GRADUATE HANDBOOK

Effective October 1, 2017

Tuskegee University Graduate Handbook

This Handbook is the official document for regulations and procedures governing all Graduate School at Tuskegee University.

Graduate School of Tuskegee University are under the jurisdiction of the Vice President for Research and Dean of Graduate School, who reports to the Provost/Vice President for Academic Affairs. The Provost, in consultation with the Graduate Council chaired by the Vice President for Research and Dean of Graduate School, approves all matters governing Graduate Education at Tuskegee University.

Tuskegee University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACS): to award bachelor, master, doctoral and professional degrees.

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PREFACE

Regulations outlined in this Handbook are effective October 1, 2017. All previous releases are hereby superseded. These regulations may be updated by a memorandum from the Provost. This Handbook is intended to assist the graduate student in understanding the regulations and procedures that govern graduate education at Tuskegee University. It does not contain information about curricular and course descriptions; such information is contained in the Tuskegee University Bulletin and course catalog. Additionally, information about the profile, historical sketch, mission and purpose as well as other important information about Tuskegee University is available in the Bulletin.

Graduate students should become familiar with this Handbook, the University Calendar, Schedule of Courses, Tuition and Fees brochure, and they should frequently review the information on the Tuskegee University Website (https:/www.Tuskegee.edu). Unless otherwise specified to the applicants in writing by the appropriate university official delegated by the university administration to do so, admission to any Graduate Program at Tuskegee University implies that students are able and prepared to defray costs associated with the Graduate Program in question. At no time is Tuskegee University obliged to remedy financial shortcoming of applicants and/or registered students as a consequence of admission, registration or suspension.

Tuskegee University is committed to equal opportunity in employment and education and does not discriminate on the basis of sex, race, color, religion, national origin, or disability. The Affirmative Action/EEO Coordinator is located in the Kresge Center. Weapons and guns of any kind are prohibited on University properties. Smoking in University facilities and vehicles is prohibited. Tuskegee University, in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, shall provide reasonable accommodations for students with documented disabilities. Additional information is available in the Office of Student Support Services, located in the Margaret Murree Hall.

Tuskegee University operates on the semester system with 15 -week semesters in fall and spring and an 8-week semester in summer. The University reserves the right to cancel classes and delete programs and change any provisions, course offerings, or other requirements, including fees, at any time with or without notice. The University further reserves the right to require a student to withdraw at any time under appropriate procedures.

Students who submit false statements or documents will have their admission revoked when fraud is discovered. These students are not entitled to any credit for work done at the University and will not receive any refund of monies paid to the University. There will also be no refund of tuition, fees, charges, or any other payment made to the University in the event the operation of the University is suspended at any time as a result of an act of God, strike, riot, disruption, or for any reasons beyond the control of the University.

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I. INTRODUCTION

a. Graduate School at Tuskegee University

The University provides graduate level instruction as well as research and training in post baccalaureate professional fields. These programs seek to develop in students the ability to engage in independent and scholarly inquiry, a mastery of certain professional disciplines, a capacity to make original contributions to various bodies of knowledge, and the commitment and competencies to teach others. Graduate degrees are offered only in selected fields.

In 1944, Tuskegee University began graduate instruction in Agriculture, Chemistry and Education. The first graduate degree, Master of Science (MS), was awarded on May 19, 1947 in Agriculture, Education and Home Economics. By 1962, graduate work had been organized into a comprehensive unit for administration and coordination under a Dean of Graduate School. Throughout the years, the Dean has served jointly in other administrative capacities. Currently, the Dean of Graduate School, who reports to the President of the University, through the Provost also serves as the Vice President for Research.

b. Graduate Council

The Graduate Council which functions as the governance unit with responsibility for educational policies at the graduate level, is composed of the Dean of Graduate School as Chairperson, six faculty members, one representing each college/school that offers graduate degree (s) (nominated by t h e c o l le g e / s c h o o l d eans) and two graduate students selected by the Graduate Council from the pool of the candidates nominated by the Directors of the Graduate School. The Graduate Faculty was established in 1950. This body promotes and maintains the academic and general welfare of the faculty and graduate students. It has jurisdiction over matters of policy, procedures and regulations in graduate instruction.

c. Graduate Faculty

Tuskegee University has three categories of Graduate Faculty Membership – Member, Associate Member and Special Appointments. Criteria for each membership category are listed below.

Member

Faculty eligible to be Full Members of the graduate faculty include tenured and tenure- track faculty with the following ranks: Professor, Research Professor, Associate Professor, Research Associate Professor, Assistant Professor and Research Assistant Professor. The highest degree in a respective field, usually a PhD, is required but exceptions may be granted in some cases.

Full Membership requires that a faculty member be actively engaged in research; possess a record of peer- reviewed scholarly production in national and international journals and conference proceedings as a first or senior author (corresponding author) in the last five

years, have prior experience mentoring graduate students and submitted proposals as a principal investigator or co-investigator in the past three years.

A **Full Member** of the graduate faculty is eligible to teach graduate courses, serve as major professor, co- major professor and/or advisory committee member of Master and/or Doctoral students, served as a member or chair of any graduate faculty committee and served as a member of the Graduate Council.

Ex-officio Membership is held by the President, the Provost, and the Academic

Deans. **Associate Member**

Associate Member status may also be awarded for Adjunct, Visiting, and Clinical Faculty appointments, including government, corporate, private or community representatives or international experts with appropriate qualifications such as holding a terminal degree in a designated area or having contributed significantly in research/scholarship to national and global advances.

If the Associate Member does not hold a doctoral degree, there must be demonstrable evidence (e.g. publications, creative works) that the candidate possesses the experience, knowledge, and capability in the area of intended participation in the graduate program of the university.

An Associate Member may teach graduate courses and serve as member or co- chair (but not as chair) with a Full Member as the other co-chair of a graduate student's Advisory Committee.

Special Appointment

Nationally and internationally recognized scholars and authorities whose merits are clearly established need not be measured by standard criteria and may be recommended for special appointment of defined duration and explicit responsibilities by the Department Head or the program director and the documented concurrence of the College/School Dean.

Process

The process for admission to all categories of Graduate Faculty Membership includes the following:

> Submission of a full resume, accompanied by a letter of recommendation from the Department Head and College / School Dean to the Dean of Graduate School. The Dean of Graduate School in consultation with the members of the graduate council recommends the names of faculty members to be certified as Graduate Faculty to the Provost/Vice President for Academic Affairs. The Provost/Vice President for Academic Affairs then makes the appointment of faculty members to the Graduate Faculty.

d. Graduate Degrees Offered

Graduate School Leading to the Doctor of Philosophy (Ph.D.) degree

Integrative Biosciences (IBS, offered jointly by CAENS, CAS & CVM) - The program effectively catalyzes and facilitates collaboration, discovery, creativity, transfer of technology and learning in the biosciences. The IBS Ph.D. program selectively leverages the combined strengths of the Colleges of Agriculture, Environment, and Nutrition Sciences (CAENS), Arts and Sciences (CAS) and Veterinary Medicine (CVM).

Integrative Public Policy & Development (offered jointly by CAS & CAENS) - The Tuskegee University Integrative Public Policy and Development (IPPD) Ph.D. program is designed to develop professionals who have not only technical proficiency but who also possess the flexibility and adaptability to address the complexities of current social, economic and political challenges. The IPPD program has three major research and teaching areas: History and Public Policy, Agriculture and Resource Policy, and International Development Policy.

