

Sukhyun Ryu, M.D., Ph.D.

Assistant Professor

Department of Preventive Medicine, College of Medicine, The Catholic University, Seoul, South Korea

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| EDUCATION | 2015-2017 | Doctor of Public Health (Ph.D.), Korea University , Seoul, Korea |
| | 2006-2010 | Doctor of Medicine (MD), Chonbuk Nat'l University , Jeonju, Korea |
| | 2004-2005 | Exchange Student for undergraduate, University of Wales , Bangor, UK |
| | 1999-2006 | Bachelor of Science (BS), Dankook University , Seoul, Korea |
| EXPERIENCE | Mar 2024 - Present | Assistant Professor Department of Preventive Medicine, College of Medicine, The Catholic University, Seoul, South Korea |
| <u>Current Position</u> | Sept 2019 - Feb 2024 | Assistant Professor Department of Preventive Medicine, Konyang University College of Medicine, Daejeon, South Korea |
| | | Teaching and conducting research for the quantitative epidemiology of infectious diseases in South Korea |
| | | <ul style="list-style-type: none">• Teaching medical epidemiology, statistics, and public health in medical school and graduate school of public health.• Conduct modelling study for transmission dynamics of infectious diseases. |
| | Sept 2018 - Aug 2019 | Post-doctoral Research Associate WHO Collaborating Centre for Infectious Disease Epidemiology and Control, School of Public Health, The University of Hong Kong, Hong Kong, China |
| | | Design and conduct research for infectious disease control including surveillance of antimicrobial resistance and influenza transmission. |
| | | <ul style="list-style-type: none">• Provide concept for the case-based surveillance of antimicrobial resistance.• Conduct modelling study for estimating the effectiveness of school holidays against seasonal influenza. |
| | | Perform the review of non-pharmaceutical intervention measures to mitigate influenza pandemic and developed the WHO guideline for preparedness of influenza pandemic. |
| | Jan 2018 - Aug 2018 | Adjunct Lecturer Graduate School of Public Health, Korea University, Seoul, South Korea |
| | | Instructed the off-line course of field epidemiology |
| | Oct 2016 - Aug 2018 | Field Epidemiologist Gyeonggi Provincial Government, Suwon, Gyeonggi Province, South Korea |
| | | Conducted epidemiologic investigation and implemented surveillance and control program for infectious disease outbreak at a provincial level. |
| | May 2014 - Jun 2015 | Medical Officer Division of Infectious Disease Surveillance, Korea Centers for Disease Control and Prevention (KCDC), Osong, South Korea |
| | | Provided leadership and overall program management which focused on national antimicrobial resistance strategy. |
| | | <ul style="list-style-type: none">• Establish goals, objectives and priorities and monitor achievements.• Represent national public health expertise at national and international meetings.• Served as a member for investigation of infectious disease outbreaks including Ebola |
| | March 2011 - March 2014 | Resident Physician Department of Family Medicine, Severance Hospital, Seoul, Korea |
| | | Practiced clinical medicine at a university hospital. |
| | | <ul style="list-style-type: none">• Provided medical care in the outpatient clinic, emergency room, and inpatient services in internal medicine, surgery, pediatrics, obstetrics and psychiatry |
| INTERNATIONAL EXPERIENCE | March 2019 | Rapporteur The University of Hong Kong, Hong Kong, China |
| | | Participated WHO Technical Consultation Meeting for mitigating Influenza pandemic |
| | March 2015 - June 2015 | National Focal Point Ministry of Health and Welfare, Seoul, Korea |
| | | Coordinated the 6 th meeting of WHO's Advisory Group on Integrated Surveillance on Antimicrobial Resistance. |
| | December 2014 | Delegate & Rapporteur Ministry of Health and Welfare, Seoul, Korea |

Participated High-Level Technical Meeting on “Surveillance of AMR for Local and Global Actions”, Stockholm, Sweden

October 2014 Delegate

Ministry of Health and Welfare, Seoul, Korea

Participated 65th Session of the World Health Organization Regional Committee for the Western Pacific, Manila, Philippines

January 2008 Intern

-February 2008 Unit of Vector Ecology and Management, Department of Neglected Tropical Disease, World Health Organization, Geneva, Switzerland

