Cobb Research Lab News

A quarterly newsletter of the W. Montague Cobb Research Laboratory, Howard University

Volume 4, Issue 3 EDITOR: Dr. Fatimah Jackson WEBMASTER: Whitney Griffith SPRING 2017

CRL Director, Fatimah Jackson Named STEM Woman Researcher of the Year

On April 14th, Dr. Fatimah L.C. Jackson, (pictured at left) , Professor of Biology and Director of the W. Montague Cobb Research Laboratory was named Researcher of the Year for 2017 by HU-ADVANCE-IT at the 2017 Women in STEM Researcher of the Year Award Ceremony. This honor is in recognition of the leadership, productivity, and research competence Dr. Jackson has exhibited since coming to Howard University in 2013. Dr. Jackson's efforts at Howard University build on an established and well-regarded career at the UMD-College Park and at UNC-Chapel Hill. However, since coming to Howard University, she has been able to amplify her research publications, bring in more external grant monies, and form important international collaborations that have greatly assisted in improving the quality and quantity of research and service done at the Cobb Research Laboratory

In addition to her prolific research and publication records, Dr. Jackson regularly mentors each year over 160 undergraduates and works intensely with 8 doctoral candidates as their primary advisor. She also works with several post-doctoral fellows and has recently begun to provide research mentoring for professional students.

We congratulate Dr. Jackson on this well-deserved award and we look forward to her continued exemplary productivity as a source of longstanding inspiration and merit. ****

Graduate Students Christopher Cross and Njlaa Bakhsh win prizes for Research Week Presentations

Two graduate students from the Cobb Research Laboratory have been awarded prizes for the high quality of their presentations at Howard University's Research Week. This is highly unusual for two awards to be presented to one research laboratory and attests to the hard work and dedication of the student researchers affiliated with the CRL. A total of 11 oral and poster presentations were contributed to Research Week by members of the Cobb Research Laboratory. (The titles of these are listed on page 6 of this newsletter and the abstracts are included in the latest issue of The *Backbone.)*

Christopher Cross' (L) award winning oral presentation was on A Historic African American Skeletal Collection Reveals Bacterial Infections

Njlaa Bakhsh's (R) award winning poster was entitled The missing landscape of human genomic diversity in the Arabian Peninsula. Congrats to both Chris and Njlaa for their outstanding presentations!

HIGHLIGHTS OF THIS ISSUE

- **CRL Director named Researcher of the Year at Howard University**
- **CRL Graduate Students receive awards for winning oral presentation and poster during Research Week 2017**
- **Workshop and DNA Collection event scheduled for April 26, 2017 at the Blackburn Center was a HUGE success!**
- **CRL Affiliate and Students inducted into Sigma Xi**
- **CRL celebrates it 85th Anniversary with a reception on May 5, 2017 at Stokes Library.**

Workshop and DNA Collection Event , April 26, 2017 at Blackburn Center, 9am-5pm: *Discovering African Genomic Diversity*

WORKSHOP AND DNA SCREENING

DISCOVERING AFRICAN GENOMIC DIVERSITY

Wednesday, April 26, 2017, 9:00 am to 5:00 pm,
Blackburn Center, Howard University

Help Build a Reference Genomic Database of Peoples of African Descent

Saliva Collections ● Scientific Talks ● Games and Prizes ● Entertainment

SPONSORS:

AN OFFICIAL PART OF RESEARCH WEEK 2017

HU-IRB Approval Number 17-MED-19

The research goal of the DNA collection is to generate a comprehensive African genomic reference database and the educational goal of the supplemental activities is to raise community awareness of the role of ancestry in the development of precision medicine as well as the microbiome present in the same individuals for whom we will have ancestry and health information. This will create the first African-descended human microbiome reference database and will allow researchers to evaluate the phenotypic impact of their microbiome status and its correlation with their genotype. The initiative to do this DNA collection at Howard University is expected to have important positive educational implications for the local community by elevating their knowledge of genetics, genomics, and Africa and increasing their interest in these topics and their relevance to identity, ancestry, and overall health.

Why is this project important?

