



LUMAKRAS®/LUMYKRAS® (SOTORASIB) DEMONSTRATES SUPERIOR PROGRESSION-FREE SURVIVAL OVER DOCETAXEL IN FIRST POSITIVE PHASE 3 TRIAL OF A KRAS G12C INHIBITOR IN NON-SMALL CELL LUNG CANCER

September 11, 2022

At 1-Year, Progression-Free Survival was 25% for LUMAKRAS Versus 10% for Docetaxel

LUMAKRAS Met Key Secondary Endpoint of Objective Response Rate

LUMAKRAS Showed Clinically Meaningful Improvements in Patient-Reported Outcomes Compared to Docetaxel

THOUSAND OAKS, Calif., Sept. 12, 2022 /PRNewswire/ -- Amgen (NASDAQ: AMGN) today announced detailed results from the global Phase 3 CodeBreak 200 trial, which showed once-daily oral LUMAKRAS®/LUMYKRAS® (sotorasib) led to significantly superior progression-free survival (PFS; primary endpoint) and a significantly higher objective response rate (ORR; a key secondary endpoint) in patients with *KRAS* G12C-mutated non small cell lung cancer (NSCLC), compared with intravenous chemotherapy, docetaxel. Notably, patient-reported outcomes (PROs; a key secondary endpoint) were improved with LUMAKRAS versus docetaxel. These data were presented today, Monday, Sept. 12 at 5:20 p.m. CEST at the Presidential Symposium III session as a late-breaker oral presentation (#LBA5812) during the European Society for Medical Oncology (ESMO) Congress 2022 in Paris.

"The totality of evidence from this study supports LUMAKRAS as an important targeted treatment option for patients with non-small cell lung cancer who harbor the *KRAS* G12C mutation, and reinforces the critical need for comprehensive biomarker testing for all patients with advanced disease," said David M. Reese, M.D., executive vice president of Research and Development at Amgen. "We plan to submit this data to health authorities around the world where LUMAKRAS/LUMYKRAS is conditionally approved, and we look forward to our discussions with regulators."

LUMAKRAS significantly improved PFS as determined by Blinded Independent Central Review (BICR) compared to docetaxel in heavily pre-treated patients (median PFS of 5.6 vs 4.5 months respectively; HR, 0.66 [95% CI: 0.51, 0.86]; $P = 0.002$). PFS favored LUMAKRAS across all clinically relevant subgroups, including those with a history of brain metastases at baseline. The proportion of patients with PFS at one year was 25% for LUMAKRAS versus 10% for docetaxel.

LUMAKRAS demonstrated a significantly higher ORR than docetaxel with double the response rates in the LUMAKRAS arm (28% versus 13%, respectively; $P < 0.001$) and showed consistent benefit across other efficacy secondary endpoints, specifically improved disease control rate (DCR; 83% versus 60%, respectively); faster time to response (TTR; 1.4 versus 2.8 months, respectively); and longer duration of response (DOR; 8.6 versus 6.8 months, respectively). Overall survival (OS; a key secondary endpoint) was not significantly different between treatment arms (10.6 versus 11.3 months, respectively; HR, 1.01 [95% CI: 0.77, 1.33]; $P = 0.53$). The study was not powered to detect a statistical difference in OS, and more than one-third of patients on docetaxel went on to receive a *KRAS*^{G12C} inhibitor, either in protocol cross-over (26.4%) or as subsequent therapy (7.5%). A clinically meaningful improvement in patient reported outcomes was also observed with LUMAKRAS versus docetaxel. Change over time (improvement from baseline to week 12) in global health status, physical functioning and dyspnea favored LUMAKRAS. Time to deterioration (delaying symptoms from getting worse) in global health status, physical functioning and cancer-related symptoms (dyspnea and cough) were delayed with LUMAKRAS compared to docetaxel.

There were fewer treatment-related adverse events (TRAEs) for LUMAKRAS versus docetaxel. Grade ≥ 3 TRAEs (33% LUMAKRAS; 40% docetaxel) and serious TRAEs (11% LUMAKRAS; 23% docetaxel) were lower with LUMAKRAS compared to docetaxel. The most common TRAEs reported by at least 15% of patients in either treatment group were diarrhea (34% LUMAKRAS; 19% docetaxel), fatigue (7% LUMAKRAS; 25% docetaxel), alopecia (1% LUMAKRAS; 21% docetaxel), nausea (14% LUMAKRAS; 20% docetaxel) and anemia (3% LUMAKRAS; 18% docetaxel).

