



PROFILES IN SCIENCE ENGAGEMENT WITH FAITH COMMUNITIES

Fatimah JACKSON

Fatimah Jackson is the Director of the W. Montague Cobb Research Laboratory and Professor of Biology at Howard University. We spoke with her about the complementarity of Islam and human evolution, involving and empowering community members in research, and how to do scientific justice to human remains. Photos courtesy F. Jackson.

How does your work intersect with scientific, ethical, and religious issues?

I am a Professor of Biology at Howard University and Director of the W. Montague Cobb Research Laboratory, which holds three collections of African and African American skeletal and dental remains. It is the largest collection of African and African American skeletal and dental remains in the world, and being a collection of human materials, issues of ethics and religious beliefs as well as science all come into play.

I'm also a practicing Muslim and have given lectures on human evolution in Islam, and I have worked with fellow Muslim scientists to discuss how one can maintain religious faith while remaining true to the science.

My research for the last 20 years has looked at population sub-structuring. We often paint other people in broad strokes; we see nuance and variation in ourselves and our own people, but we don't see it in others. This has been particularly damaging for people of African descent in the Americas. I'm interested in how genomic structures can preserve evolutionary uniqueness and how that in turn can benefit the entire species. I don't want to lose that uniqueness, and I'd like to study it some more through our skeletal and dental materials, but also through living human populations.

How do you view the relationship between Islam and human evolution?

For me, it seems like a natural continuity between the often symbolic aspects of Islam and the factual nature of science. I was surprised to meet a lot of resistance, but it forced me to look at my faith system and try to understand it at a deeper level—trying to form the religious beliefs as metaphors and analogies rather than literally taking the religious words from the Quran and also, looking in the Quran for hints that would accommodate the current scientific message.

It's a two-pronged approach; I'm interested in finding Islamic caveats that open the door for more profound scientific thinking, and then also looking for things in the religion that, to optimize their reading, people should probably take figuratively rather than literally. Sometimes the metaphor approach is richer than being a literalist, and Islam and modern science can merge to present a holistic view of humanity. I feel that if we leave out the religious belief, we're less human; a very important aspect of being human is to have faith and to have belief, but the science is absolutely essential for our wellbeing as a species, so we should be able to reconcile the two. But it means that we've got to have a little bit of flexibility, you know?

Unfortunately, we as scientists have not done a good job at explaining what evolution is and decoupling it from atheism—it's really not about religion at all, it's about the natural world. It's taken on this aura of anti-God atheism that is really unfortunate because the two issues are separate, and most religious thought doesn't speak in depth about the natural world. Islam is pretty rich, but the Quran is not a science book, it's a book of faith and belief. We're told to look at the natural world to reaffirm our faith in a higher creator, and that makes sense to me, but for some reason, sometimes people feel that

nothing new should be discussed in science if it appears to contradict or to challenge the religious text. I am a strong believer that God gave us brains to use, so we should use them and we should challenge old ideas to grow as a species.

What advice would you give a scientist who isn't Muslim, but who wants to effectively communicate to Muslims on the topic of evolution and Islam?

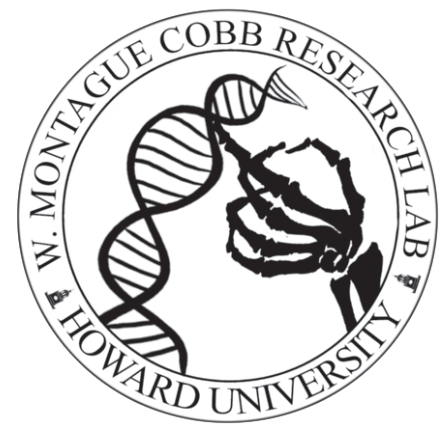
First, they should explain what evolution is, so that everyone is on the same page. We're simply talking about change over time and in response to various natural processes. A lot of evolution is random—some things are directed, but they are directed by natural processes. That's all they need to say. And then, if they can find passages in the Quran that support the general premises of evolution, that's very good. For example, one of the names for Allah is that he is al-Ibadi, the Evolver. If he's the Evolver, then that means things change. We say that everything changes except Allah.

There are many discussions in the Quran that hint at things that we now understand as fundamental parts of science. There are passages that talk about sinners being given their book in which all of their deeds are recorded, but it will all be written in numbers. When I heard that, I said, "My God, that's binary code!" You can convey the importance and naturalness of science by bringing it into the existing worldview of your audience, and if that worldview includes the Quran, then you find the passages that give you an opening for discussing science, and change over time specifically.

How do you view public science engagement?

Scientific communication at its best is transformative and meets the people where they're at. When I was teaching science education in Tanzania back in the 1970's, I was asked to teach concepts in physics, and I wondered how I was going to get these concepts across. Then I realized that people would understand the speed of sound if I talked about drumming in one village being heard 5 miles down the road in another village. It is possible to convey the fundamental aspects of all the science that we do in a cultural context that's relevant for the people. That's probably the most important thing that we do in science—to make it real and important for the people that we're speaking to.

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The logo of the W. Montague Cobb Research Laboratory.

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How do you encourage trust among the community that you want to work with?

You have to do the community education and outreach. For example, we wanted to create a database of DNA from living people so that we could place our historical samples in context. For us, it’s a little bit easier to get African Americans to participate because we’re here at Howard University, which is a historically Black university, but even with that, the community education and outreach are still very important. When we first began collecting samples from living people, we did community advertisements and education and contacted various campus and community organizations. We got buy-in from the African Students Association and the Caribbean Students Association.

