June 22, 2026

Lung Bioengineering Inc.
Michael Roberts
Associate VP, Regulatory Affairs
LB1 Building
1015 Spring Street
Silver Spring, Maryland 20910

Re: P240033
Trade/Device Name: LungFX™ device
Product Code: PHO
Filed: November 8, 2024
Amended: January 10, 2025 and March 24, 2026

Dear Michael Roberts:

The Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA) has completed its review of your premarket approval application (PMA) for the LungFX™ device. This device ("LungFX") is indicated for centralized, ex vivo (outside the body) evaluation of deceased-donor lungs (single and double) that cannot be placed for transplantation by an Organ Procurement Organization (OPO) with any of the matched candidates if using direct-to-recipient procurement and preservation procedures. LungFX provides normothermic perfusion and ventilation of procured donor lungs initially stored with cold static preservation solution.

LungFX is intended to allow for re-assessment, in a controlled environment, of procured donor lungs' suitability for transplantation into male and female patients aged 18 years or older with end-stage lung disease awaiting first time (double or single) lung transplantation. Lungs accepted for transplantation after LungFX require a second period of storage with cold static preservation solution, and cumulative preservation time of transplanted lungs is not intended to exceed 20 hours.

Based upon the information submitted, the PMA is approved. You may begin commercial distribution of the device in accordance with the conditions of approval described below. Although this letter refers to your product as a device, please be aware that some approved products may instead be combination products. The Premarket Approval Database available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma.cfm identifies combination product submissions.

The sale and distribution of this device are restricted to prescription use in accordance with 21 CFR 801.109 and under section 515(d)(1)(B)(ii) of the Federal Food, Drug, and Cosmetic Act (the act). The device is further restricted under section 515(d)(1)(B)(ii) of the act insofar as the labeling must specify the specific

training or experience practitioners need in order to use the device. FDA has determined that these restrictions on sale and distribution are necessary to provide reasonable assurance of the safety and effectiveness of the device. Your device is therefore a restricted device subject to the requirements in sections 502(q) and (r) of the act, in addition to all other applicable requirements, including those governing the manufacture, distribution, and marketing of devices.

Expiration dating for this device has been established and approved at 10 years of use life for the hardware components and various expiration dates for the disposable components including: 4 years for the organ chamber and cannula, 2 years for the organ preservation solution and heat exchanger and 1 year for the pefusion circuit kit.

Continued approval of the PMA is contingent upon the submission of periodic reports, required under 21 CFR 814.84, at intervals of one year (unless otherwise specified) from the date of approval of the original PMA. This report, identified as "Annual Report" and bearing the applicable PMA reference number, should be submitted to the CDRH Portal. The Annual Report should indicate the beginning and ending date of the period covered by the report and must include the information required by 21 CFR 814.84.

In addition to the above, and in order to provide continued reasonable assurance of the safety and effectiveness of the PMA device, under 21 CFR 814.82(a)(9), the Annual Report must include, separately for each model number (if applicable), the number of devices sold and distributed during the reporting period, including those distributed to distributors. The distribution data will serve as a denominator and provide necessary context for FDA to ascertain the frequency and prevalence of adverse events, as FDA evaluates the continued safety and effectiveness of the device.

You must obtain approval of your post-approval study (PAS) protocols within 60 days from the date of this order. Within 30 days of your receipt of this letter, you must submit PMA supplements that include complete protocols of your post-approval studies described below. Your PMA supplements should be clearly labeled as a "PMA Post-Approval Study Protocol" as noted below and submitted to the CDRH Portal. Please reference the PMA number above to facilitate processing. If there are multiple protocols being finalized after PMA approval, please submit each protocol as a separate PMA supplement.

In addition to the Annual Report requirements, you must provide the following data in post-approval study (PAS) reports for each PAS listed below.

