and the alarm based on the number and rate of vector species. To monitor vectors that could be coming from overseas, various vectors (mosquitoes, cockroaches, rodents etc) are collected at the National Quarantine Station (19 sites) located at harbors and airports. And in 2009, to effectively cope with climate change, 3 vector surveillance centers were established in Honam, Yeongnam and Jeju areas. Researchers in each center were educated on how to perform this project, and monitoring of vector mosquitoes and mites for West Nile virus (WNV), JE virus and O. tsutsugamushi is carried out.

**Performance of national vector control and surveillance**

To construct and strengthen standard laboratory system for disease vector control, supervision for renovating vector control methods under field condition, national monitoring on pesticide susceptibility and resistance of disease vector mosquitoes, issue of guideline and manual for vector control and management, national advisory committee for effective vector control were carried out. The education and manual provide background information that help workers to identify the vectors species, understand the vector ecology and apply the appropriate control measures. Practical information is given on a variety of control measures.

**Construction of Vector-Net system**

There is need to establish a comprehensive surveillance and management system (Vector-Net) on vector borne diseases that could efficiently respond to diseases from climate and environmental change by drawing up pest control strategies. This system is a united vector borne disease control that being connected vectors and patients surveillance, pathogen diagnosis, geographic information, regional customized eco-friendly vector control with infectious disease vector.

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**Tuberculosis Research in Korea**

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Korea has been listed as an example of countries demonstrating how successful tuberculosis (TB) control programs could reduce the prevalence and mortality of TB. With tremendous efforts led by the Korea Institute of Tuberculosis, the prevalence of TB reduced from over 5% in 1965 to 1% in 1995, and now about 0.3% in 2010. All these remarkable achievements could not be made without endless efforts for operational research activity including the nationwide TB prevalence surveys which were carried out every five years from 1965 to 1995. During the same period, there were also numerous research activities on drug trials, new diagnostic tests, and BCG vaccine whose results were then translated into the better TB control programs. As the prevalence of TB decreased to less than 1%, however, interests in the TB control programs and research among scientists and clinicians were also reduced markedly leaving basic and clinical research idle. Coincidently, there has been no significant decrease since late 1990s leaving TB control community a little bit nervous about the situation. Without the nationwide survey, it has been difficult to know or estimate the TB burden in the country. Emergence of HIV infection and a steady increase in multi-drug resistance (MDR)-TB in Korea and oversea countries have made a big alarm to scientists and clinicians around the country last several years.

With a recent boost in biomedical research funds led by the Ministry of Health and Welfare, research grants and contracts had been also available to TB research. Even though there was only a handful of basic and clinical researchers, their research topics include: (i) molecular diagnosis for detection of DNA or mRNA of *Mycobacterium tuberculosis*, species identification, and detection of mutations in the genes which are associated with drug resistance, whose results have been translated to several diagnostic kits in the market. (ii) new drug development against *M. tuberculosis* infection. A couple of drug candidates were licensed out and several more on the preclinical development stages. (iii) new vaccine development including identifying vaccine candidate antigens and adjuvant inducing cell-mediated immune responses toward development of subunit or DNA vaccines. (iv) clinical trials with new drug candidates against MDR-TB and XDR-TB as an effort to identify life-saving drugs. (iv) basic research for understanding host-parasite interaction between M. tuberculosis and human whose results can be translated into new diagnostics, drugs, and vaccines. In addition, there were also a group of scientists working on non-tuberculous mycobacterial infection which covers 7-10% of mycobacterial diseases in Korea. Hopefully, all these research activity in both basic and clinical settings can be extended and boosted markedly in the foreseeable future.

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**Novel Trend in Vaccine Research**

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Even before the partial success of a preventive HIV vaccine in a recent Phase III clinical trial, there has been an active discovery effort to determine one or more immune correlates of protection in HIV infection. This effort has been hampered by the lack of natural protective immunity against HIV. I will discuss lessons learned from the STEP and RV144 trials and how the Vaccine Research Center is proceeding with the HVTN505 study. I will discuss efforts to elicit broadly neutralizing antibodies and the importance of establishing correlates of immunity from studies in humans.

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