Five Prime Corporate Overview

March 2020

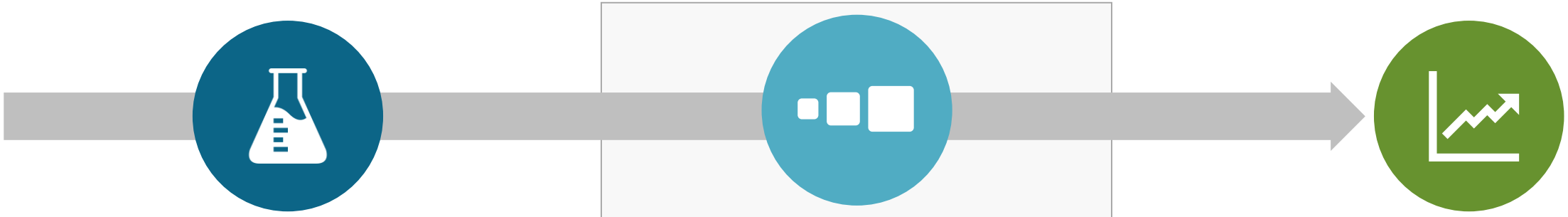
Forward-Looking Statements Disclaimer

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 Five Prime'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 for our product candidates; (ii) the potential use of our product candidates, including in combination with other products, to treat patients; (iii) the timing of the presentation of data for our product candidates; (iv) the timing of the futility analysis in the FIGHT trial; (v) the extent of protein overexpression and gene amplification in certain patient populations; (vi) the prevalence and incidence of certain diseases; (vii) our full-year 2020 net cash used in operating activities; and (viii) the amount of Five Prime’s cash, cash equivalents and marketable securities at the end of 2020.

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 or clinical trial enrollment rates that are lower than expected, changes in expected or existing competition, failure of our collaborators to support or advance collaborations or product candidates and unexpected litigation or other disputes. Other factors that may cause our actual results to differ from current expectations are discussed in Five Prime's preliminary prospectus supplement relating to the proposed offering and its other filings with the U.S. Securities and Exchange Commission, including the "Risk Factors" sections contained therein, as well as the risks identified in the registration statement and the preliminary prospectus supplement relating to the offering under the heading "Risk Factors." 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.

Five Prime Forward

2020 Five Prime Focus



Clinical Stage Company

- 4 clinical oncology programs
- 6 preclinical programs
- Multiple partnerships
- Focused organization

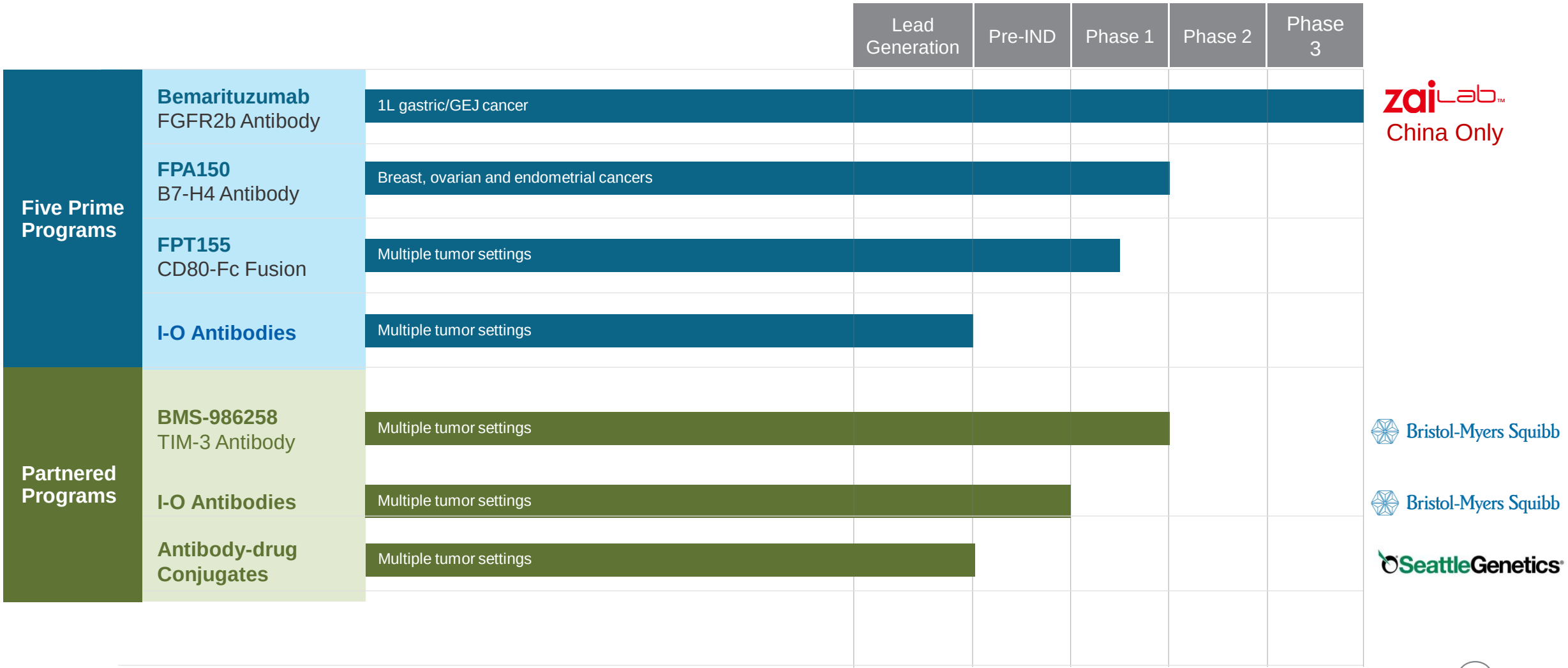
Growing the Pipeline

- Multiple inflection points
- Organic growth
- Clinical program acquisition

Maximizing Near-Term Wins & Long-Term Potential

- Portfolio prioritization
- Fiscal discipline
- Strong balance sheet to fund near-term priorities and beyond

