



**POSLUMA PET imaging  
helps shed light on  
prostate cancer**

**A precise way to  
image prostate cancer**

Not an actual patient

### **INDICATION**

POSLUMA<sup>®</sup> (flotufolastat F 18) injection is indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer

- with suspected metastasis who are candidates for initial definitive therapy
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level

### **SELECT IMPORTANT SAFETY INFORMATION**

• Image interpretation errors can occur with POSLUMA PET. A negative image does not rule out the presence of prostate cancer and a positive image does not confirm the presence of prostate cancer. The performance of POSLUMA for imaging metastatic pelvic lymph nodes in patients prior to initial definitive therapy seems to be affected by serum PSA levels and risk grouping. The performance of POSLUMA for imaging patients with biochemical evidence of recurrence of prostate cancer seems to be affected by serum PSA levels. Flotufolastat F 18 uptake is not specific for prostate cancer and may occur in other types of cancer, in non-malignant processes, and in normal tissues. Clinical correlation, which may include histopathological evaluation, is recommended.

Please see full [Important Safety Information](#) on back cover and the enclosed [Prescribing Information](#).

# A closer look at prostate cancer

## When you're first diagnosed

If you've been newly diagnosed with prostate cancer, your doctor is going to take steps to develop a **treatment plan** that's right for you. Your treatment plan will detail the goals, expected length, and any other important considerations of the treatment selected by you and your doctor.

Approximately  
**288,300**  
new cases of prostate cancer are expected to be diagnosed in the United States in 2023.

Prostate cancer is the **second** leading cause of cancer-related death in men in the United States, but survival rates are improving as detection and treatment technology continues to advance.

Early detection



Treatment



**3.1 million** prostate cancer survivors in the United States.

### SELECT IMPORTANT SAFETY INFORMATION


- Risk of Image Misinterpretation in Patients with Suspected Prostate Cancer Recurrence: The interpretation of POSLUMA PET may differ depending on imaging readers, particularly in the prostate/prostate bed region. Because of the associated risk of false positive interpretation, consider multidisciplinary consultation and histopathological confirmation when clinical decision-making hinges on flutufolastat F18 uptake only in the prostate/prostate bed region or only on uptake interpreted as borderline.

## If prostate cancer returns

Up to **40% to 50%** of men diagnosed and treated for prostate cancer will have a **recurrence** within 10 years.

Recurrent prostate cancer means that your disease has come back after treatment.

Even after you've been treated for prostate cancer, your doctor will continue to monitor for recurrence. If they suspect that your prostate cancer has returned, there are different ways they might investigate—one of those ways is through **imaging**.



It's vital to know where prostate cancer is located in your body so that you and your doctor can choose the most appropriate treatment plan. Imaging with POSLUMA can help your doctor locate prostate cancer with confidence.

Please see full Important Safety Information throughout and the enclosed Prescribing Information.

 **POSLUMA**<sup>®</sup>  
flotufolastat F 18 injection

# The importance of imaging

## What is imaging?

Imaging is a process that creates pictures of areas inside the body. It has many applications, one of them being cancer detection. While multiple types of imaging scans can help provide important information about prostate cancer, they all have pros and cons.

## Common imaging scan overview

	Prostate cancer detection			
	In bones	In soft tissue	When it's very small	When PSA levels are low <sup>†</sup>
PET	✓	✓	✓*	✓
CT	✓	✓	✓	✗
MRI	✓	✓	✓	✗
Bone scan	✓	N/A	N/A	✗

✓ = yes    ✓ = yes, with limitations    ✗ = no    N/A = not applicable

\*While PET scans have limitations in detecting microscopic metastases, they do detect smaller metastases than CT scans or MRIs.

<sup>†</sup>PSA <2 ng/mL.

CT=computed tomography; MRI=magnetic resonance imaging;  
PET=positron emission tomography; PSA=prostate-specific antigen.

Understanding the information provided by different imaging scans can help you advocate for yourself, so you can talk to your doctor about which ones may be right for you.

Please see full [Important Safety Information](#) throughout and the enclosed [Prescribing Information](#).

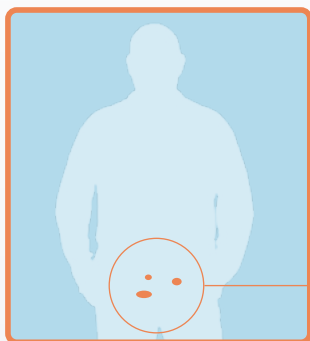
## Why choose a PET scan?

PET scans are often chosen to help develop an informed treatment plan for prostate cancer because they provide important information.

