



Libtayo® (cemiplimab) Demonstrates Durable Survival Benefit at Five Years in Advanced Non-small Cell Lung Cancer

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Late-breaking data at WCLC show Libtayo monotherapy nearly doubled median overall survival and reduced the risks of death and disease progression by 41% and 50%, respectively, compared to chemotherapy

WCLC presentation also reviews data on overall survival, progression-free survival and response rate among patients who added chemotherapy to Libtayo following disease progression

TARRYTOWN, N.Y., Sept. 09, 2024 (GLOBE NEWSWIRE) -- Regeneron Pharmaceuticals, Inc. (NASDAQ: REGN) today announced five-year results from the final pre-specified overall survival (OS) analysis of the Phase 3 EMPOWER-Lung 1 trial, which evaluated Libtayo® (cemiplimab) monotherapy versus chemotherapy as a first-line treatment for adults with advanced non-small cell lung cancer (NSCLC) with $\geq 50\%$ PD-L1 expression and no EGFR, ALK or ROS1 aberrations. The late-breaking results will be presented in an oral session at the IASLC 2024 World Conference on Lung Cancer (WCLC) hosted by the International Association for the Study of Lung Cancer.

“The five-year results from EMPOWER-Lung 1 showcase the durable survival benefit and impressive efficacy of first-line Libtayo monotherapy compared to chemotherapy in patients with PD-L1 high, advanced NSCLC, including a direct correlation between survival benefits and PD-L1 expression level,” says Ana Baramidze, MD, PhD, Head of Clinical Research Department at Todua Clinic, Tbilisi, Georgia. “Furthermore, EMPOWER-Lung 1 continues to offer important new data to help doctors increase their understanding of investigational treatment strategies for patients who progress on PD-1 inhibitor monotherapy. For instance, EMPOWER-Lung 1 was one of the few trials to evaluate survival when adding chemotherapy to a PD-1 inhibitor following progression.”

At the five-year follow-up, Libtayo remained superior to chemotherapy in the population of patients confirmed to have $\geq 50\%$ PD-L1 expression (using an FDA approved assay), demonstrating continued and clinically meaningful benefits consistent with the prior 1-year analysis in this study population (as previously [published](#) in *The Lancet* and also as previously provided in the approved label for the [FDA-approved assay](#)):

	1-year Analysis		5-year Analysis	
	Libtayo (n=283)	Chemotherapy (n=280)	Libtayo (n=284)	Chemotherapy (n=281)
Overall survival (OS)				
Median ^a	not reached	14 months	26 months	13 months
Hazard ratio (HR) (95% confidence interval [CI]; p-value) ^b	0.57 (0.42 to 0.77; p<0.0002)		0.59 (0.48 to 0.72; p<0.0001)	
Progression-free survival (PFS)				
Median ^a	8 months	6 months	8 months	5 months
HR (95% CI; p-value) ^b	0.54 (0.43 to 0.68; p<0.0001)		0.50 (0.41 to 0.61; p<0.0001)	
Objective response rate (ORR)	39%	20%	46.5%	21%
Median duration of response (DoR)	17 months	6 months	24 months	6 months

NOTE: The analysis was conducted in a subset of the randomized population that excluded 147 patients whose tumors could not be retested or were later found to have <50% PD-L1 expression.

a Based on Kaplan-Meier method

b Based on stratified proportional hazards model

Continued and clinically meaningful benefits were also observed at this five-year follow-up of the overall trial population (in which not all patients were confirmed to have $\geq 50\%$ PD-L1 expression), as compared to the prior 1-year analysis in this population.

