

# EMD Serono and Pfizer Receive US FDA Breakthrough Therapy Designation and Submit Application for BAVENCIO® for First-Line Maintenance Treatment of Locally Advanced or Metastatic Urothelial Carcinoma

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- **Breakthrough Therapy Designation and Submission based on positive Phase III JAVELIN Bladder 100 study results**
- **Supplemental Biologics License Application being reviewed under FDA Real-Time Oncology Review (RTOR) pilot program**
- **JAVELIN Bladder 100 marks the first time any immunotherapy has demonstrated in Phase III an overall survival benefit vs standard of care in first-line locally advanced or metastatic urothelial carcinoma**

Rockland, MA and New York, US, April 9, 2020 – EMD Serono, the biopharmaceutical business of Merck KGaA, Darmstadt, Germany in the US and Canada, and Pfizer Inc. (NYSE: PFE) today announced completion of the submission of a supplemental Biologics License Application (sBLA) to the US Food and Drug Administration (FDA) for BAVENCIO® (avelumab)\* for first-line maintenance treatment of patients with locally advanced or metastatic urothelial carcinoma (UC). The FDA granted Breakthrough Therapy Designation to BAVENCIO for this indication, and the sBLA is being reviewed by the FDA under its Real-Time Oncology Review (RTOR) pilot program.

The application is based on positive results from an interim analysis of the Phase III JAVELIN Bladder 100 trial, which met its primary endpoint of overall survival (OS). In this study, BAVENCIO plus best supportive care (BSC) as first-line maintenance therapy significantly extended the survival of patients with previously untreated locally advanced or metastatic UC whose disease did not progress on induction chemotherapy, compared with BSC only. A statistically significant improvement was demonstrated in both co-primary populations: all randomized patients and patients with PD-L1–positive tumors. The safety profile for BAVENCIO in the trial was consistent with that in the JAVELIN monotherapy clinical development program. Detailed results from the JAVELIN Bladder 100 study will be presented at an upcoming medical congress.

“BAVENCIO is the first immunotherapy to demonstrate a statistically significant improvement in overall survival in a Phase III clinical trial in the first-line setting for patients with locally advanced or metastatic urothelial carcinoma,” said Chris Boshoff, M.D., Ph.D., Chief Development Officer, Oncology, Pfizer Global Product Development. “Participation in the Real-Time Oncology Review program, coupled with the Breakthrough Therapy Designation, reflect the potential impact of BAVENCIO in this patient setting and provide the opportunity to work towards bringing this treatment option to patients as quickly as possible.”

The RTOR program is intended to create a more efficient review process to bring safe and effective treatments to patients earlier, including drugs that are likely to demonstrate substantial improvements over currently available therapy. It allows the FDA to review clinical trial data from certain applications before the complete application is formally submitted. Review under the program does not guarantee or influence the approvability of the application.<sup>1</sup>

Breakthrough Therapy Designation is a program created by the FDA to accelerate the development and review of medicines intended to treat serious or lifethreatening diseases where the new treatment may be a substantial improvement over available therapy. In order to receive Breakthrough Therapy Designation, preliminary clinical evidence must indicate that the drug may demonstrate a significant improvement over available therapy on a clinically significant endpoint.<sup>2</sup>

“Given the poor prognosis for patients with advanced urothelial carcinoma, there is an urgent need for additional treatment options that improve overall survival,” said Luciano Rossetti, Head of Global R&D for EMD Serono. “Our data highlight the potential for a first-line maintenance treatment approach with BAVENCIO to advance the current standard of care for previously untreated patients, and we are working with urgency toward our goal of bringing this regimen to patients.”

“For the past 30 years, chemotherapy has been the first-line standard of care for patients with advanced urothelial carcinoma. While this is an effective short-term option for many patients, most will ultimately experience disease progression, underscoring a need for additional treatment options,” said Petros Grivas, M.D., Ph.D., one of the principal investigators in the JAVELIN Bladder 100 trial. “Based on the positive overall survival results from JAVELIN Bladder 100, I believe avelumab has the potential to be practice-changing.”

