

LABORATORY INDUSTRY REPORT®

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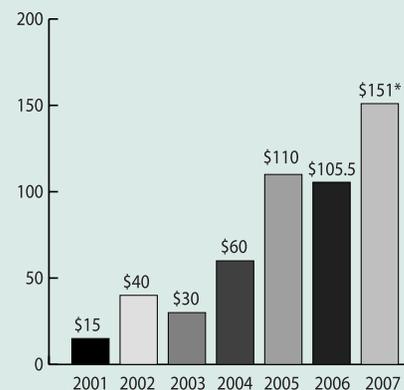
New Growth Market: Forensic DNA Testing

Federal funding for forensic DNA testing to help solve criminal cases is soaring and could represent a new revenue opportunity for clinical laboratories. In fiscal 2006 (ends Sept. 30, 2006), the federal government has appropriated \$105.5 million in spending for forensic DNA testing initiatives and as much as \$151 million could be spent in fiscal 2007.

The driving force behind the increased funding is President Bush's DNA Initiative (announced in March 2003), which calls for \$1 billion of spending between 2005 and 2009, aimed at reducing the backlog of forensic testing that currently exists in the U.S. criminal justice system. Through a process directed by the National Institute of Justice (NIJ), states may apply for federal funds to assist in testing the enormous backlog of untested cases. Of the \$1 billion earmarked for the program, approximately \$750 million will flow into publicly owned crime labs, which are expected to outsource a substantial portion to private-sector labs.

And federal spending on forensic DNA testing is expected to spur increased state spending as well. Several clinical labs, including LabCorp and Myriad Genetics, have developed small forensic DNA testing businesses, and more labs are likely to follow. For full details on the forensic DNA testing market opportunity, see *Inside the Laboratory Industry*, pp. 5-8. 🏠

Federal Spending on Forensic DNA Testing (\$ millions)



*Anticipated federal spending for fiscal 2007
Source: LIR from www.DNAresource.com, Sidoti & Company, and Orchid Cellmark

Pathologists Associated Embarks On Growth Strategy

Within the space of 30 days, Pathologists Associated (PA—Muncie, IN), a for-profit independent laboratory owned by Cardinal Health Ventures and East Central Indiana Pathologists (a local pathology group), has completed two acquisitions that will allow it to offer statewide clinical lab services and give it a platform for growth in the esoteric testing market, Charles Miraglia, M.D., chief executive of PA, tells LIR.



Charles Miraglia, M.D., became president and chief executive of Pathologists Associated in January 2004. Previously, he was director of pathology laboratories for Clarian Health Partners in Indianapolis.

■ **PATHOLOGISTS ASSOCIATED EMBARKS ON GROWTH STRATEGY**, from page 1

On December 1, PA acquired Midwest Hemostasis and Thrombosis Laboratories (MHTL-Muncie, IN), a \$2-million-per-year coagulation lab that serves 100 clients in 15 states. MHTL was owned by Doug Triplett, M.D., who has retired, and Jeffrey Dlott, M.D., who has accepted a position at Quest Diagnostics.

On December 30, PA bought Follas Laboratories (Indianapolis), a \$5-million-per-year lab that specializes in infertility and ob/gyn-related testing. Follas was founded in 1979 by two brothers: Dan and Evan Follas. Miraglia says the main lab for Follas in Indianapolis will now serve as the esoteric and cytology lab center for the combined company. Dan Follas will be executive vice president of strategic operations at PA, and Evan Follas will be senior vice president of sales and marketing.

Miraglia would not disclose the purchase prices for MHTL and Follas Labs, but said PA financed both acquisitions with existing cash (no bank debt) and earn-out agreements.

Altogether, PA, Follas Labs, and MHTL will have annual revenue of approximately \$44 million, 517 employees, and more than 800 clients. And he says all three lab companies are profitable.

But Miraglia believes the combined company will also be able to accelerate its growth rate. He says PA now has a sales staff of six employees and will be adding more. In addition, he sees opportunities to broaden the esoteric testing menus at Follas and MHTL. Among the tests that will be added this year are cystic fibrosis genetic analysis, maternal screening-quad profile, anti-annexin V antibodies, anti-prothrombin antibodies, von Willebrand multimers, and ADAMTS-13 activity and inhibitor.

