



### ■ **MT: one of best healthcare careers.**

Laboratory technologists and laboratory technicians are listed as a top career for 2010 in *U.S. News & World Report's* latest annual list of the top 50 careers, behind X-ray technician and veterinarian. The analysis was based on the U.S. Labor Department's latest job growth projections for 2008 to 2018. It highlights occupations that are expected to add jobs above the anticipated 10% average growth rate over the next decade and which will also provide a better-than-average median income. Medical technologist (MT), clinical laboratory scientist (CLS), and medical laboratory technician (MLT) jobs are expected to rise 16%. The fastest job growth will come from clinical labs, pathology labs, and physician office labs. Last year, the pay range for a laboratory technologist was \$28,420 to \$44,310, which puts overall median pay at \$35,380, with some lab tech pay packages topping \$54,000.

### ■ **Blood test reveals sex of unborn baby.**

A simple blood test can reveal the sex of a fetus, according to researchers from the University of Amsterdam, who published a study in the January 2010 issue of *Obstetrics and Gynecology*. The researchers sought to determine the diagnostic accuracy of non-invasive fetal sex determination in maternal plasma. Real-time polymerase chain reaction, or RT-PCR, was performed for the SRY gene and multicopy DYS14 marker sequence. Between 2003 and 2009, women who were between eight and 10 weeks pregnant were tested; DNA from the blood samples was examined to predict the sex of babies in 186 pregnancies. Researchers predicted 105 males and 81 females; they were correct every time.

### ■ **Unsafe practices likely caused hepatitis C outbreak.**

*The Las Vegas Review-Journal* reports that unsafe injection practices at the Endoscopy Center of Southern Nevada and affiliated clinic Desert Shadow Endoscopy Center, including reuse of single-patient syringes and anesthetic vials, most likely led to as many as 115 patients contracting hepatitis C, according to the Southern Nevada Health District's final investigative report on the outbreak that began in December 2007. The unsafe injection

practices prompted health officials to notify more than 63,000 clinic patients that they might have been exposed to hepatitis, HIV, and other blood-borne diseases — the largest patient notification of its kind in U.S. history. Costs for the health district investigation were more than \$828,000, added to the nearly \$14 million to test thousands of clinic patients and future medical costs for hepatitis treatment, the final cost for the outbreak will range from \$16 million to \$21 million, the report estimated.



## Infectious diseases

### ■ **First case of XXDR-TB found in U.S.**

The first case of extremely drug-resistant tuberculosis (XXDR-TB) in the United States was diagnosed in a Peruvian student living in Florida. The 19-year-old studying in the United States was diagnosed with contagious, aggressive, extremely drug-resistant tuberculosis, which has never before been seen in the United States. This form of drug-resistant TB is virtually impervious to all the drugs that are used to treat the disease. XXDR-TB is so rare that only a handful of other people in the world are thought to have had it. The Peruvian student was quarantined at A.G. Holley, a public-health hospital in Lantana, FL, for 19 months undergoing TB treatments.

### ■ **Antibiotic-resistant *Salmonella Typhimurium* emerges.**

A new multidrug-resistant strain of *S typhimurium* is causing life-threatening disease in Africa. The new strain, ST313, is resistant to several commonly used antibiotics, may spread from person to person, and infects vulnerable children and adults in many regions of sub-Saharan Africa — leading to death in up to one in four cases, according to a study published in the Dec. 8, 2009, edition of *Genome Research*. A team of scientists from the Wellcome Trust Sanger Institute, Cambridge, U.K., studied samples of the bacterial DNA extracted from blood samples of African patients with severe symptoms of infection to produce a high-quality reference genome sequence to find the genetic differences between ST313 and strains associated with milder disease. Researchers say this deadly strain has lost around one in 50 of the genes found in the typical *S typhimurium* — a classic sign that it may be becoming more closely

adapted to humans, and it has acquired a block of genes that make it resistant to common antibiotics. The team's findings also suggest that ST313 may be spreading by a method not seen before in *S typhimurium*. The pathogen normally circulates among animals and is introduced to humans through food. ST313 may be passing predominantly from person to person.

### ■ **Salmonella outbreak linked to pet frogs.**

A 31-state salmonella outbreak first detected in Utah has been linked to pet frogs. The U.S. Centers for Disease Control and Prevention (CDC) started a national investigation to find the source of the outbreak after five people in Utah were sickened by the *Typhimurium* strain of *salmonella*. In all, 85 people across several states became ill between spring 2009 and fall 2009, and nearly two-thirds reported some contact with frogs. The bacteria was likely spread through contact with the tanks' water, not the frogs themselves, according to the report; the bacteria were spread after people washed frog aquariums in bathroom and kitchen sinks. Turtles have been the source of other salmonella outbreaks, but this is the first time amphibians have been blamed, according to the CDC.



