

# From: Stop TB USA\*

\*Formerly the National Coalition for Elimination of Tuberculosis (NCET)

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*Do you have colleagues, policy makers, friends in the press, or other acquaintances who believe the disease is no longer a problem? Share the following reports with them.*

*Most of these TB-related reports (below) from different U.S. states, the District of Columbia, the Marshall Islands, and Canada were taken from the Centers for Disease Control's TB-Related News and Journal Items Weekly Update and they all occurred in just the past 3 months (October –December, 2009). These are not all the TB reports and articles - just those that were identified. Many of these reports describe problems that present significant challenges for health departments.*

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**COLORADO: Health officials stress tuberculosis awareness; Dec 29, 2009; The Pueblo Chieftain.**

It almost sounds like T-shirt sizes but DR, MDR, XDR and now XXDR are not something you want anywhere near your chest. The abbreviations designate the increasing ability of tuberculosis bacteria to resist antibiotics once thought to have eradicated the disease, at least in the developed world. The first appearance of "extremely" drug-resistant tuberculosis in the United States, the one that warrants the two Xs, means that doctors and government officials need to work closely to stop the spread of the disease. Two years ago, the Pueblo City-County Health Department had to deal with three simultaneous cases of drug-resistant TB among homeless men believed to have contracted the same strain. The United States has seen outbreaks of multiple drug-resistant strains and in 1993 extensively drug-resistant (XDR) TB. In each case, the disease had to be treated with increasingly powerful antibiotics, some of which can endanger the patient themselves. The recent discovery of an XXDR TB case, which The Associated Press reported this past weekend actually showed up several months ago, was the first in the United States. Dr. Christine Nevin-Woods, executive director of the health department, said Tuesday the ability of the bacteria to develop new drug-resistant strains is why it's important for public health agencies to keep good records and be made aware of cases that show up. For example, Nevin-Woods said, a person may go to their own physician, be diagnosed with TB and obtain a prescription for one of the first-line drugs that could do more harm than good. Doctors need to notify the health department, she said, because it maintains records of people who've been in contact with active cases and would be able to signal a need to upgrade the drug response. It's believed that the use of ineffective drugs - or people who stop taking prescribed drugs too soon - are the causes of drug-resistant strains. The weak drugs kill off some of the bacteria but allow the stronger ones to multiply. That's why health department officials closely monitor homeless people with active cases, making sure they actually swallow the pills and take them every day. Recently, the health department made an effort to test as many homeless people here as possible, which was funded through a state grant, said Jo Sher, the department's expert on TB testing. Sher said some latent cases were found. They'll be given upgraded medications if they've been found to have been in contact with people who've had drug-resistant strains. Homeless people also are given cards showing their status, which increasingly are required for admission to shelters, Sher added.

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**CANADA: New TB case found in Port Alberni; 'outbreak is not over': VIHA;** [Alberni Valley News](#); December 30, 2009.

An active case of tuberculosis has been confirmed in the Port Alberni area, bringing to 45 the total number of cases diagnosed since an outbreak was declared in October 2006. "This is the first active case diagnosed since January 2009," Vancouver Island Health Authority Medical Health Officer Dr. Charmaine Enns said in a press release. "It serves as a reminder that the outbreak is not over. Any resident who has been notified by public health officials that they have been in close contact with someone with active TB disease is urged to follow up on recommendations for completing screening for TB," she added. Screening for TB involves skin testing or a chest x-ray, or both in some cases. Since May 2006, more than 3,000 individuals in the Port Alberni area have been screened for TB, Enns said.

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**CANADA: New Democratic Party [Canada] Pursues Tuberculosis Strategy;** Winnipeg Free Press, December 23, 2009, by Jen Skerritt.

Three members of Canada's Parliament have formed a committee to develop a national strategy to eliminate TB in First Nations communities. Manitoba MPs Judy Wasylycia-Leis and Niki Ashton, and the federal New Democratic Party's aboriginal affairs critic, Jean Crowder (Nanaimo-Cowichan), plan to submit the proposal in a private member's bill when Parliament reconvenes in late January. Some Manitoba First Nations have recorded high TB rates not seen in the world since the mid-1970s, Wasylycia-Leis said. In some northern communities, the rate is 600 TB cases per 100,000 population, surpassing TB rates even in developing countries. "I think the federal government can play a key role by saying this is a national priority," said Wasylycia-Leis. "[It's] a national embarrassment. Here we are heading into 2010, and a curable disease is taking a toll on our First Nations communities." The strategy should offer initiatives to improve housing and infrastructure, including providing access to clean, running water, said David Harper, grand chief of Manitoba Keewatinowi Okimakanak. "This is one of the issues we'd want to be 100 percent involved in," he said. Housing and improved access to healthy foods will both be addressed, said Ashton. Much of the TB disparity stems from overcrowded housing and poor health, said Theresa Oswald, Manitoba's health minister.

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**NEBRASKA: Nebraska College Posts Notice About Student with TB;** Associated Press, December 18, 2009.

Through a posting on its Web site, a community college in Norfolk, Nebraska, has released the news that an on-campus international student has been hospitalized with TB since Dec. 1. The college is contacting persons who may have been at risk of exposure, and the patient's room- and suite-mates will be tested.

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**FLORIDA: First Case of Fearsome TB Strain Found in US (United States);** Sphere, December 27, 2010, Margie Mason and Martha Mendoza.

LANTANA, Fla. -- It started with a cough, an autumn hack that refused to go away. Then came the fevers. They bathed and chilled the skinny frame of Oswaldo Juarez, a 19-year-old Peruvian visiting to study English. His lungs clattered, his chest tightened and he ached with every gasp. During a wheezing fit at 4 a.m., Juarez felt a warm knot rise from his throat. He ran to the bathroom sink and spewed a mouthful of blood. I'm dying, he told himself, "because when you cough blood, it's something really bad." It was really bad, and not just for him. Doctors say Juarez's incessant hack was a sign of what they have both dreaded and expected for years - this country's first case of a contagious, aggressive, especially drug-resistant form of tuberculosis. The Associated Press learned of his case, which until now has not been made public, as part of a six-month look at the soaring global challenge of drug resistance. Juarez's strain - so-called extremely drug-resistant (XXDR) TB - has never before been seen in the U.S., according to Dr.