## How do PET scans work?

First, an imaging agent—like POSLUMA—is injected into the body. Then, it binds to a target, such as cancer cells, to light it up. This can be seen on images from a PET scan, showing the location of the disease. Keep in mind that like all imaging agents, POSLUMA may not detect all prostate cancer.

## How POSLUMA works



The surface of most prostate cancer cells has elevated levels of a protein called **prostate-specific membrane antigen, or PSMA**.

As an advanced diagnostic imaging agent, POSLUMA is highly specific to PSMA and attaches to it, highlighting prostate cancer where it's located.

As with all diagnostic imaging tests, it's possible that physicians may interpret POSLUMA PET scan results incorrectly. This means that a negative POSLUMA PET scan does not confirm or rule out the presence of prostate cancer.

PET=positron emission tomography.

## SELECT IMPORTANT SAFETY INFORMATION

- POSLUMA use contributes to a patient's overall long-term cumulative radiation exposure. Long-term cumulative radiation exposure is associated with an increased risk for cancer. Advise patients to hydrate before and after administration and to void frequently after administration. Ensure safe handling to minimize radiation exposure to the patient and health care providers.

 **POSLUMA**<sup>®</sup>  
flotufolastat F 18 injection

# What to expect with a POSLUMA PET scan

## Before your scan



Fasting is not necessary, so you can stick to your normal diet



Hydrate well. Make sure to urinate immediately before your scan



POSLUMA will be injected ahead of time, about 60 minutes before your scan

## During your scan



The scan itself will take about 20 minutes



You may be asked to change body positions, but generally you will be on your back with your arms above your head

## After your scan



Continue to hydrate and urinate frequently for the first few hours



You'll review and discuss the results at your next doctor's visit. Please note that it's possible for physicians to interpret the results of an imaging scan incorrectly

**POSLUMA was not associated with any serious adverse reactions in the clinical trials.**

## SELECT IMPORTANT SAFETY INFORMATION

- The adverse reactions reported in  $\geq 0.4\%$  of patients in clinical studies were diarrhea, blood pressure increase and injection site pain.
- Drug Interactions: androgen deprivation therapy (ADT) and other therapies targeting the androgen pathway, such as androgen receptor antagonists, may result in changes in uptake of flutufolostat F 18 in prostate cancer. The effect of these therapies on performance of POSLUMA PET has not been established.



# Ask your doctor about POSLUMA



## Discussion points for you and your doctor

I'd like to know if a PET scan is an option for me

I want to know more about the safety of imaging scans

I'd like to talk about what the different treatment options are depending on what's found on the scan

I've had a POSLUMA PET scan previously, and now that my prostate cancer has recurred, should I have another?



## Stating your preferences for your treatment plan

I'm interested in a personalized treatment plan

I'm interested in treating my prostate cancer aggressively

Being healthy for as long as possible is very important to me

Avoiding hormone therapy for as long as possible is very important to me

Having a POSLUMA PET scan can provide you and your doctor with important information about your initial prostate cancer diagnosis or suspected recurrence.

# Talk to your doctor about scheduling a POSLUMA PET scan



## Your scheduled POSLUMA PET scan

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Imaging center: \_\_\_\_\_

Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

## Follow-up visit

Date: \_\_\_\_\_

Time: \_\_\_\_\_

### INDICATION

POSLUMA® (flotufolastat F 18) injection is indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer

- with suspected metastasis who are candidates for initial definitive therapy
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level

### IMPORTANT SAFETY INFORMATION

- Image interpretation errors can occur with POSLUMA PET. A negative image does not rule out the presence of prostate cancer and a positive image does not confirm the presence of prostate cancer. The performance of POSLUMA for imaging metastatic pelvic lymph nodes in patients prior to initial definitive therapy seems to be affected by serum PSA levels and risk grouping. The performance of POSLUMA for imaging patients with biochemical evidence of recurrence of prostate cancer seems to be affected by serum PSA levels. Flotufolastat F 18 uptake is not specific for prostate cancer and may occur in other types of cancer, in non-malignant processes, and in normal tissues. Clinical correlation, which may include histopathological evaluation, is recommended.
- Risk of Image Misinterpretation in Patients with Suspected Prostate Cancer Recurrence: The interpretation of POSLUMA PET may differ depending on imaging readers, particularly in the prostate/prostate bed region. Because of the associated risk of false positive interpretation, consider multidisciplinary consultation and histopathological confirmation when clinical decision-making hinges on flotufolastat F18 uptake only in the prostate/prostate bed region or only on uptake interpreted as borderline.
- POSLUMA use contributes to a patient's overall long-term cumulative radiation exposure. Long-term cumulative radiation exposure is associated with an increased risk for cancer. Advise patients to hydrate before and after administration and to void frequently after administration. Ensure safe handling to minimize radiation exposure to the patient and health care providers.
- The adverse reactions reported in  $\geq 0.4\%$  of patients in clinical studies were diarrhea, blood pressure increase and injection site pain.
- Drug Interactions: androgen deprivation therapy (ADT) and other therapies targeting the androgen pathway, such as androgen receptor antagonists, may result in changes in uptake of flotufolastat F 18 in prostate cancer. The effect of these therapies on performance of POSLUMA PET has not been established.

