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): February 28, 2020

PIERIS PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Nevada	**001-37471**	**30-0784346**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
255 State Street, 9th Floor Boston, MA		**02109**
(Address of principal executive offices)		**(Zip Code)**

Registrant's telephone number, including area code: 857-246-8998

N/A
(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:

☐ 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))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2).

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 7.01: Regulation FD Disclosure.

Attached hereto as Exhibit 99.1 and incorporated by reference herein is the February 28, 2020 Immuno-Oncology 360 Conference presentation of Pieris Pharmaceuticals, Inc.

The information set forth under this "Item 7.01. Regulation FD Disclosure," including Exhibit 99.1 attached hereto, shall not be deemed "filed" for any purpose, and shall not be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, regardless of any general incorporation language in any such filing. except as shall be expressly set forth by specific reference in such filing.

Item 9.01 Financial Statements and Exhibits

(d) *Exhibits.*

99.1 Immuno-Oncology 360 Conference Presentation, Dated February 28, 2020.

SIGNATURE

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.

PIERIS PHARMACEUTICALS, INC.

Dated: February 28, 2020

/s/ Tom Bures

Tom Bures

Vice President, Finance

Enhancing Efficacy and Safety of 4-1BB Agonism with Tumor-Targeted Bispecifics

Ingmar Bruns, M.D., PH.D.
Senior Vice President, Head of Clinical Development
Pieris Pharmaceuticals, Inc.

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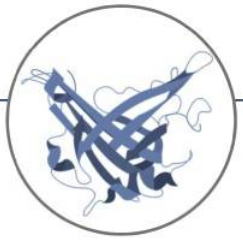
Forward Looking Statements

This presentation contains forward-looking statements as that term is defined in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Statements in this press release that are not purely historical are forward-looking statements. Such forward-looking statements include, among other things, references to novel technologies and methods and our business and product development plans, including the advancement of our proprietary and co-development programs into and through the clinic. Actual results could differ from those projected in any forward-looking statements due to numerous factors. Such factors include, among others, our ability to raise the additional funding we will need to continue to pursue our business and product development plans; the inherent uncertainties associated with developing new products or technologies and operating as a development stage company; our ability to develop, complete clinical trials for, obtain approvals for and commercialize any of our product candidates, including our ability to recruit and enroll patients in our studies; our ability to address the requests of the FDA; competition in the industry in which we operate and market conditions. These forward-looking statements are made as of the date of this press release, and we assume no obligation to update the forward-looking statements, or to update the reasons why actual results could differ from those projected in the forward-looking statements, except as required by law. Investors should consult all of the information set forth herein and should also refer to the risk factor disclosure set forth in the reports and other documents we file with the SEC available at www.sec.gov, including without limitation the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and the Company's Quarterly Reports on Form 10-Q.

Company Snapshot

IO Pipeline Highlights

- **PRS-343:** 4-1BB/HER2 bispecific for solid tumors
- **PRS-344:** 4-1BB/PD-L1 bispecific (partnered with Servier)



Anchor IO Partnerships

- 5-program deal (all bispecific fusion proteins)
- 3-program partnership based on tumor-localized costimulatory bispecific fusion proteins

2020 IO Catalysts

- ❑ PRS-343 complete monotherapy phase 1 escalation data
- ❑ PRS-343 complete combination with atezolizumab phase 1 escalation data
- ❑ PRS-343 phase 1 expansion initiation
- ❑ PRS-344 IND 1H2020

What are Anticalin® Proteins?

A Novel Therapeutic Class with Favorable Drug-Like Properties

- Derived from lipocalins (human extracellular binding proteins)
  - TLC and NGAL lipocalins used as "templates" for drug development
- Engineerable binding pocket for robust target engagement
- Monomeric, monovalent, small size (~18 kDa vs 150kDa mAbs)
- Can be formulated for inhalable delivery
- Can be formatted into novel bi/multispecific constructs
- Broad IP position

Underpinned by a Powerful Drug Discovery Platform

- Highly diverse libraries (>10^{11}) of potential drug candidates…
- Automated high-throughput drug screening technology (phage display)…
- Extensive protein engineering know-how…
- …resulting in high hit rates, quick-to-development candidates

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Advantages of 4-1BB as Target for T-Cell Engagers

