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

August 10, 2023
Date of Report (Date of earliest event reported)

Aprea Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**001-39069**	**84-2246769**
(State or other jurisdiction of incorporation)	(Commission File Number)	(IRS Employer Identification No.)

3805 Old Easton Road **Doylestown, PA**	**18902**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(617) 463-9385**

(Former name or former address, if changed since last report): Not applicable

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:

☐ 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(s)**	**Name of each exchange on which registered**
Common stock, par value $0.001 per share	APRE	The NASDAQ Stock Market LLC

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 2.02 Results of Operations and Financial Condition.

On August 10, 2023, Aprea Therapeutics, Inc. (the "Company") issued a press release announcing its financial results for the three and six months ended June 30, 2023, and provided an update on the Company's operations for the same period. The Company is furnishing a copy of the press release, which is attached hereto as Exhibit 99.1.

In accordance with General Instruction B.2 of Form 8-K, the information included in this Item 2.02, including Exhibit 99.1 hereto, shall not be deemed "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference into any filing made by the Company under the Exchange Act or Securities Act of 1933, as amended, except as shall be expressly set forth by specific reference in such a filing.

Item 8.01 Other Events.

On August 10, 2023, the Company updated its corporate presentation slide deck. A copy of the corporate presentation slide deck is filed as Exhibit 99.2 hereto and incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Description
99.1	Press release issued by Aprea Therapeutics, Inc. dated August 10, 2023.
99.2	Corporate Presentation (August 2023).
104	Cover Page Interactive Data File (embedded within the inline XBRL document).

SIGNATURES

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 hereunto duly authorized.

Aprea Therapeutics, Inc.

Dated: August 10, 2023

By: /s/ Oren Gilad
Name: Oren Gilad, Ph.D.
Title: President and Chief Executive Officer

Exhibit 99.1

Aprea Therapeutics Reports Second Quarter 2023 Financial Results and Provides Update on Business Operations

DOYLESTOWN, PA, August 10, 2023 (GLOBE NEWSWIRE) – Aprea Therapeutics, Inc. (Nasdaq: APRE) ("Aprea", or the "Company"), a clinical stage biopharmaceutical company focused on precision oncology through synthetic lethality, today reported financial results for the three and six months ended June 30, 2023 and provided a business update

"We continue to execute across all our programs, with notable progress in enrollment in our lead Phase 1/2a dose escalation study with ATRN-119, our ATR inhibitor for the treatment of advanced solid tumors and anticipate initial preliminary data in the fourth quarter 2023," said Oren Gilad, Ph.D., President and Chief Executive Officer of Aprea. "Our IND enabling studies for ATRN-1051, our WEE1 inhibitor, continue to be on track, and we continue to anticipate filing an IND by the end of the year. Our strong balance sheet continues to support our strategy and plans through our near-term milestones in both our ATR and WEE1 programs, with a cash runway into the fourth quarter of 2024. We look forward to providing more updates as we make progress throughout the rest of the year."

Key Business and Financial Updates

- *ATR inhibitor program: ATRN-119* – Enrollment continues in the Phase 1/2a trial of Aprea's lead clinical candidate, ATRN-119, a potential best-in-class ATR inhibitor for treatment of advanced solid tumors harboring defined mutations in DDR pathways. ATRN-119 is an orally bioavailable, potent and selective macrocyclic small molecule inhibitor of ATR. ATR is one of several key regulators impacting response to defective DNA replication and DNA damage, which occurs more commonly in cancer cells than in normal cells. Primary endpoints of the Phase 1 dose escalation part of the study include safety, tolerability, pharmacokinetics and a recommended Phase 2 dose. The Company expects to report initial interim safety, tolerability, and pharmacokinetic data from the ongoing Phase 1 trial of ATRN-119 in the fourth quarter of 2023.

- *WEE1 inhibitor program: ATRN-1051* – ATRN-1051 is an orally-bioavailable, highly potent and selective small molecule inhibitor of WEE1, a key regulator of multiple phases of the cell cycle. The Company believes preclinical findings support potentially favorable drug selectivity and exposure. Investigational New Drug (IND) enabling studies with ATRN-1051 are under way, and the Company anticipates filing an IND by the end of 2023.

- Appointed Gabriela Gruia, M.D., to the Board of Directors, strengthening the Company's leadership. Dr. Gruia brings over 25 years of clinical, regulatory and life science leadership experience to Aprea, having worked for Novartis, Pfizer, Pharmacia, Aventis, and Rhone Poulenc. Dr. Gruia received her M.D. from Bucharest Medical School in Romania and a Masters in Breast Pathology and Mammography from René Huguenin/Curie Institute Cancer Center in Paris, France.

Select Financial Results for the Second Quarter ended June 30, 2023

- As of June 30, 2023, the Company reported cash and cash equivalents of $27.7 million.

- For the quarter ended June 30, 2023, the Company reported an operating loss of $3.7 million, compared to an operating loss of $98.5 million for the same period in 2022.

- Research and Development (R&D) expenses were $2.2 million for the quarter ended June 30, 2023, compared to $6.8 million for the same period in 2022. The decrease in R&D expense was related to lower clinical trial expense primarily due to the close out of legacy Aprea clinical trials, lower personnel costs for the former facility in Sweden, and lower non-cash stock-based compensation expense.

- General and Administrative (G&A) expenses were $1.7 million for the quarter ended June 30, 2023, compared to $15.6 million for the same period in 2022. The decrease in G&A expenses was due to lower non-cash stock-based compensation expense, lower insurance premium expenses and lower personnel costs for the former facility in Sweden.

- Acquired in-process research and development (IPR&D) expenses were $0 for the quarter ended June 30, 2023, compared to $76.0 million for the same period in 2022. The decrease in IPR&D was related to the 2022 acquisition of

Atrin which was accounted for as an asset acquisition. The acquisition cost allocated to acquired IPR&D with no alternative future use was recorded as an expense as of the closing date in May 2022.

