Innovative Device Treats ‘Glue Ear’

NUS engineers have heard the cry for help of more than 700 million people worldwide threatened by impaired hearing annually, by inventing a device that quickly and effectively treats “glue ear” or Otitis Media with Effusion (OME).

The leading cause of hearing loss in children, OME is a condition where the middle ear becomes filled with fluid instead of air, due to causes such as genetics, allergies or a bout of flu.

Headed by Associate Professor Tan Kok Kiong, a team from NUS Electrical and Computer Engineering designed CLiKX, in collaboration with Adjunct Associate Professor Lynne Lim from NUS Yong Loo Lin School of Medicine, to improve current surgical treatment of OME.

The simple handheld device uses a sensor to safely insert almost any commercially available grommet into the patient’s ear with a single click in less than a second, minimising contact with the eardrum and reducing discomfort. The procedure requires only moderate sedation or local anaesthesia.

At a light 185g, the battery-powered gadget could also make grommet-placing surgeries more accessible for patients in underdeveloped regions.

The team plans to conduct the first clinical trial in Singapore in 2018.

Elderly More Generous with Strangers

Charity may begin at home, but an NUS study has found that older persons are also more likely to extend a helping hand to strangers.

The research, led by Assistant Professor Yu Rongjun from NUS Psychology and the Singapore Institute for Neurotechnology at NUS, sought to understand the motivation behind an increase in altruistic behaviour as they age.

Based on a framework known as social discounting, which assumes that people treat those they are closer to better, 39 older adults (about 70 years old) and 39 younger adults (about 23 years old) were asked to rate how much they would give to someone as a function of social distance.

The results showed that while both groups are equally generous to those they are close to, the elderly demonstrate more generosity towards strangers. Their level of generosity also does not decrease with distance as quickly as that of younger adults.

“Greater generosity was observed among senior citizens possibly because as people become older, their values shift away from purely personal interests to more enduring sources of meaning found in their communities,” explained Asst Prof Yu.

The team plans to use brain-imaging technologies to examine the neural mechanisms underlying shifts in decision making. The findings could be used in healthy ageing programmes, as well as help address age-related conditions such as Parkinson’s disease and Alzheimer’s disease.

Butterfly Colours Decoded

NUS scientists discovered that a butterfly has added red to its palette of wing colours in a bid to stave off possible enemies.

A team from NUS Biological Sciences has determined that the warning hue, potentially more effective in keeping predators at bay, is a new addition to the vibrant colours of the Painted Jezebel butterfly. Red originated within this group of butterflies.

Jocelyn Wee, a PhD candidate, and Associate Professor Antonia Monteiro conducted field experiments of the Painted Jezebel in Singapore.

Jocelyn created more than 300 artificial paper models depicting the Painted Jezebel with its wings held vertically over its body. She designed five variants of the paper models: a faithful colour replica of the butterfly, a greyscale model, as well as three more highlighting the red, yellow and black, respectively. These paper models were then placed at three sites and observed for signs of attacks from predators like birds.

The researchers noted that paper models emulating the real colours of the Painted Jezebel suffered the least number of attacks, followed by models with unaltered red patches, and models with unaltered yellow patches.

Jocelyn explained that red and yellow on the ventral wings of the Painted Jezebel serve as warning signals to predators, and “demonstrated how predators can play a critical role in affecting the evolution of warning colours within this particular butterfly genus”.

The Painted Jezebel butterfly is known for its vibrant red and yellow markings on the ventral wings. Red originated within this group of butterflies.

Age without Frailty

Half of older persons above the age of 55 living at home are frail, revealed the Singapore Longitudinal Ageing Studies, an ongoing long-term observational study which examines the overall health and ageing of a cohort of people above the age of 55.

Compared to their robust counterparts, the physically frail elderly had a much higher likelihood of becoming depressed or cognitively impaired, functionally disabled, hospitalised or dying prematurely.

However, the four-year Singapore Frailty Intervention Trial (FIT) by Associate Professor Ng Tze Pin from NUS Yong Loo Lin School of Medicine, revealed that a combination of nutritional, physical and cognitive interventions was able to reverse physical frailty in older people.

FIT looked at some 250 community-living people aged 65 and above in Singapore, who exhibited signs of physical frailty. Each participant was randomly allocated into one of five groups.

Four of the groups received lifestyle interventions — physical training, nutritional enhancement or cognitive training, and a combination of all. The last group did not receive any interventions.

The frailty of each participant was assessed before the start of the intervention, and at three months, six months and one year later.

The researchers found that better nutrition, physical training and mental exercises can reverse frailty, enhance muscle strength and gait speed, reduce depressive symptoms and improve cognitive functioning.

Based on the findings, Assoc Prof Ng’s team is working with the Geriatric Education and Research Institution and social service organisations to develop frailty screening and community intervention programmes that can help improve the well-being of senior citizens.