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Investor Webcast:
Initial Data from Phase 1a/1b Trial of Cabiralizumab/OPDIVO® and Early Efficacy Signal in Pancreatic Cancer

November 8, 2017

NASDAQ:FPRX

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This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "may," "will," "expect," "plan," "anticipate" and similar expressions (as well as other words or expressions referencing future events or circumstances) are intended to identify forward-looking statements. These forward-looking statements reflect FivePrime's current beliefs and expectations. Each of these forward-looking statements involves risks and uncertainties. Actual results may differ from these forward-looking statements. Forward-looking statements contained in this presentation include statements about (i) the timing of initiation, progress and scope of clinical trials of cabiralizumab; and (ii) the potential use of cabiralizumab to treat patients.

Many factors may cause differences between current expectations and actual results, including unexpected safety or efficacy data observed during preclinical or clinical studies, clinical site activation rates that are lower than expected, changes in expected or existing competition, failure of our collaborators to support or advance the development of cabiralizumab and unexpected litigation or other disputes. Other factors that may cause our actual results to differ from current expectations are discussed in FivePrime's filings with the U.S. Securities and Exchange Commission, including the "Risk Factors" sections contained therein. Except as required by law, we assume no obligation to update any forward-looking statements contained herein to reflect any change in expectations, even as new information becomes available.

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Key Takeaways Regarding Cabiralizumab/Opdivo® Combination in Pancreatic Cancer

- Durable clinical benefit in 5 of 31 patients in pancreatic cancer
  - Including 3 independently confirmed responses in heavily pre-treated patients without microsatellite-instability (MSI)
  - Responses associated with significant reduction in tumor marker CA19-9
  - Historically, pancreatic cancer without MSI does not respond to PD-1 pathway blockade
- BMS and FivePrime advancing cabira/OPDIVO development
  - Enrolling 30 additional patients with pancreatic cancer in the current trial
  - Information on BMS-sponsored ADVISE trial, which includes cabiralizumab, now available at clinicaltrials.gov (NCT03335540)
  - Information on an additional BMS-sponsored study in pancreatic cancer will be posted on clinicaltrials.gov soon
- Tolerable safety profile of cabira monotherapy and cabira + Opdivo

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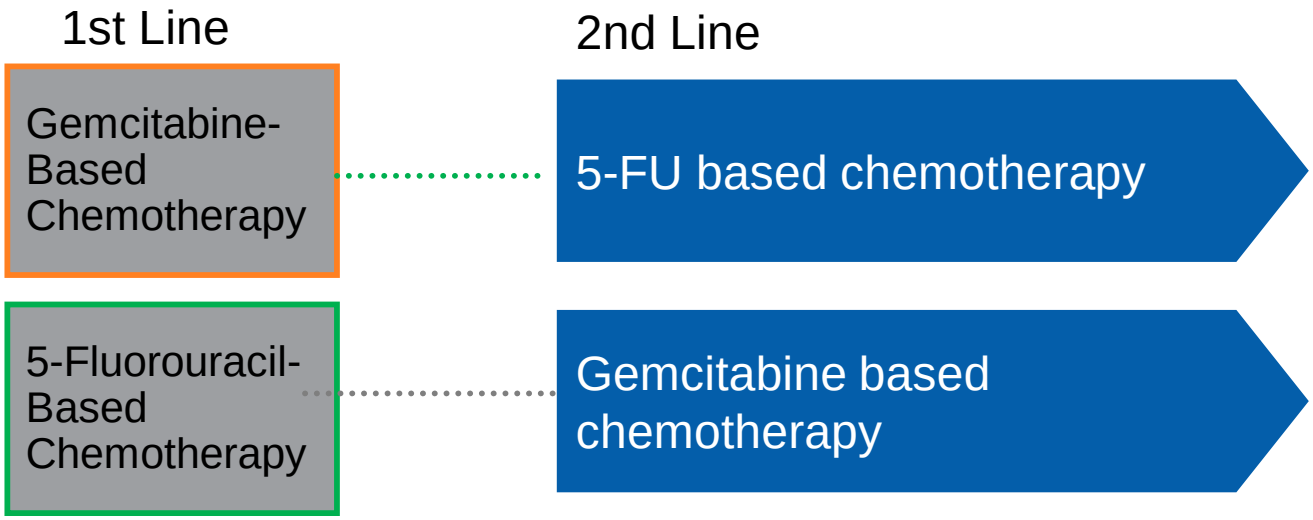
Pancreatic Cancer in 2017

