Investor News

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Perspective on Innovation 2012:

Bayer: improving people's lives through innovation

- Some EUR 3 billion for research and development in 2012
- More than 600 patent applications submitted last year
- Currently 35 clinical development projects in the pharmaceuticals pipeline
- Five pharmaceutical products with approximate peak annual sales potential of more than EUR 5.5 billion
- Strong CropScience pipeline with peak sales potential exceeding EUR 4 billion
- Increasing significance of partnerships – more than 800 R&D collaborations

Leverkusen, November 14, 2012 – With numerous new products, the Bayer Group aims to help improve people's lives while exploiting billions in potential sales. "Innovation is the only way to address the global challenges that exist at the beginning of the third millennium," Management Board Chairman Dr. Marijn Dekkers said on Wednesday, addressing some 140 journalists at Bayer's "Perspective on Innovation 2012" press forum in Leverkusen. Dekkers explained that significant opportunities are presenting themselves for the innovation company Bayer as a result of trends such as population growth and demographic changes, ecology and sustainability. Bayer will therefore once again invest some EUR 3 billion in research and development this year alone. The Bayer Group employs nearly 13,000 research scientists worldwide, whose work resulted in more than 600 patent applications last year.

"To us, innovation always means generating value for our customers and society as a whole," Dekkers continued. "Our mission sums it up: 'Bayer: Science For A Better Life.' In other words, our scientific successes are intended to help improve people's lives." Bayer's research and development focuses on the life sciences – in other words, the health of people, animals and plants.

Positive development for advanced pharmaceutical projects

Bayer is currently seeing positive developments particularly with the new product candidates from its clinical Phase III pharmaceuticals pipeline. Dekkers said further crucial milestones had been reached here in the past months. Here he referred to recent progress made with the anticoagulant Xarelto™, the cancer drugs Stivarga™ and radium-223 dichloride (Alpharadin), the eye medicine aflibercept (VEGF Trap-Eye) and riociguat to treat pulmonary hypertension. Assuming Bayer is granted marketing authorization for these products, they have yearly sales potential of more than EUR 5.5 billion, the Bayer CEO said, estimating the potential for Xarelto™ alone at more than EUR 2 billion. Bayer's pharmaceutical pipeline is otherwise well stocked, too: the company currently has a total of 35 projects in clinical development.

According to Dekkers, Xarelto™ is approved in up to 120 countries worldwide depending on the indication. Since it was first licensed in 2008, Xarelto™ has been administered to more than two-and-a-half million patients worldwide in everyday medical practice, he said. In the Bayer Chairman's words, the medicine can prevent two out of three strokes in patients with atrial fibrillation, and – by contrast with other novel anticoagulants – needs only be taken once daily.

New ways to increase food production

Dekkers explained that plant health is a very important issue. He said the CropScience subgroup already offers a balanced portfolio of new products and product candidates, including Xpro™ and Luna™ to control fungal infections and the insecticide Sivanto™ for application primarily in fruits, vegetables and various field crops. Other products in the subgroup's portfolio are Votivo™ for biological protection against nematodes (small worms that damage roots) and a new variety from the FiberMax™ family of cotton seeds that offers both herbicide tolerance and insect resistance and thus helps to considerably improve harvest yields, Dekkers explained.

Dekkers highlighted the benefits of these innovations using the example of Xpro™, which last year already was used in roughly one quarter of the planting area in Germany for cereals. Xpro™ leads to higher yields of 5 percent on average – corresponding to 500,000 metric tons of cereals in Germany last year alone. "Allow me to give you a clear idea of just how much this is: to be able to transport this additional yield, a train would

need 20,000 carriages and would stretch from Leverkusen to Frankfurt," said the Management Board Chairman.

In light of societal acceptance of biologically grown food products, biologicals will play a key role in the future of crop protection. Bayer is keen to be represented in this field from the beginning, Dekkers remarked. Essentially, the issue concerns microorganisms such as bacteria or their metabolites that are applied to crops. They act biologically on various species of plant pests. Although Bayer is already represented on the market with biological products such as the recently launched Votivo™ brand, the acquisition of AgraQuest now provides the company with an excellent starting point for further innovation.

According to the Bayer CEO, CropScience is pursuing numerous promising projects in the areas of crop protection, biologicals and seed. With peak sales potential in excess of EUR 4 billion, these new products are expected to be introduced to the market between 2011 and 2016.

New approaches in innovation

Dekkers emphasized that Bayer has a unique starting position thanks to its extensive expertise with respect to the health of people, animals and plants. "Bayer is the only global company to combine all three under one roof". It is from this very position that Bayer is breaking new ground in terms of innovation too. Thanks to significant progress in the biosciences, there is a steady flow of new findings about fundamental cellular mechanisms in people, animals and plants, the Bayer Chairman said, explaining that these mechanisms can be very similar across various species and can thus enable new research approaches. Dekkers said Bayer has therefore created the framework its researchers need to work together on innovations – systematically and much more intensively across subgroup boundaries.

