# Lesson plan

1. **Subject title:**

   TMID 607-16: (2-0-4) Molecular aspects in food- and water-borne diseases II

2. **Name of teacher:** Santi Maneewatchararangsri

   **educational qualifications:** Ph.D. (BioMedical Sciences), Thammasat University

   **academic ranking:** Assistant Professor

   **communication channel:** Formal

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3. **Course Name:**

   Food- and Water-borne Diseases in the Tropics 3(3-0-6)

   **Course Code:**

   TMID 607 Required subject

4. **Program name:**

   Doctor of Philosophy in Tropical Medicine

   Ph.D. (Trop.Med.) (International programme)

   Faculty of Tropical Medicine, Mahidol University

5. **Date and time of teaching:** February 20th, 2020/ 1.00 – 3.00 p.m.

   **Venue:** Lecture room, 4th floor, Chamlong Harinasuta Bldg.,
   Faculty of Tropical Medicine, Mahidol University

6. **Study objectives:**

   After completing this lecture, student should be able to:

   1. Describe strategies to control Foodborne (FB) and Waterborne (WB) diseases.
   2. Describe advance molecular approaches for tracking (AMR) pathogens, public health surveillance, and outbreak.
   3. Integrate -omics technology for developing a novel molecular diagnostic and biopharmaceutic reagent for emerging FB and WB diseases outbreak.

**7. Brief contents:**

1. Summary of foodborne (FB) and waterborne (WB) diseases
2. Impacts of FB and WB diseases
3. Strategies to control FB and WB diseases
    - Surveillance
    - Strengthening food safety
    - Molecular approaches for FB and WB diseases
4. Emergence of antimicrobial resistant (AMR) pathogens & control
5. Current development of therapeutic antibodies for FB and WB passive therapy
    - Passive therapy using therapeutic antibodies
    - Antibody Engineering Technology
    - Therapeutic antibodies for severe leptospirosis
    - Therapeutic antibodies for emerging influenza virus type A

**8. Arrangement of learning experience:**

Self-directed study

Lecture attendance

Discussion, Question and answer

**9. Learning media:**

PowerPoint slide presentation, Lecture handout, textbooks, Scientific articles

**10. Learning evaluation:**

Feedback & Questionnaire

Essay-type Examination

Modified essay type (MEQ)

**11. Dates if amendment:** None.

**12. Learning resources:**

**Textbooks:**

1. Fratamico P, Liu Y, Kathariou S, editors. *Genomes of foodborne and waterborne pathogens.* Washington, DC: ASM Press American Society for Microbiology; 2011.
2. Barh D, Blum K, and Madigan MA, editors. *OMICS Biomedical Prespectives and Applications.* CRC Press Tayler & Francis Group: Boca Raton; 2012.

**Suggested Readings**:


1. Hashempour-Baltork F, Hosseini F, Shojaee-Aliabadi S, Torbati M, Alizadeh AM, Alizadeh M. Drug resistance and the prevention strategies in food borne bacteria: an update review. *Adv Pharm Bull.* 2019; 9(3): 335-347. doi: 10.15171/apb.2019.041.
2. Zhao X, Lin CW, Wang J, and Oh DH. Advances in rapid detection methods for foodborne pathogens. *J Microbiol Biotechnol*. 2014; 24(3): 297–312. DOI:10.4014/jmb.1310.10013.
3. Maneewatchararangsri S. Therapeutic monoclonal antibodies and their engineered antibody fragments specific to LipL32 for passive immunotherapy of leptospirosis. *J Virol Emerg Dis* 2016; 2(2). Available from: doi http://dx.doi.org/10.16966/ 2473-1846.114.
4. Maneewatch S, Sakolvaree Y, Tapchaisri P, Saengjaruk P, Songserm T, Wongratanacheewin S. Humanized-monoclonal antibody against heterologous *Leptospira* infection. *Protein Eng Des Sel.* 2009; 22(5): 305-312.


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