In 2017, the FDA approved BAVENCIO for the treatment of patients with locally advanced or metastatic UC who have disease progression during or following platinum-containing chemotherapy, or who have disease progression within 12 months of neoadjuvant or adjuvant treatment with platinum-containing chemotherapy. This indication is approved under accelerated approval based on tumor response and duration of response. JAVELIN Bladder 100 is the confirmatory study for the conversion to full approval.

\*BAVENCIO is under clinical investigation for the first-line maintenance treatment of advanced UC. There is no guarantee that BAVENCIO will be approved for firstline maintenance treatment of advanced UC by any health authority worldwide.

### **About JAVELIN Bladder 100**

About JAVELIN Bladder 100 JAVELIN Bladder 100 (NCT02603432) is a Phase III, multicenter, multinational, randomized, open-label, parallel-arm study investigating first-line maintenance treatment with BAVENCIO plus BSC versus BSC alone in patients with locally advanced or metastatic UC. A total of 700 patients whose disease had not progressed after platinum-based induction chemotherapy as per RECIST v1.1 were randomized to receive either BAVENCIO plus BSC or BSC alone. The study achieved its primary endpoint of OS in each of the co-primary populations of all randomized patients and patients with PD-L1-positive tumors. Secondary endpoints include progression-free survival, anti-tumor activity, safety, pharmacokinetics, immunogenicity, predictive biomarkers and patient-reported outcomes in the coprimary populations. The safety profile for BAVENCIO in the trial was consistent with that in the JAVELIN monotherapy clinical development program.

### **About Urothelial Carcinoma**

Bladder cancer is the tenth most common cancer worldwide.<sup>3</sup> In 2018, there were over half a million new cases of bladder cancer diagnosed, with around 200,000 deaths from the disease globally.<sup>3</sup> UC accounts for about 90%

of all bladder cancers.<sup>4</sup> This subtype becomes harder to treat as it advances, spreading through the layers of the bladder wall.<sup>5</sup> For patients with metastatic UC, the five-year relative survival rate is 5%.<sup>6</sup> Combination chemotherapy is currently the first-line standard of care for patients with advanced disease, and while a majority of patients experience high initial response rates, most patients will ultimately experience disease progression within nine months after initiation of treatment.<sup>7,8</sup> Given the poor prognosis for patients with advanced bladder cancer whose disease progresses after first-line chemotherapy, there is an urgent need for additional treatment options that improve overall survival.<sup>9</sup>

### **About BAVENCIO® (avelumab)**

BAVENCIO is a human anti-programmed death ligand-1 (PD-L1) antibody. BAVENCIO has been shown in preclinical models to engage both the adaptive and innate immune functions. By blocking the interaction of PD-L1 with PD-1 receptors, BAVENCIO has been shown to release the suppression of the T cell-mediated antitumor immune response in preclinical models.<sup>10-12</sup> In November 2014, Merck KGaA, Darmstadt, Germany and Pfizer announced a strategic alliance to co-develop and co-commercialize BAVENCIO.

### **BAVENCIO Approved Indications**

BAVENCIO® (avelumab) in combination with axitinib is indicated in the US for the first-line treatment of patients with advanced renal cell carcinoma (RCC).

In the US, the FDA granted accelerated approval for BAVENCIO for the treatment of (i) adults and pediatric patients 12 years and older with metastatic Merkel cell carcinoma (mMCC) and (ii) patients with locally advanced or metastatic urothelial carcinoma (mUC) who have disease progression during or following platinum-containing chemotherapy, or have disease progression within 12 months of neoadjuvant or adjuvant treatment with platinum-containing chemotherapy. These indications are approved under accelerated approval based on tumor response rate and duration of response. Continued approval for these indications may be contingent upon verification and description of clinical benefit in confirmatory trials.

Avelumab is currently approved for patients with MCC in 50 countries globally, with the majority of these approvals in a broad indication that is not limited to a specific line of treatment.

### **BAVENCIO Important Safety Information from the US FDA-Approved Label**

BAVENCIO can cause **immune-mediated pneumonitis**, including fatal cases. Monitor patients for signs and symptoms of pneumonitis, and evaluate suspected cases with radiographic imaging. Administer corticosteroids for Grade 2 or greater pneumonitis. Withhold BAVENCIO for moderate (Grade 2) and permanently discontinue for severe (Grade 3), life-threatening (Grade 4), or recurrent moderate (Grade 2) pneumonitis. Pneumonitis occurred in 1.2% of patients, including one (0.1%) patient with Grade 5, one (0.1%) with Grade 4, and five (0.3%) with Grade 3.

