

# SEPARATIONS

Keeping you on track with the latest in EP

## Sebia continues to bring new innovation to traditional gel electrophoresis

Sebia recently unveiled two new instruments that provide state-of-the-art technology to gel electrophoresis - the **ASSIST** and **GELSCAN**.

**ASSIST** is the new autosampler designed to ensure standardization of all pre-analytical steps. ASSIST, which works in conjunction with Sebia's HYDRASYS® line of instrumentation, was developed to address the needs of today's busy laboratories. This innovative autosampler eliminates manual pipetting with direct sample application from the primary tubes, and has full barcode management for positive patient identification. The ASSIST can also perform automatic dispensing of antisera for immunofixation with Sebia's Dynamic Mask application system. The ASSIST allows for either standard or customized sample dilutions which are very useful for both immunofixation and CSF assays. ASSIST's automated sampling capability streamlines laboratory workflow and maximizes biohazard safety for your laboratory. In addition, the autosampler boasts loading and storage



capacity of up to four applicators for processing of 60 protein or 9 immunofixation samples with complete walk-away capabilities.

**GELSCAN** is the latest innovation from Sebia to provide high-resolution image capture technology. The GELSCAN utilizes CCD technology which gives a multipoint densitometry reading; this allows for precise quantification of all the fractions. The GELSCAN can also help reduce turn-around-time with a full gel being processed in less than one minute, regardless of the gel size or configuration. Other features include: bi-dimensional measurements, automatic image position correction, and direct visualization with accurate optical density measurement. This state of

## Innovation & Automation

the art technology is available as a stand-alone system, GELSCAN, or on Sebia's HYDRASYS® 2<sup>SCAN</sup> instrument that allows the user to perform all of the steps for gel electrophoresis on one platform.

Sebia continues to advance the process for gel electrophoresis. With the addition of ASSIST and GELSCAN, any lab can achieve more automation, increase productivity, and provide clear and accurate results.

For additional information, visit [www.sebia-usa.com](http://www.sebia-usa.com), What's New page.

## Enhanced networking & database management capabilities

Sebia's PHORESIS™ software, utilized with the HYDRASYS®, MINICAP, and CAPILLARYSTM instruments, is multi-functional. Above and beyond crucial instrument operation, the software also has interfacing and networking capabilities to further streamline processes within the laboratory. Many Sebia customers currently take advantage of these very useful software capabilities, as describes in a previous **Sebia SEPARATIONS – Issue 2 Volume 10**.\*

Sebia PHORESIS now has enhanced networking and database management capabilities with the use PostgreSQL database system, as described in the following article – Transitioning Networking Technologies. PostgreSQL is ideal for those unique customers with multiple PHORESIS software users – networking requirements (off-site and/or on-site) and with a high testing volume - large amounts of patient data. **Please read on...**

## Transitioning Networking Technologies: Access to SQL

By: E. Richard Hunt, MBA, National Service Manager

Microsoft® (MS) Access and PostgreSQL (SQL) are both relational database management systems, well-suited to the purposes for which they were created. Their main difference lies in how each is designed to be used. MS Access uses a file server design, intended for home or small laboratory applications with a small number of users. SQL, a widely accepted open source application in use for over 20 years, uses a client/server design intended for medium to large labs with more complex data processing requirements and with many concurrent users. It is important to use the right tool for the job - one wouldn't attempt to clean a floor with a lint brush.

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## California Lab Finds Much to Like About Sebia

### Electrophoresis innovation keeps HealthCare Clinical Laboratories loyal for 10 years running

Judging by the prevalence of “reality” TV and the media’s proclivity for covering failed relationships, it might appear that loyalty is a futile concept these days.

Fortunately, most of us live a reality not made for TV. In our “real world,” long-lasting relationships are built every day, forged by trust, excellence and promises kept. The 10-year history between HealthCare Clinical Laboratories (HCCL) and Sebia Electrophoresis is a great example.