Miraglia also notes that PA and Follas Labs submitted a joint bid for the Indiana region in response to United Healthcare's RFP in September and have made it to

the next round of negotiations. United covers 779,000 members in Indiana, including approximately 160,000 HMO and POS enrollees.

Other initiatives include continued deployment of PA's internally developed Web connectivity systems at physician office clients. As of year-end 2005, Miraglia says PA's results reporting system (WebSCORE) was being used by

roughly 100 clients. In addition, he says PA currently receives more than half of its test orders electronically via its WebPAL system. Miraglia notes that PA has an information technology staff of 20 people.

PA's competition includes Quest Diagnostics in northern Indiana and LabCorp in the south. Its biggest competitor in the middle is Mid America Clinical Laborato-

The New Pathologists Associated

	<i>Pathologists Associated</i>	<i>Follas Laboratories</i>	<i>Midwest Hemostasis and Thrombosis</i>	<i>Combined</i>
Annual revenue	\$37M	\$5M	\$2M	\$44M
Billable test volume	4.0M	0.5M	50,000	4.6M
Employees	450	60	7	517
Patient service centers	37*	20	0	57
No. of clients	650	100	100	850
*Includes 12 PSCs located at physician offices		Source: Pathologists Associated		

The Indiana Lab Market



ries (Indianapolis), a joint venture lab owned 44% by Quest with the remainder owned by several hospitals and Colab LLC (a local pathology group). Independent lab competitors include Alverno Clinical Labs, South Bend Medical Foundation, Terre Haute Medical Lab, and DCL Medical Labs.

Miraglia says PA's primary focus will continue to be the state of Indiana, but says expansion into nearby markets (e.g., Louisville) is being considered.

On the challenges of competing with the two big commercial labs, Miraglia, notes: "Our pathologists and technologists are readily available for telephone consultation and take great pride in the personal service they provide. We feel it is our responsibility to become an extension

of the physician's practice to enhance patient care. This is much more difficult for the "mega" labs to do at a distance." 🏠

Apax Completes Acquisition Of Spectrum

Apax Partners, a New York-based investment firm, has completed its acquisition of an 80% stake in Spectrum Laboratory (Greensboro, NC). Most of the remaining 20% of Spectrum is owned by the Moses Cone Health System. Spectrum's chief executive, Nate Headley, and a few small investors also hold a small stake. Headley will remain president and chief executive and has signed a new four-year employment agreement.

The purchase price paid by Apax has not been disclosed, although Headley tells *LIR* that the price was in line with current market valuations and compared favorably with transactions completed in 2005.

Over the past five years, Spectrum's outreach business has grown at an average annual rate of 28.5%, according to Headley. In 2005, Spectrum generated \$89 million in net revenue from its outreach business and another \$31 million from inpatient hospital lab management contracts. This year, Headley expects Spectrum's outreach business to grow by 15% to 20% (excluding any potential acquisitions).

Headley says Spectrum is now considering lab acquisitions within its current five-state market (North Carolina, South Carolina, Georgia, Virginia, and Tennessee). 🏠

UnitedHealth Completes Acquisition of PacifiCare

UnitedHealth Group (Minnetonka, MN) sealed its \$9.2 billion acquisition of PacifiCare (Cypress, CA) on December 20. Together, the two companies provide healthcare insurance to 27 million people, or nearly 10% of the U.S. population. To get approval for the acquisition, California regulators are making the merged company pay \$250 million for healthcare for the poor.

California Insurance Commissioner John Garamendi said the \$250-million investment the state is requiring the companies to make is based on the deal's "despicable" \$300 million in executive compensation (see *LIR* editorial, January 2006, p. 9). The companies will invest \$200 million in clinics and hospitals that serve the poor and will make \$50 million in charitable donations including medical education and outreach to people who may be eligible for public programs.

United is now the second-largest healthcare insurance company in the United States. Earlier last year, WellPoint merged with Anthem to form the nation's largest insurer with 32 million enrollees. Nationally, just six healthcare insurers (WellPoint, United, Aetna, Cigna, Kaiser, and Humana) now provide coverage for more than half of insured Americans.