## HIV/AIDS

### ■ **Molecule may help block HIV transmission.**

Researchers say they have discovered that the molecule surfen appears to make sexual transmission of HIV less likely, therefore has the potential to become an ingredient in topical microbicides that aim to reduce the likelihood of infection through semen, according to a report to be published in an upcoming print issue of the *Journal of Biological Chemistry*. Surfen is a small molecule that interferes with the action of a factor in semen called semen-derived enhancer of viral infection (SEVI). SEVI is thought to increase the likelihood of HIV infection by 100,000 times in some cases because it appears to help the virus attach to cells. Supplementing current HIV microbicide candidates with SEVI inhibitors, such as surfen, might help lower transmission rates of HIV, say researchers at San Francisco's Gladstone Institute of Virology and Immunology.



## Zoonotics

■ **More diseases to pass from animals to humans.** Increased environmental disruptions, global warming, globalization, and urbanization are set to trigger new pandemics of infectious diseases, according to medical experts. A team of scientists from the U.S. Environmental Protection Agency found that nearly 45 diseases have passed from animals to humans in the past two decades. HIV, passed from chimpanzees in West Africa more than a century ago, is the best known example of a disease passed from animals to humans. The H1N1 flu pandemic that emerged in Mexico in 2009 resulted from the mixing of viruses that infected pigs, birds, and humans to create a new pandemic strain. Researchers believe the destruction of plant and animal habitats, the loss of species, and changes that have brought more humans into closer contact with animals than at any stage in human history mean new diseases from contact with animals will continue in this century.



## Blood

■ **Synthetic red blood cells developed.** Scientists at University of California-Santa Barbara, in collaboration with scientists at University of Michigan, have developed synthetic particles that closely mimic the characteristics and key functions of natural red blood cells, including softness, flexibility, and the ability to carry oxygen. The synthetic red blood cells (sRBCs) retain 90% of their oxygen-binding capacity after a week. The sRBCs also have been shown to deliver therapeutic drugs effectively and with controlled release, and to carry well-distributed contrast agents for enhanced resolution in diagnostic imaging. Researchers succeeded in synthesizing the particles by creating a polymer doughnut-shaped template, coating the template with up to nine layers of hemoglobin and other proteins, then removing the core template. In addition to synthesizing particles that mimic the shape and properties of healthy RBCs, the technique — detailed in the online edition of *Proceedings of the National Academy of Science* — can also be used to develop particles that mimic the shape and properties of diseased cells, such as those found in sickle-cell anemia and hereditary elliptocytosis.



## New studies

■ **Routine tests predict type 2 diabetes.** The future development of type 2 diabetes mellitus may be predictable in children through routine pediatric exams and lab tests, according to a pair of studies in the January *Archives of Pediatrics & Adolescent Medicine*. Scientists tracked 1,067 girls starting at 10 years of age in the National Growth and Health Study (NGHS) and 822 children aged 6 to 18 years in the Princeton Follow-up Study (PFS), and correlated common pediatric measures and tests to type 2 diabetes at ages 19 and 39 years. In the NGHS, insulin in the top fifth percentile was the strongest type 2 diabetes predictor, while in the PFS, body mass index and systolic blood pressure in the top fifth percentile, parental diabetes history, glucose of at least 100 mg/dL, and high triglycerides were predictors of future type 2 diabetes.

■ **New findings on toxoplasmosis parasite.** Researchers at Albert Einstein College of Medicine of Yeshiva University have made a new discovery about an invasive parasite that infects up to a quarter of the world's population. The study, involving the single-celled parasite *Toxoplasma gondii*, was published in the December issue of the *Journal of Immunology*. People become infected by ingesting *T. gondii* oocysts, and once the parasite is swallowed, its tachyzoites multiply by infecting cells and then reproducing several times within each cell. Finally, the parasitic cargo ruptures its host cell and exits to infect new cells. Prior studies had suggested that tachyzoites progress through five to seven cell-division cycles over two to three days before rupturing the host cell and initiating a new round of infection. But the Einstein team discovered that in infected mice the multiplication cycle goes much faster: parasites ruptured the cells in about six hours after undergoing only one or two cell-division cycles.

Visit [www.mlo-online.com](http://www.mlo-online.com) for a current list of upcoming conferences. □

**K-ASSAY®** The Assay You Can Trust . . .

## Immunoassay Reagents for Chemistry Analyzers™

### Lipoprotein Assays

- Apolipoprotein AI
- Apolipoprotein B
- Lipoprotein(a)

For *in vitro* diagnostic use.

- Apolipoprotein AII
- Apolipoprotein CII
- Apolipoprotein CIII
- Apolipoprotein E

For research use only in the U.S.  
Not for use in diagnostic procedures.

#### 🔑 For use on most chemistry analyzers including:

Abbott Aeroset®  
Abbott Architect® C8000®  
Alfa Wassermann ACE®  
Alfa Wassermann Alera®  
Bayer Advia® 1650  
Bayer Advia® 2400

Bayer Opera®  
Beckman Synchron CX®  
Beckman Synchron LX®  
Cobas Mira®/ Fara®  
Dade Dimension®  
ILAB 600

ILAB 900/1800  
Olympus® AU™ series  
Roche/Hitachi 700 & 900 series  
Stanbio Sirrus®

**KAMIYA BIOMEDICAL COMPANY**  
12779 Gateway Drive, Seattle, WA 98168

[www.kamiyabiomedical.com](http://www.kamiyabiomedical.com)

800-526-4925  
206-575-8068  
206-575-8094 (fax)