and terminology in English, and (c) bioethics/good scientific practice.
- Study majors (katefthisis) should be offered in the senior years, possibly as follows:
 - Environmental Biology; and (b) Molecular Biology Genetics and Biotechnology
- The EEC strongly believes that practical training is a very important element of the curriculum and the government should continue providing support for this program and identify mechanisms to reduce administrative burden, that is now shouldered by a small number of School members.
- The EEC believes that the Senior Thesis is an important activity which should be encouraged because it serves to select the most qualified students for graduate programs. Applications should be encouraged for pre-doctoral training programs from the EU Integrated Training Network (ITN) and further exploit EU exchange networks e.g. ERASMUS, SOCRATES so that students can complete their thesis abroad.
- The EEC believes that Field Work is a very strong element of the curriculum that can integrate and refocus course as described above
- The EEC strongly believes that it is crucial that the Ministry of Education **URGENTLY** provides funds for appropriate classrooms as soon as possible. In the meantime the main amphitheatre of the building where the School is housed should be properly outfitted and used as much as possible.
- The EEC feels that the physical chemistry course should be eliminated and replaced with a required introductory chemistry course, offered in the first year.
- Biochemistry should be taught for at least two semesters.

Graduate (Master program)

Critical points

- There were three programs : (a) Environmental Biology (ended), which evolved into two programs, one entitled “Ecological Design of Protected Areas and Management,” the second “Conservation of Biodiversity and Sustained Exploitation of Indigenous Plants, which is the only one currently funded by the Ministry of Education; (b) Hydrobiology-Aquaculture (until 2008); and (c) Applied Genetics and Biotechnology (until 2010). In addition there are proposals for two new programs: (a) Bio-diagnostics; and (b) Bio-production and Bio-monitoring in Health and Environment.
- The most qualified graduates of the programs are selected as doctoral candidates.
- There are two interschool programs: (a) Nano-technology run by the Physics School and (b) Ecological Quality and Management at a Basin Level, run by the School of Biology.
- The School acted rapidly and efficiently to establish graduate programs making use for a short period of the EPEAC funding. These programs provided sound scientific training and permitted many graduates to gain employment in relevant areas, such as ecology.
- With the exception of the brief period of funding the cost of the graduate programs was covered by individual School or by tuition paid by students.

Recommendations

- The EEC recommends increased efforts to attract funding to permit continuation of successful graduate programs, or start new programs that have critical mass in the School and to provide scholarships to the top graduate students.
- Strengthening of graduate programs may be achieved by inter-university and trans-national programs that secure participation of the School with appropriate expertise. For example the Atlantis EU “Calls” offers possibilities to create transnational graduate programs involving Europe and the US.
- It is not obvious to the EEC that the expertise of the present School allows for the establishment of a multitude of new programs without compromising their quality.
- A prerequisite for any successful new graduate program is the critical mass of expert School members (ca: 10-15 per program). Without critical mass of well-qualified School members the quality of the programs will be compromised.
- It might be counter-productive to expand into areas of limited expertise, even if funding opportunities become available. If the aims of such programs

is to further the professional accreditation of the graduates, then specific courses in such disciplines such as bio-diagnostics may be more appropriate than creation of a new graduate program.

- The EEC recommends that funding for graduate programs should be made available, possibly through combination of the following: (a) competitive funding of individual student fellowships or high quality graduate program by the Ministry of Education; (b) application for training grants from National and EU sources; (c) utilization of University real estate resources; and (d) exploration of funding from Greek Charitable Foundations.

Doctoral Program

Critical points

- All Departments have graduated a good number of doctoral students in spite of critical lack of appropriate laboratory space, resources and equipment (see Research below).
- The cost of supporting doctoral graduate programs is covered exclusively by extremely limited funds from individual School members.
- The graduate students are largely the driving force for research activities

Recommendations

- The EEC recommends that funding for doctoral students should be made available, possibly through combination of the following: (a) establishment of graduate training grants by the Ministry of Education; (b) application for doctoral training grants from EU sources (when those exist); (c) more research grant applications; (d) individual doctoral training fellowships from IKY and private foundations (e.g. Bodosakis, Onasio, Empirikio, Manasakis); and (e) utilization of University real estate resources.
- The EEC feels that the sustainability of viable doctoral programs is dependent on a vibrant research environment (please see below under Research).

