



China

Zhou Wu

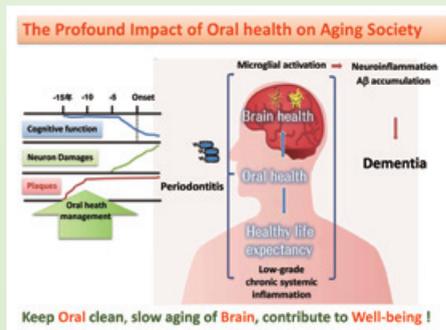
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My Research Interests

The impact of oral health on human well-being is a global concern. Normally, oral bacteria maintain their balance in the mouth and do not enter the bloodstream. However, gum disease can provide a port of entry for microbes and change the intestinal flora, especially during aging. Diseases and medications that reduce saliva flow can also disrupt the balance of oral bacteria, allowing them to enter the bloodstream. Research has shown that oral bacteria-induced gum disease (periodontitis) is associated with other systemic diseases, such as arteriosclerosis and diabetes. Recently, worsening oral health has been identified as a sequela of Alzheimer's disease, which is the major type of dementia in worldwide aging. I have found that microglia, the resident mononuclear phagocytes in the brain, induce age-dependent differential responses to chronic systemic inflammatory conditions, such as rheumatoid arthritis. We thus raised the hypothesis of "microglia-aging," which infers that microglia are the key accelerators of brain aging.

My research interests focus on clarifying the mechanisms of oral health on brain function. We have found that chronic systemic exposure to components of *P. gingivalis*, the major bacteria involved in periodontitis, induces microglia-dependent amyloid β plaque accumulation and results in cognitive decline, even in middle-aged animals. Moreover, oral infections with live *P. gingivalis* induced cognitive decline faster than with its components, suggesting that oral infections induce brain aging. We believe that maintaining good oral health will slow brain aging and contribute to well-being. I am also exploring natural solutions for slowing oral-brain aging.



Research design

My Career and Vision

I worked as a dentist in a university hospital for 10 years after graduating from a university in China. During my clinical experience, I saw patients suffering from various diseases and was sure that basic medical science could help guide their clinical course. I went on to pursue my Ph.D. in Japan because I remembered the excitement of basic medical science from my former mentor. The difficult training I received as a dental student taught me bravery and endurance in performing my Ph.D. research and during my postdoctoral fellowship at Kyushu University.

I have continued basic science research in Japan because many countries are entering an aging society, and Japan has already advanced to a super-aging society. My research concept is that maintaining oral health slows brain aging and contributes to well-being. I am also exploring natural cures to slow oral-brain aging. I believe that building a health longevity model in

Japan and communicating my findings to the world will contribute to global health longevity.

One of my favorite things about Japan is Japanese food. The food is made from fresh ingredients, has good natural flavors, and is beautifully presented. I enjoy improving my delicate sense of taste through Japanese food, which was listed as an entity in UNESCO's Intangible Cultural Heritage in 2013.



Collaboration with British researchers

Message for Students

I practice a round and straight philosophy: Round reader (read widely), straight speaker (speak simply), round eater (eager gourmand), and straight cook (cook simply). A spiral shape is formed by winding material straight and round, resulting in more flexibility and elasticity, helping you to spring up to higher ground in life. I am happy to share some of my wisdom gained through life experience: "Enjoy hardships to polish will, enjoy competitive relationships to polish sense, and enjoy friendships to polish heart." As someone who is constantly learning, I believe that "Today I am a reader, tomorrow I will be a leader!" Life with science is wonderful!



My favorite: Japanese food