

Automated processing for pioneering translational medicine project

Aurora Health Care is relying on its Freedom EVO® liquid handling platforms and REMP Small Size Store™ to provide automated processing, cataloging and storage of samples for an innovative translational medicine project.

Aurora Health Care is a not-for-profit health care provider, serving eastern Wisconsin in the United States. Established in 1984 by the affiliation of two Milwaukee hospitals, Aurora Health Care was founded on a simple premise; that there is a better way to provide health care. Since these early days, Aurora has expanded to serve a population of more than a million people, and now comprises 13 hospitals, over 120 outpatient clinics and approximately 140 pharmacies.

Aurora's founding principle still remains central to its vision for health care, and has been the driving force behind establishing a translational medicine project – a fully automated repository of biological information developed over the last five years by Aurora directors Matthew and Alfred Tector. With so many facilities, in addition to community services, including visiting nurses, physicians and hospice activities, the potential influence of this venture is far reaching. The Aurora biorepository hopes to collect 50,000 samples a year, making use of surplus blood samples collected from patients for routine clinical tests that would otherwise go to waste. With such a large volume of samples for processing, automated sample handling is essential to its success.

Dr Matt Tector, explained: "The aim of the project is to allow this research to take place without changing the experience of patients within the health care system. We will be asking patients entering the system, as part of the preliminary paperwork, to consent to letting us access their medical records and use surplus blood samples. The benefit of this arrangement is that patients won't have to give additional blood samples, so we expect a high consent rate. Potentially we could create a library on the same scale as the UK Biobank, benefiting all races and socio-economic backgrounds within our region. To process such a large number of

samples, we will need to use robotics for as much of the processing as possible. All our colleagues with experience of automated systems recommended Tecan as the right choice for liquid handling. With the Freedom EVO/REMP SSS Factory, almost the entire process will be automated."

"The objective of establishing the Aurora biorepository is not the discovery of new drugs and therapies, but the improvement of existing treatments," Matt continued. "As a health care system, our advantage is that we are not limited to investigating a single disease, like some institutions. Our aim is to transfer information from a research environment to a clinical setting as fast as possible. We intend to have people in the front line of health care – clinicians, nurses, physicians and pharmacists – directing our research to the appropriate studies. We can then find the expertise we need to help us accomplish those goals. If we make a discovery that is relevant to any aspect of the health care industry, our unique set-up allows us to implement those changes rapidly."

"Our intention is to use genetic analysis to help our physicians to create personalized therapies for individual patients. We are not a clinical laboratory, however, so we will not be reporting results to directly influence an individual donor's care. In fact, one of the tasks of the Freedom EVO will be to assign new identities to each sample so they cannot be traced back to identify the patient. We have a Freedom EVO 100 that will be responsible for checking the barcodes on samples against the database. It will then re-rack those samples from patients who have consented to this project, and assign a new identity which incorporates certain elements of their medical history. With this system we expect to be able to process several thousand samples a day. Samples will then be transferred to our Freedom EVO



(l to r) Matt Kirsling, information systems specialist, Alfred Tector, MD, clinical research and transplant program medical director, Natalie Polinske, research associate and Matt Tector, PhD, biorepository director

200 / REMP SSS Factory, which will isolate DNA from the samples and store them for later use. Full automation of the process should allow us to process approximately 300 DNA samples a day. We have also purchased a Safire²™ microplate reader and are hoping to incorporate some standard genetic analysis assays into the Freedom EVO 200 protocols."

"Planning for the biorepository has been ongoing for five years, and our relationship with REMP began very close to the start

of the process. As the project has evolved, the Tecan team has always offered good insight; they have put almost as much into this project as we have. Whenever we have needed help, Tecan's support staff has been there. As the project grows and expands to our other facilities we hope to continue our relationship with Tecan."