Robust Pipeline with Multiple 2020 Catalysts



Positioned for Portfolio Prioritization in 2020

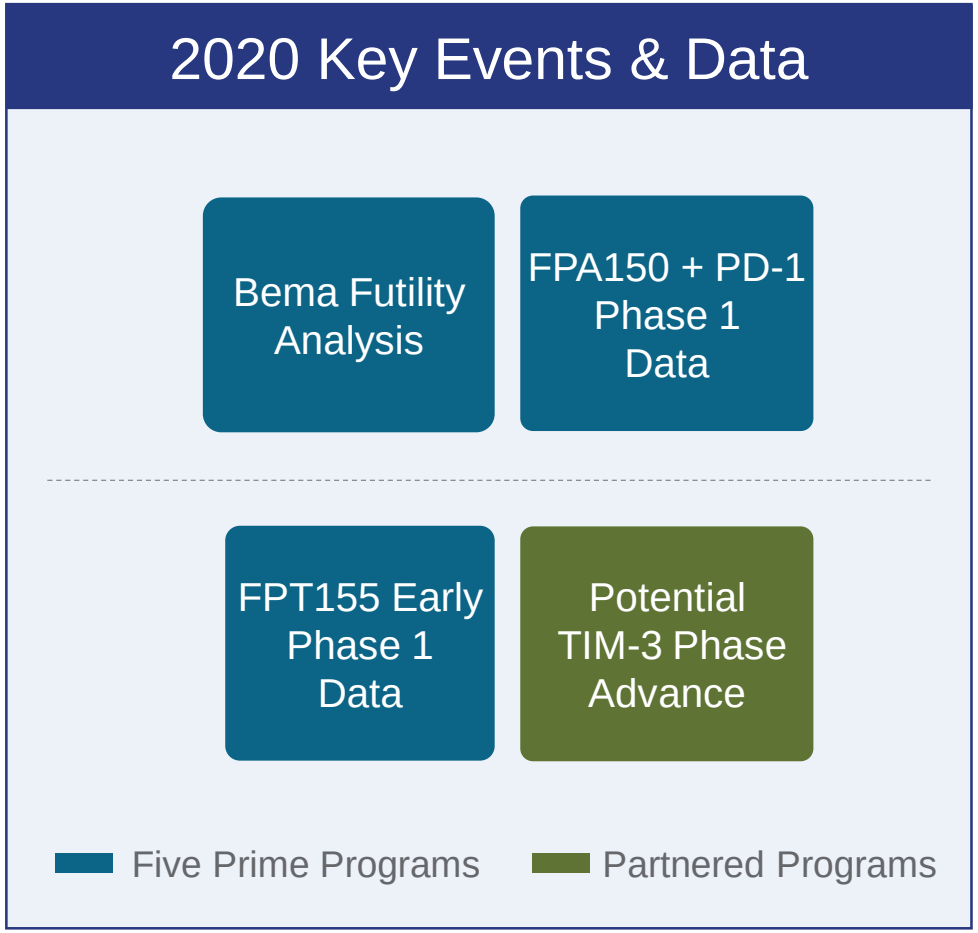
2019 Accomplishments

- Rapid enrollment in FIGHT Phase 3 Study
- Initial FPA150 monotherapy and combination data
- Preliminary FPT155 safety results

Anticipated Mid 2020

Anticipated in 2H

2020 Key Events & Data



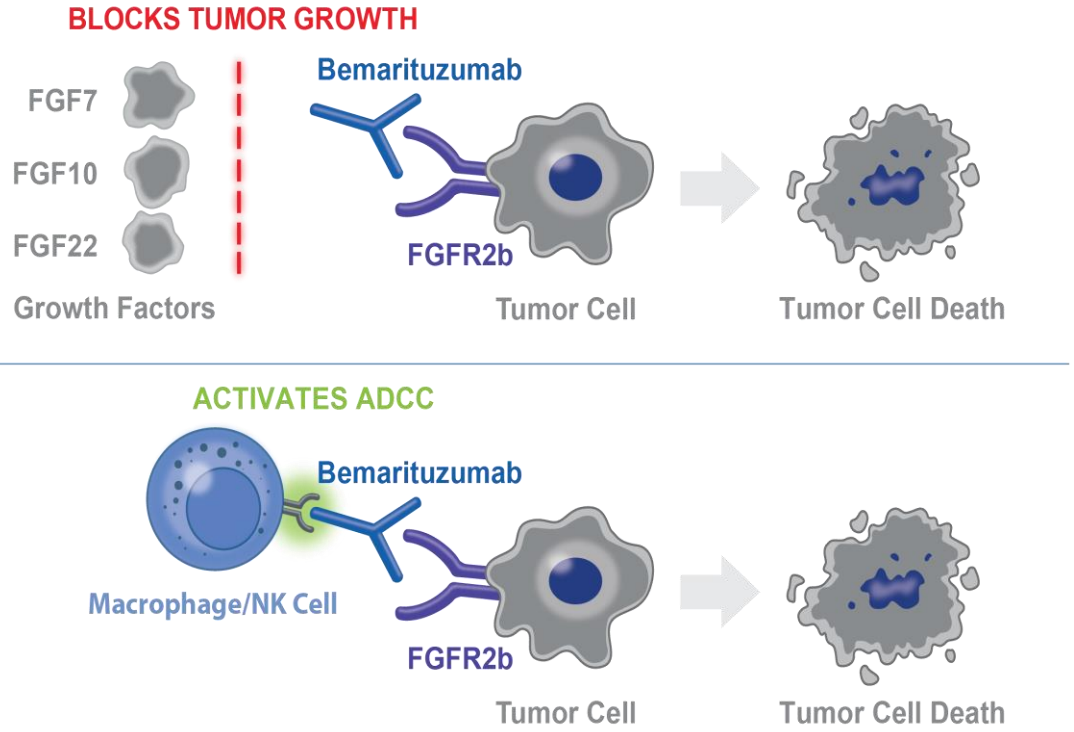
FivePrime®

Bemarituzumab (FPA144)

Targeted Immunotherapy for FGFR2b-Overexpressing Tumors

Bemaritizumab in FGFR2b+ Gastric / Gastroesophageal Cancer

- **First-in-class selective FGFR2b antibody**
  - **Blocks** FGFR2b activation by FGF7, 10 and 22
  - **Engineered** to enhance tumor cell killing via ADCC
- **Well-tolerated:** specificity for FGFR2b avoids the toxicities of the oral FGFR TKI's
- **Only FGFR-targeted agent in late-stage development in gastric / GEJ cancer**
  - Single-agent activity demonstrated in FGFR2b+ GC
  - Ongoing Phase 3 front line combination with SOC chemotherapy



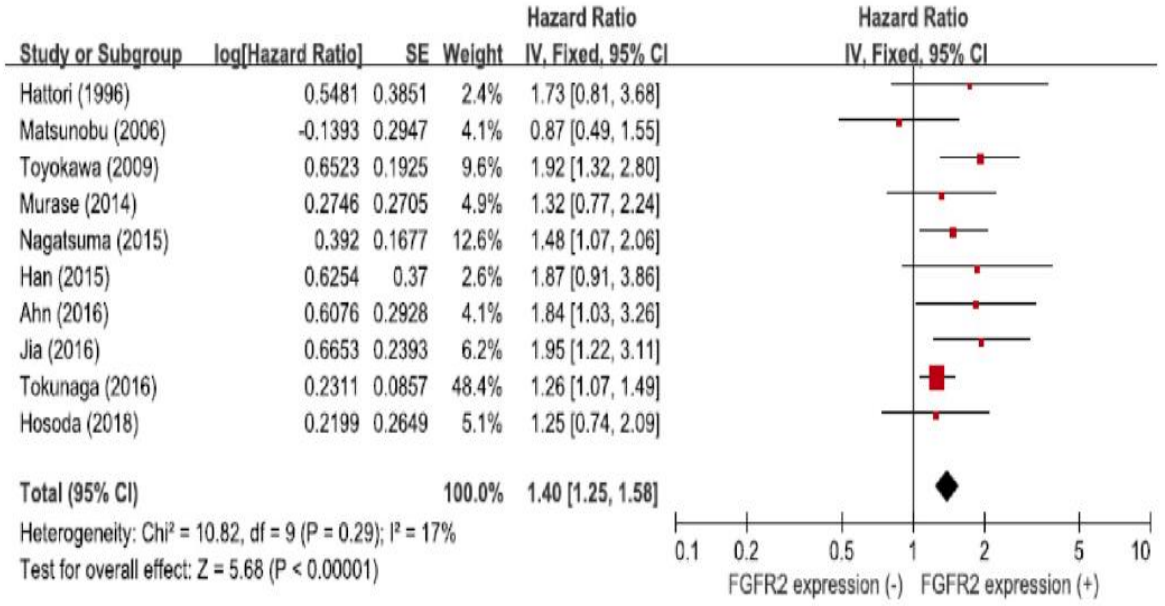
FGFR2 Gene Amplification and FGFR2b Overexpression in Gastric/GEJ Cancer Are Associated with Poor Prognosis