- 4th most common cause of death due to cancer in the US (n ≈ 43,090)
  - Higher than breast cancer (40,600) or prostate cancer (26,700)[1]
- Most patients with pancreatic cancer are diagnosed at an advanced stage
  - All stages have poor prognosis; even the earliest stage < 1/3 alive at 5 years
- In advanced stage pancreatic cancer 1-3% alive in 5 years with standard therapy:

Standard Therapy[2]



1https://seer.cancer.gov/statfacts/html/pancreas.html. Accessed 5 November 2017

2 *exception is MSI

Durable responses are rare in patients with pancreatic cancer, who have a poor prognosis and few treatment options

- There are no reported durable monotherapy responses in pancreatic cancer without MSI:
  - Anti-PD-1
  - Anti-CTLA4
- Anti-PD1 monotherapy is ineffective in pancreatic cancer except in the <1-2% of patients who have microsatellite instability-high (MSI)[2]
- *Onivyde*® (liposomal irinotecan) is the most recently FDA approved agent in October 2015
  - 2nd-line approval, in patients who have failed a gemcitabine based regimen
  - *Onivyde*®/5-FU/Leucovorin[1] (n=117)
    - ORR 7.7% (USPI, 2017)
    - PFS 3.1 months
    - OS 6.1 months

1 *Onivyde* USPI, 2017
2 *Keytruda* USPI, 2017

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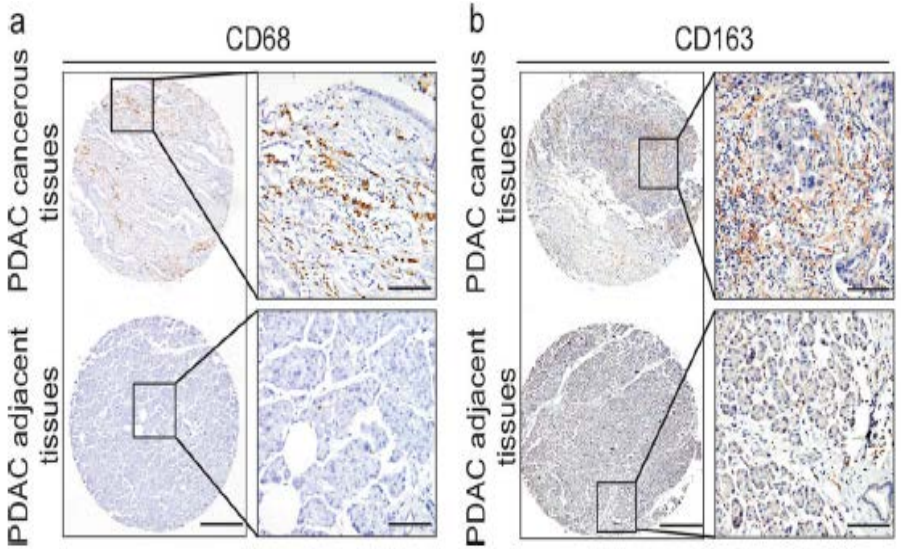
Rationale for Targeting of CSF1-R-Dependent TAMs in Pancreatic Cancer

- Human pancreatic cancer cells and surrounding stroma induce CSF1R-dependent macrophages to a pro-tumor phenotype (Tumor Associated Macrophages)
- Tumor Associated Macrophages (TAMs)
  - Promote a fibrotic tumor microenvironment, cancer cell survival and migration, and cancer cell resistance to chemotherapy
  - Suppress cytotoxic and Th1 lymphocyte responses in the tumor

Tumor Associated Macrophages in Pancreatic Cancer
(identified by CD68 and CD163 staining)



