Who are the rising stars in pathology and laboratory medicine?
Find out more about this year’s 40 Under Forty honorees p. 20

Building the Workforce

The Workforce Conundrum p. 8

STEM Education p. 28

Workforce Mobility in the UAE p. 32
The July cover features the 40 Under Forty honorees. Not pictured: Dana Altenburger, MD, FASCP; Marianne Hamel, MD, PhD, FASCP; and Christopher A. Tormey, MD, FASCP. See page 20, or visit www.ascp.org/40under40 for more information.
Building the Workforce

Our nation’s laboratory professionals have a bright future in patient care. Even as the fields of pathology and laboratory medicine evolve, many diverse job opportunities lie ahead.

Yet despite the job prospects for the practitioner of the future, we are facing significant challenges right now. The healthcare system in the United States is undergoing dramatic change. Leaders within health systems are tasked with maximizing efficiency in a fiscally prudent environment. The majority of professionals within the medical laboratory field are approaching retirement. The baby boomer population is aging and will require more healthcare services in the near future. And, millions of previously uninsured Americans will now have access to health care through the Affordable Care Act.

How can we ensure that there is an adequate pipeline of future pathologists and medical laboratory professionals to meet this demand? And, how can we ensure that our professionals are prepared to function in this changing environment and continue to provide the highest quality of care to patients?

ASCP has developed a multipronged approach to address the impending shortage of laboratory professionals. This includes support for STEM (Science, Technology, Engineering, and Math) initiatives, advocacy for the expansion and modernization of traditional curricula, and the development of new educational products to ensure that future students and current professionals have access to advanced analytics and are viewed as the provider of these essential services.

The July 2014 issue of Critical Values examines innovative strategies that are being implemented to strengthen and expand the laboratory workforce within the United States and around the globe. ASCP President Steven Kroft, MD, FASCP, explores how the state of the laboratory workforce could determine whether the challenges and promises of the emerging area of personalized medicine can be met and fulfilled, respectively.

Jack Hager, MT(ASCP)SBB, Chair of the Council of Lab Professionals, describes the warning signs of a shortage that have loomed over the profession for decades, including automation, which has resulted in consolidation and the need for fewer operators. When there is a lack of qualified labor and qualified labor is undervalued, employers often hire underqualified staff. How will this impact the quality of patient care?

In her article, “Preparing for the Future,” Jennifer N. Stall, MD, Chair of the Resident Council, analyzes trends facing the pathology profession, which indicate a declining number of individuals entering the field. She reflects on whether residency programs are truly preparing graduates to thrive and shape the future healthcare landscape.

ASCP is always looking for ways to recognize our members and future leaders. This year, we have launched 40 Under Forty, an innovative program that shines the spotlight on 40 pathologists, pathology residents, and laboratory professionals under age 40 who are making significant contributions to the profession. 40 Under Forty provides a wonderful opportunity to recognize these rising stars and strengthen our efforts to build the medical laboratory workforce. I encourage you to read about the 40 finalists in this issue of Critical Values. You can also read more about them on ONELab, ASCP’s online community, where each finalist will have his or her own personal blog to write about topics pertinent to pathology and laboratory medicine.

Finally, I encourage you to read ASCP News to learn about the phenomenal lineup of keynote speakers and educational sessions we have developed for ASCP 2014, Oct. 8–10, in Tampa. This meeting puts the future of pathology and laboratory medicine front and center.

As always, thank you for your continuing support of ASCP. Please send me your comments and suggestions at Blair.Holladay@ascp.org. My very best to each of you.

Like ASCP on Facebook
Follow me on Twitter at @Blair_Holladay

Dr. Holladay is Executive Vice President of ASCP.
150+ Sessions. 240+ Thought Leaders. 1 Destination this October.

Discover the latest innovations and best practices in anatomic and clinical pathology, while exploring the current conditions and future outlook of laboratory medicine. It all comes together October 8-10 at the Tampa Convention Center in beautiful Tampa Bay, Florida.

Experience the latest in medical simulation

See what all the buzz is about. As a pre-meeting event on Tuesday afternoon, tour and take part in hands-on learning experiences, including a new US-guided biopsy course, at the world’s largest hospital-grade medical training facility.

USF Health’s new Center for Advanced Medical Learning (CAMLS) is located just steps away from ASCP 2014.
New Ways to Focus Your Learning

9 innovative specialty tracks give you the option for in-depth study in key areas of interest, including:

**CMP Track (New!)**
17 sessions geared toward Laboratory Professionals, meeting MLS/MLT CE requirements.

**Molecular Pathology Track**
9 sessions, including: *Next Generation Cytogenetics: Genomic Microarrays Go Mainstream for Constitutional and Malignancy-Related Testing*

**Hot Topics in Clinical Pathology (New!)**
8 sessions, including: *Speed-Dating in Blood Banking and Apheresis: Hot Topics for Diagnostic and Therapeutic Interventions*

**Breast Pathology Track**
9 sessions, including: *Special Histological Subtypes of Breast Carcinoma: Diagnostic Challenges and Clinical Implications*

See all track details online at ascp.org/2014tracks

**Resident Review Series**
Back by popular demand, this 2-day series offers residents up to 7.5 total hours of high-yield content for boards and daily practice.

---

Hurry! Early Bird Pricing Ends July 18
Save up to $200

REGISTER ONLINE:
ascp.org/ascp2014
The Workforce Conundrum

40 Under Forty

p. 8

p. 20

Departments

3 Leadership Messages
   About Critical Values
   E. Blair Holladay

8 The Workforce Conundrum
   Steven H. Kroft

12 Career Waves: Climbing to Higher Ground
   Jack A. Hager

16 Preparing for the Future
   Jennifer N. Stall

DOWNLOAD the Critical Value app for bonus content. The app is available for both Apple and Android devices.
Building a Laboratory Workforce to Meet the Future: A Summary

p. 24

STEM Education and the Future of the Laboratory Workforce

p. 28

in this issue

20  40 Under Forty
24  Building a Laboratory Workforce to Meet the Future: A Summary
   Andrea Bennett
28  STEM Education and the Future of the Laboratory Workforce
   Kelly Swails
32  Workforce Mobility in the United Arab Emirates
   Faisal Ibrahim
35  Academic Competitions between Clinical Laboratory Science Programs in Sudan
   Hind Mohamed
36  Educating the Future: A Q&A with Robert Folberg, MD
   Molly V. Strzelecki
40  ASCP News
We stand poised on the brink of what is likely to be a truly dramatic period of change in the way clinical laboratories operate. This change will be the product of the convergence of two juggernaut trends. The first is the explosion of technology that promises to usher in the era of what is commonly referred to as personalized medicine: the ability to understand the interaction of disease and host with unprecedented depth and precision, and develop tailored therapies that provide maximum benefit with minimal adverse effects.

The second is the movement from traditional fee-for-service healthcare financing to pay-for-performance. We will progressively transition from a volume-based to a value-based business model in the provision of laboratory services.

Meanwhile, as if by some perverse plan, this all coincides with a historical moment in which there is serious concern about the adequacy of the future supply of laboratory professionals and pathologists. The present and future states of the laboratory workforce have serious implications for whether the challenges and promises of the brave new world of truly personalized therapeutics can be met and fulfilled, respectively.

The Known and Unknown

What do we know about the laboratory workforce?

We know that the number of training slots for laboratory professionals and pathologists is stagnant. We know that the prospects for more funding to increase these training slots in the foreseeable future are uncertain (although ASCP and other organizations will continue to advocate vigorously for increased funding). It is also apparent that the pipeline of pathologists and laboratory professionals is not responsive in any obvious way to market demand. We know that
we are, collectively, a relatively “seasoned” group of professionals, and that people will inevitably retire. We know that the U.S. population is growing, and that the fastest-growing segment is the elderly, who use many more healthcare resources than their younger counterparts. Thus, the U.S. Department of Labor’s Bureau of Labor Statistics estimates that we are educating only 55 percent of the number of laboratory professionals we will need through 2018, and the College of American Pathologists estimates that by 2030 the number of pathologists per capita in the U.S. will be one-third fewer than at present. Ergo, our ability to meet the laboratory requirements of the U.S. population is in jeopardy. And, since laboratory data are such an enormous component of medical decision making, the very health of the U.S. public is at risk.