FGFR2 Gene Amplification

FGFR2	2-year OS	Hazard Ratio for Overall Survival
Negative	48.1%	1
Positive	19.8%	1.9 (1.01-3.35)

Yuki, et al ASCO 2018
The nationwide cancer genome screening project in Japan SCRUM-Japan GI-SCREEN: Efficient identification of cancer genome alterations in advanced stage gastric cancer (GC). 448 patients

FGFR2b Overexpression

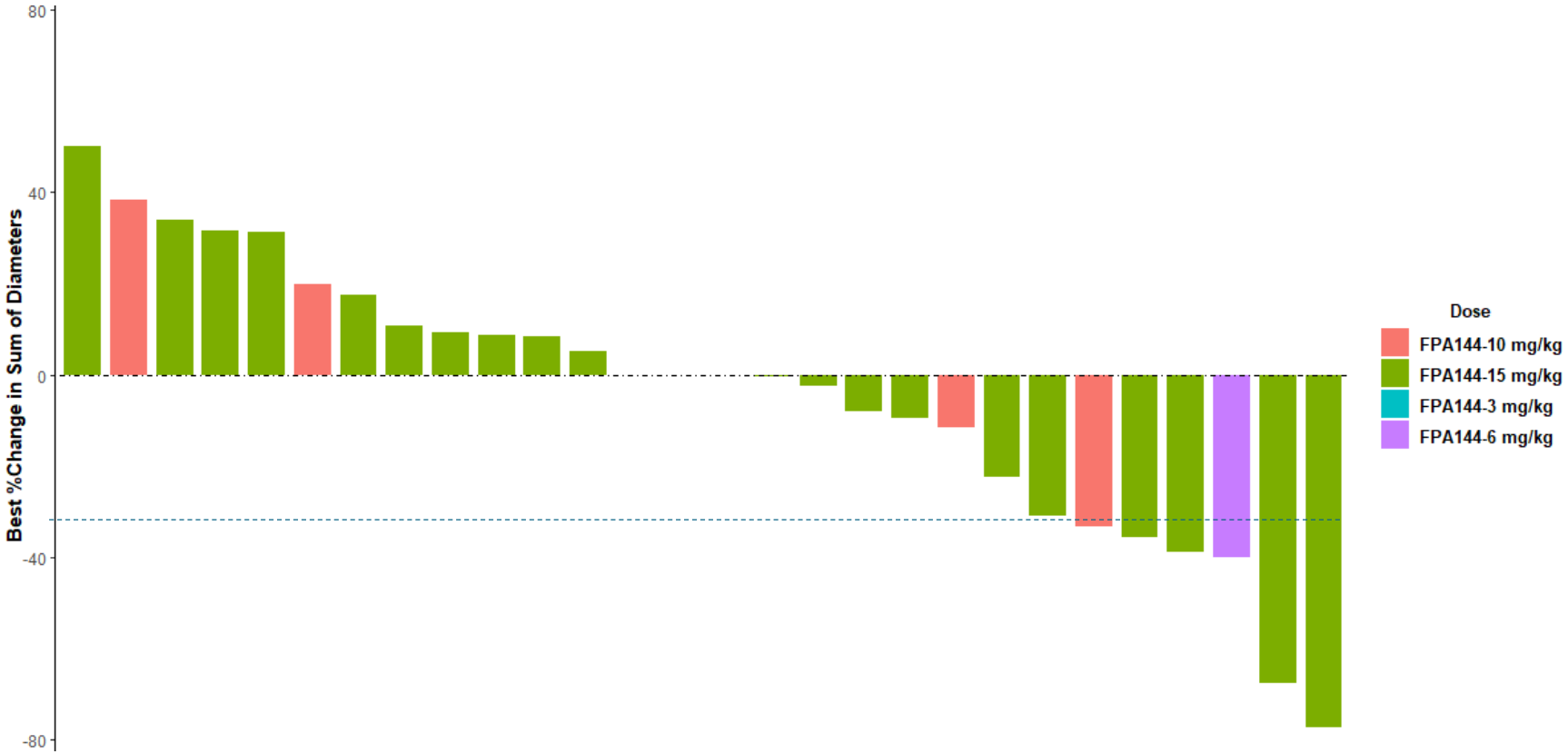


Kim, et al 2019

Monotherapy Phase 1 Trial: Single-Agent Activity in FGFR2b+ Gastric/GEJ Cancer

Best % Change in Sum of Diameters from Baseline in FGFR2b+ Gastric / GEJ Cancer

- Late line (median number of prior therapies = 2.5)
- 18% Confirmed ORR (n=28)
  - 21% response rate (confirmed + unconfirmed)
- Disease Control Rate 60%



Recommended Phase 2 dose was 15mg/kg Q2W based on clinical activity, safety, tolerability and the ability of this dose to achieve the target trough of ≥ 60µg/mL

Rationale for Bema's Potential Success in Front-Line Gastric / GEJ Cancer

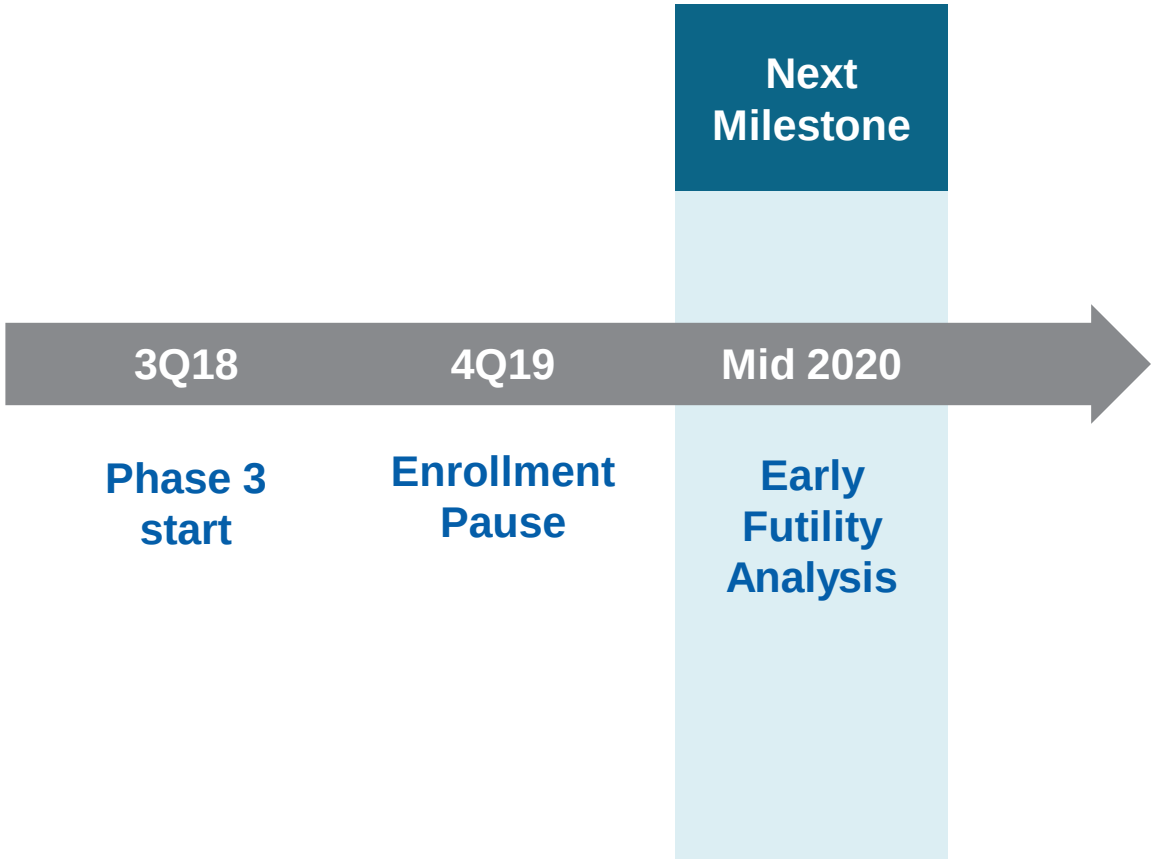
	Agent	Trial Selects Patient Population With Target	Single Agent Efficacy	No Overlapping Toxicity
Success	Herceptin (trastuzumab)	✓	✓	✓
	Bemarituzumab	✓	✓	✓
Fail	Andecaliximab			✓
	Cyramza (ramucirumab)			✓
	Perjeta (pertuzumab)	✓		✓
	Tykerb (lapatinib)	✓	✓	
	Avastin (bevacizumab)			✓