1. The Long-Term Follow-Up of EVP-DEV-LTX-301 Participants and CLES [Central Lung Evaluation System] for EVLP [Ex Vivo Lung Preservation] Lung Transplant Recipients is an on-going observational, retrospective review of data obtained from the United Network for Organ Sharing (UNOS) for all lung transplant recipients enrolled in the EVP-DEV-LTX-301 piviotal trial for the LungFX device. The purpose of this study is to obtain long-term, post-transplant follow-up data for up to 5 years for all subjects enrolled in the piviotal trial protocol and 10 additional recipients who received donor lungs following CLES assessment under FDA emergency use exemption. Subjects will be followed for 5 years and data will be collected at years 2, 3, 4 and 5. Data collected include survival status, cause of death, oxygen requirement at rest, occurrence of chronic lung allograft dysfunction (CLAD), physical capacity, work status and graft survival. All analysis will be descriptive in nature.

PAS Progress Reports must be submitted every six months for the first year and annually thereafter, from the date of the PMA approval letter, unless otherwise specified by FDA. The Final PAS Report should be submitted no later than three months after study completion (i.e., last subject's last follow-up date).

2. The LungFX Post-Approval Study (LungFX PAS) is a prospective, multi-center, all-comers study designed to assess the benefits and risks for lung transplantation patients receiving donor lung(s) assessed with the LungFX device. To evaluate real-world use of the device, the study will include all lung transplant recipients which receive a lung which has been assessed using the LungFX device during the 5 years following PMA approval of LungFX; this includes all donor lungs that are either transplanted without ELVP using LungFX or are evaluated using LungFX regardless of whether the lung is accepted for transplant. This study will evaluate long-term (5-year) outcomes of recipients of LungFX lungs to inform clinician's and patient's decision making.

   The first 420 consecutive lung transplant patients enrolled in the LungFX PAS who receive lungs assessed using the LungFX device will constitute the primary analysis cohort for the formal statistical evaluation. Outcomes for these PAS participants will be compared with those of all other single-organ lung transplant recipients in the United States during the same time period as the LungFX recipients in the primary analysis set. Data from an estimated 8,400 patients in the concurrent Organ Procurement and Transplantation Network (OPTN) database will serve as the concurrent comparison cohort.

   The primary analysis will compare 1-year patient survival free from graft failure requiring re-transplantation between PAS participants and the concurrent OPTN cohort using Kaplan-Meier methods, with corresponding 95% confidence intervals. The study is expected to have 90% power to demonstrate non-inferiority using a non-inferiority margin of 10%. PAS participants will be followed for 5 years post-transplant. Adverse events and primary graft dysfunction data not otherwise captured in the OPTN database will be collected retrospectively from transplant center records unless they are reported spontaneously to the Sponsor during the course of the study. EVLP data will be collected from Lung Bioengineering EVLP records and radiographs collected to calculate primary graft dysfunction and will be adjudicated by an independent adjudication committee.

   Patients who receive non-EVLP lung transplants and meet the pre-specified PAS matching criteria will be included in a secondary analysis comparing the 420 LungFX patients with a matched control group. Matching will be performed based on four factors: transplant center, transplant type (SLT or DLT), Composite Allocation Score Diagnosis group (A, B, C, or D) or pre-transplant ECMO.

   In addition to the patient outcome listed above, the following data will be collected: occurrence of chronic lung allograft dysfunction (CLAD); incidence of major lung events that are determined to be potentially related to the use of LungFX (a major lung event is one or more of the following: acute rejection, bronchial complication, respiratory failure, major pulmonary infection, or re-transplant); grade of Primary Graft Dysfunction (PGD) at 48 hours and 72 hours following transplant; DCD versus DBD status of donor lung; acute rejection within one year (AMR/ACR); "extended" or "standard" criteria lung donor; reason for lung referral for evaluation using LungFX; Patients' time on transplant list; patients' Composite Allocation Score Diagnosis Group and pre-transplant ECMO; match run sequence number of recipient; long-term survival status; graft survival; cause of death;

oxygen requirements at rest; physical capacity; work status; preservation times, including cold ischemic times and perfusion time; proportion of referrals evaluated using LungFX; proportion of referrals placed directly to transplant; proportion of lungs evaluated using LungFX accepted for transplant; proportion of lungs evaluated using LungFX declined for transplant; proportion of lungs received by LBE for evaluation using LungFX that were placed for transplant without the EVLP procedure being performed; and EVLP parameters at end of LungFX procedure for lungs that are accepted for transplant, specifically including: peak airway pressure (PAwP); static and dynamic compliance; pulmonary vascular resistance (PVR); and perfusate gas analysis at lung inflow and outflow, including partial pressure of oxygen ($PO_2$), pH, glucose, and lactate.

