



## FDA Approves Dupixent® (dupilumab) for Moderate-to-severe Atopic Dermatitis in Adolescents

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**Only therapy that targets the IL-4/IL-13 pathway, a key driver of the allergic or type 2 inflammation that underlies atopic dermatitis**

**In a Phase 3 trial, Dupixent significantly reduced the extent and severity of disease and itching, and helped adolescents achieve clearer skin**

Regeneron Pharmaceuticals, Inc. (NASDAQ: **REGN**) and Sanofi today announced that the U.S. Food and Drug Administration (FDA) has approved Dupixent® (dupilumab) for adolescent patients 12 to 17 years of age with moderate-to-severe atopic dermatitis whose disease is not adequately controlled with topical prescription therapies or when those therapies are not advisable. Dupixent can be used with or without topical corticosteroids.

"For the first time, adolescents with uncontrolled moderate-to-severe atopic dermatitis have an approved biologic treatment option to help control persistent, often debilitating symptoms such as chronic itch and widespread rash. Today's approval expands the use of Dupixent in the U.S. to include both adults and adolescents with atopic dermatitis or moderate-to-severe asthma," said George D. Yancopoulos, M.D., Ph.D., President and Chief Scientific Officer at Regeneron. "Given that Dupixent targets a key pathway in type 2 inflammation, we are also investigating it in a broad development program in patients with other type 2 inflammatory diseases including eosinophilic esophagitis, chronic rhinosinusitis with nasal polyps, where we recently announced positive Phase 3 results and Priority Review of a U.S. regulatory submission, and food and environmental allergies."

Dupixent is a targeted biologic therapy that inhibits signaling of interleukin-4 (IL-4) and interleukin-13 (IL-13), two key proteins that may play a central role in type 2 inflammation that underlies atopic dermatitis and several other allergic diseases.

"The approval of Dupixent for adolescents with moderate-to-severe atopic dermatitis means that for the first time these patients and their families, who often help them manage this debilitating disease, will have access to a first-of-its-kind biologic treatment that has already been used to treat approximately 50,000 patients in the U.S.," said John Reed, M.D., Ph.D., Head of Research and Development at Sanofi. "Our Phase 3 data demonstrated that Dupixent treatment significantly improved skin lesions, reduced itching, and helped clear the skin of these adolescent patients."

The FDA evaluated the Dupixent application under Priority Review, which is reserved for medicines that represent potentially significant improvements in safety or efficacy in treating serious conditions. Dupixent was also granted Breakthrough Therapy designation by the FDA for inadequately controlled moderate-to-severe atopic dermatitis in adolescents. The Breakthrough Therapy designation was created to expedite the development and review of drugs developed for serious or life-threatening conditions.

In the pivotal Phase 3 trial evaluating Dupixent monotherapy in adolescent patients with uncontrolled moderate-to-severe atopic dermatitis, the safety and efficacy were generally consistent with that previously seen in adult studies. At 16 weeks:

- The average improvement in the Eczema Area and Severity Index (EASI) from baseline was approximately 66% compared to 24% for placebo
- More than 10 times as many patients had clear or almost clear skin with Dupixent compared to placebo: 24% of patients who received Dupixent achieved clear or almost clear skin compared to 2% with placebo, as measured by an Investigator's Global Assessment (IGA) score of 0 or 1, the primary endpoint of the trial
- Over five times as many patients saw overall disease improvement of at least 75% with Dupixent compared to placebo: 42% of patients who received Dupixent achieved 75% or greater skin improvement compared to 8% with placebo, as measured by EASI-75
- Over seven times as many patients experienced significantly reduced itch with Dupixent compared to placebo: 37% of patients who received Dupixent achieved a clinically meaningful improvement in itch of at least four points on the Peak Pruritus Numerical Rating Scale (NRS) compared to 5% with placebo

Dupixent has been studied in more than 7,000 patients 12 years and older in over 30 clinical trials. The safety profile of Dupixent in the adolescent trial was similar to the safety profile from trials in adults with atopic dermatitis, and consistent through 52 weeks. The most common adverse events were injection site reactions, eye and eyelid inflammation including redness, swelling and itching, pain in the throat (oropharyngeal pain) and cold sores in the mouth or on the lips.

Atopic dermatitis, a form of eczema, is a chronic inflammatory disease with symptoms often appearing as a rash on the skin. Moderate-to-severe atopic dermatitis is characterized by rashes that can potentially cover much of the body and can include intense, persistent itching, skin lesions and skin dryness, cracking, redness, crusting and oozing. Itch is one of the most burdensome symptoms for patients and can be debilitating.