However, there are many things we don’t know about the laboratory workforce. While it seems logical to assume that changing U.S. demographics will produce an increased demand for pathology and laboratory services, this is far from a foregone conclusion. Demand models typically assume that current practice patterns will continue unchanged. However, we can safely bet that change is coming. Evolving patterns of test ordering, emerging and potentially disruptive technologies, and novel paradigms of medical care are all likely to affect demand for laboratory services in complex and unpredictable ways. Furthermore, demand for services does not equate to need for services. Need for social services can be defined in various ways, but a definition that tracks well with modern views of healthcare economics is that “need” means “the capacity to benefit from healthcare interventions.” The definition of “benefit” is neither straightforward nor invariant, as it depends on current knowledge, technology, and social and ethical norms. However, the concept of aligning demand with
need, based on the best possible medical evidence, is the basis of the current movement toward control of utilization of medical services (such as lab testing) that is gaining traction in this country. It has been estimated that we overtreat laboratory testing in this country by 30 percent—in other words, no actual benefit accrues to patients from 30 percent of lab testing performed. If this is true (and I happen to think that this is a conservative estimate), then it obviously has significant impact on the discussion of the future demand for laboratory services. This focus on benefit and clinical utility will become even more critical as the menu of esoteric tests explodes in the coming years. We need to ensure that we get maximum bang for our healthcare buck.

Moreover, we don’t really know how many pathologists and lab professionals are needed to produce quality results, now or moving forward. We have no generalizable staffing model for clinical laboratories. Laboratories are like complex organisms, and no two are alike. Test menus, instrument platforms, patient populations, service expectations, local economic factors, organizational efficiency, practice setting—all vary from lab to lab. The laboratory professionals who constitute the cells of the organism are often highly diverse and “differentiated” with respect to aptitudes, training, skills, and experience, and thus are not easily interchangeable. This variability and complexity make it extremely difficult to discuss what constitutes an adequately staffed lab or pathology department, and therefore we have no good definition of what constitutes a workforce shortage. The laboratory ethos is to do whatever it takes to get the results out, and if the results are getting out, stresses due to inadequate staffing are largely invisible to the outside world. We don’t have good outcome measures that allow us to objectively assess or communicate (for example, to hospital administrators and policy makers) when we have reached the tipping point between quality and expedience.

Finally, and very importantly, we don’t have good information about whether our training programs—both for laboratory professionals and pathologists—are appropriately preparing our workers for current and future challenges. Quite tellingly, at the recent Workforce Summit—convened jointly in December of 2013 by ASCP, the College of American Pathologists, the Association of Pathology Chairs, and the United States and Canadian Academy of Pathology—the discussion focused not on the quantitative aspects of the laboratory workforce, but rather on qualitative ones. Are we educating the right kinds of professionals, in the appropriate relative proportions, to face the challenges and opportunities that lie ahead, so that we can maintain the integrity of our clinical laboratory system as a robust foundation for modern medical practice?

Informing the Future

Thus the conundrum: big change is coming, and we have a responsibility to ensure that our patients continue to receive the highest level of diagnostic services. We have to make sure that our workforce evolves—quantitatively and qualitatively—to meet the coming challenges. Yet, our grasp of the current state of the workforce is incomplete, as is our understanding of the implications of how impending changes in healthcare delivery and financing will affect the practice of laboratory medicine.

So, do we cross our fingers and hope for the best? I think not. ASCP is committed, along with collaborating partners in the field, to building the data streams and knowledge base to inform workforce policy and decision making, to critically evaluating the current state of our existing workforce and training programs, and to building a workforce model that we can confidently project into the future. This is a complex task, as illustrated in the report of the ASCP Task Force on the Laboratory Professional Workforce. However we proceed, though, our efforts need to be based on the core principles that quality cannot be compromised and that we must maintain the highest standards for our most precious resource: the healthcare professionals who work in our laboratories.

References


Dr. Kroft is Professor of Pathology, Vice Chair for Clinical Pathology, and Director of Hematopathology at the Medical College of Wisconsin in Milwaukee.
Around ASCP Journals

The American Society for Clinical Pathology offers information and education that can aid your practice as pathologists or laboratory professionals. Whether you read the printed journals or get your information online, the *American Journal of Clinical Pathology (AJCP)* and *Lab Medicine* provide the latest research, reports, and studies. Here are some highlights from recent issues.

**AJCP**

AJCP’s Education and Training in Pathology and Laboratory Medicine series continues, with three articles appearing in recent months. May’s issue features an article by Drs. Jordan Olson and Melissa George that describes a workshop designed to prepare residents to handle after-hours calls. June’s article by Dr. Ronald E. Domen outlines what pathology training programs should consider when involved in situations in which a resident requires remediation, probation, or dismissal. And in the July issue, Dr. Tamar C. Brandler and colleagues measure the effects of team-based learning on promoting learning and teamwork in the setting of pathology residency training. These articles and others can be accessed at www.acpj.com as part of your ASCP membership.

**Lab Medicine**

The Spring 2014 issue of *Lab Medicine* features a review article by Dr. William E. Winter et al that looks at the molecular biology of human iron metabolism. And though they are a rare occurrence, tumors of the parotid gland are the focus of two articles in the issue. Additionally, the Spring issue features multiple case studies, including one by Dr. Jonathan Genzen, on hypercalcemic crisis due to Vitamin D toxicity.

The 2013 Wage and Vacancy Surveys are available on the Lab Medicine website (www.labmedicine.com). Visit the site to review the full reports, and look for the 2014 results later this year. Wage Survey: http://labmed.ascpjournals.org/content/44/4/e97.full Vacancy Survey: http://labmed.ascpjournals.org/content/44/1/e1.full

Lablogatory, the blog for laboratory professionals, features several posts that focus on management and administration issues, including employee retention and laboratory efficiency. Check them out at http://labmedicineblog.com/category/managementadministration/.

If you would like to blog for Lablogatory, please contact the web editor at editor.labmed@ascp.org.
When you go to the Pacific Ocean, signs are posted all along the coast providing warning and instruction about tsunamis. The signs say that when there is threat of a tsunami, people should seek safety by climbing to higher ground. Until a few years ago, I did not even know what a tsunami was, let alone have any reason to worry about them. After the December 2004 Indian Ocean tsunami and the March 2011 Pacific tsunami that devastated Japan, those signs have new meaning. One particularly poignant picture from December 2004 shows the water oddly receding far away from the shore, which the indigenous people knew was a sign of what was to follow. Sadly, however, many people did not understand what this sign meant and didn’t head to higher ground.

My career in the medical laboratory professions began many years ago, and there were signs and warnings of
trouble ahead in laboratory careers at all levels. The more common warnings included: 1) Automation with the resulting ease of operation and the ability to run testing with less operator time, therefore minimizing the value and need for our professions; 2) Lack of identity and recognition from working in ancillary services out of sight of the mainstream of health care; 3) Physician and hospital leadership not supporting the laboratory professions in having a voice in making their wages equitable with those of other healthcare professions; 4) The closing of clinical laboratory programs, resulting in fewer graduates; and 5) An aging workforce retiring and not being replaced.

Enough time has passed that I’m seeing another generation of laboratory professionals entering the workforce. Many of the warnings are the same and some even have been realized. For example, automation has resulted in consolidation and the need for fewer operators, though with highly complex instruments, the maintenance, validation, and evaluation of quality metrics in many cases require ever more astute operators.

Labor statistics indicate that by 2020, health care will account for 20 percent of all the goods and services produced in the nation. Employment in the healthcare industry rose from 8.7 percent in 2000 to 11.5 percent of the total U.S. civilian workforce in 2010. It is projected to increase to 13.5 percent by 2020. Yet every report published in the past three decades says there is going to be an acute shortage of laboratory professionals. In these days of high unemployment and with “job creation” the emphasis of so many political campaigns, how can laboratories, being as important as they are to accurate medical diagnoses, be understaffed—now and in the future?
Labor economics indicate that when the supply of qualified labor is not great enough to offset the demand, alternative labor will be pursued, and when qualified staff is not sufficiently valued, underqualified staff will be hired. We are already seeing indications of this happening as some employers hire laboratory personnel who are not ASCP-certified with the argument that ASCP certification is not a requirement. This is a reality that the laboratory professions face. I find it perplexing that all states require barbers, hairdressers, and cosmetologists to be licensed, and, to qualify for a license, candidates must graduate from a state-approved cosmetology program. Yet we still have to advocate for certified laboratory professionals.

The institutions that will be best positioned in the future are those that realize that high-quality, timely, and cost-effective diagnostic testing—which by extension produce optimal patient outcomes—are best attained by hiring qualified, certified, and competent laboratory professionals.

A number of outstanding reports on the status of the laboratory professions have been released recently. These include the ASCP’s 2013 Wage Survey and the summary of a yearlong study by the ASCP Task Force on the Laboratory Professionals Workforce, Building a Laboratory Workforce to Meet the Future. Both are available on the ASCP website.

The warning signs in our professions today are telling us the same thing as the signs from 30 years ago—and this is where the analogy to the tsunami signs along the Pacific Ocean is relevant: Both are telling us to climb to higher ground.

