
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 6-K

**REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16 UNDER
THE SECURITIES EXCHANGE ACT OF 1934**

For the month of September 2017

Commission File Number: 001-36826

ADVANCED ACCELERATOR APPLICATIONS S.A.

(Exact name of registrant as specified in its charter)

20 rue Diesel

01630 Saint Genis Pouilly, France

(Address of principal executive office)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F:

Form 20-F Form 40-F

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):

Yes No

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7):

Yes No

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ADVANCED ACCELERATOR APPLICATIONS S.A.

By: /s/ Heinz Mäusli
Name: Heinz Mäusli
Title: Chief Financial Officer

Date: September 29, 2017

ADVANCED ACCELERATOR APPLICATIONS S.A.

EXHIBIT INDEX

Exhibit No.	Description
99.1	Press Release dated September 29, 2017 titled “Advanced Accelerator Applications Announces European Approval of Lutetium (177Lu) Oxodotreotide (Lutathera®) for Gastroenteropancreatic Neuroendocrine (GEP-NET) Tumors”



PRESS RELEASE

Advanced Accelerator Applications Announces European Approval of Lutetium (¹⁷⁷Lu) Oxodotreotide (Lutathera®) for Gastroenteropancreatic Neuroendocrine (GEP-NET) Tumors

Completes First Theragnostic Radiopharmaceutical Pairing in Oncology

September 29, 2017, Saint-Genis-Pouilly, France - Advanced Accelerator Applications S.A. (NASDAQ:AAAP) (AAA or the Company), an international specialist in Molecular Nuclear Medicine (MNM), today announced that the European Commission (EC) has approved the marketing authorization of lutetium (¹⁷⁷Lu) oxodotreotide* (Lutathera®) for “the treatment of unresectable or metastatic, progressive, well differentiated (G1 and G2), somatostatin receptor positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs) in adults.” This approval allows for the marketing of lutetium (¹⁷⁷Lu) oxodotreotide* (Lutathera®) in all 28 European Union member states, as well as Iceland, Norway and Liechtenstein.

Stefano Buono, Chief Executive Officer of AAA, commented, *“This is a historic moment. We are proud to bring this first-in-class drug, and the very first registered Peptide Receptor Radionuclide Therapy (PRRT), to the European NET patient community. We will continue to work closely with the respective health authorities to make lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera®) widely available. We believe numerous clinical studies in the nuclear medicine field have demonstrated the advantages of selectively delivering radiation to tumor cells over certain other therapies, and we are committed to advancing this approach to cancer treatment.*

“With this approval, AAA has become the first theragnostic radiopharmaceutical company in the oncology market. We believe our unique platform, which involves radiolabeling a single targeting molecule with either gallium Ga 68 for diagnostic use or lutetium Lu 177 for therapeutic use will deliver improved patient outcomes. NET patients who have had tumors successfully localized using Positron Emission Tomography (PET) scans with our SomaKit TOC™ diagnostic drug approved in Europe or our first-in-class NETSPOT® diagnostic drug approved in the United States, may also be candidates for therapy with lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera®), since the drugs bind to the same receptor. This theragnostic pairing for NETs is one of three drugs in our oncology pipeline, through which we are leveraging the same targeting molecule to license two separate products. Our next pairings in development target malignancies such as prostate and breast cancers and gastrointestinal stromal tumors.”

The marketing authorization is based on results of a randomized pivotal Phase 3 study, NETTER-1 that compared treatment using lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera®) to a double dose of Octreotide LAR in patients with inoperable midgut NETs progressive under standard dose Octreotide LAR treatment and overexpressing somatostatin receptors; as well as efficacy and safety data from a Phase 1/2 trial conducted by Erasmus Medical Center in more than 1,200 patients with a wide range of NET indications including foregut (including bronchial and pancreatic), midgut and hindgut.

The European Medicines Agency requested an update of NETTER-1 efficacy results with a cut-off date of June 30, 2016. The findings of this update were consistent with previously published results (Strosberg, et al. N Engl J Med 2017;376:125-35). The NETTER-1 study met its primary endpoint, showing a reduction of risk of progression or death of 79% using lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) compared to octreotide LAR 60 mg. Although the final Overall Survival (OS) analysis (secondary endpoint) is planned for after the first of either 158 cumulative deaths, or five years after the last patient is randomized; the current update (after 71 cumulative deaths), also confirmed the favorable trend of 28 deaths in the lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) arm versus 43 in the octreotide LAR 60 mg arm. The median OS in the octreotide LAR arm was 27.4 months, but was still not reached in the lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) arm after 42 months, with a Hazard Ratio (HR) of 0.536, meaning a reduction of risk of death of 46% using lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) compared to octreotide LAR 60 mg).¹

Gastroenteropancreatic neuroendocrine tumors, also known as GEP-NETs, are a group of tumors originating in the neuroendocrine cells of numerous organs. According to the European Society for Medical Oncology (ESMO), the crude incidence of GEP-NETs is estimated to be 5.25/100,000 per year.² Lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) has received orphan drug designation from the European Medicines Agency.

The Summary of Product Characteristics for lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) may be found at:
http://ec.europa.eu/health/documents/community-register/2017/20170926138665/anx_138665_en.pdf

A New Drug Application is currently under review by the US Food and Drug Administration. The Prescription Drug User Fee Act (PDUFA) action date is January 26, 2018.