To report suspected adverse reactions to POSLUMA, call 1-844-POSLUMA (1-844-767-5862) or contact FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).

Full POSLUMA prescribing information is available at [www.posluma.com/prescribing-information.pdf](http://www.posluma.com/prescribing-information.pdf)





## HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use POSLUMA® safely and effectively. See [full prescribing information](#) for POSLUMA.

**POSLUMA (flotufolostat F 18) injection, for intravenous use**  
**Initial U.S. Approval: 2023**

### INDICATIONS AND USAGE

POSLUMA is a radioactive diagnostic agent indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer:

- with suspected metastasis who are candidates for initial definitive therapy
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level. (1)

### DOSAGE AND ADMINISTRATION

- Recommended amount of radioactivity of POSLUMA is 296 MBq (8 mCi) administered as an intravenous bolus injection. (2.2)
- Initiate imaging approximately 60 minutes after administration. Scanning should start from mid-thigh and proceed to base of skull. (2.4)
- See full prescribing information for additional preparation, handling, administration, imaging, and radiation dosimetry information. (2.3, 2.4)

### DOSAGE FORMS AND STRENGTHS

Injection: 296 MBq/mL to 5,846 MBq/mL (8 mCi/mL to 158 mCi/mL) as flotufolostat F 18 gallium in approximately 25 mL at end of synthesis in a multiple-dose vial. (3)

### CONTRAINDICATIONS

None. (4)

### WARNINGS AND PRECAUTIONS

- Risk of Image Misinterpretation: Image interpretation errors can occur with POSLUMA imaging. Interpretation of POSLUMA PET may differ depending on imaging readers in patients with suspected recurrence of prostate cancer. Consider multidisciplinary consultation and histopathological confirmation. (5.1, 14.2)
- Radiation risk: POSLUMA contributes to a patient's long-term cumulative radiation exposure. Ensure safe handling to protect patients and health care workers from unintentional radiation exposure. (2.1, 5.2)

### ADVERSE REACTIONS

The most common adverse reactions (≥0.4%) are diarrhea, blood pressure increase, and injection site pain. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Blue Earth Diagnostics Ltd at 1-844-POSLUMA (1-844-767-5862) or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).

See 17 for PATIENT COUNSELING INFORMATION

Revised: 5/2023

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# FULL PRESCRIBING INFORMATION

## 1 INDICATIONS AND USAGE

POSLUMA is indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer

- with suspected metastasis who are candidates for initial definitive therapy.
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level.

## 2 DOSAGE AND ADMINISTRATION

### 2.1 Radiation Safety - Drug Handling

Handle POSLUMA with safety measures to minimize radiation exposure [see *Warnings and Precautions (5.2)*]. Use waterproof gloves, effective radiation shielding, including syringe shields, and other appropriate safety measures when handling and administering POSLUMA.

Radiopharmaceuticals should be used by or under the control of physicians who are qualified by specific training and experience in the safe use and handling of radionuclides, and whose experience and training have been approved by the appropriate governmental agency authorized to license the use of radionuclides.

### 2.2 Recommended Dose and Administration Instructions

#### Recommended Dose

The recommended amount of radioactivity to be administered in adults is 296 MBq (8 mCi) as an intravenous bolus injection.

#### Preparation and Administration Instructions

- Inspect POSLUMA visually for particulate matter and discoloration before administration. Do not use the drug if the solution contains particulate matter or is discolored.
- Use aseptic technique and radiation shielding when withdrawing and administering POSLUMA.
- Calculate the necessary volume to administer based on calibration time and required dose.
- The recommended maximum volume of undiluted POSLUMA is 5 mL.
- POSLUMA may be diluted with 0.9% Sodium Chloride Injection, USP.
- Assay the dose in a dose calibrator before administration.

#### Post Administration Instructions

- After the POSLUMA injection, administer an intravenous flush of sterile 0.9% Sodium Chloride Injection, USP to ensure full delivery of the dose.
- Dispose of any unused drug in a safe manner in compliance with applicable regulations.

## 2.3 Patient Preparation

Instruct patients to drink water prior to administration of POSLUMA to ensure adequate hydration and to continue drinking and voiding frequently for the first few hours following administration to reduce radiation exposure.