	1-year Analysis		5-year Analysis	
	Libtayo (n=356)	Chemotherapy (n=354)	Libtayo (n=357)	Chemotherapy (n=355)
OS				
Median ^a	22 months	14 months	23 months	14 months

HR (95% CI; p-value) ^b	0.68 (0.53 to 0.87; p=0.0022)		0.64 (0.54 to 0.77; p<0.0001)	
PFS				
Median ^a	6 months	6 months	6 months	5 months
HR (95% CI; p-value) ^b	0.59 (0.49 to 0.72; p<0.0001)		0.55 (0.46 to 0.66; p<0.0001)	
ORR	37%	21%	42%	21%
Median DoR	21 months	6 months	24 months	6 months

a Based on Kaplan-Meier method

b Based on stratified proportional hazards model

Importantly, EMPOWER-Lung 1 allowed patients who experienced disease progression to change their therapy, with those assigned to Libtayo having the option to add four cycles of chemotherapy. Among these patients (n=75), the addition of chemotherapy was associated with a 15-month median OS (95% CI: 11 to 18 months), 7-month median PFS (95% CI: 6 to 8 months) and 28% ORR (95% CI: 18% to 40%).

The exploratory subgroup analysis of EMPOWER-Lung 1 also showed direct correlations between survival and disease progression benefits and PD-L1 expression level among Libtayo patients, supporting the direct correlation between tumor response and PD-L1 expression level previously observed. At five years, those with tumor PD-L1 expression of ≥90% (n=99) derived the greatest benefit with a median OS of 39 months (95% CI: 23 months to not evaluable) and a 15-month median PFS (95% CI: 10 to 21 months). These correlations with PD-L1 expression level were not observed with chemotherapy.

No new safety signals were observed at five years among evaluable patients (Libtayo=356; chemotherapy=343), following a median duration of exposure of 36 weeks to Libtayo and 18 weeks to chemotherapy. Adverse events (AEs) of any grade occurred in 93% of Libtayo patients (46% ≥Grade 3) and 96% of chemotherapy patients (52% ≥Grade 3). The most common AEs occurring in at least 10% of Libtayo patients included anemia (20%), decreased appetite (14%), fatigue (14%), pneumonia (12%), arthralgia (12%), back pain (12%), dyspnea (11%), cough (10%) and pruritus (10%). Among Libtayo patients, AEs were serious in 36% and led to permanent discontinuation in 9% and death in 10%, compared to 29%, 5% and 10% in the chemotherapy arm, respectively.

Among the 75 Libtayo patients who received additive chemotherapy after disease progression, AEs of any grade occurred in 89% (36% ≥Grade 3), following a median duration of exposure of 27 weeks to Libtayo. The most common AEs included anemia (35%), alopecia (24%), diarrhea (21%), nausea (20%), neutropenia (15%) and asthenia (11%). AEs were serious in 27% of patients and led to discontinuation of treatment in 5% of patients and death in 4% of patients.

Additional presentations on data from Regeneron's oncology portfolio and pipeline are being shared at [WCLC](#).

The potential use of adding chemotherapy to Libtayo following disease progression as described above is investigational, and the safety and efficacy of this regimen have not been fully evaluated by any regulatory authority.

About Regeneron in Cancer

We aspire to turn revolutionary discoveries into medicines that can transform the lives of those impacted by cancer. Our team around the world is driven to solve the needs and challenges of those affected by one of the most serious diseases of our time.

Backed by our legacy of scientific innovation and a deep understanding of biology, genetics and the immune system, we're pursuing potential therapies across more than 30 types of solid tumors and blood cancers. Our cancer strategy is powered by cutting-edge technologies and therapies that can be flexibly combined to investigate potentially transformative treatments for patients. Oncology assets in clinical development comprise nearly half of Regeneron's pipeline, and include checkpoint inhibitors, bispecific antibodies and costimulatory bispecific antibodies. Our approved PD-1 inhibitor Libtayo serves as the backbone of many of our investigational combinations.

To complement our extensive in-house capabilities, we collaborate with patients, healthcare providers, governments, biopharma companies and each other to further our shared goals. Together, we are united in the mission to serve as a beacon of transformation in cancer care.