Interdisciplinary Pathobiology (IDPB, offered by CVM) - The IDBP graduate program is offered by the College of Veterinary Medicine and is designed to promote the *One Medicine, One Health* initiative by providing the candidates with the essential technical and scientific knowledge to become outstanding scientists, researchers, academicians and innovators. This training takes place by utilizing and enjoying state-of-the art equipment, laboratories and classrooms. We provide expertise in the areas of Cancer Biology and Cancer Therapy, Immunology and Infectious Diseases and Obesity and Control of Food Intake, Computational Epidemiology and Risk Analysis, Food Microbiology and Food Safety and Nanotechnology.

Materials Science & Engineering (Offered by CE) – The Department of Materials Science and Engineering at the College of Engineering (CE) offers a PhD degree with the aim to produce graduates who can be successful in academia, industry and federal laboratories. The department has a multidisciplinary group of renounced faculty members of international repute with expertise in various aspects of synthesis, processing, modeling and characterization of advanced materials that may be used for military, industrial, agricultural and healthcare applications.

Graduate School Leading to the Master of Science Degrees

Master of Science in Agricultural & Resource Economics (Offered by CAENS) - The Agricultural and Resource Economics graduate program offers several specialty areas, such as rural economic and community development, agribusiness management and marketing, and natural resources economics. This program is flexible in terms of research and course work so that students can achieve their career-inspired and individual objectives as well as readiness for local, national and international employment opportunities in government, private enterprise and company-based and non-governmental organizations.

Master of Science in Animal Sciences (Offered by CAENS) - The Animal Sciences graduate program offers several specialty areas, such as nutrition, parasitology, silvopasture, breeding and genetics, reproduction and biotechnology, from which students can focus as a part of their course of study. Cattle, poultry, goats and a variety of other domestic and laboratory animals are available for research.

Master of Science in Biology (Offered by CAS) – This program offers a graduate degree in Biology or other related natural sciences. It will broaden and increase the knowledge in biological sciences. Additionally, it provides students the opportunity to enter into or expand their experience in experimental research in the areas of health disparities, cancer, environmental biology, cardiovascular disease, mycology, parasitology, microbiology and Immunology.

Master of Science in Chemical Engineering (Offered by CE) – Students pursuing a MS degree in Chemical Engineering can specialize in areas such as Environmental Engineering, Food Science Engineering, Microfluidics for Materials Processing, Advanced and Cyber Manufacturing; Renewable and Sustainable Energy, Bioenergy/Bio refinery Technologies, Pulp and Paper Process Engineering, Nanocomposites of Graphene Aerogel for Energy Storage Applications.

Master of Science in Chemistry (Offered by CAS) – The Department of Chemistry at Tuskegee University is an American Chemical Society approved program with a thesis-based MS degree in chemistry. With faculty in Analytical, Biochemistry, Nanomedicine, Organic, Polymer, and Physical Chemistry, there are a variety of research projects and opportunities. A focus of the department, however, is chemical characterization through instrumentation and molecular modeling. Recent acquisitions of a 400 MHz NMR and LC-MS-QTOF have broadened the range of studies that can be performed in the department. We have cultivated an environment that encourages learning, teamwork and discovery.

Master of Science in Electrical Engineering (Offered by CE) – Students pursuing the MS degree in Electrical Engineering specialize in (a) Energy Systems, including: Power Systems, Control Systems, Power Electronics (b) Microelectronic Systems, including: Electronic Materials, Opto-electronics, Integrated Circuits (c) Communication Systems, including: Telecommunications, Digital Signal Processing, Wireless Systems and Electromagnetics (d) Computing Systems, including: Computer Aided Design, Computer Hardware, VLSI Design, Programming Languages.

Master of Science in Environmental Science (Offered by CAENS) - The Environmental Sciences graduate program offers a MS degree in several specialty areas such as climate change, watershed management, environmental health, fate and transport of environmental toxicants, soil health, hydrology, geospatial science and nutrient and ecosystem management.

Master of Science in Food & Nutritional Science (Offered by CAENS) - The Master Science Degree programs in the Department of Food and Nutritional Sciences offer opportunities for creative endeavors through basic and applied research. This is best accompanied by a curriculum which is broad in scope and includes work in the areas of food safety, food product development, nutritional biochemistry and community nutrition.

Master of Science in Information Systems & Security Management (Offered by CBIS) – The Information Systems and Security Management (ISSM) Master of Science program is designed to fill the current and future needs for Information Assurance professionals to support the nation's information infrastructure. Information Assurance has become a critical issue for businesses as they encounter problems from external network attacks as well as internal issues due to lax control systems and compliance requirements.

Master of Science in Materials Science & Engineering (Offered by CE) – The Department of Materials Science and Engineering offers the Master of Science degree with an aim to produce graduates who can be successful in academia, industry and federal laboratories. The department has a multidisciplinary group of renounced faculty members of international repute with expertise in various aspects of synthesis, processing, modeling and characterization of advanced materials that may be used for military, industrial, agricultural and healthcare applications.

Master of Science in Public Health (Offered by CVM) - The MSPH is an academic degree program that interests graduates who seek to expand their public health career with transition into further advanced studies such as is applicable in the pursuit of the PhD degree.

Master in Public Health (Offered by CVM) - is a professional degree that will be favorable to the health care practitioner and/or in administrative public health.

Master of Science in Mechanical Engineering (Offered by CE) - Mechanical Engineering is concerned with the production and utilization of power and the design, construction, and operation of machines and systems. Mechanical engineers are associated with all branches of industry and with all activities involving design, manufacture, research and development, operation and maintenance, or sales.

Master of Science in Occupational Therapy (Offered by SONAH) - The Occupational Therapy Program provides an academic environment for individuals who are committed to the enrichment of people's lives through the tenets of occupational therapy. The program will provide educational experiences that will nurture creativity, intellectual curiosity, and promote the spirit of active, independent, and self-directed learning through dynamic interactions in the classroom and community service.

Science Degree programs in the Department of Food and Nutritional Sciences offer opportunities for creative endeavors through basic and applied research. This is best accompanied by a curriculum which is broad in scope and includes work in the areas of food safety, food product development, nutritional biochemistry and community nutrition.

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Master of Science in Plant & Soil Sciences (Offered by CAENS) - The Plant and Soil Sciences graduate program offers several specialty areas, such as biotechnology, breeding, genetics, horticulture, soil microbiology, organic farming, bioenergy and much more.

Master of Science in Veterinary Sciences (Offered by CVM) - The MS in Veterinary Science is offered by the College of Veterinary Medicine and it is designed to provide candidates with technical and scientific knowledge in the areas of Cancer Biology and Cancer Therapy, Immunology, Infectious Diseases, Obesity / Control of Food Intake, Computational Epidemiology / Risk Analysis, Food Microbiology, Food Safety and Nanotechnology. This will enable them to explore career options in research, academia or industry.

On-line Master's Degree Programs

Environmental Management (Offered by CAENS) - The Environmental Sciences graduate program offers several specialty areas, such as climate change, watershed management, environmental health, fate and transport of environmental toxicants, soil health, hydrology, geospatial science and nutrient and ecosystem management.

Environmental Science (Offered by CAENS) - The Environmental Sciences graduate program offers several specialty areas, such as climate change, watershed management, environmental health, fate and transport of environmental toxicants, soil health, hydrology, geospatial science and nutrient and ecosystem management.