CERTIFICATION AND LICENSURE

2014 Certification (#7569), Korean Board of Family Medicine, Status- Active
2010 Medical License #105433, Status- Active

PROFESSIONAL ACTIVITIES

Associate Editor

BMC Infectious Diseases (2019-present)
 Public Health Weekly Report (2023-present)
 Journal of Preventive Medicine and Public Health (2020-2024)
 Viruses (2022-2023)
 Frontiers in Public Health (2022-2023)

Editorial Board Member

Public Health Weekly Report, South Korea (2014- 2015, 2022-present)

Reviewer of peer-reviewed journals (2018~)

Lancet
 JAMA
 Emerging Infectious Diseases
 BMC Medicine
 Journal of Medical Virology
 Transboundary and Emerging Diseases
 Scientific Report
 Antimicrobial Resistance and Infection Control
 Plos One
 BMC Infectious Diseases
 Public Health

One Health Research Goup (2016~)

Head, South Korea

Ebola Outbreak Response Team (2014-2015)

Member, Korea Center for Disease Control and Prevention, South Korea

HONORS AND AWARDS

AND 2020 Oct Outstanding Review Award, Korean Society of Preventive Medicine
2018 Dec Scholarship, Mogam Science Scholarship Foundation
2018 Dec Outstanding Abstract Award (Travel grant), Korean Society of Epidemiology
2017 Oct Outstanding Abstract Award, 17th International Symposium on Antimicrobial Agents
2017 Sept Outstanding Abstract Award (Travel grant), Korean Society of Epidemiology
2008 Best Presentation Award, Chonbuk Nat’l University, Medical School
2007 Excellent Medical Student Award, Chonbuk Nat’l University
2006 Scholarship, Gyeonggi Province (#05-83)
2003-2005, Outstanding Academic Achievement Award, Dankook University

FUNDED GRANTS

2023 Feb - 2023 Jun Funding agency: **Korea Centers for Disease Control and Prevention Agency**
 Role: Principal Investigator
 Project title: Training for epidemiological parameter of infectious diseases
 Major goals: To develop training course of estimating epidemiological parameter and provide the course to field epidemiologist in Korea

- 2020 Jun- Funding agency: **National Research Foundation of Korea**
2025 May Role: Principal Investigator
Project title: Estimation of influenza virus transmission and prediction of epidemic
Major goal: To explore and estimate influenza virus dynamics.
- 2018 Sep - Funding agency: **National Research Foundation of Korea**
2019 Aug Role: Principal Investigator
Project title: Postdoctoral Fellowship Program
Major goal: To provide the evidence for the appropriate antibiotic prescribing in the community.
- 2018 Sep - Funding agency: **Asia-Pacific Economic Cooperation (APEC)**
2019 Aug Role: Principal Investigator
Project title: APEC Self-funded project
Major goal: To provide the materials of field epidemiologist training programs among APEC members.
- 2016-2017 Funding agency: **Korean Research Institute for Healthcare Policy**
Role: Principal Investigator
Project title: Healthcare policy research support project
Major goal: To provide evidence of inappropriate use of antibiotics in Korea.
- 2007-2010 Funding agency: **Ministry of Education**
Project title: Brain Korea 21, Chonbuk Nat'l Univerisity, Medical School
Major goal : To improve the public awareness of community health.