David Ashkin, one of the nation's leading experts on tuberculosis. XXDR tuberculosis is so rare that only a handful of other people in the world are thought to have had it. "He is really the future," Ashkin said. "This is the new class that people are not really talking too much about. These are the ones we really fear because I'm not sure how we treat them." Forty years ago, the world thought it had conquered TB and any number of other diseases through the new wonder drugs: Antibiotics. U.S. Surgeon General William H. Stewart announced it was "time to close the book on infectious diseases and declare the war against pestilence won." Today, all the leading killer infectious diseases on the planet - TB, malaria and HIV among them - are mutating at an alarming rate, hitchhiking their way in and out of countries. The reason: Overuse and misuse of the very drugs that were supposed to save us. Just as the drugs were a manmade solution to dangerous illness, the problem with them is also manmade. It is fueled worldwide by everything from counterfeit drug makers to the unintended consequences of giving drugs to the poor without properly monitoring their treatment.

This April, the World Health Organization sounded alarms by holding its first drug-resistant TB conference in Beijing. The message was clear - the disease has already spread to all continents and is increasing rapidly. Even worse, WHO estimates only 1 percent of resistant patients received appropriate treatment last year. "We have seen a huge upburst in resistance," said CDC epidemiologist Dr. Laurie Hicks. Juarez' strain of TB puzzled doctors. He had never had TB before. Where did he pick it up? Had he passed it on? And could they stop it before it killed him? At first, mainstream doctors tried to treat him. But the disease had already gnawed a golf-ball-sized hole into his right lung. TB germs can float in the air for hours, especially in tight places with little sunlight or fresh air. So every time Juarez coughed, sneezed, laughed or talked, he could spread the deadly germs to others. "You feel like you're killing somebody, like you could kill a lot of people. That was the worst part," he said. Tuberculosis is the top single infectious killer of adults worldwide, and it lies dormant in one in three people, according to WHO. Of those, 10 percent will develop active TB, and about 2 million people a year will die from it. Simple TB is simple to treat - as cheap as a \$10 course of medication for six to nine months. But if treatment is stopped short, the bacteria fight back and mutate into a tougher strain. It can cost \$100,000 a year or more to cure drug-resistant TB, which is described as multi-drug-resistant (MDR), extensively drug-resistant (XDR) and XXDR. There are now about 500,000 cases of MDR tuberculosis a year worldwide. XDR tuberculosis killed 52 of the first 53 people diagnosed with it in South Africa three years ago.

Drug-resistant TB is a "time bomb," said Dr. Masae Kawamura, who heads the Francis J. Curry National Tuberculosis Center in San Francisco, "a manmade problem that is costly, deadly, debilitating, and the biggest threat to our current TB control strategies." Juarez underwent three months of futile treatment in a Fort Lauderdale hospital. Then in December 2007 he was sent to A.G. Holley State Hospital, a 60-year-old massive building of brown concrete surrounded by a chain-link fence, just south of West Palm Beach. "They told me my treatment was going to be two years, and I have only one chance at life," Juarez said. "They told me if I went to Peru, I'm probably going to live one month and then I'm going to die." Holley is the nation's last-standing TB sanitarium, a quarantine hospital that is now managing new and virulent forms of the disease. Tuberculosis has been detected in the spine of a 4,400-year-old Egyptian mummy. In the 1600s, it was known as the great white plague because it turned patients pale. By 1850, an estimated 25 percent of Europeans and Americans were dying of tuberculosis, often in isolated sanatoriums like Holley where they were sent for rest and nutrition. Then in 1944 a critically ill TB patient was given a new miracle antibiotic and immediately recovered. New drugs quickly followed. They worked so well that by the 1970s in the U.S., it was assumed the disease was a problem of the past. Once public health officials decided TB was gone, the disease was increasingly missed or misdiagnosed. And without public funding, it made a comeback among the poor. Then immigration and travel flourished, breaking down invisible walls that had contained TB. Drug resistance emerged worldwide. Doctors treated TB with the wrong drug combinations. Clinics ran out of drug stocks. And patients cut their treatment short when they felt better, or even shared pills with other family members. There are two ways to get drug resistant TB. Most cases develop from taking medication inappropriately. But it can also be transmitted like simple TB, a cough or a sneeze. In the 1980s, HIV and AIDS brought an even bigger resurgence of TB cases. TB remains the biggest killer of HIV patients today.

For decades, drug makers failed to develop new medicines for TB because the profits weren't there. With the emergence of resistant TB, several private drug companies have started developing new treatments, but getting an entire regimen on the market could take 24 years. In the meantime, WHO estimates each victim will infect an average of 10 to 15 others annually before they die. A.G. Holley was back in business. Holley's corridors are long and dark, with fluorescent tubes throwing harsh white light on drab walls. One room is filled with hulking machines once used to collapse lungs, sometimes by inserting ping pong balls. Antique cabinets hold metal tools for spreading and removing ribs - all from a time when TB was rampant and the hospital's 500 beds were filled. Only 50 beds are funded today, but those are mostly full. More than half the patients are court-ordered into treatment after refusing to take their meds on the outside. Juarez came voluntarily. In the beginning, he was isolated and forced to wear a mask when he left his room. He could touch his Peruvian family only in pictures taped to the wall. He missed his dad, his siblings, his dog, his parrot, and especially his mother. "I was very depressed," he said. "I had all this stuff in my mind." He spent countless hours alone inside the sterile corner room reserved for patients on extended stays - dubbed "the penthouse" because it is bigger and lined by a wall of windows. He made friends with new patients, but was forced to stay long after many of them came, got cured, and left. Early on, Juarez's treatment was similar to chemotherapy. Drugs were pumped into his bloodstream intravenously three times a day, and he choked down another 30 pills, including some that turned his skin a dark shade of brown. He swallowed them with spoonfuls of applesauce, yogurt, sherbet and chocolate pudding, but once they hit his stomach, waves of nausea sometimes sent him heaving. He would then have to force them all down again. "When he first came in we really had to throw everything and the kitchen sink at him," said Ashkin, the hospital's medical director, who experimented on Juarez with high doses of drugs, some not typically used for TB. "It was definitely cutting edge and definitely somewhat risky because it's not like I can go to the textbooks or ... journal articles to find out how to do this." After 17 years of handling complex cases - including TB in the brain and spine - Ashkin had never seen a case so resistant. He believed he would have to remove part of Juarez's lung. Ashkin dialed Peru to talk to the young man's father. It's a rare disease, said Ashkin, hard to define. Your son is one of two people in the world known to have had this strain, he said. "What happened to the other person?" his father asked. "He died." Juarez's adventure in the U.S. had turned into a medical nightmare.