- The Company reported a net loss of $3.3 million ($0.87 per basic share) on approximately 3.7 million weighted-average common shares outstanding for the quarter ended June 30, 2023, compared to a net loss of $98.3 million ($86.72 per basic share) on approximately 1.1 million weighted average common shares outstanding for the same period in 2022. The decrease in net loss was primarily attributable to the acquired IPR&D associated with the Atrin acquisition in May 2022, as well as lower R&D and G&A expenses as described above.

About Aprea Therapeutics, Inc.

Aprea Therapeutics, Inc. is a clinical stage biopharmaceutical company headquartered in Doylestown, Pennsylvania, focused on precision oncology through synthetic lethality. The Company's lead program is ATRN-119, a clinical-stage small molecule ATR inhibitor being developed for solid tumor indications. Our WEE1 inhibitor is being advanced to IND submission. For more information, please visit the company website at www.aprea.com.

The Company may use, and intends to use, its investor relations website at https://ir.aprea.com/ as a means of disclosing material nonpublic information and for complying with its disclosure obligations under Regulation FD.

Forward Looking Statement

Certain information contained in this press release includes "forward-looking statements", within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, related to our study analyses, clinical trials, regulatory submissions, and projected cash position. We may, in some cases use terms such as "future," "predicts," "believes," "potential," "continue," "anticipates," "estimates," "expects," "plans," "intends," "targeting," "confidence," "may," "could," "might," "likely," "will," "should" or other words that convey uncertainty of the future events or outcomes to identify these forward-looking statements. Our forward-looking statements are based on current beliefs and expectations of our management team and on information currently available to management that involve risks, potential changes in circumstances, assumptions, and uncertainties. All statements contained in this press release other than statements of historical fact are forward-looking statements, including statements regarding our ability to develop, commercialize and achieve market acceptance of our current and planned products and services, our research and development efforts, including timing considerations and other matters regarding our business strategies, use of capital, results of operations and financial position, and plans and objectives for future operations. Any or all of the forward-looking statements may turn out to be wrong or be affected by inaccurate assumptions we might make or by known or unknown risks and uncertainties. These forward-looking statements are subject to risks and uncertainties including, without limitation, risks related to the success, timing and cost of our ongoing clinical trials and anticipated clinical trials for our current product candidates, including statements regarding the timing of initiation, pace of enrollment and completion of the trials, futility analyses, presentations at conferences and data reported in an abstract, and receipt of interim or preliminary results (including, without limitation, any preclinical results or data), which are not necessarily indicative of the final results of our ongoing clinical trials, and the other risks, uncertainties, and other factors described under "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in the documents we file with the U.S. Securities and Exchange Commission. For all these reasons, actual results and developments could be materially different from those expressed in or implied by our forward-looking statements. You are cautioned not to place undue reliance on these forward-looking statements, which are made only as of the date of this press release. We undertake no obligation to update such forward-looking statements for any reason, except as required by law.

Source: Aprea Therapeutics, Inc.

Investor Contact:

Mike Moyer
LifeSci Advisors
mmoyer@lifesciadvisors.com

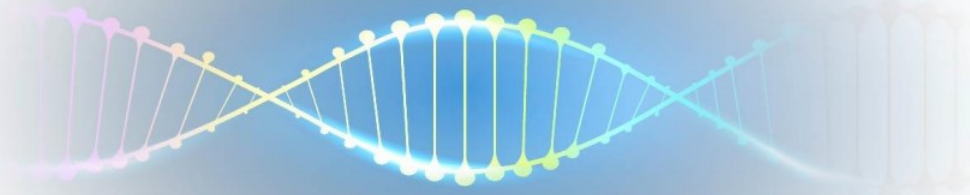
Aprea Therapeutics, Inc.
Condensed Consolidated Balance Sheets
(Unaudited)

	June 30, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 27,685,131	$ 28,786,647
Prepaid expenses and other current assets	953,670	1,366,859
Total current assets	28,638,801	30,153,506
Property and equipment, net	1,687	2,321
Restricted cash	40,180	—
Total assets	$ 28,680,668	$ 30,155,827
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 1,131,197	$ 842,754
Accrued expenses	2,819,624	2,358,332
Total current liabilities	3,950,821	3,201,086
Total liabilities	3,950,821	3,201,086
Commitments and contingencies		
Series A convertible preferred stock, $0.001 par value, 40,000,000 shares authorized; 56,227 shares issued and outstanding at June 30, 2023 and December 31, 2022, respectively.	1,311,063	1,311,063
Stockholders' equity:		
Common stock, $0.001 par value, 400,000,000 shares authorized, 3,731,571 and 2,655,269 shares issued and outstanding at June 30, 2023 and December 31, 2022, respectively.	3,731	2,655
Additional paid-in capital	335,485,317	330,060,836
Accumulated other comprehensive loss	(10,634,872)	(10,623,408)
Accumulated deficit	(301,435,392)	(293,796,405)
Total stockholders' equity	23,418,784	25,643,678
Total liabilities and stockholders' equity	$ 28,680,668	$ 30,155,827

