TECAN.

Tecan Journal

Life Sciences | Clinical Diagnostics | Forensics | OEM | Business and Technical News

Edition 3/2009

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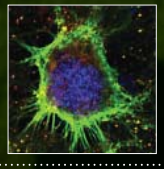

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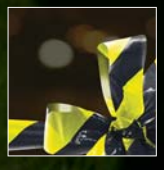

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Welcome

As 2009 draws to a close...

I am delighted to welcome you to this edition of the Tecan Journal with an update on our latest comprehensive global customer survey. The survey, conducted by an independent organization to evaluate and measure customer satisfaction, yielded very good overall results and reinforced our belief that the measures taken over the past years are the right ones. It has also helped us in focusing our efforts even more in such critical areas as helpdesk efficiency and innovation. This feedback is very important to us and I sincerely thank all those who took the time to participate. We look forward to hearing the views of many more customers as our roadshow visits the UK.

We are also continually working in other areas to improve the quality of our products and services. One of our latest initiatives is the establishment of central warehouses and a dedicated stock control team, ensuring faster delivery of Tecan spares and consumables worldwide.

Also in this issue, we have details of collaborations with customers in both academia and industry to develop technologies for regenerative medicine, pharmaceutical development and diagnostics, expanding the use of laboratory automation in these exciting disciplines. We also have another success story on the use of automation in forensics, along with discussion on the likely future of regulation in the field.

We hope you enjoy this issue,

Thomas Bachmann, CEO

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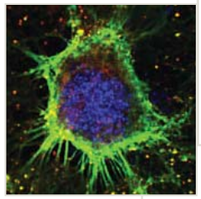

Automating stem cell culture on the Freedom EVO® platform has reinforced our collaborations

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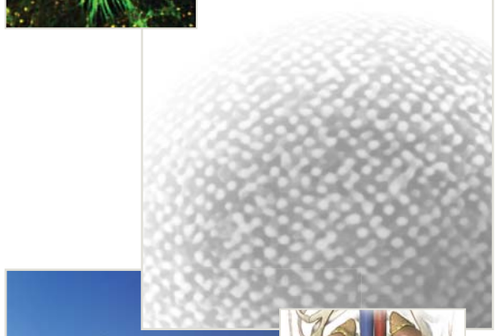

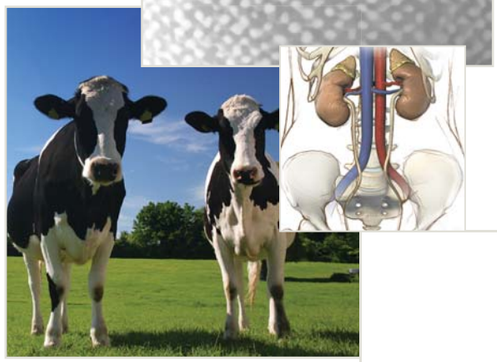

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The Tecan software and the LIMS help to ensure that the worklist of each sample is fulfilled within the scheduled period

Magellan™ offers new features for ELISA

magellan
data analysis software

PLAY&WIN

To be in with a chance of winning Magellan v6.6 software, pre-installed on a netbook, go to **www.tecan.com/magellan-package-deal**

As from September 15

Tecan has set a new standard for ELISA assays with its Magellan v6.6 data analysis software. This latest version of Magellan supports eight languages to offer even more user-friendly operation, including Chinese, English, French, German, Italian, Portuguese, Russian and Spanish.

Magellan v6.6 is available as part of several packages designed to provide customers with attractive solutions for ELISA applications, even on low cost netbooks.

To find out more about these special offers, visit **www.tecan.com/magellan-package-deal**

Welcome
Magellan speaks your language!

Tecan's roadshow is coming to the UK!

Tecan will be touring the UK from the end of August until the end of October, visiting 13 universities, research institutes and science parks to demonstrate the capabilities of the Freedom EVO® 100 automated liquid handling workstation and the Infinite® 200 series of modular, multimode plate readers.

Everyone is welcome to visit us at any of the venues and see our instruments in action. Take this opportunity to see Tecan systems in action and speak to our representatives to learn how automation can help you to achieve reliable results and make tedious manual handling a thing of the past.

For more information, please visit **www.tecan.com/ukroadshow**

Quality tips you can count on

New purity level certification ensures reliable results with LiHa disposable tips.

Tecan's range of high quality disposable tips is constantly evolving to help you achieve the highest performance levels on your Tecan liquid handling instruments. As well as developing new products and improving tip design, we are focused on stringent quality standards and tailoring purity levels towards specific applications.

As ever, Tecan's Liquid Handling Disposable Tips are manufactured to the highest production standards; each tip is optically inspected during production and, to improve process security and minimize the risk of user errors, tips are now supplied in trays color-coded for different tip volumes. The purity of blister-packaged Liquid Handling Disposable Tips is now tested by an external laboratory, guaranteeing tips are free from human DNA, PCR inhibitors, RNase and DNase.

In addition, each case of tips is shipped with a Tecan Certificate of Conformity (CoC), using Tecan's validated quality assurance processes to provide full product traceability.

Free from	Specification	Method
Human DNA	<2 pg (less than in a human cell)	Polymerase chain reaction
PCR inhibitors	<10 amplifiable targets (equivalent to control)	Polymerase chain reaction
RNase	<1.0 x10^{-9} Kunitz units	Not detectable by RNA digestion
DNase	<1.0 x10^{-6} Kunitz units	Not detectable by DNA digestion

To find out more on Tecan's consumables, visit **www.tecan.com/consumables**

Hands-on training for microRNA profiling

Tecan has teamed up with Exiqon, manufacturers of the high specificity Locked Nucleic Acid (LNA™) detection technology, to offer customers practical training in automation of high throughput microRNA profiling. Using Exiqon's miRCURY™ LNA microRNA arrays and Tecan's HS 400™ Pro hybridization station, the course includes hands-on laboratory work to help users achieve robust and reliable results, as well as tips, tricks and presentations from experienced microRNA specialists.

To find out more about these workshops, visit **www.tecan.com/microRNA**

LNA and miRCURY are trademarks of Exiqon A/S, Vedbaek, Denmark.

Practical training for high throughput microRNA profiling

Academic collaboration receives CTI Medtech Award nomination

A novel automated solution, developed through a collaboration between Tecan and researchers at the Zurich University of Applied Sciences, Wädenswil, has been nominated for an award by the Commission for Technology and Innovation (CTI) from the Swiss Confederation. The new system performs and controls all the steps required for cell isolation from biopsies, from primary cell culture, to expansion and maintenance, and forms the basis for research into ground-breaking regenerative medicine.

Prof Ursula Graf-Hausner and her team at Zurich University of Applied Sciences

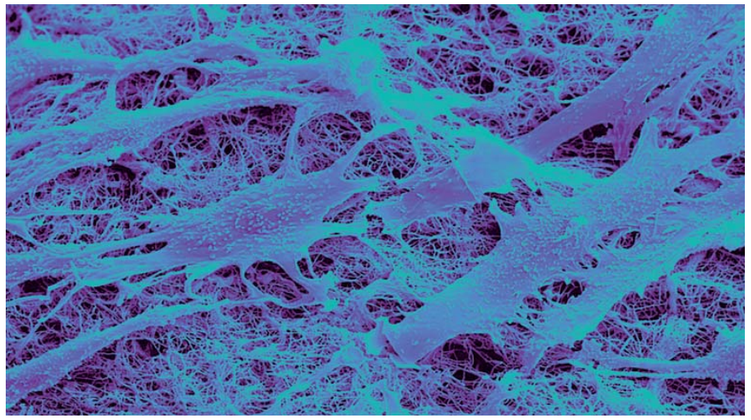
The CTI Medtech initiative funds projects to promote closer co-operation between science and industry, and the award recognizes the project that best demonstrates an innovative product, combining strong market potential and medical relevance. “We are delighted that we continue to be closely involved at the forefront of cutting-edge scientific research, and are very pleased to be nominated for this much sought after award,” commented Roland Durner, Director Market & Application Management for BioPharma at Tecan.

“We have worked closely with Tecan throughout this project, and I believe we have made a significant breakthrough,” added Prof Ursula Graf-Hausner, group leader of the Cell Biology and Tissue Engineering Division at the Zurich University of Applied Sciences. “For us, it is an enormous achievement to be nominated alongside Switzerland’s other prestigious universities and federal institutes.”

Prof Norbert Boos, Head of Spinal Surgery at the Orthopedic University Hospital Balgrist and the Spine Research Group at the Centre of Applied Biotechnology and Molecular Medicine, University of Zurich, commented: “Automated cell culture systems are a pre-requisite to bringing tissue engineering from the bench to the bedside. We have achieved a major leap forward in making regenerative medicine a clinical reality.”

To find out more on Tecan’s automated cell culture solutions, visit **www.tecan.com/cellbiology**

To find out more on Prof Graf-Hausner’s tissue engineering group, visit **www.icbc.zhaw.ch**



Cultured human spinal disk cells

Tecan and *p*ION offer new automated drug screening solution

*p*ION’s Double-Sink PAMPA integrated with Tecan’s Freedom EVO platform

Following on from the successful launch of manual assay systems for permeability and solubility, Tecan and *p*ION INC have co-developed an automated solution for drug permeability and solubility screening. This new solution is both scalable and upgradable according to the user’s changing requirements, from the entry level manual technique to a fully automated system for high throughput applications.