CAS – College of Arts and Science
CAENS – College of Agriculture, Environment and Nutrition Sciences
CBIS – College of Business and Information Science
CE – College of Engineering
CVMNAH – College of Veterinary Medicine
SONAH – School of Nursing and Allied Health

II. REQUIREMENTS FOR ADMISSION

a. Master of Science Degree Programs

1. A baccalaureate or professional degree earned from an accredited college or university. (The program in Occupational Therapy (OT) is an exception to this rule).
2. A cumulative grade point average of 3.00 based on the 4.00 scale grading system for all previous work.
3. Official transcripts.
4. Personal statement.
5. Three (3) letters of recommendation.
6. Resume.
7. GRE Scores
8. TOEFL (required from all international students whose medium of instruction at the undergraduate level was not in English)

b. Doctor of Philosophy Programs

Doctor of Philosophy in Integrative Biosciences

1. Admission to the IBS Ph.D. Program is determined by six IBS Faculty members on the Student Selection Committee and by the IBS Deans Council. Admission is then communicated to the candidates by the IBS Program Office and the Office of Graduate School and Research. Candidates must have completed the B.S. /B.A. and/or Master's degree in areas related to Integrative Biosciences, e.g., the Biological, Chemical, Physical, Health, Food, Nutritional, Agricultural, Environmental, or Natural Resource Sciences. If deemed necessary, the student may be required to take additional prerequisite courses.
2. Competitive candidates for admission should have a cumulative grade point average (GPA) of at least 3.00 or higher in all previous studies, a GPA of 3.4 in upper division courses and completed the GRE general and subject tests.
3. International students who are granted admission to the IBS Ph.D. Program must consult with the Office of International Programs, Tuskegee University, concerning legal documents to enter or stay in the United States for the duration of the program. Grades received from international programs of study must be translated into the U.S. scale by World Education Services, Inc. [www.Wes.org (212)-966-6311]. International students must also submit proof of financial support and TOEFL scores.
4. Three excellent letters of recommendation from faculty or others who have known the student in an academic or research capacity, official transcripts from each institution attended, GRE scores, a resume or curriculum vitae documenting previous research or teaching experience, and a statement of interest, which details the applicant's goals and potential research focus areas are required as part of the application. Applications to the IBS Ph.D. Program are received by the Office of Graduate Studies and Research (https://www.tuskegee.edu/graduate_studies_and_research/download_applications.aspx) which ensures that the applications are complete and forwards copies to the IBS Ph.D. Program Office. The IBS Program Office convenes a Student Selection Committee, which will review the applications according to merit, and then make recommendations for acceptance to the IBS Dean's Council. The IBS Dean's Council makes the final decisions regarding selections. An Internal Advisory Committee and an External Advisory Committee provide annual reviews of the IBS Ph.D. Program.

Doctor of Philosophy in Interdisciplinary Pathobiology

1. Applicants must have completed the B.S. degree from an accredited college or university.
2. Applicants with a MS degree will be given priority for admission
3. Cumulative GPA of 3.0 or better.
4. Completed Online Application and Application Fee.
5. Official Transcripts from all colleges/universities (International Students must have transcripts through World Education Services –WES).
6. GRE Scores at least 540 (old) or 156 (new), less than 5 years' old.
7. TOEFL scores is required from all international students whose medium of instruction at the undergraduate level was not in English.

8. Personal Statement.
9. Three Letters of Recommendation.
10. Resume or Curriculum.

Doctor of Philosophy in Integrative Public Policy and Development

1. Admission to the IPPD Ph.D. Program is determined by six IPPD Faculty m e m b e r s on the Student Selection Committee and by the IPPD Dean's Council. The IPPD Program Office and the Office of Graduate School and Research then communicate admission to the candidates.
2. Candidates must have completed the B.S./B.A. and/or Master's degree in areas related to Integrative Public Policy, e.g., the Political Science, Economics/Agricultural Economics, Sociology/Rural Sociology, Anthropology and other related Social Sciences. If deemed necessary, the student may be required to take additional prerequisite courses.
3. Competitive candidates for admission should have a cumulative grade point average (GPA) of at least 3.00 or higher in all previous studies, a GPA of 3.4 in upper division courses.
4. Three letters of recommendation from faculty or others who have known the student in an academic or research capacity.
5. GRE scores.
6. A resume or curriculum vitae documenting previous research or teaching experience, and a statement of interest, which details the applicant's goals and potential research focus areas are required as part of the application.

Doctor of Philosophy in Materials Science and Engineering

1. Applicants must have a Master's degree in Materials Science and Engineering or related disciplines from college or university to be considered for the Ph.D. program in Materials Science and Engineering.
2. Prerequisite academic work should provide evidence that the application shall be able to pursue the graduate course effectively.
3. Applicants must also have a cumulative GPA of 3.0 or better.
4. The minimum acceptable combined GRE score is 1000 (old) or 300 (new).
5. Official Transcript from all colleges/universities attended.
6. Completed Application along with the required amount of application fees.
7. 3 Letters of Recommendation.
8. Statement of Purpose.
9. GRE Scores.

Additional Admission Requirements for International Students

1. Evaluation of transcripts by the World Education Service (WES).
2. Scores of Test of English as a Foreign Language (TOEFL), if the applicant has received an undergraduate degree from the program that is not offered in English.

Requirements for issuance of I-20 for International Students

1. Bank Statement.

2. Affidavit of support for yourself & dependents (if any).

International students who are granted admission to the Graduate School may consult with Tuskegee University's Office of International Programs regarding US residency and visa requirements.

c. Admission Status

1. Regular Graduate Status

Students who are approved to work toward a graduate degree at Tuskegee University are designated as regular graduate students. For all programs except IBS and IPPD, each student will be assigned a temporary advisor to guide them through the first semester. Students are encouraged to choose a permanent advisor by the second semester. Students accepted into IBS I P P D Programs have one academic year to select two (2) co-mentors who, together with an advisory committee, outline student's program of study.

2. Conditional Graduate Status

A graduate with the bachelor's degree from an accredited or approved institution who possesses the necessary u n d e r g r a d u a t e preparation i n the field in which study is intended and who has a minimum cumulative grade point average of 3.00 may be admitted with full graduate status.

A student who has (1) a deficiency in curricular requirements in the field in which study is desired, or (2) a deficiency in admission requirements set by the college or department, or (3) a cumulative grade point average less than 3.00, upon the recommendation of the Department Head and College Dean, may be admitted as a conditional student after approval of the Dean of Graduate School.

A student may advance from conditional graduate to full graduate status upon the recommendation of the Head of the Department/Director of the program and approval by the Dean of Graduate School. To apply for a change from conditional graduate to full graduate status, the student and the Major Professor must submit the ***Change from Conditional to Regular Status Form*** to the Dean of the Graduate School.

3. Non-Degree Status

Admission in this category is restricted primarily to students who may benefit professionally from additional study at the graduate level. These students may subsequently apply for regular admission to Graduate School. Courses taken as a non-degree student may be used for fulfilling the requirements of the graduate degree.

III. REQUIREMENTS FOR REGISTRATION

A letter of acceptance from Tuskegee University's Office of Graduate School i s s e n t to applicants, who qualify for full or conditional admission. The letter contains "conditions" upon which the applicant is accepted. Unless specifically stated,

acceptance to the Graduate School implies that the applicant is capable of defraying the cost of the Graduate Program under consideration.

a. Initial Registration

After receiving the official notification of admission, and upon arrival on campus, the student should report to the relevant department. Each incoming graduate student will be assigned a temporary advisor for guidance until the student selects a permanent advisor (Major Professor). Registration is the process by which one becomes enrolled as a student at Tuskegee University. There are two steps for the process: (1) the completion and filing of registration and informational forms, and (2) the payment of tuition and other fees for various purposes during a prescribed time.