Since 1999, HCCL has relied on a range of Sebia instruments and assays to deliver high-quality laboratory services to St. Joseph’s Medical Center in Stockton, Calif., in addition to its outpatient client base and other members of the Catholic Healthcare West network. Being situated inside a 294-bed regional hospital might seem like a “gray train” setup, but the reality is that HCCL faces the same challenges as other hospital-based labs. Rising patient volumes, a decreasing labor pool, cost pressure, competition from other labs, and fickle physician loyalty are some of the issues being mitigated through the use of laboratory automation.

**“What’s really special about (the CAPILLARYS 2) is that it gives us unprecedented separation of hemoglobin variants.”**

— Matt Bruni, CLS (ASCP)

For HCCL, the results have been compelling – and not only because of a boost in throughput. Test quality has bumped up a few notches due to clearer results, more accurate interpretation and substantially fewer retests. Workflow has improved, and technologists can multi-task without pulling their hair out.

“In the old world, we would have had to hire an extra person to perform the variety and volume of electrophoresis testing we’re handling now,” says HCCL’s Medical Director, Stephen Connolly, M.D. “We can comfortably increase our volumes with the staff we have in place. As our relationship with Sebia grows, we’re able to decrease the cost of



testing considerably while delivering a higher level of service.”

Here’s a look at the Sebia instruments and test assays used by HCCL.

#### First steps: ‘walkaway’ electrophoresis

HCCL’s initial venture into ‘hands-free’ electrophoresis began in early 1999 with the HYDRASYS® – Sebia’s semi-automated instrument designed to reduce handling and processing time of agarose gels. The ‘walkaway’ system rapidly performs all phases of electrophoresis – from sample application to migration to incubation to staining, destaining and drying. HCCL’s lab personnel loved the speed and consistency afforded over their previous manual method, but the quality of Sebia’s gels sold them: Fast processing could be had without sacrificing the integrity of tests.

“Sebia’s gels are superior to those of other providers – the quality is consistent and the gels are easy to read,” says Lab Manager Denise Facaros, CLS (ASCP). “That wasn’t always the case with our previous method.”

There’s no mistaking the value of a high-clarity gel. “Sebia allows us to provide a very accurate diagnosis,” says Dr. Connolly. “We can be very confident in our results.”

Facaros also found the HYDRASYS system refreshingly uncomplicated. “The procedure is easy to follow, more so than the other options we looked at,” she notes. In a busy lab where staff are already

stretched thin, technologists can’t afford to spend a lot of time – or risk making mistakes – fiddling with a new system. HYDRASYS is foolproof when it comes to usability. There are no messy reagents to mix; the user simply centrifuges the sample, adds a neat serum and loads the sample into the HYDRASYS. The machine takes it from there. Typically, a high-volume lab can achieve throughput of 162 proteins, 45 hemoglobins or 18 immunofixations in an hour.

#### A ‘neat’ solution for urines

HCCL uses the HYDRASYS for urine protein electrophoresis and immunofixation (IFE). The lab switched from using concentrated urine samples – which put a drag on turnaround time and increased the technologist’s workload – and now opts for Sebia’s High Resolution (HR) gel for unconcentrated or “neat” urine samples.

“It used to take us a full day to concentrate samples to where they needed to be, and we risked losing the sample if, for instance, the volume submitted wasn’t adequate to work with. Not only that, we didn’t always get the best concentration, so we were kind of guessing,” Facaros recalls.

The Sebia High Resolution gels are designed to be highly sensitive and capable of detecting very minute amounts of protein. Because the urine doesn’t have to be concentrated, sample size is less of an issue. Plus, the technologists save time and get an accurate diagnosis. Facaros points out that the High Resolution gels have been particularly helpful in picking up small amounts of Bence Jones protein, a hallmark in multiple myeloma.