Pancreatic cancer

Adjacent normal pancreas

Hu et al., Tumor Biol 2016

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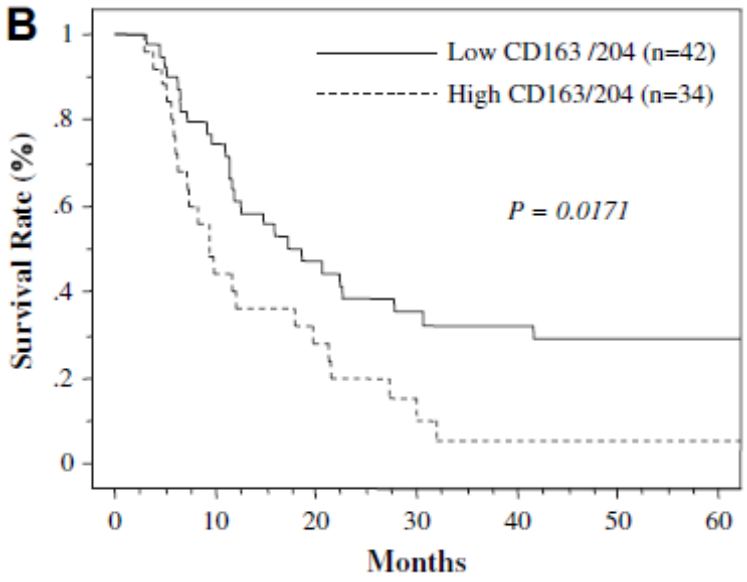
TAM Infiltration is Associated with Poor Prognosis in Pancreatic Cancer

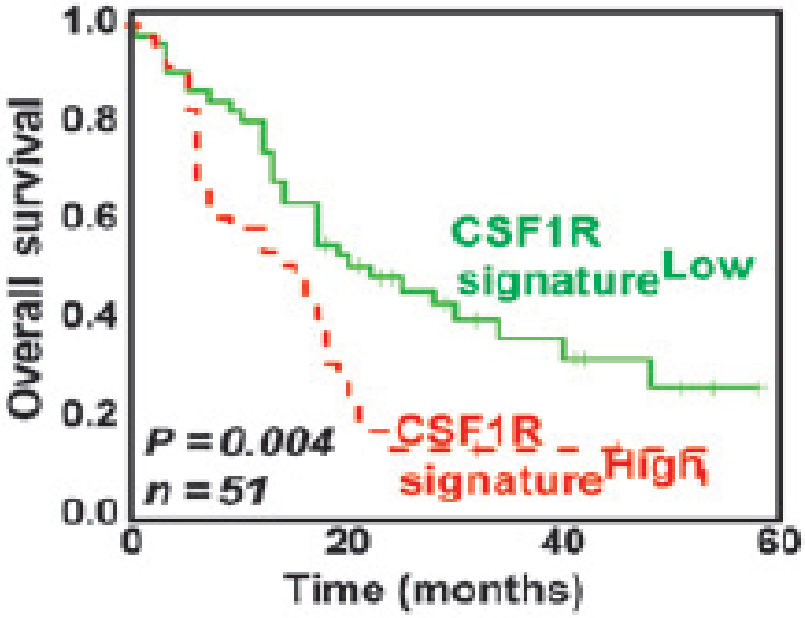
40-50% of patients with pancreatic cancer have a high infiltration of immunosuppressive TAMs

Pancreatic cancer with a high number of TAMS (identified by overexpressing CD163 or CD204) has a lower survival



Kurahara et al., J Surgical Res 2011

Pancreatic cancer with a high number of TAMs (identified by CSF1R-dependent gene signature; CD68, MRC1, MSR1, CSF1R) has a lower survival



Zhu et al., Cancer Research 2014

Not shown: pancreatic cancer with high overexpression of CSF1 has a lower survival

