Two Arizona leaders in scientific collaboration partner to advance global TB research

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TUCSON and FLAGSTAFF, May 1, 2017 –Two Arizona leaders in worldwide scientific collaboration and infectious disease research have joined forces to improve global tuberculosis (TB) treatment regimens by studying drug resistance.

The Bill & Melinda Gates Foundation has awarded the Critical Path to TB Drug Regimens (CPTR), an initiative of Tucson's Critical Path Institute (C-Path), a $1.1 million grant to enrich its Relational Sequencing TB Data Platform (ReSeqTB). Utilizing a sub-award from C-Path, the Translational Genomics Research Institute (TGen) Pathogen Genomics Division, or TGen North, will sequence over 12,000 TB bacteria isolates from around the world.

The Flinn Foundation, a grantmaking organization founded in 1965 for the improvement of the quality of life in Arizona to benefit future generations, has, since 2001, concentrated its efforts on the advancement of the biosciences in the state. "C-Path and TGen are transformational pioneers in this effort," said Jack Jewett, Flinn's CEO. "Working both individually and collaboratively, these organizations realize several of the strategic goals outlined in Arizona's Bioscience Roadmap, showing Arizona's 'collaborative gene' in action, converging research efforts to produce output relevant to the global population, and turning research into actionable data."

The synergistic partnership of C-Path with TGen North will strengthen Arizona's reputation as a hub for cutting-edge pharmaceutical and medical research, which has been growing steadily over the past two decades, as the number of biotech and health science nonprofits in Arizona has increased.

"C-Path is excited to announce this important collaboration with TGen," said Debra Hanna, PhD, Executive Director of CPTR, "which we envision as the beginning of a lasting and fruitful scientific partnership. Working with TGen will allow us to bridge knowledge gaps critical for identifying TB drug-resistance patterns, and ultimately help us to better treat patients. With TGen's expertise in DNA sequencing, we at C-Path can extract valuable data from existing clinical samples and make them available globally via the ReSeqTB data-sharing platform."

TGen North will use next-generation sequencing technology to sequence the DNA of the isolates over the next three years, significantly augmenting the ReSeqTB database, which provides key data on TB drug

resistance to researchers worldwide. "Data from TGen can be used to pinpoint genetic markers that indicate how best to treat each individual," said Dr. David Engelthaler, Associate Professor and Co-Director of TGen North in Flagstaff.

"Identifying DNA markers associated with TB drug resistance will enable clinicians to more rapidly diagnosis the disease and direct patients toward the best available treatments for their particular strain of bacteria," Dr. Engelthaler said.

"TB can quickly develop resistance to treatments, even multiple-drug resistance. And the degree and type of drug resistance varies from place to place," he said. "We need better ways to determine which patients should receive which specific drugs to address their infection. The ultimate goal is a more personalized, and effective, approach to treating this disease."

Dr. Marco Schito, scientific director of CPTR, also emphasized how the addition of this important data—which will increase the number of isolates represented on ReSeqTB to twenty thousand—aids in the goal of personalized medicine.

"ReSeqTB is at the forefront of the genomic revolution," he said. "The integration of clinical outcome data will be key toward having personalized medicine options available to patients who are infected with drug-resistant tuberculosis bacteria. This would have a significant impact on global health."

As a sub-award from C-Path, and working with multiple collaborators, TGen North will sequence samples derived from as many as 35 countries around the world, including developing nations in Africa, Asia, Eastern Europe, and South America, where drug-resistant TB continues to present a significant threat. The genome samples will come from public health laboratories, clinical drug trials, and biobanks. The sources of samples and the number of countries involved could grow over time, providing an expanding base of evidence for researchers to draw on.

"ReSeqTB is a critical endeavor if we hope to drive the development of new diagnostics in drug-susceptibility tests to support TB patients," said Dr. Hanna. "The vision for ReSeqTB is to better understand TB resistance across the globe, and by partnering with scientists in our own backyard, we are another step closer to realizing this vision."

About the Organizations:

Critical Path Institute (C-Path) is an independent, nonprofit organization established in 2005 with public and private philanthropic support from the Arizona community, Science Foundation Arizona, and the US Food and Drug Administration (FDA). C-Path's mission is to catalyze the development of new approaches that advance medical innovation and regulatory science, accelerating the path to a healthier world. An international leader in forming collaborations, C-Path has established 14 global, public-private partnerships that currently include over 1,450 scientists from government and regulatory agencies, academia, patient advocacy organizations, and dozens of major pharmaceutical companies. C-Path is headquartered in Tucson, Arizona. For more information, visit www.c-path.org.

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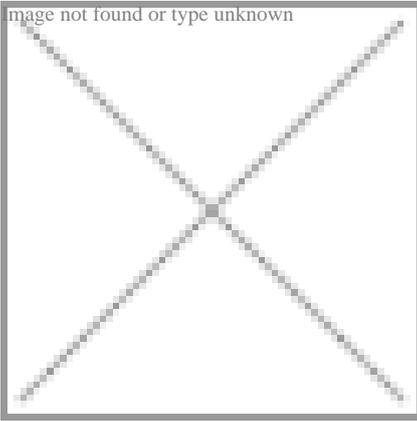
Translational Genomics Research Institute (TGen) is a Phoenix, Arizona-based nonprofit organization dedicated to conducting groundbreaking research with life changing results. TGen is focused on helping patients with neurological disorders, cancer, and diabetes, through cutting edge translational research (the process of rapidly moving research toward patient benefit). TGen physicians and scientists work to unravel the genetic components of both common and rare complex diseases in adults and children. Working with collaborators in the scientific and medical communities literally worldwide, TGen makes a substantial contribution to help our patients through efficiency and effectiveness of the translational process. TGen is allied with City of Hope, a world-renowned independent research and cancer and diabetes treatment center. This precision medicine alliance enables both institutes to complement each other in research and patient care, with City of Hope providing a significant clinical setting to advance scientific discoveries made by TGen. For more information, visit: www.tgen.org. Follow TGen on Facebook, LinkedIn, and Twitter @TGen.

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