Transforming the Experience of Chemotherapy for Cancer Patients

CORPORATE PRESENTATION

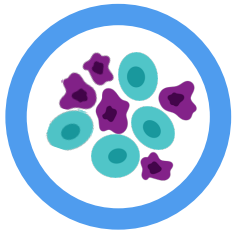
October 2020

Forward Looking Statements

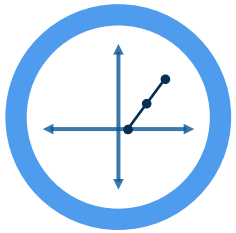
Statements in this presentation about Aileron's future expectations, plans and prospects, as well as any other statements regarding matters that are not historical facts, may constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements about the 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 and/or trials anticipated; whether the Company will obtain the cash resources to initiate and fund the Company's planned clinical trials; whether results obtained in preclinical and nonclinical studies and clinical trials will be indicative of results obtained in future clinical trials; whether preliminary or interim results from a clinical trial such as the interim data referenced in this presentation will be indicative of the final results of the trial; whether results of trials conducted by third parties would be observed in randomized trials conducted by the Company; whether Aileron's product candidates will advance through the clinical trial process on a timely basis, or at all; whether the results of such trials will warrant submission for approval from the United States Food and Drug Administration or equivalent foreign regulatory agencies; whether Aileron's product candidates will receive approval from regulatory agencies on a timely basis or at all; whether, if product candidates obtain approval, they will be successfully distributed and marketed; whether the coronavirus pandemic will have an impact on the timing of the Company's clinical development, clinical supply and operations; and other factors discussed in the "Risk Factors" section of Aileron's quarterly report on Form 10-Q for the period ended June 30, 2020, filed on August 5, 2020, and risks described in other filings that Aileron may make with the Securities and Exchange Commission. Any forward-looking statements contained in this presentation 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.

Our Focus

Addressing a significantly overlooked and serious unmet need in oncology: Chemotherapy-induced toxicities and side effects



ALRN-6924: First and only chemoprotective agent in clinical development employing a biomarker strategy by treating patients with p53-mutated cancers



Proof-of-concept data from Phase 1b accepted as late-breaking presentation at EORTC-NCI-AACR 2020 conference: October 24, 2020

- Positive interim data reported in Q2 2020

Our Long-Term Vision

Bring selective chemoprotection to all patients with p53-mutated cancers

50% of cancer patients have **P53-MUTATED CANCER**

We want to enable patients to fight cancer without the fear, quality-of-life burden and medical consequences of chemotherapy-induced side effects

MILLIONS OF PATIENTS

Need chemotherapy to fight cancer

SIDE EFFECTS

Impact all patients undergoing chemotherapy

UNSELECTIVE

Chemotherapy cannot distinguish between cancer cells and healthy cells, causing side effects

TODAY'S SUPPORTIVE CARE APPROACH:

Resignation / Side Effects Accepted

- Multiple drugs; typically address only one toxicity
- Often ineffective; associated with harmful toxicities
- No options for some side effects (like hair loss)

AILERON'S MISSION AND POTENTIAL:

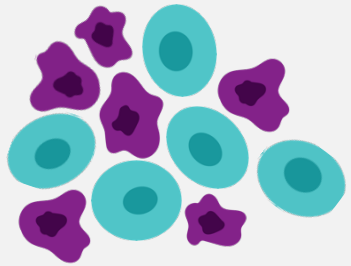
Proactive Prevention

- One medicine to protect multiple cell types
- Improved quality of life and better tolerance for chemotherapy, without dose reductions or delays

Basic principles to successfully protect against chemotherapy-induced side effects

CURRENT PARADIGM:

Chemotherapy targets both healthy cells and cancer cells that are cycling (undergoing cell division process)



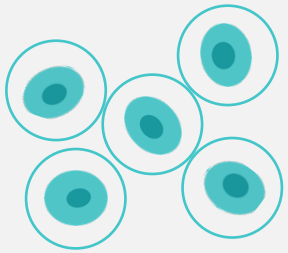
Both healthy cells and cancer cells are destroyed by chemotherapy