Whatever route you take to higher ground is an individual choice. For some it is getting additional education, while for others it may be finding a specialty or a position that excites and challenges you. There is a vast assortment of options and solutions for the laboratory professional from within the laboratory professions, and whatever route you decide to take, I assure you that there is higher ground to be had. It was exciting to see the success of one such program recently launched: Laboratory Management University. It is also great to have outstanding young laboratory professionals recognized by the 40 Under Forty program, and read their blogs on ONE.Lab.

With more than 20 certifications available and a whole range of other professional options including informatics and molecular technology, the future is very bright for the ambitious, shrewd, and hardworking laboratory professional. Higher ground includes ASCP certification because it is the gold standard for the medical laboratory workforce. Nearly 14,000 people took ASCP certification exams in 2012, with 77 percent passing. It is no coincidence that we see career ads nearly always referencing equivalency to ASCP certification. There are other associations that accredit laboratory personnel, but ASCP certification remains the highest standard for the profession.

ASCP membership provides the opportunity to engage and work as part of the laboratory and healthcare team. Six laboratory professionals are currently represented on the ASCP Board of Directors. Having had the opportunity to serve with this group of people who represent the diversity of our professions, I can assure you that ASCP is serious about the saying that we are Stronger Together and seeks to be fully inclusive of non-physician laboratory professionals.

A few of us, having achieved some of our own professional and personal goals, are standing on pretty high ground in the laboratory professions. That does not mean that our work has to stop. We can and should help lift others in the coming generations through teaching, mentoring, professional advocacy, and outreach opportunities, all of which are available to us through our membership.

I completely agree with our ASCP Executive Vice President, E. Blair Holladay, who said in Building a Laboratory Workforce to Meet the Future: “There will be countless and diverse job opportunities in the future provided that the field of pathology and laboratory medicine continues to evolve and is duly recognized for its vital contributions to patient care.”

Mr. Hager is the Chief Executive Officer at the American Red Cross National Testing Laboratory in Portland, Ore.
The University of Cincinnati online Bachelor of Science in Medical Laboratory Science is designed for working Laboratory Technicians who want to complete their bachelor’s degree from a NAACLS* accredited program and learn the skills necessary to become a Medical Laboratory Scientist.

**Key Features:**

- Earn 25 CE credits while completing the program at your own pace
- Interact with an engaging online multimedia curriculum
- Learn from an impressive lineup of reputable experts in laboratory management
- Receive your Laboratory Management Certificate of Completion and bolster your career standing

Save $200! Enroll Now $399

Use promo code: LMUSMR

July only! Expires 7/31/14

Enroll online: ascp.org/LMU
Preventing for the FUTURE

Following their travels to the Yucatan Peninsula in the 16th century, Spanish explorers introduced the logwood tree (Haematoxylum campechianum) to Europe. For years, derivatives of this tree were used in the textile industry but then discarded due to their instability. However, at the end of the 19th century, a new use was discovered for hematoxylin, and in coordination with advances in microscopy, optics,
and histotechnology, the stage was set for modern surgical tissue examination.

It did not take long before a surgeon requested an intraoperative interpretation, and in 1891 at Johns Hopkins Hospital in Baltimore, William Welch, MD, performed a frozen section analysis on breast tissue for the renowned surgeon William Halstead, MD. Unfortunately, the analysis took so long that Halstead completed the procedure prior to receiving the pathology results.¹

We have come a long way since that time and now we find ourselves entering a dynamic era of genomic medicine, which will bring with it an entirely new set of challenges. The question is: Are we ready? Will we be able to provide patients and our colleagues with the information and support they need? I do not by any means plan to answer this, but rather hope to pose a few interesting questions as we broach this important issue of an increasing demand and possibly decreasing supply.
The Current State

As of April 1, 2014, 7.1 million individuals had enrolled in various federal and state health insurance programs under the Affordable Care Act. Due in part to both an increased availability of health insurance and an aging patient population, the number of individuals utilizing pathology and laboratory services will also rise. With potential increases in care and expected retirement cliffs, many specialties in medicine have been analyzing workforce supplies, and not unlike other specialties, we have an impending shortage. Recent workforce analyses predict a steady decline in the number of pathologists beginning in 2015, which will lead to a net deficit greater than 5,700 full-time equivalent (FTE) pathologists. The projected need for pathologists by 2030 is nearly 20,000 FTEs; based on the current state, that would necessitate an approximate 8.1 percent increase in residency positions.

An analysis of trends from the National Resident Matching Program (NRMP) shows that 91.5 percent of available pathology residency positions (564 of 597) were filled this past year through the 2014 Main Residency Match. In the previous four years, the numbers were as follows: 2013: 96.4 percent (562/583); 2012: 89.4 percent (466/521); 2011: 91.9 percent (476/518); and 2010: 96.2 percent (484/503).

While the number of positions filled has fluctuated over the past five years, it is evident that we do not completely fill our current number of residency positions (at least not through the match process). Additionally, the number of U.S. medical school seniors desiring to enter the field of pathology continues to decline. This past year saw only 274 American seniors selecting pathology as compared to 363 in 2010, with the total applicant pool being comparable both years (863 and 857, respectively). While these numbers reflect only positions obtained and/or sought via the NRMP system, it demonstrates that we are recruiting fewer and fewer medical students from our institutions every year. If we hope to address future workforce issues, we must make recruitment a top priority both at the level of our individual institutions as well as nationally within our professional societies.

Reflection is Key

However, simply recruiting more individuals is not enough. We also must critically reflect on how we train the future workforce. Are we truly preparing graduates to thrive in and shape the future healthcare landscape? And do our current methods of evaluation reflect those necessary skills? Depending on your practice setting or your own personal opinions, your responses may differ. Nevertheless, we must answer these questions. Our efforts will be trivial if we do not appropriately train and arm residents with the tools they need to successfully practice medicine and be active partners in their healthcare teams.

While there is an optimal number of pathologists needed to continue to provide necessary care, we must also ask ourselves if we are adequately utilizing the resources we currently possess. Practice models that were effective 50 years ago are unlikely to be the best solution as we go forward. We will need to consider how we distribute our resources and time in every part of the laboratory. While many of the questions I have posed here are specific to residency recruitment and training, they can and should be universally applied to all members of the laboratory team. We do not practice in a vacuum, and the workforce shortage affects the entire laboratory.

Going Forward

As we continue our journey into the 21st century, the rapidly changing technological landscape will require us to change the environment in which we practice, and evolving healthcare models will alter the delivery of care. As a specialty, we must take this opportunity to critically reflect on our current status of training and practice—both on a local and global scale. What we do today may not be the answer. It is imperative now more than ever that we recruit, develop, and build the appropriately trained workforce in order to provide patients around the world with quality, value-added care.

References


Dr. Stall is the Robert E. Scully Gynecologic/Perinatal Pathology Fellow at Massachusetts General Hospital in Boston, Mass.
Practical Clinical Pathology
Daniel Mais, MD

A comprehensive and up-to-date working review of clinical pathology

- Integrated molecular pathology throughout, including a chapter on molecular biology, molecular techniques, and genetics of nonneoplastic disease
- Hundreds of high-resolution images illustrating microbiology, hematology, immunology, chemistry, and molecular biology
- Chapter dedicated to medical directorship

ISBN: 978-089189-5985

Member Price: $179
List Price: $239

Order Online at www.ascp.org/books
Members Receive Free Shipping!
This past spring, the American Society for Clinical Pathology (ASCP) launched its inaugural 40 Under Forty program to recognize the top 40 pathologists, laboratory professionals, and residents under age 40 who have made outstanding contributions and who are influencing the future of pathology and laboratory science.