#### Penta IF saves time and money

As the debate over U.S. healthcare reform rages on, there is increasing sensitivity about the money and time spent on medical tests. Penta Immunofixation (IF) is a unique way that HCCL and Sebia are helping physicians walk that fine line between high quality care and cost control. The Penta IF acts as a screening IF assay, where five antibodies are combined and tested in a single lane. Because only two tracks are required verses

the traditional six, more samples can be processed simultaneously. This saves considerable time and money when there are a high number of negative or normal results, because the traditional IF assay testing can be reserved for confirming positives.

“Some physicians order IFEs without regard to the SPEP result,” Facaros explains. “We use IF Penta gels mostly in these cases, or in re-testing of previously positive patients to rule-in the continued presence of a spike. The traditional IF is still done when the Penta is positive, or in obvious positive patients (from the SPEP result).

“We used to do an IFE confirmation anytime IFE was ordered, she adds. “Now we have eliminated a step and run more patients at once, saving money.”

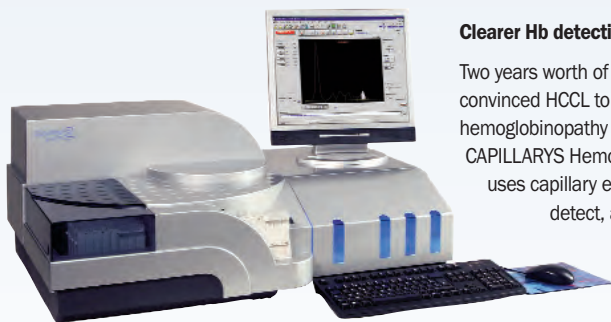
**“We believe that by working with Sebia,  
we're giving our very best to our customers”**

— Denise Facaros, CLS (ASCP)

#### **FOCUSING on the gold standard**

In 2005, HCCL enhanced its testing menu to include isoelectric focusing (IEF) for cerebrospinal fluid (CSF) assays – the “gold standard” in multiple sclerosis diagnosis. IEF is the most sensitive method for the detection of oligoclonal immunoglobulin bands, and Sebia's high-voltage HYDRASYS FOCUSING instrument with its CSF assay produces clear, crisp, easy-to-interpret results in just over two hours.

“The isoelectric focusing method provides very accurate results and far superior resolution than what we were using before,” says Matt Bruni, CLS (ASCP), HCCL's Clinical Laboratory Scientist. “This has greatly enhanced the level of service we provide our clinicians.”



*CAPILLARYS 2 - automated capillary electrophoresis*

In his experience, getting such high-quality results on the CSF IEF assay requires a little more technical finesse than what the lab encountered with other Sebia products. “Sebia provided some

extra training to ensure consistency across the board (for instance, always using fresh reagents, etc.) Now everyone is very comfortable with it.”

#### **CAPILLARYS: The new generation**

Simultaneous to the implementation of IEF, HCCL also ushered in the ‘new generation’ in capillary electrophoresis by adding the CAPILLARYS® 2 to the mix.

Sebia's fully automated system speeds and simplifies processing because it's completely hands-free – from bar-coded primary sample tube to final result. What's more, the CAPILLARYS 2 includes a robust database that can store up to 100,000 capillary electrophoresis result curves and data; and the system can automatically delimit curves and identify fractions, reducing the need for operator editing.

“The nice thing is that, through the sample barcodes, we can upload patient demographics to the CAPILLARYS,” Facaros notes. “Then, along with the CAPILLARYS results, we can also import quantitative protein results for that patient, creating one comprehensive chartable report that includes unlimited space for comments.”

HCCL recently added a scanner that enables the lab to scan a patient's urine IF result from a gel into the CAPILLARYS 2, and electronically attach it to the SPE result generated by the instrument. This eliminates the need for a densitometer.

Dr. Connolly has seen an improvement in test accuracy since the CAPILLARYS came aboard. “We had to re-run samples more frequently when we were using gels for protein electrophoresis. Now that we're fully automated it's extremely rare to not get a clear result with the first run.”