**Peer-Reviewed
Manuscripts**

* Corresponding author

1. Choi HW, Achangwa C, ..., Do H, ..., **Ryu S***, Kee SJ. Pediatric Humoral Immune Responses and Infection Risk after Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection and Two-Dose Vaccination During SARS-CoV-2 Omicron BA.5 and BN.1 Variants Predominance in South Korea. *Frontiers in Immunology*. 2023;14:1306604.
2. **Ryu S**, Choi JK, Achangwa C, Cho S, Hwang JH, Hwang JH, Niels B, Lee CS. Temporal dynamics of serum perforin and granzymes in three different clinical stages of virus-induced severe fever with thrombocytopenia syndrome. *American Journal of Tropical Medicine & Hygiene*. 2023;109(3):554-558.
3. Rahman MDT, **Ryu S**, Achangwa C, Hwang JH, Hwang JH, Lee CS. Temporal Dynamics of Serum Perforin and Granzyme during the Acute Phase of SARS-CoV-2 Infection. *Vaccines*. 2023;11(8):1314.
4. Lee D, Choi S, Do H, Achangwa C, Kim MK, Chin BS, **Ryu S***. Transmissibility of mpox to the general population from travellers returning to South Korea. *Journal of Travel Medicine*. 2023;30(5):taad080.
5. Achangwa C, **Ryu S**, Jung JH, Hwang SM. The impact of the COVID-19 pandemic on chlamydia infection in South Korea: a comparison between the pre-pandemic and during-pandemic periods. *Frontiers in Public Health*. 2023;11:1167321.
6. Han C, Seo H, Cho S, Achangwa C, **Ryu S***. Impact of travel restrictions for travelers from China on the internal spread of SARS-CoV-2 in South Korea. *Journal of Travel Medicine*. 2023;30(5):taad047.
7. **Ryu S***, Han C, Ali ST, Achangwa C, Yang BY, Pei S. Association of public health and social measures on the hand-foot-mouth epidemic in South Korea. *Journal of Infection and Public Health*. 2023;16(6):859-864.
8. Ali ST, Lau YC, Shan S, **Ryu S**, Du Z, Wang L, Xu XK, Chen D, Xiong J, Tae J, et al. Prediction of Upcoming Global Infection Burden of Influenza Seasons after Relaxation of Public Health and Social Measures for COVID-19 Pandemic: a modelling study. *Lancet Global Health*. [https://doi.org/10.1016/S2214-109X\(22\)00358-8](https://doi.org/10.1016/S2214-109X(22)00358-8)
9. **Ryu S***, Han C, Kim D, Tsang TK, Cowling BJ, Lee S. Association between the relaxation of public health and social measures and transmission of the SARS-CoV-2 Omicron variant in South

- Korea. *JAMA Network Open*. 2022;5(8):e2225665
10. Han C, **Ryu S**, Shin H, Kim D, Modchang C. Impact of national lockdown on the suspected SARS-CoV-2 epidemic in terms of the number of fever cases in North Korea. *Journal of Travel Medicine*. 2022;29(6):taac090
 11. Zhao S, Chong MKC, **Ryu S**, Guo Z, He M, Chen B, Musa SS, Wang J, Wu Y, He D, Wang MH. Characterizing superspreading potential of infectious disease: Decomposition of individual transmissibility. *Plos Computational Biology*. <https://doi.org/10.1371/journal.pcbi.1010281>
 12. Liu Y, Zhao S, **Ryu S**, Ran J, Fan J, He D. Estimating the incubation period of SARS-CoV-2 Omicron BA. 1 variant in comparison with that during the Delta variant dominance in South Korea. *One Health*. <https://doi.org/10.1016/j.onehlt.2022.100425>
 13. Achangwa C, Park H, **Ryu S***. Incubation period of wild type of SARS-CoV-2 infections by age, gender, and epidemic periods. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2022.905020>
 14. **Ryu S**, Kim D, Jung LY, Kim B, Lee CS. Decreased door-to-balloon time in patients with ST-segment elevation myocardial infarction during the early COVID-19 pandemic in South Korea: An observational study. *Medicine*. 2022;101(30):p e29596
 15. Guo Z, Zhao S, **Ryu S**, Mok CKP, Hung CT, Chong KC, Yeoh EK. Superspreading potential of infection seeded by the SARS-CoV-2 Omicron BA.1 variant in South Korea. *Journal of Infection*. <https://doi.org/10.1016/j.jinf.2022.05.041>.
 16. Achangwa C, Park H, **Ryu S**, Lee MS. Collateral Impact of Public Health and Social Measures on Respiratory Virus Activity during the COVID-19 Pandemic 2020–2021. *Viruses*. 2022;14(5):1071
 17. Yoo JS, Kim D, Choi HY, Yoo S, Hwang JH, Hwang JH, Choi SH, Achangwa C, **Ryu S**, Lee CS. Prevalence Rate and Distribution of Eschar in Patients with Scrub Typhus. *American Journal of Tropical Medicine and Hygiene*. 2022;106(5):1358-1362
 18. Hwang Y, Kim D, **Ryu S***. Decreased patient visits for ankle sprain during the COVID-19 pandemic in South Korea: A nationwide retrospective study. *Preventive Medicine Reports*. 2022;26:101728
 19. Kim D, Ali ST, Kim S, Jo J, Lim JS, Lee S, **Ryu S***. Estimation of Serial Interval and Reproduction Number to Quantify the Transmissibility of SARS-CoV-2 Omicron Variant in South Korea. *Viruses*. 2022;14(3):533
 20. **Ryu S***, Kim D, Lim JS, Ali ST, Cowling BJ. Serial interval and transmission dynamics during the SARS-CoV-2 Delta variant predominance, South Korea. *Emerging Infectious Diseases*. 2022;28
 21. Hwang H, Lim JS, Song SA, Achangwa C, Sim W, Kim G, **Ryu S***. Transmission dynamics of the Delta variant of SARS-CoV-2 infections in South Korea. *Journal of Infectious Diseases*. 2022;225(5):793-799
 22. **Ryu S***, Hwang Y, Yoon HB, Chun BC. Self-quarantine non-compliance during the COVID-19 pandemic in South Korea. *Journal of Disaster Medicine and Public Health*. 2022;16(2):464-467
 23. Lim JS, Noh E, Shim E, **Ryu S***. Temporal changes in the risk of superspreading events of coronavirus disease 2019. *Open Forum Infectious Diseases*. 2021;8(7):ofab350
 24. **Ryu S***, Ali ST, Noh E, Kim D, Lau EHY, Cowling BJ. Transmission dynamics and control of two epidemic waves of SARS-CoV-2 in South Korea. *BMC Infectious Diseases*. 2021;21:485
 25. Chang S, **Ryu S***, Kim D, Chun BC. Decrease in the incidence of chlamydia infection during the COVID-19 pandemic in South Korea. *Sexually Transmitted Infections*. <http://dx.doi.org/10.1136/sextrans-2021-055074>.
 26. **Ryu S***, Hwang Y, Ali ST, Kim DS, Klein EY, Lau EHY, Cowling BJ. Decreased use of broad-spectrum antibiotics during COVID-19 epidemic in South Korea. *Journal of Infectious Diseases*. jjab208
 27. Lim GW, Ryu S, Park J, Lee EJ, Lee KJ, Tae J, Hwang Y, Kim DS. Changes of antibiotic prescribing pattern and its resistance to E. Coli in South Korea: a 12-year retrospective observational study. *Scientific Reports*. 2021;11:5658.
 28. Lim JS, Cho SI, **Ryu S**, Pak SI. Interpretation of the Basic and Effective Reproduction