*p*ION’s Double-Sink™ parallel artificial membrane permeability assay (PAMPA) helps to identify the most promising lead compounds well in advance of cell-based methods, and has been integrated with the Freedom EVO® workstation and Infinite® M200 plate reader in the PAMPA Evolution™ system. This platform offers enhanced walkaway time and high throughput for fully automated processing of permeability assays, while automated miniaturized shake-flask solubility assays can be done with the similarly configured µSOL Evolution™. The flexibility of the Freedom EVO workstation also allows a single instrument to perform both permeability and solubility assays, as well as other ADME assays, in a combined set-up. The advanced Quad4 Monochromators™ technology in the Infinite M200 provides excellent sensitivity, and an optional MultiChannel Arm™ 96 further increases throughput with rapid sample transfers.

“Over the years, we have invested heavily in developing new applications for our patented Double-Sink PAMPA, allowing our licensed customers to conduct cost-effective screening prior to the more expensive cellular and *in vivo* GIT and BBB testing,” explained Dr Alex Avdeef, *p*ION CSO and President. “We are delighted to continue working with Tecan, with its Freedom EVO platform demonstrating once again the consistently high quality and reliability of all its products.”

To find out more on Tecan’s PAMPA Evolution system, visit **www.tecan.com/pampa**

Double-Sink, PAMPA Evolution and µSOL Evolution are trademarks of *p*ION INC, Woburn, USA.

New global supply operation guarantees quick delivery of parts

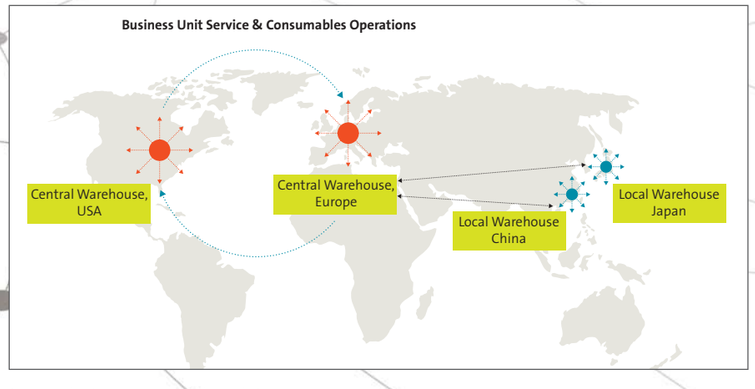
Tecan's restructured global demand planning operations has been running since July 2009, supplying stock through two central warehouses in Bad Säckingen, Germany and Raleigh, North Carolina, USA, as well as two local warehouses in China and Japan, to ensure faster delivery of Tecan spare parts and consumables products.

Urs Käppeli, head of the new global demand planning team

Tecan's central warehouse in Bad Säckingen, Germany

Previously, stocks were locally managed by the different regional organizations, with limited global overview of the supply arrangements. With the new process, three global demand planning managers communicate with the four production plants and external suppliers on one hand, and the distribution managers of the two central warehouses on the other, to maintain a balance between demand and stock levels.

One demand planning manager is based in the US and manages the detection spare parts, while two members of the team are based in Switzerland and handle the liquid handling and robotic spare parts, as well as the supply of all Tecan consumables (disposable tips, troughs, tubes etc) in both central warehouses. Although geographically separated, they work from the same materials requirements planning (MRP) lists and, using the SAP ERP system, the three planning managers are able to coordinate the global operation more efficiently. With the new structure, the customers benefit from a service department that is in a better position to supply any of the 3,000 parts to the field service engineers within due time.



Scheme for the global overview of stock supply

Urs Käppeli, head of the new global demand planning team, explained: "Tecan's on-time delivery rate for new instruments has already been around 99.2 %, and the new global demand planning operation was conceived with the aim to improve on-time delivery rates for the after-sales items as well, plus control the stock of such items globally. For this, we needed a new organizational structure. The introduction of the new structure went very smoothly and everything is running well. Efficient global communication processes have been established and the planning parameters of the items that are most commonly required by the service engineers have been determined."

"The whole goal behind this operation is to have happier customers. It's great to work for a company that realizes what needs to be done to strive for greater customer satisfaction. All my colleagues understand what they need to do in order to achieve that, and we are on track to see the improvements," Urs concluded.

Sample Management Club 2009

Sample Management Club (SMC), a group in which scientists overcome the corporate barrier to discuss issues in sample management, held its yearly meeting at a hotel in Tokyo, Japan, on July 2, 2009. The meeting was the fourth event, attended by approximately 40 researchers from 20 of the country's main pharmaceutical manufacturers and two public research institutes.

Greeting by Dr Ikeda of Dainippon Sumitomo Pharma Co., Ltd. at the banquet

Dr Fujita, Astellas Research Technologies Co., Ltd.

Presentation by Dr Jens Peter von Kries of FMP

The SMC was started in 2006 by organizers from three companies, with the mission to 'improve academic and social values of sample management, and technological innovation'. The REMP Business Group has supported the running of the SMC, as its industrial sponsor, since the group's inauguration.

"Conferences and forums on sample management are actively held in other countries, and the improvement of academic and social values of sample management, and the technological innovation that is gained through those studies and debates, are always relevant topics. The SMC was started by its organizers and their supporters, who had the sincere desire to create a joint arena for such in-depth activity in our country too," said Dr Shigeo Fujita, Senior Director of Exploratory Research Division of Astellas Research Technologies Co., Ltd. "The notable point of this group is that it is not just a meeting only of REMP users, but that it involves many pharmaceutical corporations that have overcome corporate barriers to participate in open discussions, and work towards positive results on the shared theme of sample management."

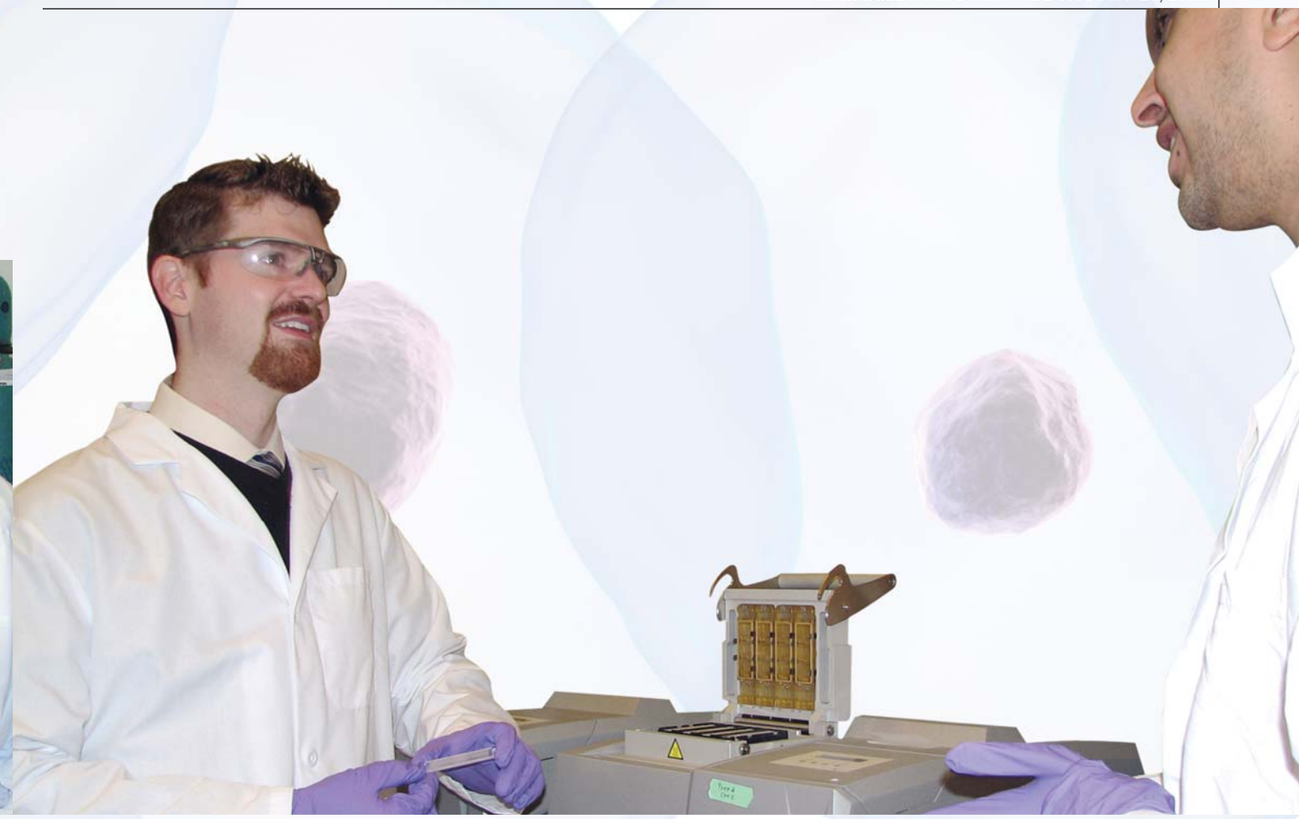
At the meeting, there were presentations by two national manufacturers and an international invited group, on high throughput screening for the whole pharmaceutical research process, and automation of sample management for research purposes. The event started with a presentation by Dr Masahiko Ikeda of the Genomic Science Laboratories of Dainippon Sumitomo Pharma Co. Ltd., entitled 'Automated storage, the core of a sample management system for drug discovery'. This was followed by 'Validation of low volume pre-dispensed compound plates using kinase screen' and 'Sample management for HTS by SP, APR and LSS in Astellas', which were presented by Mr Kazuhiko Aibe and Mr Hitoshi Sawada of Exploratory Research Division at Astellas Research Technologies Co., Ltd. Lastly, guest speakers visiting from Berlin, Germany, Dr Jens Peter von Kries and Dr Martin Neuenschwander of Leibniz-Institut für Molekulare Pharmakologie (FMP), gave a presentation entitled 'The academic high throughput screening platform of the ChemBioNet'.

