# Molecular Testing to Identify Solid Tumor Molecular Markers

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**Julie McDowell:**

"Precision oncology in the treatment of solid tumors is a rapidly growing field, which involves testing for molecular biomarkers. Molecular biomarkers can be used to confirm a diagnosis, provide prognostic information, and select targeted therapies. Pathologists need a working knowledge of these biomarkers and assays used for their evaluation to optimize patient care," explains Dr. Jennifer Yoest, a pathologist at UH Cleveland Medical Center, in this CAPcast.

Dr. Yoest, who led the development of a Clinical Pathology Improvement Program, or CPIP, course on this topic, will also discuss how this knowledge will help pathologists triage specimens and prioritize testing in situations where limited tissue is available, which is also known as tissue stewardship. Dr. Yoest, this CPIP course covers molecular biomarkers as I explained. What are a few of the biomarkers covered in the course?

**Dr. Jennifer Yoest:**

Well, there are really too many of them to cover them all in detail, but the scenarios in the course focus on PIK3CA mutations in breast cancer, BRAF mutations in melanoma, and RAS pathway mutations in colorectal cancer, but it also touches on a wide range of other solid tumor biomarkers, including the various different findings that are now important in non-small cell lung cancer.

**Julie McDowell:**

Now, there are limitations to some molecular testing methods. What's an example that pathologists need to know about?

**Dr. Jennifer Yoest:**

Yeah, I'm glad you asked. First and foremost, it's really important to understand whether the biomarker you're interested in is even covered by the panel or the methodology that you're considering using for a particular patient, because all molecular platforms are not created equal. For example, there are a lot of very quick and cheap and simple molecular techniques available to look for specific mutations in one gene at a time. But it's important to understand this limitation, if there is also value in looking for other mutations in the same gene or other biomarkers in other genes, that would not be covered by this type of a method. On the other hand, very large panels may require more sample material than is available and may also provide much more information than is necessary to make treatment decisions at an additional financial cost or interpretive burden. So with any test, the risks and benefits have to be weighed against each other in order to select the best test for the clinical scenario.

**Julie McDowell:**

So the course also talks about tissue stewardship. What are some of the strategies your institution uses?

**Dr. Jennifer Yoest:**

At my institution, we're actually very fortunate to have validated our molecular panel to accept cytology specimen supernatant fluids. So we are actually able to perform molecular testing on a portion of the sample of these types of specimens that would otherwise be discarded. This allows our cytopathologists to utilize the main portion of the specimen for diagnosis. We also have strategies in place to cut unstained slides upfront in certain situations where the sample is small and ancillary testing will likely be necessary so that multiple facings of the block are then not necessary.

**Julie McDowell:**

How do you think your fellow pathologist colleagues can benefit from understanding and learning about this content?

**Dr. Jennifer Yoest:**

By understanding what molecular biomarkers are relevant in multiple different clinical scenarios and how to provide a good stewardship of the tissue, and also how to evaluate which assay best fits the goals of the testing, really the pathologists will be able to provide expert consultation to their clinical oncology colleagues and really the best value care for their patients, which is really important.

**Julie McDowell:**

Well, thank you, Dr. Yoest, for sharing all this information with us. Any parting thoughts you'd like to share?

**Dr. Jennifer Yoest:**

Yeah, thank you. Molecular testing is only becoming more and more important for prognosis and treatment planning, and it's really our responsibility as pathologists to provide the best care for our patients by making these necessary molecular tests available and ensuring that these tests have the best chance of success.

**Julie McDowell:**

Well, thanks again. As mentioned at the beginning of this episode, Dr. Yoest led the development of a Clinical Pathology Improvement Program, or CPIP, course on this topic. It's entitled Molecular Solid Tumor Molecular Markers. Visit the learning section of estore.cap.org and enter the course title and the search function to learn more about the course.

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