

GS01-3 **Development of a novel transcutaneous vaccination system for infectious diseases**

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The recent vigorous transnational migration of people and materials reflecting the development of transportation facilities have increased the global spread of infections. Once, as the 2009 pandemic influenza A (H1N1) virus, person-to-person transmission was achieved, the spread of pandemic cannot be contained in reality. Thus enhancement of the crisis-management structure against pandemic is critically important to maintain national function. On the basis of this social background, the development of vaccination, which is the only fundamental prophylaxis, is in attention, and earliest possible establishment of system that supply mass-vaccines in a short time is required. Even if, however, rapid manufacture of vaccine antigen is actualized, there are several problems that vaccine isn't easily spread across the developing country and mass vaccination isn't performed immediately at the time of the crisis, because conventional vaccination is performed mainly by injection. Our research group developed two transcutaneous vaccine devices which delivered antigens to antigen-presenting cells in the epidermal layer: a hydrogel patch formulation and a biodegradable microneedle. Our transcutaneous immunization system using these devices receives a high evaluation as novel, easy-to-use, and less-invasive vaccination method against infections from home and abroad. In this symposium, we outline the research progress resulted from our basic and preclinical research, and introduce our approach for practical use.