## 2.4 Image Acquisition

- Patients should void immediately prior to imaging.
- Position the patient supine with arms above the head.
- Begin image acquisition approximately 60 minutes after POSLUMA injection.
- Image acquisition should start from mid-thigh and proceed to the base of the skull.
- Scan duration is approximately 20 minutes depending on the number of bed positions and acquisition time per bed position (typically 3 minutes). Adapt imaging technique according to the equipment used and patient characteristics in order to obtain the best image quality possible.

## 2.5 Image Display and Interpretation

POSLUMA binds to PSMA. PET images obtained using POSLUMA indicate the presence of PSMA in tissues [see *Clinical Pharmacology (12.1)*]. Lesions should be considered suspicious if uptake is greater than physiologic uptake in that tissue or greater than adjacent background if no physiologic uptake is expected. Tumors that do not express PSMA will not be visualized. Increased uptake in tumors is not specific for prostate cancer [see *Warnings and Precautions (5.1)*].

## 2.6 Radiation Dosimetry

Estimated absorbed radiation doses for adult patients following intravenous injection of POSLUMA are shown in [Table 1](#). The effective radiation dose resulting from the administration of the recommended activity of 296 MBq of POSLUMA is 4.1 mSv. The radiation absorbed doses to the critical organs of adrenal glands, kidneys, and submandibular glands for the recommended activity of 296 MBq are 54.3 mGy, 51 mGy, and 43.8 mGy, respectively. When PET/CT is performed, exposure to radiation will increase by an amount dependent on the settings used in the CT acquisition.

**Table 1: Estimated Radiation Absorbed Doses in Organs/Tissues in Adults who Received POSLUMA**

Organ/Tissue	Absorbed Dose per Unit Administered Activity (mGy/MBq)
	Mean
Adrenal glands	0.184
Brain	0.002
Breasts	0.004
Gallbladder wall	0.017
Lower large intestine wall	0.007
Upper large intestine wall	0.01
Heart wall	0.02
Kidneys	0.172
Lacrimal glands	0.08*
Liver	0.062
Lungs	0.01

Muscle	0.006
Osteogenic cells	0.012
Ovaries	0.005
Pancreas	0.028
Parotid glands	0.114*
Red bone marrow	0.01
Skin	0.002
Small intestine	0.012
Spleen	0.083
Stomach wall	0.012
Sublingual glands	0.065*
Submandibular glands	0.148*
Testes	0.005
Thymus gland	0.01
Thyroid	0.01
Urinary bladder wall	0.006**
Uterus	0.011
<b>Effective dose (mSv/MBq)</b>	<b>0.014**</b>

\*The absorbed dose value reflects self-irradiation only; no dose contribution from other regions to the glands is added. \*\*A 1-hour bladder voiding interval is assumed.

### 3 DOSAGE FORMS AND STRENGTHS

Injection: 296 MBq/mL to 5,846 MBq/mL (8 mCi/mL to 158 mCi/mL) as flutemetastat F 18 gallium in approximately 25 mL at end of synthesis supplied as a clear, colorless solution in a multiple-dose vial.

### 4 CONTRAINDICATIONS

None.

### 5 WARNINGS AND PRECAUTIONS

#### 5.1 Risk of Image Misinterpretation

Image interpretation errors can occur with POSLUMA PET. A negative image does not rule out the presence of prostate cancer and a positive image does not confirm the presence of prostate cancer. The performance of POSLUMA for imaging metastatic pelvic lymph nodes in patients prior to initial definitive therapy seems to be affected by serum PSA levels and risk grouping [See *Clinical Studies (14.1)*]. The performance of POSLUMA for imaging patients with biochemical evidence of recurrence of prostate cancer seems to be affected by serum PSA levels [See *Clinical Studies (14.2)*]. Flutemetastat F 18 uptake is not specific for prostate cancer and may occur in other types of cancer, in non-malignant processes, and in normal tissues. Clinical correlation, which may include histopathological evaluation, is recommended.

#### Risk of Image Misinterpretation in Patients with Suspected Prostate Cancer Recurrence

The interpretation of POSLUMA PET may differ depending on imaging readers, particularly in the prostate/prostate bed region [see *Clinical Studies (14.2)*]. Because of the associated risk of false positive

interpretation, consider multidisciplinary consultation and histopathological confirmation when clinical decision-making hinges on flutufolastat F18 uptake only in the prostate/prostate bed region or only on uptake interpreted as borderline.

## 5.2 Radiation Risks

POSLUMA use contributes to a patient's overall long-term cumulative radiation exposure. Long-term cumulative radiation exposure is associated with an increased risk for cancer. Advise patients to hydrate before and after administration and to void frequently after administration. Ensure safe handling to minimize radiation exposure to the patient and health care providers [see *Dosage and Administration (2.1, 2.2)*].