Next Bemarituzumab Milestone: Early Analysis in Front-Line Gastric Cancer with mFOLFOX6

FIGHT

Phase 3 Study

- Front-line FGFR2b+ gastric cancer
- ~30% FGFR2b+ prevalence to date
- Primary endpoint: overall survival
- ~150 patients enrolled to date



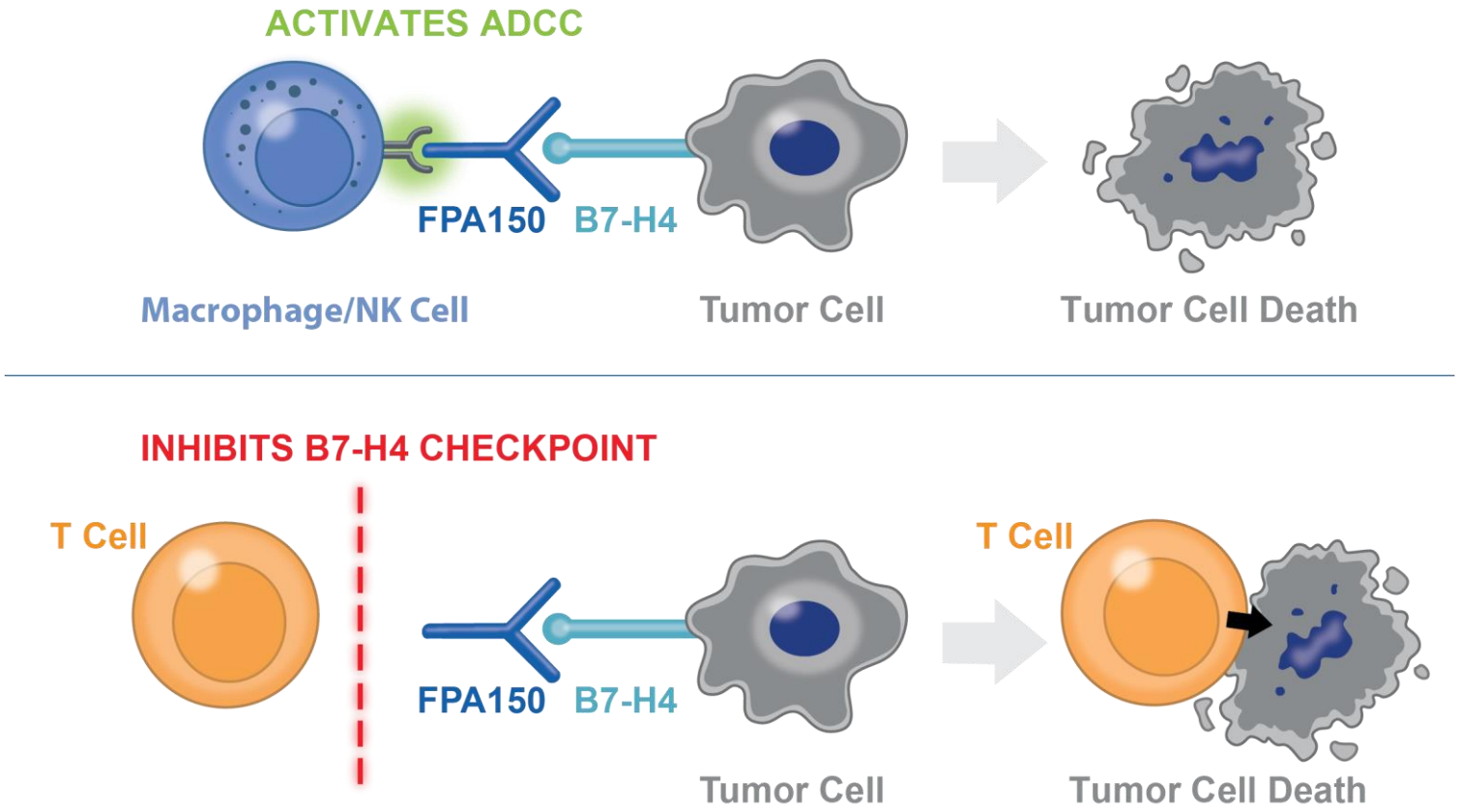
FivePrime®

FPA150

Targeted Immunotherapy for Tumors Overexpressing B7-H4

FPA150 Kills Tumor Cells by ADCC and May Be a Novel Checkpoint Inhibitor

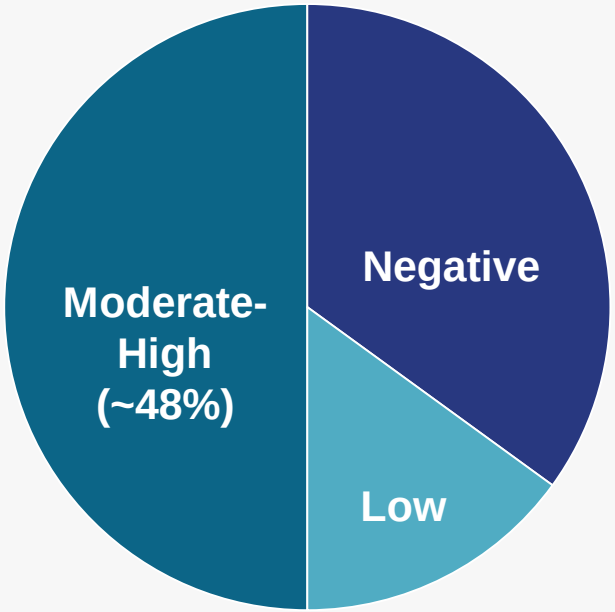
- First-in-class fully human, (afucosylated) B7-H4 monoclonal antibody
- Well-tolerated, modest monotherapy activity
- Promising preclinical activity in combination with PD-1 inhibitor