PARADIGM SHIFT

AILERON PARADIGM:

Temporarily pause cycling in healthy cells, shielding them

No interruption of cycling in cancer cells, leaving them fully susceptible to chemotherapy



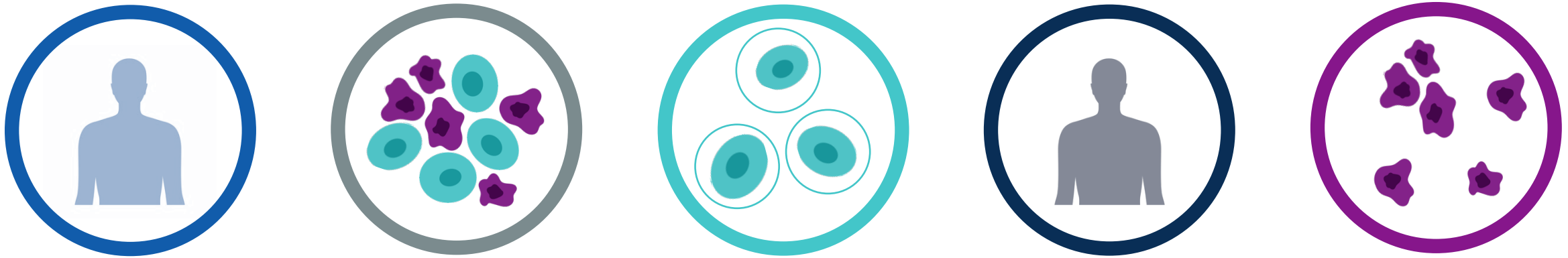
Healthy cells are not destroyed

Cancer cells are destroyed

A COUNTERINTUITIVE APPROACH:

Treat healthy cells, not cancer cells

ALRN-6924 activates p53 to pause the cell cycle in healthy cells, but not in cancer cells



Patient with p53-mutant cancer receives ALRN-6924 before chemotherapy
IV administration;
1-hour infusion

→

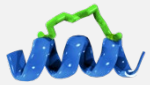
ALRN-6924 activates p53 in healthy cells