## 6 ADVERSE REACTIONS

### 6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of POSLUMA was evaluated in 747 patients with prostate cancer [see *Clinical Studies (14.1, 14.2)*]. All patients received a single administration of POSLUMA with an administered radioactivity (mean  $\pm$  SD) of  $307 \pm 23$  MBq ( $8.3 \pm 0.6$  mCi). The mean age of patients was 67 years (range: 43 to 86 years); distribution by race was 78% White, 12% Black or African American, 2% other, and 7% unreported; and distribution by ethnicity was 5% Hispanic/Latino, 87% non-Hispanic/Latino, and 8% unreported.

The adverse reactions reported in  $\geq 0.4\%$  of patients are shown in [Table 2](#).

**Table 2: Adverse Reactions in  $\geq 0.4\%$  of Patients with Prostate Cancer Receiving POSLUMA**

Adverse Reaction	POSLUMA N = 747 n (%)
Diarrhea	5 (0.7%)
Blood pressure increase	4 (0.5%)
Injection site pain	3 (0.4%)

## 7 DRUG INTERACTIONS

Androgen deprivation therapy (ADT) and other therapies targeting the androgen pathway, such as androgen receptor antagonists, can result in changes in uptake of flutufolastat F 18 in prostate cancer. The effect of these therapies on performance of POSLUMA PET has not been established.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

#### Risk Summary

POSLUMA is not indicated for use in females. There are no available data on the use of POSLUMA in pregnant women to evaluate for a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Animal reproduction studies have not been conducted with flutufolastat F 18. Radioactive drugs, including POSLUMA, have the potential to cause fetal harm depending on the fetal stage of development and the magnitude of the radiation dose.

### 8.2 Lactation

#### Risk Summary

POSLUMA is not indicated for use in females. There are no data on the presence of flutufolastat F 18 in human milk, the effect on the breastfed infant, or the effect on milk production.

### 8.4 Pediatric Use

The safety and effectiveness of POSLUMA have not been established in pediatric patients.

### 8.5 Geriatric Use

Among the total number of patients receiving POSLUMA in clinical studies of prostate cancer, 463 (62%) were 65 years of age and older, while 118 (16%) were 75 years of age and older [see *Clinical Studies (14.1, 14.2)*]. No overall differences in safety or effectiveness were observed between these patients and younger adult patients.

## 10 OVERDOSAGE

In the event of an overdose of POSLUMA, maintain hydration of the patient and frequent voiding to minimize radiation exposure. A diuretic might also be considered. If possible, an estimate of the radiation effective dose administered to the patient should be made.

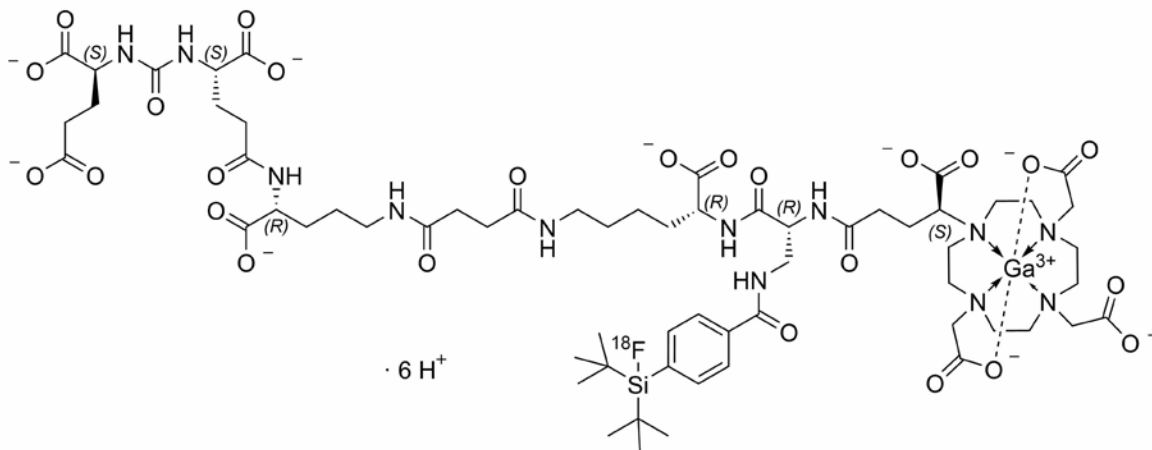
## 11 DESCRIPTION

### 11.1 Chemical Characteristics

POSLUMA (flutufolastat F 18) injection is a radioactive diagnostic agent for intravenous use. The active ingredient of POSLUMA is flutufolastat F 18 gallium, of which the molecular structure includes a DOTAGA complex with nonradioactive gallium. Radioactive fluorine-18 is covalently bound to silicon.