#### **Clearer Hb detection**

Two years worth of success on the CAPILLARYS 2 convinced HCCL to add a sister instrument for hemoglobinopathy and thalassemia testing. The CAPILLARYS Hemoglobin, implemented in 2007, uses capillary electrophoresis (CE) to separate, detect, and quantify normal hemoglobins and hemoglobin variants.

“What's really special about this instrument is that it gives us unprecedented separation of hemoglobin variants. For example, we can more clearly quantify Hb E from the A2 fraction, aiding in a differential diagnosis for beta thalassemias,” explains Bruni. In a city where 20 percent of the population is Asian,

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HCCL sees a lot of Hb E patients. “Plus, the CE results are so clean. Prior to this, when we were using HPLC we'd get a lot of extraneous peaks, which required time-consuming investigation.”

CAPILLARYS Hemoglobin also provides very enhanced resolution and focalization in the separation of Hb A2, F, and S – especially useful in sickle-cell anemia diagnosis – and very clear detection of Hb Bart's and Hb H – which are indicators of alpha-thalassemia. The instrument also features an onboard, dropdown Hb variant library and stored control reference curve overlay, clearly visible right there on the screen.

As a second methodology for abnormal results, HCCL runs Sebia's HYDRAGEL® Acid Hemoglobin gel on the Sebia HYDRASYS semi-automated electrophoresis instrument. Some common hemoglobin variants co-migrate with others at an alkaline pH, making them readily identifiable by visual interpretation when compared to patterns electrophoresed at an acid pH. With a shelf life of at least 18 months, this assay provides an economical option as a secondary hemoglobin testing method for HCCL, who only sees a handful of abnormal hemoglobin results by CE in a day.

#### **Service with a smile**

Customer loyalty is rarely sustained on technology alone. Sebia's most important offering – good old-fashioned service and support – factors heavily into HCCL's decision-making.

“They probably have the best electrophoresis instrumentation out there, but a big reason for our continued satisfaction with Sebia is that they're just so great to work with,” Facaros says. They are readily accessible, whether we have a technical question or need help with a diagnosis.”

She recalls that when the lab switched to CSF isoelectric focusing, technologists were having difficulty getting consistently clear gels. “Our Sebia technical representative immediately came onsite and spent time with us to ensure we knew how to perform the test correctly. Since then we've continued to get clear and readable results every time.”

Bruni adds that Sebia's Scientific Support department is also available by phone to discuss

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*Continued from pg 1 - Enhanced networking & database management...*

Several of the key benefits of SQL for larger labs with more intensive data needs are its improved data reliability, security, performance, manageability, and scalability. It is able to handle the increased volume of records, complexity of data, and multiple users that accompany a growing lab. Whereas the MS Access database engine's record storing abilities are a few gigabytes, SQL is designed to handle terabytes worth of data in one secure location. Additionally, SQL offers the option of investing more in hardware, such as more memory or computers, to improve performance as the lab's needs increase.

With SQL's client/server approach, the reliability and integrity of the database is protected. Each user interacts with an intelligent data manager on the server rather than the raw data tables. If a client system crashes, or there is a network glitch, the data manager on the server recognizes the incomplete transaction and does not relay the request to the database, thus ensuring the information stored within the database isn't left in an incomplete or corrupted state. SQL also supports automated backup procedures to a network drive or a medium disk while operating, and maintains an automatic transaction log, allowing programmers to track and roll back procedures.

Further strengthening SQL's ability to maintain data integrity, is the use of triggers, which MS Access does not support. For example, if a name is added to the Employee list, a trigger can be written to also add that name to Salaries, Hours, etc. A trigger could also be applied to enforce a business rule, such as limiting whether or how much a product price can be updated. These triggers occur at the core data level rather than from the user's end and therefore can't be forgotten about, ignored, or bypassed by the user.

