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Where Science and Management Meet™

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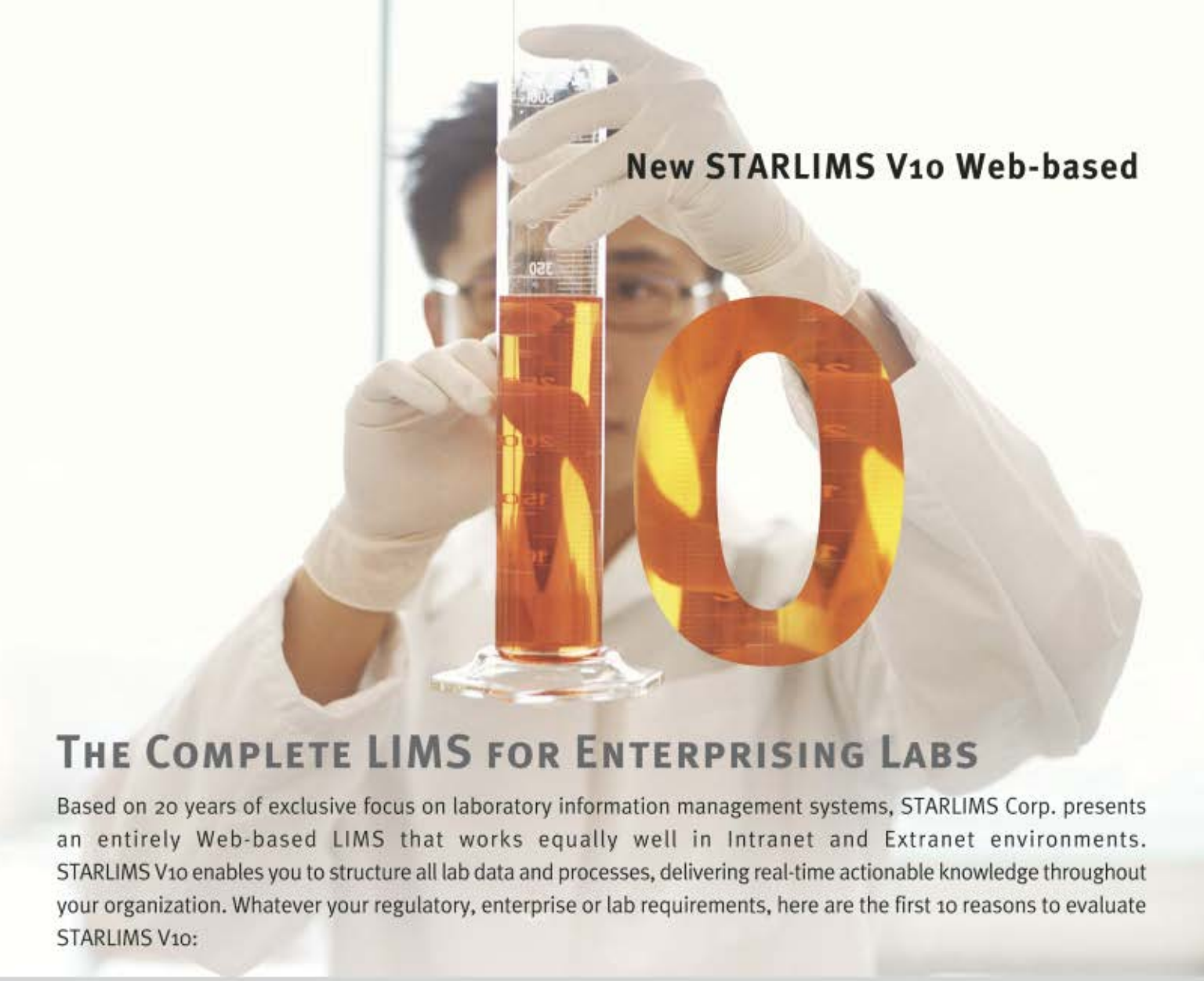

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YOUstress and Distress

The first article in this issue of *Lab Manager* offers a method for managing stress in the workplace. It focuses on a group technique to uncover and identify stressors and begin the process of addressing circumstances that affect performance and job satisfaction. As a manager, it is important to be aware of dynamics within your staff and move toward making positive changes.

But stress management may need to start with the saying, "Physician heal thyself" — essentially reminding us to take care of our own behaviors before "fixing" them for others.

From the "Ten Commandments of Stress Management" to "Stress-busters," to laughter clubs, mediation and relaxation techniques, endless websites, consultants, quizzes, self-help books, and time-management tools, there is no lack of information on how to handle stress. The key is to handle or manage stress. Most experts will tell you that it is not possible to avoid or eliminate it.

Hans Seyle, a Canadian endocrinologist who studied the effects of stress, wrote, "The only escape from stress is death." His statement was not a dire view of the human condition but rather a call to understanding that life involves taking risks, making choices, facing challenges, and that not all stress is bad. In fact, his studies led him to coin the term *eustress* (from the Greek *eu* meaning either "well" or "good"). Eustress is stress that is deemed healthful or giving one the feeling of fulfillment. Examples of this in the workplace can be associated with successful completion of a project or achieving a promotion. Both events assume that expectations were set and needed to be met. What might have been a stressful situation becomes positive when the outcome results in a feeling that the effort was worth it.

Negative stress, or distress, in the workplace can take many forms including lack of appropriate autonomy or authority, work overload, or even the inability to say no or ask for assistance. Work stress is often related to time management. Two of the biggest time wasters are interruptions and poor delegation skills — assessing the impact of these on your workday is a good place to start "distress" reduction.

Take a few minutes to think about stress and ask these four questions:[1]

- What is stressful to me?
- How does stress affect me?
- When am I most vulnerable to stress?
- When is stress good for me?

By identifying stressors and responses to stress, you can help yourself and go on toward helping your staff, individually and as a whole, create a "stress for success" atmosphere.

Patrice Galvin

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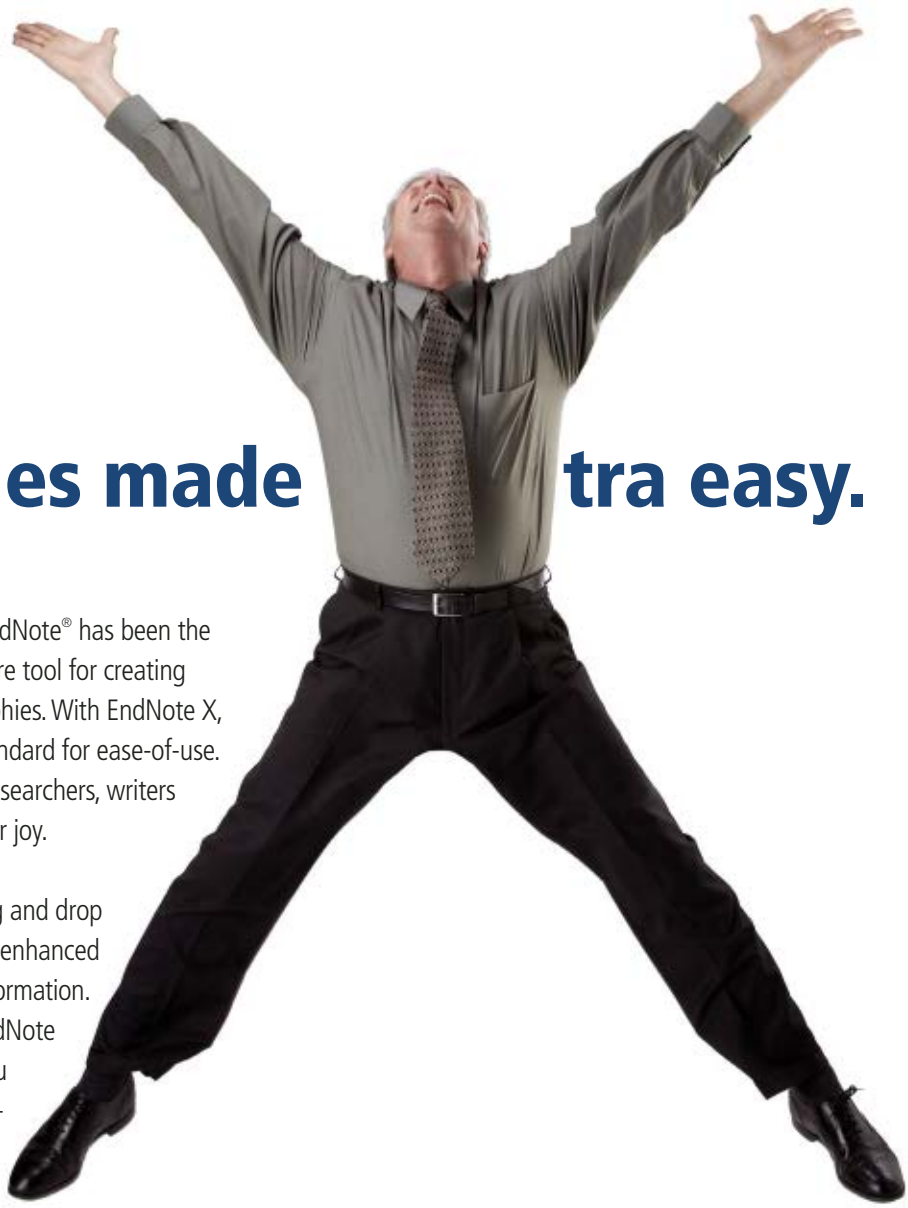

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A Nominal Agenda to Reduce Work Stress

AN UNSTRUCTURED APPROACH TO PROBLEM SOLVING MAY NOT ENSURE THAT ALL VOICES ARE HEARD — THAT'S WHEN THE NOMINAL GROUP TECHNIQUE IS EFFECTIVE.

Work stress has become a dominant factor in our workplace and it affects all of us. As a manager, you may be coping with a chronic staffing shortage, recent layoffs, a rash of errors that has eroded confidence, or a turnover in senior administration. If you're new to the job, you may not understand the problem. Your secret weapon to create a work agenda that combats stress just might be the nominal group technique.

Work has always been stressful, you say. And you're right. After all, if it were fun, it wouldn't be called work. It's tempting to view stress as an individual's problem. But the latest trends suggest that our society is changing in ways that create even more stress, making it difficult to shrug off.

Information technology and a global economy contribute to an out-of-control work environment. As customer demands increase, we depend more on technology to deliver. This "informatization" of our workplace is double-edged; we not only use but need to produce information in ever-increasing amounts. Productivity may be higher, but more skill is needed.

THE PRICE OF STRESS

One study cites a third of U.S. workers as overwhelmed and seven out of ten want a different job. One reason is technology. Cell phones, pagers, computers, and other devices that didn't exist a few decades ago create a constant need to be accessible and add stress.[1]

It's tempting to view stress as an individual's problem. But the latest trends suggest that our society is changing in ways that create even more stress, making it difficult to shrug off.

There are disturbing signs that the trends are real. Similar to the phenomenon of "road rage" on overcrowded highways, work stress is causing "desk rage" on the job. One study reports that 42 percent of Americans say that yelling or verbal abuse takes place at their job, and nearly a third of those have themselves yelled at co-workers. One in seven report rage-driven destruction of property. The end costs are employee tardiness, absenteeism, and turnover.[2]

Most alarmingly, work stress is linked to heart disease in a 14-year study published recently by the British Medical Journal.[3] Civil servants exposed to chronic stressors are nearly twice as likely to develop metabolic syndrome that increases the risk of heart disease and type-2 diabetes. Physiological disorders as well as lifestyle changes may be the cause. The study shows a "dose-response relationship" in which workers' health-damaging behaviors are in proportion to the amount of stress.

As a manager, you may think that stress is unavoidable for some people, a feeling buoyed by research that focuses on how it affects individuals. But we also know that workers need freedom in how to respond to job demands in order to reduce stress. Those in high-strain, low-control jobs are three times more likely to have a heart attack as those in executive positions.[4]

The little research done on group stress shows that overall performance suffers. One study comparing groups of Navy technical school personnel suggests that a higher level of stress narrows the focus of the group from team to individual goals.[5]

Scott Warner

A new manager can be blind-sided by a group culture that may have developed without the awareness of upper management. Long-term effects of an "each man for himself" mentality may foment hostility, dissolve a team, or empower a "shadow organization" negative culture as the group loses perspective. In the long term, work stress can make your job all the more difficult.

It's also tempting to accept this stress as part of our world, perhaps as a price for new technology. To some degree, a work culture that views stress as not only inevitable but necessary in order to compete and generate profit pays an ultimate human cost.

THE NOMINAL GROUP TECHNIQUE

As the National Institute for Occupational Safety and Health points out, there is a difference between harmful stress and a work challenge or so-called "good stress." Work that is challenging is energizing and motivating. Work stress occurs when expectations are too high, which, in the long run, makes a job unsafe and unhealthy. The good news is that some of the working conditions that can create stress listed in Table 1 are probably under your control.[6] You may be able to turn bad stress into good.

Lack of individual control in how to respond appears to be at the root of work stress. Other causes are a lack of participation in decision making and uncertainty about expectations. A good first step is to allow the group to identify these subjective perceptions.

