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## **New Marketing Authorisation Application Submitted to EMA for Ibrutinib for the Treatment of Two Forms of Blood Cancer**

*The submission is for chronic lymphocytic leukemia (CLL)/small lymphocytic leukemia (SLL) and mantle cell lymphoma (MCL), two difficult-to-treat diseases*

BEERSE, Belgium--(BUSINESS WIRE)-- Janssen-Cilag International NV (Janssen) announced today it has submitted a Marketing Authorization Application (MAA) to the European Medicines Agency (EMA) for ibrutinib for the treatment of adult patients with relapsed or refractory chronic lymphocytic leukemia (CLL)/small lymphocytic leukemia (SLL) or relapsed or refractory mantle cell lymphoma (MCL), two forms of blood cancer.

Ibrutinib is administered orally, once-daily and is the first in a class of medicines called Bruton's tyrosine kinase (BTK) inhibitors. Data suggest ibrutinib covalently bonds to BTK in malignant B cells, shutting down major proliferation and survival pathways. Ibrutinib is being developed by Janssen with Pharmacyclics, Inc. for the treatment of several forms of blood cancer. If approved, ibrutinib will be the first commercially available therapy targeting BTK.

"The EMA Marketing Authorisation Application is an important milestone in the development of ibrutinib," said Jane Griffiths, Group Company Chairman of Janssen Europe, the Middle East and Africa (EMEA). "At Janssen, we are dedicated to developing solutions that prolong and improve the lives of patients. If approved, ibrutinib will address a great unmet need for patients with CLL/SLL and MCL who have previously failed or become resistant to previous treatment."

The EMA filings follow the New Drug Application submission of ibrutinib to the U.S. Food and Drug Administration which was announced on 10 July 2013, for its use in the treatment of previously treated patients with CLL/SLL or MCL.

CLL/SLL and MCL belong to a group of blood cancers, known as B-cell malignancies, originating from B cells, a type of white blood cell (lymphocyte).<sup>1</sup> CLL/SLL and MCL, are complex diseases that can be challenging to treat. As a result, many patients will relapse after a specific treatment and may require multiple treatments over the course of their disease.

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### About Ibrutinib

Ibrutinib is the first in a class of medicines called Bruton's tyrosine kinase (BTK) inhibitors. BTK is an important protein involved in mediating the cellular signaling pathways which control B cell maturation and survival. In malignant B cells, there is excessive signaling through the B cell receptor signaling (BCR) pathway, which includes BTK. The malignant cell ignores the natural signal to die and continues to develop and proliferate. Malignant cells migrate and adhere to protective environmental areas such as the lymph nodes where they proliferate and survive. Ibrutinib is the first in a new class of drugs specifically designed to target and inhibit BTK. Ibrutinib forms a strong covalent bond with BTK, which inhibits the excessive transmission of cell survival signals within the malignant B cells and stops their excessive build up in these protected environmental areas. The efficacy and safety of ibrutinib alone and in combination with other treatments is being studied in several blood cancers.<sup>2,3,4,5,6</sup>

### About Chronic Lymphocytic Leukemia (CLL)/Small Lymphocytic Leukemia (SLL)

CLL is a usually slow growing blood cancer that most commonly originates from B cells, a type of white blood cell (lymphocyte) that develops in the bone marrow. B cells are part of the immune system and play an important role in fighting infection in the body. CLL is the most common adult leukemia in the Western world, with the median age at diagnosis being primarily those over 70 years old. The incidence rates among men and women in Europe are approximately 5.87 and 4.01 cases per 100,000 persons per year, respectively. CLL is a chronic disease; median overall survival ranges between 18 months and more than 10 years according to the stage of disease. When cancer cells are located mostly in the lymph nodes, the disease is called small lymphocytic lymphoma (SLL).<sup>7,8,9,10,11,12</sup>

### About Mantle Cell Lymphoma (MCL)

MCL is a rare and aggressive blood cancer that usually occurs in older adults, with the median age at diagnosis being 65 years. The disease typically begins in the bone marrow, but can spread to other tissues such as bone marrow, liver and spleen. The incidence rates among men and women in Europe are approximately 0.64 and 0.27 cases per 100,000 persons per year,

respectively. MCL patients generally have a poor prognosis. Median overall survival is typically three to four years, and only one to two years in patients following the first relapse. <sup>13,14,15,16</sup>

## About Janssen

The Janssen Pharmaceutical Companies of Johnson & Johnson are dedicated to addressing and solving the most important unmet medical needs of our time, including oncology, immunology, neuroscience, infectious disease, and cardiovascular and metabolic diseases. Driven by our commitment to patients, Janssen develops innovative products, services and healthcare solutions to help people throughout the world. More information can be found at [www.janssen-emea.com](http://www.janssen-emea.com)

## Janssen in Oncology

In oncology, our goal is to fundamentally alter the way cancer is understood, diagnosed, and managed, reinforcing our commitment to the patients who inspire us. In looking to find innovative ways to address the cancer challenge, our primary efforts focus on several treatment and prevention solutions. These include a focus on hematologic malignancies, prostate cancer and lung cancer; cancer interception with the goal of developing products that interrupt the carcinogenic process; biomarkers that may help guide targeted, individualized use of our therapies; as well as safe and effective identification and treatment of early changes in the tumor microenvironment.

## Janssen and Pharmacyclics Strategic Partnership

Ibrutinib is being co-developed as part of a strategic partnership between Janssen and Pharmacyclics, Inc. Both companies are responsible for the development, manufacturing and commercialisation of ibrutinib. In Europe, Janssen is the lead party for the commercialisation of ibrutinib, if approved. Details about the complete ibrutinib clinical program are posted on [clinicaltrials.gov](http://clinicaltrials.gov).

(This press release contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. 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 unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Janssen-Cilag International NV, any of the other Janssen Pharmaceutical Companies and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to, general industry conditions and competition; economic factors, such as interest rate and currency exchange rate fluctuations; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approvals; challenges to patents; changes in behavior and spending patterns or financial distress of purchasers of health care products and services; changes to governmental laws and regulations and domestic and foreign health care reforms; trends toward health care cost containment; and increased scrutiny of the health care industry by government agencies. A further list and description of these risks, uncertainties and other factors can be found in Exhibit 99 of Johnson & Johnson's Annual Report on Form 10-K for the fiscal year ended December 30, 2012. Copies of this Form 10-K, as well as subsequent 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. None of the Janssen Pharmaceutical Companies nor Johnson & Johnson undertake to update any forward-looking statements as a result of new information or future events or developments.)

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