AXLAB FOCUS

Axlab
YOUR CHALLENGES - OUR INSPIRATION

Welcome to Axlab Focus

Axlab's newsletter "STRIBEN" has been around for many years with articles and interviews from the pathology labs: Stories about daily work and challenges, new trends in pathology and future visions. Generally keeping ourselves and our products in the background. With the new Axlab Focus we aim to take a step forward and more openly present our latest technology. Not as a sales presentation but by letting the users of our technology tell the story. How do our products perform in real life? How do they affect workflow and quality? And how do we perform as a supplier and service partner? We hope you will enjoy this first issue with a first hand review of our auto slide preparation system AS-410M.

The new blockbuster at Novo Nordisk

Novo Nordisk has invested in the advanced, fully automated paraffin sectioning instrument AS-410M. Senior Laboratory Technician Hanife Dzaferi Farizi explains why the investment makes sense in a research lab and why the machine was quickly nicknamed BLOCKBUSTER.

"The background for the acquisition was a management decision to automate multiple processes in the departments. One of the laboratory's chemists had previously looked at the AS-410M and found it interesting, but it wasn't until the department manager decided to invest in automization, that the AS-410M was acquired. The instrument was installed in January 2019".

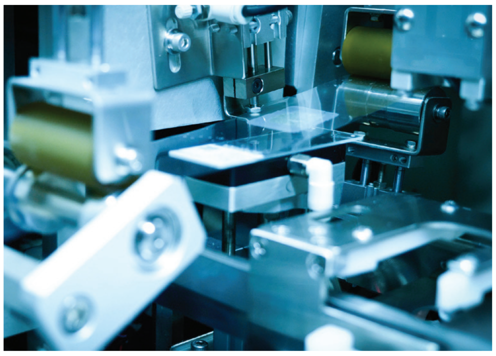
WHICH TYPE OF TISSUE DO YOU TYPICALLY SECTION ON THE INSTRUMENT?

"The idea was primarily to use the instrument for 3D Imaging, where all off the tissue is sectioned for stacking of the 3D images. The reason is that paraffin sections provide a very good resolution and is in many cases a better way of analyzing the tissue.

We discovered that the instrument can be used for even more research, because it cuts sections very well. Therefore, we also use it to section through entire blocks - perhaps with 1,000 or 1,500 cuts. For example, part of a brain where we look for a specific area. In the past, we would manually cut down to a specific area, and collect sections. Now, however, we can quickly cut the entire block, color every 10 sections, and find the interesting area among them.

The technique is also perfect for Tissue Microarrays, where we embed more tissue in the same block - e.g. arteries from mice. There we can also quickly section through the entire block to see if there are any morphologically changes in the tissue. We section tissue from mice, rats, rabbits, pigs and dogs - and from all types of organs. In fact, we also have human tissue, so there are really no restrictions. We look at many types of changes in the tissue, often with a focus on diabetes. We could look at pancreas to

Hanife and Malik from Novo Nordisk



see if a given drug has an effect. But we also analyze a lot of sections from immunohistochemical staining as well as sections used for In Situ Hybridization, where we look at RNA".

HOW MUCH DO YOU SECTION ON THE INSTRUMENT?

"The instrument has become quite popular, so planning is actually necessary, because it is largely booked and run 24 hours a day. We even use it on holidays, occasionally. We had a month when we made over 14,000 sections, which is quite a lot.

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The reason we cut that many sections is also that other departments are contacting us for assistance in sectioning. If for instance other histology labs at Novo wish to cut sections from 25 rat tissue blocks, it is my opinion that we should help each other. At the same time, I have not yet finished educating new users on the instrument. When the new users are ready, the demand for sectioning becomes even greater. It ends up making the instrument so popular that we have to invest in another one", Hanife says smiling. "This is probably why we have given it the name BLOCKBUSTER after a name competition. It cuts through a lot of blocks and it keeps on going".

HOW HAS THE NEW INSTRUMENT AFFECTED YOUR DAY AT WORK?

"I think that as laboratory technicians we were quite skeptical about the instrument at first. Probably because we were afraid that the technology would replace us, but it didn't at all. On the contrary, we avoid the manual sectioning task that is extremely stressful to the body and we now have time for meetings and other important tasks. For example, when sectioning manually, we often didn´t have enough time for scanning and for checking results. Now we have time to finish all the steps in the process.
As a result, we have a lot more sections in the lab than before, but with help from the AS-410M, we can easily handle the increased number of sections.

Fortunately, it is a very user-friendly instrument which surprised us, because it is a large instrument. When I first saw it, I thought that just cleaning and maintenance would take hours. But there is actually not much work with cleaning, and it is easy to use. One of my colleagues is a little intimidated by technology, but when she first used it, she stood next to it and jumped for joy out in the hallway. It runs and it runs very well".

THERE MUST BE CHALLENGES WITH THIS NEW TECHNOLOGY?

"When we bring in new technology, we wish to adapt it to our way of working. We want to have very open platforms for research, but in some areas, the AS-410M is locked.

We usually collect as much tissue as possible on a single slide glass for expensive analysis like some immunohistochemistry analysis. We can´t do that on the BLOCKBUSTER. In this case we adapt and say that we can´t make section for these analyses, but in return, we use it for so much else. We have been inspired to work differently and to look at the early processes of embedding, where we could embed more tissue in the same block, so it can be cut at BLOCKBUSTER. Another example is that when we cut 1,000 glasses and would like continuous numbering of the slide glasses, the instrument is set up for batches of 400 glasses and starts again with 0 at each new run instead of continuing with # 401. This feature is also locked.

Finally, the AS-410M it is not cheap to use as there are expenses for tape and special slide glasses. In general, we have adapted our work as to how the instrument is constructed. We have also used our network at hospitals to benefit from hospital experience. At the same time, we have a very good dialogue with Lone (Lone Loldrup Kjær, Axlab), who is always our back up, she answers questions and takes our suggestions further to DNS".

HAVE YOU NOTICED ANY ADVANTAGES IN THE PROCESSES SUBSEQUENTLY?

"Yes, definitely. The instrument places the sections exactly in the same place, making subsequent scanning much easier and more accurate. With manual sectioning, there may be too much water on when you pick up the section, so it slides down a bit. At the same time, it cuts uniformly, and you can count on the section thickness. Manually, the first sections can be perfect while the last ones are too thick because the block has gotten varm along the way.

All in all, it has become easier to stain, scan and perform digital and manual analyses. If I must conclude - without it sounding like advertising – it is really good. It has made our work much easier in general, and I'm actually surprised that we are so happy with the instrument."

WATCH THE VIDEO

Watch Hanife and Malik present their experiences with AS-410M.