Group exercises like brainstorming can help identify stressors and get a group back on track, but individuals who wield power within the group can make this difficult. These individuals may not be immediately apparent. And an unstructured approach to problem solving may not ensure that all voices are heard. These conditions may occur when negative "groupthink" takes over after prolonged periods of stress. That's when the nominal group technique

TABLE 1: JOB CONDITIONS MAY LEAD TO STRESS

CONDITION	STRESSORS
Task Design	Heavy workload, infrequent rest breaks, long work hours and shifts, hectic and routine tasks that have little inherent meaning and do not utilize workers' skills, lack of control
Management Style	Lack of participation by workers in decision-making, poor communication in the organization, lack of family-friendly policies
Interpersonal Relationships	Poor social environment, lack of support or help from co-workers and supervisors
Work Roles	Conflicting or uncertain job expectations, too much responsibility, too many "hats to wear"
Career Concerns	Job insecurity, lack of opportunities for growth, advancement, or promotion, rapid changes for which workers are unprepared
Environmental Conditions	Unpleasant or dangerous physical conditions such as crowding, noise, air pollution, or ergonomic problems

Source: National Institute for Occupational Safety and Health (NIOSH)

TABLE 2: PROS AND CONS OF NOMINAL GROUP TECHNIQUE

PROS

- Quickly generates creative ideas
- Equal participation of group members
- Influence of individuals is minimized
- Team building exercise

CONS

- Cross-fertilization of ideas doesn't occur
- Process may be too mechanical
- Groupthink may prevent idea generation
- Voting process may not reach consensus

(NGT) is effective.

A nominal group is brought together solely to generate ideas. While brainstorming uses a freewheeling, spontaneous approach, NGT is more structured. Both are suited to dealing with poorly understood or complex problems, but NGT keeps individuals from dominating meetings, insulating the process from politics. This helps a group work together quickly to help find solutions.

HERE ARE THE STEPS:

1. Begin with a group of five but no more than ten participants, with you acting as a facilitator. You'll need a board or flipchart to write on and a clock.
2. Choose a meeting space large enough to accommodate members in a U-shape or around a table, and block out a length of time during which you'll be uninterrupted.
3. State the problem clearly as an open-ended question. Be sure that the issue framed by the question is understood by all participants. Your terms should be unambiguous. The issue itself is open-ended and may range from an overall agenda (What are the major sources of stress in this laboratory?) to a specific problem (How can we reduce cost?).
4. Ask the group members to silently jot down their ideas and responses in a set period of time (5–10 minutes).
5. Collect the ideas in a round-robin fashion, asking each group member in turn to state an idea aloud. You as the facilitator write down the ideas, asking for clarification from the respondent. No criticism or discussion is allowed. A member may also "pass," in which case no idea is recorded and the next person states an idea. This continues for a set period of time or until all ideas are recorded.
6. Briefly discuss each idea. This is the time to eliminate duplicates or combine similar ideas, change wording, or delete items by group consensus. Rather than judge the ideas, this step clarifies them without argument.
7. Number the items and ask members to silently rank order the top 5–10, depending on the length of the list, by writing them down on a piece of paper in a set period of time (5–10 minutes). If each member has five votes, for instance, the most important item is worth five, the next worth four, and so on. The criteria for voting can be open-ended (individual preference) or specific (cost) but should be made clear by you in advance of voting.
8. Tally the scores either by the members reading their choices aloud in descending order (not anonymous) or by a scribe reading from their score sheets (anonymous), then write the scores beside the individual items.

What this gives you is a prioritized list of items that answer the question posed to the group in a short period of time, maybe as little as 45 minutes. It's up to you to develop action plans, perhaps with their help. And if you're a new manager, this technique can give you an agenda that can be a roadmap for success, helping you gain early credibility.

If NGT seems like a complicated way to solve problems, consider that a group is generally better than an individual at solving an unstructured problem.[7] You wouldn't use NGT to add a column of numbers, because addition is clearly understood. It follows that a poorly understood problem (How do we reduce work stress?) needs definition and clarification before taking action, the more creative the better.

The NGT, outlined above with a multi-voting, prioritization method, isn't perfect as briefly summarized in Table 2. But it has advantages over other techniques, particularly if the group's dynamics are unknown or the group has been under stress for an extended period of time. If all members in a group (or a series of groups, depending on the size of your staff) are given a voice, NGT can be a powerful, team-building exercise.

Roadblocks can occur. Group members may be familiar with NGT to the point of manipulation; individuals can obstruct the process. You as a facilitator must firmly keep the group focused. A phenomenon of "groupthink" may exist, in which some or all members agree collectively on an irrational course of action. NGT may not only expose this but serve to keep the group grounded in its

approach to the problem.

Strict adherence to the technique may produce uncomfortable results. It's possible, for instance, that you or other members of a work team are causing stress. As noted in Table 1, there can be specific reasons for employees' dissatisfaction with management. It's important that you separate the person from the process.

A structured, rational approach to consensus building like NGT helps counter the destructive, chaotic effects of work stress. You may even solve problems, which is a good thing. Managers are stressed, too.

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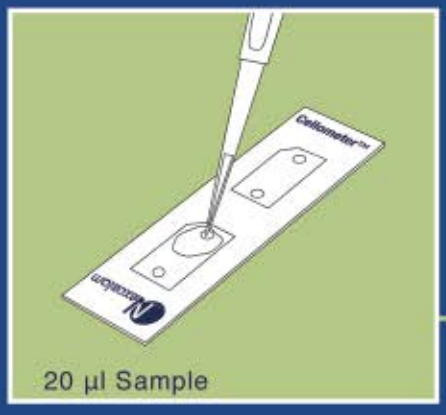

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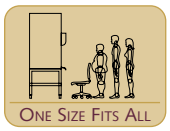

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Improving Customer Relationships in the Laboratory

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Satisfied customers have always been critically important at BioTek Instruments, Inc. We recognize that high customer satisfaction will ultimately lead to increased loyalty and sales, while dissatisfaction could potentially inflict lasting damage.

While we enjoy the reputation of providing excellent customer service, in addition to the microplate instrumentation that we manufacture, we recently implemented a formal system of self-improvement so that this reputation could be further enhanced. It was an eye-opening experience at times, and we gained such tremendous value from this process that we believe others may benefit as well — including the laboratory market.

Though not always readily apparent, every laboratory has customers. In fact, lab customers can be found in a wide range of areas, from the far-reaching "consumer" to another lab down the hall — and anywhere in between. It's important to keep these customers happy — if they're not, your lab's credibility could suffer, or worse, existing and future responsibilities could be transferred to another lab. In the normal course of human nature, problems do arise and errors are made, but ideally the relationship is as smooth as possible. So how can you avoid bottlenecks and pitfalls to ensure pleased customers? You may be able to find the answer through the implementation of a CRM strategy.

We found that implementation of a streamlined CRM system helped to promote communication both internally and externally, and all departments now have access to the same information.

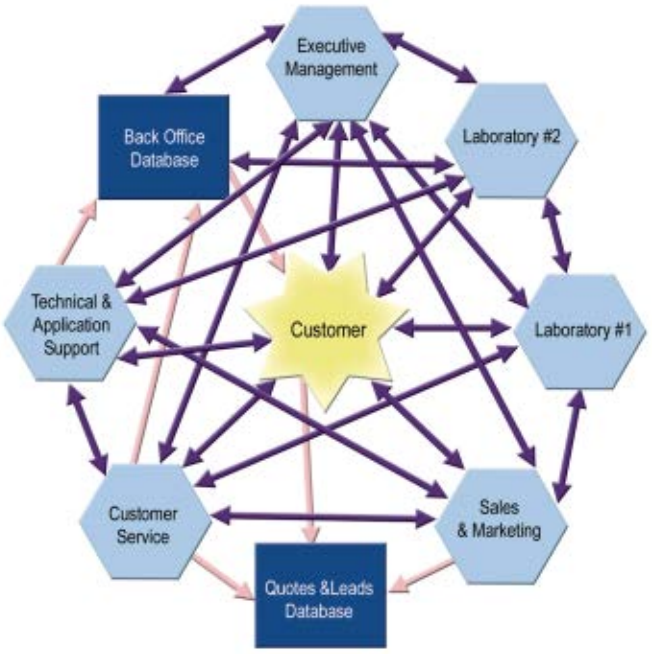

Figure 1. A physical map of communication methods and information input often reveals a chaotic scenario.

CUSTOMER RELATIONSHIP MANAGEMENT

Customer Relationship Management (CRM) is a system or process that enables organizations, regardless of specialty or market, to manage, service, retain, and often strengthen relationships with customers. A successful and efficient CRM system encompasses the entire company, from the executive level to every department and employee. Through CRM, a synergistic effect is created between a pre-determined

Deborah Farnham

process, the employees of the company, and the CRM technology and database system creating one complete view of each customer, both internal and external, in real time.

FIND YOUR CUSTOMERS

From the scope of the laboratory environment, do you know who your customers are? It may be surprising to learn that some people in your lab have differing opinions. To complicate matters further, do you know who your customer's customers are? Your customer may be the lab down the hall but do you know who depends on them? Often, you may have a piece or two of the puzzle, but not many people have the time and/or resources to gather all of the pieces to create the complete picture. An ancient and well-known proverb puts this into perspective. Four wise men were led into a dark, windowless room with their hands outstretched. The first wise man ran his hands along the rough trunk of a tree. The second wise man felt a large tropical leaf. The third wise man trembled as he handled a giant serpent while the last felt nothing but a warm, rudimentary wall. As they voiced their discoveries, confusion swept the room — torches were lit, and the tree, leaf, serpent, and wall were revealed as the leg, ear, trunk, and body of a large elephant. The four wise men nodded their heads slowly as they realized the lesson that they had learned — only through collaborative knowledge will a deeper understanding be achieved.

This is where we found that the process of implementing a CRM system can be helpful, and the resulting picture of internal and external BioTek customers was greater and more complex than we could have anticipated. As each laboratory and department identifies their customers, a CRM system can combine the multifaceted data into a comprehensive model.

WHY CHANGE IS NECESSARY

Once the pieces are in place, and internal and external customers are identified and combined with existing database systems, a hectic picture will often emerge (Figure 1), along with areas that require improvement. This is where implementing a CRM system becomes a way to improve and identify problem areas. We found that implementation of a streamlined CRM system helped to promote communication both internally and externally, and all departments now have access to the same information. Customer service and interdepartmental service were both improved as a result of this collaborative knowledge, which in turn, benefits our customers. In addition to improvements that we experienced, lag times can also be reduced through implementation of a CRM system, along with an increase in efficiency. Future problems that may unavoidably arise can be identified, minimized, or even eliminated before they become major issues. Finally, in our performance-driven world, a CRM system allows for continued growth of the company by increasing loyalty, reducing unnecessary labor and material costs, and saving time.

GAINING COMMITMENT

Dr. W. Edwards Deming, esteemed author, consultant, and quality expert, once noted, "What we need to do is learn to work in the system, by which I mean that everybody, every team, every platform, every division, every component is there not for individual competitive profit or recognition, but for contribution to the system as a whole on a win-win basis." The same applies here; a firm commitment from executive to laboratory levels is necessary to create and sustain this broad-based and fundamental change. We realize that active involvement of the entire team creates understanding, empowerment, and ultimately motivation to plan for and then implement a CRM system.

MAKING THE CHANGE

So how does one make this change? Once commitment has been gained, the next step is to create a specific and detailed goal. What is the known issue to address — purchasing delays, incompatible research databases, etc…? Or are you looking to proactively streamline communication and processes within your laboratory or organization? BioTek's goals included improving real-time communication both internally and externally, creating tangible metrics for projects in various departments, and establishing a virtual profile of our customers so that complete information was available in one convenient location, regardless of the department that accessed it.

After identifying the goal, document it, and refer to it often to ensure that the process of change remains focused. It also is essential to create a physical map or flowchart of the processes that are being automated. This step in particular will help identify problem areas that may need resolving before implementing a CRM solution. Think of your project in terms of stages, rather than trying to accomplish everything at one time. Then develop realistic timelines for each phase. Depending on the complexity of your needs, you may want to take advantage of a CRM consultant for extra assistance. Creation and implementation of a CRM strategy can be complex and labor-intensive, and if internally managed without a true focus, the strategy is very easily pushed to the back burner in favor of existing job responsibilities.

When you have developed a focused goal and know what you wish to accomplish with a CRM system, look for a CRM vendor with the flexibility to develop a solution based on your specific needs, or, if your implementation is fairly simple, an off-the-shelf program might be all that's necessary. We narrowed the field from fifteen candidates to four before awarding the project to a company based in the Midwest. Keep in mind during this search phase that internal departments will certainly be involved in the overall process.

CREATION OF THE SYSTEM

Once you've chosen your CRM partner, a Project Manager

Figure 2. Implementation of a CRM system can improve communication methods and information input for overall benefit.

will work closely with the entire team to understand the goals, fine-tune the business practice flowcharts, and combine co-dependent and associated activities into an interconnected electronic application, allowing all information to be shared in real time. The pre-defined goals, strategies, and processes all drive development and customization of the information technology.

SUMMARY

Results from improvements can include streamlined processes (Figure 2) resulting in less waste, less confusion, increased efficiency, and enhanced customer satisfaction — even from the lab next door. Although the results from a CRM system may not be readily apparent to outside customers, they'll appreciate the prompt and high-quality customer service they receive from every member of your laboratory. Our customers have appreciated our proactive approach; they spend less time explaining their needs and more time working with us towards a solution. Our CRM system provides us with more time and resources to serve our customers.

Deborah Farnham *is Marketing & Sales Operations Manager at BioTek Instruments, Inc., and spearheaded the implementation of a successful CRM system within her organization to ensure the continued happiness of BioTek's internal and external customers. She may be contacted at 802-655-4040; or farnhamd@biotek.com.*

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ONE TEST, ONE ACCREDITATION — Accepted Everywhere

MUTUAL RECOGNITION ARRANGEMENTS (MRAS) ARE DRAWING THE GLOBAL ACCREDITATION COMMUNITY CLOSER TO ACCEPTING THE OUTCOMES OF EACH OTHER'S ACCREDITATION.