About 60 million people visit the U.S. every year, and most are not screened for TB before arrival. Only refugees and those coming as immigrants are checked. The top category of multidrug-resistant patients in the U.S. - 82 percent of the cases identified in 2007 - was foreign-born patients, according to the CDC. The results are startling among those tested, said Dr. Angel Contreras, who screens Dominicans seeking to enter the U.S. on immigrant visas. The high rate of MDR-TB in the Dominican Republic coupled with high HIV rates in neighboring Haiti are a health crisis in the making, he said. "They're perfect ingredients for a disaster," he said. Juarez's homeland, Peru, is also a hotspot for multidrug-resistant TB. DNA fingerprinting linked his disease to similar strains found there and in China, but none with the same level of resistance. "So the question is: Is this a strain that's evolving? That's mutating? That's becoming more and more resistant?" asked Ashkin. "I think the answer is yes." Doctors grappling with these new strains inadvertently give the wrong medicines, and so the TB mutates to become more aggressive and resistant. Poor countries also do not have the resources to determine whether a patient's TB is drug-resistant. That requires sputum culturing and drug-susceptibility testing - timely, expensive processes that must be performed in capable labs. WHO is working to make these methods more available in high-risk countries as well as negotiating cheaper prices for second-line drugs. "There's a lot of MDR and XDR-TB that hasn't been diagnosed in places like South Africa and Peru, Russia, Estonia, Latvia," said Dr. Megan Murray, a tuberculosis expert at Harvard. "We think it's a big public health threat." Experts argue if wealthy countries do not help the worst-hit places develop comprehensive TB programs, it puts everyone at risk. "You're really looking at a global issue," said Dr. Lee Reichman, a TB expert at the New Jersey Medical School Global Tuberculosis Institute. "It's not a foreign problem, you can't keep these TB patients out. It's time people realize that."

Juarez spent a year and a half living alone in a room plastered with bikini-clad blondes, baseball caps and a poster of Mt. Everest for inspiration. There were days when he simply shut down and refused his meds until his family convinced him to keep fighting. "I was thinking that maybe if I need to die, then that's what I need to do," he said, perched on his bed in baggy jeans. "I felt like: 'I'm never going to get better. I'm never going to get out of here.'" When put side by side, his CAT scans from before and after treatment are hard to believe. The dark hole is gone, and only a small white scar tattoos his lung. "They told me the TB is gone, but I know that TB, it doesn't have a cure. It only has a treatment like HIV," he said, his English now fluent and his body weight up 32 pounds from when he first arrived. "The TB can come back. I saw people who came back to the hospital twice and some of them died. So, it's very scary." His treatment cost Florida taxpayers an estimated \$500,000, a price tag medical director Ashkin says seems like an astronomical amount to spend on someone who's not an American citizen. But he questions how the world can afford not to treat Juarez and others sick with similar lethal strains. "This is an airborne spread disease ... so when we treat that individual, we're actually treating and protecting all of us," he said. "This is true homeland security." In July, at age 21 - 19 months after checking in - Juarez swallowed his last pills, packed a few small suitcases and wheeled them down the hospital's long corridor. The last time doctors saw him, he was walking out of the sanitarium into south Florida's soupy heat.

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**CHICAGO/BOSTON: Study Casts Doubt on TB Spore Theory;** UPI.com, December 22, 2009.

A study by Adam Driks of Loyola University, Chicago, Stritch School of Medicine and colleagues at Harvard University, Boston, has cast doubt on a theory that TB bacteria are able to turn into armor-plated spores. TB bacteria can remain latent in the body for many years and later emerge and cause disease that can be fatal. The spore theory was proposed by researchers in Sweden and was published in the *Proceedings of the National Academy of Sciences* in June of 2009. It hypothesized that the ability of TB to infect decades before the disease emerges is because of its ability to form spores, thick-walled, armor-plated cells that lie dormant until conditions allow them to shed the armor and grow again. However, US researchers reported in their study, also in the *Proceedings of the National Academy of Sciences*, [published online before print, December 22, 2009], that they have found no evidence of spores in TB cultures. They show that the TB bacterium does not have genes related to those necessary for producing spores, and they did not find spores in frogs infected with TB bacteria.

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**VOICE OF AMERICA: Tens of Millions of TB Patients Cured;** Voice of America News, December 8, 2009, by Lisa Schlein.

The cure rate goal for TB internationally has been reached for the first time since the target was set in 1991. Some 2.3 million people were cured of TB in 2008, and the cure rate of 87 percent exceeded the 85 percent global target. Much of the credit was given to aggressive implementation of directly observed therapy, short course, or DOTS, the strategy of having health professionals witness first-hand that TB treatments are taken correctly. "So, that is the good news, that 15 years of investments are bringing visible results as a result of cooperation between national programs, particularly the World Health Organization, UNAIDS, the Global Fund, and other partners," said Paul Nunn, coordinator of WHO's Stop TB Department. TB often is seen in combination with HIV infection, and there health officials reported mixed results. Last year, the 1.5 million TB patients who were also HIV-infected represented an increase of 200,000 over the previous year. Patients coinfecting with HIV account for about half the 1.8 million lives lost to TB each year, Nunn said. In addition, Nunn sounded the alarm about the rise of multidrug-resistant TB and the even stronger strain, extensively drug-resistant TB. "The problem with resistance means that we might be facing a situation where our currently mostly susceptible epidemic is replaced in a decade or two by mostly multidrug-resistant disease," Nunn said. Some \$2 billion is needed to carry out the Stop TB effort in 2010, WHO officials estimate.

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**MARYLAND: NHLBI Funding \$13.8M Study for TB Latency, Reactivation (United States);**  
Genomeweb, December 11, 2009.