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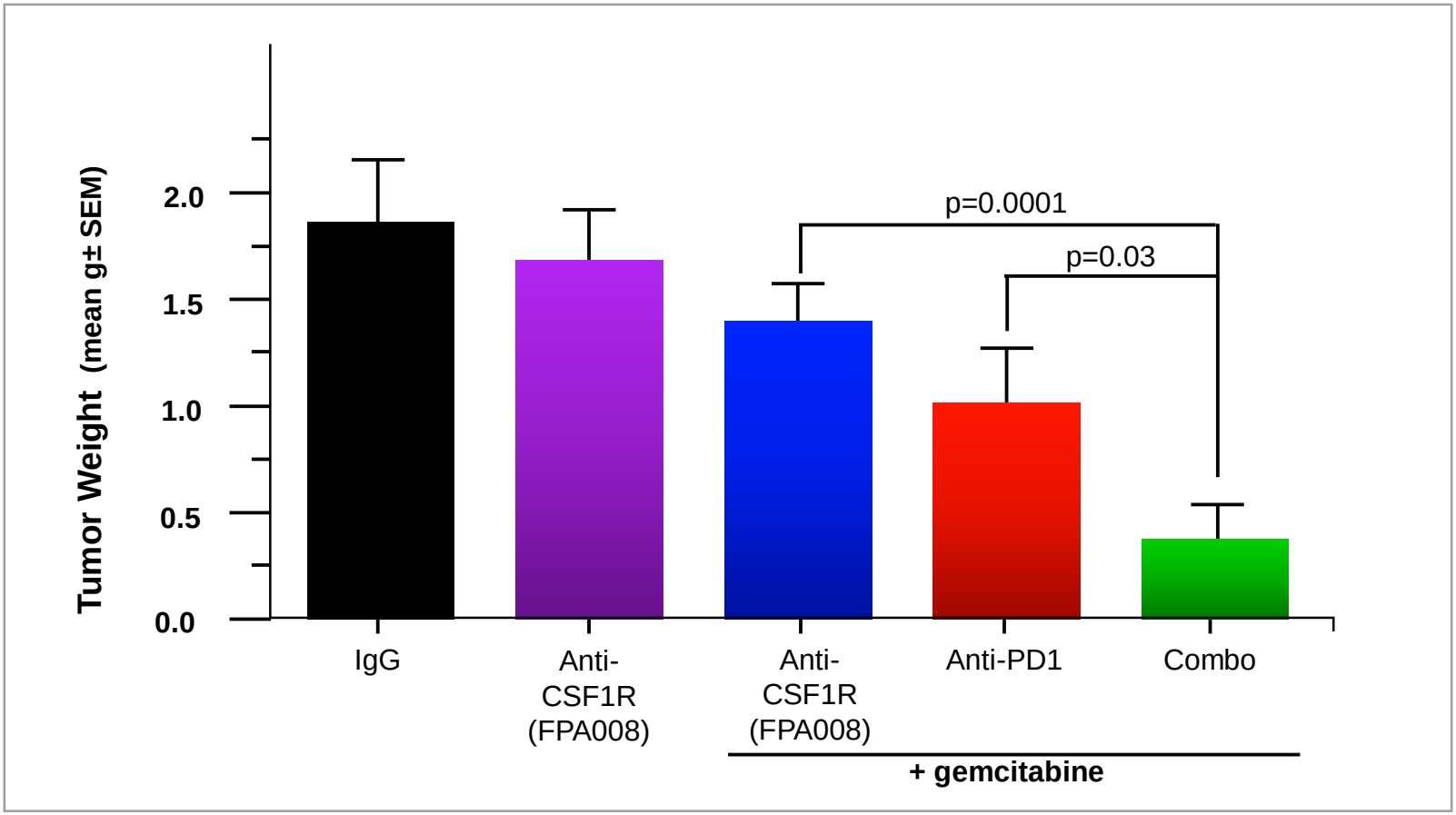
CSF-1R Blockade Acts Synergistically with Anti-PD-1 and Chemotherapy by Reprograming the Tumor Microenvironment