Laboratories are understandably frustrated by the need to obtain duplicate accreditations for similar types of tests, measurements, and calibrations. The proliferation of accreditation bodies, each with users only accepting their preferred accreditation body tends to increase the duplication. There are numerous examples where this is the case. The point of this paper though is not to elaborate on this problem but to discuss the solution. It is generally agreed that the ideal of "one test, one accreditation — accepted everywhere" is a worthwhile and achievable aim. A2LA supports this aim and believes the way to achieve it is through Mutual Recognition Arrangements (MRAs) among the accreditation bodies themselves.

COOPERATION AT THE INTERNATIONAL LEVEL

Efforts to realize this ideal have a long history, both nationally and internationally. The International Laboratory Accreditation Cooperation (ILAC) was established 30 years ago to develop accreditation as a trade facilitation tool. If the global accreditation community were to accept the outcomes of each other's accreditations, it would need to operate with equivalent criteria and processes. Internationally accepted standards of practice for laboratory accreditation were needed. The first international standard from the International Organization for Standardization (ISO), ISO Guide 25:1978, addressed the general requirements for the competence of laboratories based upon the work of ILAC. ASTM standard E548 served as a primary source for Guide 25 text. The latest version is now ISO/IEC (International Electrotechnical Commission) standard 17025:2005.

The whole purpose of an MRA is to provide a mechanism where reports from accredited laboratories can be accepted everywhere.

Beginning in the early 1980s, standards for the operation and acceptance of accreditation bodies were published. ASTM standard E994 was the U.S. equivalent (using virtually identical text) to ISO/IEC Guide 58, which was recently replaced by ISO/IEC 17011:2004. In the 1990s, ASTM Committee E36 began to adopt ISO laboratory accreditation standards, which are now the generally accepted U.S. standards. ASTM E36 is recommending the formal adoption of ISO/IEC 17011:2004 as an American National Standard. NIST, ANSI, and several federal agencies already use these standards.

ILAC also agreed to the rules for peer evaluation of accreditation bodies for Mutual Recognition Arrangements (MRAs). The foundation for realizing "one test, one accreditation — accepted everywhere" was thereby laid. Acceptance would begin with the accreditation bodies themselves. The whole purpose of an MRA is to provide a mechanism where reports from accredited laboratories can be accepted everywhere. MRAs, as agreed on the regional and international levels, oblige each signatory to recognize and promote the equivalence of the accreditations of the other signatories.

The ILAC MRA was established in October 2000. ILAC works through recognized regions so that signatories to the MRAs of the European cooperation for Accreditation (EA) and the Asia Pacific Laboratory Accreditation Cooperation (APLAC) automatically

Peter Unger

become eligible for recognition under the ILAC MRA. The Inter-American Accreditation Cooperation (IAAC) is in the process of having its MRA process recognized and accepted by ILAC.

COOPERATION AT THE NATIONAL LEVEL

Laboratory accreditation has developed in many U.S. market sectors at different times and under different circumstances. As accreditations overlapped and became duplicative, ways for consolidating them have been explored.

In 1992, ACIL, ANSI, and NIST formed a tri-partite cooperation called the Laboratory Accreditation Working Group (LAWG). After five years of intense discussion of how to reduce the duplication and complexity of the U.S. laboratory accreditation scene, ACIL, ANSI, and NIST jointly established the National Cooperation for Laboratory Accreditation (NACLA) in 1997.

NACLA developed a process for evaluation and mutual recognition of accreditation bodies based upon international standards and practice. In October 2000, the first three signatories (i.e., A2LA, International Accreditation Services (IAS), and NVLAP) to the NACLA Mutual Recognition Arrangement were recognized based on peer evaluations of the APLAC MRA. NACLA has added five more signatories, but the three original signatories have since resigned from the NACLA MRA for legitimate and compelling reasons. However, A2LA continues to support the goals of NACLA and believes that an opportunity to realize these goals is at hand.

A NEW AND BETTER APPROACH BY NACLA TO ACHIEVE HARMONIZATION

NACLA has recently approached ILAC to explore acceptance as a region. However, recognized regions of ILAC must be composed of a minimum of four countries to have international credibility that the decision-making process is impartial. Accepting NACLA's request requires fundamental changes to which ILAC is unlikely to agree. ILAC is much more likely to encourage interested NACLA members to participate in the

ILAC mutual recognition process, either directly or through participation in the MRA of one of ILAC's recognized regions (e.g., APLAC or IAAC). This would ensure maintenance of a truly internationally-harmonized process for mutual recognition.

NACLA also intends to pursue closer association with IAAC. The combination of each body's limited resources would strengthen the realization of their common goals. U.S.-based accreditation bodies can be evaluated by an internationally recognized process, enabling the accreditation bodies to get international (as well as national) recognition with one evaluation, thus avoiding duplication and the distinct possibility of differing standards of practice. Conflict-of-interest issues would be resolved. Unnecessary trade barriers would be avoided. NACLA stakeholder members can participate in IAAC and ILAC and thus have more influence on the development of international standards of laboratory accreditation practice, which as noted earlier, are also the national standards.

WHY SHOULD U.S. LABORATORIES CARE?

Just as laboratories do not want duplicative assessments, accreditation bodies do not want duplicative evaluations. Separate evaluation schemes are costly and, if they are based on different standards, they are even more costly. Such costs are inevitably passed through to the accredited laboratories. If an accreditation body can get an evaluation to serve both national and international recognition, costs would be reduced.

Not withstanding growing discontent in some quarters, globalization is here to stay. This is even more valid for accreditation and mutual recognition processes and the standards by which they operate. The global MRA processes are growing in coverage, effectiveness, and acceptability. Trade agreements are beginning to include references to the ILAC MRA. Recognition and acceptance of the ILAC MRA will continue to grow in the marketplace and with federal agencies. NIST, the Navy, and the Nuclear Regulatory Commission are users of the ILAC MRA. Regulators will follow, albeit more slowly.

The U.S. with its multiplicity of accreditation bodies is not unique in the world. There are at least ten other countries with more than one accreditation body, many of which are members of ILAC. It is in the self-interest of U.S. laboratory accreditation bodies and U.S. laboratories to follow the international (national) rules no differently than other countries. Doing our own thing would be duplicative, wasteful, and ultimately counterproductive.

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SELECTBIOSCIENCES

2007 conference schedule

Trends in Drug Discovery
Executive Summit
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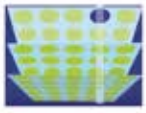
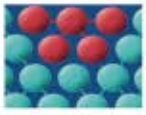
DrugDiscoveryTrends.com

Advances in Protein Crystallography
24-25 January South San Francisco, CA, USA
ProtCrystConf.com

Stem Cells World Congress
12-13 February San Diego, CA, USA
StemCellCongress.com



Screening Europe
20-21 February Barcelona, Spain
ScreeningEurope.com



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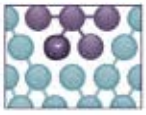

MedChem India
12-13 April Hyderabad, India
MedChemIndia.net

RNAi World Congress
24-25 April Philadelphia, PA, USA
RNAiCongress.com

Molecular Diagnostics World Congress
26-27 April Philadelphia, PA, USA
MolecularDiagnosticsCongress.com

Cancer Proteomics World Congress
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CancerProteomics.net

Advances in Microarray Technology
15-16 May Edinburgh, Scotland
MicroarrayTechnology.biz

Lab-on-a-Chip World Congress
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SEQNSYNTECH (Advances in DNA Sequencing and Synthesis)
15-16 May Edinburgh, Scotland
SEQNSYNTECH.com

European Biomarkers Summit
4-5 September Amsterdam, Netherlands
BiomakersSummit.com

Proteomics Europe
4-5 September Amsterdam, Netherlands
ProteomicsEurope.com

RNAi Europe
20-21 September Barcelona, Spain
RNAiEurope.com

Screening Targets
10-11 September Boston, MA, USA
ScreeningTargets.com

Discovery Chemistry Congress
3-4 October South San Francisco, CA, USA
DiscChemCongress.com

MAOS (Microwave Assisted Organic Synthesis)
3-4 October South San Francisco, CA, USA
MAOSCongress.com

Nanobiotech World Congress
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NanoBiotechCongress.com

Advances in Metabolic Profiling
13-14 November Boston, MA, USA
MetabolicProfiling.com

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Compliance-based Operational Excellence in Pharmaceutical GMP Laboratory Operations

THE FDA HAS INCREASED ITS FOCUS ON MODERNIZING THE REGULATION OF PHARMACEUTICAL MANUFACTURING AND DRUG PRODUCT QUALITY. AS A RESULT, INNOVATIVE PHARMACEUTICAL COMPANIES ARE RE-EXAMINING WHETHER TRADITIONAL DRUG DEVELOPMENT AND COMMERCIALIZATION PROCESSES ARE SUFFICIENT.

A major goal of the new regulatory environment is encouraging manufacturers to adopt new technological advances to enable high quality and efficient manufacturing. Many companies are investigating "operational excellence" programs to create a "lean manufacturing" environment with optimized controls for superior product quality. Supply sites have been challenged to reduce costs and gain efficiency through critical assessment of systems. Most resource headcounts at the supply sites are remaining static, thus moving forward, the gains in efficiency, cost, and error reduction will be achieved through investment in automation and technology.

For QC laboratories, management of data means that analysts input data into paper-based notebooks, worksheets, log books, spreadsheets, LIMS, and chromatography data systems (CDS). For the most part, hybrid systems consist of paper-based records that either stand alone or are combined with electronic records. This approach requires redundant checks, peer review, and time-consuming manual systems to maintain data integrity and compliance with regulatory requirements. Since most of the records are paper-based, they require additional efforts for archival and retrieval.

The approaches that many pharmaceutical labs worked on were born out of Y2K initiatives with the goal of going completely electronic. There were many systems identified during Y2K that were capable of generating and/or storing electronic records. The key issue to be resolved is the integration of all QC/QA lab equipment and IT systems so that management of the data, as a whole, is compliant, organized, complete, and capable of streamlining data and workflow throughout the operation. Leading companies are adopting a new approach to "automating compliance" that is, utilizing innovative technologies and building quality directly into the compliance infrastructure (SOPs, work instructions, analytical methods, data sheets, batch records, and more). Many of these internal programs are sometimes called "Right the First Time" programs. Their key conclusion is that compliance activities can be automated, creating a new, more compliant paradigm, reducing risk and providing higher productivity and improved quality.

Many companies are taking stock of the entire product life cycle (discovery research, development, and manufacturing) and realize all areas must be streamlined.

This paper will discuss the current situation in pharmaceutical quality laboratory operations relative to compliance initiatives, manufacturing challenges, and "method-centric" software, designed for the analyst, to electronically execute and manage lab testing protocols, yielding significant reductions in operational costs while improving productivity.

INDUSTRY PRODUCTIVITY CHALLENGES

The pharmaceutical and biotech industries are challenged to improve product quality, productivity, and assure regulatory compliance while, at the same time, generating an annual 10–15% growth for their stakeholders. This is becoming increasingly difficult due to the large number of branded products coming off patent over the next five years and vulnerable new product pipelines with ever increasing costs to discover new chemical and molecular entities. Many

John P. Helfrich

Figure 1: A digital version of a standard operating procedure (or method) is presented to an analyst with automatic capture of critical method-based data. This process eliminates transcription errors associated with paper-based notebooks.

companies are taking stock of the entire product life cycle (discovery research, development, and manufacturing) and realize all areas must be streamlined. Today, most laboratory operations rely on the ubiquitous use of paper-based "systems" to capture and catalog data. This is particularly evident in the quality control labs where paper notebooks, binders, and data work sheets are used and are fraught with potential human — generated errors requiring constant "checking" and manual verification steps. These processes add no value to the operations and significantly contribute to the costs. Complying with cGMP requirements is an added challenge for the life science industry further adding costs stemming from manual activities centered on compliance.

21 CFR Part 11 emerged as a demanding regulation for the pharmaceutical and biotechnology industries in 1997. Part 11 has recently been modified to lesson the total enforcement scope and provide a more rational framework for implementation, however, the rule still applies if the electronic record is in a high-risk area as defined by the data's impact on human health. The QA/QC activities within the pharmaceutical production arena clearly fall into this high-risk definition. Systems that generate electronic records include analytical instruments (chromatography data systems, balances, pH meters, titrators, and spectrophotometers, etc.), office applications (Microsoft Word and Excel) used for documentation, and laboratory information management systems (LIMS). In addition, the data can be used in higher-order systems such as ERP/MRP systems.

THE PAPERLESS QC LAB

Automation initiatives in production are typically driven by the need to precisely control synthetic reactions or bioprocess conditions and cut operational costs. That paradigm is now being further enhanced by reviewing the costs associated with non-value added tasks. An identified area is the large amount of paper processes still used in manufacturing, particularly quality control and quality assurance functions. The key non-valued added functions are the analysts' records of method execution and the re-typing of data into IT systems such as LIMS or ERP systems. This paper process requires significant review and audits to check the data and assure compliance with the SOP and expected process norms. To investigate an analytical value further complicates the situation as the source data is inside a paper notebook and/or binders that must be manually found and reviewed. If one could capture and catalog all the data and metadata at its source and drive it direct to a database, the entire process could go totally electronic and significantly reduce any manual processes. These "e-manufacturing" initiatives have received attention as one of a small number of critical-path issues that, if solved, will yield significant cost savings for decades.