For a small lab with a relatively small and stable amount of data to store, where security requirements are mainly focused within a confined group and database processing needs are simple, MS Access offers a good solution for its range of capabilities. However, when the database needs of an organization grow and expand across multiple operating environments over time, SQL provides a secure, reliable, and scalable solution.

**If you would like to learn more about your laboratory's networking and database management potential with the use of PostgreSQL, please e-mail [Marketing@sebia-usa.com](mailto:Marketing@sebia-usa.com).**

\* Available at [www.sebia-usa.com](http://www.sebia-usa.com), newsletters & feedback.

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any questions. Dr. Connolly points out that Sebia does a good job of providing routine maintenance without disruption. "They are very flexible about scheduling things around our daily workload. Technical maintenance is completely invisible to the customer."

#### **Fostering healthy relationships**

Facaros summed up her lab's 10-year relationship with Sebia in one sentence: "We believe that by working with Sebia, we're giving our very best to our customers."

#### **About HealthCare Clinical Laboratories (HCCL)**

HCCL, located at St. Joseph's Medical Center in Stockton, Calif., was originally an

outreach lab serving San Joaquin County. In 1996 the lab became affiliated with Catholic Healthcare West (CHW), the largest hospital system in California and the eighth largest not-for-profit hospital provider in the U.S. HCCL's Stockton lab is the central lab serving 38 hospitals and providers in the CHW network, and performs all reference tests including electrophoresis.



*Left to right: Matt Bruni, Dr. Stephen Connolly, and Denise Facaros*

## **AACC/ASCLS and the Clinical Lab Expo**

The annual meeting of the American Association for Clinical Chemistry (AACC) and the American Society for Clinical Laboratory Science (ASCLS), and the Clinical Lab Expo took place in Anaheim, CA in late July, 2010. Meeting attendees enjoyed vast educational opportunities and face-to-face time with exhibitors in order to learn about new technology available for the clinical laboratory.

Sebia proudly supports the AACC annually by participating as an exhibitor during the Clinical Lab Expo. Additionally, Sebia supports the laboratory community by participating as a site sponsor of the AACC educational website [www.labtestsonline.org](http://www.labtestsonline.org). Lab Tests Online is an award-winning website accessed globally that provides patients and medical professionals with access to free, non-commercial, peer-reviewed information on laboratory testing in their native language.

During the 2010 annual meeting of the AACC/ASCLS, Sebia hosted an Industry Sponsored Workshop entitled "CAPILLARYS 2 FLEX Piercing: Whole blood hemoglobinopathy testing utilizing capillary electrophoresis; technology discussion and case studies." Aigars Brants, Ph.D., Sebia Scientific Support, along with two

guest speakers, David F. Keren, M.D. and Mark Shearer, MCLT, MT (ASCP), presented material during the well-attended workshop session. Dr. David Keren is the Medical Director of Warde Medical Laboratory and Adjunct Clinical Professor of Pathology at the University of Michigan Medical School in Ann Arbor, MI. Mr. Mark Shearer is the Director of Chemistry at CompuNet Clinical Laboratory in Moraine, OH. Dr. Keren and Mr. Shearer both currently utilize Sebia's capillary electrophoretic methodology for hemoglobinopathy & thalassemia testing within their clinical laboratories. **To receive a presentation booklet, e-mail [marketing@sebia-usa.com](mailto:marketing@sebia-usa.com).**



During the Clinical Lab Expo, Sebia registered booth visitors for the opportunity to win an Apple® iPad. We are pleased to announce the Grand Prize winner of the Apple iPad. Congratulations to Manijeh Danaye-Elmi, Laboratory Operations Manager (pictured) of Sutter Health Shared Laboratory in Livermore, CA. We look forward to another successful meeting of the AACC in 2011, scheduled to take place in Atlanta, GA – home to Sebia's U.S. corporate offices!