

# An Overview of Pathology Residency

– Interview with Dr Alwin Loh, Dr Clarence Teo and Dr Thomas Thamboo

As with all medical specialties, the art and science of pathology is complex and pathologists require years of training to hone their skills and refine their eye for detail. Residency programmes offer doctors in training structured teaching systems that cover important aspects of pathology and its various subspecialties. *SMA News* interviewed **Dr Alwin Loh (AL)**, **Dr Clarence Teo (CT)** and **Dr Thomas Thamboo (TT)**, pathology residency programme directors from SingHealth, National Healthcare Group (NHG) and National University Health System (NUHS), respectively, to find out more about their institutions' training programmes and what they entail.

**Dr Alwin Loh** graduated from the University of Manchester in 1999 with honours in Medicine and Surgery, and joined the Singapore General Hospital's (SGH) Department of Pathology in November 2000. Prof Loh was appointed director of SingHealth Pathology Residency Programme effective September 2016.



**Dr Clarence Teo** has been the programme director for the NHG Pathology Residency Program in Tan Tock Seng Hospital (TTSH) since 2015. His subspecialty interest is in breast pathology.



**Dr Thomas Thamboo** is a senior consultant pathologist at the Department of Pathology, NUHS. His subspecialty interests are renal pathology and urologic pathology. He has been the programme director for the NUHS Pathology Residency Programme since 2013.



## Could you tell us more about your institution's residency programme pathway?

**AL:** The SingHealth Pathology Residency Programme started in 2010 and the first batch of residents joined us in July 2011. Anatomic pathology (histopathology) is the only pathology discipline that comes under the purview of the Accreditation Council for Graduate Medical Education - International (ACGME-I). ACGME-I conducted its first site visit in October 2012. Subsequently, some changes were made to the programme resulting in better alignment with ACGME principles. Locally, the Residency Advisory Committee ensures compliance with ACGME-I guidelines.

The Department of Anatomical Pathology at SGH is the primary institution in SingHealth where histopathology training takes place. Our sister institutions within the SingHealth cluster are Changi General Hospital (CGH) and KK Women's and Children's Hospital (KKH). The Health Sciences Authority (HSA) supports all sponsoring institutions in autopsy pathology.

With a large and diverse case mix, residents have unparalleled exposure to an extensive spread of clinical material. Those who have satisfied the training requirements will proceed to take the national level examination at the end of the third year of training. Successful candidates will proceed

to do two more years of a fellowship equivalent in anatomical pathology. They are then eligible to exit from the programme after satisfying all requirements stipulated by the Joint Committee on Specialist Training (JCST). Passing the national level examination is a prerequisite for promotion to senior residency.

**CT:** The NHG pathology residency programme has a total of five years of training, with the first three years accredited by the ACGME-I.

During the first year, a resident undergoes general surgical pathology rotations in TTSH and has opportunities for experiential learning across various

routine pathology subspecialties (eg, breast pathology, gastrointestinal pathology, cytopathology), procedural skills (eg, gross trimming, frozen section), and principles of laboratory management.

The second year of residency includes rotations to other training sites to gain experience in other pathology subspecialties, which include forensic pathology at HSA, gynaepathology and paediatric pathology at KKH, and dermatopathology at National Skin Centre (NSC).

The third year sees a resident's return to general surgical pathology rotations at TTSH and/or National University Hospital (NUH), with increasing exposure to more complex pathology subspecialties (eg, renal pathology, haematopathology, molecular pathology), as well as laboratory management. The compulsory local Board examination is held at the end of this year.

In the fourth and fifth years of senior residency, a resident gradually assumes the clinical responsibilities of a consultant in preparation for his/her eventual practice as a pathologist. In addition to general surgical pathology rotations at TTSH, follow-up rotations to NUH, KKH and NSC allow a resident to adequately prepare for the Australasian or British exit examinations at the end of the fifth year.

**TT:** The NUHS five-year pathology residency programme is for training in histopathology (anatomic pathology). The first three years, known as junior residency, are accredited by the ACGME-I. At the end of the three years, there is an intermediate examination (American Board of Medical Specialties examination), and success in which allows for progression to senior residency. The last two years, or senior residency, are accredited by the JCST. Exit examinations are usually undertaken within the last year of training, and success in either the Australian FRCPA

Part II exam, or the British FRCPath Part II exam along with the cervical cytopathology examination, are acceptable for exit.

During the first three years, residents will have rotations in general surgical pathology, cytopathology, forensic pathology, paediatric and perinatal pathology, and molecular pathology. They will also receive regular systems-based pathology teaching. In the following two years, there is further development and strengthening of core histopathology and cytopathology training, as well as the opportunity to spend more time on pursuing subspecialties of the residents' choice. For example, residents may choose to have a short posting at the NSC in order to gain exposure to a variety of skin pathology, or have postings at other hospitals for relevant exposure.

#### **What are some key factors of your institution's residency training? Are there any unique features to highlight?**

**AL:** SingHealth has a strong legacy in clinical service, medical education and research. Generations of pathologists currently practising in both public and private sectors have previously trained or worked in our department. Our dynamic and rigorous programme continues this golden tradition of nurturing competent pathologists who make a difference in healthcare. Cross-cluster rotation is in the pipeline and will add more dynamism to residency education.