The National Heart, Lung and Blood Institute (NHLBI) is providing up to \$11.5 million in funding for grants over a four-year time period. The grants will be made to studies that use omics data and other systems biology approaches in developing computational models for use in studying lung response to *Mycobacterium tuberculosis*. The studies will also involve host-microbe reactions that cause disease latency and reactivation. An additional \$2.3 million will be given to fund a data coordination center to handle and store the information used in the projects. The “Systems Biology Approach to the Mechanisms of TB Latency and Reactivation” will grant up to \$480,000 per year for up to four years to support several systems biology centers and up to \$380,000 a year for four years to develop and conduct joint research protocols. The aim of the studies is to discover critical components of pathways and gene regulatory networks that determine which host-microbial interactions trigger and maintain latency, and which permit bacteria to become reactivated. The funding is meant for researchers to integrate data from omics studies with biological and immunological data to develop models that could be tested in humans or non-human primates. NHLBI is encouraging researchers to use multiple principal investigators and collaborations from different disciplines, including specialists in microbiology, genomics, genetics, TB, lung biology, and others. The central aim is to develop tools for investigating gene networks and pathways that induce latency in the host’s lungs, or that determine parameters that permit the mycobacteria to be reactivated.

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**MARSHALL ISLANDS: Marshalls Restricts Movements for TB Sufferers; Australia Network**  
News, December 10, 2009.

TB patients in the Marshall Islands have been prohibited from travel within or outside of the country because of an outbreak of drug-resistant TB. Six cases of drug-resistant TB have been diagnosed, and the authorities are planning a large public education campaign to inform the people about the dangers of not completing treatment. According to Justine Langidrik, Marshall Islands Secretary of Health, patients often fail to complete treatment, increasing the risk of developing and spreading drug-resistant strains. She commented that patients go away without notifying the program that they are traveling, and they may be traveling outside of the Marshall Islands or other outer islands. She explained that for these reasons, it is important to make sure that patients do not travel until they have completed TB treatment.

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**MASSACHUSETTS: Inhalable Chocolate Paves the Way for a Safer TB Vaccine (United States);**  
Popsci.com, December 14, 2005, by Jenny Everett.

Last year, David Edwards, a biomedical engineer at Harvard University, introduced Le Whif, a lipstick-size inhaler that drops a one-calorie chocolate taste on the tongue. Each Le Whif is filled with a few hundred milligrams of cocoa particles engineered small enough to be moved by one’s breath, but too big to reach the lungs. As an individual inhales, the powder travels through a mouthpiece that directs the cocoa to the tongue instead of the back of the throat. Edwards is adapting this technology to make an inhalable TB vaccine that does not need to be refrigerated.

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**ALASKA: Alaska Ranks Third in US for Rate of TB; The News Tribune, December 15, 2009, by Rosemary**  
Shinohara.

Alaska has the third highest rate of TB in the United States. Only Hawaii and the District of Columbia rank higher. The state had 50 new cases in 2008, and a rate of 7.4 cases per 100,000, compared to the national average in 2008 of 4.2 cases per 100,000 population. Between 1999 and 2008, 65 percent of the patients were Alaska natives. According to Dr. Beth Funk, Alaska’s TB Control Officer, the native

people all became infected with TB as children in the 1950's. When they were younger, the bacteria were dormant in their bodies. Now as they age, the dormant germs get active. There were 601 TB cases reported between 1999 and 2008. Northern and Southwest Alaska have the highest rates. There were 43.5 cases per 100,000 for 2008 in the Southwest, almost six times greater than the rate of the whole state. Asians and Pacific Islanders, mostly Filipinos, are infected at higher rates than others in Alaska. They made up 21 percent of the cases from 1999 to 2008. Dr. Funk said that Alaska's rate was the same in 2007 and 2008, but has shown a downward trend over 10 years.

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**NEW YORK: Community involvement in HIV and tuberculosis research;** M.Harrington; Journal of Acquired Immune Deficiency Syndromes; 2009 Nov.

Since the advent of the HIV pandemic in the 1980s, affected communities and individuals living with HIV have played key roles in leading the response to the crisis. Achievements of the HIV treatment activist movement include persuading the US Food and Drug Administration to allow expanded access to experimental treatments for those unable to enter controlled clinical trials; accelerated approval of anti-HIV drugs based on surrogate markers such as CD4 cell and HIV RNA changes; and the involvement of people with HIV and their advocates throughout the research system, including in the design, conduct, and evaluation of clinical trials. HIV treatment activists have adapted these skills to tackle TB research and programs. Considering the dearth of adequate diagnostic, treatment, and preventive interventions to control TB among people with HIV, the experiences and efforts of HIV activists are vital to accelerate research and development of new diagnostics, drugs, and vaccines to diagnose, cure, and prevent TB, especially among people living with HIV. Advocacy to implement World Health Organization collaborative HIV/TB activities and to reduce TB's toll among people with HIV provides a case study of how scale-up of HIV and TB programs contributes to health system strengthening.

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**TEXAS: Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis: The New Face of an Old Disease;** Journal of the American Academy of Nurse Practitioners. 2009 Nov; Ferguson, L.A., Rhoads, J.

This University of Texas study provides an overview of TB, especially the persistent threat of multidrug-resistant (MDR) and extensively drug-resistant (XDR), and the role of the nurse practitioner (NP) in diagnosis, treatment, and public health surveillance. Data are from public health sources such as the World Health Organization and the Centers for Disease Control and Prevention as well as current literature. One hundred twenty-five years after the discovery of *Mycobacterium tuberculosis*, the disease remains a persistent threat and a leading cause of death worldwide. Medication adherence and prevention are critical to successfully treating and ultimately eradicating this killer disease. Health care providers need to be knowledgeable in the detection and diagnosis of TB and to understand that they assume responsibility for public health by monitoring treatment adherence and/or appropriate referral. The persistent and increasing threat of MDR-TB and XDR-TB is a significant public health threat. Health care providers need to be knowledgeable and vigilant in diagnosing and treating this disease.

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**CANADA: History of Tuberculosis Linked to Severe H1N1?;** Winnipeg Free Press, December 7, 2009, by Jen Skerritt.

Nearly 10 percent of patients on ventilators with severe H1N1 disease last spring in Manitoba had a history of TB. Data show that several individuals who were severely ill with H1N1 influenza in the first wave had had active or latent TB. According to Dr. Joel Kettner, Manitoba's Chief Medical Officer, there is no clear evidence suggesting a higher rate of H1N1 severe illness among patients with TB. He noted that both diseases share common risk factors, and that people who have a high risk of contracting both diseases are at greater risk of falling severely ill from H1N1. He also stated that there is a possibility that people with active TB disease could have damaged lungs or a weakened immune system that may make

them more susceptible to H1N1. First Nations communities in Manitoba have some of the highest rates of TB in the world. Some of the northern reserves have recorded more than 600 cases per 100,000, compared to the national rate of 5 cases per 100,000. Scientists do not know why severe H1N1 spreads to the body's lower respiratory tract, but a team of Winnipeg researchers is leading a national effort to determine how the influenza virus attacks the lungs.