African human genomic diversity is highly understudied and yet it forms the foundation for subsequent sophisticated applied work in genetics and genomics of relevance to people of African descent (e.g., pharmacogenomics, metabolomics, epigenomics, proteomics, gene-environment interactions, etc.). By developing a comprehensive African reference genomic database (our goal), we are providing an appropriate comparative foundation for future genetic and genomic research. In addressing the educational goal of increasing community awareness, we are developing a bridge between the scientists and the lay community and making the relevance of the science better known and appreciated. Over the past semester, the Cobb Research Laboratory has hosted an interdisciplinary team of scholars investigating mathematical and ecological models of African genomic diversity. This team has been charged with developing sampling algorithms for various ecological and ethnographic regions of continental Africa and the Diaspora. The initial purpose of the proposed workshop and DNA screening event is to provide actual genomic data from local African-descended individuals originally from various regions of continental Africa and the Diasporas to allow testing of these algorithms. Since the interpretation of genomic data does not exist within a vacuum, developing links with the various stakeholder communities will improve the quality of the research & bring more future scientists into the research process.

FACTS:

1.Almost all of the genomic research that has been done is on Europeans

2.Without a complete reference database of African genomic diversity, it will be impossible for people of African descent to benefit significantly from advances in precision medicine.

3. Currently, very little is known about the genomics of peoples of African descent.

4.We have a chance to change this here at Howard University by developing our own reference genomic database that we can make available to researchers all over the world.

Data on this microbiome will be analyzed along with the human genomic patterns data to provide a comprehensive set of information on a unique and heretofore inadequately represented population in the scientific literature.

The lack of adequate information on peoples of African descent has been a major disincentive to their participation in biomedical studies and genetic/genomic surveys. Through our outreach initiatives, we have already found support for the proposed Workshop and DNA Collection event with the Howard University African Students Association, International PALs, the Howard University chapter of Sigma Xi, Howard University's National Human Genome Center, and the departments of Human Genetics in the College of Medicine and Biology in the College of Arts and Sciences (Howard University). We are currently seeking links with additional community and university groups (e.g., Howard University's Caribbean Students Association, various local civic groups, embassies and cultural centers representing diverse countries from Africa, the Middle East, the Caribbean, Central and South America, etc.). Our aim is to broadly connect to the culturally rich communities of the greater Washington DC area to assure that our educational message is widely proliferated and sustained and that the research goal of creating a geospatially comprehensive database are realized .

What do we hope to accomplish with this project?

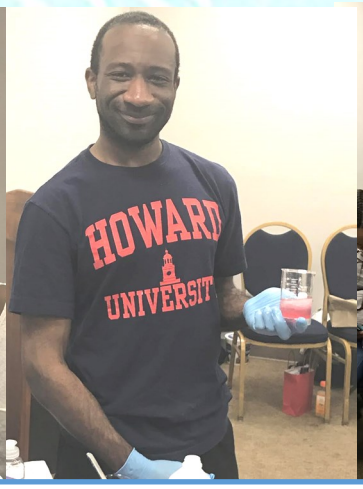
The following major educational and research goals and objectives of this project have been identified.

Goal 1: Broad community publication of the event and its significance; development of culturally-appropriate support materials for the Workshop and DNA Collection day activities; and representative sampling from all recent African-descended populations accessible within the greater Washington DC area. In addressing this goal, we hypothesize that contact and comprehensive sampling of African descended adults can be attained to adequately represent the existing genomic diversity among continental and Diasporic Africans (human and microbial DNA), and this can be paired with survey-based ancestral and health data.

Goal 2: Representative sample salivary microbiomes can be obtained from a cross-section of African descended adults along with their recent dietary data. Goal 2 is connected to Goal 1 and employs the same collection strategy applied to address Goal 1.

Goal 3: We hope that a significant subsample of these salivary specimens can be sequenced genomically (using next generation sequencing) to reflect the human and microbial diversity present in this unique population sample and the results made available to the participants (as well as to us for database creation).We anticipate that participant access to their personal data will further stimulate their interest in genetics, genomics, and Africa and enhance their willingness to participate in future studies. This is very important since peoples of African descent are underrepresented in biomedical and clinical trials and therefore do not proportionately benefit from advances in science.

