

Europe and International Department

# EVALUATION AND ACCREDITATION DOCUMENTS

Ph.D. Biotechnology

Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), University of Jos

Nigeria

## September 2019

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International evaluation and accreditation

## **EVALUATION REPORT**

## Ph.D. Biotechnology

Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), University of Jos Nigeria

**JUNE - 2019** 



The University of Jos has mandated Hcéres to perform its Biotechnology doctoral program evaluation. The evaluation is based on the "External Evaluation Standards for doctorates out of France", adopted by the Hcéres Board on March 26, 2018. These standards are available on the Hcéres website (hceres.fr).

### For the Hcéres<sup>1</sup>:

Michel Cosnard, President

#### On behalf of the experts committee<sup>2</sup>:

Dominique Laurain-Mattar , President of the committee

In accordance with the decree n°2014-1365, November 14th, 2014,

<sup>&</sup>lt;sup>1</sup> LThe president of Hcéres "contresigne les rapports d'évaluation établis par les comités d'experts et signés par leur président." (Article 8, alinéa 5) – « countersigns the assessment reports made by the experts' committees and signed by their president »(article8, alinéa 5)

<sup>&</sup>lt;sup>2</sup> The evaluation reports "sont signés par le président du comité". (Article 11, alinéa 2) – « are signed by the president of the committee » (article 11, alinea 2)



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## I. NATIONAL CONTEXT AND INSTITUTION IDENTITY SHEET

#### GENERAL CONTEXT AND HIGHER EDUCATION

University of Jos was established in 1979, it is one of the existing 170 Universities in Nigeria. The Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD) was established in 2014 through a World Bank alliance between the regional governments of West Africa, to harness the untapped potentials of collaboration among African researchers with the focus of creating a sustainable agenda for health innovation in Nigeria and Africa. ACEPRD is one of the 10 Centers of Excellence in Nigeria to contribute to health care development in Africa as a way of exploiting its biodiversity. From 2015-2017 a total of 446 students have been enrolled into the Masters and PhD programmes, drawn from the West African Region namely Togo, Ghana, Burkina Faso, Benin and Nigeria.

#### INSTITUTION

- 1. University/institution: University of Jos, Africa Centre of Excellence in Phytomedicine Research & Development (ACEPRD)
- 2. Component, faculty or department concerned: Faculty of Pharmaceutical Sciences, Department of Pharmaceutical Microbiology and Biotechnology
- 3. Programme's title: PhD in Biotechnology
- 4. Training/specialty: Biotechnology
- 5. Year of creation and context: 2017
- 6. Site(s) where the programme is taught (Town and campus): At the Faculty of Pharmaceutical Sciences with the support of the Africa Centre of Excellence in Phytomedicine Research & Development (ACEPRD), University of Jos. In addition, laboratory facilities are at the ACEPRD and also at the Faculty.
- 7. Programme director:
  - a. Surname, first name: Aguyi, John Chinyere
  - b. Profession and grade: Professor
  - c. Main subject taught: Pharmacology and Genetic Engineering

#### METHODS AND RESULTS OF THE PREVIOUS ACCREDITATION(S)

8. Methodology and agency

The PhD programme has been evaluated and accredited by the National Universities Commission in Nigeria in 2017.

9. Results : Approved.

#### HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME

#### 10. Human resources

The teaching staff of the PhD in Biotechnology includes 11 Professors, 2 Senior Lecturers, 1 Lecturer II, and 4 Readers. It is well qualified and in good accordance and with the needs for training, research and mentoring internships.

#### 11. Material resources

Recent equipments to perform sophisticated analyses have been acquired:

- Genetic analysis system: Beckman Coulter Genome Lab GeXP;
- High performance separation-Es Module with OptiMS Technology: Beckman Coulter's CESI 8000 Plus;
- Pharmaceutical analysis system: Beckman Coulter PA 800 Plus;



- Gas Chromatography-Mass Spectrophotometer: Scion 456-GC;
- Multi EA 4000: Analytkjena Elemental Analyser;
- Thermal Cycler: Jenway UV Spectrophotometer, PCR;
- Beckman Coulter- Allegra X15 Cold Centrifuge;
- Production of distillated and de-ionized water: Milli-Q Lab Water System;
- Electrophoresis equipment;
- Dissecting Microscope Tritech Research Fluorescence Microscope.

#### STUDENT POPULATION: EVOLUTION AND TYPOLOGY OVER THE LAST 4 YEARS

MPhil/PhD in Biotechnology

S/No	YEAR	TOTAL/YEAR	FEMALES	MALES	INTERNATIONAL STUDENTS	NATIONAL STUDENTS	TOTAL
1	2015/2016	-	- ]	1	1	1	2
2	2016/2017	-					
3	2017/2018	1					
4	2018/2019	1					

Numerical inconsistencies in MPhil/PhD international students in Biotechnology can be found between the figures in this table and those presented during the on-site visit. The other table did not show any foreign student for this training.

