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## Johnson & Johnson Innovation Announces 17 Collaborations With Focus on Advancing Global Healthcare Through Transformational Science and Technologies

Research Alliance with Washington University Marks First Collaboration for Janssen Disease Interception Accelerator in Type 1 Diabetes

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NEW BRUNSWICK, N.J., June 11, 2015 /PRNewswire/ -- Johnson & Johnson Innovation today announced 17 new collaborations with research institutions and healthcare companies, bringing the total number of collaborations formed since the 2013 launch of Johnson & Johnson Innovation to more than 200. Today's announcement includes the first alliance for the **Disease Interception Accelerator (DIA)**, a research agreement with Washington University to identify the root cause of type 1 diabetes and enable the development of interventions that halt progression to disease.

"Johnson & Johnson Innovation is focused on bringing forward cutting-edge healthcare solutions that could extend and improve lives. The collaborations announced today aim to accelerate innovation at all stages of research and development," said **Paul Stoffels**, M.D., Chief Scientific Officer, Johnson & Johnson and Worldwide Chairman, Pharmaceuticals. "We are committed to working with researchers around the world to push the boundaries of what science and medicine can achieve to transform healthcare."

Johnson & Johnson Innovation seeks to identify and advance scientific innovation across the Johnson & Johnson segments of Pharmaceutical, Medical Devices and Consumer businesses.

### Intercepting Type 1 Diabetes

- **Investigating Early Signs of Type 1 Diabetes** – The DIA and Janssen Pharmaceuticals, Inc. have formed a first-of-its-kind collaboration with award-winning immunologist Emil Unanue, M.D., Paul & Ellen Lacy Professor of Pathology & Immunology at Washington University. Through this collaboration, the role of antigen presenting cells in the initiation and progression of type 1 diabetes in humans will be explored. The ability to detect and potentially intercept type 1 diabetes in at-risk individuals before the disease sets in or insulin dependence develops has the potential to greatly improve health and well-being.

"We are pursuing disease interception to discover and develop novel solutions to halt or alter disease-causing processes in at-risk patients," said Benjamin Wiegand, Ph.D., Head, DIA, Janssen Research & Development, LLC. "The research collaboration with Dr. Unanue and Washington University is an example of the exciting work underway in our first disease area, focused on type 1 diabetes. We believe collaborations linking our internal expertise with leading external research can bring about transformational medical solutions across many diseases where strong scientific rationale exists to intercept disease."

### Building Global Connections in Healthcare

- **Advancing New Healthcare Products in China**– Johnson & Johnson Innovation has

entered into a broad collaboration with WuXi AppTec, a leading global contract R&D service provider with a corporate venture arm, to source and advance potentially transformational new healthcare products. Johnson & Johnson Innovation and WuXi will each provide resources and capabilities, such as talent, facilities and funding, to set up asset-centric development companies focused on the development of early stage biopharmaceutical assets and consumer healthcare products. These product candidates will be sourced globally and developed in China for the global market.

- **Launching a Nordic Innovation Hub** – Johnson & Johnson Innovation has established a hub at Karolinska Institutet to accelerate the translation of promising science by providing emerging life science companies in the Nordic region that are working in areas of strategic interest to the Johnson & Johnson Family of Companies with investment and access to a range of resources and expertise. Under the collaboration, companies will have access to knowledge exchange and scouting programs, seed financing investment for new company formation and advancement of ideas towards proof of concept. This newly established Johnson & Johnson Innovation office will also act as platform to explore opportunities in the wider Nordic regional life science ecosystem.
- **Collaborating with Toronto-Based MaRS Innovation** – Johnson & Johnson Innovation has formed a new collaboration with MaRS Innovation focused on identifying and advancing early stage technologies of interest to the Johnson & Johnson companies. A previous alliance formed in 2013 has already resulted in a medical device that is being evaluated in a clinical trial. The device has the potential to improve patient outcomes following a catheter ablation procedure.
- **Building Strategic Alliances with German Researchers** – A collaboration between The Lead Discovery Center in Germany, which works closely with research institutions and universities in the region to transform promising early stage projects into therapeutic candidates, and Johnson & Johnson Innovation aims to identify and advance molecules with therapeutic potential developed by the academic community that also lie within the strategic areas of interest of Janssen Research & Development, LLC.