A panel of ASCP volunteers and leaders evaluated candidates on their accomplishments, leadership, diversity of experience, and innovation. Candidates were also asked to write

Carolina Raasch Alquist, MD, PhD
Age: 31
New Orleans, LA

Marianne Hamel, MD, PhD, FASCP
Age: 39
Woodbine, NJ

Dana Altenburger, MD, FASCP
Age: 32
Bloomington, IL

Alexia Hansen, MLS(ASCP)CM
Age: 31
Saint Paul, MN

Clinton Borek, MLS(ASCP)CM SBBCM
Age: 30
Marshfield, WI

Jennifer Maxine Hawkins, DO
Age: 34
Philadelphia, PA

Sara R. Briggs, MS, MLS(ASCP)CM SBBCM
Age: 31
Eau Claire, WI

Rochelle Helminski, MLS(ASCP)CM
Age: 36
Phoenix, AZ

Michelle Brown, MS, MT(ASCP)CM SBBCM
Age: 38
Birmingham, AL

Marisa K. James, MLS(ASCP)CM
Age: 35
North Kansas City, MO

Deborah J. Chute, MD FASCP
Age: 37
Cleveland, OH

Joyce D. Jones, MS, MLS(ASCP)CM SMCM
Age: 34
Highland, IL

Jitakshi De, MD, FASCP
Age: 39
Palo Alto, CA

Mary D. Le, MD
Age: 36
Torrance, CA

Ashraf M. Dehlawi, H(ASCP)CM
Age: 36
Tampa, FL

Carlo Ledesma, SH(ASCP)CM MT(ASCP)
Age: 30
Oklahoma City, OK

Shawn Griggs, MT(ASCP)
Age: 37
Findlay, OH

Sara E. Monaco, MD, FASCP
Age: 37
Pittsburgh, PA

Rama Gullapalli, MD, PhD
Age: 38
Albuquerque, NM

Anna M. Moran, MD, FASCP
Age: 38
Philadelphia, PA

www.ascp.org/40under40
a 500-word essay, choosing from one of five questions that covered topics including how they stay connected with the clinical care team, what sparked their interest in laboratory medicine, and the role of pathology and laboratory medicine in the evolving healthcare landscape.

40 Under Forty honorees receive free registration to the ASCP Annual Meeting in Tampa; enrollment in Lab Management University; a press release to their employer regarding the honor; a comprehensive DISC profile workplace personality assessment; the chance to help select the 2015 40 Under Forty recipients; and a personal blog entry on the ONE Lab Online Community. Visit the ONE Lab online community to find out more about these young professionals, read their blogs, and help select the top five 40 Under Forty participants.

For questions or more information, please contact 40under40@ascp.org.

www.ascp.org/40under40
Building a Laboratory Workforce to Meet the Future: A Summary

By Andrea Bennett, MPH, MT(ASCP)
As the largest professional organization in the laboratory community and the only organization whose membership represents all clinical laboratory professions, the American Society for Clinical Pathology (ASCP) has made workforce issues a top priority. All of ASCP’s workforce-related programs and activities are predicated on and driven by the latest data. The ASCP Wage and Vacancy Surveys, for example, administered biennially for the past 25 years, serve to not only monitor supply and demand but also identify underlying factors.

As part of its continued commitment to resolving workforce issues the industry is facing, ASCP’s Task Force on the Laboratory Professionals Workforce released its report, Building a Laboratory Workforce to Meet the Future in September 2013. The results of the yearlong study take an extensive look at today’s workforce and where it’s headed, and provide recommendations on how to best address future workforce needs in the new era of patient-centric care.

**Mission and Scope of the Task Force**

The mission of the Task Force was to recommend a comprehensive organizational strategy to address the future workforce needs of the nation’s medical laboratories in order to provide timely, accurate, and safe patient care, and to fully realize the benefits of personalized medicine. Specific charges of the Task Force included evaluating the current data on all laboratory professions, identifying gaps and making recommendations for future data collection initiatives; reviewing ASCP’s role in workforce development and current initiatives; and examining how ASCP might leverage its resources and standing among other pathology and laboratory medicine organizations, industry, government, and the broader healthcare system to develop long-term initiatives that will provide meaningful, measurable impact.

While parallel concern exists over a possible shortage of pathologists in the coming years, the primary focus of this Task Force was the non-physician laboratory professions. Workforce dynamics and projected needs in the pathologist workforce will be considered separately given that the demographics, the challenges to recruitment and retention, the educational requirements, and the body of available workforce data for each group differ significantly. See the statement from ASCP President Steven H. Kroft, MD, FASCP, regarding the pathologist workforce on page 21.

**Key Findings**

The latest results from the primary data sources for the medical laboratory professional workforce, including ASCP’s Wage and Vacancy Surveys, the National Accrediting Agency for Clinical Laboratory Sciences/ASCP Board of Certification Program Survey, and the Bureau of Labor and Statistics provide some positive indicators: lower vacancy rates (Figures 1, 2, and 3), lower current workforce average age, and education program growth and increasing student enrollment in laboratory science programs.

But with the nation’s healthcare system on the brink of tremendous change, even if these positive trends hold, will they be enough to meet the demand? It is doubtful that these relatively minor gains are sufficient to handle the inevitable onslaught of new patients and new diagnostics, and using only these indicators to conclude that the workforce shortage is waning is dangerously premature. Other factors impacting the workforce must be considered, such as the delay of retirement due to the recession, budget constraints that have resulted in hiring freezes, and the elimination of positions through attrition.

Knowing how and where the numbers will settle remains to be seen, but right now building policy and programming on quality data is essential to parse out critical needs. While...
ASCP’s Wage and Vacancy Surveys have produced widely cited trend data on the medical laboratory workforce for the past 25 years, the laboratory field and the services it provides have grown increasingly complex. Measures of workforce sufficiency have focused mainly on laboratory operations—for example, having enough adequately qualified laboratory professionals to perform patient testing in a timely fashion. However, there is a paucity of data on the impact of staffing on patient care and patient outcomes. The development of staffing guidelines based on patient care has proved helpful to other professions in health care in securing resources for workforce development, and while identifying and measuring such metrics is challenging, this kind of data may have more impact with policymakers and the public in the current patient-centric environment.

Additionally, the ever-increasing knowledge of disease prevention and management, coupled with new diagnostics, automation, and information technology, is continually changing the services laboratory professionals provide. The scope of work is changing, and while these developments present workforce challenges, they are also opportunities. Cytotechnologists provide an excellent example of adapting to a changing clinical landscape with modernization of their curriculum to meet the growing demand for molecular testing.

To secure the future of the workforce, educational preparation in laboratory science must be addressed. A solid background in the basic sciences is required, but it’s key to note that the laboratory competes with other healthcare professions, as well as with other professions in the sciences to recruit students with the appropriate background and aptitude to succeed in the laboratory science profession. The lack of awareness about laboratory science careers among pre-college students continues to be a major obstacle.

Federal funding for laboratory science education programs continues to be sparse. Just as there is among students, there is a dearth of knowledge among policymakers regarding the laboratory professions and their critical contribution to the delivery of quality patient care.

Looking Forward

How can the laboratory and pathology community ensure that its workforce will be prepared to meet the future demands of our healthcare system? How many and what types of laboratory professionals will be needed? What role can today’s laboratory professionals and pathologists play in providing more patient-centric quality care? What skills and knowledge base will tomorrow’s laboratory professionals need to have?

While ASCP’s Task Force on the Laboratory Professionals Workforce considered these questions and offered specific recommendations, it is clear that collaborative effort by multiple stakeholders will be critical to ensuring that our nation’s medical laboratories are adequately staffed with appropriately qualified laboratory professionals. Our nation’s medical laboratories employ an array of professionals, with differing educational backgrounds and credentials, who perform a variety of clinical and administrative functions. The complexities of this workforce and the laboratory environment within the healthcare system are not easily understood. Increasing awareness about these professions is critical to recruitment, program funding, and realizing the full benefit of these professionals as essential members of the care delivery team.

Initiatives to increase awareness must be data-driven. Continual review of the rapidly evolving laboratory environment and its role within the healthcare system is essential in order to identify and gather relevant, high-quality data that can be used to inform and engage policymakers. Review of information on the workforce, patient demographics, and clinical and economic factors is needed as well. One example of a current gap in workforce data involves educators for the field, many of whom have clinical responsibilities beyond teaching. Administration of a separate survey on faculty is necessary to understand the challenges that education programs face, particularly with regard to clinical rotations.

The pipeline of future laboratory professionals must be nourished and promoted. Increased efforts must be made to reach high school or younger students prior to the period when they begin to consider career options.

The full report from the ASCP Task Force on the Laboratory Professionals Workforce, Building a Laboratory Workforce to Meet the Future, is available on the ASCP website. Visit http://www.ascp.org/PDF/Advocacy/ASCP-Task-Force-on-Lab-Pros.pdf to read the report in its entirety.
Task Force Recommendations

*Building a Laboratory Workforce to Meet the Future* compiled research from multiple data sources to determine the needs of the laboratory professional workforce now and in the future. Here, key takeaways provide recommendations on how to put this data into action.

1. Promote the role of laboratory professionals to patients, other providers, healthcare administrators, educators, policy makers, and the public at large, as an integral part of the clinical care team in a transitioning healthcare system.

2. Conduct and disseminate original health services research that supports laboratory workforce policy and compels the nation toward an adequate supply of qualified laboratory professionals, who have the appropriate skills and education to ensure access to quality care for all citizens.

3. Engage in outreach opportunities that promote science, technology, engineering, and mathematics (STEM) education to support and promote the development of high-level skills critically important to the performance of quality laboratory testing and management, and to bolster the pipeline of potential candidates for the profession and leadership in health care.