Professional Accreditation

To the best of our knowledge this concept for biology graduates is unique to Greece. Ever since the creation of the School of Biology by a Government Decree, its graduates do not have any professional status officially recognized by the state. Communications to this effect have been sent repeatedly to the Minister of Education from this School as well as the University of Crete. In the EEC's view this appears to be paradoxical especially since the newly established School of Biosciences at the University of Thessaly and the School of Molecular Biology and Genetics of the University of Alexandroupolis, where most of the School members are graduates of the Biology Schools of Thessaloniki and Athens, have been recognized by the State. The issue of professional accreditation by the State was a crucial issue for the School and the students and came up in discussions repeatedly.

The EEC believes this is a reasonable and long overdue request and recommends its adoption.

B. Teaching

The School uses a combination of teaching methods that include lectures, laboratory exercises, field study, group discussions, participation in practical training, and participation in senior theses. Textbooks are used and are supplemented by handouts that are updated in ca:60% of the courses.

Critical Points

- Approximately 40% of the class take examinations and about 80% of students pass each examination.
- Learning objectives are stated for each course and OMEA indicated that they are met in 90% of the courses.
- OMEA stated that, within the current curriculum, the teaching load is excessive (the average number of teaching hours per School member is 3.5 hrs/week, and in some cases when laboratory is included averages 15-27 hrs/week). Such a teaching load for individual School members is excessive and often uneven.
- Electronic teaching tools such as “Blackboard” are used in teaching in a number of courses.
- The OMEA stated that most graduates (ca over 60%) find employment within their specific field and 1% in industry. Of the graduates, 1-12% complete a master’s degree and 1-9% complete a doctoral degree.
- OMEA indicated the critical absence of support personnel (EEDIP) to teach laboratory courses which will become almost total as the current individuals retire and there is no provision (by the government) to replace them. In order to fill this void another category of untenured personnel with doctorate degrees (IDAH) are called upon to fill the vacuum, even though their job description is defined as “administrative.”
- The large number of courses entails a very substantial examination load mostly in a written form. Most current examination modalities are not optimal in that they do not encourage critical thought and/or data handling and interpretation.
- Students have indicated that several textbooks are made available only very late in the term making it difficult for them to prepare adequately for the examinations.
- OMEA indicated that a lot of microscopes used for undergraduate teaching are monocular dating from 30 years ago and are inadequate.
- OMEA indicated that the Ministry of Education will soon pass a new law

requiring additional training for teaching sciences at high school level. Any such additional courses should not be the responsibility of the School but should be organized at university level.

- There are no study rooms and only a few stalls are available in the library.
- OMEA notes that there is absence of administrative and secretarial support services.

Recommendations

- The EEC believes that implementation of the recommendations for restructuring the curriculum, the teaching load will be reduced substantially thus freeing up time for other academic activities.
- The EEC concurs with the recommendation of OMEA for the establishment of an organized (computerised) system to track the careers of graduates would be useful.
- The EEC recommends that The Ministry of Education provides for replacement and increase of the EEDIP positions when the current individuals retire. Given that the EEDIP positions are not sufficient even with proper replacement, the EEC feels that the present IDAH members could be reclassified as EEDIP members so they can best utilize their own education for teaching and research.
- The EEC acknowledges the considerable contribution of IDAH to the School and recognizes that they have academic potential. In order for them to fulfil their potential, the EEC recommends they are granted study leave and seek postdoctoral appointments abroad and given scholarships when required. The EEC feels that automatically granting tenure track appointments to IDAH will be counter-productive.
- The EEC recommends that the number of written exams in their present form be reduced and supplemented by alternative modes which might include: extended essays and oral presentations to encourage critical thinking and development of presentation skills.
- Given that the EEC has recommended that descriptive courses be reduced, dependence on text books should be minimized and when required these should be made available at the beginning of each respective course.
- The EEC recommends replacement of the microscopes especially with multi-ocular teaching microscope units also equipped with monitors.