From the date of study protocol approval, you must meet the following timelines for patient enrollment in the LungFX PAS:

- First subject enrolled within 6 months
- 20% of subjects enrolled within 18 months
- 50% of subjects enrolled within 36 months
- 100% of subjects enrolled within 54 months

In addition, you must submit separate periodic reports on the progress of the LungFX PAS as follows:

- PAS Progress Reports every six months until subject enrollment has been completed, and annually thereafter, from the date of the PMA approval letter, unless otherwise specified by FDA.

- If any enrollment milestones are not met, you must begin submitting quarterly enrollment status reports every three months in addition to your periodic (6-month) PAS Progress Reports, until FDA notifies you otherwise.

- Submit the Final PAS Report three months from study completion (i.e., last subject's last follow-up date).

Each PAS report should be submitted to the CDRH Portal identified as a "PMA Post-Approval Study Report" in accordance with how the study is identified above and bearing the applicable PMA reference number.

Be advised that failure to comply with any post-approval requirement, including initation, enrollment and completion requirements outlined above, constitutes grounds for FDA withdrawal of approval of the PMA in accordance with 21 CFR 814.82(c) and 814.46(a)(2).

Be advised that the failure to conduct any such study in compliance with the good clinical laboratory practices in 21 CFR part 58 (if a non-clinical study subject to part 58) or the institutional review board regulations in 21 CFR part 56 and the informed consent regulations in 21 CFR part 50 (if a clinical study

involving human subjects) may be grounds for FDA withdrawal of approval of the PMA in accordance with 21 CFR 814.46(a)(3)-(4).

Be advised that protocol information, interim and final results will be published on the Post-Approval Studies Program Database Webpage, available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma_pas.cfm.

In addition, the results from any post approval study should be included in the labeling as these data become available. Under 21 CFR 814.39, any updated labeling must be submitted to FDA in the form of a PMA Supplement. For more information on post-approval studies, see the FDA guidance document entitled, "Procedures for Handling Post-Approval Studies Imposed by Premarket Approval Application Order" (https://www.fda.gov/media/71327/download).

This is a reminder that as of September 24, 2014, class III devices are subject to certain provisions of the final Unique Device Identification (UDI) rule. These provisions include the requirement to provide a UDI on the device label and packages (21 CFR 801.20), format dates on the device label in accordance with 21 CFR 801.18, and submit data to the Global Unique Device Identification Database (GUDID) (21 CFR Part 830 Subpart E). Additionally, 21 CFR 814.84 (b)(4) requires PMA annual reports submitted after September 24, 2014, to identify each device identifier currently in use for the subject device, and the device identifiers for devices that have been discontinued since the previous periodic report. It is not necessary to identify any device identifier discontinued prior to December 23, 2013. Combination Products may also be subject to UDI requirements (see 21 CFR 801.30). For more information on these requirements, please see the UDI website available at https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/unique-device-identification-udi-system.

Before making any change affecting the safety or effectiveness of the PMA device, you must submit a PMA supplement or an alternate submission (30-day notice) in accordance with 21 CFR 814.39. All PMA supplements and alternate submissions (30-day notice) must comply with the applicable requirements in 21 CFR 814.39. Additional information about changes that may require a PMA supplement are provided in the FDA guidance document entitled, "Modifications to Devices Subject to Premarket Approval (PMA) - The PMA Supplement Decision-Making Process" https://www.fda.gov/media/81431/download.