B7-H4 Overexpression* Common in Multiple Solid Tumors

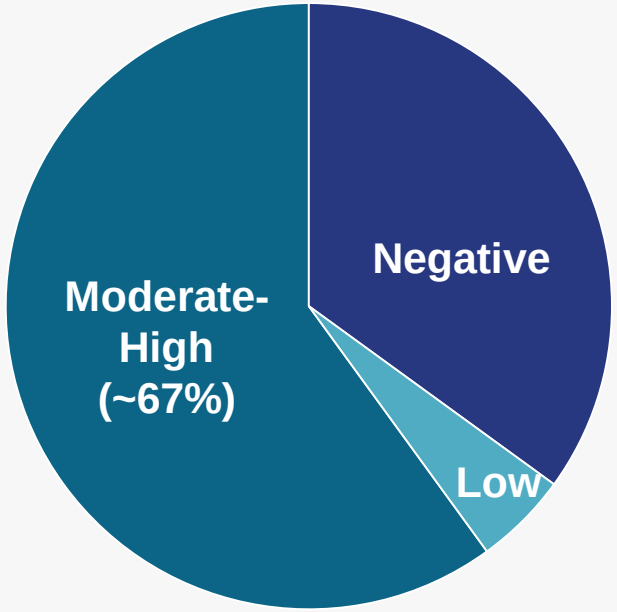
Breast

~125K Patients
ER+/ER-



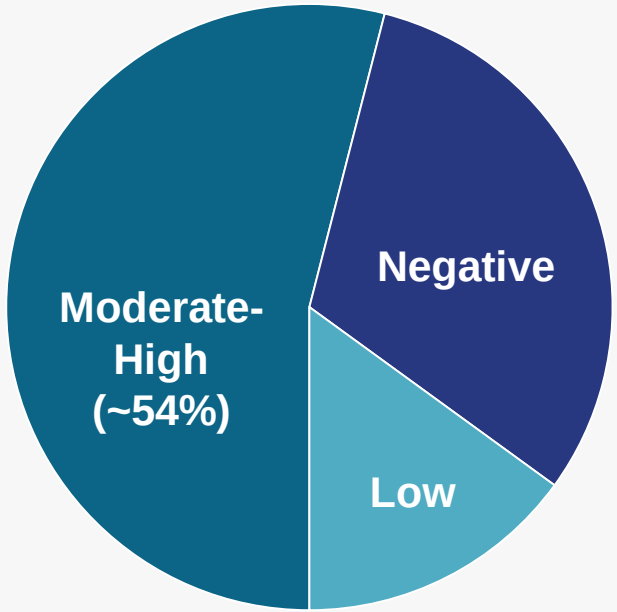
Ovarian

~25K Patients



Endometrial

~13K Patients



*Overexpression as measured by IHC

Next FPA150 Milestone: Evaluation in Combination with Keytruda

- Phase 1 Combination with Keytruda in B7-H4+ Ovarian Cancer
- Keytruda Combination well tolerated to date
- Lack of toxicity suggests B7-H4 may also be a target for ADC, bi-specifics or CAR-T

FivePrime®

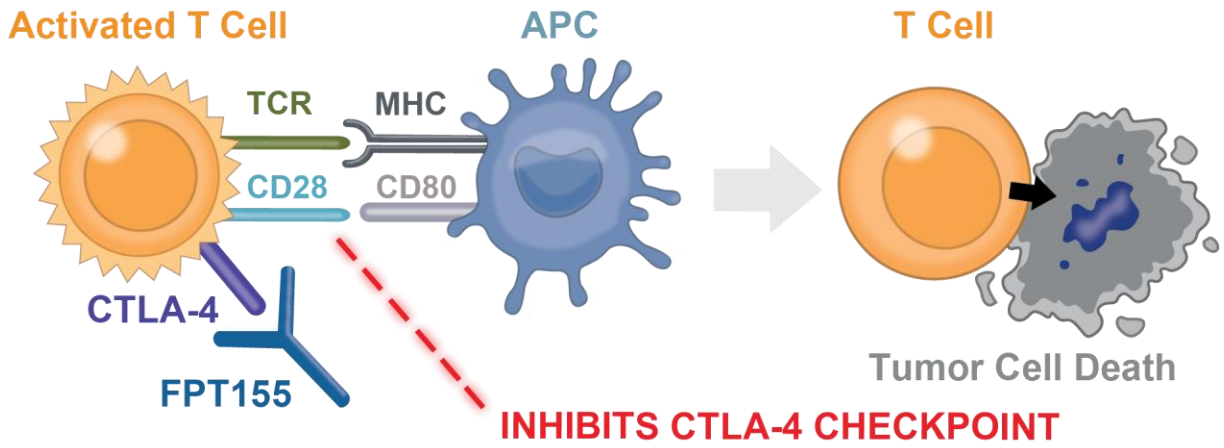
FPT155

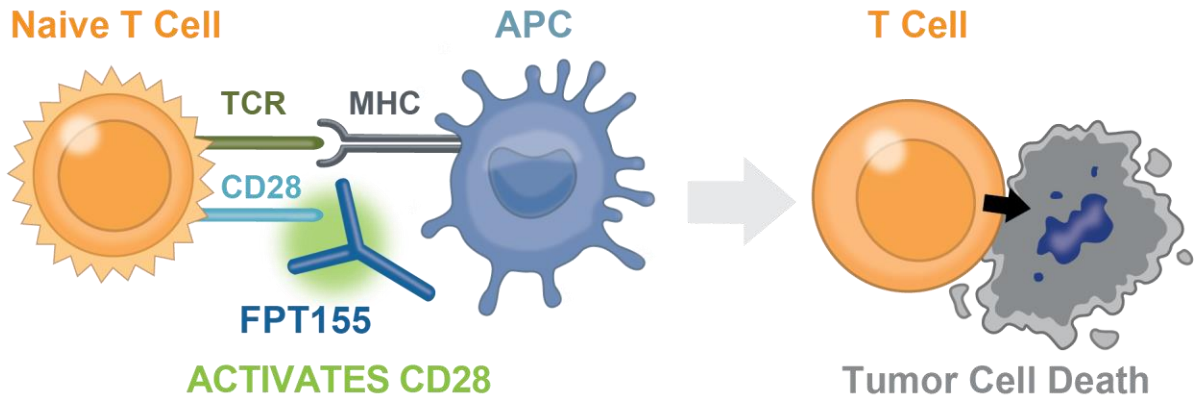
First-in-Class CD80-FC Fusion Protein

FPT155 is an Immune Agonist and Checkpoint Inhibitor

- First-in-class CD80-Fc Fusion Protein
  - Anti-CTLA4 Checkpoint Inhibitor
  - Enhances antigen-dependent co-stimulation of T-cell activation through CD28