Activated p53 pauses cell cycling in healthy cells

Patient with p53-mutant cancer receives chemotherapy

Chemotherapy's attack on cancer cells is uninterrupted

ALRN-6924 window of protection for healthy cells

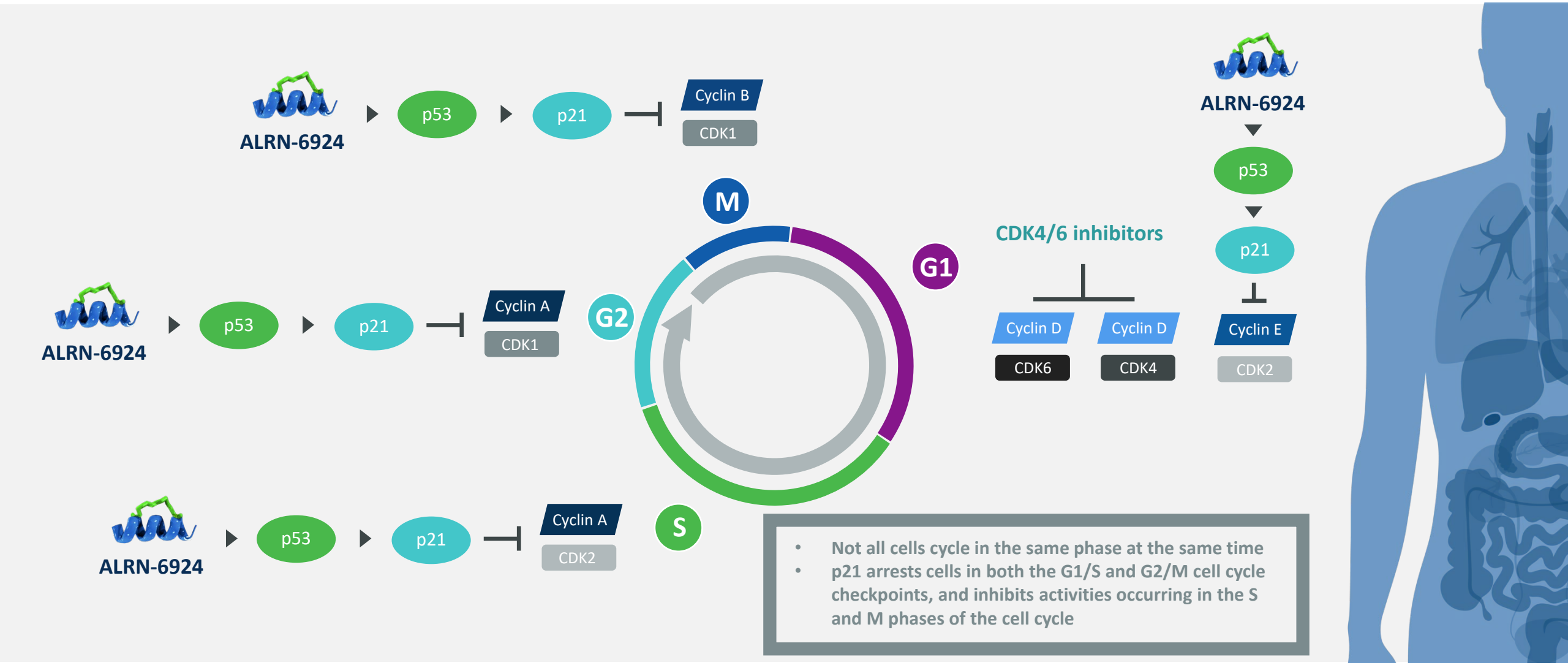


ALRN-6924

Selectively and temporarily activates normal p53 in healthy cells, not in cancer cells

Cannot work in p53-mutated cancer cells because p53 has lost its function in those cancer cells

ALRN-6924 best-in-class potential: Effects on all phases of the cell cycle



- Not all cells cycle in the same phase at the same time
- p21 arrests cells in both the G1/S and G2/M cell cycle checkpoints, and inhibits activities occurring in the S and M phases of the cell cycle