Still, we expected to maybe get 200 people, if we were lucky, but on the day of the sampling, we got over 400. They just kept coming, and some were on their cell phones standing in line, saying, “Hey, you need to come to Howard, ‘cause you can get your DNA tested!” We gave presentations for the people that came—so they not only gave a sample, but also got to extract some DNA from a piece of fruit, and see and discuss that DNA.

Once the trust has developed, people are very eager to participate; it’s in cases where the trust has been abrogated that people feel distrustful and afraid. We constantly stay in communication with the participants; we try to issue bulletins, we have information on our website, we have multiple avenues for them to keep in contact with what’s the status of their sample and what they’re part of. We try to create the sense in the participants that they’re part of something bigger than themselves.

It can be challenging working with diaspora communities because we have been abused. Any population that has been abused is going to have some issues, and you have to address those issues head-on. Establish rapport, build the trust, and then maintain it, because it can relapse into feelings of oppression very easily.

You said you work on population substructure – what does that mean and why is it important?

I’ve been working on this since the 1990’s, around the time that the human genome project was getting started. We were asking

how the variation in humanity was going to be reflected in a very narrow human genome project. I wanted an alternative model to the racial model, because we did not want the genetics to recapitulate the racial model that we and our parents had fought so hard to overcome.

In my field, some people thought “We can just say that there’s no race.” Well, you tell the average American there’s no race, and they look at you like you’ve just told them the moon is made of cheese. They are seeing diversity, and they need a way to put a handle on that. So, we started looking at intrapopulation variation. But you can’t really tell the story of African Americans without the story of European Americans, or Native Americans, or Latinos. We are all interconnected in this hemisphere, and it is absolutely essential to understand the substructure if we’re going to make sense out of the genetics and understand regional patterns of genetic variability.

Then I started to encounter pushback as I published and gave talks about this. There was a resistance to the idea that African Americans would have substructure. It dawned on me that negating the population substructure was a way to presume that people were genetically homogeneous, so if you lost a few from the population, it didn’t matter as much. It decreased the value of any individual life. If you denied substructure, then you didn’t have to make a careful assessment of the separate entities; you could just take 5 Black people from Chicago, and whatever they were doing therefore represented all Black people. I began to understand the hidden politics and assumptions that distort our science.

For the first time in two million years, we only have one type of human on the planet. We want to maintain [our] existing diversity so we can forestall our species’ extinction, and we never know where that lifesaving genetic trait or cultural pattern is going to be located.

When I talk about substructure to Muslims who have read the Quran, I try to relate it to one of the passages that essentially says (with “we” meaning “God”), “We have created you into nations and tribes so that you’ll get to know each other, not so you’ll despise each other, and the best among you is the best with God consciousness.” It fits into the scientific rationale for my work, and there’s an immediate link. That’s what we in the science

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community have to build with nonscientists; you have to build these links so that they will embrace the science and use it appropriately.

What considerations inform your work on your lab's collection of skeletal remains?

We've initiated a protocol that helps to guide our interactions with the skeletal material. Everyone has to be CITI (Collaborative Institutional Training Initiative) certified in guidelines for ethical treatment of skeletal and scientific material, have signed a confidentiality statement, and then we make sure they're trained in the proper techniques for analyzing the sample. The samples are precious and irreplaceable. I think that those two terms "precious" and "irreplaceable" is the way we should interact with all humans, but the dead can't protect themselves the way living people can, so we have to be especially careful. We want to honor those individuals by conducting research on them. If the bones just sit in a drawer, they're deteriorating and it would be better to bury them with honor, but if we're actually doing high-class science on the bones, then we're making the bones talk. It's an active ethics—let's get to work with the best techniques possible to elucidate the most facts from these bones using the most minimally invasive techniques possible so that we can come back another day with even better techniques and get even more information from these individuals.

For us, it's all about doing the research, and if we're not doing the research then we don't deserve to keep the bones. But if we're asking questions and formulating answers, testing important hypotheses for the wellbeing of

living people, or getting historical insight that we would not otherwise have, then it's a good use. We do justice to the deceased people if we put their bones to good scientific use.

What ethical issues should one consider when doing similar work?

You have to maintain contact with the descendent community, because they ultimately have rights to those remains. The Cobb collection is 83% African American, so for us at Howard University, the descendent community is a community that we're in contact with anyway. Find out from the community what their research priorities are and try to be responsive to their requests. Sometimes their requests are above our scientific capabilities, but that's okay because it gives us something to aim towards.

We're doing outreach programs so people are aware that we have these bones and know about our research. I have internal and external advisory boards with community people on them, and we publish a quarterly newsletter about the ongoing research. We're just holding these remains, but they truly belong to the University and to the descendent community, and we should be using them to benefit the descendent community.

How do you approach student and community participation in your work?

In my experience, in 21st century science, you need interdisciplinary teams that communicate well where each person has a useful skill to add to the success of the

project. You need students; I believe the way that I have organized the Cobb Research Lab has been very effective. I have about 6 graduate students, and each of them is considered a project manager of their own project, and then the graduate students work directly with undergraduate students that are their advisees. In the community, we call this, "Each one, teach one." Each graduate student is responsible for 5 or 6 undergraduates who they are training in different techniques, sometimes even taking them into the field. The undergraduates learn how to do research by being actively involved in our DNA collection and interacting with the community. We've got a lot of hands-on training in place; these are future researchers who will be more adept at field and laboratory research than those who just sat in the classroom and never got out and got their hands dirty.

My position is, everybody does everything and then we'll let their skill level reveal what they are good at. All the people who have contributed to the success of the project get a chance at authorship on the papers; I really try and maintain that egalitarian approach.

I think this model can be expanded to include interested community members. And that participation brings a certain level of rights, and that's why we want the community to participate—so they can affirm their rights.



Fatimah Jackson with members of the W. Montague Cobb Research Laboratory.

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