BAVENCIO can cause **hepatotoxicity and immune-mediated hepatitis**, including fatal cases. Monitor patients for abnormal liver tests prior to and periodically during treatment. Administer corticosteroids for Grade 2 or greater hepatitis. Withhold BAVENCIO for moderate (Grade 2) immune-mediated hepatitis until resolution and permanently discontinue for severe (Grade 3) or life-threatening (Grade 4) immune-mediated hepatitis. Immune-mediated hepatitis occurred with

BAVENCIO as a single agent in 0.9% of patients, including two (0.1%) patients with Grade 5, and 11 (0.6%) with Grade 3.

*BAVENCIO* in combination with *axitinib* can cause **hepatotoxicity** with higher than expected frequencies of Grade 3 and 4 alanine aminotransferase (ALT) and aspartate aminotransferase (AST) elevation. Consider more frequent monitoring of liver enzymes as compared to when the drugs are used as monotherapy. Withhold *BAVENCIO* and *axitinib* for moderate (Grade 2) hepatotoxicity and permanently discontinue the combination for severe or life-threatening (Grade 3 or 4) hepatotoxicity. Administer corticosteroids as needed. In patients treated with *BAVENCIO* in combination with *axitinib*, Grades 3 and 4 increased ALT and AST occurred in 9% and 7% of patients, respectively, and immune-mediated hepatitis occurred in 7% of patients, including 4.9% with Grade 3 or 4.

*BAVENCIO* can cause **immune-mediated colitis**. Monitor patients for signs and symptoms of colitis. Administer corticosteroids for Grade 2 or greater colitis. Withhold *BAVENCIO* until resolution for moderate or severe (Grade 2 or 3) colitis until resolution. Permanently discontinue for life-threatening (Grade 4) or recurrent (Grade 3) colitis upon reinitiation of *BAVENCIO*. Immune-mediated colitis occurred in 1.5% of patients, including seven (0.4%) with Grade 3.

*BAVENCIO* can cause **immune-mediated endocrinopathies**, including adrenal insufficiency, thyroid disorders, and type 1 diabetes mellitus.

Monitor patients for signs and symptoms of **adrenal insufficiency** during and after treatment, and administer corticosteroids as appropriate. Withhold *BAVENCIO* for severe (Grade 3) or life-threatening (Grade 4) adrenal insufficiency. Adrenal insufficiency was reported in 0.5% of patients, including one (0.1%) with Grade 3.

**Thyroid disorders** can occur at any time during treatment. Monitor patients for changes in thyroid function at the start of treatment, periodically during

treatment, and as indicated based on clinical evaluation. Manage hypothyroidism with hormone replacement therapy and hyperthyroidism with medical management. Withhold *BAVENCIO* for severe (Grade 3) or life-threatening (Grade 4) thyroid disorders. Thyroid disorders, including hypothyroidism, hyperthyroidism, and thyroiditis, were reported in 6% of patients, including three (0.2%) with Grade 3.

**Type 1 diabetes mellitus** including diabetic ketoacidosis: Monitor patients for hyperglycemia or other signs and symptoms of diabetes. Withhold *BAVENCIO* and administer antihyperglycemics or insulin in patients with severe or life-threatening (Grade 3) hyperglycemia, and resume treatment when metabolic control is achieved. Type 1 diabetes mellitus without an alternative etiology occurred in 0.1% of patients, including two cases of Grade 3 hyperglycemia.

*BAVENCIO* can cause **immune-mediated nephritis and renal dysfunction**. Monitor patients for elevated serum creatinine prior to and periodically during treatment. Administer corticosteroids for Grade 2 or greater nephritis. Withhold *BAVENCIO* for moderate (Grade 2) or severe (Grade 3) nephritis until resolution to Grade 1 or lower. Permanently discontinue *BAVENCIO* for life-threatening (Grade 4) nephritis. Immune-mediated nephritis occurred in 0.1% of patients.