### About Dupixent

Dupixent comes in two doses (200 mg and 300 mg), each as a pre-filled syringe. Dupixent is intended for injection under the skin (subcutaneous injection) and is given every other week following an initial loading dose. It can be given in a clinic or, for convenience, at home by self-administration after training by a healthcare professional.

Dupixent is also approved in the U.S. for the treatment of adult patients with moderate-to-severe atopic dermatitis (eczema) that is not well controlled

with prescription therapies used on the skin (topical), or who cannot use topical therapies; and for use with other asthma medicines for the maintenance treatment of moderate-to-severe asthma in people aged 12 years and older whose asthma is not controlled with their current asthma medicines. In 2016, the FDA granted Breakthrough Therapy designation for Dupixent for the treatment of moderate-to-severe (adolescents 12 to 17 years of age) and severe (children 6 months to 11 years of age) atopic dermatitis not well controlled on topical prescription medications.

Regeneron and Sanofi are committed to helping patients in the U.S. who are prescribed Dupixent gain access to the medicine and receive the support they may need with the *DUPIXENT MyWay*<sup>®</sup> program. For more information, please call 1-844-DUPIXENT (1-844-387-4936) or visit [www.DUPIXENT.com](http://www.DUPIXENT.com).

Outside of the U.S., Dupixent is also approved in a number of other countries for use in certain adults with moderate-to-severe atopic dermatitis. Dupixent is currently under regulatory review for adolescents with moderate-to-severe atopic dermatitis in several countries, including Japan, and in the European Union (EU).

### Dupilumab Development Program

In addition to the currently approved indications, Regeneron and Sanofi are also studying dupilumab in a broad range of clinical development programs for diseases driven by allergic and other type 2 inflammation, including chronic rhinosinusitis with nasal polyps (Phase 3 *completed*), pediatric (6 to 11 years of age) atopic dermatitis (Phase 3), pediatric (6 months to 5 years of age) atopic dermatitis (Phase 2/3), pediatric (6 to 11 years of age) asthma (Phase 3), eosinophilic esophagitis (Phase 2/3), and food and environmental allergies (Phase 2). A future trial is planned for chronic obstructive pulmonary disease. Dupilumab is also being studied in combination with REGN3500, which targets IL-33. These potential uses are investigational and the safety and efficacy have not been evaluated by any regulatory authority. Dupilumab and REGN3500 were invented using Regeneron's proprietary *VelocImmune*<sup>®</sup> technology that yields optimized fully human antibodies, and are being jointly developed by Regeneron and Sanofi under a global collaboration agreement.

### U.S. INDICATIONS

DUPIXENT is a prescription medicine used:

- to treat people 12 years of age and older with moderate-to-severe atopic dermatitis (eczema) that is not well controlled with prescription therapies used on the skin (topical), or who cannot use topical therapies. DUPIXENT can be used with or without topical corticosteroids. It is not known if DUPIXENT is safe and effective in children with atopic dermatitis under 12 years of age.
- with other asthma medicines for the **maintenance treatment of moderate-to-severe asthma** in people aged 12 years and older whose asthma is not controlled with their current asthma medicines. DUPIXENT helps prevent severe asthma attacks (exacerbations) and can improve your breathing. DUPIXENT may also help reduce the amount of oral corticosteroids you need while preventing severe asthma attacks and improving your breathing. DUPIXENT is not used to treat sudden breathing problems. It is not known if DUPIXENT is safe and effective in children with asthma under 12 years of age.

### IMPORTANT SAFETY INFORMATION FOR U.S. PATIENTS

**Do not use** if you are allergic to dupilumab or to any of the ingredients in DUPIXENT<sup>®</sup>.

**Before using DUPIXENT, tell your healthcare provider about all your medical conditions, including if you:**

- have eye problems (if you also have atopic dermatitis)
- have a parasitic (helminth) infection
- are taking oral, topical, or inhaled corticosteroid medicines. **Do not** stop taking your corticosteroid medicines unless instructed by your healthcare provider. This may cause other symptoms that were controlled by the corticosteroid medicine to come back.
- are scheduled to receive any vaccinations. You should not receive a "live vaccine" if you are treated with DUPIXENT.
- are pregnant or plan to become pregnant. It is not known whether DUPIXENT will harm your unborn baby.
- are breastfeeding or plan to breastfeed. It is not known whether DUPIXENT passes into your breast milk.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins and herbal supplements. If you are taking asthma medicines, do not change or stop your asthma medicine without talking to your healthcare provider.