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**GEORGIA: TB Patient Suit Dismissed;** Atlanta Journal-Constitution, November 24, 2009, by Sheila M. Poole.

A US District Court judge has dismissed a lawsuit in which an Atlanta attorney claimed CDC violated his privacy. Judge William S. Duffey Jr. said the plaintiff had failed to provide specific, material facts to support the lawsuit proceeding. On May 29, 2007, CDC announced that a patient with extensively drug-resistant TB (XDR TB) had taken an international commercial flight, triggering concerns about potential TB transmission. The plaintiff maintained he had been told he had a less serious form of the disease and was not contagious, and he said CDC and Fulton County officials knew of plans for a wedding trip to Europe. The plaintiff said he planned to seek treatment upon returning to the United States. Craig T. Jones, the plaintiff's attorney, said he plans to appeal the ruling. He acknowledged, however, that recent Supreme Court decisions have made it more difficult for plaintiffs to make allegations in lawsuits prior to discovery. The lawsuit had sought unspecified damages and attorney's fees.

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**CANADA: Tuberculosis: On the Path to Prevention;** McGill University Health Center, November 30, 2009.

According to a study by Dr. Erwin Schurr et al. at the Research institute of McGill University Health Center (RI-MUHC), in collaboration with Dr. Alexandre Alcais of the Institut National de la Santé et de la Recherche Médicale (INSERM) in Paris, one or more genes might provide some people with resistance to TB. Findings indicate that there is a chromosomal site or a locus that controls resistance to TB infection. Of 128 families studied in an area of South Africa with high TB rates, 20 percent of individuals had natural resistance to the disease. Dr. Shurr felt that a genetic resistance factor is a major step toward fighting TB locally and globally. The challenge, according to Dr. Alcais, is to identify the genetic factors and mechanisms that lead to resistance. It is hoped that these genetic resistance factors can be used to prevent TB infection in the general population by stimulating the mechanism responsible for resistance. The study was published in the *Journal of Experimental Medicine* Vol. 206 (12) 2583-2591.

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**CANADA: Better TB, Malaria and AIDS Tests Urged.** UPI.com, November 23, 2009.

A team of Canadian researchers led by Dr. Madhukar Pai, Assistant Professor at McGill University, is urging creation of better diagnostic tests for TB, malaria and HIV. Dr. Pai said a rapid and accurate diagnosis is the first step to treatment in the fight against infectious disease. The team, along with researchers at the World Health Organization's (WHO) special Program for Research and Training in Tropical Diseases, highlighted the poor quality of published studies that evaluate the accuracy of diagnostic tests for these three infections. According to the researchers, findings suggest that diagnostic studies on TB, malaria, and HIV commercial tests are of moderate to low quality and are often poorly reported. Also, some bias and variation were present in all the studies. Pai noted that only a small percentage of the studies accurately described how the tests were conducted and whether they are reproducible. He commented that poorly designed studies can lead to premature or misguided adoption of tests that may have little or no clinical and public health relevance. The results of these studies are incorrect diagnoses and adverse consequences for the patient. The study is published in the online journal *PLoS One*.

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**DELAWARE: Officials to Check Possible Spread of TB by Homeless Man;** News Journal (Wilmington), November 14, 2009, by Hiran Ratnayake.

A homeless man who had been staying in the Wilmington area has been diagnosed with TB, prompting Delaware Division of Public Health workers to launch an investigation. "We are advised by CDC to test close contacts; for example, persons sleeping in the same room as the infected person," said Heidi Truschel-Light, a spokesperson for the division. The man was hospitalized November 12 and was still in isolation on November 13.

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**FLORIDA: Tests Find No New Active TB Cases at School;** St. Petersburg Times, November 13, 2009.

TB testing of about 300 students and staff at a Florida high school, undertaken after one student was found to have active TB disease, has identified no one else with the active form of the disease. Eight persons were found to carry latent TB infection; this number was "well under what we actually expected," said Steve Huard, a spokesperson for the Hillsborough County Health Department. "That just means they've been exposed to TB at some point in their life, and they may be carrying the germ. But it's not active, and none of those would actually be infectious." The initial patient was isolated and is expected to recover fully.

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**CANADA: If You Prevent HIV, You Can Prevent TB;** Winnipeg Free Press, November 12, 2009, by Jen Skerritt.

Canadian health officials are worried about the number of Manitoba First Nations people who are infected with HIV, as people with HIV are 50 times more likely to contract TB. They fear a similar rise in TB cases such as what is happening in Manitoba, where there is a high rate of HIV and TB coinfection among First Nations. According to Dr. Marissa Becker, Manitoba local infectious disease expert, about 10 to 12 per year of the province's persons with active TB disease are coinfecting with HIV. Becker noted that the majority of the persons coinfecting with HIV and TB are aboriginal, and the rest are immigrants. Medical experts are now encouraging every person in Manitoba who tests positive for TB infection to be tested for HIV and vice versa. Although only 10 percent of patients in Manitoba are coinfecting with HIV and TB, health officials are monitoring the situation.

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**MINNESOTA: Ex-Inmate's Suit Says Jail Ignored TB Signs;** StarTribune.com, November 17, 2009, by Jenna Ross.

A former inmate of Ramsey County Correctional Facility has filed suit in federal court against the county. He alleges that despite obvious symptoms of TB during 54 days of confinement at the facility, the staff did not respond. He explained that he had stopped eating, lost 41 pounds, coughed constantly, and became too weak to walk. The plaintiff is seeking more than \$14 million in damages from the county and some of the county's employees, plus attorneys' fees, to pay his medical bills that have amounted to \$500,000. The plaintiff claimed he repeatedly requested help from health services and that other inmates formally requested help for him. A correctional officer even told medical staff that he needed to be examined immediately, but he was ignored. The officer had the patient taken to a hospital where X-ray and chest scan showed extensive damage to his right lung. The county also faces a class-action lawsuit alleging that more than 80 former inmates and 30 county employees were found to have TB after the patient entered the jail.