"This is the first Phase 3 randomized clinical trial for a *KRAS*^{G12C} inhibitor to show benefit in heavily pre-treated patients who have limited treatment options," said Melissa L. Johnson, M.D., director of Lung Cancer Research, Sarah Cannon Research Institute at Tennessee Oncology and presenting author. "It is encouraging that progression-free survival benefits were consistent across all clinically relevant subgroups including those with a history of brain metastases, and that sotorasib response rates were more than double compared to docetaxel response rates. This data represents a major advance for the treatment of patients with *KRAS* G12C-mutated non-small cell lung cancer."

Data from CodeBreak 200 will be submitted to global regulatory authorities where LUMAKRAS/LUMYKRAS has accelerated approval or conditional marketing authorization. LUMAKRAS is the only *KRAS*^{G12C} inhibitor approved anywhere in the world with approval in 44 markets, including the United States, the European Union, the United Kingdom and Japan. CodeBreak 200 is the first randomized, controlled clinical trial for a *KRAS*^{G12C} inhibitor.

**This press release was initially issued on Sunday, Sept. 11 at 6:05pm Eastern Daylight Time (EDT) and was updated on Monday, Sept. 12 at 12:30pm EDT to include additional data following the ESMO presentation.*

About LUMAKRAS®/LUMYKRAS® (sotorasib)

Amgen took on one of the toughest challenges of the last 40 years in cancer research by developing LUMAKRAS/LUMYKRAS, a *KRAS*^{G12C} inhibitor.¹ LUMAKRAS/LUMYKRAS has demonstrated a positive benefit-risk profile with rapid, deep, and durable anticancer activity in patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) harboring the *KRAS* G12C mutation with a once daily oral formulation.²

Amgen is progressing the largest and broadest global *KRAS*^{G12C} inhibitor development program with unparalleled speed and exploring more than 10 sotorasib combination regimens, with clinical trial sites spanning five continents. To date, over 6,500 patients around the world have received LUMAKRAS/LUMYKRAS through the clinical development program and commercial use.

In May 2021, LUMAKRAS was the first KRAS^{G12C} inhibitor to receive regulatory approval with its approval in the U.S., under accelerated approval. LUMAKRAS/LUMYKRAS is also approved in the European Union, Japan, United Arab Emirates, South Korea, Hong Kong, Switzerland, Taiwan, Qatar, and in Australia, Brazil, Canada, Great Britain, Singapore, and Israel under the FDA's Project Orbis. Additionally, Amgen has submitted MAAs in Argentina, Colombia, Kuwait, Macao, Malaysia, Mexico, Russia, Saudi Arabia, Thailand and Turkey.

LUMAKRAS/LUMYKRAS is also being studied in multiple other solid tumors.³

About Non-Small Cell Lung Cancer and the KRAS G12C Mutation

Lung cancer is the leading cause of cancer-related deaths worldwide, and it accounts for more deaths worldwide than colon cancer, breast cancer and prostate cancer combined.⁴ Overall survival rates for NSCLC are improving but remain poor for patients with advanced disease, and 5-year survival is only 8% for those with metastatic disease.⁵

KRAS G12C is the most common KRAS mutation in NSCLC.⁶ About 13% of patients with NSCLC harbor the KRAS G12C mutation.⁷ Unmet medical need remains high and treatment options are limited for NSCLC patients with the KRAS G12C mutation whose first-line treatment has failed to work or has stopped working. The outcomes with other approved therapies are suboptimal, with a median progression-free survival of approximately four months following second-line treatment of KRAS G12C-mutated NSCLC.⁸

About CodeBreak

The CodeBreak clinical development program for Amgen's drug sotorasib is designed to study patients with an advanced solid tumor with the KRAS G12C mutation and address the longstanding unmet medical need for these cancers.