The following are the student's responsibilities:

1. Become familiar with the University Calendar posted on the website (https: /www.Tuskegee.edu/). Familiarity with the Calendar makes the registration process easier.
2. Complete registration according to regulations. Student will not earn credit unless he/she files an official registration form with the Registrar.
3. Complete the Student Data Form. This form is critical to the registration process. Each student must provide correct information so that documents such as grades, registration materials, and billing statements reach Each student. Students who falsify information, particularly those who intentionally change address data to incorrect information, may be suspended from the University.
4. Consult with the appropriate academic advisor and obtain authorized signatures on forms as required in order to make certain that proper course sequences for the curriculum in which the student is enrolled are being followed.
5. Become familiar with the fee structure and inform sponsors/guardians, where applicable, of the fees required for enrollment. Students who do not complete their registration in accordance with the dates stated in the University Calendar will not be allowed to attend classes.

b. Selection of Advisory Committee

For all Graduate School except IBS and IPPD programs, each graduate student, at the beginning of the second semester of enrollment, must chose a Major Professor who will guide the student in choosing the appropriate course work and area of research. In consultation with the Major Professor, the student will select at additional members from the graduate faculty to serve on his/her Advisory Committee. Students enrolled in IBS and IPPD programs must complete a one-year rotation program, designed by the Department Head/Program Director, before completing this process.

It is the joint responsibility of the student and the Major Professor to make certain that a plan of graduate study is prepared and approved by the advisory committee, Department Head and, the College Dean at the beginning of the second semester of student's graduate study. The advisory committee approves any change in the student's plan of Graduate School with notification to the Dean of the college.

c. Course Load of a Graduate Student

A regular full-time graduate student should enroll in nine to twelve credit hours of graduate courses. The normal course load in Occupational Therapy is fifteen credit hours. This course load may be decreased by the student's advisor because of the nature of the courses to be taken, the academic record of the student, and the time to be devoted to research, teaching. A student requesting to take up to 15 credit hours must have an approval from the Major Professor and the Department Head/Program Director.

d. Certification as a Full-time Graduate Student

It is sometimes necessary that a graduate student be certified as a full-time graduate student. To qualify for such a certification, the student must carry a minimum of eight (8) semester hours. Many graduate students have work assignments in their departments, which enable them to continue their specialized programs. Under these conditions, six (6) semester hours plus their specialized activity (research, etc.) would qualify them for certification as full time. Additionally, students may be certified as full time if they are conducting full-time research when registered under "Continuous Registration."

e. Tuition, Fees and General Statement

The Office of Business and Fiscal Affairs releases information on tuition and fees for the upcoming academic year in January/February. All students are urged to meet this responsibility promptly or to make arrangements for payment to avoid being asked to withdraw and have their registration canceled.

Veterans of the Armed Forces of the United States studying under Chapter 31 of 28 U.S. Code have their educational expenses paid to the University by the Veterans Administration. These students receive directly from the Veterans Administration a monthly check for their living expenses. Tuskegee University does not extend credit for living expenses nor make any advances for personal expenses to veterans. These students are urged to make arrangements before coming to Tuskegee University to finance themselves for approximately three months. Students are encouraged to read the fees brochure carefully and direct any questions to the Office of the Bursar or the Office of Financial Aid Services.

f. Financing Graduate Education at Tuskegee University

The Office of Financial Aid Services at Tuskegee University manages financial aid and scholarship resources from the University, federal, state, county and private sources. The funds are awarded to ensure that the opportunity to attend the University is provided for eligible students. The Tuskegee University Financial Aid Program is designed to reward academic achievement and to provide financial assistance to supplement family resources. The primary responsibility for financing college expenses rests with the student h o w e v e r; the Office of Financial Aid

Services will do everything possible to provide financial planning assistance to students. We believe students should select Tuskegee University based upon educational considerations and not financial factors.

Students who have been admitted to Tuskegee University should write to the Office of Financial Aid Services for materials and procedures regarding financial assistance. EARLY APPLICATION IS ENCOURAGED. The priority deadline date to submit the Student Aid Report to Tuskegee University is March 31st of each year.

Student's Eligibility for Financial Aid

Students who meet the following criteria may be eligible for financial aid:

1. United States citizens or permanent residents of the United States.
2. Admitted in an approved degree-granting program.
3. Making satisfactory progress and in good academic standing as defined by the University.
4. Enrolled at least half time in an approved degree-granting program.
5. Have proof of compliance with Selective Service registration requirements.
6. Not in default on a Perkins Loan (formerly National Direct Student Loan) or Stafford Student Loan (formerly Guaranteed Student Loan).
7. Do not owe a refund on a Pell Grant or Supplemental Education Opportunity Grant.

Applicants for financial aid must have been accepted to Tuskegee University before an award can be made. Transfer students must have their former institution(s) send a financial aid transcript(s) to the University.

Financial aid to graduate students at Tuskegee University is divided into two general types: fellowships administered through the Office of Financial Aid Services and research and teaching assistantships administered by individual departments.

Each student who applies for admission to the Graduate School may also apply simultaneously for an assistantship and/or fellowship by writing a letter directly to the Head of the Department. Each applicant should forward all application materials, except recommendation forms, directly to the Office of Graduate School. Completed recommendation forms should be sent to the Head of the Department.

g. Enrollment of Graduate Students Receiving Financial Support

Graduate students holding the title of Research Assistant, or Teaching Assistant will be required to register during the fall and spring semesters. Students who have completed course requirements are required to be registered for the appropriate categories (courses numbered 700, 752, or 754). Students remaining in the Graduate Program during the summer session must register for at least the continuous registration course (course numbered 752).

Policies governing graduate fellowships and research or teaching assistantships are as follows:

1. Applicants should generally have at least a grade point average of 3.00 out of a possible 4.00 in both undergraduate and any prior graduate work.
2. Holders of fellowships or assistantships are expected to pursue a full-time schedule of courses and teaching or research assignments. They must maintain the scholastic standards established for graduate students in good standing. They must not otherwise be gainfully employed during the term of appointment. A student cannot hold more than one appointment during any given period of time.

3. Teaching assistantships are awarded for the academic year only, u n l e s s otherwise noted, while research assistantships/fellowships may be awarded for the calendar year.

Work Study Program

The College Work-Study program, under the Economic Opportunity Act of 1964, provides financial aid through employment of college students who otherwise may not be able to pursue college and graduate education without such aid. To qualify, students must meet the following requirements:

1. Come from a low- or moderate- income family unable to contribute significantly to their education.
2. Need this employment income in order to continue in college.
3. Be able to work up to 15 hours per week and maintain satisfactory grades.
   When classes are in session, students may not work more than 15 or more hours per week. When school is not in session or during vacation periods, students may work up to 40 hours a week.

h. Audit Courses and Non-Credit Courses

A student who wishes to audit a course must register in the course as an auditor. The registration form should show clearly that the student is auditing the specific course. A student may not later seek course credit for the course in which the initial registration was as an auditor, except by enrolling in the course at a subsequent date and pursuing it in the regular manner. Permission to enroll for credit in a previously audited course must be granted by the Dean of Graduate School.

Auditing privileges are not allowed in laboratory courses. The number of courses to be audited and the proportion of audited courses to the total number of courses for which the student may register should be determined on an individual basis. A student must also obtain the approval of the instructor and the Dean of the College where the course is offered.

If the advisor considers it necessary, a graduate student may register for certain courses for which graduate credit will not be received. A "non-graduate credit" course is any course taken by a graduate student for which graduate credit toward a degree is not

allowed either because of the level of the course or because it is a prerequisite for admission to graduate work in that area.

A student registered for a non-graduate credit course must complete all requirements of the course as though it were taken for credit. The instructor must submit a final grade for the non-graduate credit course as earned by the student. The non-graduate credit course may be counted toward a full schedule but may not be counted toward a degree.