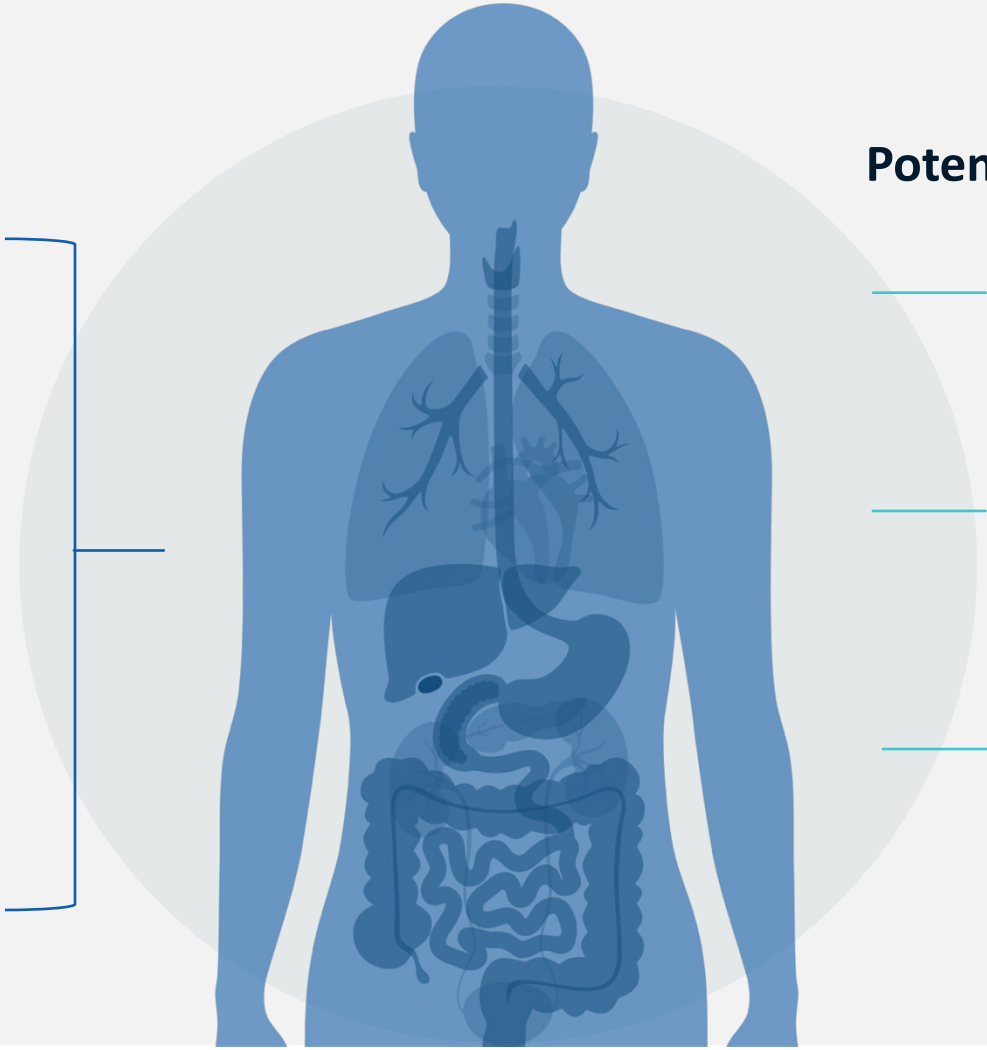
ALRN-6924: A systemic therapeutic approach to a systemic issue