### Tools to Improve Drug Discovery and Development

- **Improving Prediction of Human Response to Drugs** – Janssen Biotech, Inc. has formed a research collaboration with Emulate Inc. to deploy the Organs-on-Chips platform across specific Janssen Research & Development, LLC clinical research

programs, including Lung-on-Chip to evaluate pulmonary thrombosis and Liver-on-Chip to better predict liver toxicity, a major cause of drug failures in the clinic as well as other programs. The goal of this technology is to reduce drug candidate attrition in human clinical trials and ultimately advance safer therapeutic candidates.

- **Exploring New Antibody Discovery Platforms** – While current antibody discovery technologies, such as hybridomas, are highly reliable, they are also inefficient in terms of percentage of antigen-specific B cells identified during screening. HiFiBiO and Janssen Biotech, Inc. are collaborating to evaluate the company's single cell technology for genetically characterizing individual cells as a potential new antibody discovery platform. Validation activities include comparing a large repertoire of B-cell antibodies from a number of different tissues generated against a target antigen chosen by Janssen Research & Development, LLC.

### Advancing the Science of Immunology, Infectious Diseases and Orthopaedics

- **Advancing Treatments for Inflammatory Bowel Disease** – Crohn's disease and ulcerative colitis, two types of inflammatory bowel disease, affect an estimated 5 million people globally and surgery is often required for those living with these diseases. A worldwide, exclusive license agreement between Janssen Biotech, Inc. and Novo Nordisk AS has been formed involving NNC-0142-0002, a monoclonal antibody that has the potential to be a first-in-class treatment. The agreement is subject to final clearance under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (HSR) with the U.S. Department of Justice Antitrust Division and the Federal Trade Commission.
- **Identifying Environmental Factors Involved in Asthma** – While asthma is known to have a genetic component, recent increases in its prevalence suggests environmental factors play a major role, and studies have shown a correlation between increased farm exposure during childhood and reduced asthma risk. Johnson & Johnson Consumer & Personal Products and Janssen Biotech, Inc. are collaborating with the BIO5 Institute at the University of Arizona, an interdisciplinary group of researchers seeking solutions to health and environmental challenges, to identify environmental components that may be protective against asthma. Findings from this study could lead to the development of medicines to prevent asthma.
- **Ankylosing Spondylitis: Addressing Underlying Causes** – Ankylosing spondylitis is a form of inflammatory arthritis that affects the spine and can lead to chronic, severe pain, spinal fusion and disability. Janssen Cilag Pty Limited has formed a collaboration

with UniQuest, under which researchers at The University of Queensland, Australia, and Janssen Research & Development, LLC will work together to identify, develop and commercialize small molecule modulators of a biological target that has been implicated in ankylosing spondylitis.

- **Harnessing the Power of Kinase Inhibitors** – Kinases are known to play a key role in the etiology of autoimmune and inflammatory diseases. Janssen Biotech, Inc. has entered into a worldwide licensing agreement with Carna Biosciences to further develop and commercialize small molecules from one of Carna Biosciences' kinase inhibitor programs.
- **Developing Drugs for Dengue Fever** – Spread through a mosquito bite, dengue fever affects nearly 400 million people worldwide each year and is a leading cause of illness and death in tropical regions. However, no vaccines or therapies are approved for dengue. BRIM Biotechnology, Inc. and Janssen Pharmaceutica N.V. are collaborating to research, develop and commercialize novel therapies for dengue fever.
- **Teaming with South African Scientists on a Potential Hepatitis B Cure** – With an estimated 240 million people chronically infected with hepatitis B, the disease is a major global health problem. However, current therapies are unable to cure the infection, requiring most people to continue treatment for life. With the goal of developing a cure for hepatitis B, the University of the Witwatersrand in South Africa and Janssen Sciences Ireland UC have formed a collaboration to explore the delivery of hepatitis B-targeted transcription activator–like effector nucleases (TALENs) using viral and non-viral vectors.
- **Working to Improve Orthopaedic Surgeries** – DePuy Synthes Products has entered into two early stage collaborations involving orthopaedic areas of focus. One alliance will research how advanced biomarker diagnostics could be used to detect infection, while another collaboration with an academic institution will evaluate next-generation cements for orthopaedic applications.
- **Advancing RNA-Based Medicines** – RNA-based therapeutics hold much promise, but chemistry and delivery continue to be a challenge. Janssen Pharmaceuticals, Inc. and Arcturus Therapeutics, Inc. have entered into a research collaboration and worldwide license agreement. Together, the companies will work to discover, develop and commercialize RNA-based drug products for the treatment of specified diseases using Arcturus' UNA Oligomer™ chemistry and LUNAR™ nanoparticle delivery platform.

