and smear-positive pulmonary TB was dropped from 668 to 93 cases, with an annual average decrease of 5.0% to 6.8% every year. However, Korea has dramatically reduced TB incidence with its economic turnaround time control.

In this presentation, I would share our experience of operating mass-scale Latent Tuberculosis Screening project of Korean national Tuberculosis Control Program to implement a mass-scale LTBI project, and population Latent Tuberculosis Screening project.

To accelerate the decrease of TB incidence, Korea government issued ‘The Action Strategy for TB Safe Korea’ in March, 2016. It contains nationwide massive screening on almost 1.4 million Koreans including high school students of first grade, healthcare workers with high risks, males conscripted for military service, social welfare facility workers, daycare center workers and prisoners. The Korean Institute of Tuberculosis (KIT) has performed up to half million tests during 2017 with distinctive laboratory strategy to perform mass-scale IGRA test as minimizing indeterminate cases with proper turnaround time control.

In this presentation, I would share our experience of operating mass-scale nationwide LTBI screening project on various target groups. It would provide informational understanding on the current direction of Korean national TB program and the mass scale LTBI project, and our laboratorial strategic approach would be useful for other laboratories considering of utility of IGRA screening.
**JKIMS-4** Population structure and local adaptation of human lung disease agent *Mycobacterium avium*

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*Mycobacterium avium* subsp. *hominissuis* is an emerging human lung disease agent. Despite increasing worldwide incidence, little is known about the genetic mechanisms behind the population evolution of MAH. To elucidate them, we conducted comprehensive population genomics analyses on the genomic sequences of 36 global MAH isolates. In addition, the multiple-locus variable-number tandem repeat analysis (MLVA) data from 692 global strains were used to infer the worldwide distribution pattern of the population groups.

We identified five major MAH lineages and found that extensive mutual homologous recombination occurs among them (Yano et al. Genome Biol. Evol.9:2403-2417. 2017). Two lineages, which were predominant in the Japanese and Korean isolates, were named as MahEastAsia1 and MahEastAsia2. We identified alleles unique to these two East Asian lineages in the loci responsible for trehalose biosynthesis and in one mammalian cell entry operon. Several genes and alleles unique to East Asian strains were located in the fragments introduced via recombination between East Asian lineages, suggesting implication of recombination in local adaptation. These patterns of MAH genomes are consistent with the signature of distributive conjugal transfer, a mode of sexual reproduction reported for other mycobacterial species.

**JKIMS-5** Suppression of antibody response by mycolactone

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Buruli ulcer is a destructive skin disease caused by *Mycobacterium ulcerans*. The disease is prevalent in more than 30 countries with especially high incidence in West Africa. The pathogenesis of Buruli ulcer depends on mycolactone, which is a toxic macrolide produced by *M. ulcerans*. Mycolactone also causes immunosuppression in animals. Suppressive effect of mycolactone on cell-mediated immune responses has been studied. However, the effects of mycolactone on serum immune responses remain unclear.

To examine the effect of mycolactone on antibody response, we administered model antigens into mice with acetone soluble lipid fraction of *M. ulcerans* (ASL), which contained mycolactone. Interestingly, serum antibody response was not seen in mice injected with the antigens mixed with ASL. The immunosuppression was not induced by injection with ASL prepared from mycolactone-deficient *M. ulcerans*, suggesting that the effect depended on mycolactone. The effect was not demonstrated when the antigens and mycolactone were separately injected at different sites. The results suggested that mycolactone suppressed antibody production only against co-administered antigens. Some results from our experiments suggested that mycolactone might inhibit antigen recognition or activation of immune cells. However, further analysis is required to reveal the mechanism of the immunosuppression by mycolactone.