Animation Script

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Neurovascular Epidemiology with Dr. Timothy Hughes

To make the most out of this script, you could:

- Stick it in your notebook as a record of watching Tim's animation
- Pause the animation and make notes as you go
- Add your own illustrations to the sheet
- Create your own animation to accompany it
- Add notes from classroom discussions
- Make notes of areas you will investigate further
- Make notes of keywords and definitions
- Add questions you would like answered – you can message Tim through the comments box at the bottom of his article: **www.futurumcareers.com/neurovascular-epidemiology-with-dr-timothy-hughes**

SCRIPT:

Tim has always been curious about the world. Sports taught him the amazing potential of the body and how to work in teams. Science and meditation have impacted his sense of how the mind works.

Tim studied epidemiology, which looks at the causes of diseases, their patterns across populations and how to prevent them. He has applied this approach to understand determinants of brain aging. He is now a Professor at Wake Forest University School of Medicine in the US, specializing in neurovascular epidemiology and investigating how heart and brain health are linked.

Tim leads the MESA-MIND project, which explores how diseases that affect the blood vessels – such as high blood pressure and diabetes – contribute to Alzheimer's disease and related dementias.

Around 57 million people worldwide live with dementia, and almost 10 million new cases are diagnosed each year – a number that continues to rise as populations age. Most people who get dementia have a combination of Alzheimer's disease and vascular disease in the brain.

MESA-MIND combines magnetic resonance imaging (MRI) scans, which show vascular and tissue changes and shrinkage occurrences in the brain, with positron emission tomography (PET) scans, which highlight amyloid deposits – the protein clumps that lead to Alzheimer's disease.

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The study includes older adults who identify as Hispanic, White, Black, or Chinese Americans living in six cities in the US. To ensure that groups often excluded from dementia research are represented, the study conducts cognitive testing in English, Spanish, Mandarin, and Cantonese.

Researchers once thought that Black and Hispanic older adults might be at higher risk of Alzheimer's, but MESA-MIND has helped to show that these groups in the US do not have a greater risk for Alzheimer's disease specifically. Instead, people who developed dementia in these populations often have more vascular disease in the brain, which interacts with Alzheimer's-related changes.

A key focus for Tim is subclinical vascular disease – early changes in the blood vessels of the body and brain that happen long before a person notices any symptoms. Even though the person feels healthy, subclinical changes can be detected with advanced imaging. Treating subclinical vascular disease aims to prevent the development of problems before they cause dementia.

Controlling blood pressure is a powerful way to protect the brain. Blood pressure depends on many factors, including how quickly arteries stiffen with age. Tim has learned that the faster arteries stiffen with age, the more likely dementia-related pathologies build up in the brain, impacting its function and increasing the risk of dementia.

Tim and his team have begun clinical trials to see whether treating early vascular disease can help prevent Alzheimer's and related dementias. They are testing whether drugs already known to protect the heart can also protect the brain.

Now that you've heard Tim's story, what could you achieve as a neurovascular epidemiologist?

Let us know what you think of this educational and career resource. To provide input, simply scan the QR code or use this link: redcap.school.wakehealth.edu/surveys/?s=NPK347RYHCR3FNDC