Aprea Therapeutics, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Grant revenue	$ 249,688	$ —	$ 249,688	$ —
Operating expenses:				
Research and development	2,202,657	6,811,609	3,459,199	10,901,186
General and administrative	1,698,712	15,633,738	5,064,673	19,619,036
Acquired in-process research and development	—	76,020,184	—	76,020,184
Total operating expenses	3,901,369	98,465,531	8,523,872	106,540,406
Loss from operations	(3,651,681)	(98,465,531)	(8,274,184)	(106,540,406)
Other income:				
Interest income, net	336,221	52,491	592,631	54,462
Foreign currency gain	56,363	154,566	42,566	290,777
Total other income	392,584	207,057	635,197	345,239
Net loss	$ (3,259,097)	$ (98,258,474)	$ (7,638,987)	$ (106,195,167)
Other comprehensive loss:				
Foreign currency translation	(73,420)	157,655	(11,464)	92,150
Total comprehensive loss	(3,332,517)	(98,100,819)	(7,650,451)	(106,103,017)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.87)	$ (86.72)	$ (2.18)	$ (95.31)
Weighted-average common shares outstanding, basic and diluted	3,731,571	1,133,092	3,497,329	1,114,189

aprea therapeutics



Precision Oncology through Synthetic Lethality

August 2023

Forward-Looking Statements

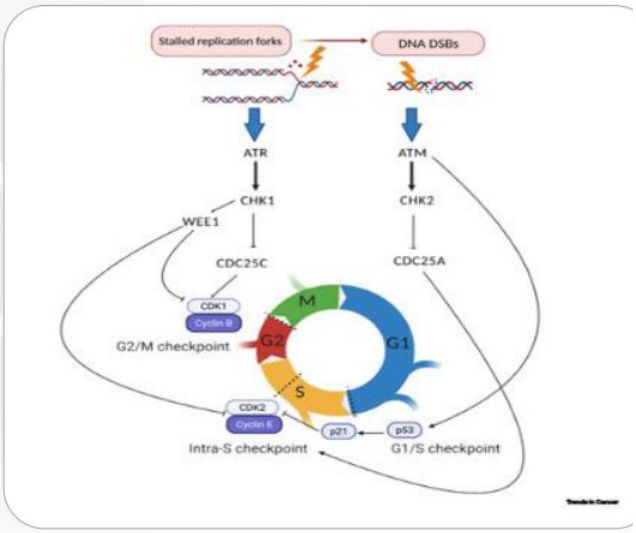
Certain information contained in this presentation includes “forward-looking statements”, within the meaning of Section 27A of th Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, related to our clinical tri regulatory submissions and strategic plans. We may, in some cases use terms such as “predicts,” “believes,” “potential,” “continue “anticipates,” “estimates,” “expects,” “plans,” “intends,” “may,” “could,” “might,” “likely,” “will,” “should” or other words that conve uncertainty of the future events or outcomes to identify these forward-looking statements. The forward-looking statements are ba on current beliefs and expectations of our management team that involve risks, potential changes in circumstances, assumptions, uncertainties. Any or all of the forward-looking statements may turn out to be wrong or be affected by inaccurate assumptions ou management team might make or by known or unknown risks and uncertainties. These forward-looking statements are subject to risks and uncertainties including, without limitation, risks related to the success and timing of our clinical trials or other studies an the other risks set forth in our filings with the U.S. Securities and Exchange Commission, including our Annual Reports on Form 10 and Quarterly Reports on Form 10-Q. Forward-looking statements regarding our product candidates are also subject to additional risks and uncertainties, including without limitation, with respect to: our dependence on additional financing to fund our operatio and complete the development and commercialization of our product candidates, and the risks that raising such additional capital may restrict our operations or require us to relinquish rights to our technologies or product candidates; our limited history and preclinical status of the assets we acquired from Atrin Pharmaceuticals Inc.; our business plan or the likelihood of the successful implementation of such business plan; the timing of initiation of planned clinical trials for our product candidates; the future succ of such trials; the successful implementation of our research and development programs and collaborations and the interpretatio the results and findings of such programs and collaborations and whether such results are sufficient to support the future success our product candidates; the success, timing and cost of our anticipated clinical trials for our current product candidates; the timin initiation, futility analyses, data presentation, reporting and publication and receipt of interim results (including, without limitation any preclinical results or data); any statements about our understanding of product candidates mechanisms of action and interpretation of preclinical and early clinical results from its clinical development programs and any collaboration studies; and oth factors, including legislative, regulatory, political and economic developments not within our control. For all these reasons, actual results and developments could be materially different from those expressed in or implied by our forward-looking statements. You cautioned not to place undue reliance on these forward-looking statements, which are made only as of the date of this presentati We undertake no obligation to update such forward-looking statements to reflect subsequent events or circumstances, except to t extent required by law or regulation.

Aprea Therapeutics (NASDAQ: APRE)

Precision Oncology via Synthetic Lethality in Defined Patient Populations

One Critical Pathway, Multiple Targe

- Clinical stage precision oncology company developing novel synthetic lethality-based therapeutics in areas of high unmet need
  - ◊ ATRN-119: ATR Inhibitor
  - ◊ ATRN-1051: WEE1 Inhibitor
  - ◊ Undisclosed DDR Inhibitor
- Synthetic lethality assets potentially differentiated from competitors
- Innovative platform technologies



Capital-efficient model and near-term clinical milestones drive compelling investment opportunity

Robust DNA Damage Response (DDR) Development Pipeline

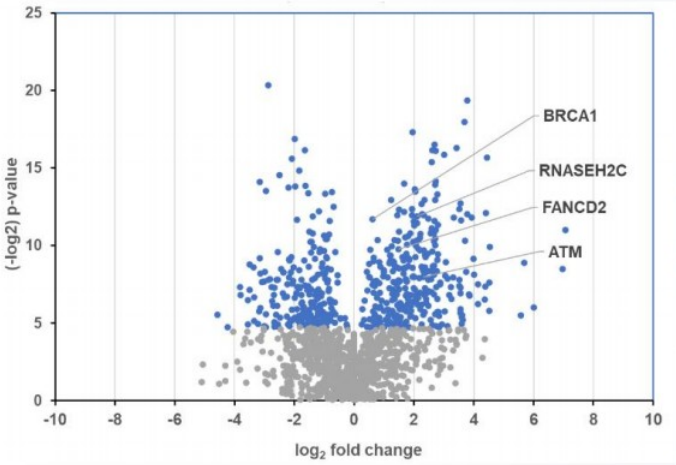
MOLECULE	TARGET	INDICATION	BIOMARKER	Preclinical	IND-Enabling	Phase 1	Anticipated Milestones
ATRN-119	ATR	Advanced solid tumors	Defined biomarkers	monotherapy			Q1 2024: Phase 1 tolerability, PK
		Ovarian, breast, prostate	BRCA1/2 + others	combination with PARPi			Q4 2023 / Q1 2024: Ph1 initiatio
ATRN-1051	WEE1	Advanced solid tumors	CCNE amplification + others				End of 2023: IND submission
ATRN-354[1]	ATR	Advanced solid tumors	Defined biomarkers				Second half of 2024: IND submiss
APRE-DDRi	DDR Target	Advanced solid tumors	Defined biomarkers				Mid-2024: Development candida