C. Research

Critical Points

- The OMEA acknowledged that there had not been any goals for the School. OMEA supplied the EEC with an additional document generated by the Research Strategy Committee. This stated the need to: (a) identify and provide incentives to conduct high quality research and (b) create new research groupings.
- The EEC felt that research highlights when presented by School members were useful for the evaluation process.
- OMEA indicated that the average IF for each School member in peer reviewed journals is ca 1.7 (with a large s.d.), and that this number is not statistically different from the mean of similar biology departments in Greece. However, it would be advisable to best compare the mean IF to that of biology Schools of equal size and funding in Europe and the USA.
- The statistics indicate to the EEC that there is a steady level of activity in biological sciences, for which the School is commended given the difficult conditions under which it operates.
- Commonly used indices of quality and recognition of scientific work are the IF and the numbers of citations of individual publications. Based on our analysis of the data provided and further in-depth analysis the EEC carried out there is a total of 15/501 publications with IF above 4.
- Seven out of the 60 School members have a total of 500 citations and four have a total of over 300 citations. It is apparent that this number of citations represents a large percentage of the combined. The total number of School citations reported by OMEA is 4,095 during the period 2003-2007.
- The above two observations indicate that a considerable proportion of internationally recognized research activities are concentrated in relatively few laboratories.
- The statistics offered for IF of the School publications is not informative to the EEC because it does not allow comparisons with other institutions within the EU or North America
- The EEC recognized that the active research in the School may not be directly quantifiable by the above indices.
- OMEA, in its internal evaluation report, recognizes the following deficiencies (please see page 67-68 of The internal report): inadequate facilities; antiquated lab space; lack of maintenance and technical personnel due to the unavailability of qualified technical personnel resulting in most of the load

falling on School members and graduate students; limited national calls for research proposals; no stated School research goals; school member collaborate, however there are no established research units; absence of core facilities.

- OMEA stated that despite of the overall low level of funding, the School rates high among all AUT Schools.
- EEC observed that the current assignment of School in four Departments is mostly historical and is not conducive to competitive research.
- Lack of administrative support.
- Lack of research management at the School level.
- Overall, there has not been substantial “renewal” of the School members for the last 30 years. Of the few external recruits, there were two of high quality at the level of associate professor and at least two at the level of lecturer during the last 10 years’. Most School replacements in the last several years were inside appointments (from within the School) in existing disciplines and did not reflect a global research strategy aiming at the improvement of the research environment. The present inbreeding if continued will compromise irreparably the quality of the School.
- The few recent School appointments were mostly at entry levels.
- Research activities appeared to be diffused, not always centred around clearly defined critical biological questions.
- The proportion of research activities on established genetic model systems which represents one of the current trends of contemporary biological sciences appears to be low.
- Presently there are only two technical assistants (EETP) for maintenance of instruments, most of which need to be replaced urgently. Once they retire, these positions are due to be eliminated under current law which will leave the School with no technical support, much of which is already carried out by School members and students.
- The EEC noted the absence of organized formal School research seminars.
- The Journal of Biological Research produced by the School is a commendable activity but the EEC recognizes the effort expended may add to the already excessive work load of the School members.

Recommendations

- The EEC strongly believes that vibrant research is the cornerstone of any

academic institution.

- The EEC believes that the grouping of the School members along the present Departments is not conducive to high level interdisciplinary research.
- The EEC believes that the creation of functional research teams will strengthen the research environment and improve the output and quality of the School. This is consistent with the Research Strategy Committee's suggestions. Some ways of achieving this might include: (a) coalescing research activities around existing strong groups with high levels of research outputs and income, (b) creating new groups along exciting new biological themes with high likelihood of funding.
- To promote implementation of these recommendations and in order to identify viable new synergies, the EEC suggests that School organizes an "away day" where exclusively science is discussed without administrative burden/considerations. The EEC noted that the School historically has strong skills in classical areas such as morphology, physiology, systematics, ecology, etc. These can be enriched by forging links with molecular-based approaches. For example, molecular and chemical ecology, genetic and molecular basis of biodiversity, understanding of systems-based biological properties, etc.
- Such activities can benefit greatly from links with well-established scientists abroad, including prominent Greek scientists in the US, Europe, etc., who can act as advisors to individual School members and the School. The advisors can also serve as mentors for younger School members and graduate students and host them as trainees in their own laboratories. The advisors can also contribute to the enrichment of the graduate program through teaching and research seminars.
- Given the fact that the School has not undergone any substantial renewal in terms of School members and the practice of internal recruitment, there is an imperative need of corrective action. Based on data provided by OMEA, nine School members will retire in the next five years. A total of thirty School members will retire in the next 12 years. The EEC strongly recommends that all retiring School members should be replaced through a high quality recruitment process of highly qualified candidates from outside the School in order to strengthen the functional research groups.
- The EEC recommends that new School members are supported with start-up funds. This is critical for allowing them to establish a strong and competitive

independent research program and it is common practice elsewhere in the USA and the EU. The EEC also strongly recommends that such School members are excused from administrative duties for the first two years and not be overburdened with an excessive teaching load during this time.