Goal 4: A database can be constructed using SQL to systematically display the research results and provide easy access for subsequent hypothesis testing and advanced genomic analyses. This database will be made available to all qualified researchers so that the results of the Workshop and DNA Collection event are broadly available and the data cited in forthcoming literature. Comprehendible summaries of the database will be made accessible to the public and each participant will be given an interpretation of their ancestry results that locates them among the other participants in the Workshop and DNA Collection initiative. Goal 4 therefore encompasses a research database in SQL and an interpreted user-friendly database summary for use by the public.



UPDATE! The Workshop and DNA Collection event was extremely successful! We expected 200 participants and attracted over 600 with a dozen on the list for a Fall version of the event.

Join us for an evening reception to celebrate the
85th Anniversary of the W. Montague Cobb Research Laboratory

Friday, May 5, 2017
6:30 p.m. – 9:00 p.m.

Louis Stokes, Health Science Library
501 W Street, NW, Washington, DC

Black & White Attire

Please help support our research!
All donations are tax-deductible

For more information, please contact the Reception Co-Chairs:
Christopher Cross & Rita Okulu at CobbResearchLab@gmail.com

HOWARD UNIVERSITY
1867

85TH ANNIVERSARY CELEBRATION AND FUNDRAISER

FRIDAY, MAY 5, 2017 AT STOKES HEALTH SCIENCE LIBRARY, 6:30 PM TO 9:00 PM.

WASHINGTON (May 5th, 2017) – The Cobb Research Laboratory will host the 85th Anniversary of the lab's inception dating back to 1932 with its founding by Dr. William Montague Cobb. In brief, Dr. Cobb was a renaissance man. After attaining his MD from Howard University, he went on to become the first African American to attain a PhD in biological anthropology, was elected president of the American Association of Physical Anthropologists, and wrote hundreds of articles and letters of influence. Dr. Cobb used his expertise to establish the Cobb Collection through Howard University's Department of Anatomy under Dean Numa Adams and then first African American President of Howard University, Dr. Mordecai Wyatt Johnson

A key event to note during the mid-20th Century was the unethical collection and use of Ms. Henrietta Lack's cells. Unlike this misappropriated use of her body, Dr. Cobb set an example of community sanctioned donations of African American remains primarily from the DMV, for the betterment of science.

Currently, the Cobb Research Lab is thriving under the leadership of Dr. Fatimah L.C. Jackson as its Director and Chief Curator. She has stimulated diverse research and training on the two skeletal and dental collections of the Cobb Research Lab, the New York African Burial Ground and the Cobb Collection. Under her leadership, she has brought funding from the National Park Service and National Geographic Society into the lab and secured a new residence for the Cobb Research Laboratory DNA Lab in Howard University's multimillion dollar state-of-the-art Interdisciplinary Research Building.

On the evening of May 6th 2017, from 6:30-9pm, we invite you to commemorate the momentous occasion of our 85th Anniversary at the Louis Stokes Health Science Library. During this time, we will highlight the journey of the lab's development from its inception to its contemporary activities. In addition, we will emphasize the research that's being done now and provide our guests an overview of future directions for the lab.

Attendance at the celebration is free and open to the public with online registration. Dress is business casual, black and white. The Cobb Research Laboratory is the humble beneficiary of Dr. Cobb's groundbreaking work and vision. Over the past three years, we have expanded upon his legacy and hope to continue to do so in the future. Consistent with Dr. Jackson's directorship, we have trained and provided research experiences for over 200 individuals including undergraduates, graduates, professional students, faculty and staff, and general community members, including K-12 and Senior citizens. Researchers have come from across North America, the Caribbean, Africa, Europe, Asia, and the Middle East to study at the Cobb Research Laboratory. Along with our international newsletter (Cobb Research Lab News) and our online scientific journal (The Backbone), we are making positive impacts on our university and on the research community as a whole.