[1] ATRN-354 timeline and anticipated milestones subject to data from ATRN-119 clinical trial

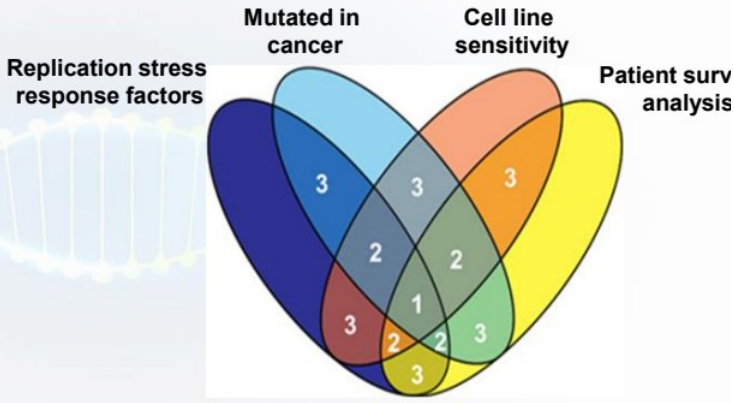
Repli-Biom Proprietary Platform and Combination Approaches

An Integrated Platform for Discovery of Novel SL Targets and Biomarkers

Drug response factor identification



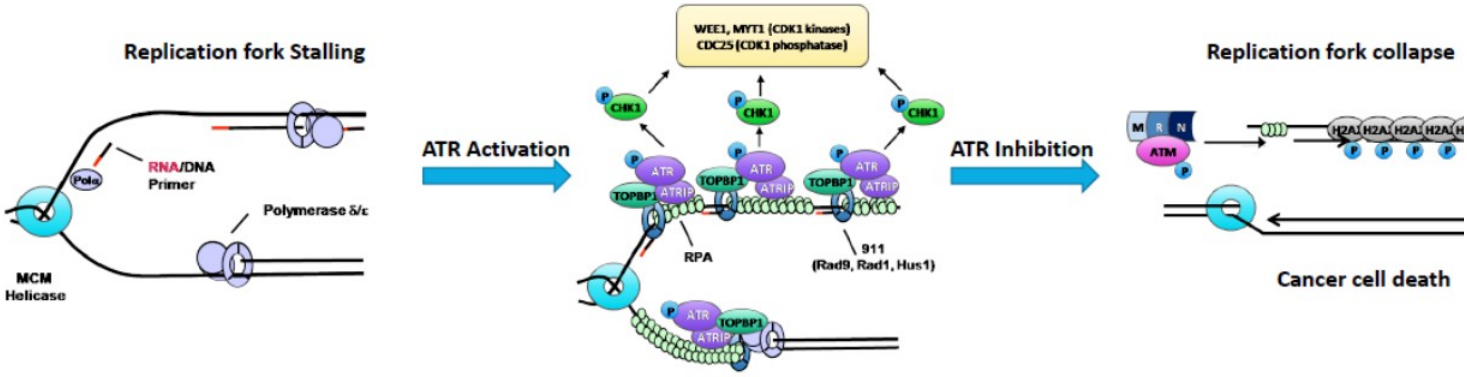
Biomarker prioritization



- Repli-Biom platform is designed to identify factors that respond to drug treatment at the mechanistic site of drug action, the replication fork
- Repli-Biom shows potential to identify candidate biomarkers of therapeutic benefit as well novel SL targets
- Combination SL may permit lower doses and decreased rates of acquired resistance, potentially leading to durable responses in cancers with specific mutations

ATRN-119
ATR Inhibitor

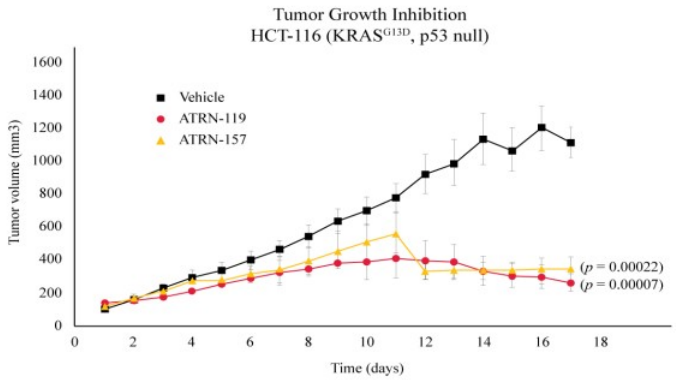
ATR is the Master Regulator of DDR

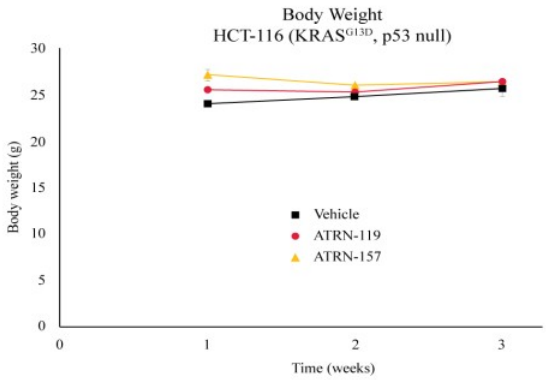


- Defects in DDR lead to genomic instability and stalling of the replication fork
- ATR is activated by replication stress
- ATR Inhibition leads to replication fork collapse and cancer cell death
  - Cancer cells with dysfunctional and/or dysregulated DDR are particularly sensitive to ATR inhibition
  - Examples: Oncogenic RAS mutations, MYC overexpression, ATM mutations, BRCA1, BRCA2