There were numerous positive comments in response to the presentations, such as: "I have been able to hear solid, open descriptions", "I have been able to grasp the situations at other companies", and "it will become a reference for review of our own company's workflows".

After the presentations, the participants enjoyed informal talks during the banquet that was held in the same hotel. This annual event has become a significant opportunity to exchange information for researchers involved in sample management.

Automation standardizes single-cell assays

Chemical engineers in Cambridge, MA, USA, are using HS 400™ Pro Hybridization Stations to study heterogeneity in populations of cells, characterizing single cells to help understand inter-individual variability in immune response and responsiveness to clinical treatments.



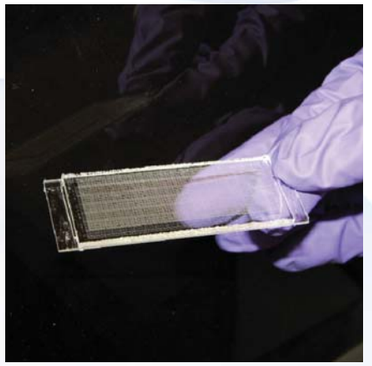
Christopher Love and Navin Varadarajan. The photos are courtesy of Melanie Miller.

Dr J. Christopher Love, an assistant professor of chemical engineering in Cambridge, MA, is investigating ways of measuring characteristics of single cells in large cell populations. Research into the heterogeneity of cell populations is expected to help vaccine and drug development; understanding how genetically identical cells vary within a population, and identifying the underlying mechanisms, is critical for successfully bio-manufacturing therapeutic substances. Dr Love explained the involvement of his team of engineers in biological projects: "One aspect of chemical engineering is about understanding how to make products from molecules and how to engineer the processes that accomplish that task. In pharmaceuticals today, this means the manufacture of therapeutic substances that are biological molecules, such as enzymes and antibodies, using traditional chemical engineering approaches. The cells that produce these molecules are critical to the whole manufacturing process, so it is necessary to be able to characterize the cells as well as the final product. In our laboratory, we also aim to understand more about the diversity of the immune cells that contribute to autoimmune disorders such as diabetes or multiple sclerosis, or those that battle chronic infections like HIV. We collaborate closely with a number of local clinical laboratories in this research on human immunology, and for developing diagnostic tools for allergy. For example, we are working with a newly-formed institute here in the US, using cutting-edge technologies to develop a vaccine for HIV."

Dr Love continued: "Early in 2008, as we started to explore how to better characterize immune responses so that we might have a better understanding of how vaccines work, we decided to standardize all of our routine steps, including washing slides and processing data, to ensure that results from successive experiments are comparable. To help us achieve this goal, we chose two HS 400 Pro Hybridization Stations. These systems are critical in all the projects that involve the single-cell technologies we have developed. In a typical experiment, we isolate and analyze large numbers of individual cells. Our platform consists of a specialized rubber chip containing a grid of 100,000 individual wells, each able to hold about one cell. To study a population of cells, such as those used in bio-manufacturing, or white blood cells from a clinical sample, the cells are loaded onto the chip and evenly distributed. Molecular secretions from the cells are transferred from the rubber chip onto multiple glass slides – like a miniaturized version of intaglio printing for copper plate etchings – and the slides are analyzed for different cell products. The results resemble a protein microarray in appearance, but the spatially encoded information reveals the function of the individual cells that it maps to. As a recent example, we have been measuring cytokines from cytotoxic T-cells, as data in the literature suggest that cells secreting multiple cytokines respond better to HIV-infection than those producing only one cytokine, helping to prevent HIV infection becoming full-blown AIDS. We can now measure four different cytokines secreted from the same cell, allowing us to start studying T-cell profiles in rare 'elite controllers', people that have HIV but don't progress to AIDS, at the single-cell level."

"We simply insert the slides into the hybridization station chamber for processing, through washing, fluorescent reagent addition and post-washing steps; the HS 400 Pro systems really help us to maintain consistent quality of these printed assays. We have enough variability in clinical samples without having to deal with variations in the assay itself. The systems allow us to run eight slides in parallel, and are being used by students and researchers daily. The hybridization stations also help to automate and improve our workflow, so that we can leave the system unattended to get on with the other parts of the assay, knowing that conditions and methodology are always standardized. This is our first experience with Tecan, and the service has been very good."

For more information on HS Pro, please visit **www.tecan.com/hs400**



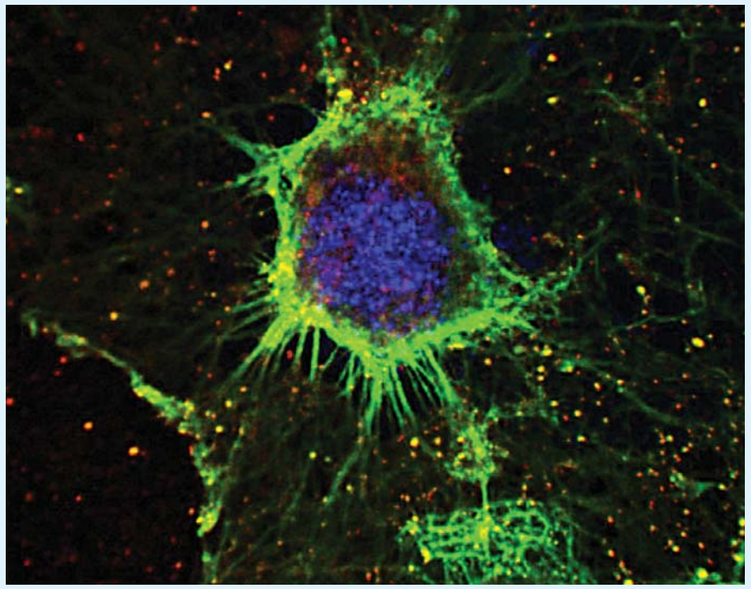
Molecular secretions from single cells are transferred onto glass slides, which are analyzed for different cell products.

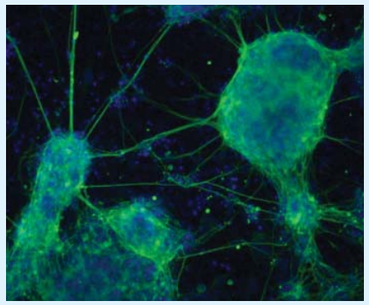
Consistency and reproducibility in stem cell culture

Researchers in the Department of Biochemical Engineering, University College London (UCL), UK, have automated stem cell culture on a custom-built Freedom EVO® 100 platform. Benefits compared to manual methods are higher consistency and reproducibility, better protection of cells from contamination, and improved operator safety.

Research in the Department of Biochemical Engineering, led by Gary Lye and Farlan Veraitch, aims to develop reliable processes for preparation of plates with homogeneous stem cell populations, and to screen them against compound libraries for use in drug discovery applications. One project, funded by the UK's Technology Strategy Board, focuses on the production of pluripotent or differentiated stem cells in microplate formats. This requires stem cell culture which, until very recently, was manually performed with high variability and low consistency, making it difficult to reproduce experimental protocols in stem cell research. Gary explained: "This lack of consistency in culturing stem cells is a real problem in furthering our understanding of the basic science of stem cell biology, and a major obstacle in commercializing applications of stem cells. Most commercial products based on stem cells and cell therapies use manual processes with reproducibility and contamination issues, which are major problems because stem cells are very difficult to grow. Automation is the obvious route for solving these problems and improving consistency of stem cell culturing, because every step is performed in the same way, for the same duration, every time."

