

# Department of Pathology and Diagnostic Pathology

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**Homepage** <http://pathol.umin.ac.jp/>

## Introduction and Organization

Department of Pathology and Diagnostic Pathology is responsible for the practice of diagnostic pathology, education, and research in conjunction with Division of Diagnostic Pathology of the University Hospital\*. Our aim is the construction of “pathology as clinical medicine” as well as “next-generation pathology incorporating cutting-edge science and technology”.

Associate Professor Dr. Shibahara moved as the chairman and professor to Department of Pathology, Kyorin University, School of Medicine. Lecturer Dr.

Morikawa was promoted to the associate professor, and lecturer (Hospital) Dr. Aya Ushiku to the lecturer\*, respectively. Dr. Atsushi Tanaka and Dr. Zen-ichi Tanei were now Associates.

Three postgraduate students (Saito, Hinata, Mine) finished the course and received Ph.D. In the new fiscal year, 2017, six new students will enter the postgraduate course, and there will be 21 postgraduates.

We are responsible for the pathology practice of the University Hospital, and are carrying forward the morphology-based research targeting human diseases.

As for the education of the medical students, we take charge of the following courses; General Pathology Course for the 1<sup>st</sup> grade students in collaboration with Department of Molecular Pathology, Systemic Pathology for the 2<sup>nd</sup> grade, Elective Clinical Clerkship for the 3<sup>rd</sup> grade, and Clinical Clerkship for the 4<sup>th</sup> grade students. Programs for postgraduates and junior residents are also included in our education activities.

To promote genomic medicine in clinical care, we set up Center for Genome Pathology Standardization (assisted by Japan Agency for Medical Research and Development). The mission of the Center is to investigate basic technologies for tissue banking, and to hold seminars for doctors and technicians (see the section of Diagnostic Pathology Division). Clinical Genome Conference started in the University of Tokyo Hospital for the application of cancer clinical sequencing to medical practice as a research project of genome medicine (Project organizer: Prof. Hiroyuki Mano).

We will join the research project of Japanese Society of Pathology “Database of Pathology-Whole Slide Image (WSI) for Development of Artificial Intelligence (AI) Technique and AI-based Support System for Pathology Diagnosis” in 2017.

## Clinical activities (diagnostic pathology and autopsy)

Together with Division of Diagnostic Pathology, we are responsible for the pathologic diagnosis and autopsy in the University Hospital. We set up Telepathology & Remote Diagnosis Promotion Center (TRD-PC), and started Outpatient Clinic of Pathology (see the corresponding section of Division of Diagnostic Pathology).

Surgical pathology conferences are regularly held with each clinical division, and the cases of various tumors are discussed, including thoracic organs, liver and pancreato-biliary tract, urology, gynecology, breast, and orthopedics, as well as biopsy cases of kidney, and skin.

Clinico-pathological conferences (CPCs) for two autopsy cases are held every month in the hospital. Both CPCs and weekly autopsy conferences are useful for the education of clinical residents. Digest versions

of CPC slides are now open in the hospital (Drs. Shintani and Hayashi), and we also started e-learning programs for clinical residents to facilitate the understanding of the CPC contents (Dr. Ikemura). All of residents were obligated to take the course for their training once a year.

A model project for the survey analysis of deaths related to medical treatment (DRMT) started from September 2005, and finished at the end of 2015 fiscal. A new system for evaluation of deaths related to medical treatment (DRMT) started from October, 2016.

## Teaching activities

We take on General Pathology Course for the 1<sup>st</sup> grade of undergraduate students, especially in its morphological field.

Each class of Systemic Pathology Course and exercises are held in parallel with that of Systemic Medicine Course. Handouts are available in every half course of the pathological exercises, and all slides used in the course are accessible on our website as virtual slides (digital images of the slides).

In Clinical Clerkship for 4<sup>th</sup> grade medical students, following courses are included; autopsy pathologic practices with a case presentation for paired students, surgical pathologic practices using various tumor sections, and a tour of the pathology laboratory.

Four students chose the clinical clerkship course for 3<sup>rd</sup> grade medical students. As for the free quarter program, we received two and five students of M0 and M1, respectively, in this fiscal year.

We also set up the lecture series of “Infection/Immunology/Cancer II” and “Tumor Pathology. We also provided two intensive exercise courses, “Integration of Neuropathology/Radiology/Clinics” and “Histochemistry/Immuno-histochemistry/Clinical Electron Microscopy”.

## Research activities

The first major theme is “chronic inflammation and neoplasms”, especially Epstein-Barr virus (EBV) associated gastric carcinoma (GC) (Drs. Kunita, Shinozaki-Ushiku and Abe). We focused on the immune-escape mechanism of EBV-associated GC

this year (ref.1,7). We revealed that PD-L1 is frequently expressed in cancer cells of EBV-associated GC (ref.30). Furthermore, gene amplification of PD-L1 occurs in some of them. We investigated the relationship of *H. pylori* infection (ref.31) and molecular mechanism of epigenetic abnormalities (ref.24) in this specific type of gastric cancer.

The second major theme is ‘translational research pathology’. We are engaged in search of target molecules for cancer therapy by global analysis of various cancers, in collaboration with Research Center for Advanced Science and Technology (RCAST) (Drs. Ushiku and Morikawa) (ref.20,22). We developed a new diagnostic technique (ref.21) and evaluated therapeutic effect (ref.43) for the molecular target therapy.

The third theme is to re-evaluate the disease entities and tumor entities from the standpoint of histopathology. Dr. Shibahara proposed Type 1/2 system for the classification of intrahepatic cholangiocarcinoma (ref.4-6), and reassessed the subset of hepatocellular carcinoma (ref.33). We also performed investigation of gastric cancers (ref.29, 43), brain tumor (ref.10) and leukemia (ref.45).

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Case reports are listed in the section of Diagnostic Pathology Division.

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