An automated data capture software application embedded within a company's existing SOPs or test methods captures all the critical data and metadata created during the process of implementing a method on the lab or process floor. Data elements include method preparation data (reagent info, weighing operations, metrology, etc.), analytical instrument data (chromatography and spectroscopy), and analyst or operator observations (color, texture, shape, etc.).

Electronic software systems take existing written protocols (methods or SOPs) and present it as an electronic version with embedded data capture technology. It is essentially a "method-under-glass" with direct connection to all the lab instruments. These systems allow analysts and operators to interact with the digitized test method or SOP through PCs or hand-held tablet PCs that force sequential data entry and capture either manually or automatically (direct from instruments). The technology can be thought of as a GMP electronic notebook.

There are many benefits to incorporating an electronic notebook system. At the end of the process all the data is aggregated in a reviewer screen (Figures 1 and 2) with all data flagged for valid method norms and a direct link to the original data source. Review times are typically reduced by a factor of 50% or more. Instrument data files are automatically captured and organized in a secure repository for future needs. Access to the platform is controlled via a secure privilege grid with full audit trail and electronic signature capability providing compliance with the FDA's 21 CFR Part 11 regulations. The result data is accessible to any authorized member of the QA review or management team. Tailored reports, including certificates of analysis for batch release documents, can then be automatically created with on-line review and approval. Data and trending

reports can also be exported to other in-house IT infrastructure requirements such as a LIMS or ERP system. In many respects, this technology represents the "process analytical technology" (PAT) applied to the QC laboratory processes. Just like physical manufacturing processes, the lab environment utilizes "method processes" conducted by analysts and through embedded "method-centric" software the PAT philosophy can be applied to the lab with equivalent productivity improvements and significant returns on investment.

OPERATIONAL EXCELLENCE – PRODUCTIVITY METRICS IN USE

Many top pharmaceutical, biotech, CRO, and generic organizations have fully validated or are in process of implementing a GMP electronic notebook system. Each year key managers from these companies convene at the International Meeting on Automated Compliance Systems (IMACS)[1] and report on their results and plans. The following summaries outline several reports:

Top 10 Large Pharmaceutical Company

A GMP electronic notebook system was rolled out in conjunction with a scheduled LIMS deployment. A single product in manufacturing was converted to an all electronic operation. Analysis of data for the year in this single product was reported as follows:

- Time Savings — three hour savings in analyst time for an assay/content uniformity method. The method required many calculations that are now automated. This translated into approximately 30 hours per week gained by the lab and data review for a single method. A total savings of approximately 79 hours of analyst time per week based on multiple batches or product per week.
- Error reduction (documentation, transcription, calculation) — errors were reduced to zero.
- Data Review — Reviewers benefited by having all of the data centralized and in electronic format for review.

As a result, the QA labs were able to eliminate the need for planned head count additions in support of product testing. Overall this system has saved the operation several hundred thousand dollars per year for a single product.

Mid-tier Pharmaceutical Company

This company reported that it had multiple manufacturing sites and installed an electronic notebook system in a European plant. This plant produces several products for worldwide distribution. The Director of Quality Control reported the following:

- The system was installed as an alternative to a planned LIMS implementation and did everything required in terms of traditional LIMS capabilities while providing an electronic notebook for GMP operations.
- The timeliness of final lot release documentation significantly reduced the "quarantine value" for operations. Estimated impact on over $20M/year of product.
- Eliminated "silly errors" and automatically checks for data completeness and has built-in compliance flags for atypical data collections (if made by analysts).
- Percent savings varied depending on activity and complexity but in general they reported a 30—50% reduction in testing time and 50—70% reduction in review and approval time.

Large Pharmaceutical Company — New Plant Installation

This large pharmaceutical company installed an electronic system at their main development facility and is expanding the capability to a production plant involved in production and delivery of time-sensitive imaging products. The Senior Research Investigator reported the following:

- Estimated resource liberation of 1 FTE on a base of 8 FTE's in the quality operation.
- 16 analytical methods, 19 instruments, a LIMS and CDS interfaced to the method-centric system and GMP "go-live" in less then six months.
- Analysts and reviewers saved significant time with

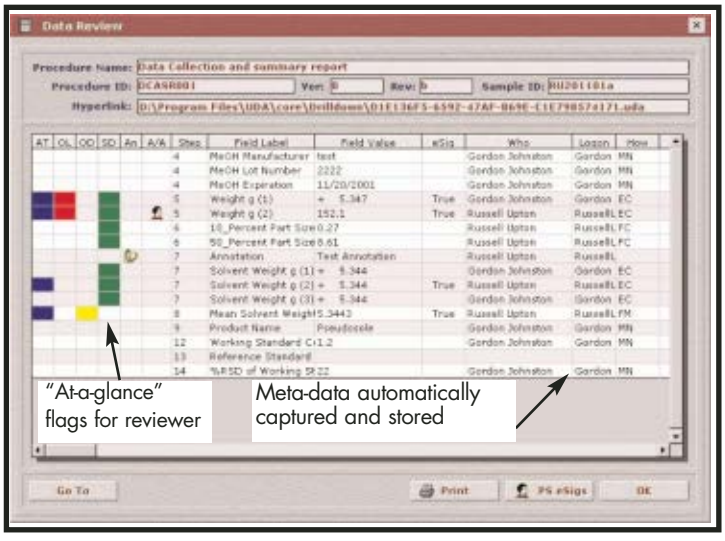

Figure 2: After a method is completed all data is presented to reviewers with visual "flags" for all specifications and materials expiration requirements along with instrument calibration dates, audit trails, annotations, e-signatures, and direct "drill-down" links to the raw data sources at the click of a mouse button.

removal of manual calculations and transcriptions. Eliminated the need for Excel for one method.

CONCLUSIONS

The pharmaceutical industry is seeking to "control" costs as a result of questionable new product pipelines and the erosion of business due to the large number of products coming off patent over the next few years. For decades, most of the data management processes in QA/QC have been paper-based requiring numerous non value-added manual checks to insure data integrity and product quality standards have been made. In today's modern computer-based environments, technology can be used to totally eliminate these paper systems and replace them with a fully all electronic method execution and data capture and review system. This process eliminates operator method error or transcription issues in working with a paper-based notebook process. The data is automatically grouped and presented to a QA reviewer with compliance flags for specification verification, e-signatures, and full audit trail of activity. Systems have been implemented in GMP labs with significant operational excellence reports given at the annual IMACS conference. This process can typically reduce review times by over 50%, reduce re-work and internal investigations yielding overall operational QA/QC cost improvements of hundreds of thousands of dollars/product line. This technology can be viewed as operational excellence technology for the GMP QC/QA lab environment.

REFERENCES:

1. IMACS 2005 – International Meeting on Automated Compliance Systems, May 18-19, 2005, Princeton, NJ (www.imacs-world.com).

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46th Annual Meeting
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MARCH 24–27, 2007
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Charlotte, NC
www.toxicology.org

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APRIL 14–18, 2007
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www.aacr.org

APRIL 15–19, 2007
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www.sbsonline.org

APRIL 28 – MAY 2, 2007
Experimental Biology (FASEB)
Washington, DC
www.faseb.org

Glenn Ketcham, CIH and Vince McLeod, CIH

The Chemical Hygiene Officer

Within the lab of a newly formed research group, a small flask containing an arsenic compound (a known human carcinogen) is accidentally knocked against a ring stand in the fume hood. The flask drops and breaks. The solution splashes the technician and hits his exposed wrist above his glove. Most of the spill is contained in the hood. The technician calls to his co-workers to tell them what happened and hurries to the emergency douse station by the sink to begin decontaminating the area. One co-worker closes the hood sash to contain the spill and its vapors while another prints out the MSDS and prepares to drive the exposed worker to the on-site clinic. The spill response team has been called. A post-accident review at the next lab meeting identified some things that should probably have been done differently. The accident and response raises concerns for the principal investigator and as a result she tasks you to be the safety coordinator for the lab. You are asked to do a complete review of the lab and procedures for chemical safety and OSHA compliance and get it into shape. Now what?

OSHA formally recognized the unique nature of the research laboratory as a workplace more than 15 years ago. It was generally accepted that most existing OSHA standards related to chemical use in general industry and manufacturing often provided little measure of overall safety improvement in the lab while sometimes imposing very challenging obstacles for compliance. As such, OSHA developed the standard occupational exposure to hazardous chemicals in laboratories — 29 CFR 1910.1450. This is commonly referred to as the "Lab Standard."

As we discussed in past issues, under this standard, a laboratory is required to produce a Chemical Hygiene Plan that identifies and addresses the specific hazards found in its operations. This plan serves as one of the cornerstones for chemical safety and health in the laboratory. It formalizes a portion of the process of experimental design to address the hazards associated with chemicals used in experiments and the controls used to limit exposure to those chemicals or their reaction products.

We know that all the members within the lab have responsibility to act responsibly and safely within that institutions guidelines and requirements. The Lab Standard goes on however to require the designation of specific personnel responsible for implementation of the Chemical Hygiene Plan including the assignment of a Chemical Hygiene Officer [1910.1450(e)(3)(vii)].

A Chemical Hygiene Officer (CHO) is defined as “an employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan.” This is what the principal investigator has just asked you to become.

As the work in the lab is often very specialized, it makes sense to develop safety expertise within the lab organization itself as in the case above. So what makes an individual qualified for such a role? There are many approaches taken to achieve compliance. Many of these are quite effective and meet the spirit and letter of the law. Others may not be so effective and could leave the institution open to

citation should an inspection occur.

An individual may start by conducting a thorough review of the Lab Standard and its appendices. There are some excellent references such as *Prudent Practices in the Laboratory*[1] and *CRC Press Handbook of Laboratory Safety*[2] that should be in every Chemical Hygiene Officers library. Attendance in laboratory safety courses such as the ones provided through the Laboratory Safety Institute (www.labsafety.org) or presented by other organizations can also be of great benefit in coming up to speed in the lab safety arena.

Due to the variety of labs and approaches taken, the American Chemical Society recognized a need to establish a certification system consistent with the requirements of the OSHA standard and other recognized health and safety certification organizations. This certification is now managed by the National Registry of Certified Chemists (NRCC) (www.nrcc6.org/cho.htm).

The certification requires general laboratory safety knowledge and an understanding of fundamental safety principles along with competency in the content areas of the sections of the Laboratory Standard — 29 CFR 1910.1450. These include:

- Standard operating procedures
- Hazard assessment
- Safe work practices
- Personal hygiene practices
- General laboratory practices
- Special procedures (by hazard class)
- Procedures for select carcinogens, reproductive toxins, highly toxic substances, and substances with unknown toxicity
- Finding information sources
- Control measures, including respirators, other personal protective equipment, and laboratory ventilation
- Exposure monitoring
- Employee training and information
- Medical consultation and examination

The Chemical Hygiene Officer examination consists of 150 multiple-choice questions covering both the theoretical, fundamental, and practical aspects of chemical health and safety. Three hours are allowed for completion of the exam and these are scheduled at various national and regional meetings. The exams may also be scheduled at local sites within reasonable distances of candidates with local proctors. Certifications are valid for the year of initial certification and may be renewed and reissued thereafter in one- or three-year increments after a review of continuing experience and education and training.

So now you are set to start, sharpen your pencil, and pull up the OSHA website www.osha.gov/SLTC/laboratories/index.html. Give the Lab Standard a thorough read. Contact other institutions or labs with good programs, most are very happy to share. Try to network with other CHOs, many problems and hurdles have already been addressed by others and there is often no need to completely recreate the wheel. Attend a short course or participate in web-based training to learn the fundamentals. And finally, if you so choose, apply for and take the certified Chemical Hygiene Officer examination to add a recognized credential to your resume.

REFERENCES

1. *Prudent Practices in the Laboratory Handling and Disposal of Chemicals*. National Academy Press, 1993.
2. Furr, A. Keith. *CRC Handbook of Laboratory Safety, Fifth Edition*. CRC Press, 2000.

Glenn Ketcham *is a Certified Industrial Hygienist with 22 years experience in the health and safety field. He is currently the Risk Manager for the University of Florida with responsibility for the loss prevention, ergonomics, disaster preparedness, and the occupational medicine surveillance programs. He has managed the laboratory safety programs for both the University of California, San Diego (UCSD) and the University of Florida. In addition, he served as an industrial hygienist with federal OSHA compliance and has a masters degree in environmental engineering sciences with a health physics concentration.*

Vince McLeod *is a Certified Industrial Hygienist and the senior IH with the University of Florida's Environmental Health and Safety Division. He has 17 years of occupational health and safety experience in academic research with focus in the research laboratory. His specialties are in hazard evaluation and exposure assessments.*

The Safety Guys welcome your comments and questions. You can email them at thesafetyguys@labmgr.com.

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How it Works

Ion Chromatography with CO_2 Suppression

Problem: Ion chromatography (IC) instrumentation and the respective operating software have increased in complexity and cost. Instrument maintenance, consumables, and training requirements to produce a valid data package are complex and expensive.

Solution: Metrohm AG has introduced a new ion chromatography instrument, the 861 Advanced Compact IC, designed with advanced features, user-selectable options, and simplified one-button operation. Each instrument includes standard features, such as a serial dual-piston pump with non-metallic flow path, an electronically-actuated injection valve, and a multi-range digital conductivity detector in a small integrated cabinet. User-selectable options include a Metrohm MSM-II Suppressor Module, column oven, and the new 853 MCS CO_2 Suppressor. Metrodata ICNet software, allowing full control of the system, sample processor, and chromatography data management, is included.

Separations, such as EPA 300, are performed routinely with resolution of all seven anions. Using the 853 MCS CO_2 Suppressor in combination with the column oven and the Metrohm MSM-II Suppressor module improves sensitivity 25–40%. Baseline disruptions are eliminated, improving peak resolution and reproducibility (Figure 1).