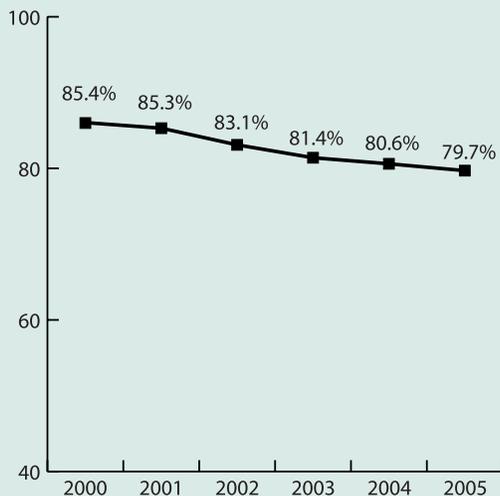
Separately, United reported net income of \$3.3 billion, or \$2.48 per share, for full-year 2005, up from \$2.6 billion, or \$1.97 per share, for full-year 2004; revenue increased 22% to \$45.4 billion. Last year, United spent 79.7% of the premiums it collected on medical care, the rest went to overhead costs, according to company reports.

ACL Laboratories Makes It to the Next Round

Add ACL Laboratories (West Allis, WI) to the list of labs making it to the next round of negotiations with United for its laboratory services contracting effort. ACL is a for-profit C-corporation that manages the labs at Aurora Health Care (Milwaukee) and Advocate Health Care (Chicago). ACL employs 2,020 FTEs that performed 15 million billable tests in 2005, including 35% to 40% from outreach volume. If it's able to work out a final contract, ACL would provide lab services to United members in Wisconsin (759,000 members) and Illinois (913,000 members).

Although *LIR* hears that there is likely to be a delay, United is scheduled to announce the final contract winners on February 26, for contracts that will become effective on Jan. 1, 2007. In addition to Quest Diagnostics and LabCorp, other labs making it to the next round of negotiations include Bio-Reference, which is collaborating with United Laboratory Network in the New York region; Clinical Pathology Labs (Texas); Cognoscenti Health Institute, which is developing a lab network in Florida; Joint Venture Hospital Labs (Michigan); Pathologists Associated (see pp. 1-3); Regional Lab Alliance (Kansas City); Spectrum Laboratory (South-east); and Sunrise Medical Laboratory (New York). 🏠

United's Medical Cost Ratio*



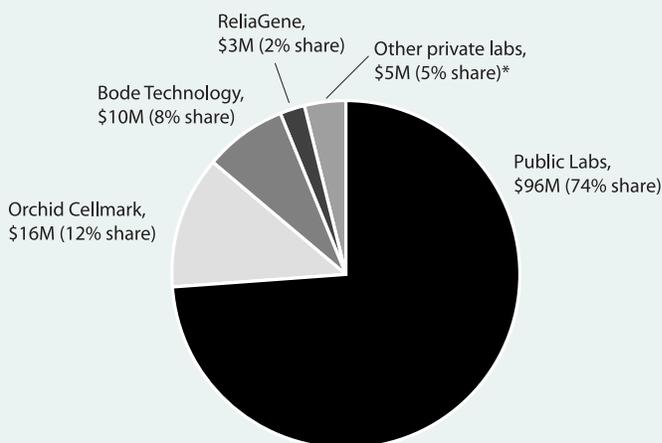
*Calculated by dividing total medical costs by total healthcare premiums

Source: *LIR* from United's financial reports

Market Opportunity: Forensic DNA Testing

The current market for forensic DNA testing in the United States is estimated at \$130 million, which includes \$110 million per year from federal funding and \$20 million from state funding. There are 351 publicly owned crime labs in the United States that account for an estimated 74% of the market.

The \$130 Million U.S. Forensic DNA Testing Market



*includes Commonwealth Biotechnologies, DNA Diagnostic Center, LabCorp, Myriad Genetics, DNAPrint Genomics, Identity Genetics, Identigene
Source: LIR estimates

However, more and more forensic DNA testing is being outsourced to private lab companies because of capacity constraints at public crime labs. The average public crime lab operates on a budget of only \$1.3 million and takes nine to 18 months to turn around test results for evidence samples collected at crime scenes, according to Orchid Cellmark's CEO Paul Kelly, M.D.