Chemically, flutufolastat F 18 gallium is gallate(6-), [(4*S*,8*S*,13*R*,27*R*,30*R*,35*S*)-35-[4,10-bis[(carboxy-*kO*)methyl]-7-(carboxymethyl)-1,4,7,10-tetraazacyclododec-1-yl-*kN*<sup>1</sup>,*kN*<sup>4</sup>,*kN*<sup>7</sup>,*kN*<sup>10</sup>]-30-[[[4-[bis(1,1-dimethylethyl)fluoro-<sup>18</sup>F-silyl]benzoyl]amino]methyl]-1,36-dihydroxy-1,6,11,18,21,29,32,36-octaoxo-5,7,12,17,22,28,31-heptaazahexatriacontane-4,8,13,27-tetracarboxylato(9-)]-, hydrogen (1:6). The molecular weight is 1537.3 g/mol and the structural formula is:





POSLUMA is a sterile, non-pyrogenic, clear, colorless, and isotonic solution. Each mL contains up to 20 mcg of fltufolastat gallium, up to 5,846 MBq (158 mCi) as fltufolastat F 18 gallium at end of synthesis, and the following inactive ingredients: not more than 10% (v/v) alcohol, 1.9 mg anhydrous citric acid, 7.2 mg sodium chloride, and 0.75 mg sodium hydroxide to adjust pH between 4 and 6. POSLUMA contains no preservative.

## 11.2 Physical Characteristics

POSLUMA contains fluorine-18 (F 18) which is a cyclotron produced radionuclide that decays by positron emission ( $\beta^+$  decay, 96.7%) and orbital electron capture (3.3%) to stable oxygen-18 with a physical half-life of 109.8 minutes (Table 3). The principal photons useful for diagnostic imaging are the coincident pair of 511 keV gamma photons, resulting from the interaction of the emitted positron with an electron (Table 4).

**Table 3: Physical Decay Chart for Fluorine-18**

Minutes	Fraction Remaining
0	1
15	0.909
30	0.826
60	0.683
110	0.5
220	0.25

**Table 4: Principal Radiation Produced from Decay of Fluorine-18**

	Energy (keV)	Abundance (%)
Positron	249.8	96.7
Gamma	511	193.5

## 11.3 External Radiation

The point source air-kerma coefficient for F 18 is  $3.75 \times 10^{-17}$  Gy m<sup>2</sup>/(Bq s). The first half-value thickness of lead (Pb) for F 18 gamma rays is approximately 6 mm. The relative reduction of radiation emitted by F 18 that results from various thicknesses of lead shielding is shown in Table 5. The use of 8 cm of Pb will decrease the radiation transmission (i.e., exposure) by a factor of about 10,000.

**Table 5: Radiation Attenuation of 511 keV Gamma Rays by Lead Shielding**

Shield Thickness cm of Lead (Pb)	Coefficient of Attenuation
0.6	0.5
2	0.1
4	0.01
6	0.001
8	0.0001

## 12 CLINICAL PHARMACOLOGY

### 12.1 Mechanism of action

Flotufolastat F 18 binds to PSMA (IC<sub>50</sub> = 4.4 nM) expressed on cells, including prostate cancer cells, and is internalized. Prostate cancer cells usually overexpress PSMA. Fluorine-18 is a β<sup>+</sup> emitting radionuclide that can be detected using positron emission tomography.

### 12.2 Pharmacodynamics

The relationship between flotufolastat F 18 plasma concentrations and image interpretation has not been fully characterized.

### 12.3 Pharmacokinetics

#### Distribution

Following intravenous administration, flotufolastat F 18 distributes to liver (15.8% of administered activity), heart blood pool (7.4%), and kidneys (3.2%) and is cleared from the blood.

#### Elimination

#### *Metabolism*

Flotufolastat F 18 does not undergo metabolism up to 50 minutes post injection.

#### *Excretion*

Elimination is by urinary excretion. Approximately 7% of the administered activity was excreted in the urine in the first 2 hours post-injection with approximately 15% excreted by 4.5 hours post-injection.

## 13 NONCLINICAL TOXICOLOGY

### 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Animal studies to assess the carcinogenicity or mutagenic potential of flutufolastat have not been conducted. However, flutufolastat F 18 has the potential to be mutagenic because of the F 18 radionuclide.

No studies in animals have been performed to evaluate potential impairment of fertility in males or females.

## 14 CLINICAL STUDIES

### 14.1 Imaging Prior to Initial Definitive Therapy of Prostate Cancer

The safety and efficacy of POSLUMA were evaluated in LIGHTHOUSE (NCT04186819), a prospective, multicenter, open-label, single-arm study in patients with prostate cancer who were candidates for initial definitive therapy.