### **II. EVALUATION PROCEDURE**

#### COMPOSITION OF THE EXPERTS PANEL

Dominique LAURAIN-MATTAR, Professor, University of Lorraine, committee leader Valérie SCHINI-KERTH, Professor, Strasbourg University Frédéric RELAIX, Professor, Paris-Est University Mathilde COLAS, Student graduated from University of Technology of Troyes. Hcéres was represented by Pierre COURTELLEMONT, science advisor.

#### **ON-SITE VISIT DESCRIPTION**

- Date of the visit: June the 10<sup>th</sup>, 2019.
- Organization of the visit: the visit was made the 10<sup>th</sup> of June, on the NUC site, during one day. On-site
  meetings with the management team, academic staff, closed meetings by videoconferencing with
  partners, alumni and students.
- Cooperation of study programme and institution to be accredited: perfect cooperation by all stakeholders, with the support of NUC team.
- People met (on NUC site):

John C. Aguiyi, director ACEPRD Ndidi C. Ngwuluka, Head of Department Pharmaceutics Ikoni Ogaji, Dean, Faculty of Pharmaceutical Sciences Dayom D. Wetkos, Head of Department, Clinical Pharmacology Dafam D. Gwatau, Head of Department, Pharmacognosy Ezekiel O. Afolabi, PG coordinator, Head of Bioinformatics Patrick O. Olorunfemi, Head of Department Pharmaceutical Microbiology Goni Dogo, ACEPRD laboratory Mark Kparmak, Project Administrator Taiwo E. Alemika, Deputy Centre Leader Patricia O. Odumosu, Head, Department of Pharmaceutical & Medicinal Chemistry



18 students (Arinze Umera (PhD Biochemistry), Akinsanmi Augustina Oduje (PhD Biochemistry), Chioma Eze (PhD Aplied Microbiology), Amaka Ubani (MSc Bioinformatics and genomics), Francis Akpadja Kodjo\* (MSc Pharmaceutical Microbiology), Adama Denou\*\* (PhD Pharmacognosy), Rafiatou Ousmane\* (MSc Biotechnology), Sariem Comfort (PhD Clinical Pharmacy), Daouda Labarou\*\*\* (PhD Bioinformatics and genomics), Agwom Francis (PhD Pharmaceutical Chemistry), Tougoma Atehezi\* (PhD Physiology), Atchrimi Komi Sagnan\* (PhD Physiology), Morenikeji Oluwatoyin (MSc Bioinformatics and genomics), Lapang Dominic (MSc Bioinformatics and genomics), Rwiann Victor (MSc Bioinformatics and genomics), Hamza Abdulraham (MSc Bioinformatics and genomics), Samuel Isaac (MSc Bioinformatics and genomics), Ammanuel Dabwer Ben (MSc Biotechnology)) \* from Togo, \*\* from Mali, \*\*\* from Niger. Other: Nigerians.

Partners and alumni by videoconferencing

### **III. PRESENTATION OF THE STUDY PROGRAMME**

#### 1 – PRESENTATION OF THE STUDY PROGRAMME

- The institution delivering the programme is The University of Jos, Nigeria and the Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD)
- The PhD programme is a multidisciplinary programme designed to provide students with knowledge and skills in the scientific and practical aspect of Biotechnology and also to prepare them for leadership and careers in the biotechnology and pharmaceutical industries. It is a young programme which started in 2017 and included 2 doctoral students for 2017 and 2018.
- The specific features include: English for Special Purposes (ESP) for regional students from Francophone countries, E-learning development with subscription to Science Direct and NgREN, Internships for students in industries to forge academia-industry partnerships.
- The program is developed within the Department of Pharmaceutical Microbiology and Biotechnology, Faculty of Pharmaceutical Sciences, for teaching. Students will develop their research in the laboratory facilities at the ACEPRD or associated partners, which is situated at the University of Jos, and also at the Faculty of Pharmaceutical Sciences. The PhD programme offers three tracks including Molecular biotechnology, Biomedical technologies and Biopharmaceutical biotechnology to give students flexibility to tailor their degree to their background, interest and career goals. These tracks in combination with core courses ensure that students get a uniquely broad exposure to the entire field of Biotechnology leading to PhD degree in Biotechnology. The curriculum is opened to candidates with MSc degree in Biotechnology from an approved institution with at least a WSA of 60% or its equivalent. Candidates with MSc in Plant Science & Technology, Botany or Chemistry are required to take necessary courses along with MSc students. The mode of study for PhD in Biotechnology is either full-time or part-time over a minimum of 36 months and a maximum of 50 months.
- PhD in Biotechnology is integrated within the local, regional and national university landscape via national and international academic partners of ACEPRD contributing to the teaching and to workshops, via industrial partners contributing to teaching and providing internships for students, and also by attracting international students (1 international student for 2017 and 2018).
- The aim of the PhD programme is to offer students a coherent profession-oriented education within the field of Biotechnology to be able to perform research at all levels and analyse and solve questions and problems within the broad field of Biotechnology. Its main objectives is to enable students to acquaint 1) a theoretical and method-oriented knowledge of biotechnology within the fields of domestic animals and livestock, plants, human, microorganisms or biochemistry, 2) the knowledge to analyse complex biotechnology problems of importance for the biotechnological industry, governmental agencies or educational programmes, 3) the ability to communicate knowledge at all levels, and a broad knowledge of the interactions between biotechnology and industry, society and the environment, and 4) the knowledge, skills and competences to pursue careers in the biotechnology and pharmaceutical industries.