ATRN-119 Preclinical Profile

- Nanomolar potency in vitro across a broad spectrum of cancer cell lines
- Based on pre-clinical studies, strong tumor control observed in vivo, including in challengir genetic backgrounds



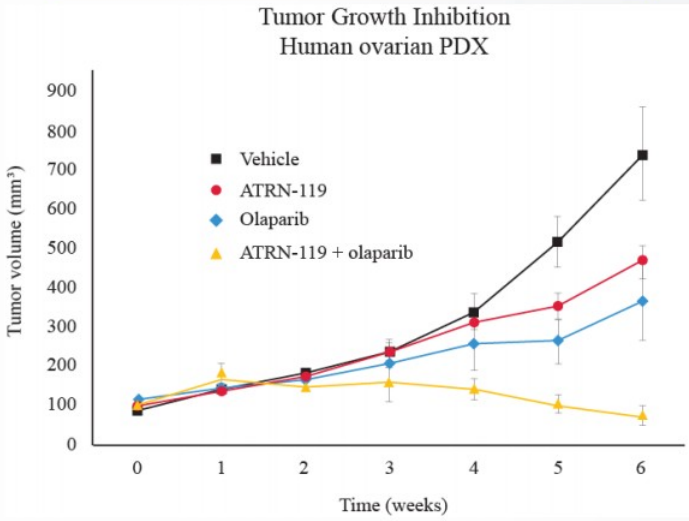


N=4 female mice per group, ATRN-119 - 100 mg/kg/day P.O, ATRN-157 - 20 mg/kg/day SQ.

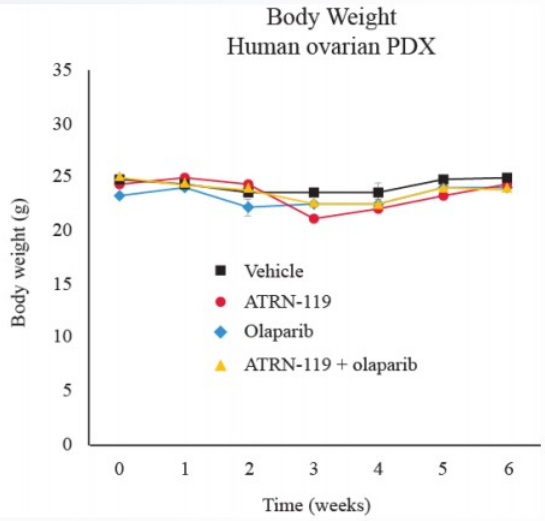
ATRN-157 is an active metabolite identified in dogs receiving ATRN-119 P.O.. In vitro metabolism studies in dog and human hepatocytes and liver microsome indicated formation of ATRN-157 in both species. Potency and selectivity of ATRN-157 was comparable to ATRN-119.

ATRN-119 + Olaparib: Regression of BRCA2-Deficient Ovarian (HGSOC) Tumors

ATRN-119 + Olaparib Inhibits Ovarian Tumor Growth Over Time



ATRN-119 + Olaparib Shows Negligible Weight Loss Over Time



N=6-8 mice per group, ATRN-119 - 90 mg/kg P.O BID, Olaparib - 50 mg/kg/day P.O, ATRN-119+Olaparib at the same doses and schedules

These data are potentially supportive of future potential clinical trials to evaluate the combination of a PARP inhibitor and ATRN-11

Pre-clinical studies with ATRN-119

ATRN-119 is Potentially Differentiated from Other ATR Inhibitors

ATRN-119 has shown the potential to be highly potent with high selectivity to limit off-target toxici

	On-Target Cellular IC_{50} (nM)	Fold Difference in IC_{50} for Off-Target PIKK Inhibition		
	ATR	ATM	DNA-PK	mTOR
Aprea: ATRN-119 (1)	4	> 600x	> 2000x	> 2000x
AstraZeneca: AZD-6738 (2)	74	> 400x	> 400x	70 – 310x
Bayer: BAY 1895344 (3)	36	39x	9x	61x
Repare/Roche: RP3500 (4)	0.33	> 20000x	> 20000x	30x

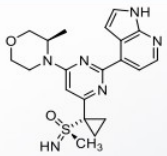
Summary:

- ATRN-119 is highly potent and selective to potentially limit off-target toxicity
- In pre-clinical studies, ATRN-119 has shown potential to have favorable tolerability profile

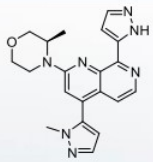
Note: Head-to-head studies with ATRN-119 have not been conducted
(1) Atrin data reported for HCT116 - Bcl/XL cell line;
(2) Foote et al (2018), J Med Chem;
(3) Lücking et al (2020), J Med Chem;
(4) Roulston et al (2022) Mol Cancer Ther

ATR Landscape Drives Potential Competitive Advantage for ATRN-119

Current ATRs Structurally Similar in Core, Backbone, and Toxicity Profile



AZD-6738



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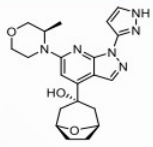


RP-3500

CAMOSERTIB

Parameter	AstraZeneca AZD6738 (1)(2)	Bayer BAY1895344 (3)	Repare / Roche(4) RP-3500 (5)
Route Of Administration	Oral	Oral	Oral
Clinical Studies Chosen (MTD/RP2D), Dose Schedule	160mg BID, 2-weeks-on, 2-weeks-off, or: Continuous dosing (1)	40mg BID, 3-days-on/4-days-off	160mg QD, 3-days-on/4-days-off
Main Grade ≥3 Hematological toxicities reported at Chosen Dose Schedule (MTD/RP2D), in clinical studies	Patriot 1, Escalation Phase, 160mg, BID (2): **Anemia** (1/6, 17%) Patriot 2, Expansion Phase (1): **Fatigue, anemia, nausea & thrombocytopenia (not differentiated)** (1): (4/6, 67%) with continuous dosing (3/15, 20%) with 2-week-on, 2-week-off	**Anemia** (2/2, 100%) **Neutropenia** (1/2, 50%)	**Anemia** (23/95, 24%) **Neutrophil count decreased** (10/95, 11%) **Platelet count decreased** (5/95, 5%)