Not a superagonist

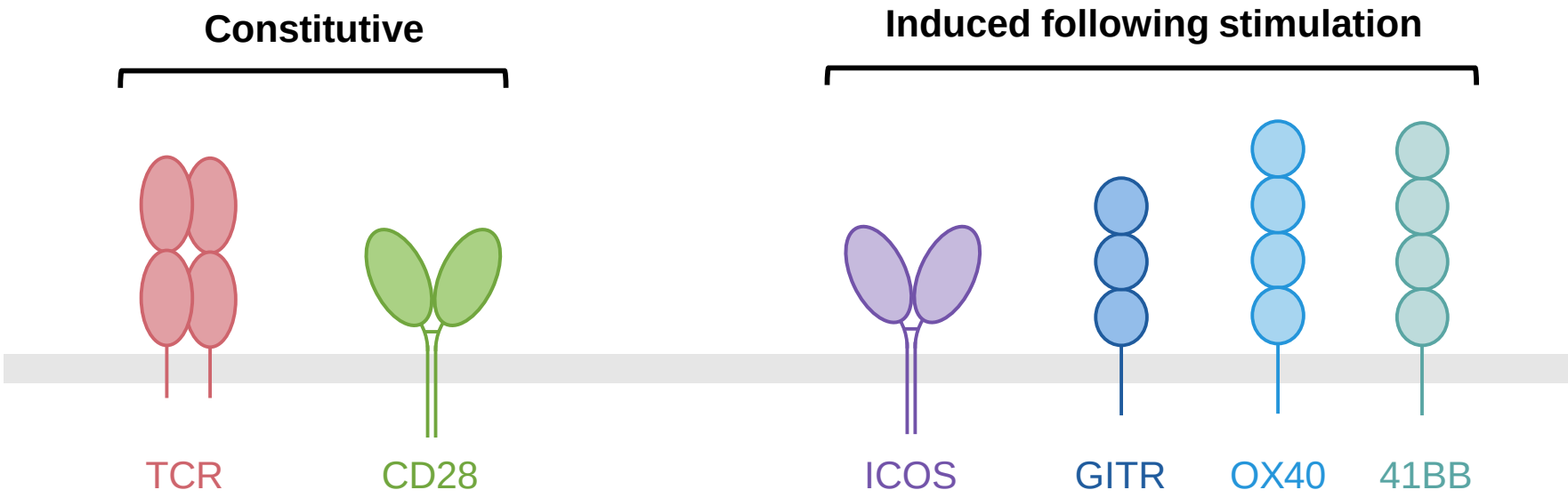




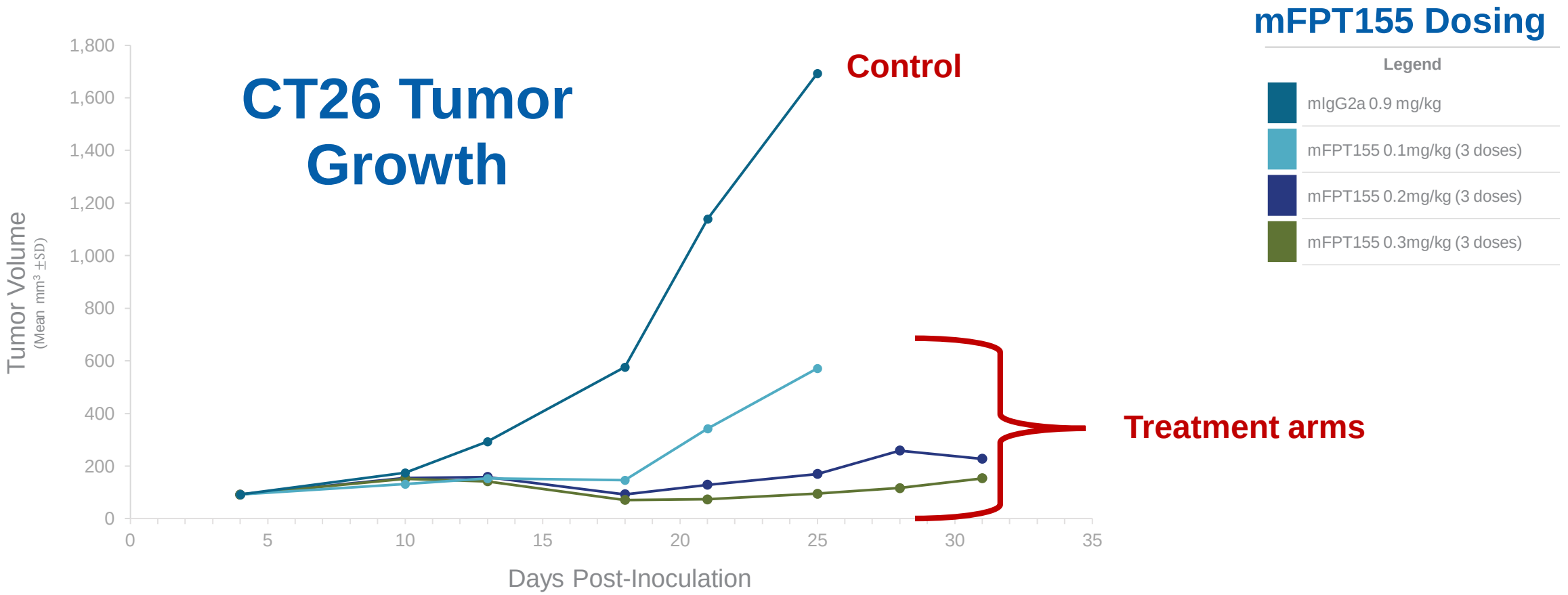
Targeting CD28 Co-Stimulates Resting and Activated T Cells, Unlike Other T Cell Agonists