Your device is also subject to, among other requirements, the Quality Management System Regulation (QMSR) (21 CFR Part 820), which includes, but is not limited to, ISO 13485 clause 7.3 (Design controls), ISO 13485 clause 8.3 (Nonconforming product), ISO 13485 clause 8.5.2 (Corrective action), and ISO 13485 clause 8.5.3 (Preventative action). Please note that regardless of whether a change requires premarket review, the QMSR requires device manufacturers to review and approve changes to device design and production (ISO 13485 clause 7.3 and ISO 13485 clause 7.5) and document changes and approvals in the Medical Device File (ISO 13485 clause 4.2.3).

You are reminded that many FDA requirements govern the manufacture, distribution, and marketing of devices. For example, in accordance with the Medical Device Reporting (MDR) regulation, 21 CFR 803.50 and 21 CFR 803.52 for devices or post-marketing safety reporting (21 CFR Part 4, Subpart B) for combination products, you are required to report adverse events for this device. Manufacturers of medical devices, including in vitro diagnostic devices, are required to report to FDA no later than 30 calendar days

after the day they receive or otherwise becomes aware of information, from any source, that reasonably suggests that one of their marketed devices:

1. May have caused or contributed to a death or serious injury; or

2. Has malfunctioned and such device or similar device marketed by the manufacturer would be likely to cause or contribute to a death or serious injury if the malfunction were to recur.

Additional information on MDR, including how, when, and where to report, is available at https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems and on combination product post-marketing safety reporting is available at https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products.

In accordance with the recall requirements specified in 21 CFR 806.10 for devices or the post-marketing safety reporting requirements (21 CFR Part 4, Subpart B) for combination products, you are required to submit a written report to FDA of any correction or removal of this device initiated by you to: (1) reduce a risk to health posed by the device; or (2) remedy a violation of the act caused by the device which may present a risk to health, with certain exceptions specified in 21 CFR 806.10(a)(2). Additional information on recalls is available at https://www.fda.gov/safety/recalls-market-withdrawals-safety-alerts/industry-guidance-recalls.

CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading. CDRH will notify the public of its decision to approve your PMA by making available, among other information, a summary of the safety and effectiveness data upon which the approval is based. The information can be found at https://www.fda.gov/medical-devices/device-approvals-denials-and-clearances/pma-approvals. Written requests for this information can also be made to the Food and Drug Administration, Dockets Management Branch, (HFA-305), 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852. The written request should include the PMA number or docket number. Within 30 days from the date that this information is placed on the Internet, any interested person may seek review of this decision by submitting a petition for review under section 515(g) of the act and requesting either a hearing or review by an independent advisory committee. FDA may, for good cause, extend this 30-day filing period.

Failure to comply with any post-approval requirement constitutes a ground for withdrawal of approval of a PMA. The introduction or delivery for introduction into interstate commerce of a device that is not in compliance with its conditions of approval is a violation of law.

You are reminded that, as soon as possible and before commercial distribution of your device, you must submit an amendment to this PMA submission with a copy of all final labeling. Final labeling that is identical to the labeling approved in draft form will not routinely be reviewed by FDA staff when accompanied by a cover letter stating that the final labeling is identical to the labeling approved in draft form. If the final labeling is not identical, any changes from the final draft labeling should be highlighted and explained in the amendment.

All required documents should be submitted to the CDRH Portal and should reference the above PMA number to facilitate processing. For more information on the CDRH Portal, please visit https://www.fda.gov/medical-devices/industry-medical-devices/send-and-track-medical-device-premarket-submissions-online-cdrh-portal.

If you have any questions concerning this approval order, please contact Bridget Wildt at 301-796-0244 or Bridget.Wildt@fda.hhs.gov.

Sincerely,

GLENN B. BELL -S

Glenn B. Bell, Ph.D.
Director
DHT3A: Division of Renal, Gastrointestinal, Obesity, and Transplant Devices
OHT3: Office of Gastrorenal, ObGyn, General Hospital, and Urology Devices
Office of Product Evaluation and Quality
Center for Devices and Radiological Health