4-1BB as Target for T Cell Engagers

- Requires signal 1 from TcR
- Drives central memory formation[1]
- Enhances mitochondrial function and metabolic fitness[2]
- Enhances anti-tumor activity across innate and adaptive anti-tumor immunity[3]

- Activates tumor-specific T Cells in the TME
- Increased durability of response
- Increased survival of T cells in immunosuppressive solid tumor TME
- Promoting a sustainable immune response

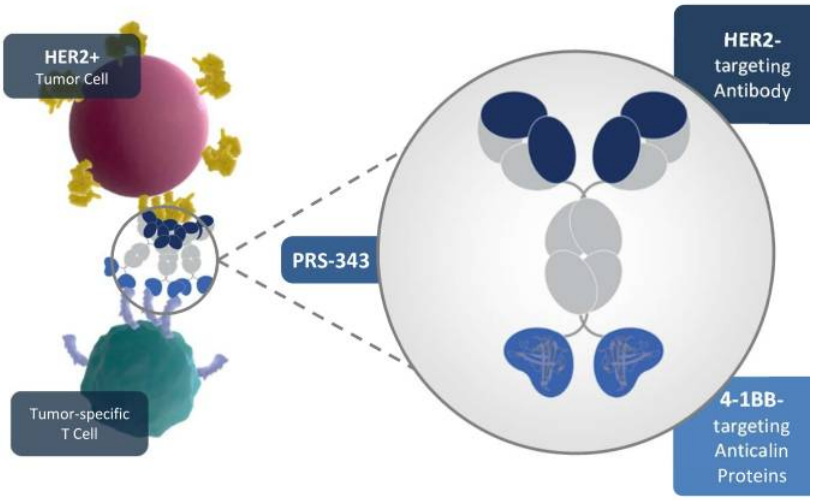
4-1BB Agonism Adapts T Cells for a Harsh Tumor Microenvironment in Solid Tumors & Promotes a Durable Anti-Tumor Response

1. *Bartkowiak and Curran, In Preparation.*
2. *Teijeira and Melero. CIR. 2018*
3. *Bartkowiak and Curran, Front Oncol 2015*

PRS-343 a HER2/4-1BB Bispecific Molecule

PRS-343 is designed to:

- Drive tumor localized activation of the immune system by 4-1BB cross-linking on tumor specific T cells avoiding systemic immune activation
- Inhibit tumor growth via HER2 signaling inhibition
- Drive proximity of T cells and HER2+ tumor cells resulting in T cell activation and increased tumor cell killing
- Drive memory formation, ameliorates T cell exhaustion and increase metabolic fitness adapting the T cells for a harsh tumor microenvironment



HER2-targeting moiety of the drug localizes to the tumor microenvironment and facilitates 4-1BB cross-linking

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Study Design

Primary Objectives

- Characterize safety profile
- Identify MTD or RP2D

Secondary Objectives

- Characterize PK profile
- Investigate dosing schedule
- Assess potential immunogenicity and PD effects
- Investigate efficacy

Active schedules

Schedule 1: Q3W dosing on Day 1

Schedule 2 : Q2W dosing on Days 1, 15

Data cut-off: 23-Oct-19 for subjects up to Cohort 11b; additional cohorts enrolling

Current Enrollment

Dose Level	No. Patients	Dose (mg/kg)
1	1	0.0005 (Q3W)
2	1	0.0015
3	1	0.005
4	2	0.015
5	2	0.05
6	5	0.15
7	7	0.5
8	6	1
9	6	2.5
10	9	5
11	7	8
11b	6	8 (Q2W)
Total	53	

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Baseline Characteristics

All Subjects (n = 53)

Characteristic	n (%)
Age, Median (range)	61 (29–92)
Gender	
F	33 (62%)
M	20 (38%)
ECOG PS	
0	12 (23%)
1	41 (77%)
Prior Therapy Lines	
1	6 (11%)
2	5 (9%)
3	11 (21%)
4	10 (19%)
5+	21 (40%)
Median no. of anti-HER2 Treatments	
Breast	4
Gastric	2

Primary Cancer Type	n (%)
Gastroesophageal	19 (36%)
Breast	14 (26%)
Gynecological	6 (11%)
Colorectal	5 (9%)
Gallbladder/ Biliary	4 (8%)
Bladder	2 (4%)
Pancreatic	1 (2%)
Other – Salivary Duct	1 (2%)
Other – Melanoma	1 (2%)