- Number. *J Prev Med Public Health*. 2020;53(6):405-408.
29. **Ryu S**, Cowling BJ. Human influenza epidemiology. *Cold Spring Harb Perspect Med*. 2020 Sep 28;a038356.
 30. **Ryu S***, Ali S, Jang C, Kim B, Cowling BJ. Effect of Nonpharmaceutical Interventions on Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, South Korea, 2020. *Emerg Infect Dis*. 2020;26(10):2406-2410.
 31. **Ryu S**, Ali ST, Cowling BJ, Lau EHY. Effects of school holidays on seasonal influenza in South Korea, 2014-2016. *Journal of Infectious Diseases*. 2020;222(5):832-835.
 32. Lee H, Kim K, Choi K, Hong S, Son H, **Ryu S***. Incubation period of the coronavirus disease 2019 (COVID-19) infections in Busan, South Korea. *Journal of Infection and Chemotherapy*. 2020;26(9):1011-1013.
 33. **Ryu S**, Ali ST, Lim JS, Chun BC. Estimation of the Excess COVID-19 Cases in Seoul, South Korea by the Students Arriving from China. *Int. J. Environ. Res. Public Health*. 2020;17(9):3113
 34. Kim HJ, Hwang HS, Choi YH, Song HY, Park JS, Yun CY, **Ryu S***. The delay in COVID-19 confirmation among cases from a religious group in South Korea. *J Prev Med Public Health*. 2020; 53(3): 164-167.
 35. Xiao J, Shiu E, Gao H, Wong JY, Fong MW, **Ryu S**, et al. Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings—Personal Protective and Environmental Measures. *Emerg Infect Dis*. 2020;26(5):967-975.
 36. Fong MW, Gao H, Wong JY, Xiao J, Shiu E, **Ryu S**, et al. Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings—Social Distancing Measures. *Emerg Infect Dis*. 2020;26(5):976-984.
 37. **Ryu S**, Gao H, Wong JY, Shiu EYC, Xiao J, Fong MW, Cowling BJ. Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings-International Related Measures. *Emerg Infect Dis*. 2020;26(5):961-966.
 38. **Ryu S**, Chun BC, Korean Society of Epidemiology 2019-nCoV Task Force Team. An interim review of epidemiological characteristics of 2019 novel coronavirus. *Epidemiol Health*. 2020; 42: e2020006.
 39. **Ryu S***. Turnover intention among field epidemiologists in South Korea. *Int. J. Environ. Res. Public Health* 2020;17(3):949.
 40. **Ryu S**, Cowling BJ, Wu P, Olesen S, Fraser C, Lipsitch M, Grad YH. Case-based surveillance of antimicrobial resistance with full susceptibility profiles. *JAC-Antimicrobial resistance*. 2019;1(3):dlz070
 41. **Ryu S**, Kim JJ, Cowling BJ, Kim C. Surveillance and public health response for travelers returning from MERS-CoV affected countries to Gyeonggi Province, Korea, 2016-2017. *Journal of Travel Medicine and Infectious Diseases*. 2019; 31:101350.
 42. **Ryu S**, Kim YW, Kim S, Liao Q, Cowling BJ, Lee C-S. Occupational Stress among Field Epidemiologists in Field Epidemiology Training Programs from the Public Health Sector. *Int. J. Environ. Res. Public Health*. 2019; 16(18):3427.
 43. Kim S, Kim YW, **Ryu S***, Kim JW. Norovirus Outbreak in a Kindergarten: Human to Human Transmission among Children. *Infect Chemother*. 2019 Jun;51(2):171-176.
 44. **Ryu S**, Chow A, Chun BC. Surveillance for Zika virus infection in travelers returning to the Republic of Korea. *Journal of Travel Medicine and Infectious Diseases Travel Medicine and Infectious Disease* 2019;29:72-73.
 45. Lim JS, Min KD, **Ryu S**, Hwang SS, Cho SI. Spatial analysis to assess the relationship between human and bovine brucellosis in South Korea, 2005-2010. *Sci Rep*. 2019;9:6657.
 46. **Ryu S**, Won SA, Uh J, Song JY. Hepatitis A virus infection from a contaminated tap of ground water facility in a neighborhood park, Republic of Korea. *Infect Chemother*. 2019;51:62-66.
 47. **Ryu S**, Soares Magalhaes RJ, Chun BC. The impact of expanded brucellosis surveillance in beef cattle on human brucellosis in Korea: an interrupted time-series analysis. *BMC Infect Dis*. 2019;19:201.
 48. **Ryu S**, Kim CK, Kim K, Woo SH, Chun BC. Serosurveillance of avian influenza (H5N6) virus