FPT155 Approach

Other T Cell Agonists



mFPT155 Shrinks Tumors at Low Doses in Preclinical Models

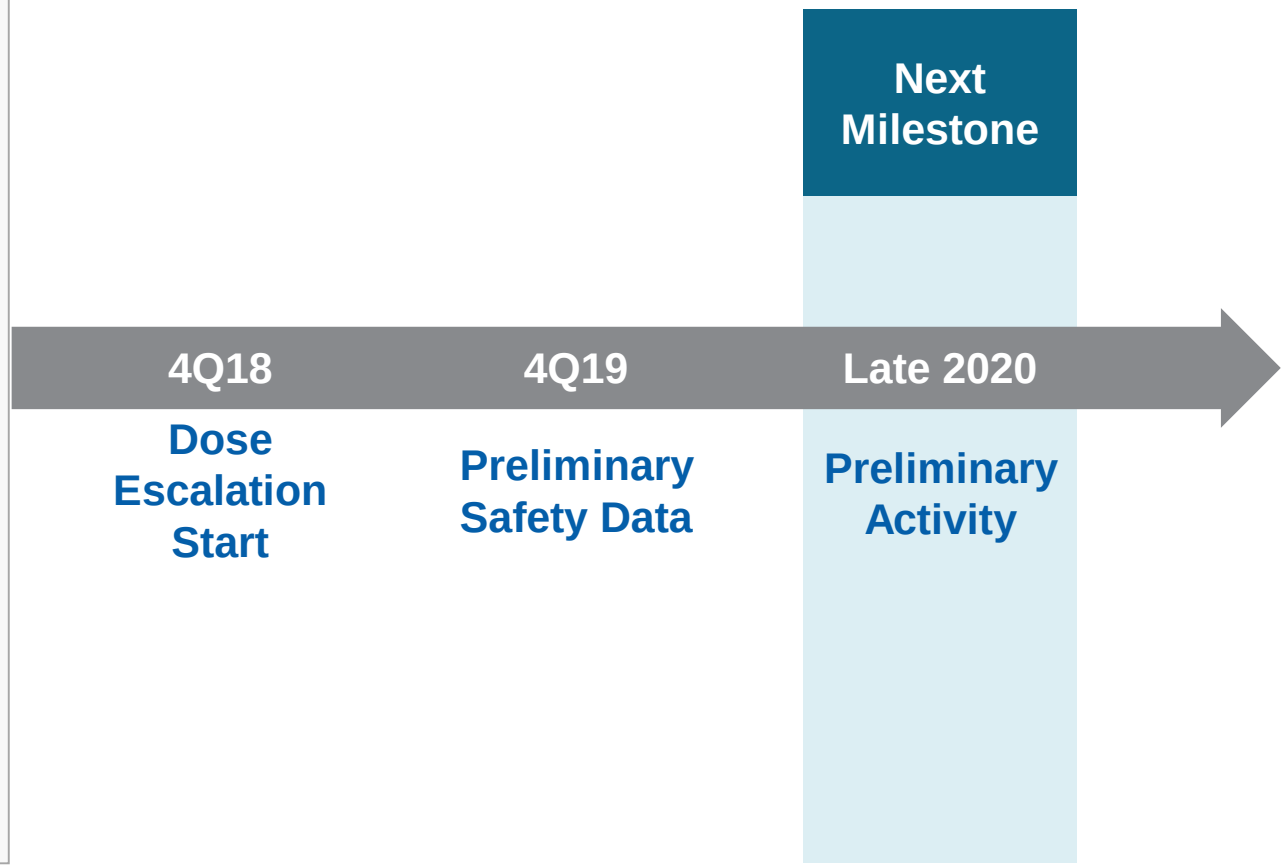


Murine FPT155 (mFPT155) demonstrates monotherapy anti-tumor activity in MC38, EMT6, 4T1, and B16-F10 models

Next FPT155 Milestone: Preliminary Monotherapy in Solid Tumors

Phase 1 Study

- Dose escalation is ongoing with ten dose escalation cohorts completed
- Expansion of central memory T cells observed in peripheral blood
- Initiated enrollment of patients with tumors where clinical efficacy can be observed*
- Safety combination with pembrolizumab planned



*Tumors with expected pre-existing anti-tumor immunity, such as PD1 naïve or treated; NSCLC, melanoma, renal cell, TNBC, H&N cancer, hepatocellular, gastric, cervical, etc

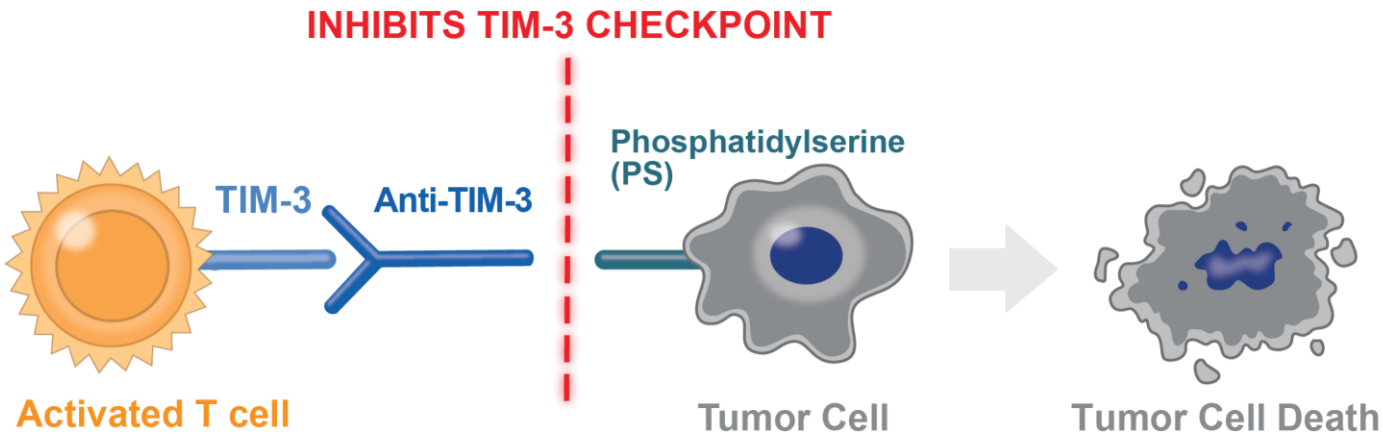
FivePrime®

BMS Led Program

BMS-986258: TIM-3 checkpoint inhibitor

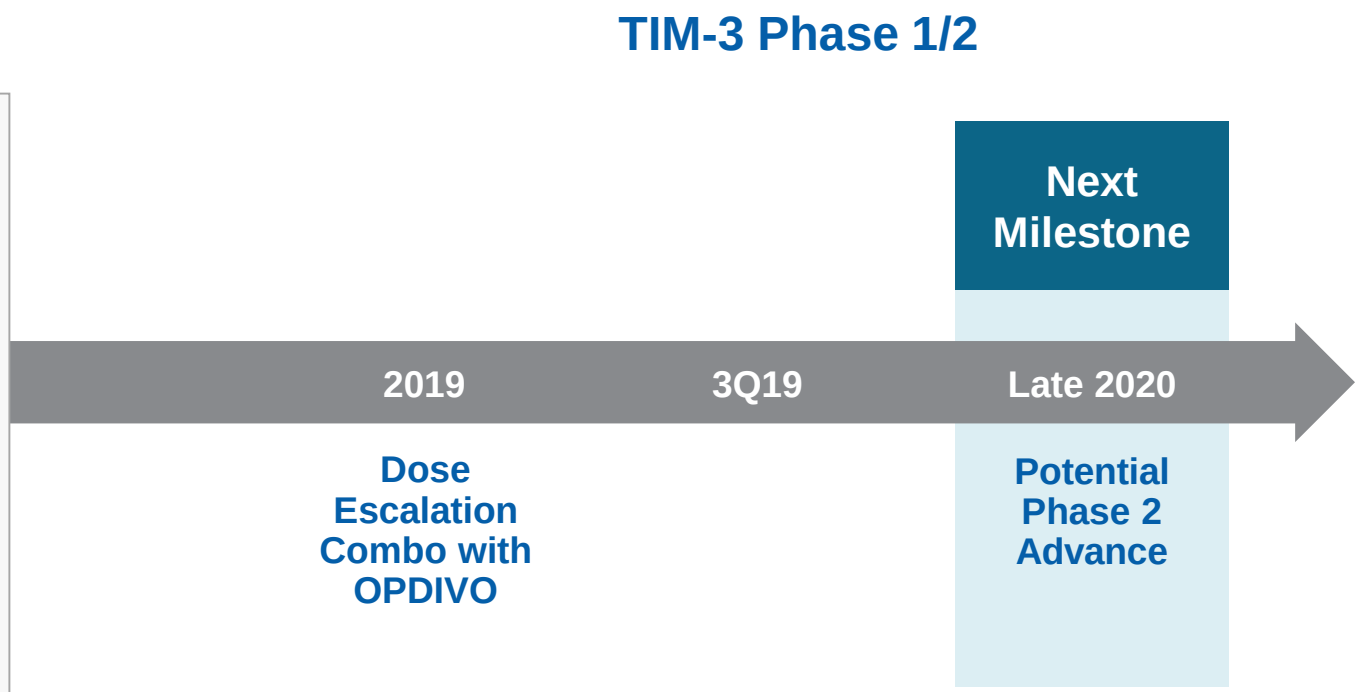
BMS-986258 (anti-TIM-3) Blocks T Cell Inhibition Allowing for Tumor Cell Killing

