FACULTY OF MEDICINE AND HEALTH SCIENCES
STELLENBOSCH UNIVERSITY

MEDIA STATEMENT

FOR IMMEDIATE RELEASE: THURSDAY, 23 AUGUST 2018

SU scientists part of collaboration exploring the role of 'natural killers' in TB infection

Stellenbosch University (SU) researchers are involved in a discovery that gives insight into how some individuals control tuberculosis (TB) infection.

The research was published yesterday (Wednesday 22 August 2018) in the journal *Nature*, with an accompanying media statement (see below).

Prof Gerhard Walzl and Dr Stephanus Malherbe of the DST-NRF Centre of Excellence for Biomedical Tuberculosis Research at SU's Faculty of Medicine and Health Sciences, were part of an international team of researchers who explored the role of so-called 'natural killer cells' in the development of active TB infection.

Natural killer (NK) cells are part of the human immune system. They are naturally-occurring white blood cells that can kill certain bacteria, viruses and other disease-causing organisms, often by destroying human cells that have been infected or damaged by these pathogens.

For the study, scientists compared levels of NK cells in people with no TB infection, people with latent TB infection (healthy patients with infection but no symptoms), and people with active TB infection (ill patients with symptoms).

They discovered higher levels of NK cells in people with latent TB, while people with active TB had lower levels of the cells. Levels of NK cells increased when patients started treatment and recovered from the disease. The finding suggests that NK cells may play a protective role in the context of TB infection.

In addition, the measurement of NK cells show promise as a gauge to determine the severity of TB infection and to track disease progression and treatment.

How the research was conducted is also noteworthy. It involved the analysis of complex data obtained from three separate clinical studies through data sharing agreements. This is an example of a recent trend among institutions and funders to promote data sharing in order to optimise research findings.

For more information, see the media statement below from *Nature*.

MEDIA ENQUIRIES
Wilma Stassen
021 938 9359 | wstassen@sun.ac.za
Faculty of Medicine and Health Sciences | Stellenbosch University

MEDIA STATEMENT FROM *NATURE*

Infectious diseases: Natural killers associated with latent tuberculosis

Higher levels of natural killer cells are associated with tuberculosis latency, reports a paper published online this week in *Nature*. The findings raise the question as to whether natural killer cells might play an active role in controlling tuberculosis infections.

Tuberculosis (TB) is a bacterial disease and a leading cause of infection-related deaths. The majority of TB infections are latent — manifesting, without outward symptoms, in a contained state. It is estimated that a quarter of the world's population has latent TB, although fewer than 10% of latent TB cases end up progressing to an active state. The immune factors that influence a given individual's infection outcome, however, are poorly understood.

To investigate the immune state that leads to latency and how that changes if the disease progresses**,** Yueh-hsiu Chien and colleagues conducted studies of various human cohorts combining mass cytometry analysis with an examination of gene expression datasets to identify differences in immune cell populations between uninfected subjects and those with latent or active TB.

They find that latent manifestations of TB are associated with higher numbers of natural killer cells — white blood cells that can kill certain pathogens — with enhanced anti-toxin responses in comparison to uninfected individuals. In subjects with an active infection, levels of natural killer cells were diminished, but abundances returned to baseline levels when the infection was cured. However, the findings cannot prove a causal relationship between natural killer cells and TB latency.

Additionally, the authors show that measurements of natural killer cell levels can be used to determine the activity level and burden of TB infection in a patient's lungs — a finding that could help to assess disease progression and optimize treatments.

CONTACT
Yueh-hsiu Chien (Stanford University School of Medicine, Stanford, CA, USA)
Tel: +1 650 723 1078; E-mail: chien@stanford.edu

Please link to the scientific paper in online versions of your report (the URL will go live after the embargo ends):
http://dx.doi.org/10.1038/s41586-018-0439-x