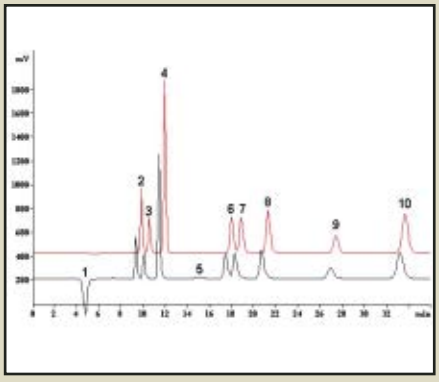

Figure 1: Comparison of anions on a Metrosep A Supp 5-250 column with and without the use of the 853 MCS CO_2 Suppressor. Peaks: 1-water dip, 2-chlorite, 3-bromate, 4-chloride, 5-carbonate, 6-bromide, 7-chlorate, 8-nitrate, 9-phosphate, and 10-sulfate.

The Metrohm Suppressor Module-II (MSM-II) is the second generation of this rotary designed, three-chambered suppressor device. Advantages of the MSM-II are low maintenance, reproducibility, low noise, solvent compatibility, and a non-industry standard 10-year warranty.

This instrument allows the analytical laboratory to increase its separations power while managing the budget, simplifying operations, and optimizing space. Space requirements are minimized because the dimensions are only 10 inches wide by 13 inches deep and 18 inches high with a built-in eluent organizer.

Metrodata ICNet software controls the IC and manages the data. ICCap software allows one-click operation of the instrument and sample automation. ICNet controls the instrument, manages data, and organizes the data for reporting and storage. All system parameters are saved with each chromatogram for future reference. Multi-staged security administrative passwords protect the integrity of the method, data, and system files, allowing user access approved by the system administrator.

Flow specifications for the pump are 0.2 mL/min up to 2.5 mL/min with a maximum operating pressure of 35 MPa. The conductivity cell has four operating ranges, controlled to better than 0.01 °C and operates between 25°C and 45 °C in 5 °C increments. The optional column heater operates at + 5 °C ambient up to 80 °C and is fully software controlled.

Instrument maintenance on the 861 is reduced by design. The pump head assembly is easily removed for seal replacement. A piston cassette containing the piston and piston spring is self-aligning into the pump head and is easily removed and reassembled without tools. Once the seals and check valve maintenance is completed, the self-aligning pump head is easily replaced by re-tightening the four hex screws.

For more information on the Metrohm-Peak 861 Advanced Compact IC, visit www.mp-ic.com.

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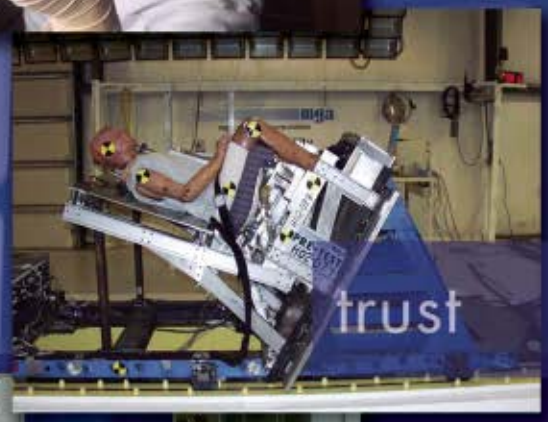
confidence



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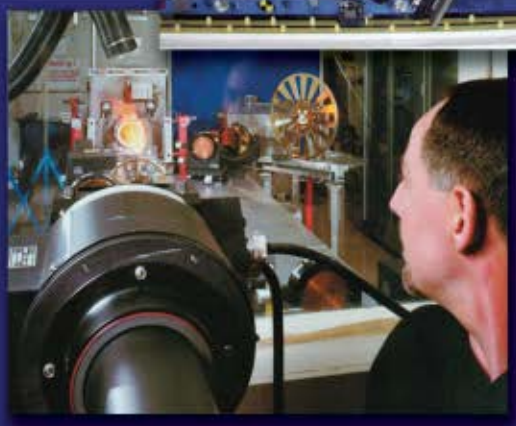

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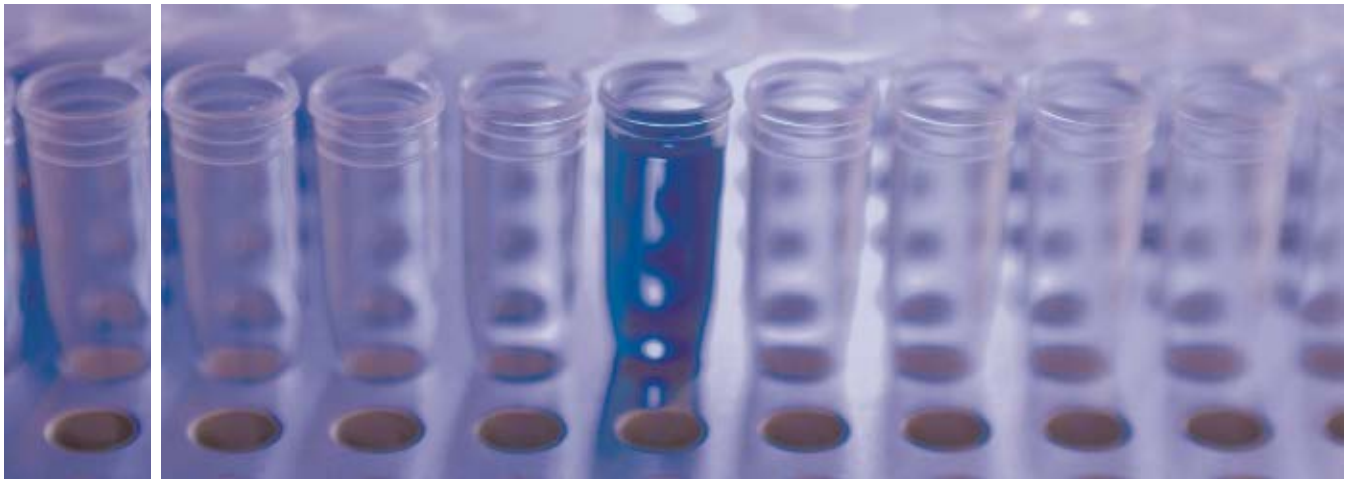


product news

SEPARATING COLUMNS

The Luna® 2.5 µm C18(2)-HST (High Speed Technology) columns provide HPLC separations without the need for ultra-high pressures. The columns are compatible with HPLC and UHPLC systems and are available in 2- and 3-mm internal diameter and 50- and 100-mm lengths.

Phenomenex
www.phenomenex.com

FLUORESCENCE FILTER SET

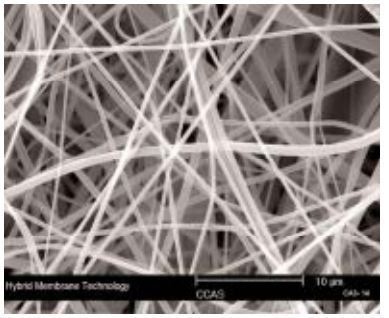
These fluorescence filter sets feature durable surface coatings, environmental stability, high signal-to-noise, zero-pixel shift, and a five-year warranty. They are capable of deep blocking to the limits of CCD detection at 1150 nm on both excitation and emission filters. A selection of fluorophore-specific filter sets is offered for single and multi-labeling microscopy applications.

Omega Optical
www.omegafilters.com

MODULAR BENCH SETS

The modular bench set can be integrated into existing areas to improve the functionality of the space. The 6700 series features under-table storage shelves, cord and tube management ports on both unit ends and back, a 2" tubular framework, fixed, swivel, or lockable casters, a selection of various work surface materials, and optional add-on accessories to customize the work space.

Workplace Systems
www.workplacesystemsinc.com



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Hybrid Membrane Technology (HMT) for air and liquid filtration is comprised of continuous sub-micron fibers. Available on a commercial scale in the form of "membrane-like" sheet structures, HMT delivers a balance of flux/barrier performance. HMT will be the leading technology offered through DuPont Separations Solutions to deliver enhanced performance across a variety of air and liquid filtration applications.

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The new ultraflex® III smartbeam™ MALDI-TOF/TOF mass spectrometer, for LC-MALDI and MALDI molecular imaging, has an improved laser with focus size from 10 µm to 80 µm. Absorbing tissue areas can be scanned with a very small laser focus and adjustable repetition rates from 1 Hz to 200 Hz. The WARP-LC™ workflow software supports LC-MALDI acquisition, protein sequence validation, PTM screening, and accurate quantitative proteomics.

Bruker Daltonics
www.bruker-biosciences.com

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Zephyr handles key applications for compound management, HTS, genomics, proteomics and bio-analytical assays, and is compatible with numerous commercially available kits. For medium throughput labs seeking out-of-the-box automated solutions, Zephyr includes an intuitive interface to guide the set-up process and initial use. It also includes pre-configured applications to ensure that researchers immediately experience the advantages of the system.

Caliper Life Sciences
www.caliperls.com

REFRIGERATORS AND FREEZERS

The i.Series™ laboratory refrigerators and freezers feature the i.Center™ integrated monitoring system which offers automatic alarm testing, an event log with alarm dates and times, and a password-protected configuration. The refrigerators and freezers have bacteria-resistant interiors and exteriors and are available in both single and double door models with capacities from 20.2 to 56 cu. ft.

HELMER
www.helmerinc.com

WASHERS

The LX family of washers consists of five models with three different chamber sizes. From undercounter through 3-level upright, all units have the capability of sharing the same racks, resulting in lower rack costs and reduced storage requirements. The commonality of rack usage reduces the cost of increasing washer capacity when moving from an undercounter to an upright unit.

Lancer USA
www.lancer.com

ULTRACENTRIFUGATION

The AW Promatix 1000™, a continuous-flow ultracentrifugation system, employs buoyant density accumulation to automate the separation, fractionation and enrichment of sub-cellular particles in a single step. he separated components are fractionated into a 96-well plate format. Researchers can use the organelles directly in experimental studies, or they can conduct proteomic studies on the organelles by performing subsequent 2-D gel electrophoresis and mass spectrometry analysis.

Alfa Wassermann Proteomic Technologies, LLC
www.awpt.us

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AUTOMATIC CELL COUNTER

Cellometer™Model Auto T4™ cell counter automates cell counting to improve sample quality and accurate results. Samples are pipetted into the chamber and placed into the Auto T4. Imaging software automatically measures cell concentration and viability. Cells within a heterogeneous sample with various sizes and morphology can also be measured, providing data not obtained by traditional methods.

Nexcelom Bioscience
www.nexcelom.com

BACKLIT PIPETTE

The Finnpipette® Novus now comes with a backlit display, using backlight technology similar to that of mobile phones. By eliminating surrounding light reflections and improving contrast in low light conditions such as safety cabinets and fume hoods, the integral backlit display ensures that the high-resolution menu characters are shown with more clarity.

Thermo Electron Corporation
www.thermo.com

DNA DECONTAMINATION

DNA-Exitus Plus destroys DNA and RNA on all surfaces. Decontamination of equipment and laboratory surfaces from DNA molecules is important for biological containment and safety. It is non-toxic, non-corrosive, and biodegradable. It is useful for applications in forensics, the life sciences, medical hygiene, and food production.

Applichem
www.applichem.us

PULSE STIMULATOR

The Stimulator C features precise digital timing control for all types of tissues. It has a large LCD display and minimum controls, recalls the last settings used, and has an output that allows stimulation of all tissue types from direct contact nerve to tissue bath field stimulation. Monophasic, biphasic, and alternating modes are available.

Harvard Apparatus
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ARTEL
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The Secador® Techni-Dome® Vacuum Desiccator offers up to 65 L of volume and space for items up to 45-cm tall or wide. Made of a plastic material that is resistant to most common chemicals, the desiccator has a clear top and bottom. Two round polypropylene shelves can be lifted out for easy access or to accommodate awkward sized items.

Bel-Art Products
www.belart.com

MICROSCOPE CATALOG

The Irtron-γ, in-compartment microscope catalog, highlights the new features of the microscopes' design. The Irtron-γ sample compartment microscopy system provides affordable analysis of microscopic samples with the high-performance features of an external FT-IR microscope accessory. The microscope accessory installs into the spectrometer sample compartment without optical alignment.

JASCO
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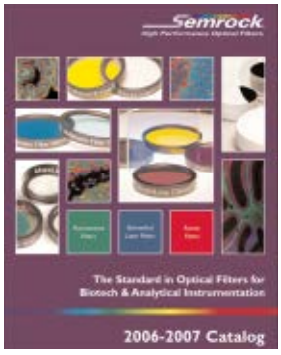
Velocity11
www.velocity11.com

OPTICAL FILTER CATALOG

This catalog presents six product families for applications ranging from fluorescence instrumentation and microscopy, to Raman instrumentation, to biomedical laser systems, all supported by a series of technical notes. New offerings include multi- and single-band bandpass filters, as well as triple-, dual- and single-edge diochroic beamsplitters in the BrightLine® series of fluorescence filters.

Semrock
www.semrock.com



ERGONOMIC PIPETTE

The portable Pipet-Aid XL has a longer handle to reduce the amount of arm lift required. Included are an adjustable sliding hand rest and a removable stand that enables the unit to be put down without contamination. The unit comes with a power supply charger, four extra filters, and a holster-type wall bracket.

