

INTERVIEW WITH DR. JU-YOON, MOLECULAR PATHOLOGIST.



“Think of us as molecular doctors for your tumour’s DNA and RNA - we perform a kind of molecular autopsy to figure out what’s driving the tumour and how we can use that information for treatment.”

SPECIALTY AREA:

Surgical & Molecular Pathology



KEY FOCUS:

Analyzing tumor DNA and RNA to guide personalized cancer treatment

WHO THIS IS FOR:

- Cancer patients curious about how their tumor is tested
- People who’ve received molecular testing results
- Anyone wondering who’s behind the lab reports

KEY TAKEAWAYS:

- Molecular pathologists work behind the scenes to study tumors at the genetic level
- Tests like PCR and Next-Generation Sequencing help identify treatment targets
- Reports are sent to your treatment team to help them choose the best therapy

Read the whole interview here:

HOW DO MOLECULAR PATHOLOGISTS HELP DIAGNOSE AND TREAT CANCER?

“Surgical pathologists deal with tissues, so the tissues come to the laboratories, and we are medical doctors who look at the tissue, mostly under the microscope to make a diagnosis. Often those tissues will require further work-up to identify which treatments may work best for you. Those can involve things such as immunostains or molecular assays.

In the current state of things, a lot of molecular assays generally focus on nucleic acids which may be both DNA or RNA. We have various assays that look at the sequence of the DNA or RNA and we can interpret the results and try to package the findings in a way that is suitable for your treatment team. Your treatment team would include a medical oncologist, surgical oncologist and a radiation oncologist to ensure the best treatment for you”.

WHAT IS THE DIFFERENCE BETWEEN A “MEDICAL ONCOLOGIST” AND A “MOLECULAR PATHOLOGIST”?

“You have probably met your medical oncologist already if you have happened to be diagnosed with a cancer, of course these are key members of your treatment team that oversees systemic therapy. You probably have not met your molecular pathologist; we are behind the scenes. Think of us as molecular doctors for your tumours DNA and RNA and we in a way perform molecular autopsy on the tumour. We figure out what is driving the tumour and what can we leverage in terms of molecular findings for your treatment purposes”.

WHAT KIND OF INTERACTION DO YOU HAVE WITH PATIENTS?

“It is highly unlikely that you have met your molecular pathologist, and we work behind the scenes to ensure that the best molecular assays and tests have been performed to best guide the treatment team. In that sense, our interactions are always indirect, we look at your tumour and I, as a surgical pathologist look at your tumour under a microscope and look at the DNA and RNA profiles of your tumour and we issue a report to summarize our findings. Generally, the audience is your treatment team and the recommendation is that you go through the reports with your treatment team to best understand the report. So, we don’t get to meet with you, but certainly we are behind the scenes, hoping for the best results for you”.

WHAT ARE SOME COMMON TECHNIQUES USED IN MOLECULAR PATHOLOGY?

“We generally focus on nucleic acids and molecular labs, this includes DNA and/or RNA extracted from your tumour generally, and we are looking into ways. One is looking at the polymerase chain reaction or PCR that amplify the little bits of DNA usually in a sequence- specific manner. This is used to see if you have a specific variant that we can detect using these PCR assays.

Secondly, we look at something named Next generation sequencing, which describes a certain way of sequencing an assay with respect to DNA or RNA. Another way to describe it, is called mass parallel sequencing and that’s quite descriptive in a sense that rather than sequencing little bits at a time we have a whole bunch of parallel reactions that are happening at the same time. All this reaction data are then demultiplexed and teased out to find out what is happening at different areas within the genomes of the tumour”.