- The EEC noted that there are no plant growth facilities despite a recent recruitment in this specific area. It is critical that this shortcoming is rectified and this can be achieved at a modest cost of 20-25K €, which the University should make available immediately.
- The EEC believes that there should be strengthening of research on established model genetic systems.
- It is obvious that the building and the existing facilities cannot support current research and it is totally inadequate for expanding the necessary research activities. Funds should be provided by the appropriate Ministries (Education, Research) for either expansion and modernization of the existing building or better yet construction of a new building.
- EEC strongly recommends reorganization of space allocation of research groups in order to establish optimal use of equipment (core facility).
- The EEC strongly recommends that more technical assistants (ETEP) be hired for the entire School and that those due to retire be replaced.
- The EEC recommends that a formal School seminar series be established to strengthen the research environment.
- Short presentations by School members early in the academic year to all undergraduate and MS students would be useful to permit students to become familiar with research opportunities.

D. All Other Services

Support services

- OMEA indicated that as a result of the internal evaluation, many of the School activities, including registration of student's grading, issuing "graduation certificates" (transcripts) accompanying the final degree are processed electronically.

- The EEC noted limited and inflexible administrative and grant management support from the University.

Library & IT

- The EEC recognizes and commends the School for its website.
- The library is small but functional even though it is staffed by one person, volunteer School members and trainees. The opening hours presently are 8.30 till 14.30 making it difficult for students to use, especially since they have classes during the morning hours. It will be reasonable to suggest that the hours of operation are modified so that the library is open in the afternoon when the students are more likely to use it. An alternative might be that libraries serving related disciplines be combined in a bigger area with expanded hours of operation.
- The EEC was very impressed with the high quality of IT educational services provided including “Blackboard” and outside access to journals.
- The overall IT support was excellent.

Office Space

- Office space for most junior School members and research personnel was limited. Space should be reorganized to provide functional offices as needed.

Basement

- A lot of space in the basement is already being utilized. However, proper architectural planning of the entire basement could provide much better space utilization and possible space for the botany and animal collections. Such exhibits/collections could be donated to suitable foundations if available in order to free space for offices and research, as well as reduce the financial burden. Two rooms were labelled “electron microscopy” but the EEC was told that the existing microscopes were not functional while a new electron microscope is still in containers for almost two years. Non-functional equipment should be removed and replaced by functional equipment to promote research.

Student services

- The student centre provides free high quality food and free medical and pharmaceutical care.
- Each student is assigned a School advisor and the Student Centre provides psychological support as needed.

- The EEC noted the absence of a “Student Grievance Committee.”

Other personnel categories

- Different employee groups (e.g. technical and cleaning personnel) under temporary employment through external contractors expressed the valid concern that their employment status should be clarified. The services provided by these personnel are essential for the normal functioning of the School.
- New staff members should come with appropriate training for the intended position, rather than using researchers for administrative work, etc.

Collaboration with social, cultural and production organizations

- The School has established strong ties with local social, cultural and production organizations, in the context of the practical training.
- Currently there is no active participation of most School members with local production organizations, and those responsible for regional development that may provide research funds.

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

- The OMEA recognized that the process of self-evaluation had a positive impact on School planning and activities.
- EEC notes that the School has no strategic research goals. These need to be defined and developed.
- OMEA stated the need to for the School to continue the collection of data (e.g. teaching, publications, research support etc) as requested for the internal evaluation report. The EEC concurs and recommends that this process be reviewed on a regular basis (e.g. every two years) as an index of

quality and productivity.