Drummond Scientific
www.drummondsci.com

BIOANALYZER

The 2100 bioanalyzer offers solutions for the analysis of DNA, RNA, proteins, and cells. It works in 30 minutes, delivering automated digital data, offering support for on-chip flow cytometry and 21 CFR part 11 compliance in addition to electrophoresis assays. It also offers 2-color analysis of fluorescently stained cells.

Agilent Technologies
www.agilent.com

EOSINOPHIL CATIONIC PROTEIN

Eosinophil cationic protein derived from human neutrophils is now available to the clinical research community. Eosinophils are granulocytes that commonly increase in number in the presence of parasites and allergies. Eosinophils comprise roughly 1% to 4% of the blood's cellular make-up. The cells are active in allergic diseases, parasitic infections, and other disorders.

Lee Biosolutions
www.leebio.com.

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mSelect™ is a service for researchers to select the most promising and lowest risk drug candidates for continued development. Based on advanced metabolomic analysis where drug-induced biochemical changes are detected in a single assay system, mSelect provides an assessment of a compound's on- and off-target affects. Results can help prioritize lead candidates for the most viable compounds.

Metabolon
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VelQuest Corporation
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news notes

BRANDTECH SUPPORTS BREAST CANCER SCREENING

BrandTech Scientific, Inc., a proud sponsor of the National Breast Cancer Foundation (NBCF), has announced a corporate donation to the Foundation in association with the launch of its new accu-jet® pro pipette controller line, which includes a special pink model. The NBCF describes its mission as saving lives through its support for breast cancer awareness, research, and mammograms for the needy. BrandTech's website, www.brandtech.com, describes the instrument and the work of the NBCF in detail, as well as an introductory offer of a free accu-jet® pro with the purchase of three of the instruments.

A2LA ADDS INSPECTION BODY ACCREDITATION TO ITS APLAC SCOPE OF RECOGNITION

A2LA has successfully completed the Asia Pacific Laboratory Accreditation Cooperation (APLAC) peer re-evaluation process and added inspection body accreditation to their scope of recognition. In March 2006 APLAC evaluated A2LA for continued recognition as a Mutual Recognition Agreement (MRA) Signatory by verifying A2LA's compliance with ISO/IEC 17011 – Conformity Assessment: General requirements for accreditation bodies accrediting conformity assessment bodies. At the APLAC MRA Council meeting in Taipei, Taiwan in September, the Council agreed to continue A2LA's signatory status within the APLAC MRA for testing and calibration laboratory accreditation and to add recognition for inspection body accreditation.

2006 SBS PRESIDENT'S AWARD PRESENTED TO STEPHEN REES

During the 12th Annual Society for Biomolecular Sciences Conference & Exhibition in Seattle, WA, SBS President Al Kolb presented the 2006 President's Award to Mr. Stephen Rees for his outstanding efforts in advancing and enhancing the products and services offered by the Society for Biomolecular Sciences. Each year the President's Award is given to an SBS member for outstanding contributions to the Society in support of the industry.

A member of the Society for Biomolecular Sciences since 2001, Mr. Rees served as the conference committee chair since 2005, program chair and session chair for 2004 and 2003, and a conference speaker in 2002 and 2000. He is the symposia organizer for 2007. Over the last 13 years, Mr. Rees has worked extensively in the area of mammalian gene expression, assay design, and cell based compound screening. He is now a Director within the Screening and Compound Profiling Department in GlaxoSmithKline, Harlow where he is responsible for cell based HTS and Compound Profiling in support of local disease areas. Mr. Rees has authored more than 40 scientific papers and has spoken at many international symposia including SBS.

GOW-MAC IRELAND CHANGES NAME TO AGC INSTRUMENTS LTD

Following the successful management buyout by the present management team at the Irish operation, GOW-MAC Instrument Co. (Ireland) Ltd announced a change of name to AGC Instruments Ltd. Marcus Creaven, Sales Director noted, "We can now focus and deal personally with the many industrial, electronic, specialty gas manufacturers, coupled with our petrochemical and pharmaceutical customers also around the globe. We are putting a strong emphasis into local ground support, particularly in Europe, Middle East, and South East Asian markets, to provide application and technical backup that is so important to our customers." All current gas chromatographs, gas analysers, thermal conductivity, patented discharge ionization and argon discharge detectors, and other products will be produced by AGC.

ALFA WASSERMANN PROTEOMIC TECHNOLOGIES ANNOUNCES SCIENTIFIC COLLABORATION WITH DR. JENNIFER VAN EYK, JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

Alfa Wassermann Proteomic Technologies, LLC (AWPT) announced an agreement with The Johns Hopkins University School of Medicine under which Dr. Jennifer Van Eyk will work with AWPT to develop methodologies and protocols for the isolation and enrichment of organelles and sub-cellular particles. AWPT applies buoyant density accumulation (bda) through the use of preparative continuous-flow ultracentrifugation in the AW PROMATIX 1000™ instrumentation for proteomics research, specifically for the automated separation, accumulation and enrichment of organelles to identify low-abundance proteins not detected by other techniques.

Dr. Jennifer Van Eyk, director of The Johns Hopkins NHLBI Proteomics Group and

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Exhibition: January 28-30

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The Johns Hopkins Bayview Proteomics Center, is an associate professor in the departments of medicine, biological chemistry, and biomedical engineering. Her work focuses on the use and optimization of proteomic analysis of tissue and biomarkers for development of treatment and diagnostics for heart disease.

MILLIPORE LAUNCHES R&D POSTER PODCAST SERIES

Millipore Corporation announced the availability of its R&D poster podcasts. Featuring Millipore's industry experts, the weekly broadcasts help customers improve productivity on the lab bench and manufacturing floor. The podcasts include reviews of various technical posters as well as tutorials on the broad field of membrane technology.

Available via iTunes and RSS feeds, the technical sessions provide the opportunity to download and listen to the latest development in filtration, separation, and lateral flow technology. For those unable to attend the industry's top laboratory research, therapeutic production and diagnostic conferences, podcasts are an alternative source of information that can drive protocols and research. Millipore's R&D poster podcasts are accessible by searching for "Millipore" in the iTunes Podcast Directory, or selecting the RSS Feeds link from Millipore's homepage at www.millipore.com.

AURORA® BIOTECHNOLOGIES ENTERS INTO MICROPLATE DISTRIBUTION AGREEMENT WITH BECKMAN COULTER

Aurora® Biotechnologies announced that it has entered into a worldwide distribution agreement with Beckman Coulter, Inc. Beckman Coulter is now a key distribution partner for Aurora's line of ChemLib™ microplates. Chris Neary, Vice President of Automation at Beckman Coulter stated, "Beckman Coulter has recognized the importance that assay miniaturization brings to the discovery sciences. We are very excited to be able to offer Aurora's ChemLib microplates to our customers. The ChemLib microplates, packaged with our liquid-handling and detection instrumentation technologies, allow us to offer our customers a total miniaturization solution."

AACR ANNOUNCES MAJOR GIFT FOR BREAST CANCER RESEARCH

The American Association for Cancer Research announced a $200,000 gift from the Breast Cancer Research Foundation which will create the BCRF-AACR Fund for Translational Breast Cancer Research.

Announced at a Breast Cancer Research Foundation research symposium, the gift will be supplemented with a matching grant from the AACR Foundation for the Prevention and Cure of Cancer to create a $400,000 research grant fund for translational breast cancer research. Translational research is defined as a "two-way bridge" that conveys new ideas and discoveries between the laboratory and the clinic, bringing the benefits of basic science knowledge to patients more quickly and effectively. Grants in the amount of $200,000 will be awarded to cancer researchers through AACR's rigorous and competitive scientific review process beginning in 2007.

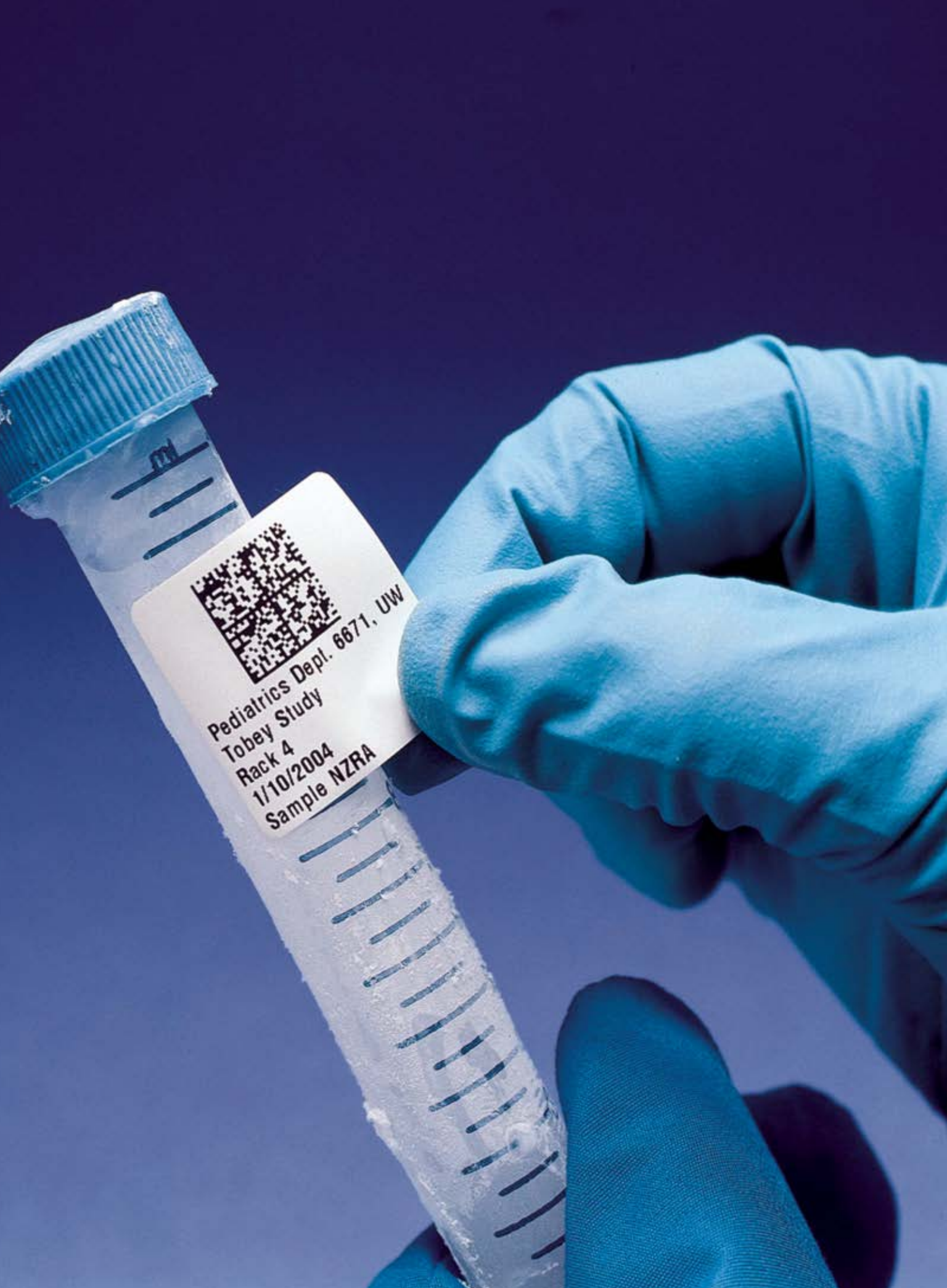
The American Association for Cancer Research celebrates its 100th anniversary on May 7, 2007. To commemorate this event, the AACR Foundation launched a Centennial Research Grant Campaign with a goal of raising $6 million by May 2009 to support a number of vitally important areas of cancer research. The BCRF gift brings the AACR's Centennial Research Grant Campaign to $2 million. To contribute to the AACR Centennial Research Grant Campaign, visit www.aacrfoundation.org.

WATERS CORPORATION SPONSORS TWO AMERICAN CHEMICAL SOCIETY AWARDS

Waters Corporation announced its sponsorship of two American Chemical Society Achievement Awards. The annual awards recognize outstanding accomplishments in the fields of separations science and technology, and mass spectrometry.

The ACS Award in Separations Science & Technology recognizes outstanding accomplishments in fundamental or applied research directed to separations science and technology. The Frank H. Field and Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry honors the work of Drs. Field and Franklin, research chemists at Humble Oil & Refining Co. in the 1950s. Their work was of great fundamental importance to understanding of ion/molecule reactions in the gas phase and they are credited with the development of the first ionization techniques for mass spectrometry.

The presentation of ACS national awards is an annual feature of the ACS spring national meeting. Additional information about the award program and the nomination process can be found at www.chemistry.org.


Pediatrics Dept. 6671, UW
Tobey Study
Rack 4
1/10/2004
Sample NZRA

Labeling Technology Increases Laboratory Efficiency

Lab managers face numerous challenges when balancing research integrity, productivity, and budgets for the daily operations of their facility. Finding the most cost-effective way to do even the most routine tasks is now a necessity. One such task — labeling samples — presents the opportunity to improve productivity, lower costs, and maintain or even increase the integrity of research projects.

Using labeling equipment specifically designed for lab use improves productivity and lowers costs while maintaining the integrity of research samples.

THE PROBLEM WITH HANDWRITTEN LABELS

Surprisingly, many labs still arm their personnel with a pen and a package of standard labels. Not surprisingly, many of these sample labels are smeared, destroyed by laboratory chemicals, or just plain illegible due to poor handwriting. Further, the amount of information that can be placed onto a small handwritten label is limited. Some labs use a basic office printer and office labels. This may resolve the legibility issue, but still leaves sample labels vulnerable to smearing from frequent handling and destruction from harsh lab conditions.