- infection in poultry farmers, Gyeonggi Province, Republic of Korea, 2016-2017. *Int J Infect Dis.* 2018;75:49-51
49. **Ryu S**, Klein EY, Chun BC. Are we using β -lactam and β -lactamase inhibitor combinations properly? As carbapenem-sparing antibiotics for the infection caused by extended-spectrum β -lactamase-producing *Klebsiella pneumoniae*. *Antimicrob Resist Infect Control.* 2018;7:83.
 50. **Ryu S**, Kim BI, Wang KC, Chun BC. An outbreak of respiratory tract infection due to Respiratory Syncytial Virus-B in a postpartum center, Republic of Korea. *Journal of Infect Chemother.* 2018;24:689-694.
 51. **Ryu S**, Kim S, Kim BI, Klein EY, Yoon YK, Chun BC. Temporal relationship between antibiotic use and respiratory virus activities in the Republic of Korea: a time series analysis. *Antimicrob Resist Infect Control.* 2018;5:56.
 52. Kim JJ, **Ryu S**, Lee H. Foodborne Illness Outbreaks in Gyeonggi Province, Korea, Following Seafood Consumption Potentially Caused by *Kudoa septempunctata* between 2015 and 2016. *Osong Public Health Res Perspect.* 2018;9:66-72.
 53. **Ryu S**, Chun BC. Scarlet fever outbreak in a kindergarten. *Infect Chemother.* 2018;50:38-42.
 54. **Ryu S**, Lim JS, Cowling BJ, Chun BC. Low risk of avian influenza A (H5N6) transmission to depopulation workers in Korea. *Influenza Other Respi Viruses.* 2018:1-4.
 55. **Ryu S**, Kim JS, Chen MY, Jin H, Lee HK, Chun BC. Outbreak investigation of pertussis in an elementary school: a case-control study among vaccinated students. *Clin Exp Vaccine Res.* 2018;7:70-75.
 56. **Ryu S**, Kim BI, Lim JS, Tan CS, Chun BC. One health perspectives for emerging public health threats. *J Prev Med Public Health* 2017;50:411-414.
 57. **Ryu S**, Yang K, Chun BC. Community-acquired Legionnaires' Disease in a Newly Constructed Apartment Building. *J Prev Med Public Health.* 2017;50:274-277.
 58. **Ryu S**. The new Korean action plan for containment of antimicrobial resistance. *J Glob Antimicrob Resist.* 2017;8:70-73.
 59. **Ryu S**, Lau CL, Chun BC. The impact of livestock manure control policy on human leptospirosis in Republic of Korea using interrupted time series analysis. *Epidemiol Infect.* 2017;145:1320-1325.
 60. **Ryu S**, Head MG, Kim BI, Hwang JC, Cho EH. Are we investing wisely? A systematic analysis of nationally funded antimicrobial resistance projects in Korea, 2003-2013. *J Glob Antimicrob Resist.* 2016;9:90-94.
 61. **Ryu S**, Cho EH. Introduction of National Strategy for Combating Antibiotic Resistant Bacteria in the US. *Public Health Weekly Report.* 2015;8:260-261.
 62. **Ryu S**. Antimicrobial Resistance in the Community. *Korean J Fam Pract.* 2015;5(1); S130-S132.

