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SECTION

Sara Issa, Biomedical Scientist & Team Leader & Josefin Persson, Biomedical Scientist & Lab Manager, both from Clinical Pathology Laboratory, Skåne University Hospital in Lund, Sweden, prepare paraffin blocks for sectioning.

OPTIMIZING TISSUE PROCESSING:

Skåne University Hospital's strategy for streamlined laboratory workflows

Tissue processing, defined as the procedure in which fixated tissue is made suitable for embedding in paraffin, typically involves three sequential steps: dehydration, clearing, and infiltration. Dehydration problems, difficulties in tracking errors, and instable temperatures which in return would negatively affect the tissues, were, however, some challenges that the Clinical Pathology Laboratory, Skåne University Hospital in Lund, Sweden, were experiencing.

To solve these challenges, the staff had to pay a lot of attention and time to the sectioning. Several potential errors could occur, such as cracks or fragmented tissue, often caused by tissues being either over- or under processed, making them difficult to section, explains Josefin Persson, Biomedical Scientist & Lab Manager. – Also, it was not possible for us to run short programs, Sara Issa, Biomedical Scientist & Team Leader, explains, before Josefin Persson adds: – Basically, we felt that WE were the ones who had to adjust to the machine, not the other way around.

The essence of time

Anyone who has worked in a lab will know that the time factor is crucial. It all comes down to obtaining the best results as fast as possible, for the sake of the patients, and to avoid backlogs. With that in mind, the quest began.

From heating cabinet to tissue processing

A heating cabinet would mark the beginning of the lab's journey towards a new tissue processing solution. When learning of the challenges the team was having, they were quickly introduced to the HP300 Plus. It appeared to tick all the boxes. One thing, however, was vital: – As much as we felt it was the right match for us, it was also a must to conduct a test in a real clinical setting, says Josefin Persson, further explaining that pre-testing is in fact a standard procedure in her lab before implementing any new device.

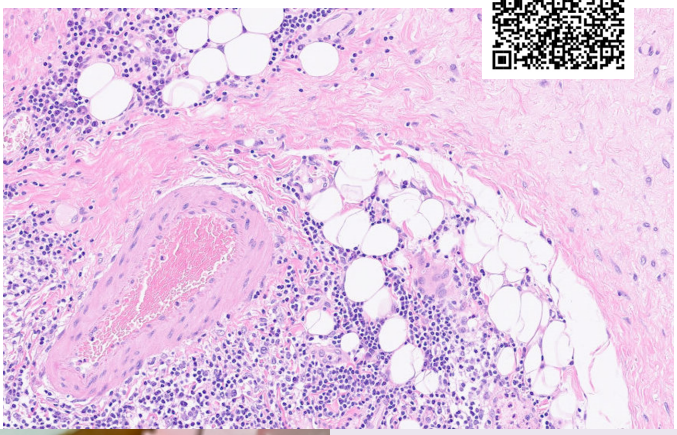
Overnight runs and faster throughput time

And so, the trial was set up, and within a month of that first meeting, the HP300 Plus was installed. The staff received training and ongoing support throughout the entire period. It didn't take long before the team started to see the results: A smoother workflow and finally being able to run many different tissue types together in one dehydration program overnight. Throughput time was also reduced from around 22 hours and down to approximately 18 hours for the large fatty tissues.

Overview of entire processing flow

– Being able to follow the entire process on the screen was really beneficial in our workflow, explains Sara Issa, and continues: – No one likes to spend time on cleaning but with this particular device it is much easier. Problems such as paraffin getting stuck in the system could block the entire process. But the HP300 Plus, basically has a built-in dishwasher. One more example of how everything just seems to have been carefully thought through, down to the smallest detail, she says. And then there is the design: – It is actually quite stylish, Sara Issa says with a big smile.

To view the image in further detail, scan the code



Multiple tissue types tested

– We felt that this device met our expectations 100%, but we also needed feedback from the pathologists, says Sara Issa, further explaining that the trial phase was designed so that the pathologists did not know which tissue came from which device. – This enabled us to ensure that they were unbiased in their evaluation.

What happened was that no matter which kinds of tissues the pathologists tried – and they tried a lot – they found it easy to work with and the results satisfactory with a good morphological preservation, says Sara Issa. Josefin Persson further mentions that a more evenly distributed staining was also observed, possibly due to a better dehydration process which was also completed faster.

The team was also positively surprised about the reagent exchange notification feature that allows the replacement of only the exhausted reagent, not all. This reduces not only replenishment costs but also has some environmental benefits.

Pre-testing ensures internal validation

– We find it hugely beneficial to have tested this device. Now we know with certainty that it has been tested thoroughly and validated internally, also in pathology, so there will be no unexpected surprises. This way we are also able to collaborate much closer with our supplier from an early stage. And we have found a device that can be adapted to our needs, not the other way around, concludes Sara Issa.

Example of an H&E stain of an appendix from Lund. Notice the overall tissue structure, the clear appearance of the elastic fibers, the nuclear structure, and the well-preserved erythrocytes.

How Lund tested the HP300 Plus:

- Test period: two months
- Various types of tissues were tested: breast, brain, sarcoma, ear, nose, throat, lung, uterus, skin, lipoma.
- Blinding of samples for pathologists: To ensure unbiased analysis, samples were placed in two different colored blocks, each representing a different device. The pathologists were unaware of which device each sample originated from.