Privately held forensic DNA labs currently account for 26% of the U.S. market (or \$34 million per year) and generally they can turn around forensic casework results in less than 30 days, although backlogs are growing here as well because of growth in the market, notes LIR.

The Forensic Casework Market Opportunity

The forensic casework market, which involves DNA testing for specimens collected at crime scenes, is expected to grow dramatically over the next five years as federal funding increases under President Bush's DNA Initiative and the Justice for All Act of 2004, which have authorized \$750 million for DNA testing programs. The aim is to reduce the backlog of forensic testing that

currently exists in the criminal justice system. The total number of crime cases with possible biological evidence either still in the possession of local law enforcement or piling up at forensic laboratories is estimated to be over 500,000 pieces, according to the U.S. Department of Justice.

Private labs—like Orchid, Bode Technology, ReliaGene, etc.—are expected to play a major role in helping to eliminate the backlog of forensic casework. Through contracts with local law enforcement agencies (e.g., LAPD, NYPD, Illinois State Police, etc.), these labs receive biological evidence from a crime scene, such as blood stains, semen, hair, skin, bone, teeth, and even minute traces of saliva from cigarette butts

Roles of Forensic Evidence in

Criminal Investigation

- Identify a person
- Exclude a suspect
- Link suspect, victim, and crime scene
- Link weapon to victim
- Link witness to scene
- Prove or disprove an alibi
- Reconstruct the scene
- Provide investigative leads

Source: John M. Butler, Ph.D., National Institute of Standards and Technology

or postage stamps. Using PCR (polymerase chain reaction) based tests, DNA profiles from evidence are created to be compared with that of a suspect or victim.

Private labs typically charge \$500 to \$1,000 for each casework sample tested (prices go up depending on the size, level of degradation, and age of the sample). And prices can be as high as \$2,500 for more complex testing like mitochondrial DNA analysis.

The CODIS Testing Market Opportunity

The FBI manages a national felon database known as the Combined DNA Index System, or CODIS. The database was created in 1998 and currently contains about 1.5 million DNA profiles of convicted criminals. CODIS enables federal, state, and local crime labs to exchange and compare DNA profiles electronically, thereby linking crimes to each other and to convicted offenders.

Most states currently require convicted felons to get a cheek swab that is sent to a crime lab for DNA profiling. These profiles are added to CODIS. Because of the high quality of the samples received, most private labs charge only \$20 to \$30 per DNA profile made for CODIS. Prior to 2001, only nine states required all convicted felons to submit DNA samples, today there are 43.

On January 5, President Bush approved federal legislation that significantly expands the potential CODIS testing market. The provisions, which became law as part of the Department of Justice Reauthoriza-

tion bill (HR 3402), grant state and federal law enforcement authorities the right to upload the DNA profiles of all arrestees into CODIS. It also authorizes DNA testing for immigrants caught trying to enter the country illegally. Prior to this legislation, only convicted felons had DNA profiles taken and loaded into CODIS. Currently only five states require DNA profiling of both convicted felons and arrestees, but the new federal legislation may spur more states to do so.

Robert Willoughby, stock analyst at Banc of America Securities, notes that the latest state to pass legislation supporting all arrestee testing was California. Proposition 69 passed in the last election (November 2004) and requires collection of DNA samples from all felons for submission into California's statewide database. And, in five years, California will expand the program to include DNA profiles from adults arrested for or charged with any felony. Previously in California, DNA samples were required to be taken only from persons convicted of serious felony offenses.

Over the next five years, Orchid's Kelly estimates that 22 million DNA profiles for convicted felons will be added to CODIS. And he believes the new legislation authorizing testing for arrestees and illegal immigrants could potentially add another 500,000 DNA profiles per year.

Funding for Forensic DNA Testing

The National Institute of Justice (NIJ) is the federal agency that reviews requests for funding from the states for forensic DNA testing. State governments then allocate funds to state or local law enforcement agencies and police departments, which then can outsource business to private labs. To get the busi-

Typical Pricing by Private Labs for DNA Profiling

CODIS testing	\$ 25
Forensic casework (high quality specimen)	500
Forensic casework (degraded specimen)	1,000
Mitochondrial DNA analysis	2,500

Source: LIR

ness, private labs must market their services mainly to public officials and government agencies through competitive bidding.