OBSTACLES TO EFFECTIVE LABELING

Identifying the obstacles to effective labeling is the first step in improving the labeling process, lowering costs, and increasing both productivity and sample integrity.

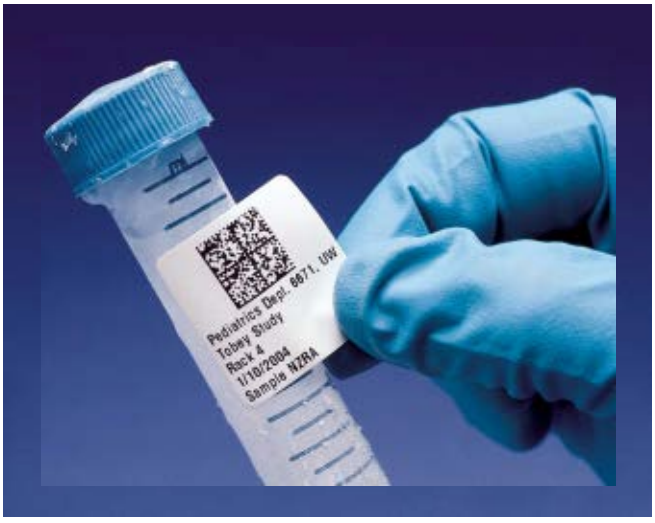
Illegibility: Samples with missing or illegible labels are a big problem for most labs. Whether due to illegible penmanship or smeared text, if researchers can't tell what it is, who worked on it and when, the integrity of the research is compromised. *Labels should be readable by everyone, every time.*

Durability: Many labs have their own horror stories of opening a –80°C freezer to find their samples neatly in place and the labels piled up on the floor of the freezer. Labs need sample labels that remain in place despite contact with moisture, autoclave, solvents, freezers, and liquid nitrogen. *Labels should be present for everyone, every time.*

Proper labeling of samples with labels designed for use in a lab assures that labels are legible, won't smear, fall off, crack or peel.

Content: When sample ID data is cryptic or too abbreviated, it becomes more difficult for other researchers or collaborating labs to clearly understand the data or intended message. When labels include all the relevant data in a way that is comprehensive and clearly understood by everyone, then error rates go down and productivity goes up. *Labels should be understood by everyone, every time.*

Matt Luger



New materials allow a label to stick to an already-frozen surface.

Time: Labeling with accurate, legible information is a time-consuming process when done by hand. Yet most researchers still spend countless hours labeling samples with a marking pen. Modern lab labeling systems and printers produce clear, legible labels up to eight times faster than handwriting. *Labels should be quick to apply for everyone, every time.*

A MORE EFFECTIVE METHOD OF LABELING

New printers, software, and label options that have been developed for the laboratory environment, directly address these common labeling challenges. These lab-specific labeling systems reduce lost, damaged, or otherwise compromised sample labels, save lab staff hours per project, and help lab managers better track projects and control costs.

LAB-SPECIFIC PRINTERS

Label printing systems designed for the lab environment feature non-smearing print technology and extremely durable labels and inks. This allows labs to produce crisp, readable labels that are resistant to chemical corruption and temperature extremes — including labels that will adhere to an already frozen tube. Many of these printing systems are portable, offering more versatility and a small footprint in an often crowded lab. Benchtop models connected to a PC are also available for labs with higher label throughput requirements.

These printing systems can clearly print small fonts, allowing labs to accommodate more information per label, giving researchers more of the facts they need at a glance. Printers with barcoding capabilities can also help labs develop and maintain scanning and tracking systems that save time in sample retrieval and help prevent lost samples — a problem that can be a disaster for researchers.

There are immediate productivity benefits with labeling systems that allow lab staff to create more clear, easy-to-read labels in less time.

CHOOSING THE RIGHT LABEL PRINTING SYSTEM

Look for the following features in a laboratory label printing system:

- 300 dpi print resolution for crisp, readable text even at small font sizes
- Small font sizes in the offering to accommodate small labels for small tubes
- Durable labels that withstand temperatures down to –196 °C and solvents, moisture and heat
- Built-in lab templates for vials and slides
- Time and date stamping
- Auto-serialization for aliquots
- Greek and laboratory symbols consistent with current scientific nomenclature
- Bar coding capabilities — for sample scanning and tracking
- PC connectivity — important for access to existing sample information
- Battery or AC power operation

CHOOSING THE RIGHT LABEL MATERIAL

Lab-specific labels protect samples and research integrity. Be sure to choose durable labeling materials that have been tested to withstand the extreme conditions found in most laboratories. These labels will not fall off, crack, peel, or smudge when exposed to extreme temperatures such as liquid nitrogen (-196 °C), freezer (-80 °C), autoclave (+121 °C), and everything in between. Testing for harsh chemicals should ensure that xylene, ethanol, DMSO, IPA, toluene, and boiling water do not affect the integrity of the labels. Also look for low-profile label materials that will not jam in centrifuge or other equipment, and that are easy to handle, even when wearing gloves.

Labeling already-frozen samples presents a particular labeling challenge for laboratory personnel. Until recently, materials were simply not designed to stick to frozen surfaces, leaving lab technicians to scrape frost off frozen vials prior to labeling. Conversely, these old labels would often slide off of samples when they thawed, creating the potential for lost data. Innovative new materials allow a label to stick to an already-frozen surface and help to ensure the integrity of research because the samples can be quickly and easily labeled in their frozen state, thus avoiding the potential damage to samples caused by thawing and refreezing.

LABEL CONSTRUCTION

There are two label construction options available for labeling most samples:

Self-laminating labels feature a white printable area with a clear "tail" which wraps around the rest of the label to cover the text and create a clear protective barrier. This label is particularly effective when the sample is handled frequently. These labels also create a "viewing window" so the liquid level in the tube remains visible.

Free-Standing labels stick to vial or tube without a need to overlap, thus keeping the contents of sample vials visible. Both label styles are available in a variety of sizes for identifying tubes, vials, vial tops, straws, dishes, cryocanes, bags, cardboard boxes, and more.

In addition to label construction, label opacity is a concern for laboratories involved in patient care and research. These labs should choose opaque labels ("non-see-through") for the protection of private information in accordance with HIPAA requirements. To meet HIPAA standards, labels should be opaque enough to completely cover legally protected patient information.

LABELING SOFTWARE

Increase efficiency and speed in labeling by combining a label printing system with one of the lab labeling software packages now available. These programs allow users to create files and templates, provide hundreds of lab-specific graphics and characters, and expand the user's text formatting options. Some programs also offer database import capabilities, multi-label data entry view, and 2-D bar code support. Many of these programs will also work with Windows®-based printers, if necessary.

INVENTORY TRACKING

Storing and tracking frozen lab samples is vital for research facilities, clinical laboratories, and specimen repositories. An effective labeling system can integrate seamlessly into a laboratory's inventory tracking system, especially when the lab uses the bar coding capabilities of the newest labeling software and printing systems. Then laboratory staff can simply scan their samples to enter them into an existing inventory control system. Lab-specific inventory tracking systems are also available.

For labs that do not yet utilize an inventory tracking system, managers should consider one of the stand-alone software products currently available. Such a system makes it much easier for labs to quickly and efficiently locate the correct sample among thousands of stored frozen samples. This saves time and is another way to avoid costly, time-consuming errors or missing samples.

THE COST-QUALITY EQUATION

Choosing a high-quality, lab-specific label printing system will help to save countless hours on labeling, while helping to ensure that all lab samples are clearly, permanently, and accurately labeled. Many easy to use, cost-effective printer models are now available that specifically address the need of the laboratory environment and offer lab managers an integrated solution for increasing lab efficiency, controlling costs, and protecting valuable research.

Matt Luger *is Senior Product Manager, Portable Laboratory Printing Systems, Brady Worldwide, www.bradyid.com/lab; Laboratory Labeling Solutions Center 1-888-311-0775; www.bradycorp.com.*

The Common Mistakes New Managers Make

Julie Bennett
From CareerJournal.com

Initiative, skill, and dedication may be the reasons you were promoted to management, but those qualities may not make you a good manager.

Most new managers make plenty of mistakes, says Nicole Morgenstern, practice consultant to the American Management Association in New York, which offers management training. "It's unfortunate," she says, "but managers typically do learn on the job."

Here, we examine five common new-manager missteps and ways they can avoid them.

1. TAKING ON TOO MUCH YOURSELF

When he was in his 20s, Larry Runge's employer put him in charge of a design project because he was a top computer programmer. After getting the new position, "I spent long nights writing code myself and stayed up all night to get everything running before our deadline, at nine the next morning," he says.

Mr. Runge fell victim to a classic trap for new managers: taking on too much work while failing to delegate. "I should have spent my time encouraging my employees to do the work. When you step in yourself, you're disenfranchising the folks working for you. And no matter how good you are, you're not better than 20 people put together," says Mr. Runge, now 50 and the chief information officer of a consulting company in Northbrook, Illinois.

2. REFUSING TO ASK FOR HELP

Treava Lewandowski of Addison, Texas was made an assistant manager of a Bath & Body Works store in Plano, Texas when she was 22. Working in a high-volume store during the holidays managing 20 to 25 stockers, cashiers, salespeople, and greeters "was pretty crazy," she says. She says she fell behind on paperwork — staying at work until 1 a.m. and returning at 8 a.m. — and didn't let anyone know that she was struggling. Ms. Lewandowski's mistake was allowing the work overwhelm her instead of letting someone else share the load. "It's a sign of maturity to ask for help," says Ms. Morgenstern.

When a sales clerk came to work wearing a shirt that didn't match the store's dress code, she told her to take it off, and the clerk stormed off to complain to another manager, Ms. Lewandowski says. That's when she realized asking for some support was okay. "I thought I'd be in real trouble, but the other managers supported me. Until then, I'd been afraid to ask them for help," says Ms. Lewandowski, who is now 29.

3. FAILING TO PLAN

David Stevens, 37, of Manasquan, New Jersey says he was "thrown into a management position" four years ago. His biggest mistake, he says, was a lack of planning. "Whenever a superior asked for something, I was so anxious to perform and please, I'd dive right into it," says Mr. Stevens, now a solution-consulting manager. "I finally learned that if I spent half a day mapping a project out first, and delegating the work to my team, I could save 10 to 15 days on the back end," he says.

4. JUMPING THE GUN

Harrison Lewis, now 45, learned the limits to this approach the hard way. When he entered a management-training program at Kroger's Atlanta-area grocery stores after college, he began managing unionized workers, so he studied the union contract until he knew it "better than the shop stewards," he says.

When an employee refused an order, behavior that came under insubordination in the contract, Mr. Lewis says, he fired him. The next day, the employee was back on the job after seeking the help of his union. Mr. Lewis says he later realized that his job "wasn't about reading contracts, but about my ability to get a job done through others." If he had talked out the problem with the employee and gone through the proper channels with union representatives, the situation may have been resolved without conflict, he says. Thereafter, when problems arose, he says, he went to the union representative first. "Learning to listen made my job easier and made me a better manager," says Mr. Lewis.

5. OVERRELYING ON YOUR TITLE

Perhaps the hardest lesson for young managers to learn is that a management title does not elicit automatic respect and obedience. "Authority," says Ms. Morgenstern, "will come with time. When managing, actions speak louder than words. If you show a level of competence, and demonstrate the skills that come with your title, the respect of your workers will follow."

Christopher Tucker admits to barking orders when he was first made a manager. While he was in college, Mr. Tucker worked for a call center selling mobile phones in his native Swansea, Wales. "The company expanded so quickly," he says, "that they made a lot of us managers too quickly for our own good."

Some of the young managers would require employees who didn't make a sale in an hour to stand on their chairs. If they failed again, the managers would tie balloons to the employees' wrists or belts.

The tactics demoralized the whole office. "I learned that you should always praise workers in front of their peers, but discipline them privately," says Mr. Tucker, now 27 years old, who manages an Act-1 Personnel Services office in Schaumburg, Illinois.

It actually was a music course that gave him a lesson in management: "When an orchestra gets out of synch, the conductor doesn't make big, exaggerated motions. His moves become smaller and more precise," Mr. Tucker says. Likewise, "when I stopped shouting and quietly explained what was needed, people actually did what I wanted."

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Year's End –
A TIME FOR CAREER ASSESSMENT AND PLANNING

Just as your health can benefit from an annual physical check-up, you can improve your career health with an annual career check-up. December is an ideal time to assess your 2006 professional accomplishments, learn from your experiences, and plan for 2007. This will improve your productivity and aid your professional growth and career advancement in the new year.

LOOKING BACK

Begin by reviewing the past year. List your accomplishments. Don't neglect professional society accomplishments. Determine the factors that made these accomplishments possible. These include your personal and professional strengths and workplace factors. Workplace factors include abilities of your coworkers, your employer's facilities, and opportunities offered by your employer. Do the same for your disappointments.

By doing this, you'll identify strengths on which to build for a professionally successful and fulfilling 2007. You'll also identify areas where you need to improve. When you assemble this list, also consider what skills and resources you did not exploit in 2006. In planning for 2007, consider how you could capitalize on these under-utilized assets.

In addition to the strengths and resources that you can build upon, identify the abilities you need to strengthen. Your list of your disappointments will help you do this. Determine why you did not achieve some of your 2006 goals. Unachieved goals may be due to inadequate planning and organization, inefficient use of time, insufficient coordination with coworkers, and other factors. Some causes of your unachieved goals may be external such as lack of corporate resources. Can these be overcome by funding outsourcing or some other strategy in 2007?