About Libtayo

Libtayo is a fully human monoclonal antibody targeting the immune checkpoint receptor PD-1 on T cells and was invented using Regeneron's proprietary *VelocImmune*[®] technology. By binding to PD-1, Libtayo has been shown to block cancer cells from using the PD-1 pathway to suppress T-cell activation. In the U.S. and other countries Libtayo is indicated in certain patients with advanced basal cell carcinoma (BCC), advanced cutaneous squamous cell carcinoma (CSCC) and advanced NSCLC, as well as in advanced cervical cancer in the European Union, Canada and Brazil. As of July 1, 2022, Libtayo is developed and marketed globally by Regeneron.

In the U.S., the generic name for Libtayo in its approved indications is cemiplimab-rwlc, with rwlc as the suffix designated in accordance with Nonproprietary Naming of Biological Products Guidance for Industry issued by the U.S. Food and Drug Administration (FDA). Outside of the U.S., the generic name of Libtayo in its approved indication is cemiplimab.

The extensive clinical program for Libtayo is focused on difficult-to-treat cancers. Libtayo is currently being investigated in trials as a monotherapy, as well as in combination with either conventional or novel therapeutic approaches for other solid tumors and blood cancers. These potential uses are investigational, and their safety and efficacy have not been evaluated by any regulatory authority.

U.S. FDA-approved Indications

Libtayo is a prescription medicine used to treat:

- People with a type of skin cancer called cutaneous squamous cell carcinoma (CSCC) that has spread or cannot be cured by surgery or radiation.
- People with a type of skin cancer called basal cell carcinoma (BCC) when your BCC cannot be removed by surgery

(locally advanced BCC) or when it has spread (metastatic BCC) and have received treatment with a hedgehog pathway inhibitor (HHI), or cannot receive treatment with a HHI.

- Adults with a type of lung cancer called non-small cell lung cancer (NSCLC).
 - LIBTAYO may be used in combination with chemotherapy that contains a platinum medicine as your first treatment when your lung cancer has not spread outside your chest (locally advanced lung cancer) and you cannot have surgery or chemotherapy with radiation, or your lung cancer has spread to other areas of your body (metastatic lung cancer), and your tumor does not have an abnormal “EGFR,” “ALK,” or “ROS1” gene.
 - LIBTAYO may be used alone as your first treatment when your lung cancer has not spread outside your chest (locally advanced lung cancer) and you cannot have surgery or chemotherapy with radiation, or your lung cancer has spread to other areas of your body (metastatic lung cancer), and your tumor tests positive for high “PD-L1,” and your tumor does not have an abnormal “EGFR,” “ALK,” or “ROS1” gene.

It is not known if Libtayo is safe and effective in children.

IMPORTANT SAFETY INFORMATION FOR U.S. PATIENTS

What is the most important information I should know about LIBTAYO?

LIBTAYO is a medicine that may treat certain cancers by working with your immune system. LIBTAYO can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.

Call or see your healthcare provider right away if you develop any new or worsening signs or symptoms, including:

- **Lung problems:** cough, shortness of breath, or chest pain
- **Intestinal problems:** diarrhea (loose stools) or more frequent bowel movements than usual, stools that are black, tarry, sticky or have blood or mucus, or severe stomach-area (abdomen) pain or tenderness
- **Liver problems:** yellowing of your skin or the whites of your eyes, severe nausea or vomiting, pain on the right side of your stomach-area (abdomen), dark urine (tea colored), or bleeding or bruising more easily than normal
- **Hormone gland problems:** headache that will not go away or unusual headaches, eye sensitivity to light, eye problems, rapid heartbeat, increased sweating, extreme tiredness, weight gain or weight loss, feeling more hungry or thirsty than usual, urinating more often than usual, hair loss, feeling cold, constipation, your voice gets deeper, dizziness or fainting, or changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness
- **Kidney problems:** decrease in your amount of urine, blood in your urine, swelling of your ankles, or loss of appetite
- **Skin problems:** rash, itching, skin blistering or peeling, painful sores or ulcers in mouth or nose, throat, or genital area, fever or flu-like symptoms, or swollen lymph nodes
- **Problems can also happen in other organs and tissues. These are not all of the signs and symptoms of immune system problems that can happen with LIBTAYO. Call or see your healthcare provider right away for any new or worsening signs or symptoms, which may include:** chest pain, irregular heartbeat, shortness of breath or swelling of ankles, confusion, sleepiness, memory problems, changes in mood or behavior, stiff neck, balance problems, tingling or numbness of the arms or legs, double vision, blurry vision, sensitivity to light, eye pain, changes in eyesight, persistent or severe muscle pain or weakness, muscle cramps, low red blood cells, or bruising
- **Infusion reactions that can sometimes be severe or life-threatening.** Signs and symptoms of infusion reactions may include: nausea, vomiting, chills or shaking, itching or rash, flushing, shortness of breath or wheezing, dizziness, feel like passing out, fever, back or neck pain, or facial swelling
- **Rejection of a transplanted organ.** Your healthcare provider should tell you what signs and symptoms you should report and monitor you, depending on the type of organ transplant that you have had
- **Complications, including graft-versus-host disease (GVHD), in people who have received a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic).** These complications can be serious and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with LIBTAYO. Your healthcare provider will monitor you for these complications

Getting medical treatment right away may help keep these problems from becoming more serious. Your healthcare provider will check you for these problems during your treatment with LIBTAYO. Your healthcare provider may treat you with corticosteroid or hormone replacement medicines. Your healthcare provider may also need to delay or completely stop treatment with LIBTAYO if you have severe side effects.

Before you receive LIBTAYO, tell your healthcare provider about all your medical conditions, including if you:

- have immune system problems such as Crohn’s disease, ulcerative colitis, or lupus
- have received an organ transplant
- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have received radiation treatment to your chest area
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome
- are pregnant or plan to become pregnant. LIBTAYO can harm your unborn baby

Females who are able to become pregnant:

- Your healthcare provider will give you a pregnancy test before you start treatment
- You should use an effective method of birth control during your treatment and for at least 4 months after your last dose of LIBTAYO. Talk to your healthcare provider about birth control methods that you can use during this time
- Tell your healthcare provider right away if you become pregnant or think you may be pregnant during treatment with LIBTAYO
- are breastfeeding or plan to breastfeed. It is not known if LIBTAYO passes into your breast milk. Do not breastfeed during treatment and for at least 4 months after the last dose of LIBTAYO

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

The most common side effects of LIBTAYO when used alone include tiredness, muscle or bone pain, rash, diarrhea, and low levels of red blood cells (anemia). The most common side effects of LIBTAYO when used in combination with platinum-containing chemotherapy include hair loss, muscle or bone pain, nausea, tiredness, numbness, pain, tingling, or burning in your hands or feet, and decreased appetite. These are not all the possible side effects of LIBTAYO. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088. You may also report side effects to Regeneron Pharmaceuticals at 1-877-542-8296.

Please see full [Prescribing Information](#), including [Medication Guide](#).

About Regeneron's *VelocImmune* Technology

Regeneron's *VelocImmune* technology utilizes a proprietary genetically engineered mouse platform endowed with a genetically humanized immune system to produce optimized fully human antibodies. When Regeneron's co-Founder, President and Chief Scientific Officer George D. Yancopoulos was a graduate student with his mentor Frederick W. Alt in 1985, they were the first to [envision](#) making such a genetically humanized mouse, and Regeneron has spent decades inventing and developing *VelocImmune* and related *VelociSuite*[®] technologies. Dr. Yancopoulos and his team have used *VelocImmune* technology to create a substantial proportion of all original, FDA-approved or authorized fully human monoclonal antibodies. This includes REGEN-COV[®] (casirivimab and imdevimab), Dupixent[®] (dupilumab), Libtayo[®], Praluent[®] (alirocumab), Kevzara[®] (sarilumab), Evkeeza[®] (evinacumab-dgnb), Inmazeb[®] (atoltivimab, maftivimab and odesivimab-ebgn) and Veopoz[®] (pozelimab-bbfg).