**DUPIXENT can cause serious side effects, including:**

- **Allergic reactions (hypersensitivity), including a severe reaction known as anaphylaxis.** Stop using DUPIXENT and tell your healthcare provider or get emergency help right away if you get any of the following symptoms: breathing problems, fever, general ill feeling, swollen lymph nodes, swelling of the face, mouth and tongue, hives, itching, fainting, dizziness, feeling lightheaded (low blood pressure), joint pain, or skin rash.
- **Eye problems.** If you have atopic dermatitis, tell your healthcare provider if you have any new or worsening eye problems, including eye pain or changes in vision.
- **Inflammation in your blood vessels:** Rarely, this can happen in people with asthma who receive DUPIXENT. This may happen in people who also take a steroid medicine by mouth that is being stopped or the dose is being lowered. It is not known whether this is caused by DUPIXENT. Tell your healthcare provider right away if you have: rash, shortness of breath, persistent fever, chest pain, or a feeling of pins and needles or numbness of your arms or legs.

**The most common side effects include** injection site reactions, pain in the throat (oropharyngeal pain) and cold sores in your mouth or on your lips. Eye and eyelid inflammation, including redness, swelling and itching have been seen in patients who have atopic dermatitis.

Tell your healthcare provider if you have any side effect that bothers you or that does not go away. These are not all the possible side effects of DUPIXENT. Call your doctor for medical advice about side effects. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit [www.fda.gov/medwatch](http://www.fda.gov/medwatch), or call 1-800-FDA-1088.

Use DUPIXENT exactly as prescribed. DUPIXENT is an injection given under the skin (subcutaneous injection). If your healthcare provider decides that you or a caregiver can give DUPIXENT injections, you or your caregiver should receive training on the right way to prepare and inject DUPIXENT. **Do not** try to inject DUPIXENT until you have been shown the right way by your healthcare provider. In adolescents 12 years of age and older, it is recommended that DUPIXENT be administered by or under supervision of an adult.

**Please see accompanying [full Prescribing Information](#) including Patient Information.**

#### **About Regeneron Pharmaceuticals, Inc.**

Regeneron (NASDAQ: REGN) is a leading biotechnology company that invents life-transforming medicines for people with serious diseases. Founded and led for 30 years by physician-scientists, our unique ability to repeatedly and consistently translate science into medicine has led to seven FDA-approved treatments and numerous product candidates in development, all of which were homegrown in our laboratories. Our medicines and pipeline are designed to help patients with eye diseases, allergic and inflammatory diseases, cancer, cardiovascular and metabolic diseases, neuromuscular diseases, infectious diseases and rare diseases.

Regeneron is accelerating and improving the traditional drug development process through our proprietary *VelociSuite*<sup>®</sup> technologies, such as *VelocImmune*<sup>®</sup> which produces optimized fully-human antibodies, and ambitious research initiatives such as the Regeneron Genetics Center, which is conducting one of the largest genetics sequencing efforts in the world.

For additional information about the company, please visit [www.regeneron.com](http://www.regeneron.com) or follow @Regeneron on Twitter.

#### **About Sanofi**

Sanofi is dedicated to supporting people through their health challenges. We are a global biopharmaceutical company focused on human health. We prevent illness with vaccines, provide innovative treatments to fight pain and ease suffering. We stand by the few who suffer from rare diseases and the millions with long-term chronic conditions.

With more than 100,000 people in 100 countries, Sanofi is transforming scientific innovation into healthcare solutions around the globe.

