

Under the Microscope: Interview Series #5

The benefits of customisable LED illumination systems in automated imaging systems



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Automated imaging systems deliver quantitative results from a wide variety of assays, with very little hands-on time required from the scientist.

Medipan is at the forefront of automated imaging systems and in 2009 became the first company in the world to introduce a commercially available system for the fully automated, objective evaluation of cell-based immunofluorescence tests. The AKLIDES® system marked a new milestone in the development of the immunofluorescence method - one of the oldest and most widespread laboratory procedures for the diagnosis of autoimmune disease.

We met with AKLIDES® Team Leader Dorian Sartorius to find out why they have relied on CoolLED customised LED Illumination Systems in their products for the past 12 years.

Can you tell us a little about Medipan and your role in the company?

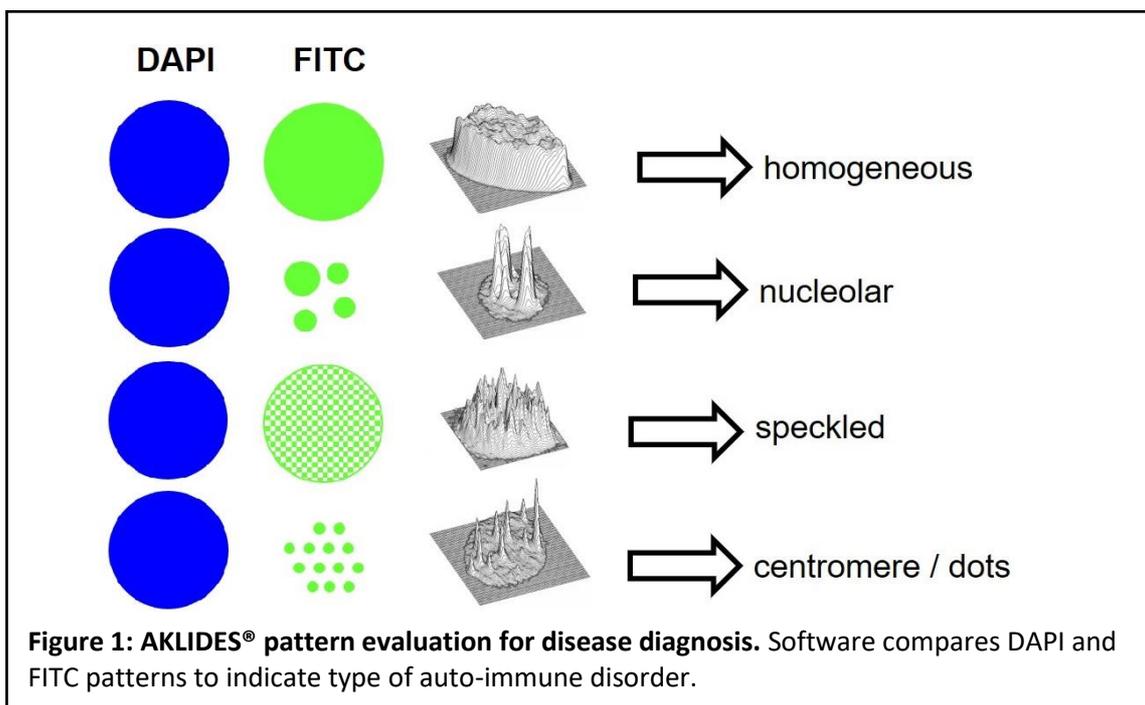
I joined Medipan in 2014 as software developer and two years later I was promoted to leader for the AKLIDES® team. The AKLIDES® is an automated imaging system and was the first on the market able to automatically analyse slides. It has two main software programs: one for detecting cell damage via DNA double strand breaks, and the other for detecting immunofluorescence on slides with prepared cells.

The latter type of assay is important in diagnosing auto-immune diseases, using pattern recognition software to identify specific antigens. The patient's antibody implicated in the auto-immune disorder sticks on a certain part of the cell (depending on which antibody) and our fluorescence tagged antibody sticks to that antibody, and the program reads out the pattern (Figure 1).

If a patient presents with several symptoms, running 10 or 20 ELISAs is resource intensive, but the AKLIDES® rules out many diseases prior to running a set of ELISAs. By performing an immunofluorescence assay and seeing which part of the cell shows fluorescence, it is then possible to choose two or three ELISAs to determine the type and amount of antigen present. The physician can then use this information alongside other results, for example blood tests for a diagnosis.

How has the technology evolved over the time you've been working with CoolLED?

We started working with CoolLED 12 years ago. Before that we started out using a Xenon bulb, but we needed something reliable and steady. With the xenon, we had to wait until it was stable and worst of all, the lamp needed to be changed after a certain number of cycles.



This is simply not possible for our customers: we could not ask them to send it back for repair after 100 runs. LEDs are stable and reliable and can be switched on and off without having to wait.

Of course, in the beginning it was also a challenge to introduce new technologies into hospitals, as they are very cautious to change. But automated imaging systems really do make a difference. Traditionally, scientists would analyse slides manually using a microscope in a dark chamber, where it's just not possible to do this for eight hours. Even after two hours, your eyes are tired and you cannot focus correctly. The AKLIDES® overcomes this with its own internal dark chamber, so it is also more space efficient. Importantly, the analysis removes any subjectivity and it is standardised each time. It's objective and repeatable.

What are the main factors you need from an OEM LED light source?

First is reliability: this is crucial. If the LED doesn't work, the system doesn't work and our customers suffer downtime. If our customers do not then feel confident about the performance of one system, they might wonder if the other systems could also have problems. We need to avoid that at all costs, and at the end of the day we are talking about patient samples which are irreplaceable.

Nowadays, everything needs to be compact. There are more and more systems packed into the lab, so a small footprint is more and more important for end users. We also value long-term stability and having the correct certifications. As LEDs have become

accepted as a microscopy light source, it is a good point for our sales to say we have a new system for light illumination which is more reliable and better in all parameters.

Why else do you like working with CoolLED?

Over the years working with CoolLED we have been satisfied with the quality of the product, but every product has an occasional error. The very few times we have reported this to CoolLED, we have relied on good and fast support. For some customers, returning an LED to be fixed takes too long, and CoolLED has instead sent us a replacement immediately, to provide a much faster exchange and get the customer up and running again.

What do you see for the future of Medipan?

We also have a CoolLED pE-4000 in our development department to look into an idea to automate the identification of chromosomal aberrations. We need to develop the software first and this is the part we are currently testing. Although we are always researching other possibilities and future projects, our current systems suit our customers' needs and are not set to change.

Find out more about Medipan at
www.medipan.de

For more information on OEM Illumination Systems, please visit
www.oemillumination.com