ORTHOTOPIC PANCREATIC CANCER MODEL



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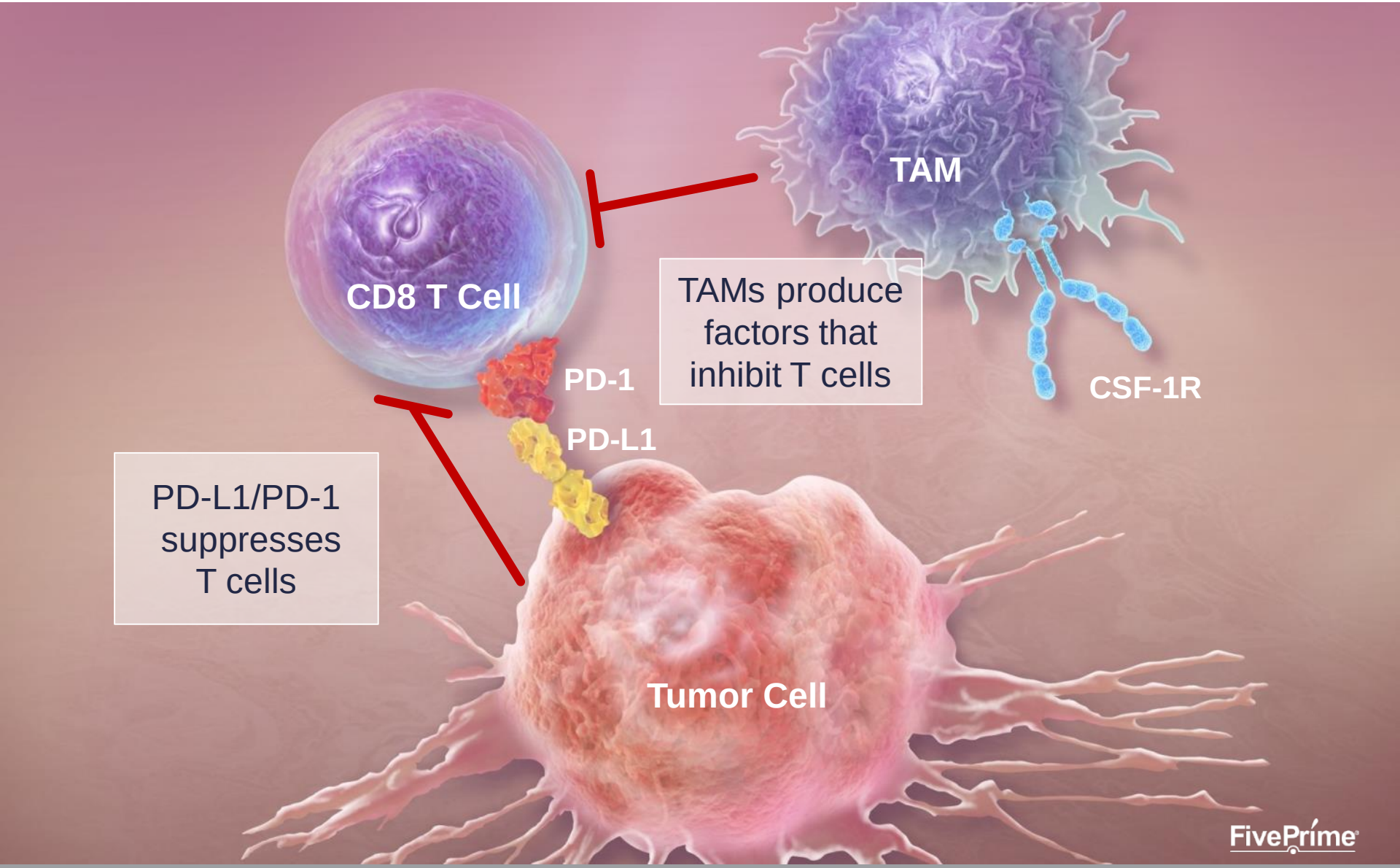
