Tell me about your research
My research seeks to understand the contribution of tau protein in Alzheimer’s disease. Tau is one of the proteins that builds up in the brains of people with this disease. Tau is best known for its role in microtubules, which are rail-like tracks supporting the transport of cargo in cells. However, tau is also found in other areas of the cell. While exploring this during my PhD, I found it was involved in the production of raw materials for building parts of the cell, the way bricks are used to build a house.

Tau is considered a drug target for Alzheimer’s and other types of dementia. It is important to know what else it does in case drugs targeting it have unintended side effects. My current research uses a basic science approach to understand how tau contributes to Alzheimer’s disease.

What motivates you?
The misconceptions around brain disease in my community while growing up led me to become fascinated with the brain.

When I worked in a Neuro-Psychiatric Hospital in Nigeria I encountered the view that dementia has spiritual causes, which affects the way sufferers are managed or if they seek care in hospitals. So I wanted to do research to help defeat dementia and address these misconceptions.

Are there any myths about your work which bother you?
The long-held view by many colleagues that tau’s main action is related to microtubules. We now know it has other roles which we need to understand to facilitate breakthroughs.

In an ideal world, where do you see your work in the future?
There is growing evidence ancestry affects Alzheimer’s development. Most research has focused on Europeans. We know little about how it develops in Africans, despite Africa’s genetic diversity. For example, research has shown that biomarkers like tau protein build-up are different in black and white people with the disease.

In an ideal world I see my future research dedicated to understanding these differences. This will be key to defeating dementia on a global scale.

About the artwork
The main page features Mahmoud in the lab while the tangles in the border represent the build up of tau proteins. The houses in the corners were inspired by how Mahmoud talks about raw materials in cells - Hana

This design & profile were created based on interviews conducted in late 2019 & early 2020. They are made available under a CC BY-NC-ND 2.0 UK license. Visit hanaayoob.co.uk/dementia for more information.