#### 2 - PRESENTATION OF THE PROGRAMME'S SELF-EVALUATION APPROACH

The Committee that worked for & prepared the Accreditation report to Hcéres comprised of the following:

1. Prof. Taiwo E. Alemika - Deputy Centre Leader (Chairman)



2. Prof. Ikoni J. Ogaji - Dean, Faculty of Pharmaceutical Sciences

- 3. Dr. Patrick O. Olorunfemi Head, Department of Pharmaceutical Microbiology & Biotechnology
- 4. Dr. Ndidi C. Ngwuluka Head, Department of Pharmaceutics
- 5. Dr. Wetkos D. Dayom Head, Department of Clinical Pharmacy & Pharmacy Practice
- 6. Dr. Dalen G. Dafam Head, Department of Pharmacognosy & Herbal Medicine
- 7. Dr. Patricia O. Odumosu Head, Department of Pharmaceutical & Medicinal Chemistry
- 8. Prof. Ezekiel O. Afolabi Department of Pharmaceutical & Medicinal Chemistry
- 9. Mr. Mark Kparmak ACEPRD Admin Officer (Secretary)

### **IV. EVALUATION REPORT**

#### AREA 1 – THE POSITIONING OF THE DOCTORATE

The PhD in Biotechnology at ACEPRD is a young and innovative curriculum, which is positioned within local, national and international range of study programmes in order to provide graduates of MSc in Biotechnology with upper level knowledge and skills to become competent experts within the field of Biotechnology. The objectives of the doctorate is to enable students to be able to perform research at all levels and analyse and solve questions and problems within the broad field of Biotechnology. Doctorates interact with the socio-economic environment in particular during their 1-month internship program at an industry related environment after the first 6 months under the supervision of a supervisor, and during workshops and short courses. The programme involves collaboration with universities within the country and international universities. The programme started in 2017 and enrolled 2 PhD students for 2017 and 2018 including one international student. Objectives with regard to knowledge and skills to be acquired are clearly stated. The doctorate's target audience is clearly defined and the name of the study programme is with regard to its objectives and content. ACEPRD has an information booklet (Students' Handbook) that contains the objectives and content of the programme, and policies are communicated to all students.

#### Area 1-1: The doctorate's distinct features and objectives are clearly defined

The PhD programme in Biotechnology of the Africa Centre of Excellence in Phytomedicine Research & Development in University of Jos, Nigeria, initiated in 2017, provides advanced knowledge and skills required in the scientific and practical aspect of Biotechnology. II will also prepare doctoral students for leadership and careers in the biotechnology and pharmaceutical industries, in education at the University and in Health related governmental Agencies. Such high quality competent human resource in association with technological advancements has direct impact on human and animal health, agricultural productivity and environmental issues to provide novel opportunities for the development of Nigeria. Objectives with regard to knowledge and skills to be acquired are clearly stated. The doctorate's target audience is clearly defined and the name of the study programme is with regard to its objectives and content. ACEPRD has an information booklet (Students' Handbook) that contains the objectives and content of the programme, and policies are communicated to all students.