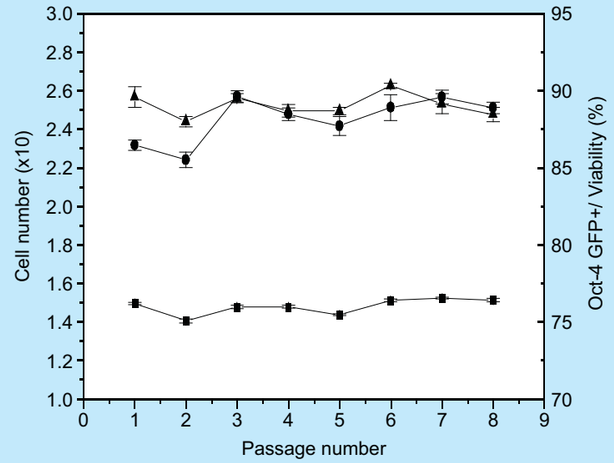
"Our Freedom EVO 100 platform was custom-built for us by Tecan with environmental control, and is set up in a self-contained biological safety cabinet for automated stem cell culture and manipulation. This guarantees both operator safety and non-contamination of the stem cells. Control of temperature, levels of carbon dioxide and oxygen is automatic, so the cells experience no variation in CO_2 levels, and consequently pH, during transport of plates between the automated CO_2 incubator and the Freedom EVO deck, which houses various modules including a microplate centrifuge. Controlling and keeping the environment around the cells constant minimizes fluctuations in the growth and differentiation of these cells, ensuring consistent results. Use of disposable tips on the 4-channel pipetting arm of the Freedom EVO platform enhances consistency, by minimizing crossover and contamination. We can then systematically vary the conditions to improve growth and control differentiation of stem cells from a variety of sources."





Immunocytochemistry of embryonic stem cells after 192 hours of neural differentiation. (above) single staining for bIII tubulin-FITC (green) and (right) double staining for bIII tubulin-FITC (green) and MAP2-PE (red). Neuronal cells were identified in clusters showing typical neural rosette morphology. DAPI (blue) shows cell nuclei.

Farlan Veraitch with the Freedom EVO platform in the Department of Biochemical Engineering at UCL.



Reproducible automated passaging of embryonic stem cells over eight consecutive passages: (■) cell number, (●) Oct-4-GFP+ expression indicating maintenance of pluripotency, (▲) cell viability. Error bars represent 1 standard deviation about the mean (n=4).

Gary continued: "We have to address two questions when automating stem cell culture and differentiation; the ability of these cells to thrive, and outcomes compared to manually performed processes by experienced operators. Manual and automated methods of culturing pluripotent stem cell populations, through several passages, were compared. Each successive passage involves multiple operations, including media exchanges and re-plating of the cells, each with the potential for propagation of errors. Both manual and automated procedures gave similar cell numbers, but automation significantly reduced variability in pluripotency-specific gene expression profiles, producing a more uniform final stem cell population. In addition, after differentiation into neuronal cells, the cells cultured using the automated system gave higher and more consistent levels of neuronal surface markers and neuron-specific gene expression."

"Our role as biochemical engineers is to make the production of pluripotent stem cells or differentiated cell types as reproducible as possible, and at a scale sufficient for commercial applications in industry. Stem cells from a variety of sources can be grown in 24-well plates, and typically run over a series of passages to get either pluripotent stem cells in all the wells, or undergo differentiation into specific cell types, such as neuronal cells. Following expansion, stem cells retain the ability to differentiate into all three germ cell types – neuroectoderm, mesoderm and endoderm – so in principle we could access any cell type. We have automated the process successfully for differentiation of neuronal cells, and it potentially applies to any screening process requiring consistent cell numbers and cell quality." Gary concluded: "Successfully automating stem cell culture on the Freedom EVO platform has reinforced our collaborations in two ways; with academic researchers studying different stem cell types and applications, and with industrial partners developing applications of stem cells for drug discovery or use in cell therapies."

Acknowledgements

Professor Lye and Dr Veraitch would like to acknowledge Dr Waqar Hussain and Mr Paul Mondragon-Teran who performed the work described here, and also the contributions of Professor Peter Dunnill, Professor Chris Mason and Dr Ivan Wall.

For further information on Tecan's stem cell solutions, visit **www.tecan.com/stemcell**

For further information on UCL, visit **www.ucl.ac.uk/biochemeng/industry/regenmed**

Pre-analytics made easy

The clinical laboratory at Fletcher Allen Health Care is the reference diagnostic center for the entire state of Vermont and, to ensure a high throughput capacity, uses Tecan's Genesis FE500™ to automate pre-analytical sample processing.

Fletcher Allen Health Care, located in Burlington Vermont, USA, together with its partners at the University of Vermont College of Medicine and the College of Nursing and Health Sciences, is Vermont's academic medical center providing advanced care to approximately one million people in Vermont and northern New York while also serving as a community hospital for approximately 150,000 residents in Chittenden and Grand Isle counties. The hospital's clinical laboratory is part of the North East Clinical Laboratory Alliance (NECLA) and is the state's diagnostic center, performing supplementary clinical analysis for the other 14 hospitals in Vermont. When designing new laboratory facilities, a high sample capacity and the option to expand throughput even further if necessary were key priorities. Cindy Cruickshank oversees reception of specimens from all sites, and explained the laboratory's requirements: "We are the main receiving area for all patient samples destined for the hematology, clinical chemistry, microbiology, cytology and surgical pathology departments, and process specimens from both in patient and out patient units at the hospital, as well as numerous community facilities in Burlington. This equates to thousands of patient samples every day, many of which need to be sent on to multiple departments for analysis. Obviously this kind of throughput is very difficult to achieve without a well-automated process so, when we planned our new laboratory, we designed it around using Tecan's Genesis FE500 to automate pre-analytical sample processing."

"Switching to automated processing was a significant change in laboratory practice, so we spent six months validating our procedures and training staff to use the system. This process was very easy and the FE500 is now fully integrated with our LIMS, offering full sample traceability and documentation. Primary samples from within the hospital arrive at our laboratory already barcoded, with details of the tests required in the LIMS, and secondary tubes are racked according to destination in the unloading area of the workstation. Tecan has provided good on-site training and we receive excellent technical support from our engineer. The system is very easy to use and is ideal for our throughput, giving the laboratory extra capacity for future expansion of services and freeing up staff for other protocols."

To find out more on Tecan's Genesis FE500, visit **www.tecan.com/fe500**

To find out more on the Fletcher Allen Health Care, visit **www.fletcherallen.org**

Marie Baker with the Genesis FE500

Reliable washing of SCHOTT NEXTERION® MTP-96 array plate with Tecan HydroFlex™

SCHOTT Technical Glass Solutions GmbH in Jena, Germany, is a subsidiary of SCHOTT AG, and develops the NEXTERION brand of coated glass products for microarray applications in academic and diagnostic laboratories. The Research and Development group at Microarray Solutions has chosen Tecan's HydroFlex microplate washer for development and quality control of its products.

The team at SCHOTT Microarray Solutions

"At Microarray Solutions, we develop and produce glass surfaces with coatings that have been designed for a range of requirements," explained Dr Rüdiger Dietrich, Director of R&D and Technical Support. "In addition to off-the-shelf products, we also offer volume production for customers who have developed their own working surfaces, developing customized surfaces to specific customer requirements. As well as our standard NEXTERION MPX-16 microscope slide and NEXTERION MTP-96 microtiter plate formats, we can produce coated glass in any format to suit different customer needs."

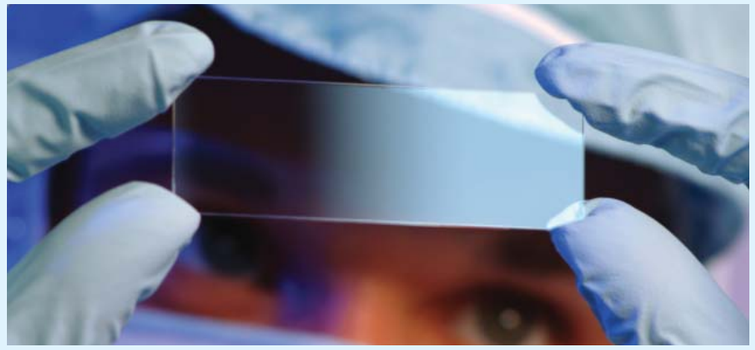
"With the increasing popularity of the microplate format for microarray applications, we have chosen Tecan's HydroFlex plate washer to run several test applications for automated quality control of NEXTERION MTP-96 format plates. The HydroFlex is used every day, and all the pipetting steps are automated, which would otherwise be very time-consuming. We are also particularly impressed by its reproducibility; it is essential for us that the process is highly reproducible because, with six people working in the R&D and Technical Support team, several different operators, including newly trained ones, use the instrument."

"The HydroFlex is easy to use, and we have been able to optimize our protocols by adjusting various parameters like liquid volumes and rinsing times. The protocols we develop are shared with the customers, saving them time by helping them to develop their own wash protocols quickly. We also use a Tecan HS 4800™ Pro hybridization station and a Tecan LS Reloaded™ scanner in our R&D laboratory, and have helped customers with the protocols we have developed with those instruments too."

For more information on Tecan's HydroFlex microplate washer, visit **www.tecan.com/hydroflex**

For more information on Tecan's HS 4800 Pro hybridization station and LS Reloaded scanner, visit **www.tecan.com/hs4800** and **www.tecan.com/ls**

NEXTERION is a registered trademark of SCHOTT AG, Mainz, Germany.



The NEXTERION microarray slide

The Tecan HydroFlex

Automated forensic testing tackles casework backlog

The Nebraska State Patrol Crime Laboratory has chosen the HID EVOlution™ System to automate its forensic DNA testing and, after a smooth installation and validation, is eagerly anticipating it will help to reduce the existing nine month casework backlog.

