

Bacteriology

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We are focusing our research on tuberculosis (TB) and nontuberculous mycobacterial (NTM) diseases. TB is one of the top 10 causes of death and the leading highest human death from a single infectious agent now. NTM diseases are increasing and resist to the current chemotherapy. We clarify the molecular mechanisms of these infectious diseases and establish control strategies.



Research interests

1. Basic research to clarify the molecular mechanisms of TB and NTM diseases.
2. Development of new potent drugs, efficient diagnostic methods, and vaccines in order to eradicate TB and NTM diseases.
3. Surveys in the TB-endemic area, such as Africa and Asia, and global cooperation.

Materials and methods for collaborations

1. Molecular biology of mycobacteria and host cells. We create gene-knockout and inducible gene-knockout mycobacterial cells and host cells.
2. P3 facility where we can manipulate recombinant *Mycobacterium tuberculosis*.
3. Immunological methods. Pathology.
4. P3A facility for animal experiments of BSL3 pathogens.

Links to additional info

1. Y. Tateishi et al., Genome-wide identification of essential genes in *M. intracellulare* by transposon sequencing - Implication for metabolic remodeling. Scientific reports 10, 5449 (2020). <https://www.nature.com/articles/s41598-020-62287-2>
2. R. Ozuru et al., Rescue from Stx2-Producing *E. coli*-Associated Encephalopathy by Intravenous Injection of Muse Cells in NOD-SCID Mice. Mol Ther 28, 100-118 (2020). <https://www.sciencedirect.com/science/article/pii/S1525001619304526?via%3Dihub>
3. M. Hayashi et al., Adduct formation of delamanid with NAD in mycobacteria. Antimicrobial agents and chemotherapy, (2020). <https://aac.asm.org/content/early/2020/03/03/AAC.01755-19.long>
4. M. Osada-Oka et al., Metabolic adaptation to glycolysis is a basic defense mechanism of macrophages for *Mycobacterium tuberculosis* infection. Int Immunol 31, 781-793 (2019). <https://academic.oup.com/intimm/article/31/12/781/5519316>
5. M. Inoue et al., High-density lipoprotein suppresses tumor necrosis factor alpha production by mycobacteria-infected human macrophages. Scientific reports 8, 6736 (2018). <https://www.nature.com/articles/s41598-018-24233-1>