Data cut-off: 23-Oct-19

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Treatment-Related Adverse Events

Cohorts 9-11b

TRAE	Number (%)	Grade 3 (%)
Infusion related reactions	6 (9%)	2 (3%)
Nausea and vomiting	8 (12%)	0
Chills	5 (8%)	0
Arthralgias	4 (6%)	1 (2%)
Flushing	4 (6%)	3 (5%)
Decreased appetite	3 (5%)	0
Hypotension	3 (5%)	1 (2%)
Increased Lipase	3 (5%)	1 (2%)
Non cardiac chest pain	3 (5%)	1 (2%)

No Grade 4 or 5 Treatment-Related AEs

Summary of Responses at Active Dose Range of PRS-343

Based on clinical data, serum concentration of > 20 µg/ml defines active dose range (beginning at Cohort 9)

Cohort	11b	11	10	9	Total
Best Response	8 mg/kg, Q2W	8 mg/kg, Q3W	5 mg/kg, Q3W	2.5 mg/kg, Q3W	
Response Evaluable Patients	5	4	4	5	18
PR	2	-	-	-	2
SD	3	2	1	2	8
PD	-	2	3	3	8
ORR	40%	0%	0%	0%	11%
DCR	100%	50%	25%	40%	55%

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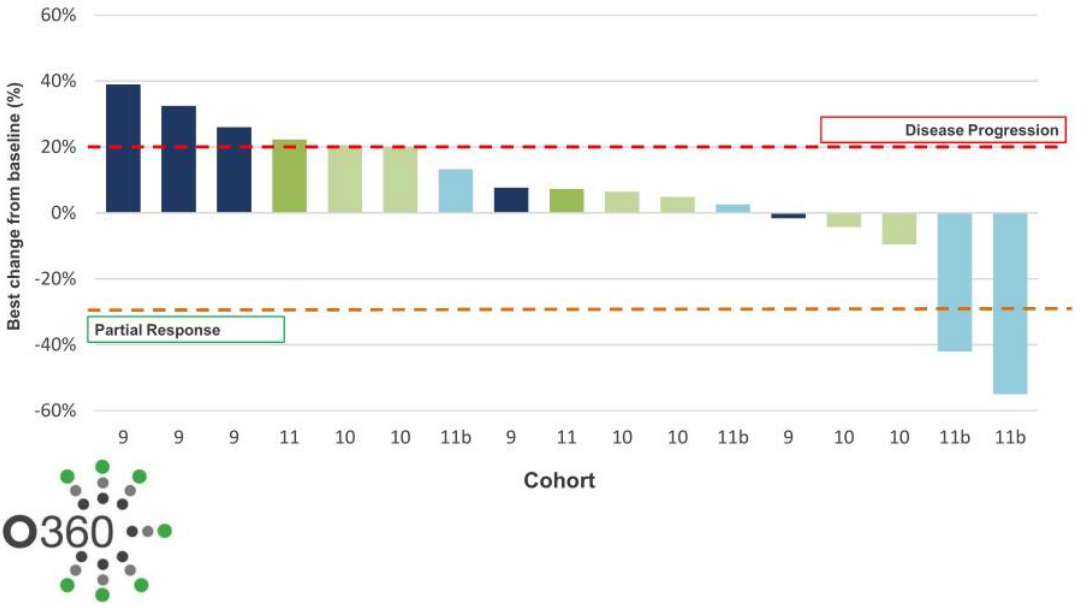
Best Response in Target Lesions Cohorts 9-11b