Note: Head-to-head studies with ATRN-119 have not been conducted

(1) Phase I study of ATR inhibitor, AZD6738, as monotherapy in advanced solid tumors (PATRIOT part A, B), Dillon et al, Volume 30, October 2019, Pages v165-v166

(2) Poster CT084: A Phase I dose-escalation study of ATR inhibitor monotherapy with AZD6738 in advanced solid tumors (PATRIOT Part A), AACR 2017

(3) First-in-Human Trial of the Oral Ataxia Telangiectasia and RAD3-Related (ATR) Inhibitor BAY 1895344 in Patients with Advanced Solid Tumors, Yap et al, Cancer Discov 2021;11:80-91 and 2019 ASCO Poster, De-Bono et al.

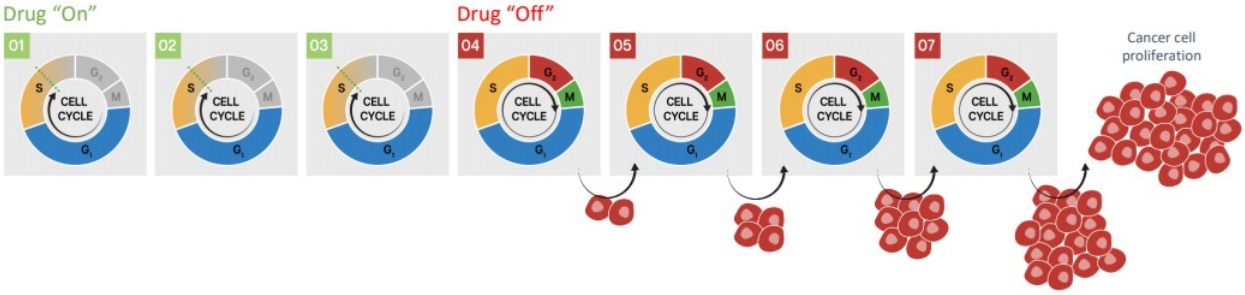
(4) Repare announced a worldwide license and collaboration agreement with Roche on June 1, 2022

(5) Preliminary Phase 1 Data From Ongoing First-in-Human Phase 1/2 TRESR Study of RP-3500, AACR 2022

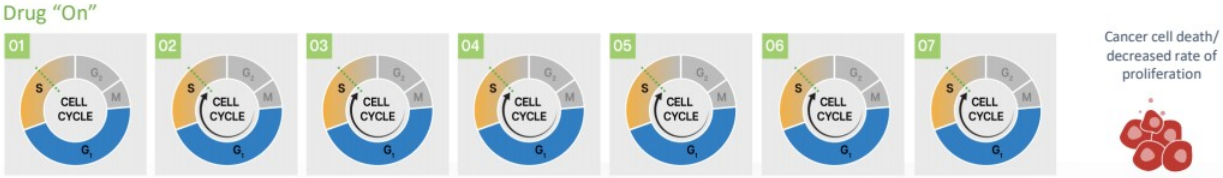
ATRN-119 Daily Dosing Is Desirable

Lack of daily dosing may contribute to formation of resistance

Intermittent dosing



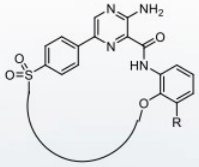
Continuous dosing



Improved tolerability of an ATR inhibitor could potentially provide opportunities to expand the therapeutic window and administer higher doses on a continuous daily dosing schedule to potentially improve response rates and response duration

ATRN-119: Potential Best-in-Class Oral ATR Inhibitor

With Structurally Differentiated Core, Backbone, and Toxicity Profile



Parameter	ATRN-119 (1)
Route Of Administration	Oral
Clinical Studies Chosen (MTD/RP2D), Dose Schedule	continuous once-daily dosing (dose TBD in Phase 1) (1)
Hematological toxicities in preclinical studies	**Pre-Clinical, Toxicology Studies:** • In 28-day GLP tox study in dogs, hematological changes were of small magnitude with complete recovery • In a head-to-head comparative tolerability study, ATRN-119 demonstrated significantly less toxicity than another oral ATRi that is currently in clinical development (2)

ATRN-119 potential for reduced toxicity could make it a preferred ATR inhibitor as a single agent, as well as a candidate for combination with standard-of-care therapies.