*BAVENCIO* can result in **other severe and fatal immune-mediated adverse reactions** involving any organ system during treatment or after treatment discontinuation. For suspected immune-mediated adverse reactions, evaluate to confirm or rule out an immune-mediated adverse reaction and to exclude other causes. Depending on the severity of the adverse reaction, withhold or permanently discontinue *BAVENCIO*, administer high-dose corticosteroids, and initiate hormone replacement therapy, if appropriate. Resume *BAVENCIO* when the immune-mediated adverse reaction remains at Grade 1 or lower following a corticosteroid taper. Permanently discontinue *BAVENCIO* for any severe (Grade 3) immune-mediated adverse reaction that recurs and for any life-threatening (Grade 4) immune-mediated adverse reaction. The following clinically significant immune-

mediated adverse reactions occurred in less than 1% of 1738 patients treated with BAVENCIO as a single agent or in 489 patients who received *BAVENCIO in combination with axitinib*: myocarditis including fatal cases, pancreatitis including fatal cases, myositis, psoriasis, arthritis, exfoliative dermatitis, erythema multiforme, pemphigoid, hypopituitarism, uveitis, Guillain-Barré syndrome, and systemic inflammatory response.

BAVENCIO can cause severe or life-threatening **infusion-related reactions**. Premedicate patients with an antihistamine and acetaminophen prior to the first 4 infusions and for subsequent infusions based upon clinical judgment and presence/severity of prior infusion reactions. Monitor patients for signs and symptoms of infusion-related reactions, including pyrexia, chills, flushing, hypotension, dyspnea, wheezing, back pain, abdominal pain, and urticaria. Interrupt or slow the rate of infusion for mild (Grade 1) or moderate (Grade 2) infusion-related reactions. Permanently discontinue BAVENCIO for severe (Grade 3) or life-threatening (Grade 4) infusion-related reactions. Infusion-related reactions occurred in 25% of patients, including three (0.2%) patients with Grade 4 and nine (0.5%) with Grade 3.

*BAVENCIO in combination with axitinib* can cause **major adverse cardiovascular events (MACE)** including severe and fatal events. Consider baseline and periodic evaluations of left ventricular ejection fraction. Monitor for signs and symptoms of cardiovascular events. Optimize management of cardiovascular risk factors, such as hypertension, diabetes, or dyslipidemia. Discontinue BAVENCIO and axitinib for Grade 3-4 cardiovascular events. MACE occurred in 7% of patients with advanced RCC treated with BAVENCIO in combination with axitinib compared to 3.4% treated with sunitinib. These events included death due to cardiac events (1.4%), Grade 3-4 myocardial infarction (2.8%), and Grade 3-4 congestive heart failure (1.8%).

BAVENCIO can cause **fetal harm** when administered to a pregnant woman. Advise patients of the potential risk to a fetus including the risk of fetal death. Advise females of childbearing potential to use effective contraception during treatment with BAVENCIO and for at least 1 month after the last dose of BAVENCIO. It is not known whether BAVENCIO is excreted in human milk. Advise a lactating woman **not to breastfeed** during treatment and for at least 1 month after the last dose of BAVENCIO due to the potential for serious adverse reactions in breastfed infants.

The most common adverse reactions (all grades, ≥ 20%) in patients with metastatic Merkel cell carcinoma (MCC) were fatigue (50%), musculoskeletal pain (32%), diarrhea (23%), nausea (22%), infusion-related reaction (22%), rash (22%), decreased appetite (20%), and peripheral edema (20%).

Selected treatment-emergent laboratory abnormalities (all grades, ≥ 20%) in patients with metastatic MCC were lymphopenia (49%), anemia (35%), increased aspartate aminotransferase (34%), thrombocytopenia (27%), and increased alanine aminotransferase (20%).

The most common adverse reactions (all grades, ≥ 20%) in patients with locally advanced or metastatic urothelial carcinoma (UC) were fatigue (41%), infusion-related reaction (30%), musculoskeletal pain (25%), nausea (24%), decreased appetite/hypophagia (21%), and urinary tract infection (21%).