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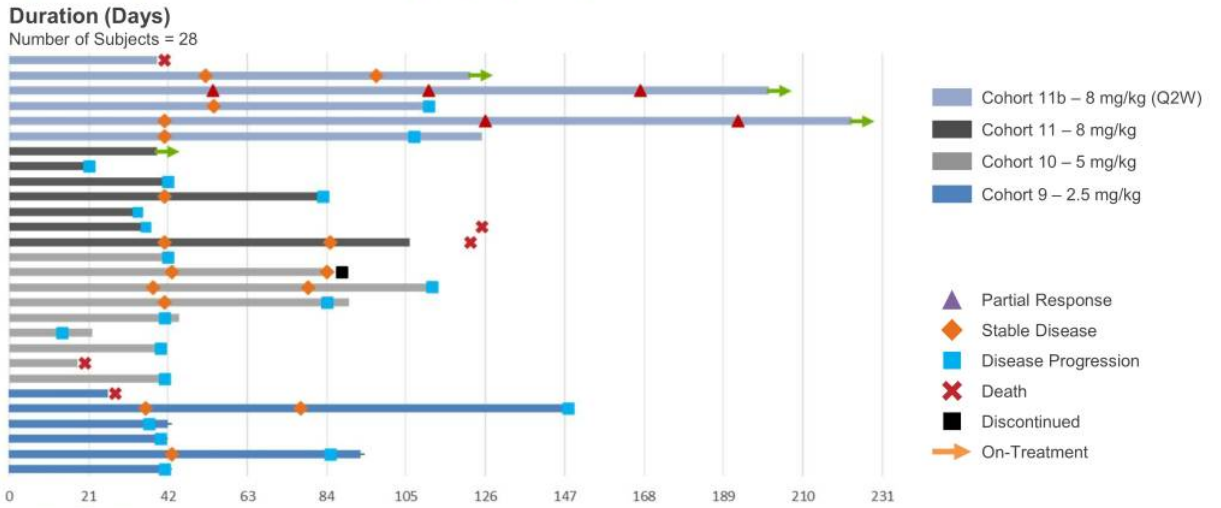
Average Time on Treatment with PRS-343

Significantly Increases in Cohort 11b (8 mg/kg Q2W)



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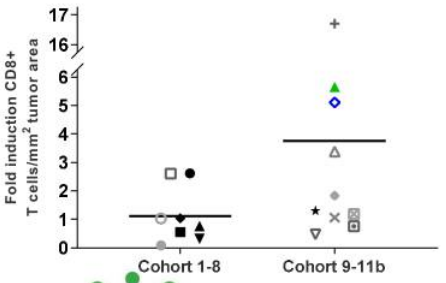
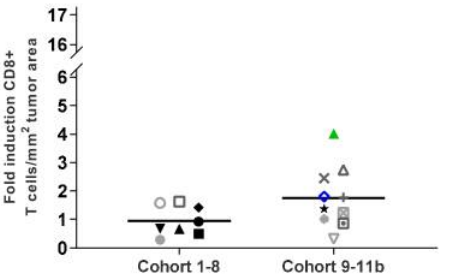
Increased CD8+ T-Cell Numbers in Tumor Biopsies Post-treatment

Tumor



Stroma



Pronounced increase in CD8+ T cell numbers is observed post-treatment in patients receiving doses ≥ 2.5 mg/kg

Patients benefiting from treatment (SD > 120 days (blue) and PR (green) had more pronounced increase in CD8+ T cell number in tumor vs. stroma

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Case Study #1: Gastric Cancer Patient with Confirmed Partial Response

Patient Profile, Treatment History and Treatment Outcome

Patient Profile

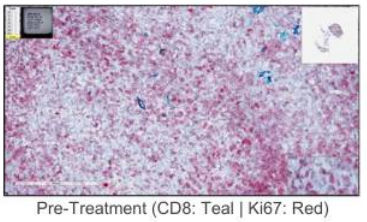
- Cohort 11b | 8 mg/kg every two weeks
- 80-year-old woman; initial diagnosis in June 2017
- Stage IV gastric adenocarcinoma
- Metastases to liver, lymph node and adrenal glands
- HER2 IHC 3+; PD-L1 positive (CPS=3)
- NGS: ERBB2 amplification, TP53 mutation, alteration of CDK12 and SF3B1

Oncology Treatment History	Duration	Best Response
Trastuzumab, Pembrolizumab + Capecitabine/oxaliplatin	July 2017 – June 2018	Stable Disease
Nivolumab with IDO1 inhibitor (investigational drug)	Aug 2018 – Jan 2019	Stable Disease

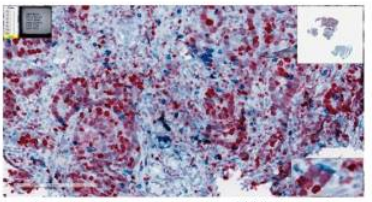
Lesions	Lesion Site	Lesion Size (mm)				
		Baseline	C2 Post-treatment	C3 Post-treatment	C4 Post-treatment	C6 Post-treatment
Target 1	Liver	14	12	10	9	9
Target 2	Liver	20	16	10	8	8
Target 3	Pancreas	19	16	14	14	14
% Change from Baseline			-17%	-36%	-42%	-42%
Non-target 1	Lung	Present	Present	Present	Present	Present
Non-target 2	Stomach	Present	Present	Present	Present	Absent
Non-target 3	Stomach	Present	Present	Present	Present	Absent