Sanofi, Empowering Life

#### **Regeneron Forward-Looking Statements and Use of Digital Media**

*This press release includes forward-looking statements that involve risks and uncertainties relating to future events and the future performance of Regeneron Pharmaceuticals, Inc. ("Regeneron" or the "Company"), and actual events or results may differ materially from these forward-looking statements. Words such as "anticipate," "expect," "intend," "plan," "believe," "seek," "estimate," variations of such words, and similar expressions are intended to identify such forward-looking statements, although not all forward-looking statements contain these identifying words. These statements concern, and these risks and uncertainties include, among others, the nature, timing, and possible success and therapeutic applications of Regeneron's products, product candidates, and research and clinical programs now underway or planned, including without limitation Dupixent<sup>®</sup> (dupilumab) Injection; the likelihood, timing, and scope of possible regulatory approval and commercial launch of Regeneron's late-stage product candidates and new indications for marketed products, such as dupilumab for the treatment of pediatric atopic dermatitis, pediatric asthma, chronic rhinosinusitis with nasal polyps, eosinophilic esophagitis, grass allergy, food allergy (including peanut), chronic obstructive pulmonary disease, and other potential indications (as well as in combination with REGN3500); unforeseen safety issues resulting from the administration of products and product candidates (such as dupilumab) in patients, including serious complications or side effects in connection with the use of Regeneron's product candidates in clinical trials; ongoing regulatory obligations and oversight impacting Regeneron's marketed products (such as Dupixent), research and clinical programs, and business, including those relating to patient privacy; determinations by regulatory and administrative governmental authorities which may delay or restrict Regeneron's ability to continue to develop or commercialize Regeneron's products and product candidates, including without limitation dupilumab; the availability and extent of reimbursement of the Company's products (such as Dupixent) from third-party payers, including private payer healthcare and insurance programs, health maintenance organizations, pharmacy benefit management companies, and government programs such as Medicare and Medicaid; coverage and reimbursement determinations by such payers and new policies and procedures adopted by such payers; uncertainty of market acceptance and commercial success of Regeneron's products and product candidates (such as Dupixent) and the impact of studies (whether conducted by Regeneron or others and whether mandated or voluntary) on the commercial success of any such products and product candidates; competing drugs and product candidates that may be superior to Regeneron's products and product candidates; the extent to which the results from the research and development programs conducted by Regeneron or its collaborators may be replicated in other studies and lead to therapeutic applications; the ability of Regeneron to manufacture and manage supply chains for multiple products and product candidates; the ability of Regeneron's collaborators, suppliers, or other third parties to perform filling, finishing, packaging, labeling, distribution, and other steps related to Regeneron's products and product candidates; unanticipated expenses; the costs of developing, producing, and selling products; the ability of Regeneron to meet any of its financial projections or guidance and changes to the assumptions underlying those projections or guidance; the potential for any license or collaboration agreement, including Regeneron's agreements with Sanofi, Bayer, and Teva Pharmaceutical Industries Ltd. (or their respective affiliated companies, as applicable), to be cancelled or terminated without any further product success; and risks associated with intellectual property of other parties and pending or future litigation relating thereto, including without limitation the patent litigation proceedings relating to EYLEA<sup>®</sup> (afibercept) Injection, Dupixent, and Praluent<sup>®</sup> (alirocumab) Injection, the ultimate outcome of any such litigation proceedings, and the impact any of the foregoing may have on Regeneron's business, prospects, operating results, and financial condition. A more complete description of these and other material risks can be found in Regeneron's filings with the U.S. Securities and Exchange Commission, including its Form 10-K for the year ended December 31, 2018. Any forward-looking statements are made based on management's current beliefs and judgment, and the reader is cautioned not to rely on any forward-looking statements made by Regeneron. Regeneron does not undertake any obligation to update publicly any forward-looking statement, including without limitation any financial projection or guidance, whether as a result of new information, future events, or otherwise.*

Regeneron uses its media and investor relations website and social media outlets to publish important information about the Company, including

information that may be deemed material to investors. Financial and other information about Regeneron is routinely posted and is accessible on Regeneron's media and investor relations website (<http://newsroom.regeneron.com>) and its Twitter feed (<http://twitter.com/regeneron>).

### **Sanofi Forward-Looking Statements**

This press release contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts. These statements include projections and estimates regarding the marketing and other potential of the product, or regarding potential future revenues from the product. Forward-looking statements are generally identified by the words "expects", "anticipates", "believes", "intends", "estimates", "plans" and similar expressions. Although Sanofi's management believes that the expectations reflected in such forward-looking statements are reasonable, investors are cautioned that forward-looking information and statements are subject to various risks and uncertainties, many of which are difficult to predict and generally beyond the control of Sanofi, that could cause actual results and developments to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include among other things, unexpected regulatory actions or delays, or government regulation generally, that could affect the availability or commercial potential of the product, the absence of guarantee that the product will be commercially successful, the uncertainties inherent in research and development, including future clinical data and analysis of existing clinical data relating to the product, including post marketing, unexpected safety, quality or manufacturing issues, competition in general, risks associated with intellectual property and any related future litigation and the ultimate outcome of such litigation, and volatile economic conditions, as well as those risks discussed or identified in the public filings with the SEC and the AMF made by Sanofi, including those listed under "Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements" in Sanofi's annual report on Form 20-F for the year ended December 31, 2017. Other than as required by applicable law, Sanofi does not undertake any obligation to update or revise any forward-looking information or statements.

### **Regeneron Contacts:**

#### **Media Relations**

**Sharon Chen**

Tel: +1 (914) 847-1546

[Sharon.Chen@regeneron.com](mailto:Sharon.Chen@regeneron.com)

#### **Investor Relations**

**Mark Hudson**

Tel: +1 (914) 847-3482

[Mark.Hudson@regeneron.com](mailto:Mark.Hudson@regeneron.com)

### **Sanofi Contacts:**

#### **Media Relations**

**Ashleigh Koss**

Tel: +1 (908) 981-8745

[Ashleigh.Koss@sanofi.com](mailto:Ashleigh.Koss@sanofi.com)

#### **Investor Relations**

**George Grofik**

Tel: +33 (0)1 53 77 45 45

[ir@sanofi.com](mailto:ir@sanofi.com)

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