The Nebraska State Patrol Crime Laboratory is responsible for forensic DNA testing for the entire state of Nebraska, USA. About 350 cases a year require DNA analysis, but the number of samples for each case is variable and can run into the hundreds. Jason Linder, forensic scientist in the Biology Unit of the Nebraska State Patrol Crime Laboratory, explained: "Previously, the highest percentage of the cases we handled was sexual assaults. We still see a lot of those but, in the last couple of years, there has been a huge increase in the number of trace DNA samples from cases like burglaries and robberies, where we need to look for very small amounts of DNA, for example where a felon has handled a firearm."

"In our efforts to reduce the nine month backlog of casework that we currently have, we decided to automate parts of the DNA analysis workflow," said Jason. "With funding from federal DNA grants, we chose the HID EVOlution System for DNA quantitation and downstream PCR set-up." The HID EVOlution System has been specifically designed to streamline routine sample workflows for human identification applications, and is based on Tecan's Freedom EVO® 150 liquid handling workstation with an integrated Applied Biosystems 7500 Real-Time PCR System and 3130xl Genetic Analyzer. "We have already been using Applied Biosystems products for our DNA analysis, and Tecan's collaboration with Applied Biosystems in the development of the HID EVOlution System has made implementation of the system very straightforward, without having to worry about writing and validating software scripts. Our system is pretty much off-the-shelf with no modifications, which means that all the validation work for the instrument was already done for us. The validation of the installation has gone smoothly, because we have not had many issues; Tecan's service engineer was able to help me identify an airflow problem with the balance and, once that was corrected, the instrument has been running flawlessly."

The HID EVOlution System at NSPCL

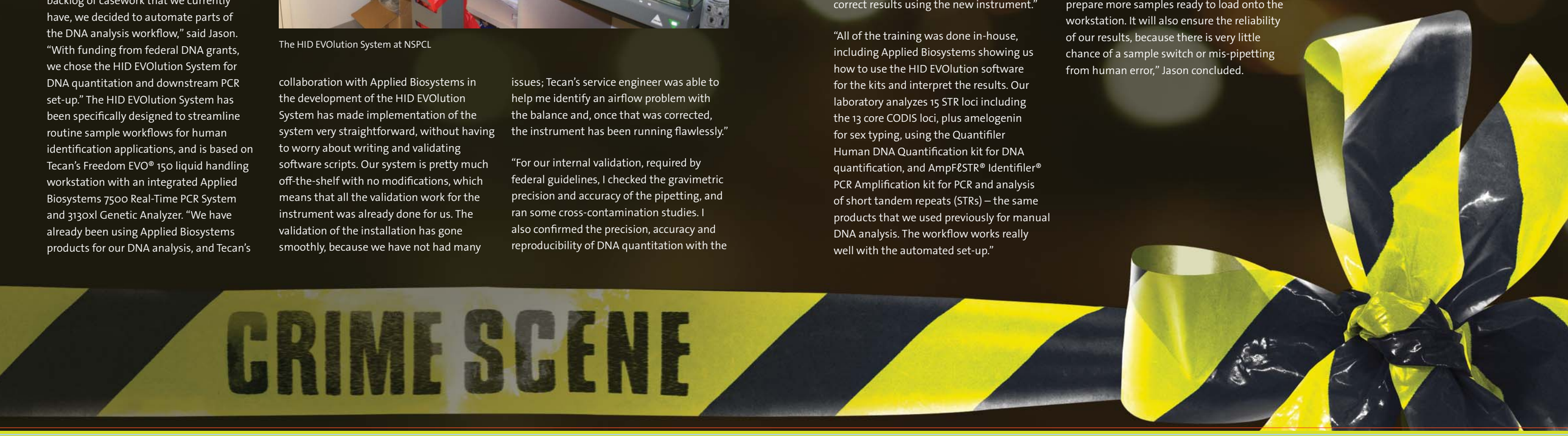
"For our internal validation, required by federal guidelines, I checked the gravimetric precision and accuracy of the pipetting, and ran some cross-contamination studies. I also confirmed the precision, accuracy and reproducibility of DNA quantitation with the Applied Biosystems' Quantifiler® kit, running PCRs using a range of DNA concentrations. The federal guidelines are issued by the Federal Bureau of Investigation (FBI) for DNA analysis and quality assurance, which we need to comply with for participation in the Combined DNA Index System(CODIS). All the analysts in the Biology Unit have also done a qualifying test to meet the federal guidelines, by running some samples to demonstrate that they are able to get the correct results using the new instrument."

"All of the training was done in-house, including Applied Biosystems showing us how to use the HID EVOlution software for the kits and interpret the results. Our laboratory analyzes 15 STR loci including the 13 core CODIS loci, plus amelogenin for sex typing, using the Quantifiler Human DNA Quantification kit for DNA quantification, and AmpFℓSTR® Identifiler® PCR Amplification kit for PCR and analysis of short tandem repeats (STRs) – the same products that we used previously for manual DNA analysis. The workflow works really well with the automated set-up."


Members of the Forensic Biology Unit (l to r: Cammi Strong, Melissa Kreikemeier, Katherine Rector and Jason Linder)

"Before July 1st, when the system officially went live for casework samples, I was really itching to use the system because, during the validation, I could see just how much it was capable of, and what it should be able to do for us. At the moment, it's hard to say how long it might take until we clear the backlog but, from what I have seen so far, the HID EVOlution System will really help by achieving a higher throughput and freeing up the analysts' time, so that they can prepare more samples ready to load onto the workstation. It will also ensure the reliability of our results, because there is very little chance of a sample switch or mis-pipetting from human error," Jason concluded.

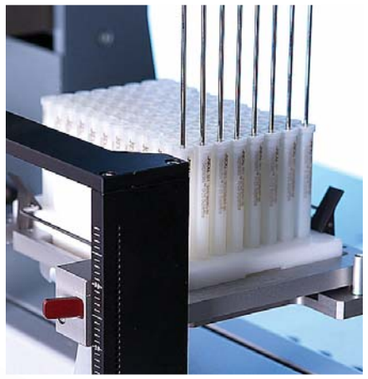
To find out more about the HID EVOlution System, visit **www.tecan.com/hid**



Innovation in biopharmaceutical downstream process development

Automation of Atoll's 96-array MediaScout® RoboColumns on the Freedom EVO® workstation is proving a popular approach for development of biopharmaceutical manufacturing processes.

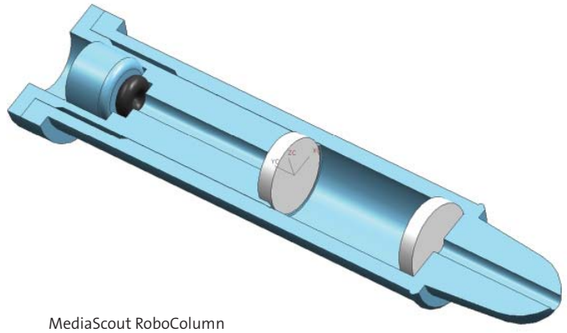
The production team at Atoll (l to r: Tim Schroeder, Nicole Sauter and Natalie Wehrwein)



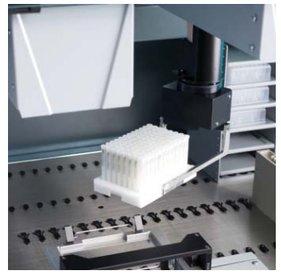
The Te-Chrom™ module

Atoll GmbH in Weingarten, Germany, is a supplier of cutting-edge biotechnology screening products to customers in academia and the biopharmaceutical industry. The Company's user friendly technologies include a range of tools for selection of chromatography media and optimization of chromatographic processes for biomolecular separation, including the innovative MediaScout MiniColumns. These disposable columns are available prepacked with any commercially available biochromatography resin, allowing rapid screening of media for process design and optimization. To further accelerate this process, the Biomolecular Separation Engineering group at the Karlsruhe Institute of Technology (KIT) has developed an automated method for media screening based on the Freedom EVO platform. The system uses the workstation's liquid handling arm in conjunction with an array of 96 MiniColumns to increase throughput, and this has now been developed by Atoll as MediaScout RoboColumns.

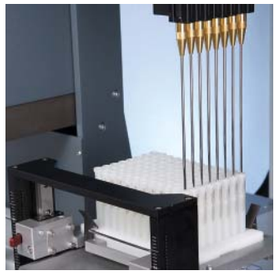
Tim Schroeder, now head of production at Atoll, was closely involved in the development of the RoboColumn system while he was a member of the Biomolecular Separation Engineering group, and explained why he chose to work with Tecan instruments: "When we first looked into developing an automated protocol for the media screening using Atoll's MiniColumns, the Freedom EVO platform offered us an unrivalled level of flexibility. The ability to integrate many different components onto the workstation is a significant advantage in this process, and the highly adaptable Tecan system is well suited to the wide range of applications that can be performed using RoboColumns. When this technology was transferred to Atoll for commercial development, Tecan was the logical choice of liquid handling partner. I already had a very good relationship with Tecan Germany, so knew that it was a good company to work with. Atoll acquired a Freedom EVO platform for development of the RoboColumns in 2006, and we have since worked with both Tecan and the KIT to further the potential of this novel approach."