PR, partial response; HER2, human epidermal growth factor receptor 2; PD-L1, Programmed Death Ligand 1; CPS, combined positive score; NGS, next-generation sequencing

CD8+ T-Cell Numbers Increase Post-Treatment in Responding Gastric Cancer Patient



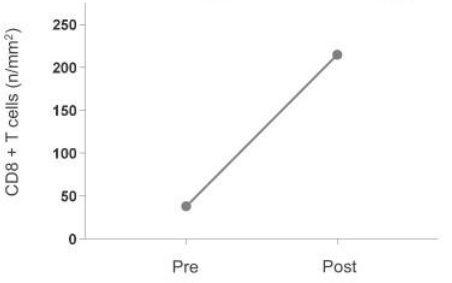
Pre-Treatment (CD8: Teal | Ki67: Red)



Post-Treatment (CD8: Teal | Ki67: Red)

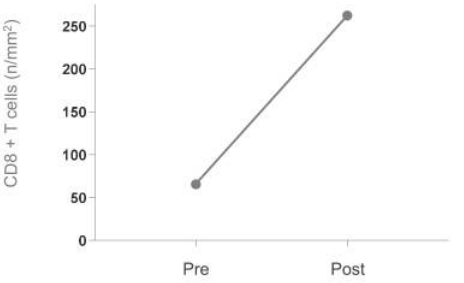
Tumor

CD8 fold change: **5.7** CD8 pre [n/mm^2]: **38**



Stroma

CD8 fold change: **4** CD8 pre [n/mm^2]: **66**



CD8+ T cell numbers increase post-treatment. This is more pronounced in tumor tissue and consistent with the predicted MoA of PRS-343.

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PRS-343-Atezolizumab Combination Trial

Primary Objectives

- Characterize safety profile of PRS-343 in combination with atezolizumab
- Identify MTD or RP2D for PRS-343 in combination with a fixed dose of atezolizumab

Secondary Objectives

- Characterize PK profile
- Investigate dosing schedule
- Assess potential immunogenicity and PD effects
- Investigate efficacy

Dosing schedule | Q3W dosing on Day 1

Data cut-off: 19-Nov-19

Dose Level	Number of Patients Enrolled	PRS-343 Dose (mg/kg)	Atezolizumab (mg
1	3	0.05	1200
2	1	0.15	1200
3	2	0.5	1200
4	3	1.0	1200
5	8	2.5	1200
6	9	5.0	1200
7	9	8.0	1200

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Case Study #1: NSCLC Patient with Partial Response

Patient Profile, Treatment History and Treatment Outcome

Cohort 6
5 mg/kg PRS-343 (Q3W) + atezolizumab 1200 mg

- 65-year-old male, initial diagnosis Feb 6, 2018
- Stage 4 NSCLC squamous
- Foundation One HER2 amplification
- CD8 fold change in tumor: 3-fold

Oncology Treatment History	Duration	Best Response
Carboplatin/paclitaxel + RT	March 2018 – April 2018	Partial Response
Atezolizumab	August 2018 – May 2019	Stable Disease (treatment ended upon disease progression)

Lesions	Lesion Site	Lesion Size (mm)		
		Baseline	C2 Post-treatment	C4 Post-treatment
Target 1	Lung	42	26	20
Target 2	Lung	16	0	0
% Change from Baseline			-55%	-66%
Non-target 1	Lung	Present	Absent	Absent
Non-target 2	Lung	Present	Present	Absent

Data cut-off: 19-Nov-19

Encouraging Anti-Tumor Activity with a HER2-Targeting 4-1BB-Based T-Cell Engager (PRS-343) in Solid Tumors

Well-tolerated, with a good safety profile in all doses and schedules tested

Demonstrated anti-tumor activity in heavily pre-treated patient population across multiple solid tumor types; treatment history indicative of 4-1BB-driven mechanism-of-action and synergy with PD-1/PD-L1 inhibition

Showed a clear increase in $CD8^+$ T cell numbers and proliferative index in the tumor microenvironment of responders

Future studies are planned for continued development in defined HER2+ indications

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