#### Area 1-2: The positioning of the doctorate is consistent with its environment

The doctorate contributes to capacity building in the institution. PhD students participate in tutorials and training including short workshops and mentoring of MSc students. PhD graduates can be recruited at Universities to contribute to the training and teaching staff in Biotechnology. During the development of their original research in Biotechnology, PhD students will work together with the Department of Pharmaceutical Microbiology and Biotechnology under the guidance of at least one supervisor. Doctorates interact with the socio-economic environment in particular during their 1-month internship program at an industry related environment after the first 6 months under the supervision of a supervisor, and during workshops and short courses. The programme involves collaboration with universities within the country and international universities. Guest lecturers from partner universities are involved in the training of the students. International Advisory Board includes academics from Salford University, Manchester, Université de Lyon, France, Sheffield Hallam University, UK, Université de Lome, Université de Abomey-Calavi, Benin Republic, Université de Sciences et Technologies of Bamako, Mali, Université du Burkina Faso, Ouagadougou, Salford University, UK. Partnerships are well identified, including active national (National Veterinary Research Institute, National Agency for Food and Drug Administration and Control), regional and international academic and Industrial/Sectoral partners involved in education and research. National and international socio-economic partners include Council for Advancement and Support of Education (CASE), USA, World Bank, USA, Association of African Universities,



(AAU), Ghana. The doctorate has access to the research laboratories and the equipment as well as support of experts at the Department of Pharmaceutical Microbiology and Biotechnology and the ACEPRD, to 24-h wifi access in all facilities, and also to facilities of the academic and industrial partners. The modality of self-evaluation of the doctorate is not provided.

#### AREA 2 – ORGANIZATION AND MANAGEMENT OF THE DOCTORATE

The PhD programme in Biotechnology is managed by a clearly defined well-qualified teaching team with appropriate number of members and of high education level, and able to cover the different areas of Biotechnology, and supported by an administrative team. In addition, academic partners both national and international ones, and partners form industries contribute to teaching through workshops and short courses, and also by mentoring internships. The management of the training is based on clearly defined rules that are brought to the attention of the students. Students have access to the different equipment and facilities of the Center, a computer laboratory, and get support from laboratory members. The criteria for the recruitment of PhD candidates are established, explicitly stated and transparent. Financial support is provided for National and Regional students to allow them to conduct their doctorate under the best conditions. The governance of the doctorate and internal quality assurance mechanisms can be improved to help the doctorate to develop.

#### Area 2-1: Effective organization and management is in place for the doctorate

The PhD in Biotechnology's organizational structure is based on a teaching team including 17 members covering the different domains of specialization in Biotechnology. The teaching staff includes 11 Professors and 2 Lecturers, and 4 readers with 16 members having a PhD level. An administrative team is also supporting the programme. In addition, several partners from academia and pharmaceutical industries contribute to teaching and training through workshops, seminars and by mentoring a 1-month internship in an industry related environment. The role and responsibilities of each teaching team member are clearly defined and understood by all stakeholders. Detailed information regarding the modality of governance of the doctorate and the involvement of doctoral student representatives is not provided. The management of the PhD programme and its different elements is clearly defined. The Students' handbook provides detailed information regarding the programme, the management, and the rules of the PhD programme in Biotechnology. PhD students are invited to participate to workshops and short courses in the area of Biotechnology. Procedure for regular self-evaluation of the doctorate is not provided.

## Area 2-2: There is an explicit policy for recruiting and funding doctoral students, which is adapted to the PhD program

The rules for recruitment of PhD students are clearly defined. Candidates submit a written proposal to the Department for review and assignment of a supervisor(s), and also the justified project budget approved by the primary supervisor. Both National and Regional PhD students are supported for tuition, transportation, living expenses, accommodation and laboratory consumables for 3 years. At least 2 journal publications in Elsevier – Indexed journals are expected from each PhD student by the end of the program. In case an extension period after the 3-year period is required to finalize the PhD training, mechanism to support the student to complete their doctorate under the best conditions should be indicated. Special services for students with particular needs such as students with disabilities, is not indicated.



#### AREA 3 – SUPERVISION AND TRAINING FOR DOCTORAL STUDENTS

The doctoral student is developing his research project under the supervision of more than one supervisor from the appropriate department. The PhD student and supervisor meet on regular basis to discuss research progress and to solve any problem. The establishment of a document regarding thesis rules signed by the PhD student and the supervisor(s) would be pertinent to define precisely the obligations of each party. The co-supervisor and members of the department also provide scientific input for the thesis project during the presentation of the results at a seminar or as required. Mid-thesis evaluation of the advancement of the research project by an evaluation committee is recommended to identify any difficulty or problem, and to propose solutions for the development of the research project so that the doctoral student will be able to achieve the PhD defense within the 3-year period. The doctorate offers diverse teaching including disciplinary and scientific training and also professional training as appropriate. Students are invited to take part in supplementary scientific and/or professional events to gain additional expertise and training. The rules for thesis defense are clearly stated and provided to doctoral students.

