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(b) (6) ANALYTICAL METHOD REVIEW MEMO

To: BLA STN 125869/0

From: (b) (6)

Through: (b) (6)
(b) (6)

Product: MFLUSIVA

Applicant: ModernaTX, Inc.

Subject: Review of Analytical Methods used for an Influenza Virus MFLUSIVA (mRNA-1010),
(b) (4) Drug
Product (DP) and Lot Release

Recommendation: Approval

Summary:

The following analytical methods used for lot release of MFLUSIVA, and the associated analytical method validations or method transfer qualifications, were reviewed:

1. (b) (4) (SOP-2460)
2. (b) (4) (SOP-1000)
3. Identity (SOP-1019 and SOP-1337)

Conclusion: The analytical methods and their validations/method transfer qualifications reviewed for the MFLUSIVA (b) (4) DP were found to be adequate for their intended use.

Documents Reviewed:

Information in sections of the original submission describing the control of (b) (4) DP (3.2.S.4, and 3.2.P.5, respectively), including descriptions of (b) (4) DP specifications, analytical procedures of (b) (4) DP and validation of these analytical procedures were reviewed. Additional information in amendments #125869/0.18, #125869/0.59, #125769/0.89 and #125869/0.100 received on March 20, 2026, May 22, 2026, July 07, 2026, and July 20, 2026 respectively, were also reviewed.

Background:

ModernaTX Inc. submitted an original BLA, STN 125869, for mRNA-1010 (MFLUSIVA), a messenger RNA (mRNA) based vaccine against Flu caused by seasonal influenza viruses (A/H1N1, A/H3N2 and B/Victoria) on December 05, 2025. The mRNA-1010 is supplied as a suspension for injection for active immunization. Supplement STN 125869/0.18 was submitted to introduce new strains recommended for the 2026–2027 influenza vaccine formulation (mRNA-1010

The Drug Product (DP) is a trivalent RNA-lipid complex dispersion containing (b) (4)

— each encode the hemagglutinin (HA) surface glycoprotein of a distinct seasonal influenza virus strain: A/Wisconsin/67/2022 (A/H1N1), A/Massachusetts/18/2022 (A/H3N2), and B/Austria/1359417/2021 (B/Victoria), respectively. The four lipid components consist of heptadecan-9-yl 8-((2-hydroxyethyl) (6-oxo-6-(undecyloxy) hexyl) amino) octanoate (SM-102), cholesterol, 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC), and 1- monomethoxypolyethyleneglycol-2,3-dimyristylglycerol with polyethylene glycol of average molecular weight 2000 (PEG2000-DMG). The mRNA-1010 Drug Substance is an mRNA-lipid complex dispersion comprising three monovalent lipid nanoparticle (LNP) drug substances, (b) (4)

The mRNA-1010 Drug Product is a trivalent RNA-lipid complex (b) (4) formed by (b) (4) the three monovalent LNP drug substances into a single formulation.

For the 2026–2027 seasonal formulation, three updated mRNA strains and their corresponding LNPs have been introduced. (b) (4) encodes the HA surface glycoprotein for influenza variant A/Missouri/11/2025 (A/H1N1), and its corresponding (b) (4) encodes the HA surface glycoprotein for influenza variant A/Michigan/105/2025 (A/H3N2) which demonstrates (b) (4) amino acid sequence identity to A/Darwin/1415/2025-like virus and its corresponding LNP is (b) (4) encodes the HA surface glycoprotein for influenza variant B/Pennsylvania/19/2025 (B/Victoria lineage) which demonstrates (b) (4) amino acid sequence identity to B/Pennsylvania/14/2025-like virus and its corresponding LNP is (b) (4). The updated mRNA sequences are of similar length (b) (4) nucleotides for (b) (4), respectively) to the current mRNA-1010 strains, and the 2026–2027 strains are manufactured according to the same processes associated with the production of the current mRNA-1010 vaccine. No new raw materials were required for RNA, LNP, or DP manufacturing, except for the (b) (4) needed to define the updated variant mRNA sequences. LNP-102 process is utilized for (b) (4) manufacturing which is an approved manufacturing process STN 125835/52 (PAS).

mRNA-1010 DP is manufactured as a sterile, preservative-free, single-dose, ready-to-use product comprising 37.5 µg dose at (b) (4) mg/mL (37.5 µg/(b) (4) mL) mRNA-1010 LNP solution in a buffer containing (b) (4) mM Tris, and (b) (4) g/L sucrose at (b) (4) in 1 mL prefilled syringe (PFS) for intramuscular (IM) administration. Each PFS delivers 12.5 µg of each seasonal influenza HA encoding RNA and 759 µg of total lipids.

The analytical methods used to assess MFLUSIVA RNA, (b) (4) DP, and their validations are approved for SPIKEVAX, MRESVIA and MNEXSPIKE vaccines. MFLUSIVA RNA testing is performed at Moderna (b) (4) testing is performed at the Moderna (b) (4) and Moderna (b) (4) DP testing is performed at Moderna (b) (4). In this review memo, method validations or method transfer qualifications for (b) (4) (3) Identity methods performed at the following facilities were reviewed:

1. ModernaTX, Inc., (b) (4)
2. Moderna (b) (4)
3. (b) (4)

(b) (4)

(b) (4)

(b) (4)

3 pages determined to be not releasable: (b)(4)

(b) (4)

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3. Identity Methods (SOP-1337 and SOP-1019)

Introduction

Identity (b) (4) (SOP-1337) and Identity (SOP-1019) are approved methods for previously licensed Moderna vaccines, including SPIKEVAX (STN 125752), MRESVIA (STN 125796), and mNEXSPIKE (STN 125835). Identity via (b) (4) (SOP-1337) and Identity (SOP-1019) are performed for (b) (4) release testing, respectively, at the Moderna Quality Control (QC) Laboratory in (b) (4)

(b) (4)

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