### Evaluating Treatment Response in a Real-World Setting

- **Working to Improve Health Outcomes** – Janssen Pharmaceutica N.V. has launched a flagship Real World Evidence (RWE) research program with Karolinska Institutet, under which researchers from the university and Janssen Pharmaceutica N.V. will study how patients respond to medicines and other interventions based on a wide range of real-world parameters, including clinical, quality-of-life, social and economic criteria. Initial areas of focus are depression, prostate cancer, psoriasis, B-cell malignancies and method development, with the ultimate goal of improving our understanding of medical interventions and treatment outcomes under real-world conditions.

Johnson & Johnson Innovation works globally with life science researchers and entrepreneurs to identify promising technologies at all stages of development and helps translate these ideas into solutions for patients. Regional innovation centers are located in Boston, California, London and Asia Pacific. To connect with a J&J Innovation team member visit [www.jnjinnovation.com/contact](http://www.jnjinnovation.com/contact).

### **About Johnson & Johnson Innovation**

Johnson & Johnson Innovation LLC is working to accelerate scientific innovation at all stages of development worldwide to deliver cutting-edge solutions that solve unmet needs for patients. Johnson & Johnson Innovation provides scientists, entrepreneurs and emerging companies with one-stop access to the broad resources of the Johnson & Johnson Family of Companies across the Pharmaceutical, Medical Devices and Consumer healthcare segments. This includes access to dealmakers, through the innovation centers located in global life science hot spots and Johnson & Johnson Innovation – Janssen Business Development; venture investment, through Johnson & Johnson Innovation – JJDC; company incubation, through Johnson & Johnson Innovation, JLABS; as well as R&D, manufacturing and commercialization expertise across all three segments. For more information, visit [www.jnjinnovation.com](http://www.jnjinnovation.com) or follow @JNJInnovation.

### **About Janssen Pharmaceutical Companies of Johnson & Johnson**

At Janssen, we are dedicated to addressing some of the most important unmet medical needs in oncology, immunology, neuroscience, infectious diseases and vaccines, and cardiovascular and metabolic diseases. Driven by our commitment to patients, we develop innovative products, services and healthcare solutions to help people throughout the world. Please visit [www.janssen.com](http://www.janssen.com) for more information.

## Cautions Concerning Forward-Looking Statements

This press release contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995 related to new collaborations and product development. The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Johnson & Johnson Innovation, LLC, the Janssen Pharmaceutical Companies and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: the satisfaction of closing conditions for the transactions, including clearance under the Hart-Scott-Rodino Antitrust Improvements Act; the potential that the expected benefits and opportunities related to the collaborations may not be realized or may take longer to realize than expected; challenges and uncertainties inherent in new product development, including the uncertainty of clinical success and obtaining regulatory approvals; competition, including technological advances, new products and patents attained by competitors; changes in behavior and spending patterns or financial distress of purchasers of health care products and services; and global health care reforms and trends toward health care cost containment. A further list and description of these risks, uncertainties and other factors can be found in Johnson & Johnson's Annual Report on Form 10-K for the fiscal year ended December 28, 2014, including in Exhibit 99 thereto, and the company's subsequent filings with the Securities and Exchange Commission. Copies of these filings are available online at [www.sec.gov](http://www.sec.gov), [www.jnj.com](http://www.jnj.com) or on request from Johnson & Johnson. Johnson & Johnson Innovation, LLC, the Janssen Pharmaceutical Companies and Johnson & Johnson do not undertake to update any forward-looking statement as a result of new information or future events or developments.

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