UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 16, 2021

Aileron Therapeutics, Inc.
(Exact Name of Company as Specified in Charter)

Delaware	**001-38130**	**13-4196017**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

285 Summer Street, Suite 101 **Boston, MA**	**02210**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 995-0900

Not applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (*see* General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, $0.001 par value per share	**ALRN**	**Nasdaq Capital Market**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Item 8.01 Other Events.

On September 16, 2021, Aileron Therapeutics, Inc. (the "Company" or "Aileron") announced final results from its Phase 1b trial of ALRN-6924 in patients with small cell lung cancer ("SCLC") receiving second-line topotecan. The Company also announced preliminary results from its ongoing Phase 1 pharmacology study of ALRN-6924 in healthy volunteers. The results from both studies were presented in posters at ESMO Virtual Congress 2021 ("ESMO"). These data will inform the design of future clinical trials to investigate ALRN-6924 as a chemoprotective agent in other p53-mutated cancers and with other types of chemotherapy.

ALRN-6924 Phase 1b SCLC Trial Final Results

The Company conducted a Phase 1b open-label clinical trial to evaluate ALRN-6924 as a chemoprotective agent against bone marrow-related, chemotherapy-induced toxicities in patients with SCLC undergoing treatment with topotecan. The Company reported the final results from this trial in a poster presentation at ESMO.

A total of 39 patients were enrolled in the trial, 38 of whom were evaluable per the trial protocol. Topotecan (1.5 mg/m^2) was administered on days 1 through 5 of every 21-day treatment cycle. 32 patients (31 evaluable) were treated with ALRN-6924 at 24 hours before each dose of topotecan at the following dose levels: 0.2 mg/kg (N=4), 0.3 mg/kg (N=16), 0.6 mg/kg (N=6; 5 evaluable) and 1.2 mg/kg (N=6). 7 patients were treated with 0.3 mg/kg of ALRN-6924 at 6 hours before each dose of topotecan.

In the Phase 1b SCLC trial, toxicities were evaluated using the National Cancer Institute's (NCI) Common Terminology Criteria for Adverse Events (CTCAE). Per the trial protocol, patients were not permitted to receive prophylactic granulocyte-colony stimulating factor (G-CSF) treatment in cycle 1. The median number of completed topotecan treatment cycles across all cohorts was 3. 13% of patients required topotecan dose reduction. No patients reported NCI CTCAE Grade ³3 events of nausea, vomiting or diarrhea; 5% had Grade 3 fatigue.

While chemoprotection effects were observed across all ALRN-6924 dose levels studied in the Phase 1b SCLC trial, the 0.3 mg/kg ALRN 6924 dose level given 24 hours prior to topotecan demonstrated the most robust chemoprotection results. None of the patients treated at the 0.3 mg/kg 24 hour ALRN-6924 dose level had a related serious adverse event. One patient (6%) at the 0.3 mg/kg 24 hour ALRN-6924 dose level required a red blood cell transfusion and a platelet transfusion.

Summary of Final Key Efficacy Findings from ALRN-6924 Phase 1b SCLC Trial

ALRN-6924 (given 24h prior to chemotherapy) Phase 1b Trial
Bone Marrow-Related Key Toxicity Findings
Adverse Events (AEs)* NCI CTCAE ³ Grade 3

Toxicity	ALRN-6924 0.3 mg/kg + Topotecan (1.5 mg/m^2)	ALRN-6924 (All Dose Levels) + Topotecan (1.5 mg/m^2)
	N (%) N=16	N (%) N=39
All AEs	14 (88)	35 (90)
Neutropenia	13 (81)	34 (87)
Thrombocytopenia	7 (44)	18 (46)
Anemia	3 (19)	6 (15)
Febrile Neutropenia	0	1 (3)
Fatigue	1 (6)	2 (5)
Nausea	0	0
Neutropenia NCI CTCAE Grade 4	5 (31)**	14 (36)**

* AEs based on laboratory values, as applicable

** For cycle 1

ALRN-6924 Phase 1 Pharmacology Study Preliminary Results

The Company is conducting a multi-part Phase 1 pharmacology study in healthy volunteers to evaluate the pharmacokinetics and pharmacodynamics of ALRN-6924. The Company presented the findings from Parts 1 and 2 of the study in a poster at ESMO. The objectives of these first two parts were to determine a dose of ALRN-6924 that initiated p53-mediated transcriptional regulation and yielded transient cell cycle arrest via p21 induction in human bone marrow while minimizing the signal for apoptosis (Part 1), and to determine the time to onset, magnitude, and duration of bone marrow pharmacodynamic effects (Part 2). The study is ongoing, and the Company anticipates presenting additional findings at a later date.

The Company reported results for a total of 37 subjects (females and males aged 18-65) enrolled and evaluated in Parts 1 and 2 of the study. In Part 1, a total of 14 subjects (6 placebo, 4 each at 0.3 and 0.6 mg/kg of ALRN-6924) received one intravenous infusion of ALRN-6924, and bone marrow samples were obtained 8 hours post-infusion. Immunohistochemistry analysis showed that both dose levels yielded robust induction of p21, a p53-regulated mediator of cell cycle arrest, in bone marrow cells, with minimal evidence of apoptosis compared to placebo. In Part 2, 23 subjects allocated to 8 groups received one 0.3 mg/kg infusion of ALRN-6924. Bone marrow samples were obtained at 4, 8, 12, 16, 20, 24, 36, and 48 hours post-infusion. The 0.3 mg/kg dose demonstrated favorable tolerability, with subjects experiencing only mild, transient adverse events. Robust p21 induction was observed in bone marrow cells, with peak expression observed between 4 hours and 16 hours following ALRN-6924 administration.

Forward-Looking Statements

Statements in this Current Report on Form 8-K about Aileron's future expectations, plans and prospects, as well as any other statements regarding matters that are not historical facts, may constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements about the potential of ALRN-6924 as a chemoprotective agent and Company's strategy and clinical development plans. The words "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including whether Aileron's cash resources will be sufficient to fund its continuing operations for the periods anticipated or with respect to the matters anticipated; whether initial findings or results of clinical trials will be indicative of final results of those trials or results obtained in future clinical trials, including trials in different indications or with different chemotherapies; whether ALRN-6924 will advance through the clinical trial process on a timely basis, or at all; whether the results of such trials will be accepted by and warrant submission for approval from the United States Food and Drug Administration or equivalent foreign regulatory agencies; whether ALRN-6924 will receive approval from regulatory agencies on a timely basis or at all; whether, if ALRN-6924 obtains approval, it will be successfully distributed and marketed; uncertainties as to the impact the coronavirus pandemic may have on the timing of our clinical development, clinical supply and our operations; and other factors discussed in the "Risk Factors" section of Aileron's annual report on Form 10-Q for the quarter ended June 30, 2021, filed on August 11, 2021, and risks described in other filings that Aileron may make with the Securities and Exchange Commission. Any forward-looking statements contained in this Current Report on Form 8-K speak only as of the date hereof, and Aileron specifically disclaims any obligation to update any forward-looking statement, whether because of new information, future events or otherwise.

SIGNATURES

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

Aileron Therapeutics, Inc.

Date: September 17, 2021

By: /s/ Richard J. Wanstall
Richard J. Wanstall
Chief Financial Officer and Treasurer