

Teva Pharmaceuticals and IBM Expand Global Partnership to Enable Drug Development and Chronic Disease Management with Watson

Programs Include a Systematic Approach to Drug Repurposing & Data-Driven, Proactive Chronic Disease Management -- Both Fueled by the IBM Watson Health Cloud Collaboration Features First Integration of The Weather Company data with IBM Watson Health Cloud

LAS VEGAS - 26 Oct 2016: IBM (NYSE: [IBM](#)) and [Teva Pharmaceutical Industries Ltd.](#), (NYSE and TASE: TEVA) today announce a significant expansion of their existing global e-Health alliance with a focus on two key healthcare challenges: the discovery of new treatment options and improving chronic disease management. Both projects will run on the IBM Watson Health Cloud.

The expanded partnership features a new, three-year research collaboration to develop cognitive technologies that can enable a systematic approach to the emerging field of drug repurposing and deliver unprecedented scale in the discovery of new uses for existing drugs. The companies also announced that respiratory and central nervous system (CNS) diseases will be the first targets for their chronic disease management initiative, which will be the first project to integrate data from The Weather Company (an IBM Business) into the analysis. The joint work in chronic disease management emerges from Teva's existing alliance with IBM as a [Foundational Life Sciences Partner for the IBM Watson Health Cloud](#).

Today's announcement is made in conjunction with a presentation on the main stage at the [World of Watson](#) conference by Professor Yitzhak Peterburg, Teva's Chairman of the Board of Directors, alongside IBM Chairman, President and CEO Ginni Rometty. "Teva's products reach 200 million people every day with the world's largest medicine cabinet. We have the opportunity to lead change in the pharmaceutical industry, innovating constantly to meet consumers' evolving needs. By combining the skills of our partners, such as Watson's cognitive computing capabilities, with Teva's pharmaceutical expertise, we can create novel solutions and deliver real value to people," said Professor Peterburg.

"Working together, Teva and IBM create an unprecedented opportunity to help doctors and patients worldwide achieve the promise of personalized healthcare," said Deborah DiSanzo, general manager for IBM Watson Health. "IBM and Teva's announcements today are notable for two reasons. First, IBM's work with Teva extends from the biopharmaceutical research bench to an individual's medicine cabinet -- underscoring the power of Watson cognitive computing across life sciences and healthcare. Second, this work includes the first integration of data from The Weather Company with the Watson Health Cloud, a milestone and demonstrable of how the definition of 'health data' is evolving."

A Systematic Approach to Discovering New Uses for Existing Drugs

Thirty percent of regulatory approvals by the FDA in recent years have been for new uses of previously approved drugs and vaccines[1]. **A repurposing approach to drug discovery and development is intended to streamline the time- and cost-intensive process of bringing new therapies to market, which can take the industry up to 20 years and cost in excess of \$2.5 billion.** Medicines that have regulatory clearance have been comprehensively tested, resulting in known safety and efficacy profiles which may significantly reduce the drug development burden. New uses, formulations and delivery innovations for previously approved medicines have the potential to come to market quickly and efficiently and address unmet medical needs.

Currently, the discovery of new therapeutic uses for existing medicines is largely the result of serendipitous findings or isolated research. The aim of the new collaboration between Teva and IBM Research is to design, build, and deploy a systematic process for drug repurposing, potentially becoming a blueprint for use across the industry. The process will combine human insight with unique machine-learning algorithms and real-world evidence accessed through the IBM Watson Health Cloud. IBM Watson Health Cloud technology will be applied on a massive scale with the aim of revealing previously hidden correlations between a drug molecule and health conditions.

“Teva is a leader in innovation using existing molecules and IBM has pioneered Watson cognitive computing – it is a natural partnership,” said Michael Hayden, Teva's President of Global R&D and Chief Scientific Officer. “This collaboration will bring together the science and the technology to scale up ‘serendipity’ to an industrial level, opening up new and exciting possibilities to create novel treatments for patients based on existing medicines.”