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**FLORIDA: Plant City High Students Tested for TB;** ABCActionnews.com (Tampa), November 10, 2009, by Linda Hurtado.

Recently, at a Plant City high school, about 300 of the facility's 2,100 students underwent testing for TB infection. The testing was prompted by one student's diagnosis of TB; that person is now under a doctor's treatment at home. Only students and employees who had been in direct contact with the ailing student were being tested. Steve Huard, a spokesperson for the Hillsborough County School District, said test results were expected in a few days.

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**ILLINOIS: Augie Student Raises Funds for TB Clinic in Uganda;** Quad-City Times, November 6, 2009, by Deirdre Cox Baker.

A student from Illinois has decided to raise funds to build a TB clinic for a hospital in Iganga, Uganda. Troy Curtis, a senior pre-med major with a great interest in public health, traveled to Uganda through Experiential Learning International (ELI) of Denver, a nonprofit organization that pairs individuals with volunteer, internship, and study-abroad programs around the world. He worked in the hospital in Uganda last summer, and at that time, realized that the hospital mixed TB patients in with the general hospital population, as there was no way to isolate TB patients from others who did not have the disease. When he returned to Augustana College, he and fellow students helped raise \$2,000 of the \$10,000 goal for the clinic. The TB clinic project was adopted by a Global Connections class taught by Augustana professor Adam Kaul. The 21 members of the class have divided into teams to organize publicity and fundraising events to help build the clinic. Curtis got cost estimates from contractors, and the project is being overseen by Uganda's ELI abroad contact. Construction is under way, and the funds raised so far have paid for the foundation. Curtis plans to return to Iganga to see the clinic when it is completed.

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**MASSACHUSETTS: Later Generation Fluoroquinolones May Improve Outcomes for Patients with XDR-TB;** Pediatric Supersite, October 31, 2009

At the 47<sup>th</sup> Annual Meeting of the Infectious Disease Society of America, Dr. Karen R. Jacobson of Massachusetts General Hospital, Boston, presented research findings regarding a retrospective analysis of studies involving XDR TB treatment outcomes through May 2009. A search of databases yielded 13 observational studies with 571 patients. Favorable outcomes were defined as patients who were cured or had completed treatment. Findings indicated a 43.7 percent rate of favorable outcomes and an estimated 20.8 percent proportion of patients who died. An association was observed between later generation fluoroquinolones (levofloxacin, moxifloxacin, and sparfloxacin) and favorable outcomes. Jacobson noted that the associations were observed, and the drugs were given, in combination with other therapies. Also, an association between favorable outcomes and studies with younger patients was observed.

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**CANADA: Privacy Laws Handcuff Homeless Shelter's Staff;** WinniPeg Free Press, November 3, 2009, by Jen Skerritt.

Ultraviolet light was installed in an emergency shelter and detoxification unit in the Main Street Project, a downtown Winnipeg homeless shelter. Dr. Earl Hershfield, the former provincial TB Control Director, had the light installed to protect the homeless at high risk of contracting TB. The lights are the only protection for the people who seek refuge at the shelter, as privacy laws block shelter staff from helping patients take their medication. The rate of TB downtown is 36 cases per 100,000; whereas, in some parts of the city such as St. James and Assiniboine South, the rate of TB is zero. The national rate is five cases per 100,000. The Main Street Project staff used to give patients their TB medication because their

transient lifestyle made it difficult for health care workers to track them down. Since privacy laws changed, the shelter staff can no longer make sure a patient takes the TB drugs, as the staff are not allowed to know that the patient has TB disease. Also, the Manitoba Lung Association used to screen inner city homeless people for signs of TB at places like the Main Street Project, but that stopped. As a result, no one knows how many people are walking around with infectious TB. Many of the homeless in Winnipeg migrated from northern First Nations communities. They are distrustful of the medical system; hence, even if physician care is available in the city, they will not go to the hospital unless accompanied by a trusted person from the shelter. Brian Bechtel, Executive Director of the project, says that staff are becoming anxious, as it is a very high-risk situation.

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**TENNESSEE: VUMC Joins Global Consortium to Fight Tuberculosis;** Vanderbilt University Medical Center, October 27, 2009.

Vanderbilt University Medical Center is part of the TB Trials Consortium, which recently received renewal funding from the US Centers for Disease Control and Prevention (CDC). The goal of the consortium is to shorten treatment of (1) active TB disease, thus preventing further spread of the bacteria; and (2) latent TB infection, preventing development of the disease. The Vanderbilt site will receive \$7 million over the next 10 years and \$510,000 in 2010. Vanderbilt will be able to expand collaborations with the Metro Public Health Department, Meharry Medical College, Metro General Hospital, and the Tennessee Department of Health. Vanderbilt will also collaborate with the Universidad Peruana, Cayetano Heredia in Lima, Peru.

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**MARYLAND: Growing Threat of Substandard and Counterfeit Medicines in Developing Countries Addressed by New USAID-USP Cooperative Agreement;** First Science, October 26, 2009, by US Pharmacopeia.

The US Agency for International Development (USAID) and the US Pharmacopeial (USP) Convention have launched a new program to fight against the use of substandard and counterfeit versions of drugs for treating life-threatening diseases such as malaria, HIV/AIDS, and TB. The program, called Promoting the Quality of Medicines (PQM), is a \$35 million cooperative agreement to help assure the quality, safety, and efficacy of medicines essential to USAID's health programs. The PQM will address the significant public health challenge of substandard and counterfeit medicines and will ensure the quality, safety, and efficacy of medicines by working with countries to strengthen their medicine regulatory bodies. The PQM will increase the supply of good-quality medicines; combat the availability of counterfeit and substandard drugs through testing programs and other ways; and conduct global advocacy to raise awareness of the dangers of substandard drugs. The PQM builds on the work of a previous USAID and USP program called the Drug Quality and Information (DQI) Program. It will be managed by Patrick Lukulay, who also managed the DQI, and will expand on DQI work in Asia, Eastern Europe, Latin America, and sub-Saharan Africa.

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**GEORGIA: Norcross TB Tests Evaluated;** WSB News, October 19, 2009, by Jon Lewis.