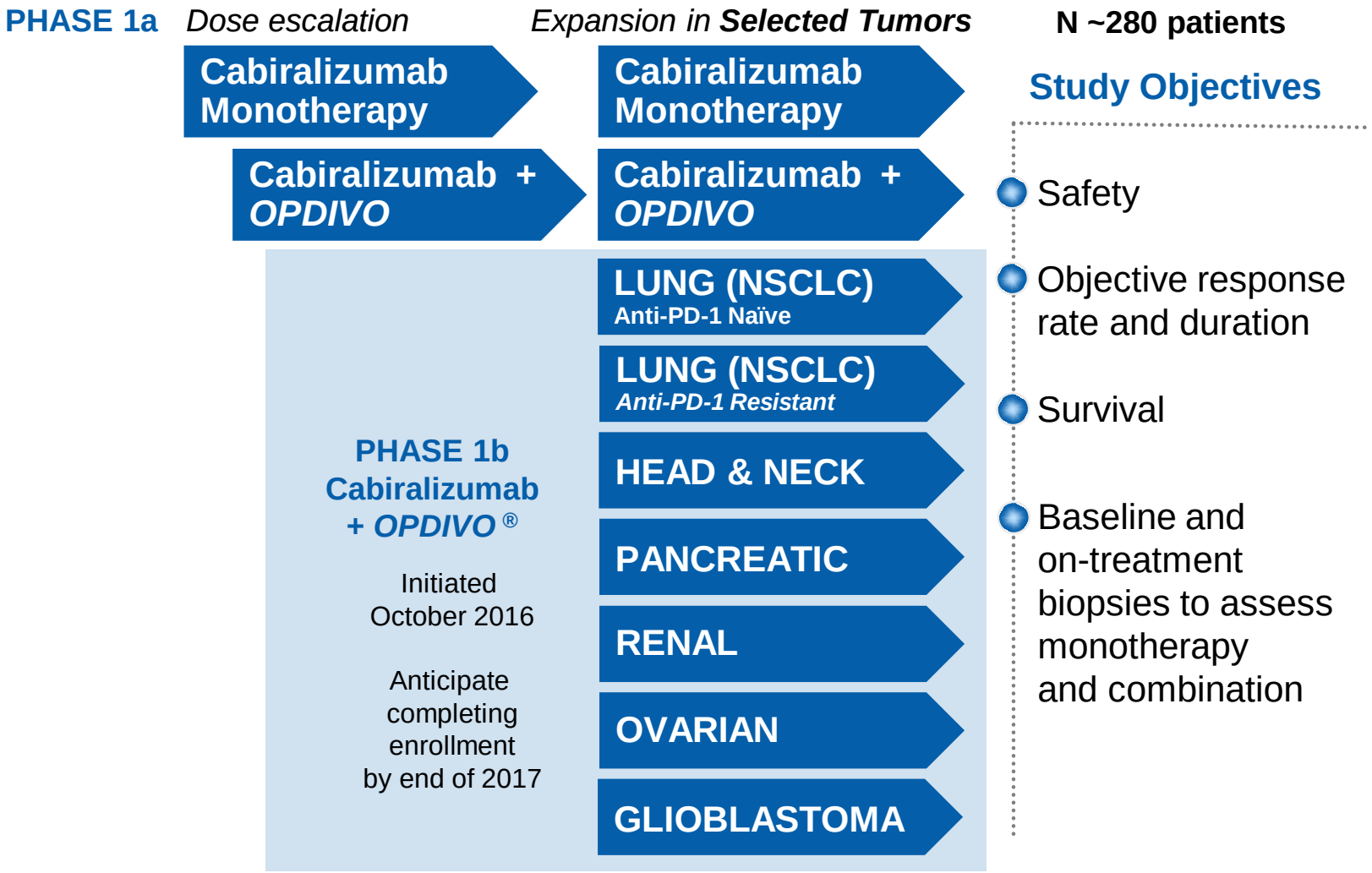
Rationale for Combination Therapy: TAMs and Checkpoints Inhibit T Cell-Mediated Killing Through Different Mechanisms