“There is so much data out there that is currently underutilized, yet has the potential to significantly inform drug repurposing. Eighty percent of all health data is invisible to current technology systems because it's unstructured,” said Ajay Royyuru, IBM Fellow and Director of Healthcare & Life Sciences for IBM Research. “Using cognitive technologies to mine this data could reveal novel therapies for diseases that desperately need tackling. By teaming up with Teva, our belief is we will gain insights that can lead pharmaceutical companies to develop new medicines that benefit patients worldwide.”

Empowering Doctors and Patients to Manage Chronic Diseases

Chronic diseases present a global burden, both on patients and on our healthcare systems. Widespread chronic diseases, like asthma, which is estimated to impact 400 million people around the world by 2025, remain uncontrolled in many patients despite decades of availability to proven medications. Many people living with asthma, for example, still experience uncontrolled symptoms and frequent attacks – often due to incorrect inhaler use or poor adherence to treatment. The need exists for therapeutic solutions that enable a systematic, comprehensive approach to help people take control of their health conditions.

To address the global impact of chronic diseases, Teva and IBM reveal, for the first time, that they are working together on an initiative that combines Teva's therapeutic technologies with IBM Watson's cognitive computing. Together, the companies aim to enable patients, healthcare providers, and payers to better understand and control chronic conditions, and track treatments.

The chronic disease management collaboration will combine cloud-connected drug delivery and app technology with more than six billion data points processed by Watson to provide actionable insights, including the first-

ever integration of data from The Weather Company. Using Watson's cognitive processing capabilities and newly developed algorithms these data may be used to calculate the prospective risk of health events, such as an asthma attack, with Teva delivering that information directly to caregivers and their patients via an app or other software interface.

"Teva envisions a future where we can empower patients and their families to better understand diseases, like asthma, and cope with health challenges in a more systematic, data-driven manner, with the ability to be proactive, rather than reactive," said Rob Koremans, MD, President and CEO of Teva Global Specialty Medicines. "In doing so, we aim to cut treatment costs by providing patients, payers, healthcare providers and caregivers with relatable data that can inform action and insights into a patient's total disease management plan."

The IBM Watson Health Cloud is a health-data enabled platform-as-a-service. It provides a foundation for cognitive offerings and is designed to help healthcare organizations derive individualized insights and obtain a more complete picture of the many factors that can affect people's health. Teva's use of the IBM Watson Health Cloud will comply with operational and security requirements for health data.

About Teva

Teva Pharmaceutical Industries Ltd. (NYSE and TASE: TEVA) is a leading global pharmaceutical company that delivers high-quality, patient-centric healthcare solutions used by millions of patients every day. Headquartered in Israel, Teva is the world's largest generic medicines producer, leveraging its portfolio of more than 1,800 molecules to produce a wide range of generic products in nearly every therapeutic area. In specialty medicines, Teva has a world-leading position in innovative treatments for disorders of the central nervous system, including pain, as well as a strong portfolio of respiratory products. Teva integrates its generics and specialty capabilities in its global research and development division to create new ways of addressing unmet patient needs by combining drug development capabilities with devices, services and technologies. Teva's net revenues in 2015 amounted to \$19.7 billion. For more information, visit www.tevapharm.com.

About IBM Watson: Pioneering a New Era of Computing

Watson represents a new era in computing called cognitive computing, where systems understand the world the way humans do: through senses, learning, and experience. Watson continuously learns from previous interactions, gaining in value and knowledge over time. With Watson, organizations are harnessing the power of cognitive computing to transform industries, help professionals do their jobs better, and solve important challenges.

Watson solutions are being built, used and deployed in more than 45 countries and across 20 different industries. Watson is open to the world, allowing a growing community of developers, students, entrepreneurs and tech enthusiasts to easily tap into the most advanced and diverse cognitive computing platform available today. For more information about how IBM Watson is driving progress in the world,

watch: <https://www.youtube.com/watch?v=PujCkDAXji8>

About IBM Research

For more than seven decades, IBM Research has defined the future of information technology with more than 3,000 researchers in 12 labs located across six continents. Scientists from IBM Research have produced six Nobel Laureates, 10 U.S. National Medals of Technology, five U.S. National Medals of Science, six Turing Awards, 19 inductees in the National Academy of Sciences and 20 inductees into the U.S. National Inventors Hall of Fame. For more information about IBM Research, visit www.ibm.com/research.