We implore all attendees to channel their interests in the Cobb Research Laboratory into investment in our future. It is our ultimate vision to transform the laboratory into a well-funded and sustainable resource to permit top tier science using the best technology to conduct historical research on the ancestors of African-descended peoples. For registration and more information please visit: http://www.alum.howard.edu/cobbresearchlab_reception85

SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY

Congratulations to Dr. Latifa Jackson (top Left), Mr. Christopher Cross (middle Left) , and Mr. Clinton (bottom Left) on being inducted to join Sigma Xi, The Scientific Research Honors Society at Howard University!

Latifa was granted full membership and Chris and Carter were granted associated level membership.

Sigma Xi, The Scientific Research Honor Society is the international honor society of science and engineering. One of the oldest and largest scientific organizations in the world, Sigma Xi has a distinguished history of service to science and society for more than one hundred and twenty five years. Scientists and engineers, whose research spans the disciplines of science and technology, comprise the membership of the Society. Sigma Xi chapters can be found at colleges and universities, government laboratories, and industry research centers around the world. More than 200 Nobel Prize winners have been members. - See more at: https://www.sigmaxi.org/

NAACCR Albuquerque 2017

CONGRATULATIONS RITA!

Undergraduate CRL research assistant and biology honors student Rita Okolo has been invited to give a presentation of her honors thesis research on *Characterization of Cancers in the Cobb Collection: Historic Washington DC African American Population* at NAACCR 2017 Annual Conference in Albiquerque, NM in early June 2017. Ms. Okolo's research is beginning to receive well-deserved national attention and a copy of her report has been passed on to officials at the National Cancer Institute. NAACCR stands for the North American Association of Central Cancer Registries. The abstract of Rita's thesis will appear in *The Backbone(issue 3)* Spring 2017. ****

RESEARCH WEEK 2017 DRAWS A DOZEN SCIENTIFIC PRESENTATIONS FROM MEMBERS OF THE COBB RESEARCH LABORATORY

This years' Research Week at Howard University attracted contributions from 12 oral and poster presentations just from the Cobb Research Laboratory. These included two award winners (see page 1 of this issue) among the stellar presentations. This year, the presentations from the CRL were integrated with others from the entire university. Included in the list was research on:

- ◊ Comparative Analysis of DNA Extraction Techniques on DNA Yield from ancient teeth (by Post-doctoral fellow Dr. Latifa Jackson)
- ◊ Peer tutoring affects on low-achieving elementary school students (by undergraduate student Brionna Hines
- ◊ Creation of a Genomic Database from New York African Burial Ground Soil Samples (by doctoral graduate student Carter Clinton)
- ◊ A Historic African American Skeletal Collection Reveals Bacterial Infections (by doctoral graduate student Christopher Cross)
- ◊ Reconstruction of the early population history of Africans in the Americas through St. Helena Island (South Atlantic) and New York City (by doctoral graduate student Gretchen Johnson)
- ◊ Assessment on the Resurgence of Rickets and Scoliosis on African Americans (by undergraduate student Khristian Ifill)
- ◊ The missing landscape of human genomic diversity in the Arabian Peninsula (by doctoral graduate student Njlaa Bakhsh)
- ◊ Association Between Location and Hypertension Among Individuals in the Cobb Collection 70 Years Ago to Present, A Statistical Approach (by undergraduate student Tamea Williams)
- ◊ The Establishment of the Cobb Research Lab's Information System (by undergraduate student Whitney Griffith)
- ◊ Osteological Expression of Tuberculosis within The Cobb Collection (by undergraduate student Zhenhong Chen)
- ◊ Cancer in an Historic Washington DC African American population (by undergraduate student Rita Okolo)
- ◊ Exploring the Effects of Ancestral Genetic Composition on African American Identity (by Professor Dr. Fatimah Jackson) ****

CRL researchers Miriam Mohammed and Adetomiwa Victor Owoseni launch *Backbones to Life* Series of Children's Books on the New York African Burial Ground Individuals.

By Adetomiwa Victor Owoseni

Skeletons from the New York African Burial Ground are being breathed to life through children's books, coming from the W. Montague Cobb Research Lab and accompanying students. The "Backbones to Life" series, a collection of books designed for younger elementary school children, will unfold the stories of Africans in New York City during the 18th century.