Cabiralizumab/OPDIVO® Combination Trial in Multiple Tumor Settings



Cabiralizumab +/- Nivolumab Demonstrates a Tolerable Safety Profile

	Cabira Monotherapy (n=24)		Cabira + Nivolumab (n=205)	
	Any Grade, n (%)	Grade 3-4, n (%)	Any Grade, n (%)	Grade 3-4, n (%)
Any Treatment Related AE (TRAE)	15 (63)	13 (54)	184 (90)	100 (49)
AE leading to Discontinuation	3 (13)	2 (8)	15 (7)	10 (5)
Clinical TRAEs (≥ 15% of patients)				
Periorbital Edema	5 (21)	0	84 (41)	1 (< 1)
Fatigue	7 (29)	0	74 (36)	11 (5)
Rash	1 (4)	1 (4)	38 (19)	8 (4)
Pruritis	2 (8)	0	34 (17)	2 (1)
Nausea	3 (13)	0	30 (15)	0
Treatment-related laboratory abnormalities of interest				
Serum enzyme elevations	10 (42)	9(38)	103 (50)	40 (20)
Pancreatic enzyme elevations	3 (13)	2 (8)	42 (20)	24 (12)
Treatment-related deaths	0		3 (1.5%)*	

*Includes pneumonitis, respiratory distress and acute respiratory distress

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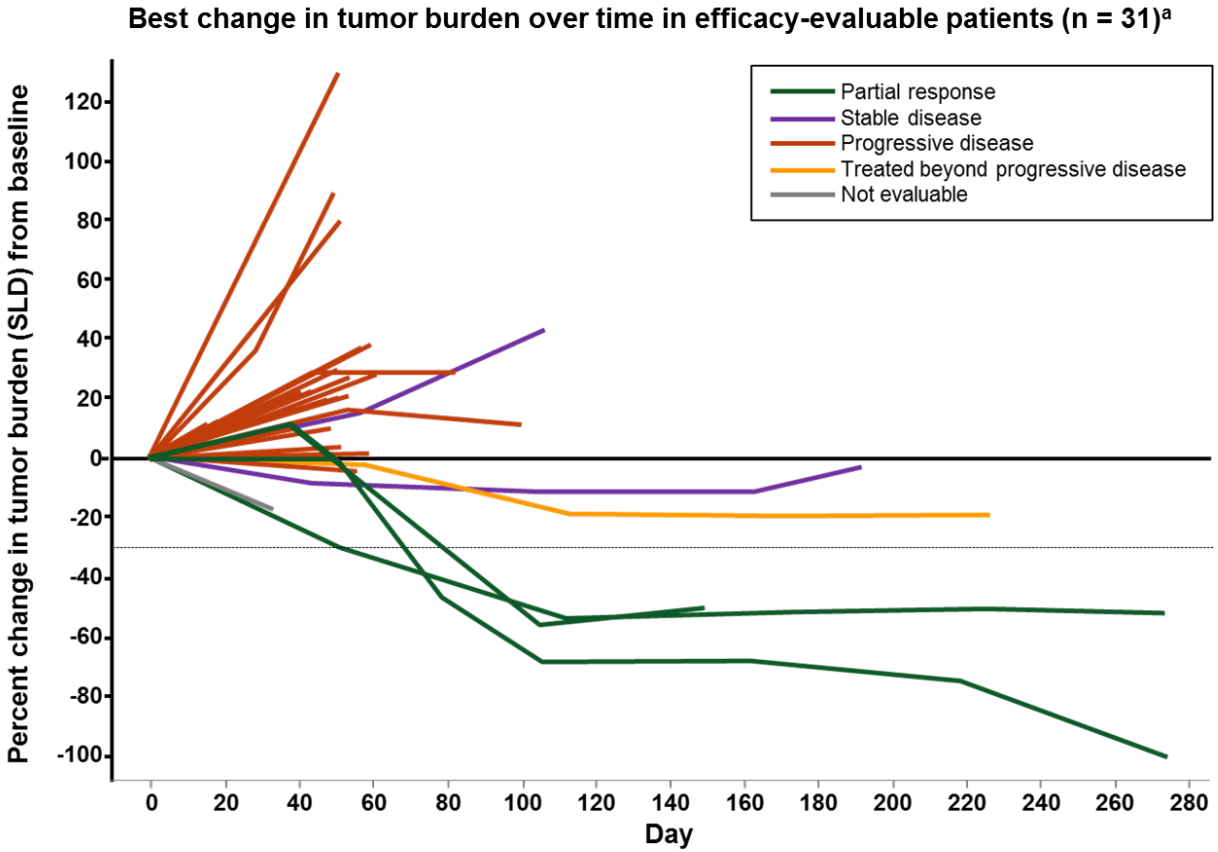
Deep and Durable Responses Observed Accompanied by Significant Reduction in Pancreatic Tumor Marker CA19-9



- Heavily pretreated population (87% third-line or later)
- **Durable clinical benefit in 5 patients (16%)**
- **Confirmed ORR = 10%**
- All 3 confirmed responses were observed in patients with MSS disease, who historically have not shown benefit with anti–PD(L)-1 therapy[1,2]
- Responses were accompanied by >95% decline in levels of the pancreatic tumor marker CA19-9 from baseline

[a]Plot shows 31 efficacy-evaluable patients; 2 patients discontinued treatment early due to AEs before disease evaluation. ORR = objective response rate; SLD = sum of longest diameters

1. Overman M et al. *Ann Oncol*. 2016;27:149-206 (abstract 479P). 2. Le DT, et al. *N Engl J Med* 2015;372:2509–2520.

Conclusions

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Thank You

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