The study enrolled 356 patients diagnosed with unfavorable intermediate-risk (32%) or high-/very high-risk prostate cancer (68%) who were candidates for radical prostatectomy and pelvic lymph node dissection (PLND). Unfavorable intermediate-risk was defined as having any  $\geq 2$  intermediate risk factors [T2b-T2c, Gleason score 7, PSA 10-20], Gleason pattern 4+3=7, or  $\geq 50\%$  of biopsy cores positive for prostate cancer. High or very high-risk was defined as having T3 or T4 disease, Gleason score  $\geq 8$ , primary Gleason pattern 5, and/or PSA  $>20$ .

All patients received a single dose of POSLUMA with an administered radioactivity (mean  $\pm$  SD) of  $307 \pm 23$  MBq ( $8.3 \pm 0.62$  mCi), followed by PET/CT scan from mid-thigh to base of the skull. Three central readers blinded to clinical information independently interpreted each scan for lesions considered positive for prostate cancer in pelvic lymph nodes, categorized by subregion and left and right laterality [see *Dosage and Administration (2.5)*]. Positive lesions in the prostate gland, lymph nodes outside the pelvis, soft tissue/parenchyma, and bones were also recorded.

A total of 296 patients (83%) underwent standard-of-care prostatectomy and template PLND and had sufficient histopathology data for evaluation of the pelvic lymph nodes. The mean age was 65 years (range 46 to 82 years); distribution by race was 82% White, 8% Black or African American, 0.3% other, and 10% unreported; and distribution by ethnicity was 5% Hispanic/Latino, 86% non-Hispanic/Latino, and 9% unreported. The median serum PSA was 8.4 ng/mL. The total Gleason score was 7 for 45%, 8 for 26%, and 9 for 25% of the patients, with the remainder of the patients having Gleason scores of 6 or 10. Approximately 24% of patients had pelvic lymph node metastases based on histopathology.

POSLUMA performance was evaluated against histopathology after matching by hemipelvis. [Table 6](#) shows the results, such that at least one true positive hemipelvis region defined a true positive patient.

**Table 6: Patient-Level, Hemipelvis Region-Matched Performance of POSLUMA PET for Detection of Pelvic Lymph Node Metastasis (N1) in LIGHTHOUSE**

N=296	Reader 1	Reader 2	Reader 3
True Positive	21	19	16

False Positive	16	14	7
True Negative	210	212	219
False Negative	49	51	54
Sensitivity, (%) [95% CI]	30% [20, 42]	27% [17, 39]	23% [14, 35]
Specificity, (%) [95% CI]	93% [89, 96]	94% [90, 97]	97% [94, 99]
Positive Predictive Value, (%) [95% CI]	57% [40, 73]	58% [39, 75]	70% [47, 87]
Negative Predictive Value, (%) [95% CI]	81% [76, 86]	81% [75, 85]	80% [75, 85]

CI= confidence interval

In exploratory analyses, there were numerical trends towards higher sensitivity among patients with PSA greater than or equal to the median value (8.4 ng/mL) and among patients with high-risk or very high-risk categorization.

POSLUMA-positive lesions outside of the prostate gland and pelvic lymph nodes (M1) were also evaluated. As a percentage of the 352 patients with an evaluable POSLUMA scan and of the 61 patients with at least one POSLUMA positive M1 lesion, 10% (95% CI: 7% to 13%) and 56% (95% CI: 42% to 68%), respectively, had at least one matching positive M1 lesion between the POSLUMA majority read and a reference standard consisting of other imaging evaluated by a separate consensus panel or histopathology.

## 14.2 Imaging for Suspected Recurrence of Prostate Cancer

The safety and efficacy of POSLUMA were evaluated in SPOTLIGHT (NCT04186845), a prospective, multicenter, open-label, single-arm study in patients with biochemical evidence of recurrent prostate cancer.

The study enrolled 391 patients with suspected recurrence defined by either serum PSA of at least 0.2 ng/mL after radical prostatectomy (with confirmatory PSA level also at least 0.2 ng/mL) or by an increase in serum PSA of at least 2 ng/mL above the nadir after other therapies.

All patients received a single dose of POSLUMA with an administered radioactivity (mean  $\pm$  SD) of 306  $\pm$  22 MBq (8.27  $\pm$  0.61 mCi), followed by PET/CT scan from mid-thigh to base of the skull. Three central readers blinded to clinical information independently interpreted each scan by region for the presence and location of lesions considered positive for prostate cancer [see *Dosage and Administration (2.5)*]. The regions interpreted were grouped into three for primary analysis: prostate/prostate bed; pelvic lymph nodes; and other (including extra-pelvic lymph nodes, bone, and soft tissue/parenchyma).

