Mary Zuccato, Every Cure

Pennsylvania Joint Public Hearing on Artificial Intelligence in the Biotechnology Sector

Senate Communications & Technology Committee and Senate Institutional Sustainability & Innovation Committee

Testimony - January 22, 2026

Senator Farry, Senator Pennycuick, and Members of the Senate Communications & Technology Committee and Senate Institutional Sustainability & Innovation Committee, thank you for the opportunity to testify today on the transformative role of artificial intelligence in life sciences.

I am Mary Zuccato, and I serve as the Chief Operating Officer of Every Cure, a 501c3 biotech nonprofit organization founded in Philadelphia. Every Cure is using artificial intelligence to find new uses for existing medicines to save and improve patients' lives.

The Problem

There are more than 18K recognized diseases, and only 4K have approved treatments. This is particularly troubling for rare diseases, where over 95% have no approved treatment. Rare diseases collectively affect 1 in 10 Americans, and also receive a fraction of research & development dollars, just 14% of NIH funding in 2023.

It takes over $1B and 10-15 years to develop a single new drug, and companies tend to pursue the most profitable diseases while they're on patent. This means that rare diseases and diseases affecting smaller populations are neglected. Once a drug approaches patent expiration, research is discontinued. Since over 80% of approved drugs are off patent, the vast majority of humanity's life-saving medicines -- which happen to be the most well understood, accessible, and least expensive -- are not being studied to further help patients. And while new drug development is critical, it can further exacerbate health inequities in ways that affordable and accessible drugs can help reverse.

I want to tell you about a rare disease patient, Joey, from Warrington, PA. In October 2018, after living a healthy childhood, he was diagnosed as a teenager with Idiopathic Multicentric Castleman Disease. He was hospitalized for almost 3 months at Children's Hospital of Philadelphia, was unable to get out of bed without help, and could hardly walk more than a couple steps before becoming incredibly fatigued. He went from a star soccer player in great shape, to being bed-ridden with kidney failure, an enlarged spleen and liver, fevers, and fluid retention in his abdomen. Joey failed to respond to the first line therapy for Castleman disease

and is alive today because of a generic medicine that was originally developed to prevent organ transplant rejection - but was repurposed for Castleman disease. Joey has his health and his life back and is now a junior at Temple University in Philadelphia.

This simple concept can be life-saving. Drugs known to treat one disease by targeting a specific mechanism could work on other diseases with similar mechanisms. Generic drugs make up the vast majority of approved medicines that could be prescribed by doctors for any use and these treatments are known to be safe, are well studied, and are typically inexpensive.

There are countless patients today who could benefit from medicines already sitting on pharmacy shelves, but our medical system has never been designed to systematically uncover those opportunities.

Our Approach

Every Cure grew out of the lived experience of our co-founder, physician, scientist, rare disease patient, and tenured professor at University of Pennsylvania, Dr. David Fajgenbaum.

Our mission is simple but bold: Save and improve lives by repurposing drugs.

To achieve our mission, we have built the first-ever end-to-end system to discover new uses for existing medicines. Until recently, it has been logistically impossible to scan across the world's biomedical knowledge including all 4K drugs and all 18K diseases to identify the most promising drug repurposing opportunities. At Every Cure, we are pioneering a new approach called 'computational pharmacophenomics' to interrogate the world's biomedical knowledge to find and advance the most promising opportunities across all drugs and all diseases. This approach was published in The Lancet earlier this year. We deploy AI to rank repurposing opportunities across all 72M drug-disease matches. This enables us to select and advance the treatments with the greatest potential for patient impact.

The AI models built by Every Cure analyze billions of biomedical data points to identify these overlooked drug–disease matches. This was made possible by $48.3M in federal funding from ARPA-H in February 2024. We use 'knowledge graphs' (maps of existing biomedical concepts and the relationships between them) as inputs into machine learning tasks that rank all drug-disease pairs. We also identify existing literature-based evidence for repurposing opportunities, and use an 'evidence hierarchy' to rank those opportunities. Every Cure's platform was selected as one of TIME's Best Inventions of 2025, an honor that recognizes groundbreaking inventions that change how we live.

Then, we use human expertise to evaluate and prioritize opportunities that have been highly ranked by our AI methods**.** The most promising drug-disease matches that are generated by the platform are reviewed by our medical team, who work closely with physicians, researchers, patient organizations – and other partners like clinical research organizations and academic

researchers – to assess the likelihood that the treatment will be effective, impactful, and feasible. Each month, our medical team reviews more than 1,000 unique opportunities, and they work with the technical team to capture the feedback as structured data to be reincorporated into the AI platform to retrain and refine its ranking algorithms and optimize for the future.

When promising drug-disease matches are validated and proven to be effective in patients, we widely disseminate research findings so people all over the world have the opportunity to benefit from these discoveries. Through this work, we hope to create a world where every drug is used to treat every disease it possibly can.

The Future

Every Cure is proudly headquartered in Philadelphia, and it was at the University of Pennsylvania that Every Cure's co-founder, Dr. David Fajgenbaum, built a research center dedicated to accelerating drug repurposing and helped repurpose fourteen medicines for diseases that lacked treatments.

Pennsylvania is where Every Cure's leadership team lives and works today. And it is where we will grow our AI–driven biomedical programs to impact people around the world. We are so fortunate to have world-class research, diverse patient populations, workforce talent, and a collaborative ecosystem of hospitals, universities, and industry partners right here in the Commonwealth. Pennsylvania can be the place where thousands of life saving discoveries are made for patients across the world.

With innovative strategies and bold leadership, we can lead the nation in AI-enabled biomedical innovation, strengthening our economy, supporting our hospitals, and most importantly, saving lives across the Commonwealth and beyond.

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