

Institution's Name: Weill Cornell Medical College

1. Department name: Department of Genetic Medicine, Pulmonary Disease
2. Principal Investigator: Dr. Ronald Crystal
3. Location: New York
4. URL: <https://geneticmedicine.weill.cornell.edu/research/pulmonary-disease> and <https://geneticmedicine.weill.cornell.edu/research/gene-therapy>

■ Professor in charge at YCU: Dr. Ichiro Takeuchi

(1) Features of your Lab, Lab's research topic

Dr. Crystal's Laboratory in the Department of Genetic Medicine will be the host laboratory for Yokohama students visiting Weill Cornell Medical Center. Dr. Crystal's laboratory sponsors two main areas of research: (1) personalized medicine, and (2) genetic therapies. Research in the area of personalized medicine focuses on the response of airway and lung biology to environmental exposures such as cigarette smoke, other smoking devices, or environmental pollution, and how these environmental exposures combine with an individual's personal genomic content to result in responses ranging from changes in gene expression to the development of chronic lung disease. The research in this area typically makes use of biological samples donated by human study subjects for the purpose of analyzing or modeling genomic, transcriptomic, proteomic, or metabolomics aspects of airway physiology and cell biology. Research in the area of genetic medicine focuses on the use of viral gene therapy vectors to change the phenotype of patients to prevent, relieve, or reverse the causes and outcomes of human disease. The research in this area typically involves creation of new viral vectors, utilization of cellular or organismal disease models, and measurement of molecular, biochemical, or physiologic changes that result from administration of the vector. Research ranges from *in vitro* proof-of-concept studies to animal models to human clinical trials.

(2) Research topic(s) available to YCU students

Students should indicate a preference for "personalized medicine" research or "genetic therapy" research. The precise topic of research will be determined by Dr. Crystal prior to arrival.

### (3) Expectations and requirements to YCU students

(Both pre-departure/during the research-clerkship period)

After selecting their general area of research (see answer to question #2 above), students will be provided with background reading material to help prepare them for their research study. Students are expected to read and understand these materials before arriving in New York. Once the internship has begun, students will be expected to maintain a laboratory notebook that records their laboratory activities in New York. The laboratory notebook will remain in the laboratory when the students return to Yokohama. The students are welcome to make copies of the notebook before leaving. Students will also be asked to prepare a PowerPoint presentation summarizing their research experience before leaving New York.