About Regeneron

Regeneron is a leading biotechnology company that invents, develops, and commercializes life-transforming medicines for people with serious diseases. Founded and led for 35 years by physician-scientists, Regeneron's unique ability to repeatedly and consistently translate science into medicine has led to numerous FDA-approved treatments and product candidates in development, almost all of which were homegrown in Regeneron's laboratories. Regeneron's medicines and pipeline are designed to help patients with eye diseases, allergic and inflammatory diseases, cancer, cardiovascular and metabolic diseases, hematologic conditions, infectious diseases, and rare diseases.

Regeneron is accelerating and improving the traditional drug development process through its proprietary *VelociSuite*[®] technologies, such as *VelocImmune*[®], which uses unique genetically humanized mice to produce optimized fully human antibodies and bispecific antibodies, and through 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 Regeneron, please visit www.regeneron.com or follow Regeneron on [LinkedIn](#).

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 products marketed or otherwise commercialized by Regeneron and/or its collaborators or licensees (collectively, "Regeneron's Products") and product candidates being developed by Regeneron and/or its collaborators or licensees (collectively, "Regeneron's Product Candidates") and research and clinical programs now underway or planned, including without limitation Libtayo[®] (cemiplimab) as a monotherapy or in combination with chemotherapy for the treatment of advanced non-small cell lung cancer; uncertainty of the utilization, market acceptance, and commercial success of Regeneron's Products and Regeneron's Product Candidates and the impact of studies (whether conducted by Regeneron or others and whether mandated or voluntary), including the studies discussed or referenced in this press release, on any of the foregoing; the likelihood, timing, and scope of possible regulatory approval and commercial launch of Regeneron's Product Candidates and new indications for Regeneron's Products (such as Libtayo as a monotherapy or in combination with either conventional or novel therapeutic approaches for other solid tumors and blood cancers); the ability of Regeneron's collaborators, licensees, suppliers, or other third parties (as applicable) to perform manufacturing, filling, finishing, packaging, labeling, distribution, and other steps related to Regeneron's Products and Regeneron's Product Candidates; the ability of Regeneron to manage supply chains for multiple products and product candidates; safety issues resulting from the administration of Regeneron's Products (such as Libtayo) and Regeneron's Product Candidates in patients, including serious complications or side effects in connection with the use of Regeneron's Products and Regeneron's Product Candidates in clinical trials; 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 Regeneron's Product Candidates; ongoing regulatory obligations and oversight impacting Regeneron's Products, research and clinical programs, and business, including those relating to patient privacy; the availability and extent of reimbursement of Regeneron's Products 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; competing drugs and product candidates that may be superior to, or more cost effective than, Regeneron's Products and Regeneron's Product Candidates; the extent to which the results from the research and development programs conducted by Regeneron and/or its collaborators or licensees may be replicated in other studies and/or lead to advancement of product candidates to clinical trials, therapeutic applications, or regulatory approval; 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, collaboration, or supply agreement, including Regeneron's agreements with Sanofi and Bayer (or their respective affiliated companies, as applicable), to be cancelled or terminated; the impact of public health outbreaks, epidemics, or pandemics (such as the COVID-19 pandemic) on Regeneron's business; and risks associated with intellectual property of other parties and pending or future litigation relating thereto (including without limitation the patent litigation and other related proceedings relating to EYLEA® (aflibercept) Injection), other litigation and other proceedings and government investigations relating to the Company and/or its operations (including the pending civil proceedings initiated or joined by the U.S. Department of Justice and the U.S. Attorney's Office for the District of Massachusetts), the ultimate outcome of any such proceedings and investigations, 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, 2023 and its Form 10-Q for the quarterly period ended June 30, 2024. 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 or otherwise) 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 (<https://investor.regeneron.com>) and its LinkedIn page (<https://www.linkedin.com/company/regeneron-pharmaceuticals>).

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