Teva's Safe Harbor Statement under the U. S. Private Securities Litigation Reform Act of 1995:

This release contains forward-looking statements, which are based on management's current beliefs and expectations and involve a number of known and unknown risks and uncertainties that could cause our future results, performance or achievements to differ significantly from the results, performance or achievements expressed or implied by such forward-looking statements. Important factors that could cause or contribute to such differences include risks relating to: our ability to develop and commercialize additional pharmaceutical products; competition for our specialty products, especially Copaxone® (which faces competition from orally-administered alternatives and a generic version); our ability to integrate Allergan plc's worldwide generic pharmaceuticals business ("Actavis Generics") and to realize the anticipated benefits of the acquisition (and the timing of realizing such benefits); the fact that following the consummation of the Actavis Generics acquisition, we are dependent to a much larger extent than previously on our generic pharmaceutical business; potential restrictions on our ability to engage in additional transactions or incur additional indebtedness as a result of the substantial amount of debt incurred to finance the Actavis Generics acquisition; the fact that for a period of time following the Actavis Generics acquisition, we will have significantly less cash on hand than previously, which could adversely affect our ability to grow; the possibility of material fines, penalties and other sanctions and other adverse consequences arising out of our ongoing FCPA investigations and related matters; our ability to achieve expected results from investments in our pipeline of specialty and other products; our ability to identify and successfully bid for suitable acquisition targets or licensing opportunities, or to consummate and integrate acquisitions; the extent to which any manufacturing or quality control problems damage our reputation for quality production and require costly remediation; increased government scrutiny in both the U.S. and Europe of our patent settlement agreements; our exposure to currency fluctuations and restrictions as well as credit risks; the effectiveness of our patents, confidentiality agreements and other measures to protect the intellectual property rights of our specialty medicines; the effects of reforms in healthcare regulation and pharmaceutical pricing, reimbursement and coverage; competition for our generic products, both from other pharmaceutical companies and as a result of increased governmental pricing pressures; governmental investigations into sales and marketing practices, particularly for our specialty pharmaceutical products; adverse effects of political or economic instability, major hostilities or acts of terrorism on our significant worldwide operations; interruptions in our supply chain or problems with internal or third-party information technology systems that adversely affect our complex manufacturing processes; significant disruptions of our information technology systems or breaches of our data security; competition for our specialty pharmaceutical businesses from companies with greater resources and capabilities; the impact of continuing consolidation of our distributors and customers; decreased opportunities to obtain U.S. market exclusivity for significant new generic products; potential liability in the U.S., Europe and other markets for sales of generic products prior to a final resolution of outstanding patent litigation; our potential exposure to product liability claims that are not covered by insurance; any failure to recruit or retain key personnel, or to attract additional executive and managerial talent; any failures to

comply with complex Medicare and Medicaid reporting and payment obligations; significant impairment charges relating to intangible assets, goodwill and property, plant and equipment; the effects of increased leverage and our resulting reliance on access to the capital markets; potentially significant increases in tax liabilities; the effect on our overall effective tax rate of the termination or expiration of governmental programs or tax benefits, or of a change in our business; variations in patent laws that may adversely affect our ability to manufacture our products in the most efficient manner; environmental risks; and other factors that are discussed in our Annual Report on Form 20-F for the year ended December 31, 2015 and in our other filings with the U.S. Securities and Exchange Commission (the "SEC"). Forward-looking statements speak only as of the date on which they are made and we assume no obligation to update or revise any forward-looking statements or other information, whether as a result of new information, future events or otherwise.

[1] <http://dx.doi.org/10.1016/j.drudis.2013.11.005>

<https://uk.newsroom.ibm.com/2016-Oct-26-Teva-Pharmaceuticals-and-IBM-Expand-Global-Partnership-to-Enable-Drug-Development-and-Chronic-Disease-Management-with-Watson>