CodeBreak 100, the Phase 1 and 2, first-in-human, open-label multicenter study, enrolled patients with KRAS G12C-mutant solid tumors.⁹ Eligible patients must have received a prior line of systemic anticancer therapy, consistent with their tumor type and stage of disease. The primary endpoint for the Phase 2 study was centrally assessed objective response rate. The Phase 2 trial in NSCLC enrolled 126 patients, 124 of whom had centrally evaluable lesions by RECIST at baseline.² The Phase 2 trial in colorectal cancer (CRC) enrolled 62 patients and results have been published.¹⁰

CodeBreak 200, the global Phase 3 randomized active-controlled study comparing sotorasib to docetaxel in KRAS G12C-mutated NSCLC completed enrollment of 345 patients. Eligible patients had previously treated, locally advanced and unresectable or metastatic KRAS G12C-mutated NSCLC. The primary endpoint is progression-free survival and key secondary endpoints include overall survival, objective response rate, and patient-reported outcomes.¹¹

Amgen also has several Phase 1b studies investigating sotorasib monotherapy and sotorasib combination therapy across various advanced solid tumors (CodeBreak 101) open for enrollment.¹² A Phase 2 randomized study will evaluate sotorasib in patients with stage IV KRAS G12C-mutated NSCLC in need of first-line treatment (CodeBreak 201).¹³

For information, please visit www.hcp.codebreaktrials.com.

LUMAKRAS® (sotorasib) U.S. Indication

LUMAKRAS is indicated for the treatment of adult patients with KRAS G12C-mutated locally advanced or metastatic non-small cell lung cancer (NSCLC), as determined by an FDA-approved test, who have received at least one prior systemic therapy.

This indication is approved under accelerated approval based on overall response rate (ORR) and duration of response (DOR). Continued approval for this indication may be contingent upon verification and description of clinical benefit in a confirmatory trial(s).

LUMAKRAS® (sotorasib) Important U.S. Safety Information

Hepatotoxicity

- LUMAKRAS can cause hepatotoxicity, which may lead to drug-induced liver injury and hepatitis.
- Among 357 patients who received LUMAKRAS in CodeBreak 100, hepatotoxicity occurred in 1.7% (all grades) and 1.4% (Grade 3). A total of 18% of patients who received LUMAKRAS had increased alanine aminotransferase (ALT)/increased aspartate aminotransferase (AST); 6% were Grade 3 and 0.6% were Grade 4. In addition to dose interruption or reduction, 5% of patients received corticosteroids for the treatment of hepatotoxicity.
- Monitor liver function tests (ALT, AST and total bilirubin) prior to the start of LUMAKRAS every 3 weeks for the first 3 months of treatment, then once a month or as clinically indicated, with more frequent testing in patients who develop transaminase and/or bilirubin elevations.
- Withhold, dose reduce or permanently discontinue LUMAKRAS based on severity of adverse reaction.

Interstitial Lung Disease (ILD)/Pneumonitis

- LUMAKRAS can cause ILD/pneumonitis that can be fatal. Among 357 patients who received LUMAKRAS in CodeBreak 100, ILD/pneumonitis occurred in 0.8% of patients, all cases were Grade 3 or 4 at onset, and 1 case was fatal. LUMAKRAS was discontinued due to ILD/pneumonitis in 0.6% of patients.
- Monitor patients for new or worsening pulmonary symptoms indicative of ILD/pneumonitis (e.g., dyspnea, cough, fever). Immediately withhold LUMAKRAS in patients with suspected ILD/pneumonitis and permanently discontinue LUMAKRAS if no other potential causes of ILD/pneumonitis are identified.

Most Common Adverse Reactions

- The most common adverse reactions ≥ 20% were diarrhea, musculoskeletal pain, nausea, fatigue, hepatotoxicity and

cough.

Drug Interactions

- Advise patients to inform their healthcare provider of all concomitant medications, including prescription medicines, over-the-counter drugs, vitamins, dietary and herbal products.
- Inform patients to avoid proton pump inhibitors and H₂ receptor antagonists while taking LUMAKRAS.
- If coadministration with an acid-reducing agent cannot be avoided, inform patients to take LUMAKRAS 4 hours before or 10 hours after a locally acting antacid.

Please see LUMAKRAS full [Prescribing Information](#).

About Amgen Oncology

At Amgen Oncology, our mission to serve patients drives all that we do. That's why we're relentlessly focused on accelerating the delivery of medicines that have the potential to empower all angles of care and transform lives of people with cancer.

For the last four decades, we have been dedicated to discovering the firsts that matter in oncology and to finding ways to reduce the burden of cancer. Building on our heritage, Amgen continues to advance the largest pipeline in the Company's history, moving with great speed to advance those innovations for the patients who need them.