F. Final Conclusions and recommendations of the EEC

Summary

The EEC highly commends the School for maintaining their research and teaching activity and energy under very difficult circumstances, reflecting the chronic lack of government investment in higher education and research. The EEC felt that lack of state funding together with over-legislation, lack of personnel renewal (from outside the School) and lack of clear research goals have led to a number of chronic problems, also identified by OMEA. These problems need immediate action at two levels. First and foremost government funding needs to be increased considerably. The Greek state needs to make higher education a top priority to forestall an otherwise imminent complete devaluation of the whole higher education sector. In the specific case of the AUT Biology School, extensive refurbishment or even better a new building are matters of extreme urgency as currently, even basic health and safety requirements are not met. Second, to support internationally competitive teaching and research in biology the School needs to build on existing strengths and radically re-align its structure and culture of operation and recruitment. The EEC has provided several concrete suggestions to this effect. The EEC also notes that such realignment of School (and university) activity will facilitate more efficient absorption of external funds. Finally the EEC wishes to note OMEA's view that while painful self evaluation has been extremely useful, it is now up to the State to accept its share of responsibility for the problems detailed above, and act on EECs recommendations. Evaluation without investment to solve the problems identified would be a futile exercise.

Specific Recommendations:

To The School

Teaching/Curriculum

- Restructuring of the curriculum with short interschool courses, including scientific understanding and writing in the first few years; elimination of purely descriptive material to reduce the student load and promote critical thinking.
- The EEC recommends that funding for graduate programs should be made available possibly through combination of the following: (a) competitive funding of individual student fellowships or high quality graduate program by the Ministry of Education; (b) application for training grants from National and EU sources; (c) utilization of University real estate resources; and (d) exploration of funding from Greek Charitable Foundations.

- New graduate programs should only be developed if there is sufficient School expertise and appropriate funding. A prerequisite for any successful new graduate program is the critical mass of expert School members (ca: 10-15 per program). Without critical mass of well-qualified School members the quality of graduate education will be compromised.

Research

- Establishment of research goals and functional research groups
- The EEC recommends that the School's historical focus in classical areas should be enriched by forging links with molecular-based approaches including molecular and chemical ecology, genetic and molecular basis of development and biodiversity, understanding of systems-based biological properties. Development of genomics, bioinformatics and computational biology capabilities should underpin all the above.
- Replacement (upon retirement) and expansion of current School members with high quality of **external** recruits
- Reorganization of the present School structure based on the research goals to be established. The EEC does not feel it is within its mandate to dictate the explicit School structure; however it notes the following:
 - Excessive fragmentation in more Departments would be counterproductive because of increased administrative layers, thus preventing effective interdisciplinary research collaboration and preventing consensus building (collectivity).
 - The present School structure appears to be based on historical grounds and it does not serve optimally either the education or the research mission of the School.
- Encourage strongly applications for research funding, on the basis of new functional groupings as well as external collaborations.
- A database with all research publications and related activities should be maintained.

To The University

- New or upgraded research and teaching facilities and infrastructure which requires substantial investment from government and university sources.
- Inter-university and transnational programs exist, but should be further facilitated and pursued to secure participation of School members with appropriate expertise.

- Funding for graduate programs should be made available, possibly through utilization of university real estate resources.
- The EEC noted that the logo of the university did not include an image of Aristotle.
- The EEC noted that there were inconsistencies in the nomenclature use in the English version of the web site of Biology - sometimes it was called “Department of Biology” and sometimes “School of Biology.” The EEC believes “Department is a more appropriate term and left it as such in this report. ADIP may wish to address this issue for all of Greece.

To The Government

- Increase funding for research as soon as possible and institute regular “Calls” for peer-reviewed competitive research grants.
- Increased funding should be made available to support successful graduate programs, and provide stipends to graduate students.
- Creation by the Ministry of Education of short-term positions (15-30 days per annum) of visiting professors/advisors from abroad for the Greek Universities (AEI). The advisors can also serve as mentors for younger School members and graduate students and host them as trainees in their own laboratories. The advisors can also contribute to the enrichment of the graduate program through teaching and research seminars and act as co-applicants in joint international grant applications.
- New or upgraded research and teaching facilities & infrastructure which requires substantial investments from government and university sources.

The Members of the Committee

Name and Surname

Signature

1. Theoharis C. Theoharides
2. Vassilis I. Zannis
3. Miltos S. Tsiantis
4. Paul Christou