There have been bureaucratic delays in transferring the funds from the NIJ to the states and then to private labs. For example, as of Sept. 30, 2005, fewer than 20 of the more than 50 potential contracts had been awarded. Nonetheless, federal funding for forensic DNA testing continues to increase, and there is a growing backlog of contracts for private labs to bid for.

To get an idea of what the typical contract looks like, *LIR* reviewed a contract with the State of New Jersey that was awarded to Reliagene Technologies in May 2004. The contract has a three-year term and involves DNA profiling of criminal cheek swab saliva specimens for the New Jersey State Police and filing into the CODIS database.

The state projected the need for 27,000 specimens to be tested each year plus a backlog of 120,000 specimens. The state required the winning bidder to be accredited by either the American Society of Crime Laboratory Directors or the National Forensic Science Technology Center. Reliagene won the contract with a bid of \$28 per specimen; Orchid Cellmark was runner up with a bid of \$29 per specimen.

The key to winning contracts for forensic casework is turnaround time, according to Tim Schellberg, a partner with the governmental affairs and law firm of Smith Alling Lane (Tacoma Washington, and Washington DC), which represents, among others, the Washington Association of Sheriffs and Police Chiefs and Applied Biosystems, a maker of forensic DNA testing instrument systems. Police departments in most states are now able to match specimens obtained in rape cases with DNA profile databases about 30% to 40% of the time, says Schellberg. "Law

enforcement has recognized the power of DNA testing, and they want lab results quickly," he adds.

Will the U.S. Follow the U.K. Market Path?

The United Kingdom is the most advanced country when it comes to the use of forensic DNA testing, and some market observers believe the United States will follow the same path. Clint Kuboyama, stock analyst at Sidoti & Company, estimates that the U.K. market is \$145 million and growing 5% per year. He says that unlike in the United States, where public crime labs perform most DNA testing, testing is completely outsourced in the United Kingdom.

The United Kingdom's national forensic database contains 2.9 million DNA profiles of convicted criminals (5% of the total population) and the database has made more than 580,000 suspect-to-crime-scene matches since its inception in 1995. Kuboyama notes that when DNA evidence is taken from a crime scene in the United Kingdom, the sample matches an existing profile in the database about 50% to 60% of the time.

Kuboyama says the success rate has lowered the cost of investigating and convicting suspects, improved timeliness, and made the United Kingdom a model to replicate in the United States.

The largest forensic crime lab company in the United Kingdom is Forensic Science Service, a spin out from Scotland Yard that has 80% share. The Laboratory of the Government Chemist, a privatized government agency, and Orchid each have a 10% share, according to Kuboyama.

LIR notes that if forensic testing in the United States were to mirror the United Kingdom, the U.S. market would grow from its current \$130 million per year to nearly \$1 billion. This estimate is based on the fact that the U.S. population (298 million) is six times the size of the United Kingdom's population (52 million).

A Snapshot of Private Forensic DNA Testing Labs

There are approximately one dozen privately held forensic DNA testing labs competing for outsourcing contracts with state and local law enforcement agencies. Here's a quick look at them:

Orchid Cellmark operates the largest private forensic DNA testing business in the United States, with an estimated annual revenue of \$16 million. The company operates two labs focused on forensic casework in Dallas, Texas, and a third lab focused on CODIS testing in Nashville, Tennessee.

Founded in 1995, **Bode Technology Group** (Springfield, VA) is a wholly owned subsidiary of ChoicePoint (Alpharetta, GA), which provides a variety of identification and credential verification services to insurance companies, private employers, and government agencies, including credit checks, pre-employment background screenings, and drug testing administration services. With an estimated \$10 million of annual revenue, Bode is the second-largest forensic DNA testing company in the United States.

ReliaGene Technologies (New Orleans, LA), which has about 75 employees, was founded by Sudhir K. Sinha, Ph.D., president and laboratory director, in 1990. The company generates approximately \$7 million to \$8 million in annual revenue, including an estimated \$3 million per year from forensic DNA testing. Its largest contracts include the California Dept. of Justice - Bureau of Forensic Services and the Washington State Patrol Forensic Laboratory Services Bureau. ReliaGene also performs DNA paternity testing and cancer diagnostic research testing.