MediaScout RoboColumn



Robotic manipulator (RoMa) arm improves throughput



Column flow is controlled via pressure-tight inlets

Automated processing of Atoll's MediaScout RoboColumns on the Freedom EVO platform has been successfully applied to a range of biopharmaceutical process development applications such as resin screening, condition screening and protein expression studies. Atoll is now working closely with Tecan to co-develop a fully integrated platform for this innovative automated solution. This workstation will offer customers a validated and tested solution for parallel processing of up to eight MiniColumns controlled by specific chromatography software, offering new levels of ease of use for downstream process development and process analytical technology (PAT) applications. Tim explained: "Automation of chromatography screening is an exciting new application for liquid handling platforms. This technique has proven very popular with biopharmaceutical companies, and many manufacturers are now following this approach using Freedom EVO workstations. The technology is still under constant development, and we are collaborating with Tecan to design a fully integrated system for this application, combining Atoll's MediaScout columns with Tecan's expertise in laboratory automation. We are working very closely with Tecan engineers to ensure that this new platform offers customers a flexible, user friendly system for automation of chromatography screening."

"To complement this project, the Freedom EVO platform in our production and development laboratory is being used to run a wide variety of chromatographic separation demonstrations and projects. Customers can come to us with a specific separation application they wish to develop, and we can use our Freedom EVO workstation to illustrate the automated chromatography process. In addition to this, we have recently expanded our laboratory to allow us to run pilot scale projects. Customers can bring their samples to our facility and work with our expert staff to develop the RoboColumn process for their application on the Freedom EVO system. This is a very important service for many of our customers, allowing them to confirm that this technology is appropriate before purchasing a combined Tecan / Atoll solution. This not only provides the customer with assurances to safeguard their investment, but also gives us the opportunity to demonstrate the power and flexibility of this innovative system."

To find out more about automation of chromatography on Tecan's Freedom EVO workstations, visit **www.tecan.com/proteinchromatography**

Our reliable service partner

Nycomed ensures reliable operation of all Tecan instruments used in its pharmaceutical research and development with Te-Care™ Complete service contracts.

Nycomed is a global pharmaceutical company specializing in medicines for gastroenterology, respiratory and inflammatory diseases, and pain management – including many over-the-counter products – and has an active research program for development of new pharmaceuticals. Peter Oehlen, service manager at Nycomed, has built up a team of specialists to provide technical support for research centers in Konstanz, Hamburg and Mumbai, working with equipment manufacturers' service teams to provide fast and reliable technical support. The team's role also includes calibration of equipment, simulating testing conditions and development of customized systems for specialist applications, as well as providing purchasing advice for new equipment.

Due to its limited resources, Peter's team relies on support from equipment suppliers to help meet the varied demands of Nycomed's research activities, using annual service contracts to ensure adequate support for all its instrumentation, without excessive or unexpected costs. Peter explained: "My team oversees all the servicing needs of the instruments used in Nycomed research laboratories, including routine maintenance, repairs and purchase of spares. We have been using Tecan equipment for over 15 years, and have Te-Care Complete service contracts to cover maintenance and repair of our Freedom EVO® liquid handling platforms, various detection instruments and a REMP Small Size Store™ (SSS)."

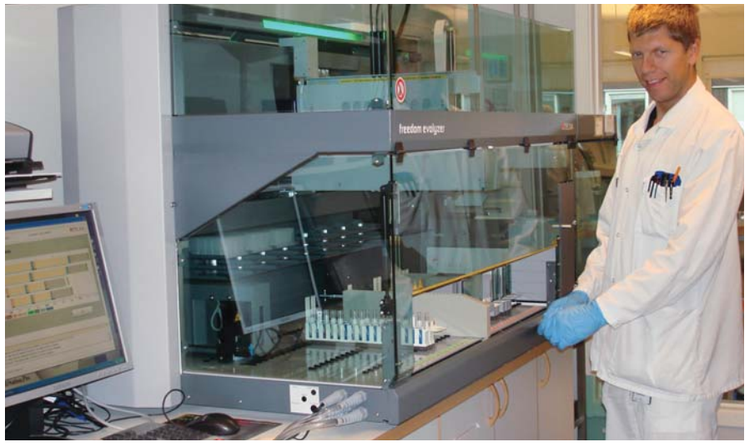
"Our long term partnership with Tecan helps us to maximize the efficiency of our equipment, and we know we can trust the Company's well trained engineers to deliver expert service assistance. We also enjoy a good working relationship with our technical support contacts – particularly Ute Judisch – who understand our needs and are very honest about what can be achieved. Tecan is a well structured and efficient company, and its service staff are very knowledgeable; we can rely on them to respond quickly to our needs. We operate an open feedback policy with all our suppliers, and Tecan is very receptive to our requirements. The Company is very genuine in trying to help its customers, offering a comprehensive and well-structured service based on its Te-Care service contracts."

To find out more on Tecan's Te-Care services, visit **www.tecan.com/support**

Peter Oehlen with his successor Jochen Tussinger

Reliable and time-saving diagnostic ELISA tests

Automation of nine ELISA-based serological tests for autoimmune and infectious diseases on the Freedom EVOlyzer® platform has saved Unilabs AB, Skövde, Sweden, a lot of labor, releasing valuable time for other activities.



Jimmy Fransson, biologist, with the Freedom EVOlyzer platform at Unilabs AB

Several manufacturers offer ELISA testing kits for detection of a range of infectious and autoimmune diseases, and markers for brain damage and inflammatory bowel disease. Many hospital and service laboratories are finding that automation is essential to increase their capacity to satisfy the increased demand for ELISA testing, but high throughput automation of ELISAs can be difficult to achieve because each kit has its own requirements for optimal performance.

One such laboratory is Unilabs AB in Skövde, one of the company's three large subsidiaries in Sweden. Unilabs is a pan-European supplier of laboratory and radiology services to public and private healthcare providers, county councils, the public, insurance and pharmaceutical companies and clinical research organizations, across a dozen countries including Norway, Sweden, Switzerland and the UK. The subsidiary in Skövde specializes in ELISA testing of infectious and autoimmune diseases on patient samples for hospitals, clinics and doctors' surgeries across Sweden.

Dr Eva Arkblad, a chemist at Unilabs AB who is responsible for setting up the laboratory analyses and instruments, explained: "We needed to automate our ELISA processing because we handle many samples of different types and volumes, and perform a range of assays using a variety of ELISA testing kits. Manual methods to process these samples take a high degree of concentration and could introduce pipetting errors. We chose the Freedom EVOlyzer equipped with Freedom EVOlution™ 2.0 software from Tecan last year, as this was the only system available on the market that was capable of satisfying our particular throughput needs, that of a varied workload and testing requirements, combined with high reliability."

"Using the Freedom EVOlyzer, we run immunological tests for autoimmune diseases and diagnostic tests for infectious diseases, detecting immune responses against bacteria or viruses by ELISA," Eva continued. "The range of tests includes infectious agents *Helicobacter pylori, Borrelia burgdorferi, Mycoplasma pneumoniae, Chlamydophila pneumoniae* and tick-borne encephalitis virus, as well as myeloperoxidase, proteinase 3, cyclic citrullinated peptide and cardiolipin, which are molecular markers for autoimmune diseases. We currently perform nine different ELISA tests using nine kits from six manufacturers, with a weekly throughput of about 600 samples from approximately 300 patients, and the platform deals easily with the test kits from different manufacturers."

The Freedom EVOlyzer platform at Unilabs AB has a 150 cm worktable, and is configured with a four-channel liquid handling (LiHa) arm with fixed tips, a 25-37°C incubator with shaking option, a 25°C incubator, a HydroFlex™ microplate washer and a Sunrise™ absorbance reader.

Eva added: "The Freedom EVOlyzer has integrated barcode readers that help to ensure reliable identification of individual samples throughout the workflow. Following centrifugation of the primary tube, the serum is transferred to an identically labeled secondary tube, which is loaded onto the Freedom EVOlyzer for diluting and aliquoting into microplates. The platform is controlled using Freedom EVOlution software, which is connected to the laboratory's LIS database so that importing of diagnostic test orders and exporting of results are all automatic without manual intervention."

"The support from Tecan has been good, and the engineer who visits our laboratory to service our Freedom EVOlyzer is always helpful, giving us the guidance we need. The Freedom EVOlution 2.0 software is highly intuitive and user-friendly, and gives us the high functionality required for programming and changing as many as 15 different tests." Eva concluded: "I feel the advantages of the Freedom EVOlyzer are especially pronounced in laboratories such as ours which have to run many different analyses, and we are planning, in the near future, to add clinical chemistry tests to the range of assays that could be automated on this platform."