## Area 3-1: The doctorate applies a strict doctoral student supervision and follow-up policy

The PhD project of each student is supervised by more than one supervisor from the appropriate departments. The primary supervisor and the student meet on regular basis and as necessary to discuss the progression of the research project and the student gets further input from the co-supervisor. Other members of the department can also provide input when the PhD candidate is presenting the research during a seminar. Rules governing the relationship between the supervisor and student are not mentioned. The expected outcome of the 3-year PhD research period involves at least 2 publications in Elsevier – Indexed journals. Students will also get training regarding Information Communication Techniques including pedagogy and entrepreneurship for preparation of employment. Inclusion of an evaluation committee evaluating the progress of the research at mid-thesis period and involving an internal and an external member of the department would provide valuable recommendations for thesis development. Measures to combat fraud are applied and those for false declaration are provided.

## Area 3-2: The doctorate offers diverse teaching and organizes supplementary events

The PhD training offers different modalities of disciplinary and scientific training including lectures, seminar, critical scientific reading and writing, and an internship in a professional environment suited to their profile and career plans. During the development of the internship and the thesis project, doctoral students have access to professional training in the research and industry fields. Socio-economic partners contribute to training during workshops, short lectures and during the Information Communication and Technology courses. Methods for accessing and validating the teaching are clearly defined and known by users. PhD students are invited to participate in workshops and short courses to gain additional knowledge and expertise. Methods for access, validation and evaluation in supplementary scientific and/or professional events are not detailed. The participation of each PhD student to a national and/or international conference would provide further training, motivation and network building for future post-doctoral training and/or job opportunities.

#### Area 3-3: The doctorate is based on explicit rules for thesis duration and defense

The doctorate provides clear objectives with regard to the duration of theses and re-enrolment of doctoral students each year for both full time and part-time mode of study. Students will be assessed based on the regulations governing examinations and assessments of the school of Postgraduate studies. The criteria for authorizing thesis defense include writing of a thesis embodying the result of their original research in any chosen area of Biotechnology including a critical review of existing knowledge that leads to novel findings in Biotechnology and contributes significantly to knowledge. The organization rules for thesis defense including composition of the examination board and role of its members, convening notice, and manuscript submission are provided in the University of Jos regulations on postgraduate studies.



### AREA 4 – INTEGRATION OF DOCTORS INTO THE JOB MARKET

The doctorate In Biotechnology is a very young curriculum, which started in 2017. Therefore, analysis of the outcome regarding the integration of doctors into the job market is too early with the first 2 PhD students being enrolled in 2017 and 2018. The PhD curriculum in Biotechnology offers a very large potential of job opportunities in the different fields of Biotechnology including agriculture, environment, biomedical and the pharmaceutical industries, and also Universities and governmental Health Agencies. Graduates can also pursue for post-doctoral training to become specialists in the field of research and are trained in Entrepreneurship. Modalities for effective monitoring and evaluation of the integration of doctors into the job markets, and the use of such collected data to promote the doctorate among local, national and international partners, and to develop the doctorate remain to be established. The establishment of an alumni directory or network of former doctoral students is strongly recommended to provide privileged mentorship to doctoral students and opportunities of internships and job.

## Area 4-1: The doctorate includes mechanisms to promote the integration of doctors into the job market

The doctorate implements systems to promote the doctorate among local, national and international partners such as the 1-month internship program at an industry related environment after the first 6 months of enrollment into the PhD programme, by attending workshops and short courses, and also based on privileged partnerships of ACEPRD with several university partners and industry partners for teaching and for short term stays of doctoral students to perform additional research investigations. No information is provided whether doctoral students are informed regarding the requirements and conditions for accessing all potential positions. Throughout the doctorate, the evaluation of discipline-specific and transferable skills follows the rules of the School of Postgraduate studies.

## Area 4-2: The doctorate has effective monitoring of the integration of doctors into the job market

The PhD in Biotechnology is a very young training curriculum, which started in 2017 and currently enrolled 2 PhD students for 2017 and 2018 including 1 international student. Therefore, the evaluation of the integration of graduates into the job market can only be done in the near future. It is recommended to start planning the modalities regarding the effective monitoring system of cohorts of doctors and the development of an alumni directory or network of former students.

#### Area 4-3: The data collected is analyzed, communicated and used

Due to the very recent start of the doctorate in Biotechnology in 2017, data collected regarding integration of doctors into the job market are not yet available. It is recommended to initiate modalities regarding analysis of such collected data and their communication to doctorate applicants/doctoral students/doctors and stakeholders, their use to develop the doctorate and to strengthen promotion of the doctorate to local, national and international partners.