Commonwealth Biotechnologies (Richmond, VA) expanded its presence in the forensic

DNA testing market through the \$1.1-million acquisition of **Fairfax Identity Laboratories** (Fairfax, VA) in December 2004. Commonwealth generated revenue of approximately \$8 million in 2005, including an estimated \$1 million from forensic DNA testing.

Myriad Genetics (Salt Lake City, UT), which generates about \$85 million per year from genetic testing services (predominantly BracAnalysis), also operates a small forensic identity testing service.

LabCorp (Burlington, NC), the second largest clinical lab company in the nation, operates a small forensic identity testing lab in Research Triangle Park, North Carolina.

Other forensic DNA testing labs include: **Identity Genetics** (Brookings, South Dakota), a private company founded in 1995 has estimated annual revenue of between \$1 million and \$2 million; **DNAPrint Genomics** (Sarasota, FL) generated total revenue of about \$1.5 million in 2005, including roughly \$500,000 from its forensic DNA testing product, DNA Witness; **Identigene** (Houston, TX), which was founded in 1993 and has an estimated \$2 million to \$3 million in annual sales; **DNA Diagnostic Center** (Fairfield, OH); and **DNA Security Inc.** (Burlington, NC).

In addition, a new DNA testing lab company, **Chromosomal Laboratories** (CL-Phoenix, AZ) was started up early last year. Bolin says he won't be surprised if other labs are started up to take advantage of the fast-growing forensic testing market. He also thinks Quest Diagnostics could enter the market and LabCorp might expand its presence. He believes that some of the larger existing forensic testing lab companies are being overwhelmed by volumes and not meeting turnaround time and service expectations of local law enforcement agencies. 🏠



Medicare Contractor To Cover Expensive Oncotype DX Cancer Test

Genomic Health (Redwood City, CA) says that National Heritage Insurance Company (NHIC), the contractor that administers Medicare programs in California, has established a coverage policy for the company's Oncotype DX breast cancer test, which quantifies the likelihood of breast cancer recurrence and predicts the likelihood of response to chemotherapy.

NHIC has agreed to cover nearly all of the test's \$3,460 list price, according to Randy Scott, Ph.D., chief executive of Genomic Health. The coverage is scheduled to become effective for claims for services performed on or after February 27. Scott believes that as much as 20% of Genomic Health's revenues may be derived from tests billed to Medicare.

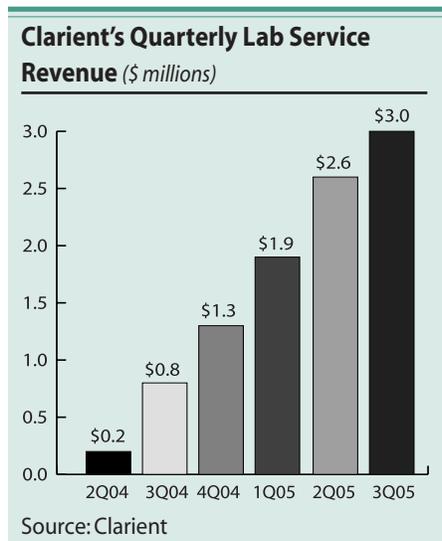
The 125,000 women in the United States that are diagnosed each year with estrogen-sensitive tumors whose cancer has not spread to the lymph nodes are candidates for using the test, which can identify the tumors most likely to recur after surgery and treatment with hormonal drugs.

LIR notes that if all 125,000 eligible women received the test each year, it would cost \$412 million per year (assuming test price of \$3,300, after discounts). But Scott points to a study published in the *American Journal of Managed Care* (May 2005) that concluded that use of the test would result in an increase in quality adjusted life years and reduce overall healthcare costs by an average of about \$2,000 per patient.

As of the third quarter of 2005, approximately 600 OncoType DX tests were being ordered by physicians each month. 🏠

Clariant Moves Into New Laboratory

Clariant (Aliso Viejo, CA) says it's moved its laboratory about 10 miles south to a new 25,000-square-foot facility in Aliso Viejo in southern California. Clariant says the move was motivated, in part, by capacity constraints at its former 11,000-square-foot facility in Irvine, California.