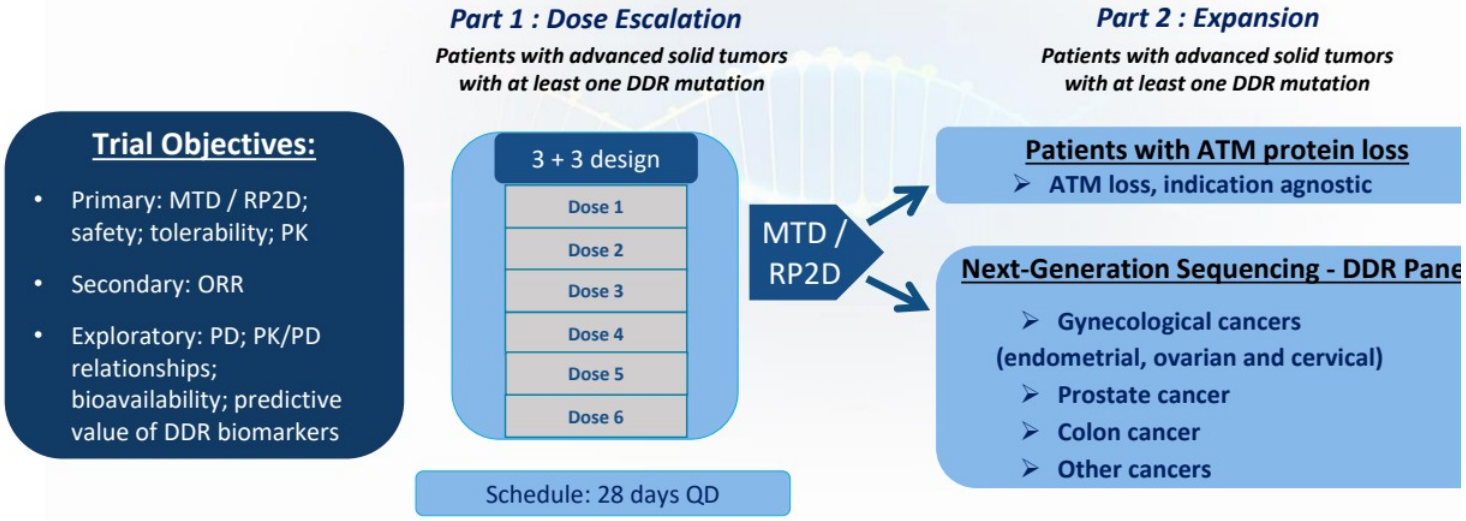
Note: ATRN-119 has not yet been tested clinically

(1) ATRN-119, Phase 1/2a Clinical Study Protocol

(2) Internal pre-clinical head-to-head tolerability study in male beagle dogs. ATRN-119 - 20 mg/kg/day for 7 days, followed by 40 mg/kg/day for 7 days and finally 50 mg/kg/day for 7 days, all P.O. Competitor ATRi- administered at a clinically equivalent dose range during 21 days, P.O. By day 4 of dosing, the dog receiving the competitor ATRi exhibited severe reduction in multiple blood cell lineages including reticulocytes. Continued dosing of competitor ATRi for three weeks resulted in significant reduction of white blood cells, red blood cells and hemoglobin levels, and was accompanied by severe body weight loss (-15%). For the dog receiving ATRN-119, reduced levels of reticulocytes and neutrophils were noted with prolonged treatment but remained within normal ranges and body weight changes were negligible (-2% to +4%).

ATRN-119 Phase 1/2a Clinical Trial

- NGS testing used to determine presence of DDR mutations/LOF
- Patient selection is critical - Subjects may be enrolled with advanced solid tumor with at least one DDR mutation
- Biomarkers with high likelihood for increased sensitivity to our lead drug candidate have been identified

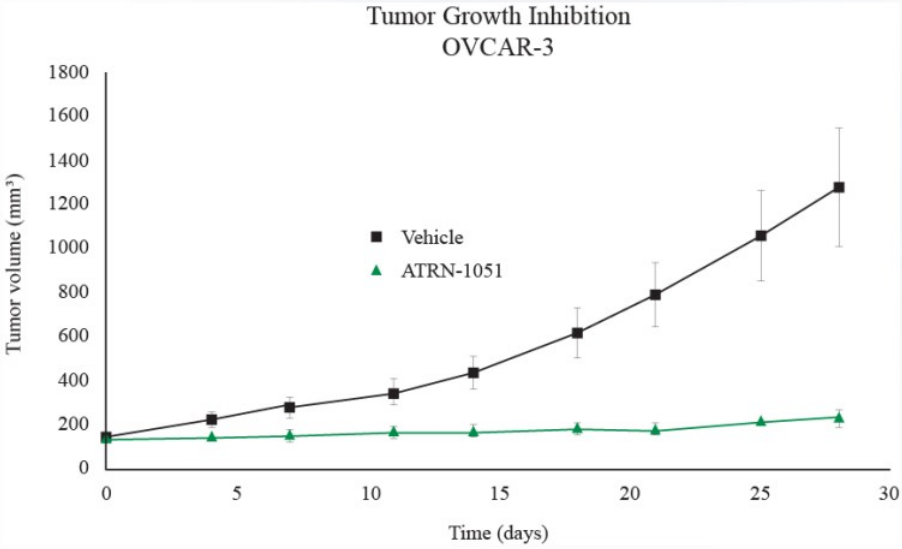



ATRN-1051
WEE1 Inhibitor
15

ATRN-1051 Has Demonstrated Potentially Compelling Anti-tumor Activity

IND filing targeted by the end of 2023

- Nanomolar anti-proliferative potency in vitro against multiple cancer cell lines
- Potent anti-tumor activity observed in vivo in an ovarian cancer xenograft model (CCNE1-amplified cell line)

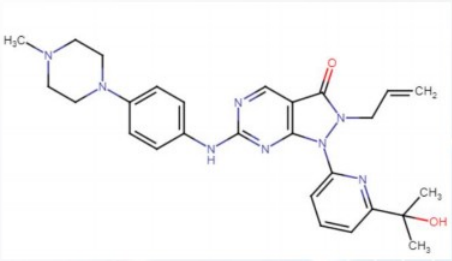


N=7 mice per group, ATRN-1051, exploratory formulation - 30 mg/kg/day

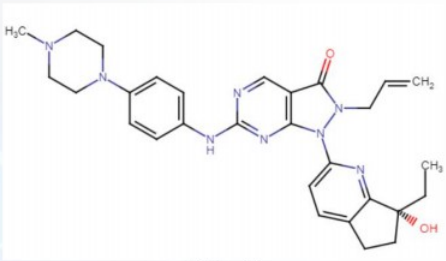
Pre-clinical studies with ATRN-1051

ATRN-1051 is Potentially Differentiated from Other WEE1 Inhibitors

ATRN-1051 shows potential to be potent and structurally differentiated, with high selectivity to limit off-target toxic



AZD-1775(1)