4. Develop and incorporate future-based products and information into educational programming via multiple platforms that will enable laboratory professionals and pathologists to be at the forefront of health care.

5. Seek and support initiatives that promote the development of a qualified workforce through quality education programs that reflect advancing technologies, maintaining high standards for certification of laboratory professionals and laboratory accreditation programs that incorporate personnel standards.

6. Promote a legislative and regulatory agenda that strives to increase interest and access to training that will lead to careers in pathology and laboratory medicine. Harmonize state and federal personnel and testing standards to remove unnecessary barriers to intrastate employment of well-qualified laboratory professionals.

References


Thank you to the contributors to the *Building a Workforce to Meet the Future Report* Mark Bailey, MA, HTL(ASCP)CM; Andrea Bennett, MPH, MT(ASCP); Kay Doyle, PhD, MLS(ASCP)CM; William Finn, MD, FACP; Edna Garcia, MPH; Dave Glenn, MASCP, MLS(ASCP)CM; E. Blair Holladay, PhD, SCT(ASCP)CM; Jeff Jacobs, MA; Steven Kroft, MD, FACP; Sara Patterson, MSJ; Junell Petersen, MS, MLS(ASCP)SHCM; Matthew Schulze; Patricia Tannebe, MPA, MLS(ASCP)CM; Sue Zaleski, MA, SCT(ASCP)HT

Andrea Bennett is Director, Center for Public Policy at the American Society for Clinical Pathology.
STEM Education and the Future of the Laboratory Workforce

By Kelly Swails, MT(ASCP)
In the mid-2000s, Sens. Lamar Alexander of Tennessee and Jeff Bingaman of New Mexico asked The National Academies to identify 10 actions the country needed to take to ensure its prosperity in the future global economy.1 The Academies’ first recommendation focused on science, technology, engineering, and mathematics (STEM) education, with suggested initiatives that included bolstering science education for K-12; recruiting science and math teachers; strengthening the skills of teachers through training and education programs; and increasing the number of students who take Advanced Placement and International Baccalaureate science and math courses.1 Since these recommendations were published, STEM education initiatives have received substantial attention and funding in the United States. Despite the recommendations and the funding, however, a mere 16 percent of American high school seniors are interested in a STEM career, and only half of students who study in STEM fields in college go on to work in a related career.2

Tamara Hudgins, PhD, is the executive director at Girlstart, an Austin, Texas-based nonprofit organization dedicated to empowering girls by providing informal STEM education programs. Dr. Hudgins says that investing in STEM and encouraging more students to pursue STEM careers is an investment in all of our futures. “We need students to stay interested [in STEM subjects] so they go on to create the next innovation, a better way to get clean water to people who need it, or discover the next cure for disease,” she says. “But because American students are doing less well in math and science compared to their peers in, say, Finland, we have less ability to hold a commanding economic position in the future.”

Indeed, according to the STEM Education Coalition, efforts to transform today’s students into tomorrow’s scientists may not be enough. In 2011, only 45 percent of high school seniors were ready for college-level math courses. Science fared even worse; only 30 percent of seniors were ready to tackle college-level sciences. And in spite of the recommendations from The National Academies to increase science education for grades K-12, “elementary schools in the United States devote an average of 2.3 hours a week to science, a decline of 43 minutes since 1994,” the Coalition reports.3

And according to the 2012 Lemelson-MIT Invention Index survey, while 47 percent of Americans aged 16 to 25 surveyed said they realize a lack of invention will hurt the U.S. economy, 60 percent of those surveyed said there are factors that could keep them from pursuing a STEM career and...
furthering innovations. Almost half of respondents said that invention isn’t given much attention in school, and a quarter agreed that their education left them unprepared to enter STEM fields.4

So where does that leave students compared with those from a decade ago?

“It’s hard to say,” says Maribeth L. Flaws, PhD, MLS(ASCP)CM, SM, SI, acting chairman and associate professor in the Department of Medical Laboratory Science at Rush University in Chicago. “In our Clinical Laboratory Science program we have excellent students from overseas as well as the States,” she says. “The good students, the smart students, are going to do well, sometimes despite their background and education.” Dr. Flaws does see a difference in how today’s students relate to technology: “Students are very savvy in terms of using technology when compared with yesterday’s students, even with something as simple as PowerPoint. That’s where I see the bigger difference over the past 10 or 20 years.”

Women in STEM Careers and the Laboratory

Encouraging students to pursue STEM careers will help stabilize the future of the workforce in general, but promoting the career field to girls and young women in particular could provide added support to the laboratory workforce.

Women are often underrepresented in STEM fields; they hold less than 25 percent of jobs in STEM fields5 and just 31 percent of STEM degrees are awarded to women.6 Dr. Hudgins reiterates the importance of encouraging women toward STEM careers. “When the future of your national economy is pegged to innovations and engineering, and you disconnect half your workforce due to external messaging, you have a problem that needs fixing.

“Girls typically lose interest around the fourth grade due to messages that give them the understanding that math is boring, hard, or [liking it] makes them a social outcast,” Dr. Hudgins continues. “We need to show them how cool and fun a career in science can be.”

Laboratory professions, however, have more promising numbers of women in the workforce than other STEM careers. According to a 2013 report by the American Society for Clinical Pathology, 72.8 percent of clinical laboratory employees are women.6 As such, it’s particularly vital that women are interested in STEM careers; otherwise, it could be hard to find qualified professionals to staff future laboratories.

How the profession is presented can get girls and young women interested in pursuing a laboratory career, according to Dr. Flaws.

“Putting this career into the perspective of the impact on disease and diagnosis is the way to go. We’re helping doctors and nurses and therefore patients,” she explains. “It’s important to point out that without laboratory professionals and pathologists, doctors and nurses are guessing. They’re educated guesses, but the information that laboratory professionals provide supports or rules out their hypothesis.”

Dr. Hudgins adds that “connecting lab work to the ways these professions help people is key. Showing a woman in a lab coat doesn’t suggest the importance of the work you do, but showing how this work benefits others does.”

Perhaps one way to engage future laboratory professionals is to promote the idea that being a woman isn’t a barrier in laboratory medicine. Because women make up the majority of the workforce in laboratory medicine, the “glass ceiling” that can exist in other science careers isn’t as hard to break when working in this field. “For my career path I’ve never seen being a woman as a hindrance or had any obstacles,” Dr. Flaws says.

The Future of the Laboratory

Medical science professions are expected to increase 36 percent by 2020,7 but without STEM education, the number of laboratory professionals could dwindle. Future laboratories need to be staffed and managed by trained clinical laboratory scientists. Not only that, innovators need to design workflows to help those laboratories run more efficiently. Scientists need to discover new ways and develop new tests to diagnose disease. Engineers and designers need to create new analyzers, and software engineers are needed to make those analyzers easy to use.

STEM education is integral to every part of laboratory medicine, and without it, future advances in the laboratory are in jeopardy. The recommendations from ASCP’s Task Force on the Laboratory Professionals Workforce include STEM education support in order to promote the sort of skills needed by laboratory professionals.6 It is the responsibility of all
laboratory professionals to engage younger generations and help provide that education so that the viability of laboratory professionals remains intact.

References


Ms. Swails is a laboratory professional and Web Editor of the Lab Medicine website.
Workforce Mobility in the United Arab Emirates

By Faisal Ibrahim, MBA, MT(ASCP)

With a robust and growing economy, the United Arab Emirates (UAE) has become a favored relocation destination for people from around the world in search of new career opportunities. Expatriates currently account for almost 85 percent of the UAE’s population, making it a country with a very diverse workforce, of which the laboratory workforce is no exception.

Laboratory professionals from all over the world are interested in seeking more and better opportunities in the Gulf Region, but because countries’ credentialing standards and processes differ greatly, it can be a challenge for expatriates to secure a position in the UAE. Recruiters tasked with filling the positions in the laboratory experience a similar challenge, as they have to review credentials from multiple countries, and determining the best candidate for a role can be a difficult and lengthy undertaking.
To streamline this process, in the past decade the American Society for Clinical Pathology’s Board of Certification has appointed representatives to an International Advisory Board in more than 30 countries across the globe to develop and promote an international certification ASCPi. ASCPi has become well recognized and trusted in the UAE, and many hospitals and laboratories in the region now require applicants to have, at minimum, ASCP certification to be considered for a position at their facility.

One reason for this requirement is that ASCP-certified professionals tend to perform better in the clinical laboratory. For instance, ASCP-certified professionals have a broader knowledge base on quality control procedures and their importance and applications, and also are more familiar with safety practices in the laboratory. This is because ASCP certification emphasizes and teaches comprehensive coverage in these two areas. Moreover, laboratory professionals generally will not be able to gain ASCP certification unless they have in-depth laboratory knowledge in both theory and practice.