A total of 389 patients had an evaluable POSLUMA PET scan. The mean age was 68 years (range: 43 to 86 years); distribution by race was 75% White, 16% Black or African American, 4% other, and 5% unreported; and distribution by ethnicity 5% was Hispanic/Latino, 87% non-Hispanic/Latino, and 8% unreported. The median baseline serum PSA level was 1.1 ng/mL with 60% of patients having a baseline PSA <2.0 ng/mL. Prior treatment included radical prostatectomy in 79% of the patients.

POSLUMA-positive interpretations were compared to a reference standard of either histopathology or other imaging (CT, MRI, Technetium 99m bone scan, or fluciclovine F 18 PET) obtained within 90 days

of the POSLUMA scan using a lesion-to-lesion co-localization method and separate consensus panel. Reference standard information for negative interpretations was not collected.

At least one POSLUMA-positive lesion was detected by at least one reader in 366 patients (94%). Reference standard information consisted of imaging only (n=297) or histopathology (n=69). As a percentage of patients with an evaluable scan, 51% (95% CI: 46% to 56%) for reader 1, 48% (95% CI: 43% to 53%) for reader 2, and 49% (95% CI: 44% to 54%) for reader 3 had at least one matching positive region between the POSLUMA scan and the reference standard. Of all POSLUMA-positive regions, 46% (95% CI: 42% to 50%) for reader 1, 60% (95% CI: 55% to 66%) for reader 2, and 53% (95% CI: 48% to 58%) for reader 3 were categorized as positive by the reference standard.

Table 7 shows patient-level results from the majority read stratified by serum PSA level. Percent PET positivity was calculated as the percentage of patients with POSLUMA-positive lesions out of all patients with an evaluable PET scan. Percent PET positivity includes true and false positives and is not a measure of diagnostic performance.

**Table 7: Patient-Level POSLUMA PET Results and Percent PET Positivity Stratified by Serum PSA Level in SPOTLIGHT by Majority Read (N=389)**

PSA (ng/mL)	N	PET Positive Patients					PET Negative Patients	Percent PET Positivity [95% CI]
		Total	Histopathology		Imaging only <sup>a</sup>			
			PA	NPA	PA	NPA		
< 0.5	121	77	6	4	27	40	44	64% [54,72]
≥ 0.5 and < 1	67	51	7	3	24	17	16	76% [64,86]
≥ 1 and < 2	45	42	10	2	18	12	3	93% [82, 99]
≥ 2	156	152	33	3	84	32	4	97% [94, 99]
Total	389	322	56	12	153	101	67	83% [79, 86]

PSA = prostate-specific antigen, PA = positive agreement, NPA = no positive agreement, CI = confidence interval

<sup>a</sup>Imaging comprised of one or more of the following: CT, MRI, <sup>99m</sup>Tc Bone Scan, fluciclovine F 18 PET

#### Variable Interpretation in Patients with Suspected Prostate Cancer Recurrence

POSLUMA reader agreement was evaluated for the three central readers and 389 patients. Inter-reader Fleiss  $\kappa$  was 0.41 (95% CI: 0.39-0.43). The three readers agreed on the presence or absence of positive lesions across all five evaluated regions in 118 patients (30% unanimity) [see *Warning and Precautions (5.1)*].

Given the level of inter-reader agreement observed overall, POSLUMA reader agreement was further evaluated by regional subgroup. The Fleiss  $\kappa$  for was 0.40 (95% CI: 0.33-0.46) in the prostate/prostate bed, 0.73 (95% CI: 0.67-0.78) in the pelvic lymph nodes, and 0.62 (95% CI: 0.58-0.65) across the other regions.

## 16 HOW SUPPLIED/STORAGE AND HANDLING

### How Supplied

POSLUMA injection is supplied as a clear, colorless solution in a multiple-dose glass vial (NDC 69932-002-50) containing 296 MBq/mL to 5,846 MBq/mL (8 mCi/mL to 158 mCi/mL) as flutufolastat F 18 gallium in approximately 25 mL at end of synthesis.

### Storage and Handling

Store POSLUMA at 20°C to 25°C (68°F to 77°F) [see USP Controlled Room Temperature]. Store POSLUMA in the original container in radiation shielding. The expiration date and time are provided on the container label. Use POSLUMA within 10 hours from end of synthesis.

Dispose of unused POSLUMA in compliance with applicable regulations.

This preparation is approved for use by persons under license by the Nuclear Regulatory Commission or the relevant regulatory authority of an Agreement State.

## 17 PATIENT COUNSELING INFORMATION

### Adequate Hydration

Instruct patients to drink a sufficient amount of water to ensure adequate hydration before their PET study and urge them to drink and urinate as often as possible during the first hours following the administration of POSLUMA, in order to reduce radiation exposure [see *Dosage and Administration (2.3) and Warnings and Precautions (5.2)*].

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