## V. CONCLUSION

The PhD programme offers training in the different fields of Biotechnology. The programme has started in 2017 and has currently 2 students enrolled one in 2017 and one in 2018. The PhD in Biotechnology at ACEPRD has a highly qualified teaching staff with appropriate number of teachers to cover the courses of the different disciplines. The programme involves also professionals from pharmaceutical industries contributing to teaching and to mentoring doctoral students during the internship, and a strong involvement of research elements including seminars and the development of innovative research, and the thesis defense in Biotechnology. The curriculum provides students the opportunity to acquire advanced knowledge and skills in the scientific and practical aspect of Biotechnology and also contributes to prepare them for Leadership and careers in the biotechnology and pharmaceutical industries, and also at the University and governmental health Agencies.

Potential outcomes in terms of job opportunities are rather good in the different areas of Biotechnology through a network of professional partners. Industry partners are identified (i.e. Pauco Pharmaceuticals, Gauze Pharmaceuticals, Juhel Pharmaceuticals, ECWA Pharmaceuticals, Gwalgwalada Specialist Hospital, Plateau



Specialist Hospital, Jos University Teaching Hospital), and they interact with students in terms of internships and job opportunities. The PhD is positioned with local, national and international range of study programmes to provide PhD students with upper level of knowledge and skills in Biotechnology, for entrepreneurship and also for pursuing a career in innovative research in the pharmaceutical industry and University. ACEPRD has an information booklet (Students' Handbook) that contains the objectives and content of the programme, and policies are communicated to all students. The management of the training is based on clearly defined rules that are brought to the attention of the students. Students have access to the equipment and facilities of the ACEPRD, 24-h internet access, and they get support from staff for their research. The criteria for the recruitment of PhD candidates are established and explicitly stated. Financial support is provided for National and Regional students to allow them to conduct their doctorate under the best conditions. The governance of the doctorate and internal quality assurance mechanisms remain to be established to help the doctorate to develop.

#### PAST ACHIEVEMENTS

Biotechnology is a relatively new cutting edge science, which incorporates principles of biology, physical and chemical sciences. It is based on technologies at the level of genes, genomes, nucleic acid and other related macro and micro bio-molecules. Advances in this discipline have already provided important applications in different fields including agriculture, environment, biomedicine and biopharmaceutics, and numerous valuable outcomes are expected in the near future. The development of Biotechnology in Nigeria is still in its early phase. The involvement of Biotechnological techniques is expected to contribute to promote the development of Nigeria with a great potential for a variety of fields including domestic animals and livestock, plants, microorganisms and human.

#### TODAY'S CHALLENGES

Today's challenges for ACEPRD in Biotechnology are numerous and important ones for the future: 1) Provide upper level training of specialists in the different areas of Biotechnology requiring a multidisciplinary teaching staff with appropriate numbers of teachers and education level, and a stimulating competitive research environment in terms of quality and number of researchers in the field of Biotechnology, 2) Develop the curriculum in close collaboration with professional partners from the industry in the area of Biotechnology to match with their needs, 3) Attract graduates of the MSc in Biotechnology to pursue upper level training in Biotechnology to become specialists contributing to capacity building in Nigeria and also at the Regional level, 4) Be able to adapt the curriculum to the fast evolution of the scientific knowledge and technologies in Biotechnology, 5) Provide opportunities for doctoral students to gain international experience and network, and 6) Provide a stimulating and competitive research environment for doctoral students with appropriate financial support to develop innovative research during their PhD research in good conditions.

#### OUTLOOK TO THE FUTURE

Biotechnology provides a great opportunity for the development of Nigeria and West African countries to respond to several needs of the population with respect to aspects related to agriculture, environment, and biomedical and biopharmaceutics. A determinant element for the success of such a challenge is the training of competent human resources, the major aim of the PhD programme in Biotechnology.

#### STRENGTHS

Training of competent human resources in the field of biotechnology, a key component in the development of numerous industries in the pharmaceutical and ago-business, and for education in Universities and governmental Health Agencies

Highly qualified teaching staff number and composition, and teaching and research facilities for such a multidisciplinary curriculum

Involvement of several local industrial partners, and also of a few national and international partners for internships and contribution to teaching.

#### WEAKNESSES

Low number of graduates of the MSc in Biotechnology enroll into doctoral training for this young curriculum Limited involvement of associate or guest lecturers or researchers to support strong links between teaching and research



Limited partnerships with foreign education institutions

Limited national and international exposure of students to start build a network enabling internship and job opportunities

Limited evaluation and monitoring of the curriculum for further development.

#### RECOMMENDATIONS

Continue to increase the attractiveness of the curriculum for national and international students

Support further internationalization of the curriculum with involvement of leading international experts to teaching and a short-term international training period for students

Improve teaching and research networks with regional, national and international partner Universities

Provide manpower to track the outcome of the curriculum for improved attractiveness, mentoring and network building.