MaterialScience focuses on improving production processes

The central challenges of our time include not just health and nutrition, but also energy, resources and safety, Dekkers said. At Bayer MaterialScience, improvements to production processes are therefore one of the most important keys to greater sustainability, the Bayer CEO remarked. For instance, Bayer is converting its energy-intensive chlorine production to a process that lowers energy requirements by some 30

percent. “As this example shows, efficiency and cost-effectiveness go hand in hand in the long term. What’s more, using less energy also improves our carbon footprint,” Dekkers said. The same applies to gas phase phosgenation in the production of TDI, one of the precursors for polyurethanes, he added. Dekkers referred to the Dream Production project as a particularly fascinating and innovative development. Here the concentration of CO_2 can be additionally reduced by using an innovative technology to convert it from a waste product into a raw material for plastics production.

Good opportunities through cooperation

Bayer sees good opportunities for developing numerous new and innovative products particularly in cooperation with research institutes and universities, as well as with start-up companies, explained Professor Wolfgang Plischke, whose responsibilities on the Board of Management of Bayer AG include the areas of innovation, technology and sustainability. The focus here is on the life sciences. “It is no longer possible for companies to achieve everything on their own. Cooperation agreements and alliances have now become an integral part of the innovation culture of all research-based companies,” Plischke said.

One vital requirement is to structure these partnerships intelligently from the outset, Plischke remarked, explaining that the correct cooperation model needs to be found based on the objectives and skills of everyone involved. Each partner contributes specific expertise that will enable the joint goal to be achieved faster and more efficiently, the Management Board member said. He pointed out that the trend toward more research alliances is also reflected in the fact that external collaborations now account for nearly one quarter of the company’s roughly EUR 3 billion annual research and development budget. Cooperation projects in the field of biology benefit from the lion’s share of these funds, receiving more than two thirds of the total. Bayer possesses and is continuously expanding an excellent network comprising more than 800 partners in many countries around the world.

In this connection, Plischke listed numerous examples from the HealthCare subgroup. Last year, he said, the close to 7,500 research and development staff at Bayer HealthCare submitted 146 patent applications and were involved in 326 cooperation projects with universities, research institutes and other companies worldwide. “Partnerships can be formed at any point in the pharmaceutical value-added chain – from the initial idea through all stages of research and development to joint sales and

marketing activities," continued Plischke. Bayer HealthCare maintains strategic partnerships in various areas – including mainly oncology, but also cardiovascular disease and women's health care.

Nearly 4,500 people work in research and development at CropScience. Last year they submitted 204 patent applications and 132 plant variety rights applications, and were involved in 420 collaborations around the world with universities, research institutes and other companies. "Our objective is to deliver the first or best solution for optimal yields for key crops worldwide," said Plischke. According to the Board member, this includes, for example, wheat – in which yields cannot be sufficiently increased with conventional methods to match world population growth. Developing a new variety takes a similar amount of time to producing a new drug – eight to 12 years. "A global network of plant breeders and cooperation projects with leading research institutes will help us in this respect," said Plischke. Bayer CropScience maintains alliances aimed, for example, at improving cotton seed or developing herbicides with new mechanisms of action.

Last year, the almost 1,000 research and development staff at Bayer MaterialScience submitted nearly 250 patent applications and were involved in 60 cooperation projects around the world with universities, research institutes and other companies. Plischke explained that "earthquake wallpaper" is an example of successful cooperation with diverse partners in the value-added chain. This innovation could play a key role in helping people in earthquake-prone regions to stay safe, Plischke said. He added that MaterialScience maintains several partnerships in the field of energy efficiency, including one collaboration that developed a modular and innovative streetlight concept. Simply by using efficient LED technology, it is possible to reduce energy consumption by up to 70 percent compared with conventional streetlights, Plischke remarked. Another example he mentioned was a new polyurethane insulation system for refrigerators that further significantly reduces thermal conductivity.

"Innovation safeguards our future"

"One thing is clear: we are committed to innovation. It is the only way to safeguard not only the company's future, but also – in more global terms – that of our planet's entire population," summed up Dekkers. However, he cautioned, innovation can only thrive under certain conditions. According to Dekkers, innovation is not just a matter of money – it also requires curiosity, a will to change and constant improvement. "This is something that needs to be taught and encouraged. Good training is therefore essential for each and

every innovation location," Dekkers said. "However, it is also important for society to be open to new ideas. We must not live in a society that is afraid of taking risks and grasping opportunities." Dekkers said these abilities and attitudes must be promoted – a task that requires a combined effort by politicians, schools and industry.

Bayer: Science For A Better Life

Bayer is a global enterprise with core competencies in the fields of health care, agriculture and high-tech materials. As an inventor company, it sets trends in research-intensive areas. Bayer's products and services are designed to benefit people and improve the quality of life. At the same time, the Group aims to create value through innovation, growth and high earning power. Bayer is committed to the principles of sustainable development and acts as a socially and ethically responsible corporate citizen. In fiscal 2011, the Group employed about 112,000 people and had sales of €36.5 billion. Capital expenditures amounted to €1.7 billion, R&D expenses to €2.9 billion. For more information, go to www.bayer.com.

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