**International Certification and Job Security**

Due to rapid advancements in clinical laboratory automation, there is a trend in the UAE toward outsourcing samples to reference laboratories. This, in turn, has forced cutbacks at regional UAE hospitals, and many laboratory professionals have lost their jobs. However, employers often will choose to retain ASCP-certified professionals because of their educational knowledge, experience, and understanding of proper laboratory processes. Additionally, in many cases ASCP-certified employees have higher salaries than non-certified professionals because of their wider knowledge base.
International Certification and Accreditation

In the past two decades, at least 10 UAE laboratories have successfully gained accreditation from the College of American Pathologists. Additionally, a large number of laboratories in the region have achieved Joint Commission International and/or ISO 15189 accreditation, and many other hospitals in the region are currently making strides toward these accreditations. Having ASCP-certified professionals assist hospitals in gaining compliance with the accreditation standards adds value to the process. ASCP-certified professionals usually fulfill laboratory accreditation personnel competency requirements because they have the required amount of education and/or experience. Furthermore, ASCP-certified professionals are more aware of the regulatory requirements needed to attain accreditation and therefore are more likely to implement and comply with these rules. Many of the international accreditation requirements are covered in the management and safety section of the ASCP examination. And ASCP-certified professionals are tested in laboratory operations topics such as quality control, Westgard rules, method validation, proficiency testing, personnel management, and more; all these sections also appear on laboratory accreditation checklists.

Because ASCP certification makes it easier to filter candidates, provides stability to the certified workforce when automation forces cutbacks, and helps guide and strengthen the accreditation process for many hospitals, the Health Authority of Abu Dhabi (HAAD) and the Dubai Health Authority (DHA) exempted laboratory professionals with ASCP certification from taking the local HAAD licensing exam and DHA exam. The exemption encourages laboratory professionals to take the ASCP exam to facilitate their mobility both within the UAE and internationally.

In summary, ASCP certification assists recruiters with the headhunting process, adds value to laboratory accreditation, and helps create job security for laboratory professionals. And because of this, both laboratory professionals already in the region and those who hope to move to the UAE to work are expected to continue their quest to achieve ASCP certification.

Mr. Ibrahim is an International Program Manager for the Clinical and Laboratory Standards Institute, Global Health Partnerships, and is based in Sudan.
Advance for Professional Development Center is a medical laboratory center in Khartoum, Sudan, that is committed to promoting ASCPi examinations. The center recently sponsored an inaugural college competition for Clinical Laboratory Sciences (CLS) students across Sudan to encourage medical technology students to deepen their knowledge and strengthen their ties to the field, all while having fun in a clean, friendly, and competitive atmosphere. Deans and directors of medical technology programs responded with enthusiasm to the idea for the competition, which ran from February through June 2014, with 12 programs participating.

Advance for Professional Development Center offers a review program to prepare interested technologists to take the MT(ASCP) exam. The review program consists of 172 contact hours in the areas of hematology, blood bank, clinical chemistry, microbiology, immunology and serology, molecular biology, urinalysis and body fluids, virology, mycology, and parasitology. Additionally, the Advance Center prepares applicants to take the International Technologist in Gynecologic Cytology, CTgyn(ASCP), examination. Sponsoring the academic competition is part of Advance’s goal to improve and further the medical technology field in Sudan and promote continuing education.

Developing the Competition

Advance invited CLS educators across the country to publicize the launch of the competition, and a moderator from the center shared the rules and regulations. To create a level playing field for all participants, all questions in the first stage of the competition came from the following books: ASCP BOC Study Guide, 5th Edition; Success in Clinical Laboratory Sciences; and Medical Laboratory Science Review by Robert Harr. In the final stages of the contest, only 50 percent of the questions came from these sources.

The games were held every Saturday at the Advance center in Khartoum. They were modeled after the television show “Jeopardy!” with competition questions covering basic core lab knowledge of chemistry, hematology, blood bank, microbiology, molecular biology, and laboratory management.

Participating universities were divided into four groups, and each team played against the other teams in its group. The team with the most points in each group moved to the finals.

Insight through Competition

A large number of students attended the competition to show loyalty and support to their teams. Additionally, the teaching staffs from participating universities joined their teams to assess their students’ strengths and weaknesses. The competition moderator noticed an obvious weakness in the areas of blood bank, molecular biology, and laboratory management, as competing students left those categories as their last choice and usually performed poorly when answering the questions. Advance shared this observation with the participating CLS programs.

The final games were held on May 29, 2014, at Sharjah Hall at the University of Khartoum. The four finalist teams were Sudan University of Science and Technology, Kordofan University, Omdurman Islamic University, and Alzaeem Al Azharee University. It is worth mentioning that teams from government universities typically performed better than private ones, as admission to government universities requires higher high school scores. The final two games, which were broadcast on local Sudan TV, were held in a large auditorium to allow students from all four finalist universities to attend.

Kordofan University came in first place, Sudan University of Science and Technology came in second place, and Alzaeem Al Azharee University came in third place. These top three winners won valuable prizes, including free admission to ASCP review programs at the Advance for Professional Development Center and waiver of the examination fees.

To see the competition in action, visit:
http://www.youtube.com/watch?v=0zoFQ1uerUo or http://www.youtube.com/watch?v=k71LRABzqTM.

Ms. Mohamed is a volunteer lecturer at Advance for Professional Development in Khartoum, Sudan.
Building the Workforce

"What pathologists do goes way beyond the autopsy, and the field is not just about tissue. Students don't know that we also do transfusion medicine, or the molecular side of practice. They don't understand how pathologists take care of patients."

Dr. Folberg
Even as a resident, Robert Folberg turned pathology training on its head. Unlike most pathology residents, who spend much of their time in the clinical lab, Dr. Folberg spent a lot of his time with patients. So it’s no surprise that as founding dean of the Oakland University William Beaumont School of Medicine, he once again took an innovative approach to medical education, creating a holistic curriculum that integrates the technical and human components of medicine.

During his residency, Robert Folberg, MD, FASCP, made it a point to go on patient rounds with the surgeons. He would check the patients’ physical exam, talk to the other residents, learn what the surgeons’ approach would be, and look at the imaging study with the care team, all before a patient went in for his or her procedure. His methods were more than a little unconventional for a pathology resident, and his consistent presence on the floor earned him some teasing from nurses, he says.

But his methods paid off. “Those residents and doctors had a heck of a lot more respect for what we were doing in that frozen lab than if I had just walked into the operating room and collected a piece of tissue,” he says.

His residency behind him, Dr. Folberg’s atypical approach to practicing and teaching pathology remains a constant in his career. Board certified in both anatomic pathology and ophthalmology, he was early to realize the power of the Internet in medical education, when in the 1990s he produced online courses in these specialties. For almost a decade he was the
Frances B. Geever Professor of Pathology, head of the Department of Pathology, and professor of ophthalmology and visual science at the University of Illinois at Chicago. And for more than 20 years as a clinician scientist, Dr. Folberg studied uveal melanoma with funding from the National Institutes of Health.

Then, in 2008, an extraordinary opportunity presented itself. Dr. Folberg was invited to lead the creation of a new medical school. “I really couldn’t resist the opportunity to build a medical school from scratch,” he says. He left the University of Illinois for the Oakland University William Beaumont School of Medicine in Rochester, Mich., that year.

The school admitted its first class of students in 2011 and since its inception has integrated human and technical aspects of medical practice. Today, Dr. Folberg serves as the school’s founding dean and professor of biomedical sciences in pathology and ophthalmology.

Oakland University will graduate its first class in 2015, at which point, Dr. Folberg says, they’ll be able to see how the school’s holistic approach to teaching medical students translates in the workforce. Here, he talks with Critical Values about new paradigms in medical education that emphasize collaboration and how that could strengthen the pathology workforce of the future.

**Critical Values (CV):** How did you shape the curriculum at Oakland, and how might that translate once these students enter the workforce?

**Robert Folberg (RF):** We tell our students from the beginning that we know they can be brilliant and master all of the cognitive information to be technically skilled. But we’re also really interested in their becoming complete physicians.

The school is driven by an interesting question: How do you train a physician to be kind? Our school starts teaching communication skills within two weeks of students arriving. We were a beta site for the American Association of Medical Colleges’ holistic admissions program, which means we screen our students first for the experiences and attributes that they bring to medicine, and then we look at MCAT scores and GPAs. We don’t admit anyone unless they are able to master the curriculum, but they must also have exceptional human qualities. We tell the students that we never want to treat them as a number, because if we did they might go into the hospital and start treating patients that way.