Selected laboratory abnormalities (Grades 3-4, ≥ 3%) in patients with locally advanced or metastatic UC were hyponatremia (16%), increased gamma-glutamyltransferase (12%), lymphopenia (11%), hyperglycemia (9%), increased alkaline phosphatase (7%), anemia (6%), increased lipase (6%), hyperkalemia (3%), and increased aspartate aminotransferase (3%).

Fatal adverse reactions occurred in 1.8% of patients with advanced renal cell carcinoma (RCC) receiving BAVENCIO in combination with axitinib. These included sudden cardiac death (1.2%), stroke (0.2%), myocarditis (0.2%), and necrotizing pancreatitis (0.2%).

The most common adverse reactions (all grades, ≥20%) in patients with advanced RCC receiving BAVENCIO in combination with axitinib (vs sunitinib) were diarrhea (62% vs 48%), fatigue (53% vs 54%), hypertension (50% vs 36%), musculoskeletal pain (40% vs 33%), nausea (34% vs 39%), mucositis (34% vs 35%), palmar-plantar erythrodysesthesia (33% vs 34%), dysphonia (31% vs 3.2%), decreased appetite (26% vs 29%), hypothyroidism (25% vs 14%), rash (25% vs 16%), hepatotoxicity (24% vs 18%), cough (23% vs 19%), dyspnea (23% vs 16%), abdominal pain (22% vs 19%), and headache (21% vs 16%).

Selected laboratory abnormalities (all grades, ≥20%) worsening from baseline in patients with advanced RCC receiving BAVENCIO in combination with axitinib (vs sunitinib) were blood triglycerides increased (71% vs 48%), blood creatinine increased (62% vs 68%), blood cholesterol increased (57% vs 22%), alanine aminotransferase increased (ALT) (50% vs 46%), aspartate aminotransferase increased (AST) (47% vs 57%), blood sodium decreased (38% vs 37%), lipase increased (37% vs 25%), blood potassium increased (35% vs 28%), platelet count decreased (27% vs 80%), blood bilirubin increased (21% vs 23%), and hemoglobin decreased (21% vs 65%).

Please see full [US Prescribing Information](#) and [Medication Guide](#) available at <http://www.BAVENCIO.com>.

### **About Merck KGaA, Darmstadt, Germany-Pfizer Alliance**

Immuno-oncology is a top priority for Merck KGaA, Darmstadt, Germany and Pfizer. The global strategic alliance between Merck KGaA, Darmstadt, Germany and Pfizer enables the companies to benefit from each other's strengths and capabilities and further explore the therapeutic potential of BAVENCIO, an anti-PD-L1 antibody initially discovered and developed by Merck KGaA, Darmstadt, Germany. The immuno-oncology alliance is jointly developing and commercializing BAVENCIO. The alliance is focused on developing high-priority international clinical programs to investigate BAVENCIO as a monotherapy as well as combination regimens, and is striving to find new ways to treat cancer.

All Merck KGaA, Darmstadt, Germany, press releases are distributed by e-mail at the same time they become available on the EMD Group Website. In case you are a resident of the USA or Canada please go to [www.emdgroup.com/subscribe](http://www.emdgroup.com/subscribe) to register again for your online subscription of this service as our newly introduced geo-targeting requires new links in the email. You may later change your selection or discontinue this service.

### **About EMD Serono, Inc.**

EMD Serono - the biopharmaceutical business of Merck KGaA, Darmstadt, Germany, in the U.S. and Canada - is engaged in the discovery, research and development of medicines for patients with difficult to treat diseases. The business is committed to transforming lives by developing and delivering meaningful solutions that help address the therapeutic and support needs of individual patients. Building on a proven legacy and deep expertise in neurology, fertility and endocrinology, EMD Serono is developing potential new oncology and immuno-oncology medicines while continuing to explore potential therapeutic options for diseases such as psoriasis, lupus and MS. Today, the business has approximately 1,500 employees around the country with commercial, clinical and research operations based in the company's home state of Massachusetts. [www.emdserono.com](http://www.emdserono.com).