A spokesperson for the Gwinnett County school systems, Sloan Roach, said that about 200 high school students received TB tests after a student was diagnosed with TB. Health officials evaluated the tests during the week of October 19 to 23. According to Roach, there are usually a few cases every year, and the school system works with the health department. The health department goes to the school and does testing. The health department will contact persons who still have not been tested.

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**MARYLAND: Sequella Secures Funding for TB Drug;** Washington Business Journal; October 5, 2009, by Vandana Sinha.

The Rockville, Maryland, biotechnology company, Sequella Inc, has won federal funding to produce its lead TB drug, which is in its first phase of clinical studies. The stimulus grant of \$694,000 was awarded by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health. The company found its main drug, SQ109, to be safe and well-tolerated in healthy adults, and is studying its effectiveness in three groups of healthy individuals in the second part of the Phase 1 clinical trial. The new stimulus funds will be used to help pay four different subcontractors to manufacture the main ingredients of SQ109. This drug has received federal fast-track and orphan drug status, and it could simplify and shorten TB treatment.

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**TEXAS: TB Deserves Same Effort Devoted to H1N1 Vaccine;** Chron.com, Viewpoints, Outlook section, Houston Chronicle, David McMurry, October 7, 2009

In September 2009, the US Food and Drug Administration announced its approval of four vaccines against the H1N1 influenza virus. This fast progress only six months after H1N1 first gained worldwide attention, with cases in Mexico and the United States, has been extraordinary and shows we can mobilize rapidly against a frightening new enemy. TB, another contagious respiratory disease affecting countries world wide, deserves a similarly substantial effort to develop a new vaccine. Since April, when we first became alerted to the "swine flu," 4,200 people have died from H1N1 flu globally, compared to nearly one million men, women, and children who have died from TB. Why didn't anyone see any headlines about this? Because 98 percent of the people who die each year from TB live in developing countries, in places like Kenya, where the author once worked as a Peace Corps volunteer. Yet TB continues to be a problem in the United States as well because in an age of globalization, germs cross borders without a passport. Rachel Orduño of El Paso, as a 36-year-old, developed symptoms that were diagnosed consecutively as flu, colds, allergies, respiratory infections, pneumonia, and asthma over a time period of three years. Her three-year-old niece meanwhile developed recurring cysts that were surgically removed. Finally, after three agonizing years of wondering what was causing their mysterious symptoms, both Rachel and her niece were diagnosed with TB and started treatment for active TB disease. Yet treatment takes months to complete. A vaccine that prevents TB would represent a major step forward. The US government has made substantial investment in infectious disease research and prevention, notably the construction of a high-containment Biosafety Level 4 laboratory in Galveston. The new lab, which is capable of safely handling the world's most highly contagious and lethal pathogens, is likely to play an important role in testing new TB vaccine candidates against the most virulent strains of drug-resistant TB. But much more needs to be done to support the development and testing of new vaccines. The research community has several promising candidates. Seven are currently undergoing early stage clinical testing for safety and efficacy, but millions of dollars will be needed to take them through the full stages of testing before they can be licensed for use.

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**PENNSYLVANIA: Brandywine Heights May Reconsider TB Screening Requirement for Volunteers;** Reading Eagle, October 12, 2009, by Valdis I. Lacin.

The Brandywine Heights School Board will reconsider the district's new mandate that all volunteers who have contact with youngsters be screened for TB. "I worry this will result in a huge drop of the volunteer population at Longswamp (Elementary)," said parent Andrea Moyer, a PTO member at the school. Moyer said parents and relatives who attend only yearly special events, such as Doughnuts With Daddy or Grandparents' Day, should be excluded. Otherwise, she cautioned, "Why didn't mommy come in today?" could be a lament. Moyer said none of five area districts she checked with has a similar requirement. The district offers TB testing during school hours at its expense. But Dr. Martin D. Handler,

superintendent, said it is not rational to require teachers, food and clerical workers, and regular volunteers, but not others, to be tested. "Our first responsibility is to students; our second is liability of the district," Handler said. Board President Carol Emrick said the issue will be addressed at the panel's Oct. 26 work session.

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**FLORIDA: Florida State University Researchers Receive NIH Grant for Basic Research on TB Drugs; Stop TB Partnership, October 8, 2009.**

The US National Institutes of Health (NIH) has given a Florida State University research team a grant of US \$3.1 million to screen small molecules that could be potential targets for TB drugs. The funds are part of a larger \$9 million NIH grant that has been awarded to a group of collaborating institutions that also includes the University of Alabama; the Burnham Institute; the University of California, San Diego; and Harvard University. Leading the Florida State project will be Dr. Timothy A. Cross, the Earl Frieden Professor of Chemistry and Biochemistry. Cross and his colleagues have been researching TB for seven years. Most of that time has been spent building up the technology and methodology to get to this point. In the next five years, researchers may be able to isolate as many as five to 10 potential drug targets using nuclear magnetic resonance techniques. These techniques will provide scientists with intimate portraits of a protein's structure and clues to its function. Cross said that although the work is still basic research, years away from what is commonly referred to as the "drug discovery stage," it lays the foundation for that step.

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**COLORADO: Scientists Take Step Toward Simple and Portable Tuberculosis Tests for Developing World; Science Centric, October 13, 2009.**

Two billion people world wide carry the pathogen that causes TB, and most of them do not even know they are infected. This is because some 90 percent of people infected with TB have "latent" infections. They have no symptoms, they can't spread the disease to others, and the bug remains dormant in their lungs, often for years. TB remains the seventh-leading cause of death worldwide, killing more than 1.5 million people every year. A group of researchers at Colorado State University (CSU) has now demonstrated a new way to use light to detect traces of TB bacteria in fluids. Their work will be described by CSU graduate student Barbara Smith at the Optical Society's (OSA) Annual Meeting, Frontiers in Optics (FIO), in San Jose, Calif. The researcher's findings may one day help health care workers identify people who are latently infected. This technology may be amenable for extensive use in the developing world, where most cases of TB occur. CSU professor Diego Krapf, who led the research, says that what has been missing from the public health tool chest is a technique that can be used to widely detect TB in those places where it is most prevalent. Krapf, Smith and their fellow researchers have developed a technique that can sensitively detect different molecular markers indicating a TB infection that would be inexpensive to use and no harder to administer than a common pregnancy test, making it ideal for use in the developing world. The device that has been developed by the Colorado researchers is one that would simply require someone to smear a drop of blood or urine on a glass slide, insert it into a machine, and read a simple display that would then indicate whether that person is infected or not. The researchers maintain that such a device could easily be built with existing technology. The device depends on specialized surface chemistry that avoids protein adsorption, except for those molecules that need to be detected. Then, the presence of these molecules is recorded by fluorescence using a red diode laser. Once detected, TB infections are generally treatable with a course of antibiotics. One of the basic strategies behind the World Health Organization's efforts to stop the spread of TB worldwide is to find the people who are infected and get them the antibiotics they need. Krapf and his colleagues have been able to demonstrate the feasibility of detecting markers of TB infections at great sensitivity in saline solutions; they were even able to detect a single molecular marker of a TB infection in solution. They have not yet built a functioning device that can detect hidden TB