Beaumont Health System had been a teaching site for two legacy medical schools for decades. And the physicians from that system who are now training our students are telling us that these students are much different. That doesn’t mean the other students are inferior—but by no means are they—but our students are coming into patient care after intensive training in the personal attributes of physicianship. They are culturally competent and excellent communicators. The test will come when these students hit their residencies, and we’ll track their progress and talk to the residency directors. We’re looking forward to that feedback, but we’re very pleased with what we’re seeing so far.

Part of our curriculum also includes a mandatory fourth-year diagnostic medicine clerkship. For two weeks during their fourth year, all of our students go through an intense collaboration between radiology and pathology that gives students a chance to learn what diagnostic physicians do, how they think, and how they, the students, should be intelligent consumers of laboratory testing and facilities. They build on a theme—for example, a specific disease. And the theme for the day might be a painful swollen leg. The students will spend the morning with a radiologist going through imaging studies for deep vein thrombosis. And in the afternoon, they might spend it talking with a pathologist about coagulation and how to monitor it. It puts the students in front of these physicians, and even if the student doesn’t choose radiology or pathology as a career, they’re not going to be the type of physician who disregards a pathologist. Pathologists don’t work in isolation. These students are going to understand that pathologists work in teams with other physicians, and are essential partners managing patients.

**Critical Values (CV):** Has your approach to integrating pathology into the clinical care team inspired more students to go into pathology than might be typical?

**Robert Folberg (RF):** It’s hard to say because our school is so new; our third-year class is just beginning to focus on their residency selections. My own personal bias is that a lot of the stimulus for students to go into pathology depends on the enthusiasm and role modeling of the pathologists and pathology residents around them, and if they can picture themselves in the same role.

When I was the chair at University of Illinois at Chicago, we typically had between eight and 12 students select pathology as a career, which was very large in proportion to others. A lot of that was attributable, I think, to the person who ran the pathology courses and residency, the late Michele Raible. She was dynamic, and students would see her and think, “I want to be like her!”

**Critical Values (CV):** What is missing from medical school education, specifically from pathology education?

**Robert Folberg (RF):** Unlike other disciplines, medical students don’t have early exposure to pathologists or pathology residents. Every school gives their students clinical experiences in the first two years, where the student will shadow a physician, and a
lot of times that physician will be part of a team of residents on rounds, which is a great experience. But pathology isn’t included in that. Having students interact with residents who could be an older sibling makes it easier [for them] to see themselves in that same role.

Early resident engagement, however, means that you have to teach residents how to teach. Our school started a Residents as Teachers program that cuts across all residency disciplines. It allows residents to acquire a certificate in medical student education, and later they go on to a fellowship and an academic position. The program is really important for getting residents in front of our medical students and provides the students with role models they can get to know.

Pathology can be very dynamic, but it’s an afterthought for most students. In developing our medical school, one of the things we thought about was teaching students that what pathologists do goes way beyond the autopsy, and the field is not just about tissue. Students don’t know that we also do transfusion medicine, or about the molecular side of practice. They don’t know, or understand how, pathologists take care of patients.

I think also that when presenting a case we should take the time to discuss how we collaborate with other members of the medical team, instead of just showing the slide or the profile and telling students about the slide or the profile. We collaborate with other physicians, and we should let students know that. You can tell them about the mutations or the cytogenetics and how you diagnosed a case, but is that it? There was more involved than just reading a gel or running a test. Explain to students how you were brought into the case early and sat down with the neurosurgeon or the radiologist and discussed their working hypothesis and their approaches for the case. Show them how because of this you were able to arrange for the tissue to be triaged into different areas. We are part of the patient management team, but it doesn’t get taught that way.

“Laboratory medicine” makes it sound as if we practice medicine in a laboratory, and that distances students from the fact that pathologists practice medicine, period. We may only see pieces of patients, but it is not just about running or interpreting a test—these are patients. Pathology is a patient-centric discipline, but it is not usually pitched that way. If you pitch it as laboratory medicine, it dehumanizes what a pathologist does.

**CV: What have you learned from the first cohort of students, and what will you change as a result?**

**RF:** We’ve changed a lot since the first cohort came in. It’s exciting to be in a new school situation where we’re not encumbered by the phrase, “We don’t do it that way here.” I would never want to see the school evolve into a situation where we would use that phrase.

We are constantly remodeling the curriculum, like changing the sequence of courses for the first two years based upon what we think we can do better or more efficiently. I also recently sat down with department chairs to discuss our diagnostic medicine clerkship and talk about potential changes. And what’s important is that any changes are owned by the faculty. They’re the ones who have to sit down and put it into place, and approve it.

**CV: Where is the future of pathology education headed?**

**RF:** I don’t know, but I will tell you I’m optimistic. More and more departments are carving out a person to take ownership of pathology education, both on a medical student and residency level. If we pay attention to the talent that is out there, they’ll show us the future.

Ms. Strzelecki is Senior Editor of *Critical Values*. 
ASCP 2014 Tampa Gazes Into the Future of Pathology and Laboratory Medicine

ASCP 2014 Tampa, Oct. 8–10, will present a one-of-a-kind experience for pathologists and medical laboratory professionals to learn about future trends affecting their profession and help them in preparing to lead in the era of patient-centered care.

To be held at the Tampa Convention Center, ASCP 2014 will feature an energizing array of more than 140 education sessions on leading-edge science that will gaze into the future of anatomical and clinical pathology, molecular pathology, new techniques, health policy, and practice management.

“This annual meeting is important for all of our members—from specialists to generalists, lab professionals and LIS experts to residents,” said Zubair Baloch, MD, FASCP, chair of the Annual Meeting Education Working Group and a member of the Annual Meeting Steering Committee. “We are all part of the pathology and medical laboratory team.”

ASCP has reached out to the pathology and medical laboratory community in the Tampa area for input in developing sessions that are relevant to their specific needs, such as topics in molecular testing, triaging, and regulations. In addition, case studies in hematology, chemistry, and transfusion medicine will focus on the team approach in the laboratory.

“It’s very exciting that ASCP is bringing the Annual Meeting to our area,” said Cindy Johns, MSA, MASCSP, MLS(ASCP)CM, senior IT technical specialist at the Laboratory Corporation of America, Burlington, N.C. “We are thrilled that topics of relevance to medical laboratory professionals in this region are going to be addressed.”

The Society also engaged Tampa’s Moffitt Cancer Center, one of the leading comprehensive cancer centers in the United States, to provide content and specialists who will lend their expertise for education sessions. Additionally, Annual Meeting attendees will have the unique opportunity to engage in educational activities that will be hosted at the Center for Advanced Medical Learning and Simulation, Tampa’s newest state-of-the-art medical training facility and simulation center, and take part in hands-on learning experiences. Featured activities include a new ASCP immersive experience session in FNA procurement, including ultrasound-guided techniques, with incorporation of clinician perspectives.

Forecasting the Future

ASCP 2014’s three general sessions will examine how new technologies are improving patient-centered care; the impact of legislative changes, CPT coding, and reimbursement on the practice of pathology and laboratory medicine; and the importance of mentoring as women climb the leadership ladder.

- **A Guide to the Future of Medicine—Bringing Disruptive Technologies to Life in Health Care,** from 8:30 a.m. to 9:30 a.m. on Wednesday, Oct. 8. Renowned medical futurist Bertalan Meskó, MD, PhD, will lead an invigorating discussion about ways that new technology, such as genomics and next generation sequencing, are providing pathologists and medical laboratory professionals with valuable tools to improve patient care. Described by Forbes magazine as “The Geek Who’s Changing the World,” Dr. Meskó is the managing director and founder of Wobicina.com, the first service to curate medical- and health-related social media resources free of charge for patients and medical professionals.
Evolving Pressures on Laboratories and Pathology Practices in 2014 and Beyond, from 11:15 a.m. to 12:30 p.m. on Thursday, Oct. 9. Moderated by Alfred Campbell, MD, FASCP, president of the American Pathology Foundation, the panel will include Mark Synovec, MD, FASCP, pathologist and member of the American Medical Association CPT Editorial Panel Executive Committee, and Jane Pine Wood, Esq., a prominent healthcare attorney at McDonald Hopkins.

Dr. Synovec’s talk, “Playing in the CMS Physician Payment Sandbox: A Survivor’s Guide to Avoid the Mines,” will focus on the direction in which CPT codes and RUC are headed. Participants will learn why pathology appears to have been singled out for payment cuts; what’s being forecasted in other areas of future payment concern; and what organized pathology is doing to mitigate threats to the future of anatomic pathology and laboratory medicine.