- Anti-TIM3 antibody prevents inhibition of activated T cells
- First of 3 candidates from IO research collaboration with BMS
- Target identified by Five Prime discovery platform



Next BMS-986258 (anti-TIM-3) Milestone: Potential Phase 2 Advancement

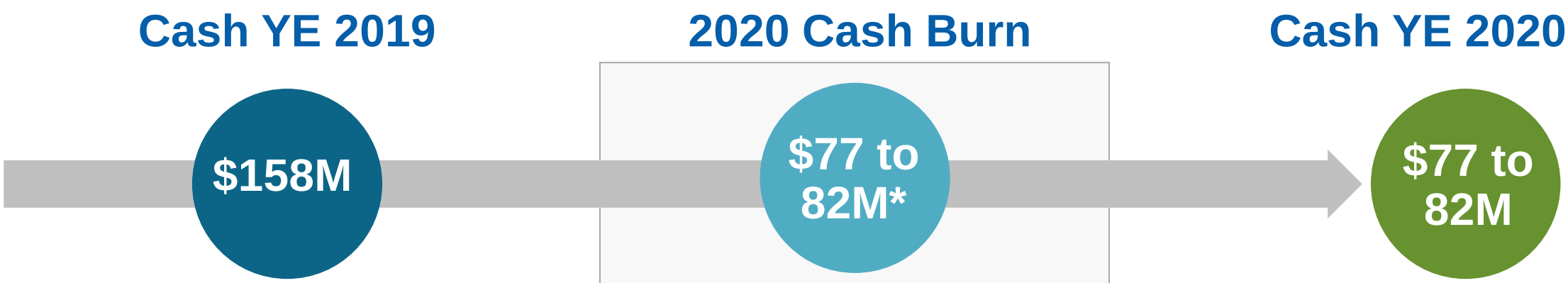
- Potential for $295M in milestone payments per collaboration product
- Tiered royalties in mid single to low double digits
- $20 million upfront payment + $5 million milestone received to-date



FivePrime®

Cash, Guidance, and Milestones

2020 Guidance – Cash Runway Extended into 2022



Cash, cash equivalents, & marketable securities

Estimated net cash used in operating activities for 2020

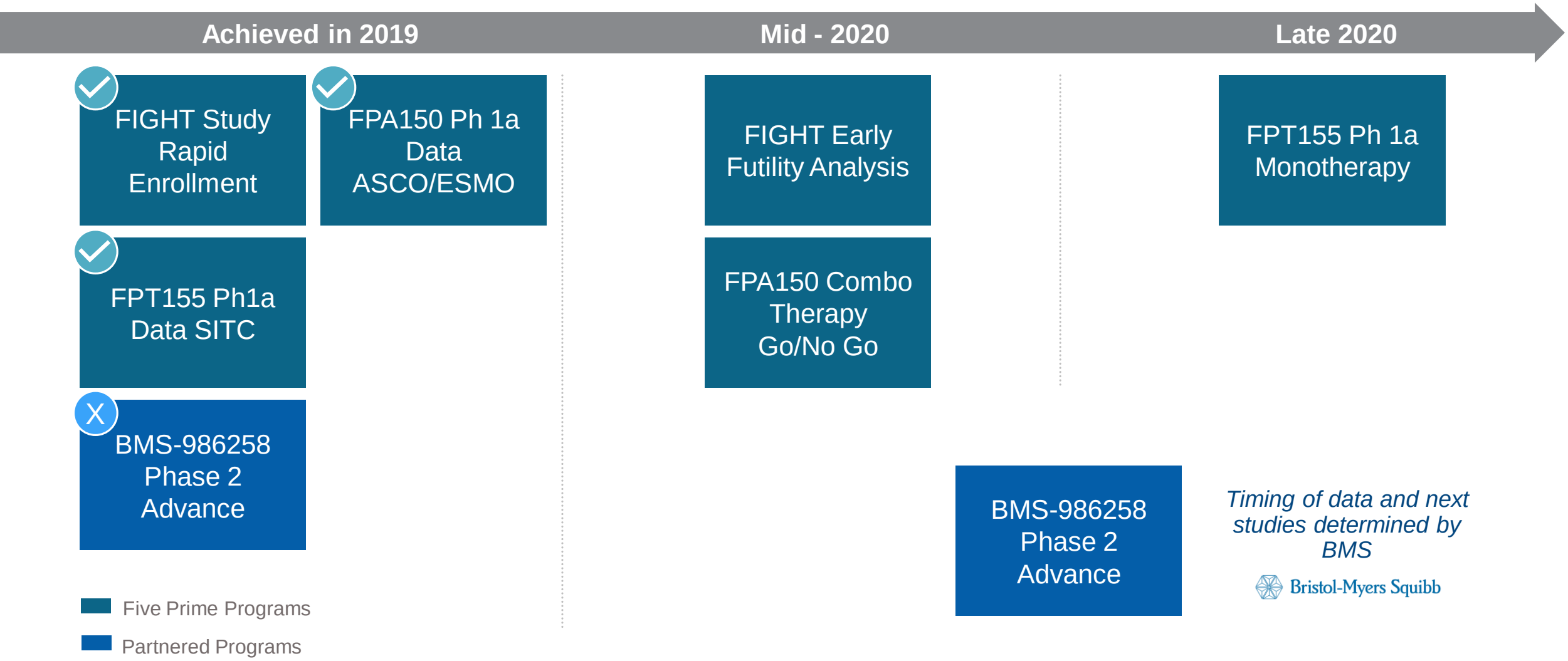
~$40M

lower cash burn vs. 2019

* Does not include any milestone revenue or business development transaction

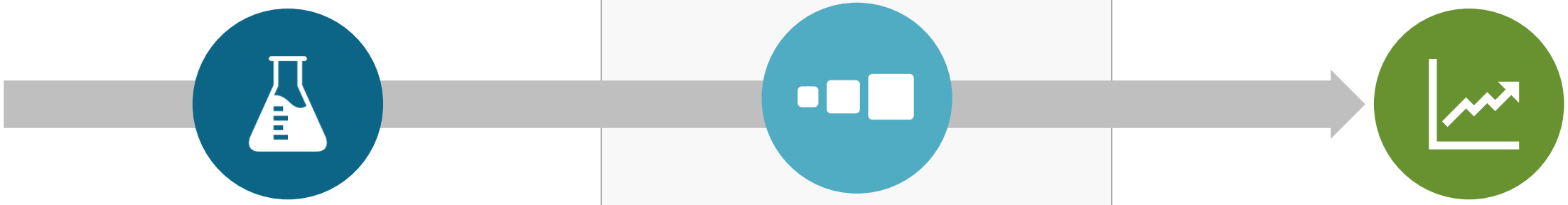
Cash, cash equivalents, & marketable securities

2019 Achievements & 2020 Milestones



Five Prime Forward

2020 Five Prime Focus



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