infections in blood or urine samples, and they have not yet tested the technology on samples collected in the field. Before any such detector is available for use in the field, it would have to be meticulously tested in clinical trials. Moving in that direction, the team plans to do a survey of urine and blood samples from persons infected with TB bacteria. This will help them conclude how sensitive they need to make any detector and which markers are the best to test.

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**MARYLAND: Sequella Secures Funding for TB Drug;** Washington Business Journal, October 5, 2009, by Vandana Sinha.

Sequella Inc. has secured federal stimulus funds to pay for increased production of its lead TB drug, which is now in the first phase of clinical studies. The Rockville, Maryland, biotech company, which has extensively relied on federal grants to move its TB pipeline forward, stated that its \$694,000 stimulus grant was awarded through the National Institutes of Health's (NIH) National Institute of Allergy and Infectious Diseases (NIAID). Sequella Inc. found that its main drug, SQ109, was well-tolerated and safe in healthy adults. Sequella is now studying the drug's effectiveness in three groups of healthy individuals in the second part of the Phase I clinical trial, which began in May of 2009. Through a contract with Dynport Vaccine Corporation, LLC, NIAID is funding that study in Kansas. Carol Nacy, Sequella CEO, said that the company is directing its new stimulus funds to help pay the bills for four different subcontractors to manufacture the main ingredients of SQ109. The US NIH has been a continual partner for Sequella in its development of the antituberculosis drug, which has received federal orphan-drug and fast-track status. The company has said that SQ109 could shorten and simplify treatment time for the disease.

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**IOWA: Potential Key to Curing Tuberculosis Uncovered;** News Post Online, October 6, 2009.

Scientists from Iowa State University have discovered an enzyme that makes TB resistant to a human body's natural defense. When most infections are introduced into humans, the body defends itself with certain cells, called macrophage cells, which kill the invading microorganisms. The macrophage cells surround and destroy these microbes, such as *Mycobacterium tuberculosis*. Reuben Peters, lead researcher and associate professor in the Department of Biochemistry, Biophysics and Molecular Biology, has discovered that TB bacteria produce a defensive molecule that prevents the macrophage cells from destroying them. Peters and his team have named the defensive molecule edaxadiene. Without edaxadiene, TB cells would have a reduced ability to resist being killed by the macrophage cells. "We have inhibitors that bind tightly to one of the enzymes that make edaxadiene in a test tube. Their genetic sequences are more than 99.9 percent identical," said Peters. "However, whereas, tuberculosis causes disease in humans, the bovis variety is much less infectious in humans, although it does cause disease in cattle," stated Peters. Warren Jones, who oversees enzymology grants at the US National Institute of Health's National Institute of General Medical Sciences, which funded the research, said, "This work presents tantalizing evidence that edaxadiene helps the tuberculosis bacterium evade the body's defenses." Jones added, "By exploring ways to block the production of this molecule, Dr. Peters is pioneering a new approach for combating this deadly pathogen." The study appears in the *Journal of Biological Chemistry*. (ANI)

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**INDIANA: Chao Center Aims To Be International Leader in TB Fight;** Inside Indiana Business, September 22, 2009.

Officials from the Chao Center for Industrial Pharmacy and Contract Manufacturing announced September 22, 2009, that they will donate about 1,800 bottles of a medication to help fight multidrug-resistant tuberculosis (MDR TB) to Cambodia and Ethiopia. The Chao Center, based in the Purdue Research Park, produces and manufactures drugs in smaller quantities that cannot be produced in a

cost-effective way by larger pharmaceutical companies. In 2007, Eli Lilly and Company partnered with the Center to continue to produce and distribute the MDR TB medication Seromycin®. The partnership is part of a \$135 million effort by Lilly to combat TB and MDR TB throughout the world. The medication, which has a market value of about \$360,000, will be provided to the Global Health Committee, which will then distribute it to patients in need overseas. "There is a great need for medications around the world. Right now there are about 6,000 people a year with multidrug-resistant TB in Ethiopia and many more worldwide who have no access to drugs," said Dr. Anne Goldfeld, Associate Professor of Medicine for the Harvard Medical School and co-founder of the Global Health Committee. She stated that through a donation from Eli Lilly and Company in 2008, they had received MDR TB medications that they are distributing in Ethiopia in partnership with the Ethiopian Ministry of Health. With the donation from the Chao Center, they will be able to expand their efforts to reach many more patients in Ethiopia and other countries. The World Health Organization (WHO) estimates that the average MDR TB patient infects up to 20 other people in his or her lifetime. Cases have been found in nearly every country surveyed by the WHO. When drugs used to treat MDR TB are misused or mismanaged, the even more virulent, extensively drug-resistant (XDR) TB can develop. "It is part of our mission and part of our partnership with Lilly to be involved in humanitarian efforts such as the Global Health Committee, and we know that the medications will be used to help people who are the most vulnerable and in great need of health-care assistance," stated Joseph B. Hornett, Senior Vice President, Treasurer and COO of the Purdue Research Foundation. "This also is an opportunity for the Chao Center and its pharmaceutical interns to be directly involved with a program that will assist in global health care."

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**INDIANA: Asian Group to Assist Lilly with TB Screening;** Indianapolis Star, October 1, 2009.

Eli Lilly has brought in an Asian academic institution to collaborate in efforts to address the worldwide problem of TB. The Indianapolis, Indiana, pharmaceutical company said that it has signed a memorandum of understanding between the Lilly TB Drug Discovery Initiative and Academia Sinica of Taiwan to collaborate in screening for the discovery of new TB drugs. Academia Sinica has a drug library of more than 2 million compounds, which will be used to aid in screening possible new TB treatments.

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