Throwing new light on kidney function

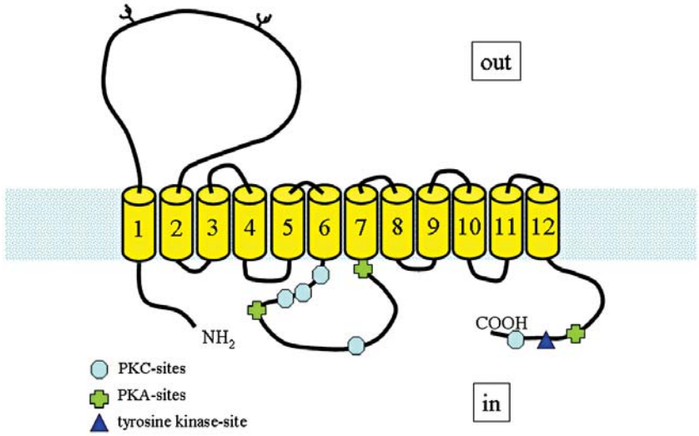
The Experimental Nephrology laboratory at University Hospital Münster is using an Infinite® M200 microplate reader to help investigate kidney function. The group is researching regulation of cell membrane transport, using fluorescence techniques to better understand uptake of pharmaceuticals and organic cations via membrane proteins.

The Experimental Nephrology group at University Hospital Münster

The Experimental Nephrology laboratory, part of the University Hospital Münster, Germany, has been studying function and regulation of the kidneys for over 15 years. The laboratory's work focuses on investigation of membrane transporter proteins, under both normal and pathological conditions, as well as the role of these proteins in causing nephrotoxic drug effects. Current projects within the laboratory include research into ion channels, osmoregulation and organic cation transport, using animal and human tissue models with a variety of cellular and molecular biology, electrophysiology and fluorescence imaging techniques.

The group is particularly interested in the regulation of organic cation transport across the cell membrane, as this process has been implicated in several disease states and is responsible for accumulation of many pharmaceutical compounds within the kidneys. Dr Giuliano Ciarimboli, deputy head of the Experimental Nephrology group, explained. "Some organic cations cannot freely permeate the cell membrane, and are taken up by cells through membrane proteins known as organic cation transporters (OCTs). OCTs are highly expressed in the basolateral membrane of the proximal tubules in the kidneys, and are responsible for the uptake of many endogenous cations, including dopamine, histamine and several neurotransmitters. However, these proteins can also transport many drugs – such as the chemotherapy drug cisplatin – into the kidneys, with nephrotoxic consequences. Our group is studying the function of these proteins, using various techniques to better understand how they are regulated, and investigate potential strategies to prevent the harmful side effects many drugs have on kidney function."

"We have been investigating basolateral membrane transport of organic cations since 1994, using a complex method developed in house. This technique requires an inverted fluorescent microscope to follow the uptake of a marker – ASP^+ (4-(4-dimethylaminostyryl)-N-methylpyridinium) – via a shift in the emission wavelength of the dye. Although this method is excellent for imaging of tissue sections, it is time consuming and unnecessary for study of cell cultures in which cation transport is delocalised, and so we began exploring alternative techniques. Our main goals were to reduce the cost of experiments, as the microscope set-up requires around 500 ml solutions of media and reagents, and increase our throughput capacity for these studies. Performing experiments in a microplate format addresses both these issues, and Ute Neugebauer, a technician in the laboratory, has been instrumental in developing a new method based on a Tecan Infinite M200 microplate reader."



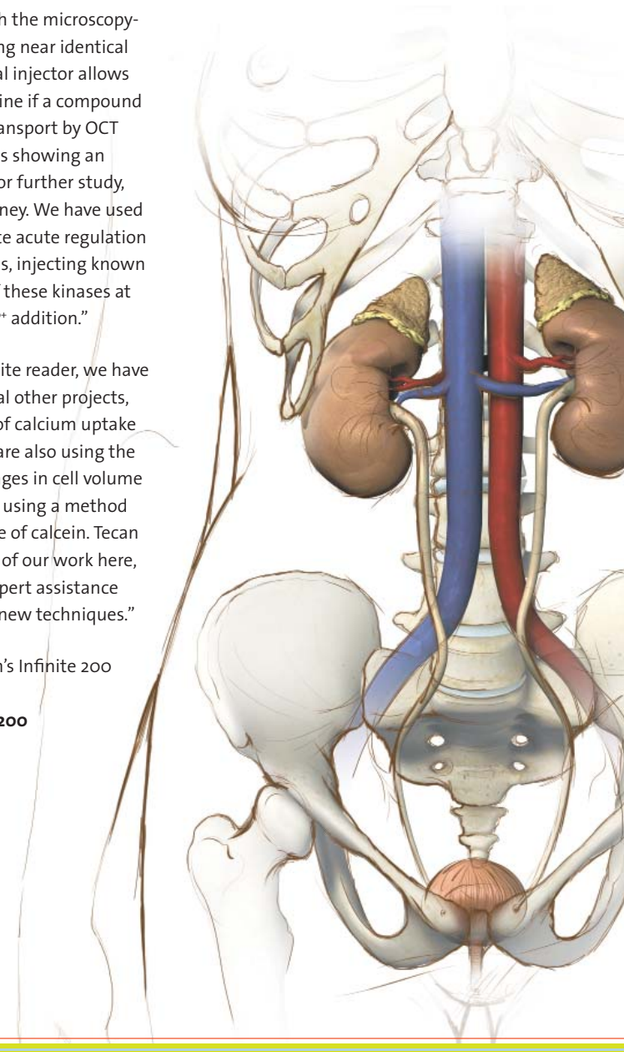
Proposed secondary structure of the rat organic cation transporter 1, showing the 12 transmembrane domains and the big intracellular loop containing several potential phosphorylation sites for PKC, PKA and tyrosine kinase.

Ute Neugebauer with the Infinite M200

"In this protocol, cells are seeded onto a 96-well microplate and incubated until confluence is achieved. ASP^+ is then added by the Infinite reader's injector module, and uptake is monitored by a shift in fluorescence output from 550 to 590 nm. This allows many experiments to be performed in parallel, with a full set of controls, using a reaction volume of just a few hundred microliters per well. To characterize the performance of this method, we conducted several studies using known substrates of OCTs, such as tetraethyl ammonium and quinine, to competitively inhibit ASP^+ uptake. The Infinite's dual injector option allows ASP^+ to be injected together with another substrate of OCT for rapid determination of IC_{50} values. The microplate technique shows very good correlation with the microscopy-based technique, achieving near identical inhibition curves. The dual injector allows us to very quickly determine if a compound of interest affects ASP^+ transport by OCT proteins. Only compounds showing an interaction are selected for further study, saving both time and money. We have used this strategy to investigate acute regulation of OCTs by specific kinases, injecting known activators or inhibitors of these kinases at variable times before ASP^+ addition."

"Since acquiring our Infinite reader, we have extended its use to several other projects, including measurement of calcium uptake and intracellular pH. We are also using the instrument to study changes in cell volume through osmoregulation, using a method based on the fluorescence of calcein. Tecan has been very supportive of our work here, and we always receive expert assistance when we are developing new techniques."

To find out more on Tecan's Infinite 200 microplate readers, visit **www.tecan.com/infinite200**



Tecan automation streamlines veterinary diagnostics processes

In order to increase reliability, efficacy and throughput of its diagnostic services, the Landeslabor Berlin-Brandenburg (LLBB) in Frankfurt (Oder), Germany, has chosen Tecan's liquid handling workstations to automate the process flow of serological sample analysis.

The team at LLBB (l to r): Sabine Thalheim, veterinarian specialized in virology, Elena Herner, biology laboratory assistant, Chris Flegel, technical assistant in veterinary medicine

The LLBB is an accredited institution for independent public investigations, dedicated to the protection of human and animal safety, health and welfare, as well as the preservation of the environment. The organization was launched in January 2009 to combine the laboratory resources of the counties of Berlin and Brandenburg, creating the first cross-state investigation facility in Germany.

An extensive testing program for the eradication of Bovine Herpesvirus 1 (BHV-1), which causes infectious bovine rhinotracheitis, plus the monitoring of other diseases of cattle, like mucosal disease, bluetongue disease, brucellosis and bovine leucosis, in the large catchment area, have increased the demand for efficient high throughput automation procedures. Sample archiving, preparation and ELISA testing steps have been automated using Tecan liquid handling workstations, together with operating software that ensures process security by tracking each sample through the workflow.

When the samples arrive in the Department of Infectious Disease Testing at the LLBB, the primary tubes are registered in the LIMS and sorted according to testing requirements and urgency of the planned tests for each sample. Sample identification is performed using PosID™ positive identification system units or fixed barcode readers to read the individual barcodes on the primary tubes and plates. Sorting is helped by the customer specific software tool DisCo Tool 2 software, which relays information of each sample's worklist. This software manages the testing procedures within the serology department and communicates the results back to the LIMS.

Sample loading area

After registration, the samples are aliquoted into deep-well plates for archiving. This is performed by two Tecan Genesis RSP™ platforms with either 4-channel or 8-channel fixed tips. Creating archive plates greatly reduces storage space requirements and increases traceability of the samples. All scheduled tests, as well as any additional tests that may be required, need to be performed within two weeks, and the DisCo Tool 2 software and the LIMS help to ensure that the worklist of each sample is fulfilled within this period by assessing test results and open tests for each sample. This practice further reduces the storage space requirements within the laboratory, because old archive plates can be regularly disposed of.