For more information, follow us on www.twitter.com/amgenoncology.

About Amgen

Amgen is committed to unlocking the potential of biology for patients suffering from serious illnesses by discovering, developing, manufacturing and delivering innovative human therapeutics. This approach begins by using tools like advanced human genetics to unravel the complexities of disease and understand the fundamentals of human biology.

Amgen focuses on areas of high unmet medical need and leverages its expertise to strive for solutions that improve health outcomes and dramatically improve people's lives. A biotechnology pioneer since 1980, Amgen has grown to be one of the world's leading independent biotechnology companies, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential.

Amgen is one of the 30 companies that comprise the Dow Jones Industrial Average and is also part of the Nasdaq-100 index. In 2021, Amgen was named one of the 25 World's Best Workplaces™ by Fortune and Great Place to Work™ and one of the 100 most sustainable companies in the world by *Barron's*.

For more information, visit www.amgen.com and follow us on www.twitter.com/amgen.

Forward-Looking Statements

This news release contains forward-looking statements that are based on the current expectations and beliefs of Amgen. All statements, other than statements of historical fact, are statements that could be deemed forward-looking statements, including any statements on the outcome, benefits and synergies of collaborations, or potential collaborations, with any other company (including BeiGene, Ltd., Kyowa-Kirin Co., Ltd., or any collaboration to manufacture therapeutic antibodies against COVID-19), the performance of Otezla® (apremilast) (including anticipated Otezla sales growth and the timing of non-GAAP EPS accretion), the Five Prime Therapeutics, Inc. acquisition, the Teneobio, Inc. acquisition, or the recently announced proposed acquisition of ChemoCentryx, Inc., as well as estimates of revenues, operating margins, capital expenditures, cash, other financial metrics, expected legal, arbitration, political, regulatory or clinical results or practices, customer and prescriber patterns or practices, reimbursement activities and outcomes, effects of pandemics or other widespread health problems such as the ongoing COVID-19 pandemic on our business, and other such estimates and results. Forward-looking statements involve significant risks and uncertainties, including those discussed below and more fully described in the Securities and Exchange Commission reports filed by Amgen, including our most recent annual report on Form 10-K and any subsequent periodic reports on Form 10-Q and current reports on Form 8-K. Unless otherwise noted, Amgen is providing this information as of the date of this news release and does not undertake any obligation to update any forward-looking statements contained in this document as a result of new information, future events or otherwise.

No forward-looking statement can be guaranteed and actual results may differ materially from those we project. Discovery or identification of new product candidates or development of new indications for existing products cannot be guaranteed and movement from concept to product is uncertain; consequently, there can be no guarantee that any particular product candidate or development of a new indication for an existing product will be successful and become a commercial product. Further, preclinical results do not guarantee safe and effective performance of product candidates in humans. The complexity of the human body cannot be perfectly, or sometimes, even adequately modeled by computer or cell culture systems or animal models. The length of time that it takes for us to complete clinical trials and obtain regulatory approval for product marketing has in the past varied and we expect similar variability in the future. Even when clinical trials are successful, regulatory authorities may question the sufficiency for approval of the trial endpoints we have selected. We develop product candidates internally and through licensing collaborations, partnerships and joint ventures. Product candidates that are derived from relationships may be subject to disputes between the parties or may prove to be not as effective or as safe as we may have believed at the time of entering into such relationship. Also, we or others could identify safety, side effects or manufacturing problems with our products, including our devices, after they are on the market.

Our results may be affected by our ability to successfully market both new and existing products domestically and internationally, clinical and regulatory developments involving current and future products, sales growth of recently launched products, competition from other products including biosimilars, difficulties or delays in manufacturing our products and global economic conditions. In addition, sales of our products are affected by pricing pressure, political and public scrutiny and reimbursement policies imposed by third-party payers, including governments, private insurance plans and managed care providers and may be affected by regulatory, clinical and guideline developments and domestic and international trends toward managed care and healthcare cost containment. Furthermore, our research, testing, pricing, marketing and other operations are subject to extensive regulation by domestic and foreign government regulatory authorities. Our business may be impacted by government investigations, litigation and product liability claims. In addition, our business may be impacted by the adoption of new tax legislation or exposure to additional tax liabilities. If we fail to meet the compliance obligations in the corporate integrity agreement between us and the U.S. government, we could become