* USAN: lutetium Lu 177 dotatate/INN: lutetium (¹⁷⁷Lu) oxodotreotide

¹ Advanced Accelerator Applications. (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) Summary of Product Characteristics. 2017.

² Öberg K, Knigge U, Kwekkeboom D, Perren A. Neuroendocrine gastro-entero-pancreatic tumors: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Annals of Oncology. 2012;23 (Supplement 7):vii124–vii130.

About USAN: lutetium Lu 177 dotatate/INN: lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®])

USAN: lutetium Lu 177 dotatate/INN: lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) is an investigational ¹⁷⁷Lu-labeled somatostatin analog peptide. USAN: lutetium Lu 177 dotatate/INN: lutetium (¹⁷⁷Lu) oxodotreotide, (Lutathera[®]) belongs to an emerging form of treatments called Peptide Receptor Radionuclide Therapy (PRRT), which involves targeting tumors with radiolabeled molecules that bind to specific receptors expressed by the tumor. This novel compound has received orphan drug designation from the European Medicines Agency (EMA) and the US Food and Drug Administration (FDA). Currently, USAN: lutetium Lu 177 dotatate/INN: lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) is administered on a compassionate use and named patient basis for the treatment of NETs and other tumors over-expressing somatostatin receptors in ten European countries and in the US under an Expanded Access Program (EAP).

About Advanced Accelerator Applications S.A.

Advanced Accelerator Applications is an innovative radiopharmaceutical company that develops, produces and commercializes Molecular Nuclear Medicine products. AAA's lead investigational therapeutic candidate, USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera[®]), is a novel MNM compound in development for the treatment of neuroendocrine tumors, a significant unmet medical need. Founded in 2002, AAA has its headquarters in Saint-Genis-Pouilly, France. AAA currently has 21 production and R&D facilities able to manufacture both diagnostics and therapeutic MNM products, and more than 500 employees in 13 countries (France, Italy, the UK, Germany, Switzerland, Spain, Poland, Portugal, The Netherlands, Belgium, Israel, the US and Canada). AAA reported sales of €109.3 million in 2016 (+23% vs. 2015) and €69.2 million in 1H17 (+27% vs. 1H16). AAA is listed on the Nasdaq Global Select Market under the ticker "AAAP". For more information, please visit: www.adacap.com.

About Molecular Nuclear Medicine ("MNM")

Molecular Nuclear Medicine is a medical specialty using trace amounts of active substances, called radiopharmaceuticals, to create images of organs and lesions, and to treat various diseases, like cancer. The technique works by injecting targeted radiopharmaceuticals into the patient's body that accumulate in the organs or lesions and reveal specific biochemical processes. MNM can be divided in two branches: Molecular Nuclear Diagnostics and Molecular Nuclear Therapy. Molecular nuclear diagnostics employs a variety of imaging devices and radiopharmaceuticals. PET (Positron Emission Tomography) and SPECT (Single Photon Emission Computed Tomography) are highly sensitive imaging technologies that enable physicians to diagnose different types of cancer, cardiovascular diseases, neurological disorders and other diseases in their early stages. Molecular nuclear therapy uses radioactive sources (radionuclides) to treat a range of tumor types. Using short-range particles, this therapy can target tumors with little effect on normal tissues.

Cautionary Statement Regarding Forward-Looking Statements

This press release contains forward-looking statements. All statements, other than statements of historical facts, contained in this press release, including statements regarding the Company's strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements that appear in a number of places in this press release include the Company's current expectation regarding future events and various matters, including expected timing of filings with the FDA and EMA, and approval dates. These forward-looking statements involve risks and uncertainties that may cause actual results, events or developments to be materially different from any future results, events or developments expressed or implied by such forward-looking statements. Such factors include, but are not limited to, changing market conditions, the successful and timely completion of clinical studies, the timing of our submission of applications for regulatory approvals, EMA, FDA and other regulatory approvals for our product candidates, the occurrence of side effects or serious adverse events caused by or associated with our products and product candidates; our ability to procure adequate quantities of necessary supplies and raw materials for USAN: Lutetium Lu 177 dotatate/INN: Lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) and other chemical compounds acceptable for use in our manufacturing processes from our suppliers; our ability to organize timely and safe delivery of our products or product candidates by third parties; any problems with the manufacture, quality or performance of our products or product candidates; the rate and degree of market acceptance and the clinical utility of USAN: Lutetium Lu 177 dotatate/INN: Lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]) and our other products or product candidates; our estimates regarding the market opportunity for USAN: Lutetium Lu 177 dotatate/INN: Lutetium (¹⁷⁷Lu) oxodotreotide (Lutathera[®]), our other product candidates and our existing products; our anticipation that we will generate higher sales as we diversify our products; our ability to implement our growth strategy including expansion in the US; our ability to sustain and create additional sales, marketing and distribution capabilities; our intellectual property and licensing position; legislation or regulation in countries where we sell our products that affect product pricing, taxation, reimbursement, access or distribution channels; regulatory actions or litigation; and general economic, political, demographic and business conditions in Europe, the US and elsewhere. Except as required by applicable securities laws, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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