MEDIA RELEASE
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Flu vaccinations can work as effectively in the active healthy elderly compared to the young

Clinical trial results also suggest that immune responses to flu vaccinations in independent elderly individuals are not affected by their levels of frailty

Singapore – Scientists from A*STAR's Singapore Immunology Network (SIgN) and clinicians from Singapore's National University Hospital (NUH) have found that when it comes to influenza vaccinations, healthy elderly individuals are able to mount immune responses that are quantitatively and qualitatively similar to young individuals. This was discovered through post-vaccination measurements of the levels of antibodies in their body fluids. The research findings also suggest that antibody responses in the elderly, induced by the influenza vaccinations, are not impaired by frailty levels of these elderly subjects.

These findings show that elderly adults, regardless of frailty level, should be recommended to receive seasonal influenza vaccinations to protect themselves. This is in line with recommendations under the National Adult Immunisation Schedule[1] (NAIS) issued by Singapore's Ministry of Health (MOH), with recommended influenza vaccinations for those aged 65 years and above. However, it is important to note that individuals should consult their doctor for advice on whether they are suitable to receive any specific vaccines.

"Influenza is highly contagious and can even be deadly to some people who develop complications such as pneumonia. These studies serve to reinforce the message that the elderly should get vaccinated to protect themselves, to reduce the risk of contracting the flu," said Professor Paul Tambyah, Senior Consultant from the Division of Infectious Diseases at NUH.

In a clinical study that was published in parallel in the journal *Immunity & Ageing,* healthy elderly subjects were fully capable of mounting robust immune responses to an influenza vaccine comparable to that of young subjects, tracked by measuring levels of plasmablasts (precursor cells of short- and long-lived plasma cells), neutralising antibodies, and HAI (hemagglutination-inhibition) responses.

In another study published in the *Frontiers in Immunology* journal, no significant differences were observed between frail and non-frail elderly with respect to pre-existing antibody levels from past exposures, and post-vaccination antibody responses.

"One might intuitively think that a younger person's immune response to a flu vaccination would be significantly stronger than an elderly person's. However, we were

[1] Source: Ministry of Health, Singapore https://www.moh.gov.sg/news-highlights/details/moh-establishes-national-adult-immunisation-schedule-extends-use-of-medisave-for-vaccines-under-the-schedule

pleasantly surprised to find that the elderly participants of the study mounted very robust antibody responses comparable to the younger individuals, even those elderly considered to be frail" said Dr Anis Larbi, Senior Principal Investigator at A*STAR's SIgN. "Of course there are other factors at play, including genetics, previous exposures to the viruses, nutritional status and more, and we have already embarked on further studies to investigate the relationship between some of these factors," he added.

The elderly subjects from these studies were recruited through the ongoing Singapore Longitudinal Ageing Study (SLAS-2) driven by the National University of Singapore (NUS), a population-based cohort study of ageing and health among Chinese elderly in Singapore, led by Principal Investigator, A/Prof Ng Tze Pin, from the Department of Psychological Medicine, Yong Loo Lin School of Medicine, NUS.

The research findings related to vaccine-induced immunity can have a significant impact as the information might guide policy decisions on relevant aspects such as the frequency, dosage and composition of influenza vaccine administered to the elderly, or future rational vaccine design strategies.

Notes to Editor:

The research findings described in this scientific news alert can be found in:

- *Frontiers in Immunology* paper titled "Influenza Vaccine-Induced Antibody Responses Are Not Impaired by Frailty in the Community-Dwelling Elderly With Natural Influenza Exposure; and
- *Immunity & Ageing* paper titled "Healthy elderly Singaporeans show no age-related humoral hyporesponsiveness nor diminished plasmablast generation in response to influenza vaccine".

These two research studies were funded in part by Sanofi Pasteur and Nestlé Research Singapore Hub. The studies involved collaborators from Sanofi Pasteur, Nestlé Research Singapore Hub, A*STAR's Singapore Immunology Network (SIgN), A*STAR's Bioinformatics Institute (BII), National University Hospital (NUH), and National University of Singapore (NUS).

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About A*STAR's Singapore Immunology Network (SIgN)
The Singapore Immunology Network (SIgN), officially inaugurated on 10 February 2006, is a research consortium under the Agency for Science, Technology and Research (A*STAR)'s Biomedical Research Council. The mandate of SIgN is to advance human immunology research and participate in international efforts to combat major health problems. Since its launch, SIgN has grown rapidly and currently includes 200 scientists from 25 different countries around the world working under 18 renowned Principal Investigators. At SIgN, researchers investigate immunity during infection and various inflammatory conditions including cancer and are supported by cutting edge technological research platforms and core services.

Through this, SIgN aims to build a strong platform in basic human immunology research for better translation of research findings into clinical applications. SIgN also sets out to establish productive links with local and international institutions, and encourage the exchange of ideas and expertise between academic, industrial and clinical partners and thus contribute to a vibrant research environment in Singapore.

For more information about SIgN, please visit http://www.a-star.edu.sg/sign/.

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As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by contributing to societal benefits such as improving outcomes in healthcare, urban living, and sustainability.

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About the National University Hospital (NUH)
The National University Hospital is a tertiary hospital and major referral centre with over 50 medical, surgical and dental specialties, offering a comprehensive suite of specialist care for adults, women and children. It is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme, in addition to kidney, liver and pancreas transplantation for adults.

The Hospital was opened on 24 June 1985 as Singapore's first restructured hospital. Each year, the Hospital attends to more than one million patients.

As an academic health institution, patient safety and good clinical outcomes are the focus of the Hospital. It plays a key role in the training of doctors, nurses, allied health and other healthcare professionals. Translational research is pivotal in the Hospital's three-pronged focus, and paves the way for new cures and treatment.

A member of the National University Health System, it is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine and the NUS Faculty of Dentistry.

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