Aileron Proof-of-Concept Trial Endpoints

Severe Anemia
(weakness, fatigue)
Red blood cells

Severe Thrombocytopenia
(excessive bleeding)
Platelets

Severe Neutropenia
(serious infection, fever, sepsis)
White blood cells



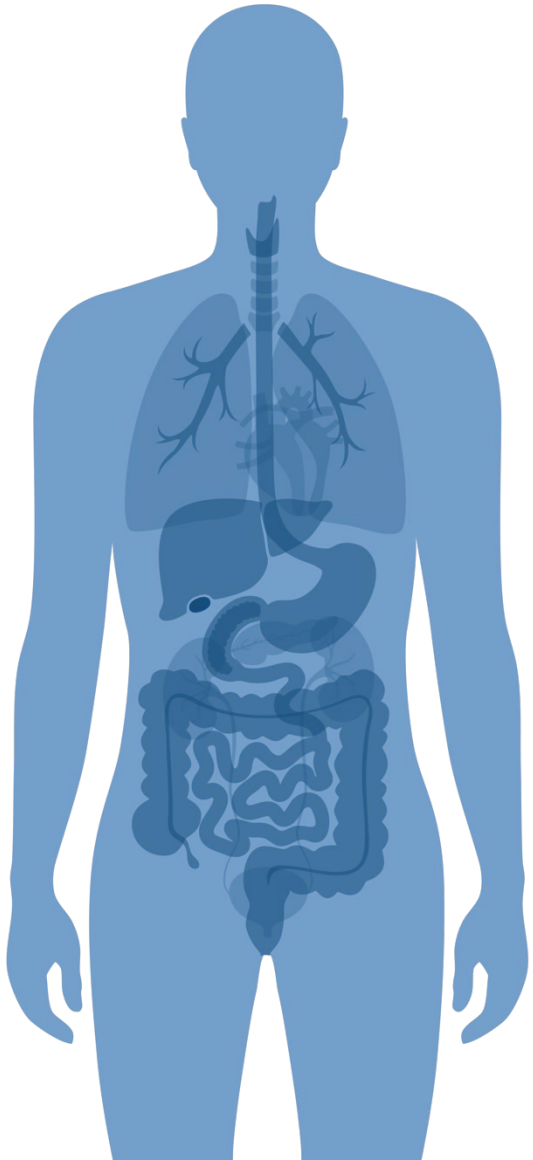
Potential Other Benefits

Alopecia (hair loss)
Hair follicle cells

Stomatitis (mouth sores)
Cells lining the oral cavity

Vomiting, Diarrhea, Bloating
Cells lining the stomach and intestines

Bone Marrow Toxicities: Proof-of-Concept Focus for ALRN-6924



SEVERE ANEMIA

Standard of Care: "EPOs" (e.g., Aranesp®/Epogen®); Blood transfusions

Clinical Issues:

- EPOs: promote tumor growth and thrombo-embolic events (black box warning ⚠)
- Limited efficacy
- Transfusions: risk of infection; limited supply

SEVERE NEUTROPENIA

Standard of Care: G-CSF (e.g. Neulasta® /Neupogen®)

Clinical Issues:

- Can promote tumor growth, can cause spleen rupture and bone pain

SEVERE THROMBOCYTOPENIA

Standard of Care: No drugs used as standard of care – platelet transfusions instead

Clinical Issues:

- Effects limited to 2-5 days maximum
- Patients can become transfusion-refractory
- Transfusion-related risk of infection; limited supply

ALRN-6924 Phase 1b Study

Dose Optimization: Positive Interim Results

REPORTED JUNE 2020

Interim Clinical Results: Highlights

- Demonstrated clinically meaningful protection against multiple hematological side effects when administering ALRN-6924 24-hours prior to chemotherapy
- 0.3 mg/kg dose level achieved most robust and consistent chemoprotection effects of 3 dose levels
- Fewer platelet transfusions and fewer red blood cell transfusions in ALRN-6924-treated patients than observed in past clinical trials in SCLC patients receiving topotecan (31-53%).†

† Hart et al. 2019, Pawel et al. 2014, Eckardt et al. 2007

ALRN-6924 protected against key side effects of topotecan in multiple cell types relative to historical controls

	Topotecan + ALRN-6924 in SCLC patients				Topotecan ± Trilaciclib in SCLC patients‡	
	Topotecan 1.5 mg/m² + ALRN-6924				Topotecan 1.5 mg/m² + Placebo	Topotecan 1.5 mg/m² + Trilaciclib
	0.3 mg/kg	0.6 mg/kg	1.2 mg/kg	Total		
	N (%) N=6	N (%) N=5	N (%) N=6	N (%) N=17	N (%) N=28	N (%) N=32
All AEs* (NCI CTC Grade ≥3)	5 (83)	5 (100)	6 (100)	16 (94)	27 (96)	28 (88)
Neutropenia	4 (67)	5 (100)	6 (100)	15 (88)	24 (86)	22 (69)
Thrombocytopenia	2 (33)	2 (40)	2 (33)	6 (35)	20 (70)	22 (68)
Anemia	1 (17)	2 (40)	1 (17)	4 (24)	18 (63)	10 (39)
Fatigue	-	-	-	-	2 (7)	3 (9)
Nausea	-	-	-	-	1 (4)	0 (0)
Neutropenia NCI CTC Grade 4**	2 (33)	5 (100)	1 (17)	8 (47)	21 (76)	13 (41)

*AEs based on laboratory values, as applicable
** in the first treatment cycle

‡ Hart et al. ASCO 2019 – G1 Therapeutics; Phase 2 Clinical Trial

Data cutoff for interim analysis of the dose optimization part of the trial 5/13/2020; 3 patients on-going

Other results support chemoprotection signal with ALRN-6924 treatment

Serious Adverse Events

SAE	0.3 mg/kg N (%) N=6	0.6 mg/kg N (%) N=5	1.2 mg/kg N (%) N=6	Total* N (%) N=17
NEUTROPENIA	-	1 (20)	2 (33)	3 (18)
LEUKOPENIA	-	-	2 (33)	2 (12)
THROMBOCYTOPENIA	-	-	2 (33)	2 (12)
ANEMIA	-	-	2 (33)	2 (12)
FEBRILE NEUTROPENIA	-	-	-	-