A spokeswoman tells *LIR* that Clariant plans to move its administrative offices to a 30,000-square-foot space in Aliso Viejo in mid-April. Together, the new lab and administrative building is costing Clariant \$4.5 million to \$5 million to construct.

Clariant, formerly named Chromavision, launched its anatomic pathology lab services business in mid-2004. Heather Creran, formerly with Impath, is executive vice president of diagnostic services for Clariant; Kenneth Bloom, formerly with US Labs, is medical/laboratory director.

In the three months ended Sept. 30, 2005, the company reported lab service revenues of \$3.03 million from 7,700 patient cases at an average revenue of \$393 per case (after discounts); about one-half of the cases were related to breast cancer. 🏠

New Hampshire Leads In Pap Screening Rates

New Hampshire has the highest Pap test screening rate in the nation, according to a new study released by the nonprofit group Women in Government (Washington, D.C.). Within the past three years, 89.7% of women in New Hampshire received a Pap test. The next best screening rate was in Maryland, where 89.3% of women got a Pap test. The two states with the lowest Pap screening rates are Utah (78.2%) and Idaho (78.8%).

The study also showed that there are only five states in the country whose Medicaid programs don't cover testing for human papillomavirus (HPV): California, Hawaii, Pennsylvania, South Dakota, and Tennessee.

The study gave an overall score to each state based on their efforts to prevent cervical cancer. Minnesota received the highest score of 81% (13 out of 16 measured points), followed by Illinois, Maryland, North Carolina, and Rhode Island, each with 75%.

The lowest-scoring state was Tennessee (38%), followed by California, Idaho, Kentucky, South Dakota, and West Virginia, each with 44%.

Among the actions the study recommended that states should take were:

1 Have each state establish and maintain a central cervical cancer information and resource center. This center could employ and strengthen partnerships to promote a "whole woman" approach to cervical cancer prevention statewide.

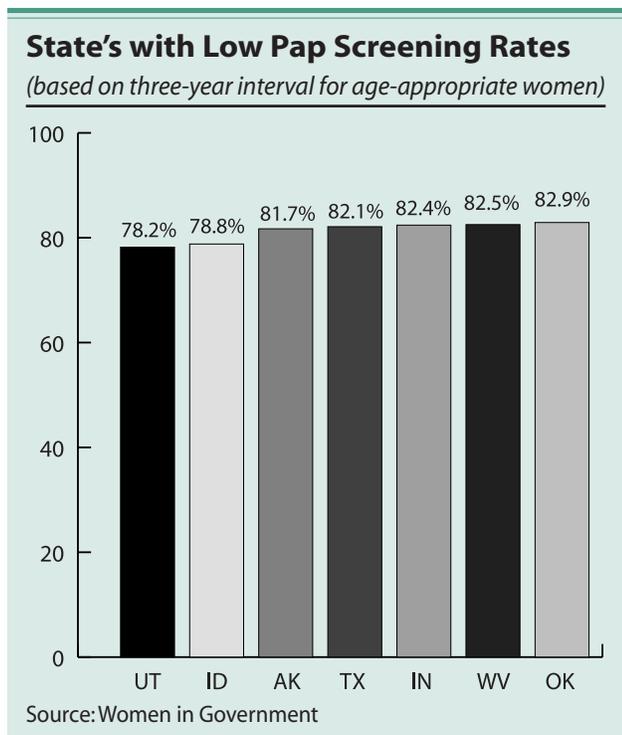
2 Measure and track the burden of illness and prevention measures within each state. Efforts should include identifying needed data and assessing areas

of disparity and the current intervention effectiveness. In addition to other factors, a state's ability to track cancer rates impacts its overall ability to focus on cancer prevention.

3 Develop, implement, and evaluate public awareness and educational outreach campaigns. Identifying women at risk for developing cancer, or detecting disease in women early in the disease process, can save women the pain and suffering associated with cervical cancer diagnosis and will save states considerable resources in treating the disease.

4 Develop innovative new healthcare delivery systems to improve access to accurate screening for all women, including appropriate follow-up services, monitoring, treating, and tracking cervical cancer.