## **VI. COMMENTS OF THE INSTITUTION**

UJ/ACEPRD/O102/03 Prof. François PERNOT Directeur/Director Département Europe et International Europe and International Department francois.pernot@hceres.fr

Dear Sir

#### **COMMENTS OF THE INSTITUTION**

The Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), Faculty of Pharmaceutical Sciences, University of Jos has submitted 9 postgraduate programmes. The HCERES has considered the programmes for evaluation and consequent accreditation, with the report made available to the Centre for comments.

The team of the ACEPRD/Faculty that considered the report and made comments available are:

- 1. Prof. John C. Aguiyi
- 2. Prof. Ikoni Ogaji
- 3. Prof. Taiwo E. Alemika
- 4. Prof. Patrick Olorunfemi
- 5. Dr. Wetkos Dayom
- 6. Dr. Dalen Dafam
- 7. Dr. Patricia Odumosu
- 8. Mr. Mark Kparmak

Director/Centre Leader Dean, Faculty of Pharmacy Sciences Deputy Director, ACEPRD Head, Biotechnology and Microbiology Head, Clinical Pharmacy and Practice Head, Pharmacognosy Head, Bioinformatics and Genomics Project Administrator

Members of the team considered the report of each of the postgraduate programmes and made its comments as follows:

#### **PHD BIOTECHNOLOGY**

- 1. Low number of graduates of the programme. This is a new programme. Strategies will be put in place to attract more students so as to have more graduate outputs.
- 2. Efforts will be intensified to have more Guest Lecturers from Europe and America as well as Industries partners contribute in the programme.
- 3. Currently, the Salford University is a partner of the ACEPRD. Efforts and discussions to expand research and teaching relationship will be harnessed.
- 4. It is noted that the students have limited international exposure, but the ACEPRD internship programmes has included the Biotechnology students, thereby exposing them to industry practices.
- 5. Evaluation and monitoring of curriculum for further development is carried out every 5 years by the University of Jos generally. However, within the Faculty and Department, there are changes that takes place in programme and course delivery.

Thank you.

Prof. John C. Aguiyi

August 25, 2019

Director/Centre Leader, ACEPRD For: Team, ACEPRD

#### **NB: URL TO LABORATORIES**

http://aceprd.unijos.edu.ng/viewing\_image/322fc987-4e53-455a-9063-2de163ab2ee7/ http://aceprd.unijos.edu.ng/playing-video-d6aea9cb-613a-4b36-889b-bb29a145bd69/



International evaluation and accreditation

## ACCREDITATION DECISION

## Ph.D. Biotechnology

Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), University of Jos, Nigeria

## September 2019



## **SCOPE OF THE ACCREDITATION GRANTED BY HCÉRES**

Hcéres has built its evaluation process based on a set of objectives that Higher Education Institution must pursue ton ensure recognised quality within France and Europe. These objectives are divided up into six fields among which are the accreditation criteria.

As for the «External Evaluation Standards», the accreditation criteria have been specifically designed for foreign HEI. The accreditation criteria were adopted by the Board on June 2016 and are available on the Hcéres website (hceres.fr).

The accreditation committe, meeting his accreditation decision, has wholly taken into account the final evaluation report of the HEI. This accreditation decision is the result of a collegial and reasoned process.

The accreditation decision issued by Hcéres shall not grant any rights watsoever, wether in France or abroad. The decision to accredit an institution confers an accreditation label and does not infer recognition in France of the qualifications issued by the accredited institution. The Hcéres accreditation process therefore has no impact on the qualifications recognition process in France.



## **ANALYSIS OF THE ACCREDITATION CRITERIA**

#### AREA 1: THE POSITIONING OF THE DOCTORATE

#### Accreditation criterion

The positioning, the content and the objectives of the doctorate are clearly defined. Its interactions with the stakeholders (lead institution(s), foreign partners, socio-economic environment) are formally set out and effective. Its links with the research units and the institution's scientific policy are effective.

#### **Criterion assessment**

The PhD in Biotechnology at ACEPRD is a young and innovative curriculum, which is positioned within local, national and international range of study programmes in order to provide graduates of MSc in Biotechnology with upper level knowledge and skills to become competent experts within the field of Biotechnology. The objectives of the doctorate is to enable students to be able to perform research at all levels and analyse and solve questions and problems within the broad field of Biotechnology. Doctorates interact with the socio-economic environment in particular during their 1-month internship program at an industry related environment after the first 6 months under the supervision of a supervisor, and during workshops and short courses. The programme involves collaboration with universities within the country and international universities. The programme started in 2017 and enrolled 2 PhD students for 2017 and 2018 including one international student. Objectives with regard to knowledge and skills to be acquired are clearly stated. The doctorate's target audience is clearly defined and the name of the study programme is with regard to its objectives and content. ACEPRD has an information booklet (Students' Handbook) that contains the objectives and content of the programme, and policies are communicated to all students.