Oral Presentation

1. The effectiveness of travel related non-pharmaceutical intervention for influenza pandemic. WHO Technical Consultation Meeting, 2019, Hong Kong, China.
2. Surveillance for Middle East Respiratory Syndrome Coronavirus in South Korea, 2016/17. The 2018 9th Southeast Asia and Western Pacific Bi-regional TEPHINET Scientific Conference. Vientiane, Lao PDR
3. Strengthening workforce of field epidemiologist for infectious diseases; Achieving sustainable health security. The 2018 1st senior officials APEC meeting. Port Moresby, Papua New Guinea
4. RSV outbreak in a postpartum center, Korea. at the 2017 Annual Meeting of the Korean Society of Preventive Medicine. Busan, Korea.
5. Are we using β -lactam and β -lactamase inhibitor combinations properly? As carbapenem-sparing antibiotics for the infection caused by extended-spectrum β -lactamase-producing *Klebsiella pneumoniae*. The 17th International Symposium on Antimicrobial Agents, 2017. Busan, Korea.
6. Current status of Antimicrobial Resistance and the role of primary physician in the community. The 2015 Annual Meeting of Korean Academy of Family Medicine. Seoul, Korea.

7. National Funded Research Trend Analysis of Antimicrobial Resistance 2003-2013. The 2014 Annual Meeting of the Korean Society of Infectious Disease. Jeju, Korea.

Posters at Scientific Meetings

1. Temporal relationship between antibiotic use and respiratory virus activities in the Republic of Korea: a time series analysis. 2017 World Epidemiology Congress. Kitakyushu, Japan.
2. The impact of livestock sludge control policy to the human leptospirosis using interrupted time series analysis in Republic of Korea. 2016 International Congress for Tropical Medicine and Malaria. Brsbane, Austrailia.
3. The Determinants of Traditional Remedy Use among the Elderly Dwelling in the Female Driver Village Located in Seogwipo, Jeju Island. 2014 Annual Meeting of Korean Academy of Family Medicine, Seoul, Korea.

Invited Lectures

1. Emerging zoonotic disease and field investigation, May 2017. School of Public Health, Yonsei University, Seoul, Korea
2. Onehealth and its application, May 2016, College of Vaterinary Medicine, Seoul National University, Seoul, Korea
3. Containment of zoonotic disease and antimicrobial resistance with onehealth approach, Feb 2016, School of Biological Science, The University of Hong Kong, Hong Kong, China

**PROFESSIONAL
DEVELOPMENT
ACTIVITIES**

Korean Epidemiologic Investigation Course: April 2015-August 2018
Korean Infections Disease Surveillance Weekly Study Group: March-June 2015

SOFTWARE

R, SPSS, Microsoft Office (Microsoft Word, Excel, PowerPoint, HTML), Word Press

LANGUAGES

Fluent in Korean, Good at English and speaking knowledge of Chinese