The Freedom EVO 200 configuration

Following archiving, the deep-well plates are loaded onto a Freedom EVO® 200 platform equipped with 8-channel fixed tips to prepare the required number of ELISA test plates. ELISA testing is performed on a second Freedom EVO 200 workstation including an 8-channel liquid handling arm with fixed tips and a robotic manipulator arm. The ELISA test that is most often performed at LLBB is BHV-1 testing using the IDEXX HerdChek* IBR gE Antibody ELISA test kit to detect BHV-1 gE, which can distinguish naturally infected animals from cattle vaccinated with gE-deleted vaccine. The ELISA workstation has been specifically configured to meet the laboratory's high throughput needs; a throughput of 35 to 45 plates per day is common, with maximum throughputs of 70 ELISA plates per day. Five hotels provide loading capacity for 45 plates in one run, and a barcode reader installed on the first hotel reads plate barcodes in order to track the samples. A Sunrise™ microplate absorbance reader and a Power Washer 384™ with 96-well head allow for fully automated ELISA processing.

The required ELISA reagents have designated loading areas on the deck of the workstation. One trough holds LvL 'System Clean' Set Up Clean solution (Laborbedarf von Lüder), which is used for decontamination washes between pipetting of different reagents, a method which has been validated by the LLBB to effectively prevent carry-over. Liquid waste is pumped from the waste container directly to the drainage system to offer additional convenience.

"By using Tecan's process automation solutions for sample processing and high throughput ELISA, our laboratory is able to process close to 7,000 samples per day for BHV-1 testing at peak times, and has greatly enhanced the efficacy and reliability of the LLBB's diagnostic service," concluded Sabine Thalheim at LLBB's Department of Infectious Disease Testing.

*HerdChek is a registered trademark of IDEXX Laboratories, Inc. in the United States and/or other countries.

For more information please visit **www.tecan.com/veterinary**

On-demand protein expression

The High Throughput Expression Laboratory at the University of York is a service facility offering bespoke protein expression, and uses a Freedom EVO® 200 workstation to meet its demand for high throughput cloning, expression and screening.

The High Throughput Expression Laboratory (HiTEL) is part of a joint project between the Biology and Chemistry departments at the University of York, UK, providing high throughput cloning and gene expression services for various bacterial, parasitic, plant and animal genomes. The laboratory offers a fully customized expression service, including cloning, optimization, purification and screening of both prokaryotic and eukaryotic cell lines.

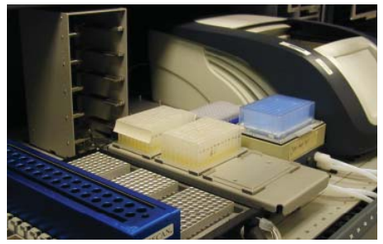
The HiTEL serves several departments within the university, as well as many external clients, and is also closely involved in a number of international collaborations, including the SPINE2-COMPLEXES work program and the *Bacillus* Systems Biology project. Experimental officer Dr Rachel Adamson explained the laboratory's primary role: "We work with various organisms, cloning genes of interest into plasmid vectors, then transfecting them into suitable cell lines for expression of the gene product. Small scale trials are used to establish the optimum incubation temperature and induction method for expression of the target protein, then the process is scaled up to produce large amounts of protein for the client."

Experimental officer Dr Rachel Adamson loading samples onto the deck of the Freedom EVO

To meet the throughput demands of a busy service laboratory, HiTEL relies on automation of its gene cloning and protein expression workflow using a Freedom EVO 200 platform. This customized workstation provides reliable cloning and protein expression for HiTEL's customers. "As a service laboratory, we rely on our automated systems to ensure reproducible cloning and protein expression for our clients. When the HiTEL facility was first established in early 2006, we looked at automated liquid handling systems from various manufacturers, and several other laboratories were performing similar processes using Tecan instruments. These laboratories received a very high level of customer service and technical support from Tecan, and this was a major factor in our choice of a Freedom EVO platform."

"Tecan's support allowed us to get our system set up and running very quickly, something facilities using other automated platforms have struggled with. We have a lot of different equipment integrated into our workstation – including a thermal cycler to allow on desk PCR amplification – and Tecan has helped us to customize the platform to our workflow. When the instrument was first installed, I attended a Tecan course on how to operate the system and develop scripts using the intuitive Freedom EVOware® software, and this ability to continually adapt the platform has been important for streamlining and development of our processes. It is very easy to write new scripts in Freedom EVOware, and the on-screen plan of the deck means you can simply drag-and-drop commands where you want the system to perform them."

Cloning of genes of interest is automated by the Freedom EVO workstation in a 96-well plate format, using either ligation-independent or Clontech In-Fusion™ cloning systems. Using bespoke primers designed in house, target genes are amplified in the system's integrated thermal cycler, then purified on the deck. Sample concentrations are automatically normalized prior to ligation into plasmid vectors, and subsequent transformation into suitable cell lines.



An 8-channel liquid handling arm ensures rapid and precise pipetting

The Freedom EVO workstation is fully integrated into the laboratory's workflow

"Automation of this process minimizes variation between samples and eliminates operator errors," Rachel continued. "This helps to make protein expression very predictable and reproducible, giving us a high level of confidence in the amount of protein we can produce from any given gene or protocol. Equally importantly, it offers walkaway automation of time-consuming laboratory processes, allowing staff to perform other tasks and helping to accelerate our production."

"Technical support and service provision is also very important to our laboratory, as we cannot afford for the system to be offline for lengthy periods awaiting servicing or repairs. Tecan is very good at rapidly responding to our needs, usually within 24 hours, ensuring that the down-time of the system is minimal. We are very happy with the level of service we receive from Tecan, and with the performance of our Freedom EVO platform."

To find out more on Tecan's Freedom EVO workstations, visit **www.tecan.com/freedomevo**

Clontech is a registered trademark, and In-Fusion is a trademark of Clontech Laboratories, Inc., Mountain View, USA, a Takara Bio Company.

Tony Mamone, Genomics and Forensics Market and Application Manager at Tecan

Leading the debate

The same is true for forensic science as it is with any other scientific discipline; there is a natural progression as developments gather apace, patterns start to form and the same questions come up time and again, and this is when the idea of regulation and standardization comes along.

Forensics is now far along this road and it's no longer a question of 'if' regulation happens, more a matter of 'how' and 'when'. At present, it is a semi-regulated industry; most laboratories are self-regulated and participate in voluntary programs to demonstrate that their management, personnel, operational and technical procedures all meet established guidelines. However, forensics is a different animal in different parts of the World, and international standardization and regulation will not be easy. At present, it's not even common to share data with different countries, although laws passed recently are encouraging this between some EU countries. UK and US forensic laboratories are already what one might call standards based, but the UK is perhaps the more progressive. In German-speaking Europe, it's another story completely; forensics is still held as an academic science, laboratories are based in universities, publications are encouraged and, as a result, methods and SOPs are frequently improved. For some, working in these more progressive cultures, standardization will not be so popular. Once SOPs are in place, it's more difficult to make a change, even an improvement, and this can be interpreted as slowing progress.

So is regulation really necessary?

Undoubtedly, mistakes are being made, but not very often and, by their esoteric nature, they're hard to spot. The ramifications, however, are very powerful, and it is likely that it will only take one high profile 'mistake' to propel this argument into the public arena. Once it is clear that it would be in the public's best interest to have stricter controls, the industry will have no choice but to join forces and respond.

Email talk@tecan.com to tell us what you think about this or another life science topic of your choice.

Meet Tecan at these events in the coming months

Americas		
20th International Symposium on Human Identification	Las Vegas, NV	12-15 Oct 2009
American Society of Human Genetics Annual Meeting (ASHG)	Honolulu, HI	20-24 Oct 2009
AABB Annual Meeting	New Orleans, LA	24-27 Oct 2009
American Association of Pharmaceutical Scientists Annual Meeting 2009 (AAPS)	Los Angeles, CA	08-12 Nov 2009
American Society for Cell Biology 49th Annual Meeting (ASCB)	San Diego, CA	05-09 Dec 2009
Asia and Pacific		
ComBio 2009	New Zealand	06-10 Dec 2009
Europe, Middle East and Africa		
11. Schweizerisches Symposium der Transfusionsmedizin BSD SRK/SVTM	Lugano, Switzerland	24-25 Sep 2009
Biotechnica	Hannover, Germany	6-8 Oct 2009
MipTec	Basel, Switzerland	13-15 Oct 2009
Medica	Düsseldorf, Germany	18-21 Nov 2009
Biotech Forum and Scanlab	Stockholm, Sweden	25-27 Nov 2009

Headquarters:
Tecan Group Ltd., Seestrasse 103, CH-8708 Männedorf, Switzerland
T +41 44 922 88 88 F +41 44 922 88 89 info@tecan.com

Tecan
Austria +43 62 46 89 33 **Belgium** +32 15 42 13 19 **China** +86 10 586 95 936 **France** +33 4 72 76 04 80 **Germany** +49 79 51 94 170 **Italy** +39 02 92 44 790
Japan +81 44 556 73 11 **Netherlands** +31 18 34 48 17 4 **Portugal** +351 21 000 82 16 **Singapore** +65 644 41 886 **Spain** +34 93 490 01 74
Sweden +46 31 75 44 000 **Switzerland** +41 44 922 89 22 **UK** +44 118 9300 300 **USA** +1 919 361 5200 **ROW** +43 62 46 89 33

REMP
Switzerland +41 31 770 70 70 **Japan** +81 44 542 70 21 **USA** +1 508 429 2200

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