

Microarray hybridization service with HS 4800™

Microarray scientists at the Netherlands Cancer Institute (NKI) in Amsterdam, have chosen four HS 4800 hybridization stations to automate their microarray processing service, which they use to support scientific research at the institute.

The NKI is a large research facility adjacent to the Antoni van Leeuwenhoek Hospital (AVL), that includes a Central Microarray Facility (CMF) to support microarray-based research for the scientists in the institute. "There are eight of us in the CMF, four working mainly in the laboratory, and four bioinformaticians who work on analysis of results," explained Dr Ron Kerkhoven, head of the CMF. "Our work is very variable – we handle a lot of human samples that come from the hospital tissue bank, where thousands of tumor samples are stored. Many scientists working here conduct large scale research using that resource, looking for fingerprints for certain types of cancers. Other research in NKI focuses on mouse models for cancer, so we also receive mouse tissues to analyze, as well as samples for various cell and tissue culture-based experiments."



Dr Ron Kerkhoven and Wim Brugman, technician, with one of NKI's HS 4800 hybridization stations



NKI uses four HS 4800 hybridization stations for its microarray processing service



Wim Brugman operating the HS 4800

"We used to perform all our microarray hybridizations manually, using little incubators that were submerged in a water bath. We have been handling expression arrays for some years and became quite proficient with the manual technique, and we taught the technique to many researchers to hybridize microarrays in their own labs. However, their results were variable compared to those from our facility, so we decided to switch strategy, where people send their samples to us, and we perform the microarray analysis. We now have a more production-style setting in our laboratory, covering RNA extraction, DNA amplification and hybridization. In order to manage the throughput, we automated the hybridization process with two Tecan HS 4800 hybridization stations in April 2005, which brought us greater reproducibility of results and allowed standardization of the process. It was a big step forward, and we now have four HS 4800 hybridization stations in our laboratory."

"Once we fine-tuned the hybridization conditions to deal with the viscous fluids used in our procedure, we had a protocol that is very compatible with the Tecan hybridization stations, and we are very

happy with their performance. With our present set-up, we can process up to 48 slides in a day," elaborated Dr Kerkhoven. "Our current levels run at between 5,000 and 6,000 arrays every year."

Most of the microarray work at CMF is carried out on arrays that are designed and fabricated in-house. "The Tecan system is completely compatible with most of the arrays we use. Besides our own, we have used Agilent and Nimblegen arrays, which also work well – the only practical difference, of course, is that the commercial arrays have higher densities."

"One of the best features of the HS 4800 is that the whole hybridization process is fully automated, from sample injection to nitrogen drying and, because of that, all the conditions are very standardized. We usually hybridize overnight, and the results are waiting for us the next day. The slides are completely safe and sealed until we take them out for scanning."

"When we first decided to automate the process we looked at many hybridization stations, but all failed our requirements except the HS 4800, which really fulfilled all of our needs," concluded Dr Kerkhoven.

For more information about Tecan's HS 4800 hybridization stations, visit www.tecan.com/hs4800