Transfusions

	0.3 mg/kg N=6	0.6 mg/kg N=5	1.2 mg/kg N=6	Total N=17
RBC transfusions (% of patients, N of transfusions)	-	3 (60)	3 (50)*	6 (35)
Platelet transfusions (% of patients, N of transfusions)	-	2 (40)	1 (17)	3 (18)

*One patient received multiple RBC transfusions with Hb NCI CTC Grade 2

Historically, RBC and platelet transfusions are reported for 31-53% of SCLC-patients who receive topotecan

(Hart et al. 2019, Pawel et al. 2014, Eckardt et al. 2007)

Performance Status

	0.3 mg/kg N=6	0.6 mg/kg N=5	1.2 mg/kg N=6	Total N=17
ECOG PS at baseline (Mean, Median)	0, 0	0.5, 0.5	0.5, 0.5	0.3, 0
ECOG final PS (Mean, Median)	0, 0	1, 1	0.5, 0.7	0.6, 0

Data cutoff for interim analysis of the dose optimization part of the trial 5/13/2020; 3 patients on-going

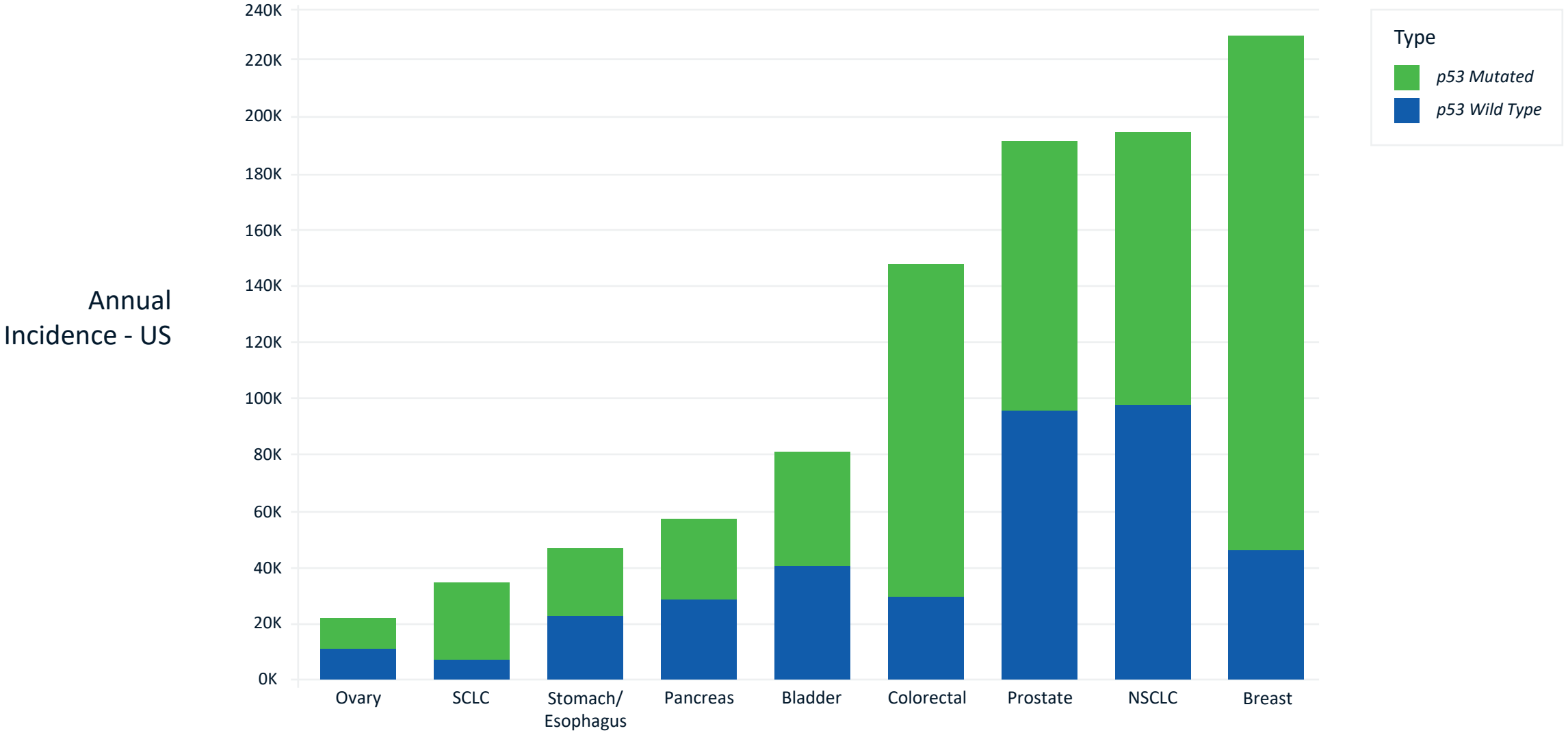
Interim Clinical Results: Key Takeaways

Evidence of clinically meaningful protection against multiple hematological side effects

Early data suggests broad chemoprotection as indicated by very low frequency or absence of febrile neutropenia, blood transfusions, severe nausea, vomiting, diarrhea, and fatigue

Enrollment completed into 0.3 mg/kg expansion cohort; late-breaking poster presentation of proof-of-concept data at EORTC-NCI-AACR conference (October 24, 2020)

Large market opportunities in p53 mutated cancers across most cancer types



Path to indication in multiple cancers and multiple chemotherapies

Phase 1b Proof-of-Concept in SCLC

- Exploring dose & timing of ALRN-6924 prior to chemotherapy (-24h and -6h schedules)

Healthy Volunteer Study

- Onset of cell protection
- Duration of cell protection
- Protection outside of bone marrow

Non-Small Cell Lung Cancer (NSCLC)

Phase 1b/2/3 Program

Market Opportunity:

- Annual US incidence: 97K patients with p53-mutated NSCLC