LOOKING FORWARD

By now you probably know your project assignments and coworkers for the coming year. Armed with your 2006 assessment, you can enter the 2007 with goals and a career plan will let you capitalize on your strengths and rectify or overcome your weaknesses.

Setting goals will help you focus your work and professional activities to keep your career on track. Goals should be clearly defined and easily measured. They should be challenging but realistic. For instance, developing and commercializing one new product in 2007 may be a realistic goal while developing three is not. Most of your professional goals should contribute to your employer's goals: delivering improved products and services to customers while increasing profits.

However, you should have additional goals that support your own professional and personal needs. These can include acquiring specific new job-related skills or improving areas of weakness you identified in your 2006 assessment. Determine what is necessary to keep up to date in your specialty. Use a current awareness service to alert you to new developments in your field.

Review what opportunities there may be in 2007 to patent the results of your work and publish or present papers. Don't limit publishing to research journals. Also consider publishing your work in trade association and industry magazines.

Most professionals can benefit from making a conscious effort to improve their networking in 2007. Writing in "The Joy of Science," Carl Sindermann defined networking as regular and frequent discussion with peers and colleagues. It's not an activity that should be confined to job hunting. These discussions can take place by letter, fax, e-mail, or telephone as well as face-to-face. Company seminars and seminars at local universities as well as regional and national technical conferences provide opportunities to maintain and expand your network. Attending these events can be part of your 2007 career plan.

While staying up to date in your specialty is critical, it is also important to develop skills in other areas. These include time management, managerial, and teamwork skills plus the interpersonal skills that make you a well-liked and sought-after coworker. These "soft skills" can be critical to obtaining a promotion, a coveted reassignment, or a new job. Professional societies and trade associations offer opportunities to develop these skills. Consequently these activities can be an important part of your 2007 career plan.

CONTINGENCY PLANNING

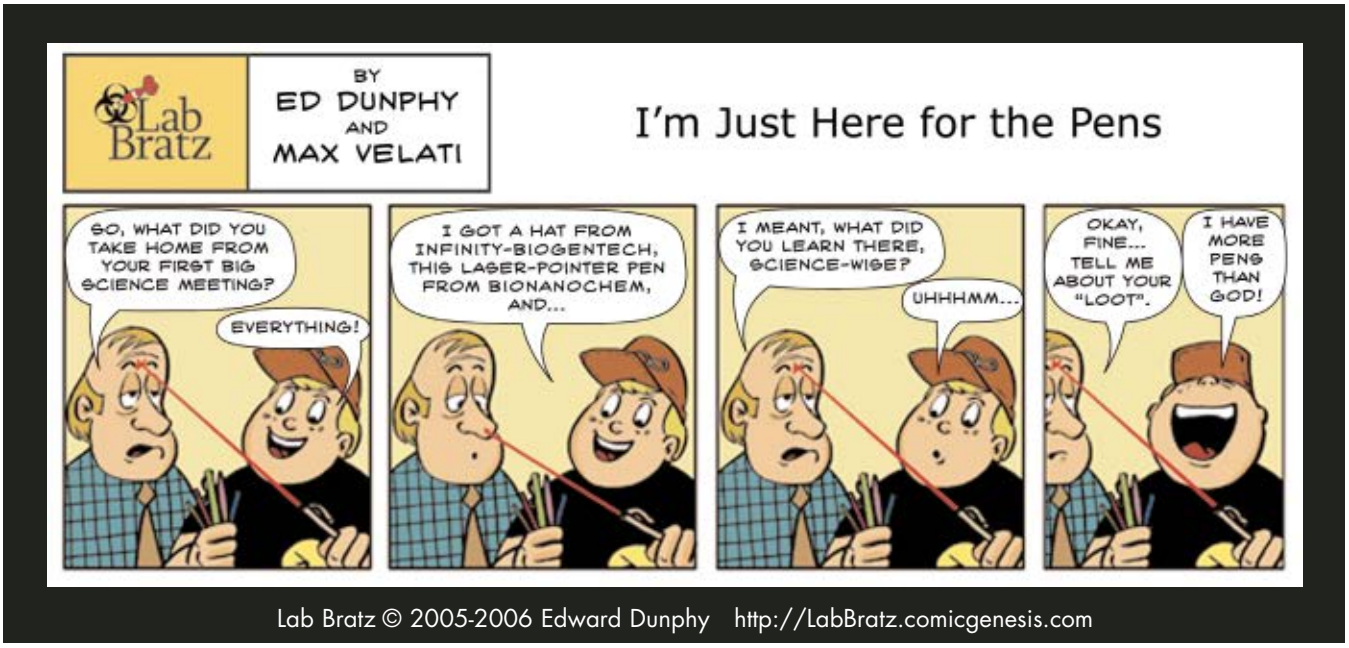
The best career plan can become irrelevant if you become an unexpected

John K. Borchardt

victim of a corporate downsizing or take-over. It probably isn't necessary to develop a detailed plan for this circumstance. However, it is best to have some courses of action clearly in mind should you lose your job or face unexpected reassignment. Keeping your résumé up to date is an essential component of this plan. This contingency planning can make such unplanned events less traumatic.

Your 2007 plan can also help you coordinate your professional activities with your personal life. For instance, by coordinating a business trip with vacation plans, you may be able to visit distant family members and friends or see an interesting part of the country. At home, planning will enable you to budget time for family, civic, charitable, and other personal activities that are important to you.

Dr. Borchardt *is a consultant and technical writer. The author of the book "Career Management for Scientists and Engineers," he writes often on career-related subjects. He can be reached at jkborchardt@hotmail.com.*



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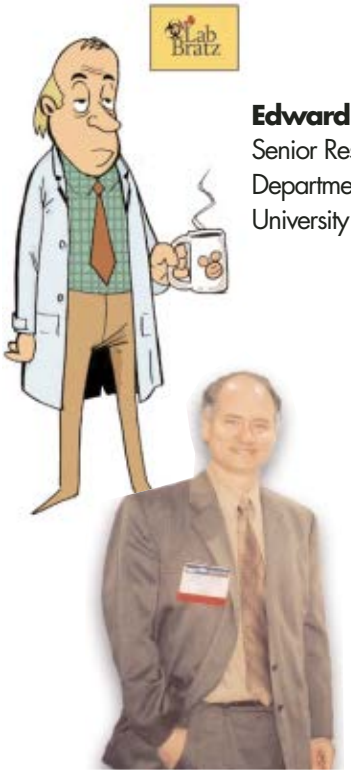

Edward J. Dunphy
Senior Research Specialist (Laboratory Manager)
Department of Medicine
University of Wisconsin - Madison

Scholars who take humor seriously may not subscribe to a unifying general theory of laughter, but most agree it resides in things gone wrong.

The trial and error world of a research lab sure works for Ed Dunphy, whose comic strip "Lab Bratz" is a distillation of miscreants and mishaps he's encountered in 25 years of "very experimental" lab work in academe.

The strip's characters inhabit two adjacent biological research labs, one rich with grant money, the other struggling to cut corners. The former is run by natty Principal Investigator David Chang, who stays on top of his game and avoids all manner of drudgery. Working for Chang is the droll and balding lab manager Mike Nanz, who is modeled on Dunphy and is the object of many self-directed zingers.

"Experience," says Nanz, "is overrated. It just means I've made more mistakes than anyone else."

Leave it to Dunphy — "I tossed out my first joke in the second grade and never looked back" — to extract humor from the worst lab nightmare. In the course of his "organic" career, he trekked through university labs as a researcher and teacher before touching down at the University of Wisconsin-Madison in 1995, where he now manages a prostate cancer/immuno-therapy research lab with "a clinical relevance to my bench science."

Even after landing in Madison as an associate researcher, Dunphy, 44, assumed he'd return to the University of Rochester to complete his graduate studies. But he enjoyed his work, "troubleshooting, training, and teaching new protocols," and took stock as he moved up the ladder. "I asked myself how different this would be from having my own lab, except I don't get to choose the overall direction. Then I realized I controlled that, based on who I worked for."

The work life, says Dunphy, has taught him two overarching lessons: "Do what you love, and don't work for jerks."

Many managerial consultants regard humor as a learned skill valued to combat ennui and boost productivity, but Dunphy contends he doesn't "have much choice," in terms of cracking jokes and kidding around. "I'm 'on' all the time, which can be a little embarrassing if the director of the cancer center is walking by. I've always been good at getting the whole room laughing."

His managerial repertoire allows for "being a good listener without being judgmental" and serving as a catalyst "to let others know you expect them to move forward.

"Everybody — glass washers, students, techs — wants to be respected. When you catch somebody doing something well, congratulate them.

"Misunderstandings happen. Different personalities handle stress differently. I often run interference, like a wrangler. A lab is a team, where everybody has to work toward the same goal. Publishing papers and getting grant money are important markers, but is everybody happy? Do people in the lab want to be there? When there's tension in the lab, you don't get your best work. And communication is so important; it's how the big picture goes from the primary investigator out to everyone else."

Dunphy ticks off the pros of working in academia. "There's a bonus being a researcher/manager, but not faculty, since almost every lab in the country needs an experienced manager. I love teaching students. They have so much energy, and are so inquisitive and so bright, and they help keep me young. And the freedom to explore what interests me is a powerful incentive." Cons? "Lower pay and worries about long-term funding. Funds are drying up, especially from NIH. More money is coming in from big pharmaceutical companies, but that's starting to drive research away from 'pure' science toward applied, product-based research."

He recalls an old bumper sticker that read: "It will be a great day when our schools get all the money they need, and the Air Force has to hold a bake sale to buy a bomber."

Naturally, it turns up in his strip, where "the Ruby lab never has money, but Chang's lab has tons, including DoD grants."

Francis Key Kidder *started out as a journalist before moving on to politics and government relations, where he still keeps his hand in writing. He may be reached at 410-828-6529; info@labmgr.com.*

F. Key Kidder

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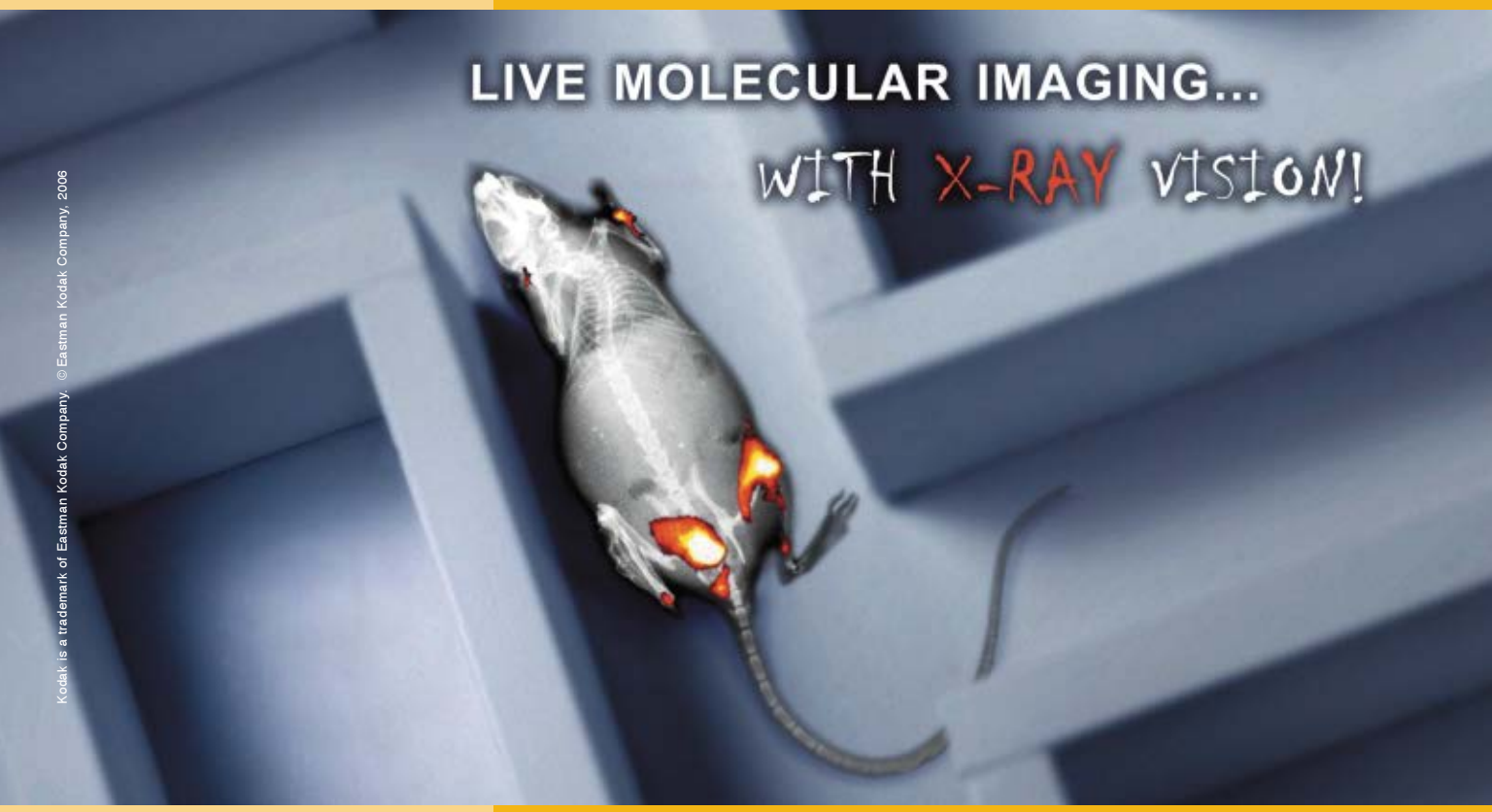

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