The advisor will indicate the course or courses to be taken as non-graduate credit courses by writing "NC" to the right of the column designated "credit hours".

i. Procedures for Change in Course of Study

Any change in a student's class schedule is at the discretion of the major advisor. Changes in courses are permitted only during the normal period of time allowed for such changes. Credit will not be given for courses taken without proper authorization. Changes in a student's field or course of study will be made only upon the written request of the student's advisor. This written request must be presented to the Dean of the unit for approval. After the unit approval, the request is forwarded to the Dean of Graduate School for approval. Once approved, copies are sent to the major professor and the registrar.

j. Procedures for Dropping Courses

In order to officially drop courses, the student must complete the Change -in-Registration Form, which must be signed by the Major Professor, pay the required fee and deposit the form in the Office of the Registrar; otherwise, the student will receive a grade of "F" in the course if he/she attended some classes or "Y" in any course the student never attended. Dropping courses must be done in accordance with the date published in the University Calendar.

k. Procedures for Withdrawing from Tuskegee University

A graduate student who withdraws from Tuskegee University will receive no credit for the courses enrolled in unless all of the requirements for those courses have been met and permanent letter grades have been recorded by the instructor(s) of those courses. In addition, the policy under GRADING SYSTEM shall be enforced and shall be taken into consideration when the student applies for readmission. A written request from the student's advisor must be filed through the Dean of the College in which the student specializes and wi t h t h e Dean o f Graduate School . To r e -enter the Graduate School, the student must petition the Dean of the College and the Dean of Graduate School and file an application for readmission.

l. Procedure for Change in Department

A student may change from one department to another within or outside the College provided the department to which the student wishes to transfer is prepared to accept him/her. The student should execute the usual Change-in-Major form and file it in the Office of the Registrar. A new advisory committee and plan of study must be submitted to the Dean of Graduate School through the appropriate channels.

m. Change in Area of Specialization, Major Professor or Member of Advisory Committee

Change in the area of student's specialization within the department, Major Professor or members of the advisory committee, may be approved only by the Dean of the College in which the student is enrolled. The Deans of participating colleges must approve changes to IBS and IPPD Programs. Request for such change(s) must be submitted to the Dean of Graduate School with the approval of the academic Dean. In the event the approval cannot be secured, the student may petition for the change to the Dean of Graduate School who will make a decision on the basis of the information presented. A new plan of study may be necessary as a result of the change in the area of specialization and/or the Major Professor.

n. Off-Campus Research

A graduate student who wishes to conduct off-campus research work in connection with the thesis must have advance program approval from the advisor, College Dean, and the Dean of Graduate School. The student must maintain registration in the Graduate School under Course 700 and must pay regular fees during each session for which credit is desired.

Under certain conditions, graduate students engaged in off-campus research or work in the field may be permitted to register for courses not designated 700 research. The total of such hours acceptable vary from department to department but may not exceed four semester hours in any department. Such credits should also be approved in advance by the student's advisor and the Dean**. An off-campus advisor must be approved by the Dean of the College and the Dean of Graduate School**.

IV. ACADEMIC STANDARDS

a. Grading System

Tuskegee University and hence its units use a grade point average system abbreviated to two decimal places. Alphabetical grades and their corresponding grade point values are as follows:

A: 4 grade points per credit hour
B: 3 grade points per credit hour
C: 2 grade points per credit hour
D: 1 grade point per credit hour
F: 0 grade point per credit hour
Y: Unofficial Drop…0 grade point/cry
W: Withdrawal, not included in GPA
I: Incomplete, not included in GPA computation

The grading system for non-credit courses is as follows:

S – Satisfactory, U –Unsatisfactory, I -- Incomplete

The grade point average is computed for all graduate courses taken while enrolled at the University whether the courses are in the student's current curriculum or not, unless the courses are repeated. For Veterinary Medicine students, courses completed in the Animal/Veterinary Science program are excluded. No grade below "C" will be accepted for graduate credit. A graduate student who earns a grade of "C", "D", "F" or "Y" in any course carrying graduate credit may repeat the course. Only the highest grade earned as the result of repeating the course will be used in computing the overall grade point average.

b. Academic Standing

A student pursuing a graduate degree at Tuskegee University must maintain a "B" (3.00) average in all work included in the graduate program of study, with no more than **six semester hours of "C" grades.** Grades of "D" are not acceptable. If a student's grade point average falls below 3.0, it's the responsibility of the Department Head/Program Director to recommend to the Dean of Graduate School, with a copy to the academic dean, to place the student on probation for a period of one or two semesters. The Dean of Graduate School will designate the student as **probationary** and will immediately notify the student, Head of the Department, College Dean and the Registrar. If, at the end of the probationary period, the cumulative grade point average is not at least 3.00, the Department Head/Program Director will recommend to the Dean of Graduate School to dismiss the student from the graduate program in which he/she is enrolled.

A student who is dismissed may complete the courses in which he/she is enrolled and transfer to another graduate program at Tuskegee University with the approval of the Department Head, the Dean of the Graduate Program to which he/she wishes to transfer and Dean of Graduate School. The number of graduate credits transferable to the new graduate program will be determined by the new major professor and advisory committee and communicated to the Dean of Graduate School through the Department Head and the Academic Dean.

The graduate student who is dismissed from Tuskegee University may a l s o enroll as a non-degree student in courses higher than 500-level only with the consent of the instructor. The hours of credit the student earns in this manner may not be applied subsequently toward fulfillment of the requirements for a graduate degree.

c. Time Limit on Credit for Graduate Courses

Students pursuing Master's degrees have a maximum of six (6) years from the time of admission to complete the degree requirements. Students pursuing PhDs have a maximum of eight (8) years from the time of admission to complete the degree requirements. Graduate credits earned prior to the time limit stated above must be validated before using them to meet the candidacy or graduation requirement. Procedure for validating courses that have been outdated is as follows:

i. The student must submit a petition, through the Major Professor, Department Head and Dean of his/her college, to the Dean of Graduate School for validation of credits with a copy to the Registrar. The petition should list the courses offered by title and semester enrolled, course number, credits and grade earned.

ii. If Dean of Graduate School approves the petition, he/she appoints an examination committee to administer validation examinations in the courses for which the student seeks validation. The major professor is responsible for reviewing and validating courses in questions.

iii. The student pays a fee of $100 per credit hour and appears for the examination(s) at the time and place designated by the examination committee, within the given semester. Depending on the number of courses requested for validation, the student may require more than one examination period. The student must present a receipt for examination fees to the Dean of Graduate School prior to the appointment of a committee.

iv. The major professor submits the grades to the Dean of Graduate School who will forward them to the Registrar within 10 days of the examination(s), with copies to the Dean of the college, Major Professor and the Department Head. The examination report should list the courses offered by title, course number, credits, grade earned from examination, and signatures of the members of the examination committee.

Students seeking validation of courses must have earned a grade of at least "C" for each course and maintained a minimum cumulative grade point average of 3.00.

V. ADMISSION TO CANDIDACY

a. Requirements for admission to candidacy of Master's Degrees (Thesis and non-thesis option)

A student pursuing a master's degree with thesis or non-thesis option must apply for admission to candidacy of the degree, within 60 days after completing **15 credits** of graduate courses. Students pursuing a Master's degree in **Occupational Therapy** must apply for admission to candidacy of the degree after completing **30 credits** of graduate courses. Additional requirements are:

A minimum cumulative grade point average of
3.0 GRE scores approved by the Department.

The student may continue taking graduate courses, if advised by the major professor.

b. Requirements for admission to candidacy of Doctoral Degrees

The following are the requirements:

A minimum cumulative grade point average of
3.0 GRE scores approved by the Department

Successful completion of written qualifying examination administered by the department
Successful presentation of the research proposal (approval of all members of the advisory committee is required)

The student may continue taking graduate courses, if advised by the major professor.