subject to significant sanctions. Further, while we routinely obtain patents for our products and technology, the protection offered by our patents and patent applications may be challenged, invalidated or circumvented by our competitors, or we may fail to prevail in present and future intellectual property litigation. We perform a substantial amount of our commercial manufacturing activities at a few key facilities, including in Puerto Rico, and also depend on third parties for a portion of our manufacturing activities, and limits on supply may constrain sales of certain of our current products and product candidate development. An outbreak of disease or similar public health threat, such as COVID-19, and the public and governmental effort to mitigate against the spread of such disease, could have a significant adverse effect on the supply of materials for our manufacturing activities, the distribution of our products, the commercialization of our product candidates, and our clinical trial operations, and any such events may have a material adverse effect on our product development, product sales, business and results of operations. We rely on collaborations with third parties for the development of some of our product candidates and for the commercialization and sales of some of our commercial products. In addition, we compete with other companies with respect to many of our marketed products as well as for the discovery and development of new products. Further, some raw materials, medical devices and component parts for our products are supplied by sole third-party suppliers. Certain of our distributors, customers and payers have substantial purchasing leverage in their dealings with us. The discovery of significant problems with a product similar to one of our products that implicate an entire class of products could have a material adverse effect on sales of the affected products and on our business and results of operations. Our efforts to collaborate with or acquire other companies, products or technology, and to integrate the operations of companies or to support the products or technology we have acquired, may not be successful. A breakdown, cyberattack or information security breach could compromise the confidentiality, integrity and availability of our systems and our data. Our stock price is volatile and may be affected by a number of events. Our business and operations may be negatively affected by the failure, or perceived failure, of achieving our environmental, social and governance objectives. The effects of global climate change and related natural disasters could negatively affect our business and operations. Global economic conditions may magnify certain risks that affect our business. Our business performance could affect or limit the ability of our Board of Directors to declare a dividend or our ability to pay a dividend or repurchase our common stock. We may not be able to access the capital and credit markets on terms that are favorable to us, or at all.

The scientific information discussed in this news release related to our product candidates is preliminary and investigative. Such product candidates are not approved by the U.S. Food and Drug Administration, and no conclusions can or should be drawn regarding the safety or effectiveness of the product candidates. Further, any scientific information discussed in this news release relating to new indications for our products is preliminary and investigative and is not part of the labeling approved by the U.S. Food and Drug Administration for the products. The products are not approved for the investigational use(s) discussed in this news release, and no conclusions can or should be drawn regarding the safety or effectiveness of the products for these uses.

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- ¹ Canon J, et al. *Nature*. 2019;575: 217–223.
- ² Skoulidis F, et al. *N Engl J Med*. 2021;384:2371-2381.
- ³ Hong DS, et al. *N Engl J Med*. 2020;383:1207-1217.
- ⁴ Sung H, et al. *CA Cancer J Clin*. 2021;71:209-249.
- ⁵ American Cancer Society. Lung Cancer Survival Rates. 2021. Available at: <https://www.cancer.org/cancer/lung-cancer/detection-diagnosis-staging/survival-rates.html>. Accessed on June 24, 2022.
- ⁶ Arbour KC, et al. *Clin Cancer Res*. 2018;24:334-340.
- ⁷ Nassar AF, et al. *N Engl J Med*. 2021;384:185-187.
- ⁸ Spira AI, et al. *Lung Cancer*. 2021;159:1-9.
- ⁹ [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT03600883). CodeBreak 100. Available at: <https://clinicaltrials.gov/ct2/show/NCT03600883>. Accessed on April 14, 2022.
- ¹⁰ Fakhri MG, et al. *Lancet Oncol*. 2022;23:115-124.
- ¹¹ [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT04303780). CodeBreak 200. Available at: <https://clinicaltrials.gov/ct2/show/NCT04303780>. Accessed on April 14, 2022.
- ¹² [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT04185883). CodeBreak 101. Available at: <https://clinicaltrials.gov/ct2/show/NCT04185883>. Accessed on April 14, 2022.
- ¹³ [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/NCT04933695). CodeBreak 201. Available at: <https://clinicaltrials.gov/ct2/show/NCT04933695>. Accessed on April 14, 2022.



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