ZN-c3

	On-Target IC_{50} (nM)	Off-Target Inhibition at 1 µM (%)		
	WEE1	PLK1	PLK2	PLK3
Aprea: ATRN-1051	2.2	17	33	12
Zentalis: ZN-c3 (1)	3.8	79	96	92
AstraZeneca: AZD-1775 (1)(2)	3.9	70	101	91

Note: Head-to-head studies have not been conducted

(1) Huang et al, (2021) J Med Chem

(2) AstraZeneca announced in July 2022 the discontinuation of development of AZD-1775

ATRN-1051 Preclinical Data Highlight Potentially Favorable PK Propert

Based on pre-clinical studies, ATRN-1051 shows potentially favorable drug exposure:

	ATRN-1051 (1)	Zentalis ZN-c3 (2)			AstraZeneca AZD-1775 (2)		
Dose (mg/kg/d)	10	20	40	80	20	40	80
C_{max}, ng/mL	1460	1167	1997	5100	635	2460	4703
T_{max}, hr	2.7	1	1	1	1	1	1
AUC_{0-24}, ng*hr/mL	16739	4863	17088	39722	1494	6313	13408

Note: Head-to-head studies have not been conducted
(1) Data from an exploratory formulation of ATRN-1051 administered to fasted Balb/c mice
(2) Data from study in A-427 NSCLC xenograft model as reported in Zentalis Corporate Overview, March 2022

Intellectual Property

Intellectual Property Portfolio Of DDR Inhibitors

Four issued US patents protecting lead molecule and analogs

- **Family 1: Ataxia Telengiectasia And Rad3-Related (ATR) Protein Kinase Inhibitors**
  - Macrocyclic inhibitors of ATR & methods of using them to treat various cancers, filed on Oct. 13th, 2015
  - Patents granted in ***AU, CA, CN, EP, IL, JP, MX, HK.*** National phase examinations ongoing in BR, IN, KR
  - 1.1: Issued on May 30, 2017 as ***U.S. Patent 9,663,535***
  - 1.2: Issued on May 29, 2018 as ***U.S. Patent 9,981,989***
  - 1.3: Issued on Feb. 5, 2019 as ***U.S. Patent 10,196,405***
- **Family 2: ATR inhibitors & methods of use**
  - Carboxylic acid-containing macrocyclic ATR inhibitors, and prodrugs; methods of using these inhibitors to treat various cancers;
    filed on Apr. 12th, 2017
  - Issued on May 28, 2019 as ***U.S. Patent 10,301,324***
- **Family 3: ATR inhibitor Pharmaceutical Composition and Methods:**
  - International application filed on Apr. 14th, 2023
  - Pharmaceutical formulation and composition of our lead molecule in the clinic
- **Family 4: WEE1 inhibitor Pharmaceutical Compositions and Methods:**
  - International Application filed on Jun. 3rd, 2022
  - Composition of our lead WEE1 inhibitor compounds

Corporate Highlights & Milestones

Robust DDR Development Milestones

MOLECULE	TARGET	INDICATION	BIOMARKER	Preclinical	IND-Enabling	Phase 1	Anticipated Milestones
ATRN-119	ATR	Advanced solid tumors	Defined biomarkers	monotherapy			Q1 2024: Phase 1 tolerability, PK
		Ovarian, breast, prostate	BRCA1/2 + others	combination with PARPi			Q4 2023 / Q1 2024: Ph1 initiatio
ATRN-1051	WEE1	Advanced solid tumors	CCNE amplification + others				End of 2023: IND submission
ATRN-354[1]	ATR	Advanced solid tumors	Defined biomarkers				Second half of 2024: IND submiss
APRE-DDRi	DDR Target	Advanced solid tumors	Defined biomarkers				Mid-2024: Development candida

[1] ATRN-354 timeline and anticipated milestones subject to data from ATRN-119 clinical trial

Corporate Summary and Recent Highlights

Robust synthetic lethality (SL) portfolio built in-house from foundational, proprietary DNA damage repair (DDR) platfor

- Addressing critical unmet therapeutic needs for patients with genetically defined cancers.

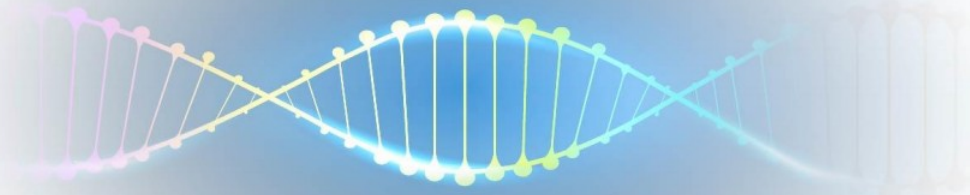
- ATR Program: ATRN-119
  - Lead clinical candidate ATRN-119 is a potential best-in-class oral ATR inhibitor for the treatment of advanced solid tumors harboring defined mutations in DDR pathways. Currently enrolling patients into Phase 1/2a. ATRN-119 is structurally differentiated and has shown in pre-clinical studies to be potentially highly selective and exhibit a favorable tolerability profile.
- WEE1 Program: ATRN-1051
  - ATRN-1051 is a highly potent WEE1 inhibitor currently in IND-enabling studies. Preclinical findings show potentially favorable drug selectivity and exposure.
- Pipeline
  - Additional undisclosed synthetic lethality assets show promising potential in novel oncology targets.

Aprea Therapeutics (NASDAQ: APRE)
Financial Summary & Capitalization

- Cash & Equivalents of $27.7.0 million as of June 30, 2023
- Closed $4.9M (net) public offering in February 2023
- Obtained $2.0 million non-dilutive funding via research grant from National Cancer Institute (NC

Securities	Common Equivalents as of May 15, 2023
Preferred Stock (as converted)	28,112
Common Stock	3,736,673
Options	558,141
Restricted Stock Units	20,870
Fully Diluted Equivalents	4,343,796

aprea therapeutics



Precision Oncology through Synthetic Lethality

August 2023