VI. ACADEMIC HONESTY AND APPEAL PROCESS

a. Academic Honesty

Honesty in academics, as well as in other matters, is expected of everyone at Tuskegee University. It is the obligation of all to adhere to this standard. Individuals are expected not to cheat or be dishonest, not to create the appearance of being dishonest, and not to contribute to or condone the dishonesty of others. Dishonesty, such as cheating, plagiarism, forgery and/or manipulation of data, misrepresentation of data or knowingly furnishing false information to an official of the University will not be tolerated. The penalty could include failure in the course, invalidation of thesis/dissertation results and possible suspension or dismissal from the University.

When an instructor has reason(s) to believe that a student has been dishonest or has aided in dishonest acts, he/she immediately informs the student and follows up with a written statement of the charges to the student, the head of the department, Dean of the College in which the student is enrolled, and the Dean of Graduate School.

The Dean of Graduate School will appoint a committee of at least three persons to make a recommendation on the charges of academic dishonesty. The Dean of Graduate School will issue final action on charges and the penalty. Tuskegee University maintains the right to suspend or dismiss a student who has been judged guilty of academic dishonesty.

b. Appeal

A student has the right to appeal decisions regarding his/her academic performance or academic requirements. Before initiating a petition for appeal, the student should attempt to resolve the problem directly with the instructor, person concerned, and/or departmental faculty.

If the student has justification for an appeal beyond the departmental faculty or head of the department, he/she must submit a written statement to the Dean of the College who will outline procedures to resolve the matter. If the matter is not resolved, the student has the right to appeal to the Dean of Graduate School who will take a final action on the matter

VII. REQUIREMENTS FOR COMPLETION OF THE DEGREE

a. Master of Science Degrees with Non-Thesis Option and On-Line degrees

The student must be a candidate for the degree.

The student must have completed all courses for the degree with a minimum cumulative grade point average of 3.0.

The student must assist the Major Professor/Department Head in completing the Letter of Completion of the Degree Requirements and sending it to the Office of Graduate School.

b. Master of Science and Doctor of Philosophy Degrees

The student must be a candidate for the degree.

The student must have completed all courses for the degree with a minimum cumulative grade point average of 3.0.

The student must have completed all research required for his/her thesis/dissertation.

The student must have completed a research proposal and submitted to a funding agency, if this is a departmental requirement.

The student must have successfully defended the research work and done the necessary corrections suggested by the examination committee.

The student must assist the Major Professor/Department Head in completing the Letter of Completion of the Degree Requirements and sending it to the Office of Graduate School.

The student and his/her major professor must follow the steps outlined below to complete his/her degree requirements.

Action by	Action Performed
Student:	Discusses and corrects draft of thesis/dissertation and abstract as re commended by Major Professor and Advisory Committee.
	Obtains P r e l i m i n a r y Approval Sheet (PAS) f r o m the Dean of G r a d u a t e School.
	Obtains the signature of the Major Professor in the space provided on the
	PAS. Obtains the signature of the Dean of Graduate School on the PAS
Major Professor:	Requests t h e C o l l e g e D e a n ' s a p p r o v a l of t h e o r a l e x a m i n a t i o n and the C o l l e g e Dean forwards the request to the Dean of Graduate School, so that the necessary appointments may be made for the student's final oral examination. The request must meet the following requirements:
	1. Include a statement of place, time, day, and date of the

oral examination.

2. Be submitted to the Dean of Graduate School at least **one week** prior to the date of the examination.
3. Indicate the names of five members of the examination committee,

including those on the advisory committee. A majority of the members of the examination committee must be from the area of the student's specialization. Students are encouraged to complete their work in a timely manner so that oral examinations may be scheduled before the week of the regular final examinations. It is the responsibility of the Major Professor and not that of the student to arrange a convenient time for the oral examination.

Major Professor: Receives from the Dean of Graduate School statements of appointment for each member of the Examination Committee and five blank copies of the Examination Report. Distributes the appointment letters to the members of the Examination Committee. No member of the graduate faculty shall serve on the examination committee unless appointed by the Dean of Graduate School through a letter.

Committee: Holds the examination with the student on date announced by the Dean of Graduate School. Members sign the Examination Report indicating the results of the Examination and status of thesis/dissertation. Signatures of four out of five Members of the Examination Committee are necessary for the student to pass the final oral examination.

Major Professor: Returns Examination Report to the Dean of Graduate School no later than two weeks after the final oral examination. The Examination Report must be typewritten and each of the committee members should review and sign it.

Action by	**Action Performed**
Student:	Prepares final copy of thesis and abstract
	Submits five copies of the approval page with original **signatures**. One copy of the thesis/dissertation and one copy of the abstract go to the D e a n o f G r a d u a t e School.
Dean of Graduate School:	Reviews the thesis/dissertation and abstract and returns to student for final corrections if any.
Student:	Submits corrected copy to the Dean of Graduate School. If corrections have been satisfactorily made, the student will be instructed to make **six copies** of the thesis/dissertation, **six** of the **abstract**, and return all copies (one **original** thesis and **five copies**), along with **copy of binding fee receipt** to the Graduate School Office within **two working days**.

Dean of Graduate School:	Sends original abstract, original thesis and required extra copies to the Library for binding.
Dean of Graduate School:	Sends Letter of Completion and copy of Examination Report to the Department Head, College Dean, and the Registrar.

VIII. AMENDMENTS

Amendments to this Handbook are made by the Graduate Council with input from the Graduate Faculty, when necessary, and submitted to the Provost for approval.

APPENDIX - A

Samples of Cover Pages:

Farhan Sultana, MS

Kayla Diane Newman, MS

Dereck Hubbard, PhD

Kwame Kenyatta Matthew

Characterizing the Evolution of Rhizosphere Microbial Communities in Two Cultivars of Sweet Potato *(Ipomoea Batatas)* (L.) Grown in High Tunnel Houses

By

Farhana Sultana

A Thesis Submitted to the Graduate Faculty of Tuskegee University
in Partial Fulfillment for the Requirements of the Degree:

MASTER OF SCIENCE IN BIOLOGY

TUSKEGEE UNIVERSITY
Tuskegee, Alabama 36088
July 2017

EFFECT OF PEPTIDE TYROSINE TYROSINE ON FOOD INTAKE IN MALE SPRAGUE DAWLEY RATS

By
Kayla Diane Newman

A Thesis Submitted to the Graduate Faculty of Tuskegee University in Partial Fulfillment of the Requirements of the Degree:

MASTER OF SCIENCE IN VETERINARY SCIENCE

TUSKEGEE UNIVERSITY
Tuskegee, AL 36088
May 2017

SYNTHESIS AND CHARACTERIZATION OF NOVEL RESOLE PHENOLIC RESIN SYSTEM BASED ON LIGNIN EXTRACTED FROM DIFFERENT BIOMASS RESOURCES

By

Dereca Hubbard

A Dissertation Submitted to the Graduate Faculty of Tuskegee University
in Partial Fulfillment of the Requirements for the Degree:

DOCTOR OF PHILOSOPHY IN MATERIALS SCIENCE AND ENGINEERING

Tuskegee University
Tuskegee, Alabama 36088
July 2016

IDENTIFICATION OF CHEMICAL INHIBITORS FOR NOVEL THERAPEUTIC MOLECULAR TARGETS IN *HAEMONCHUS CONTORTUS*

By

Kwame Kenyatta Matthews

A Dissertation Submitted to the Graduate Faculty of Tuskegee University in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY IN INTEGRATIVE BIOSCIENCES

TUSKEGEE UNIVERSITY Tuskegee,
AL 36088

July 2016

APPENDIX-B

Samples of Signature Pages:

Farhan Sultana, M.S.,

Kayla Diane Newman, M.S.,

Dereck Hubbard, Ph.D.,

Kwame Kenyatta Matthews, Ph.D.