5 Provide support for and awareness of public education and legislative initiatives. 🏛️





Lab Stocks Fell 8% In 2005; LabOne Was Best Performer

Thirteen laboratory stocks fell an unweighted average of 8% last year versus respective gains of 3% and 1% for the S&P 500 Index and the Nasdaq. The NYSE Healthcare Index was up 5.5% in 2005. Overall, six lab stocks rose in price and seven fell.

LabOne was the best-performing lab stock in 2005 with a gain of 37%. The company was acquired by Quest Diagnostics on Nov. 1, 2005, for \$43.90 per share in a transaction that valued LabOne at \$934 million.

Specialty Labs (Valencia, CA) was up 18% to end the year at \$13.05 per share. The company is being acquired by **AmeriPath** (Riviera Beach, FL) for \$13.25 per share.

Stock prices for the three publicly traded routine clinical lab companies—**Bio-Reference**, **LabCorp**, and **Quest Diagnostics**—were each up an identical 8%.

The worst performing lab stock was **Clariant** (San Juan Capistrano, CA), which specializes in cancer testing and was formerly known as ChromaVision Medical Systems. Clariant shares fell 40% to \$1.30 in 2005.

Enzo Biochem (Farmingdale, NY), which operates a reference lab in Long Island, New York, declined by 36% to \$12.42 per share.

At year-end 2005, the least expensive publicly traded lab company was **Psychemedics** (Acton, MA), which specializes in hair testing for drugs of abuse. Psychemedics trades at a P/E ratio of 19 (based on trailing 12 months earnings) and has a dividend yield of 2.9%.

As of Dec. 31, 2005, Quest had a P/E ratio of 20 and traded at 1.9 times its annual revenue. LabCorp also had a P/E of 20 and traded at 2.3 times its revenue. 🏠

Lab Stock Review for 2005

Company (ticker)	12/31/04 Price	12/31/05 Price	52-Week % Chg	P/E Ratio	Div. Yield	Market Cap (\$ millions)
LabOne (LABS)*	\$32.04	\$43.90	37%	*	*	*
Specialty Labs (SP)	11.04	13.05	18	NA	...	\$312
Bio-Reference (BRLI)	17.40	18.81	8	32	...	243
LabCorp (LH)	49.82	53.85	8	20	...	7,157
Quest Diagnostics (DGX)	47.78	51.48	8	20	0.7%	10,404
Psychemedics (PMD)	12.95	13.80	7	19	2.9	72
Myriad Genetics (MYGN)	22.51	20.80	-8	NA	...	645
Medtox (TOX)	9.00	7.58	-16	26	...	62
Genomic Health (GHDX)**	12.00	9.11	-24	NA	...	223
Monogram Biosciences (MGRM)	2.79	1.87	-33	NA	...	238
Orchid Cellmark (ORCH)	11.50	7.60	-34	NA	...	187
Enzo Biochem (ENZ)	19.47	12.42	-36	NA	...	400
Clariant (CLRT)	2.16	1.30	-40	NA	...	65
Unweighted average			-8			

*LabOne was acquired by Quest on Nov. 1, 2005, at \$43.90 per share. **Genomic Health went public through an IPO on Oct. 4, 2005, at \$12 per share. NA=The company has reported a loss in the most recent four quarters. Source: LIR



DNA testing technology is precise, but human beings can make mistakes. Police departments around the country are increasingly relying on DNA testing to help solve crimes, and the technology and science behind the testing is 100% accurate. However, the people that collect the samples and run the instruments are not infallible.

In 2004, for example, it was discovered that forensic scientists at Washington State Patrol's Tacoma crime lab had contaminated tests or made other mistakes while handling the evidence in at least 23 cases involving major crimes over a three-year period.

And last summer, the Illinois State Police canceled its DNA testing contract with Bode Technology (and switched to Orchid Cellmark) after finding that Bode analysts had failed to recognize semen on evidence in 22% of rape cases that should have then been subjected to DNA testing.

Then in November 2004, Orchid Cellmark notified the Los Angeles Police Department that it had fired a DNA analyst who falsified test results for at least two dozen cases.

Even state-of-the-art crime labs make mistakes. In 2002, the FBI's crime lab in Quantico, Virginia, was hit by scandal when a DNA analyst was caught falsifying her lab reports over a two-year period.

These examples reveal that even the most advanced DNA testing technology has an Achilles' heel: human error. 🏛️

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