The Division of Pathology (previously Department of Pathology) in SGH relocated to the twin-towered state-of-the-art Academia building in 2013. Academia facilitates interconnectivity among clinician scientists, researchers, pathologists, educators and medical students, harnessing strengths to inspire better healthcare delivery. Anchoring the Diagnostics Tower, the relocated Division of Pathology consists

of different specialised laboratories including Cytogenetics, Molecular Laboratory, Bacteriology, Virology and Clinical Biochemistry, and other pathology services and facilities, such as the Translational Pathology Centre. In this tower, trainee and staff pathologists, together with medical technologists, work side by side to achieve rapid diagnoses, with automated systems and new pathology test platforms, achieving faster turnaround.

**CT:** In NHG, competency-based developmental milestones are incorporated into the training process. A junior resident is closely supervised by a senior resident or consultant during the initial months of training, especially in components of work that require procedural skills. Supervision becomes more indirect as a resident gradually gains experience and knowledge.

The programme also incorporates quality-related learning activities so that a graduating resident is trained to undertake administrative duties in the laboratory. Regular formative assessment and feedback of a resident's performance is an important part of workplace-based learning and the programme highly encourages a resident to provide feedback for system improvement and personalised learning.

Rotations to other training sites allow a resident to learn how other laboratories function, gain subspecialty exposure not available in the primary institution, interact with other consultants and residents, and establish professional relationships. We believe that these add up to a comprehensive and integrated learning experience throughout the five years of pathology residency training.

A stint in research may be integrated during the residency years. The NHG Research Development Office has a preparatory programme for interested residents.



**TT:** In NUHS, the residents have a very close working relationship with the specialists (pathologists) in the department. They undertake cycles of attachment with various pathologists in the department, whom they work closely with to diagnose and report a large variety of cases. Apart from their assigned supervisors, all the specialists in the department serve as mentors to the residents as well. Just as the saying "it takes a village to raise a child" goes, everyone plays a part in the residents' development.

Due to the system-based teaching and selected external rotations, the residents have training in and exposure to all the required subspecialties of pathology. There is also mentorship in academic activities, and our residents have good track records of academic activities including presentations at scientific meetings and publications in peer-reviewed journals. Since many of the pathologists are National University of Singapore (NUS) academic staff, there is no shortage of research projects for the residents to get involved in and contribute significantly to.

We help our residents to feel as if they are part of a large family who are always looking out for each other. This warmth extends to residents from other institutions posted to NUH as part of their pathology rotations.

### **Are there specific qualities that you look out for in residency applicants?**

**AL:** Anatomic pathology will be a fulfilling career option for those who pay attention to details and enjoy the challenge of making diagnoses.

Its art and science requires someone who has the talent for pattern recognition and good visual memory. Be it in performing a prosection, the grossing of a surgically resected specimen or looking at glass slides, the ability to appreciate subtle changes may determine whether you miss or

make a diagnosis. To this end, one needs to be patient and thorough.

Quoting James Ironside, a well-known neuropathologist, being a good pathologist is also about "having an open mind and looking beyond the clinical expectation". This attribute is important when it comes to discovering new disease entities or variants.

**CT:** As exposure to pathology as a subspecialty has declined in medical schools, many are not aware that it is a precise subspecialty in many ways, and not just a job where one sits at the microscope to interpret colour images. The submitted material must be properly handled to reduce potential loss of important diagnostic and prognostic information for subsequent patient management. Therefore, an interested applicant has to be willing to learn both visual and kinaesthetic skills to be a pathologist, and be even more persistent to ask for feedback on how to improve these crucial skills.

The ability to work well in a team is also important. Laboratory work constantly requires inter-professional collaboration as we communicate regularly with medical technologists, clerical staff and clinicians.

Lastly, as most activities during office hours are geared towards patient care and workplace-based learning, it is typical for a resident to spend time after office hours to read and reflect upon the cases encountered during the day. A lot of hard work and self-motivation is definitely required.

**TT:** The qualities we are looking for in residency applicants can be summarised as aptitude, attitude and values. Without a certain degree of aptitude in pathology, successful residency training in pathology may be difficult or even impossible. The correct attitude towards training includes qualities such as diligence, conscientiousness and putting

the patient first. The values we look for in residents are the same as those of our NUHS institutional core values which we call the TRICE values: Teamwork, Respect, Integrity, Compassion and Excellence.

### **Do you have any advice for potential applicants?**

**AL:** We conduct regular engagement sessions with local and international medical students, as well as junior doctors who have expressed interest in pathology. Residency open house and International Pathology Day activities such as the Pathology Quiz are great avenues for such engagement. We encourage potential applicants to first apply for a medical officer posting so they can better understand the work of a histopathologist, and our faculty can also gauge the person's aptitude for the job.

**CT:** A rotation as a medical officer before applying for residency is highly encouraged so that a potential applicant can gauge his or her interest in pathology as a career.

**TT:** Do come and talk to us, and spend some time with us in order to understand what the specialty of pathology is all about. Even a few days of attachment can be very enlightening. However, we recommend a longer period of formal attachment, such as an elective posting during medical school, or a medical officer posting exercise, in order for the potential applicant and our programme director and core faculty to get to know each other better. Potential applicants may also want to consider short attachments to the pathology programmes of the other two sponsoring institutions, so that they can experience the variety of training environments available in Singapore, and so enable themselves to make the best choice for their residency training. ♦