THESIS
APPROVED BY

_____
Major Professor

_____
Major Professor

_____
Dean College of Arts and Sciences

_____
Shaik Jeelani - Dean of Graduate School

FOR: FARHANA SULTANA

Student

_____

Characterizing the Evolution of Rhizosphere Microbial Communities in Two Cultivars of Sweet Potato *(Ipomoea Balatas)* (L.) Grown in High Tunnel Houses

_____
Title of Thesis

Thesis Approved by:

Major Professor Dean

of College

Dean of Graduate School

for

Kayla Diane Newman
Student

EFFECT OF PEPTIDE TYROSINE TYROSINE ON FOOD INTAKE IN MALE SPRAGUE DAWLEY RATS

Thesis Title

DISSERTATION APPROVED BY Major

_____
Professor, Dr. Mahesh Hosur Committee

_____
Member, Dr. Shaik Jeelani Committee

_____
Member, Dr. Adriane Ludwick Committee

_____
Member, Dr. Mary Moore

_____
Committee Member, Dr. Vijaya Rangari

_____
Committee Member, Dr. Alfred Tcherbi-Narteh

_____
Dr. Heshmat Aglan, Dean, College of Engineering

_____
Dr. Shaik Jeelani, Dean of Graduate School

for

Dereca Hubbard

SYNTHESIS AND CHARACTERIZATION OF NOVEL RESOLE PHENOLIC RESIN SYSTEM BASED ON LIGNIN EXTRACTED FROM DIFFERENT BIOMASS RESOURCES

DISSERTATION APPROVED BY: Dr.

Olga Bolden-Tiller, Major Professor Dr.

A. Deloris Alexander, Major Professor Dr.

Marcia Martinez, Committee Member Dr.

Marceline Egnin, Committee Member

Dr. Albert Russell, Committee Member

Dr. A. Deloris Alexander
Director, PhD Program (IBS)

Dr. Ruby Perry
Dean, College of Veterinary Medicine

Dr. Walter Hill
Dean, College of College of Agriculture, Environment, and Nutrition Sciences

Dr. Channapatna Prakash
Dean, College of Arts and Sciences

Dr. Shaik Jeelani
Dean of Graduate School

For

Kwame Kenyatta Matthews

IDENTIFICATION OF CHEMICAL INHIBITORS FOR NOVEL THERAPEUTIC MOLECULAR TARGETS IN *HAEMONCHUS CONTORTUS*

APPENDIX - C

Samples of Abstracts:

Farhana Sultana, M.S.,
Kayla Diane Newman, M.S.,
Dereca Hubbard, Ph.D.,
Kwame Kenyatta Matthews, Ph.D.

ABSTRACT

Characterizing the Evolution of Rhizosphere Microbial Communities in Two Cultivars of Sweet Potato *(Ipomoea Batatas)* (L.) Grown in High Tunnel Houses

By

Farhana Sultana

The rhizosphere is of central importance for plant nutrition, health and quality. Microorganism- driven ecosystem fu n c ti o ni n g and nutrient cycling occur here. A multitude of treatments are assumed to affect the growth and physiology of the plant, but the impacts on the structural and functional diversity of microbial communities in the rhizosphere is poorly understood.

A field experiment w a s conducted t o evaluate the influence of different c u l t i v a r s , trellising treatments and plant developmental stage on sweet potato rhizosphere microbial communities. This study was conducted in high tunnel houses at S&B farm at Eufaula AL in 2015. The study was arranged in a 2 x 3 factorial design with a bed size was 16' x 2' and sample were replicated three times. The microbial communities of the samples were identified using Misses illumine DNA sequencing with primers for bacterial and fungal i d e n t i f i c a t i o n . Subsequent bioinformatics analysis was carried out to assess taxonomic, alpha, and beta diversity indicators. In contrast to cultivar and trellising, p l a n t developmental s t a g e showed a significant impact on the sweet potato rhizosphere microbial community. In cultivar Carver, microbial richness was significantly high (level of significance 0 . 0 0 5) than cultivar TU1892. No significant difference was found in trellising (level o f significance 0.32) and n o n -trellising treatment (level o f significance 0.86). Moreover, in maximum leaves plant developmental stage the microbial diversity, richness and evenness were highest than tuber root initiation and harvest time. *Proteobacteria* was the most

dominant phylum was found and it was accounted 45% of bacterial phylum. *Alpha proteobacteria*

was the largest classified class and it was comprised the 25% bacterial class. The genus *Bacillus* was the most abundant b a c t e r i a in the sweet potato r hi z os p h er e of all treatments and were increased significantly i n plant growth stage and it helps plant for phosphorus and potassium solubilization a n d protects plant from plant pathogens. Nitrogen fixing bacteria *Rhizobium, Azospirillum, Bradyrhizobium, Mesorhizobium* were significantly increased in plant growth stages. Nitrifying bacteria *Nitrosomonas and Nitrosococcus* were significantly decreased in trellising treatment. However, *Nitrosomonas* and *Nitrobacter* significantly increased in plant growth stage. For fungi, result showed that plant developmental stage had a significant influence on the fungal community of sweet potato rhizosphere. Fungal richness, evenness and diversity was high in cultivarl892 than cultivar Carver and the level of significance was 0.04. For, fungal diversity, richness and evenness were found more in non-trellising treatment (P value= 0.0000 I) and the plant d e v e l o p me n t a l stage. This i n d i c a t e s that plant d e v el o pme n t a l stage h a d a significant effect on the microbial community o n sweet p o t a t o r h i z o s p h e r e . *Ascomycota* was the most dominant phylum was found for fungi and it was found 68% of fungal phylum. *Sordariomycetes* was the largest classified class and it was found the 33% bacterial class. This study showed that sweet potato cultivation would be beneficial for soil fertility.

ABSTRACT

EFFECT OF PEPTIDE TYROSINE TYROSINE ON FOOD INTAKE IN MALE SPRAGUE DAWLEY RATS

By

Kayla Diane Newman

Peptide YY (PYY) is a 36 amino acid peptide that is secreted throughout the distal small intestine and the large intestine by the endocrine L cells in response to a meal. There are two biologically active forms of PYY. PYY 1-36 and PYY 3-36. Peptide YY 1-36 undergoes alteration in the blood by the enzyme dipeptidyl peptidase IV to create PYY 3-36. Physiologically, PYY 1-36 increases food intake and PYY 3-36 decreases it. The current work tested the hypothesis that the gastrointestinal tract contains sites of action that control increased food intake by PYY 1-36 and reduction of food intake by PYY 3-36 in two different age groups of male Sprague Dawley rats. To test this hypothesis, we performed three experiments. First, we injected PYY 1-36 and PYY 3-36 (0, 1, 10, 25, 50 and 100 nmol/kg) in the aorta, the artery that supplies the gastrointestinal tract, in 12-week old rats. Second, we injected PYY 3-36 (0, 1, 5, 10 and 20 nmol/kg) in the aorta in 44-week old rats and measured food intake. Third, we quantified Fos-like immunoreactivity (Fos-LI, a marker for neuronal activation) in the area postrema (AP), nucleus tractus solitaries (NTS) and dorsal motor nucleus of the vagus (DMV) of the hindbrain and the myenteric and submucosal plexuses of the duodenum, jejunum and ileum. In the young rats we found that PYY 1-36 (100 nmol/kg) increased first meal size (MS), prolonged the first intermeal interval (IMI, time between first and second meals, 1 and 50 nmol/kg) and increased the latency to the second meal (1, 25, 50 and 100 nmol/kg), whereas PYY 3-36 (100 nmol/kg) decreased second MS, first satiety ratio (amount of food consumed per unit of time (IMI/MS), 10 and 100 nmol/kg) and duration of the second meal (25 and 100 nmol/kg) relative

to saline control. In the old rats we found that PYY 3-36 decreased the first MS (5, 10 and 20 nmol/kg), shortened the first IMI (10 nmol/kg), decreased the second satiety ratio (5 nmol/kg) and decreased the duration to the first meal (10 nmol/kg) relative to saline control. In addition, in the old rats PYY 3-36 increased Fos-LI in the AP, NTS, and the DMV of the hindbrain and in the myenteric and submucosal plexuses of the duodenum and myenteric plexus of the jejunum. In conclusion, the results of study suggest that the gastrointestinal tract contains sites of action that regulate the feeding responses evoked by both forms of PYY.

ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF NOVEL PHENOLIC RESIN SYSTEM BASED ON LIGNIN EXTRACTED FROM DIFFERENT BIOMASS RESOURCES By

Dereca Hubbard

Resole phenol formaldehyde resins have been widely used in several applications due to their outstanding physical and chemical properties such as their flame retardancy, solvent resistance, thermal stability, and rigidity. However, major concerns have been associated with the synthesis of resole phenol formaldehyde resins. One of the concerns relates to the toxic effects of phenol and formaldehyde chemical precursors on the human body. In order to reduce the risks associated with the starting materials, numerous research studies have focused on renewable biomaterials such as, lignocellulosic, as partial replacement of phenol in phenolic resin synthesis. One of the goals of the current research proposal was geared towards extracting lignin from different lignocellulosic biomass sources and subsequently using it to synthesize modified phenol formaldehyde pre-polymers.

The unmodified control resole phenol formaldehyde resin was synthesized using phenol and paraformaldehyde in the presence of sodium hydroxide. The resulting phenolic material was reacted with paraformaldehyde at a temperature of about 75-80° C for one hour, placed in oven with continuous vacuuming at 65 °C for 30 minutes, then finally cured using a multi-temperature cure schedule. New resins were synthesized following cure cycle using lignin as a partial replacement for phenol and reacting for two hours to obtain the pre-polymer. Different ratios of phenol to lignin used were: 40:60, 50:50 and 60:40 by weight. Formaldehyde used was the same for base resin and lignin based resins. In addition, cured novel resole phenolic-type resins were synthesized using commercial lignin and extracted lignin from flax and alfalfa fibers as partial replacement as phenol precursor for comparison. Differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) were

used to observe the thermal behavior of each extracted lignin and commercial lignin. It was found that commercial lignin had the greatest thermal properties followed by lignin extracted from flax fiber and alfalfa fiber. This proved that the thermal properties of lignin are dependent on its source. Thus, 40, 50, and 60 % of lignin from alfalfa fiber, flax fiber, and commercial lignin were used as partial replacements for the phenol precursor in the synthesis of the resole phenolic bio-resins. The resulting materials were subjected to thermogravimetric analysis (TGA) to observe the overall thermal stability and degradation properties of unmodified and modified resole phenol formaldehyde resins. Results from TGA scan and corresponding derivative weight loss thermogram (DTG) for various cured resole phenolic-type resin systems showed a three-stage decomposition profile. Significant mass loss in each system was observed in the following temperature regions; 100-300 °C, 300-600 °C, and above 600 °C. Introduction of lignin in the resin formulation decreased the overall thermal stability which led to lower decomposition temperatures and reduced amount of char yield at elevated temperatures compared to unmodified. Resole phenol formaldehyde resins with commercial lignin had the greatest thermal stability that was slightly comparable to the modified resin using lignin extracted from flax fiber. Finally, the E_a values of thermal decomposition were investigated from the resulting TGA data using the Flynn-Wall method. The E_a increased for all resin types, varying for each novel phenolic-type systems, and never remained constant. This observation is explained by the magnitude of the E_a values have a significant influence on the extent of crosslinking of the complex resins.

ABSTRACT

IDENTIFICATION OF CHEMICAL INHIBITORS FOR NOVEL THERAPEUTIC MOLECULAR TARGETS IN *HAEMONCHUS CONTORTUS*

By

Kwame Kenyatta Matthews

Haemonchus contortus (H contortus) is the primary constraint affecting small ruminant production worldwide, due to increased anthelmintic resistance to all available anthelmintics. Investigating phospholipid synthesis pathways, such as the serine decarboxylase phosphoethanolamine methyltransferase (SDPM) pathway, can serve as a chemotherapeutic target for *H contorts* control. The SDPM pathway is unique to nematodes, protozoa, and plants, serving as a major route for supplying phosphocholine, and does not exist in mammals. Phosphoethanolamine methyltransferase (PMT) enzymes, I and 2, in *C. elegans* have been shown to be essential for nematode survival, growth and development and recently homologs to these enzymes were identified in *H contortus* (HcPMT I and 2). The objectives of this study were to 1) identify chemical compounds from the National Cancer Institute Developmental Therapeutics Program Open Chemical Repository that would inhibit the activity of CPT I and 2 in *H cantor/us* and 2) determine the *in vitro* anthelmintic effects of chemical inhibitors of HcPMT 1 and HcPMT2, which are critical for phospholipid biosynthesis in *H contortus.* To fulfill objective one, the enzyme activity for a HcPMTI and protein mixture was measured following one-hour exposure to no compound (control), compounds national service center-668394, NSC-641296, NSC-323241 or NSC-158011 to determine S-adenoslyhomocysteine production, which is indicative of HcPMT1 and HcPMT2 enzyme activity. To fulfill objective two, NSC-641296 and NSC-668394 were tested in an *in vitro* assay at various concentrations and incremental levels to determine anti-• parasitic activity against third-stage larvae and adult *H contortus.* The result of objective one indicated that compounds NSC-668394 and NSC-641296 inhibited HcPMT I and 2 enzyme activity *(P* < 0.00001) compared to the control. Compound NSC-668394 inhibited enzyme activity 50%, 58% and 52%± 2.6% when used at 3, 5

and 7 f.! M, respectively and compound NSC-641296 inhibited enzyme activity 48%, 56% and 58%± 2.9% when used at 10, 12 and 14 f.! M, respectively. Compounds NSC-323241 and NSC-158011 showed no significant effect compared to control. In objective two, NSC-641296 resulted in a linear decrease in third-stage larval viability *(P* < 0.0001) when compared to untreated larvae

after 24 and 48 hours and resulted in a linear decrease *(P* < 0.05) in the percentage of very motile larvae and a corresponding increase *(P* < 0.05) in sluggish larvae. Consistent with these findings, there w a s a significant l i n e a r increase in non-motile larvae. Similar to larval viability findings, when adult *H c o n t o r t s* were exposed to NSC-641296 (2 - I 0 f.! M), there was a linear decrease in motility *(P* < 0.0001) compared to the untreated nematodes. NSC-668394 had no anti-parasitic a c t i v i t y against third-stage and adult H *c o n t o r t s* . In conclusion, compounds NSC-668394 and NSC-641296 effectively inhibited recombinant HcPMT I and 2 enzyme activity, suggesting that these compounds may be effective in the inhibition of the SDPM pathway *in vivo.* However, only NSC-641296 had significant anti-• parasitic activity against both larval and adult

H contortus. Collectively, these data suggest that this compound may be effective in the development of new anthelmintics that may be used in the goat industry to address *H contortus* anthelmintic resistance.