Named after "*The Backbone*," official journal of the Cobb Research Lab, the series aims to educate children through narrated accounts about the history of slavery in America and how effects of that period were recorded into the very bones of Africans remains. However, the stories highlight the resiliency of African peoples and ways in which they constructed solutions to problems for their own communities, using knowledge from their traditional backgrounds.

STEM and history also play a role in creation of the stories. Written to be factually accurate, the series will be the product of in-depth research done on the remains of the NYABG and lives of Africans in colonial New York. In addition to being used in its formation, science and history will spring from the pages as well. A time warping from present scientific research on remains and incorporation of actual historical content will educate the reader while entertaining them and also promote an interest in STEM fields.

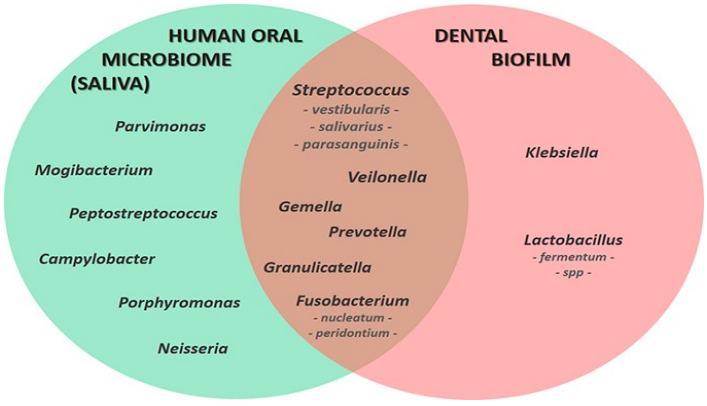
In all, the "Backbones to Life" series is designed to fill a need of our younger generation to understand the history of African presence in America and learn to utilize the past as a source of wisdom. The books are being written and developed by two current Howard University students, Adetomiwa Victor Owoseni and Mariam Mohammed, under the direction of Dr. Fatimah Jackson, head of the Cobb Research Lab. "These books are bringing to life the stories of our ancestors," said Dr. Jackson, "and hopefully they can uplift our children as well."****

What research can be done with the salivary microbiome?

There are, on average 10 mines more bacterial cells than human cells in the human body. The presence of these nearly 100 trillion bacterial cells is not inconsequential. They influence our immune response, nutrient absorption, weight retention, and many other health aspects. Of these 100 trillion bacterial cells, there are about 1000 different species. Some are in a synergistic relationship with their human hosts while others are beneficial and others detrimental to human health, depending upon the balance they present to the human body. Bacterial communities may vary between individuals and across populations and thus be a major contributor to human biodiversity.

The Cobb Research Laboratory is collaborating with colleagues at Howard University and the University of Maryland to study the microorganisms in human saliva. We just completed the first stages of the collection of saliva from nearly 600 individuals during the recent Workshop and DNA Collection event. Oral microbiomes have been correlated with cardiovascular disease, pneumonia, stroke, and preterm birth. The oral microbiome is also influenced by such external factors as food and dental status and there is a high degree of between individual variations in the oral microbiome.

We hope to study how the structure and diversity of the oral microbiome varies across healthy human hosts of different ancestry and in different seasons. Dr. Courtney Robinson of the Department of Biology will be leading many of these studies. ***



https://www.intechopen.com/books/microbial-biofilms-importance-and-applications/the-role-of-human-oral-microbiome-in-dental-biofilm-formation

Cobb Research Laboratory to conduct anatomical research at University of Toronto in May 2017

Gretchen Johnson and Christopher Cross will be conducting research at the University of Toronto this upcoming May 2017. Development of a less invasive technique to retrieve the petrous bone from the human skull will be developed in collaboration with a team of researchers at the University of Toronto. The establishment of this technique is fundamental as it will be utilized for upcoming ancient DNA studies on skeletal remains in St. Helena. Additionally, this technique is paramount to future ancient DNA studies and biomedical engineering applications in forensic anthropometric and anatomical analyses." ****