1154-92-446 **Kyeongah Nah***, kyeongah.nah@gmail.com. *The potential impact of climate change on the transmission risk of tick-borne encephalitis: insights from dynamical modeling.*

To design the immunization program to mitigate the tick-borne encephalitis (TBE) incidence adapting to climate change, it is essential to assess the transmission risk of tick-borne encephalitis virus (TBEV) in the enzootic cycle and further predict its risk in a future using projected climate conditions. In this talk, we introduce a mathematical model for retroactive analysis of weather fluctuation on TBE prevalence in Hungary. The TBE transmission-human case reporting cascade model couples a TBE virus transmission dynamics among ticks with multiple development stages, animal hosts and humans, with the stochastic observation process of human TBE reporting given infection. By fitting human incidence data in Hungary to the model, we estimate key parameters relevant to the tick-host interaction and tick-human transmission. Then we compute the basic reproduction number which determines the long-term behaviors of the periodic system of integro-differential equations - the TBE transmission dynamics. We then show that the developed model provides an effective tool for projecting TBEV transmission risk in the enzootic cycle by integrating climate projection with emerging knowledge about the region-specific tick ecological and pathogen epidemiological processes. (Received September 04, 2019)