Ms. Wood’s presentation, “How to Stay Alive While Swimming with Sharks? Legal Compliance in an Uncertain World,” will examine the uncertainties of healthcare reform and the impact it will have on pathologists and laboratory medicine and will explore opportunities for pathologists and medical laboratory professionals to take on greater leadership roles.

Women in Leadership Roles—Setting the Agenda for Current and Future Leaders, from 11:15 a.m. to 12:30 p.m. on Friday, Oct. 10. Virginia A. LiVolsi, MD, MASCP, a world-renowned expert in endocrine pathology, and Jennifer L. Hunt, MD, will discuss the importance of leadership development initiatives and role models to prepare the next generation of women leaders in health care. Dr. LiVolsi is the director of the Office of Strategic Initiatives and Quality Improvement in Anatomic Pathology and professor of pathology and laboratory medicine at the University of Pennsylvania Perelman School of Medicine, Philadelphia. Dr. Hunt, who was mentored by Dr. LiVolsi, is the chair of the Department of Pathology and Laboratory Services at the University of Arkansas for Medical Sciences, Little Rock, Ark.

Leading-Edge Science

Innovative technologies and new techniques are continually being developed, and it is critical that pathologists and laboratory professionals remain current on how these powerful tools can be used to improve patient care. The Association for Pathology Informatics, one of ASCP’s partner organizations, has developed an extensive pathology informatics curriculum that will provide an illuminating look at how technology is transforming patient care.

ASCP is also working in collaboration with the American Pathology Foundation to provide education in laboratory management. In an era in which laboratories are expected to do more with fewer resources, supervisors need to hone their management skills to lead a laboratory efficiently in a changing environment.

An outstanding array of distinguished experts will highlight critical areas of value for the field, including global patient-centric care, cancer prevention and detection, and appropriate test utilization.

Sandra Shin, MD, FASCP, and Timothy M. D’Alfonso, MD, will lead the session, “Pattern-based Approach to Needle Core Biopsy Diagnoses of Breast Lesions,” at 9:45 a.m. on Wednesday, Oct. 8. The session will address the challenges of rendering diagnoses on breast needle core biopsy material. Participants will learn about and review the spectrum of breast lesions commonly seen in needle core biopsies using a pattern-based format.

Vinay Prasad, MD, FASCP, will examine leadership skills, communication, and assertiveness in “Getting to the Soul of Leadership in Laboratory Medicine: The Skills You Need to Navigate the Changes that are Coming!” at 8 a.m. on Thursday, Oct. 9. Participants will learn leadership skills, team-building tips, and techniques to relax (including meditation lasting 90 seconds), as well as gain insights into lessons learned from legendary innovators.

Liron Pantanowitz, MD, FASCP, and Anil V. Parwani, MD, FASCP, will present “Telepathology Practice: Guidelines & Clinical Applications,” at 2:40 p.m. on Wednesday, Oct. 8. Telepathology is increasingly used for clinical applications such as frozen sections, obtaining second opinions, and telecytology. Participants will learn about the regulations and guidelines related to the practice of telepathology, as well as about other innovations such as hybrid whole slide imaging and dual robotic microscopy instruments on the market, web-based services, and mobile devices.

Robert W. McKenna, MD, MASCP, will lead the session, “Progress in Diagnosis and Determining Prognosis in Acute Lymphoblastic Leukemia,” at 9:45 a.m. on Wednesday, Oct. 8. Information acquired from immunology, genetics, and molecular science has greatly enhanced the understanding of the biology of acute lymphoblastic leukemia. New treatment modalities have followed, including more
specifically directed chemotherapy protocols. Precise diagnosis, classification, and identification of prognostic indicators of all have become essential components of proper patient management.

- Richard Mac DeMay, MD, FASCP, an internationally renowned cytopathologist, reinforces core knowledge for residents, fellows, and practicing pathologists in “The Building Blocks of Cytopathology,” at 9:45 a.m. on Wednesday, Oct. 8. This session will identify 10 basic cell types, the building blocks that are the basis for cytdiagnosis, providing a basic session in aspiration biopsy cytology.

- Dara Aisner, MD, PhD, will lead a session, “You Want Me to Send What to Where? What the Pathologist Needs to Know in Selecting Material for Molecular Analysis,” at 9:40 a.m. on Thursday, Oct. 9. The presentation will focus on key features of anatomic pathology specimens that are relevant for selection of material for molecular studies and will include a discussion of various specimen types and specimen preparations. Advance Power Point didactic material will be available to explain key concepts, followed by a real-case review of a number of anatomic pathology cases.

Bridging the Knowledge Gap

Innovation and core knowledge are at the heart of ASCP 2014. The esteemed presenters of the named lecture series will provide strategies to bridge the knowledge gap between scientific research and its translation to evidence-based laboratory medicine.

An internationally recognized expert in breast pathology, Stuart J. Schnitt, MD, FASCP, will present the Arthur Purdy Stout Lecture, titled “Molecular Classification of Breast Cancer: Where Are We and Where Are We Going?” at 3:40 p.m on Thursday, Oct. 9. Molecular classification of breast cancer and molecular prognostic tests are increasingly used to guide the management of patients with breast cancer. Dr. Schnitt’s lecture will provide the latest information on the current status and future directions of molecular classification of breast cancer, molecular prognostic tests, and next-generation sequencing in the evaluation of breast cancers.

Dr. Schnitt is the director of the Division of Anatomic Pathology at Beth Israel Deaconess Medical Center, a consultant in pathology at Brigham and Women’s Hospital and the Dana-Farber Cancer Institute, and a professor of pathology at Harvard Medical School. He is a past president of the United States and Canadian Academy of Pathology. His research interests have focused primarily on risk factors for local recurrence in patients with invasive breast cancer and ductal carcinoma in situ treated with breast conserving therapy; benign breast disease and breast cancer risk; and stromal-epithelial interactions in breast tumor progression.

In an ever-evolving field, pathologists must continually acquire and maintain the skills necessary for lifelong learning. Henry Rinder, MD, FASCP, speaker for the Michele D. Raible Lecture for Residents, will present “Pathology & Laboratory Medicine 20.20,” at 2 p.m. on Thursday, Oct. 9. His talk will explore how pathologists will practice in the future and how they need to prepare for a changing environment.

Dr. Rinder is highly respected for his extensive knowledge of pathology and his dedication to continuously improving laboratory methods to enhance patient care. He is a professor of laboratory medicine and internal medicine, associate director of the Yale Pathology Residency Program, director of the Clinical Hematology Laboratory, and associate chair for clinical affairs at Yale School of Medicine. For many years, Dr. Rinder served as chair of the Resident In-Service Examination Committee, where he worked diligently to promote and enhance the Resident In-Service Examinations, or RISE. The lecture honors Dr. Raible’s commitment to delivering superior medical education and creating a lasting impact on the lives of medical students during her career.

This year’s presenter for the Barbara Castleberry Lecture for Laboratory Professionals, at 2 p.m. on Friday, Oct. 10, is Diana Mass, MA, MT(ASCP), former professor and director of the Clinical Laboratory Sciences (CLS) program at Arizona State University, one of the nation’s largest CLS programs. Her session, “Empowerment as a Function of Leadership and Peak Performance,” will focus on how leaders must create an organizational culture of empowered people who have the freedom to exhibit self-direction in achieving the institutional mission and goals. In this work environment, all staff members are considered leaders.


The breadth and scope of topics at ASCP 2014, coupled with the extraordinary expertise of this year’s presenters, provide an unparalleled opportunity for pathologists and medical laboratory professionals to prepare for the future during three days of high-intensity learning, networking, and beyond-the-lab knowledge that cannot be missed. To learn more about ASCP 2014 offerings or to register, visit www.ascp.org/ascp2014.
A World of ASCP Journals
All In the Palm of Your Hand.

And when we say “the palm of your hand,” we mean it!

The mobile app versions of ASCP’s AJCP, Lab Medicine, and Critical Values are now available. Stay connected to the latest news and scientific breakthroughs in your field.

Get the App!

ASCP Members

• If you chose journal apps during online renewal, just download the journal mobile apps through iTunes or GooglePlay and sign in with your ASCP login!

• If you want to switch your subscription from print to mobile app, call ASCP customer services at 800.267.2727, option 2.

Nonmembers

• Download the journal mobile apps through iTunes or GooglePlay and buy a subscription or individual issues.

For more info please visit: www.ascp.org/gettheapp
Join us in sunny Tampa for the event of the year!

**New Insights**
Dive into the latest innovations in pathology and laboratory medicine, and stay on top of the next emerging advances in the field

**Expert Speakers**
Learn from and interact directly with the most respected names in the industry

**Unforgettable Experience**
Witness the energy and excitement first-hand, alongside 1500+ professional peers from across the globe

[ascp.org/ASCP2014]