#### AREA 2: ORGANIZATION AND MANAGEMENT OF THE DOCTORATE

#### Accreditation criterion

The doctorate's organisation and management are clearly defined and rely on material and human resources adapted to the requirements of programmes at ISCED level 8. Internal quality assurance mechanisms are in place and effectively used in order to improve continuously the doctorate. The doctoral students recruiting is formally set out, their funding is fair and sustainable.

#### **Criterion assessment**

The PhD programme in Biotechnology is managed by a clearly defined well-qualified teaching team with appropriate number of members and of high education level, and able to cover the different areas of Biotechnology, and supported by an administrative team. In addition, academic partners both national and international ones, and partners form industries contribute to teaching through workshops and short courses, and also by mentoring internships. The management of the training is based on clearly defined rules that are brought to the attention of the students. Students have access to the different equipment and facilities of the Center, a computer laboratory, and get support from laboratory members. The criteria for the recruitment of PhD candidates are established, explicitly stated and transparent. Financial support is provided for National and Regional students to allow them to conduct their doctorate under the best conditions. The governance of the doctorate and internal quality assurance mechanisms can be improved to help the doctorate to develop.

#### AREA 3: SUPERVISION AND TRAINING FOR DOCTORAL STUDENTS

#### Accreditation criterion

A strict policy of supervising and follow-up of doctoral students is set. Doctoral students have access to various teaching and professional trainings and take part in scientific/professional actions. Explicit rules are defined concerning the thesis duration and defence. Measures to combat fraud, plagiarism and corruption are applied within the doctorate.

#### **Criterion assessment**

The doctoral student is developing his research project under the supervision of more than one supervisor from the appropriate department. The PhD student and supervisor meet on regular basis to discuss research



progress and to solve any problem. The establishment of a document regarding thesis rules signed by the PhD student and the supervisor(s) would be pertinent to define precisely the obligations of each party. The cosupervisor and members of the department also provide scientific input for the thesis project during the presentation of the results at a seminar or as required. Mid-thesis evaluation of the advancement of the research project by an evaluation committee is recommended to identify any difficulty or problem, and to propose solutions for the development of the research project so that the doctoral student will be able to achieve the PhD defense within the 3-year period. The doctorate offers diverse teaching including disciplinary and scientific training and also professional training as appropriate. Students are invited to take part in supplementary scientific and/or professional events to gain additional expertise and training. The rules for thesis defense are clearly stated and provided to doctoral students.

#### AREA 4: INTEGRATION OF DOCTORS INTO THE JOB MARKET

#### Accreditation criterion

The doctorate implements systems to promote the doctorate and the integration of doctors into the job market. The integration monitoring and analysis are effective and used to perform the continuous improvement of the doctorate.

#### Criterion assessment

The doctorate In Biotechnology is a very young curriculum, which started in 2017. Therefore, analysis of the outcome regarding the integration of doctors into the job market is too early with the first 2 PhD students being enrolled in 2017 and 2018. The PhD curriculum in Biotechnology offers a very large potential of job opportunities in the different fields of Biotechnology including agriculture, environment, biomedical and the pharmaceutical industries, and also Universities and governmental Health Agencies. Graduates can also pursue for post-doctoral training to become specialists in the field of research and are trained in Entrepreneurship. Modalities for effective monitoring and evaluation of the integration of doctors into the job markets, and the use of such collected data to promote the doctorate among local, national and international partners, and to develop the doctorate remain to be established. The establishment of an alumni directory or network of former doctoral students is strongly recommended to provide privileged mentorship to doctoral students and opportunities of internships and job.



### **ACCREDITATION DECISION**

Considering the accreditation criteria analysis detailed above, the accreditation commission takes the following decision:

#### "Five-year unreserved accreditation decision"

and draws attention to the various recommendations made by the committee of experts in its evaluation report:

- Continue to increase the attractiveness of the curriculum for national and international students.
- Support further internationalization of the curriculum with involvement of leading international experts to teaching and a short-term international training period for students.
- Improve teaching and research networks with regional, national and international partner Universities.
- Provide human ressources to track the outcome of the curriculum for improved attractiveness, mentoring and network building.

SIGNATURE

For HCERES and on behalf of

Michel Com

Michel COSNARD,

President

Date: Paris, September 4<sup>th</sup>, 2019

Les rapports d'évaluation du Hcéres sont consultables en ligne : www.hceres.fr

Évaluation des coordinations territoriales Évaluation des établissements Évaluation de la recherche Évaluation des écoles doctorales Évaluation des formations Évaluation et accréditation internationales



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