### **About Merck KGaA, Darmstadt, Germany**

Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across healthcare, life science and performance materials. Around 57,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to live. From advancing gene editing technologies and discovering unique ways to treat the most challenging diseases to enabling the intelligence of

devices – the company is everywhere. In 2019, Merck KGaA, Darmstadt, Germany, generated sales of € 16.2 billion in 66 countries.

The company holds the global rights to the name and trademark “Merck” internationally. The only exceptions are the United States and Canada, where the business sectors of Merck KGaA, Darmstadt, Germany operate as EMD Serono in healthcare, MilliporeSigma in life science, and EMD Performance Materials. Since its founding 1668, scientific exploration and responsible entrepreneurship have been key to the company’s technological and scientific advances. To this day, the founding family remains the majority owner of the publicly listed company.

### **Pfizer Inc.: Breakthroughs that change patients’ lives**

At Pfizer, we apply science and our global resources to bring therapies to people that extend and significantly improve their lives. We strive to set the standard for quality, safety and value in the discovery, development and manufacture of health care products, including innovative medicines and vaccines. Every day, Pfizer colleagues work across developed and emerging markets to advance wellness, prevention, treatments and cures that challenge the most feared diseases of our time. Consistent with our responsibility as one of the world's premier innovative biopharmaceutical companies, we collaborate with health care providers, governments and local communities to support and expand access to reliable, affordable health care around the world. For more than 150 years, we have worked to make a difference for all who rely on us. We routinely post information that may be important to investors on our website at [www.pfizer.com](http://www.pfizer.com). In addition, to learn more, please visit us on [www.pfizer.com](http://www.pfizer.com) and follow us on Twitter at [@Pfizer](https://twitter.com/Pfizer) and [@Pfizer\\_News](https://twitter.com/Pfizer_News), [LinkedIn](#), [YouTube](#) and like us on Facebook at [Facebook.com/Pfizer](https://www.facebook.com/Pfizer).

### **Pfizer Disclosure Notice**

The information contained in this release is as of April 9, 2020. Pfizer assumes no obligation to update forward-looking statements contained in this release as the result of new information or future events or developments.

This release contains forward-looking information about BAVENCIO (avelumab), including a potential indication for first-line maintenance therapy for BAVENCIO for the treatment of patients with locally advanced or metastatic urothelial carcinoma, the alliance between Merck KGaA, Darmstadt, Germany, and Pfizer involving BAVENCIO and clinical development plans, including their potential benefits, that involves substantial risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. Risks and uncertainties include, among other things, uncertainties regarding the commercial success of BAVENCIO; the uncertainties inherent in research and development, including the ability to meet anticipated clinical endpoints, commencement and/or completion dates for our clinical trials, regulatory submission dates, regulatory approval dates and/or launch dates, as well as the possibility of unfavorable new clinical data and further analyses of existing clinical data; risks associated with interim data; the risk that clinical trial data are subject to differing interpretations and assessments by regulatory authorities; whether regulatory authorities will be satisfied with the design of and results from our clinical studies; whether and when any drug applications may be filed for BAVENCIO for first-line maintenance therapy for locally advanced or metastatic urothelial carcinoma in any jurisdictions outside the U.S. or in any jurisdictions for any other potential indications for BAVENCIO or combination therapies; whether and when regulatory authorities in any jurisdictions where any applications are pending or may be submitted for BAVENCIO or combination therapies, including BAVENCIO for locally advanced or metastatic urothelial carcinoma may approve any such applications, which will depend on myriad factors, including making a determination as to whether the product’s benefits outweigh its known risks and determination of the product’s efficacy, and, if approved, whether they will be commercially successful; decisions by regulatory authorities impacting labeling, manufacturing processes, safety and/or other matters that could affect the availability or commercial potential of BAVENCIO, including BAVENCIO for locally advanced or metastatic urothelial carcinoma; and competitive developments.



A further description of risks and uncertainties can be found in Pfizer's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, and in its subsequent reports on Form 10-Q, including in the sections thereof captioned "Risk Factors" and "Forward-Looking Information and Factors That May Affect Future Results", as well as in its subsequent reports on Form 8-K, all of which are filed with the U.S. Securities and Exchange Commission and available at [www.sec.gov](http://www.sec.gov) and [www.pfizer.com](http://www.pfizer.com).

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