Gastrointestinal Cancer

Phase 1b/2/3 Program

Market Opportunity:

- E.g. Annual US incidence: 118K patients with p53-mutated CRC

Establish chemoprotection against multiple side effects and de-risk future clinical trials

Initial registration in very large cancer type

Expansion to other cancers and chemotherapies

One cancer w/ p53 mutation → Multiple cancers w/ p53 mutation

One chemotherapy → Multiple chemotherapies

Our Pipeline

Chemoprotection Strategy for p53-Mutated Cancers

Therapy	Indication	Chemotherapy	Pre-clinical	Phase 1	Phase 2	Phase 3
ALRN-6294	Small Cell Lung Cancer	Topotecan	Proof-of-Concept Phase 1b Study		Data to inform studies for follow-on indications	
	Non-Small Cell Lung Cancer	Platinum-Doublet		Phase 1b/2/3 Program – planned 2H 2021		
	Gastrointestinal Cancer	TBD		Phase 1b/2/3 Program – planned 2022		
	Healthy Volunteer Study	N/A				

Key Financial Highlights

End of Q2 2020	
Cash, Cash Equivalents and Investments *Expected to support operations into Q4 2021*	**$19MM**
Common Shares Outstanding	**39MM**
Common Warrants ($2.01)	**13MM**

Strategic Execution to Advance Broad Long-Term Vision

- Validated mechanism of action to pause cell cycle and protect healthy cells in patients with p53-mutated cancers
- Interim results demonstrated evidence for clinically meaningful protection against multiple hematological side effects
- Planned studies to assess expanded protective effects to other chemotherapies, cancers, and additional chemotherapy-induced toxicities

LONG-TERM VISION

- Chemoprotection for patients with P53-mutated cancers regardless of cancer type or chemotherapy

50% of cancer patients have **P53-MUTATED CANCER**

Transforming the Experience of Chemotherapy for Cancer Patients

NASDAQ: ALRN

WWW.AILERONRX.COM