Corporate Presentation

May 21, 2018

Forward Looking Statement

This presentation includes forward-looking statements within the meaning of the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Such statements are subject to a number of risks and uncertainties, the outcome of which could materially and/or adversely affect actual future results and the trading price of CTI BioPharma's securities. Such statements include, but are not limited to, expectations with respect to the timing and planned enrollment of and interim analysis for PAC203 and submission of responses to Day 120 list of questions, and our ability to interpret clinical trial data and results for PERSIST-2 despite not satisfying the pre-specified minimum evaluable patient goal, expectations with respect to the potential therapeutic utility of pacritinib, statements regarding CTI BioPharma's expectations with respect to the potential of pacritinib to achieve treatment goals, the development of CTI issuer BioPharma and its product and product candidate portfolio, including the advancement of pacritinib and other pipeline programs, CTI BioPharma's ability to achieve its goals in 2018 and beyond, including achieving cost efficiency and year-on-year cost reduction goals, CTI BioPharma's intent to continue efforts to commercialize PIXUVRI in Europe in partnership with Servier and expand the market potential for PIXUVRI, whether positive outcomes to PIX306 could lead to label expansion, and timing of PIX306 top-line results, CTI BioPharma's plans to continue advancing the development of its pipeline candidates through strategic product collaborations or cooperative group and investigator-sponsored trials, as well as the identification and acquisition of additional pipeline opportunities. In particular, this presentation addresses top-line results regarding data from CTI BioPharma's Phase 3 trial of pacritinib for the treatment of patients with myelofibrosis whose platelet counts are less than or equal to 100,000 per microliter. Meaningful interpretation of PERSIST-2 may not be possible because the pre-specified minimum evaluable patient goal was not met. Risks that contribute to the uncertain nature of the forward-looking statements include, among others, risks associated with the biopharmaceutical industry in general and with CTI BioPharma and its product and product candidate portfolio in particular including, among others, risks associated with the following: that CTI BioPharma cannot predict or guarantee the outcome of preclinical and clinical studies, the potential failure of pacritinib to prove safe and effective as determined by the FDA and/or the European Medicines Agency, changes to study protocol or design or sample size to address any patient safety, efficacy or other issues raised by the FDA or otherwise, that top-line results observed to date may differ from future results or that different conclusions or considerations may qualify such results once existing data has been more fully evaluated, that CTI BioPharma may not obtain favorable determinations by other regulatory, patent and administrative governmental authorities, that CTI BioPharma may experience delays in the commencement of preclinical and clinical studies, that the costs of developing pacritinib and CTI BioPharma's other product candidates may rise; other risks, including, without limitation, competitive factors, technological developments, that CTI BioPharma may not be able to sustain its current cost controls or further reduce its operating expenses, that CTI BioPharma may not achieve previously announced goals, contractual milestones and objectives as or when projected, that CTI BioPharma's average net operating burn rate may increase, that CTI BioPharma will continue to need to raise capital to fund its operating expenses, but may not be able to raise sufficient amounts to fund its continued operation as well as other risks listed or described from time to time in CTI BioPharma's most recent filings with the Securities Exchange Commission on Forms 10-K, 10-Q and 8-K. Except as required by law, CTI BioPharma does not intend to update any of the statements in this presentation upon further developments.

CTI BioPharma

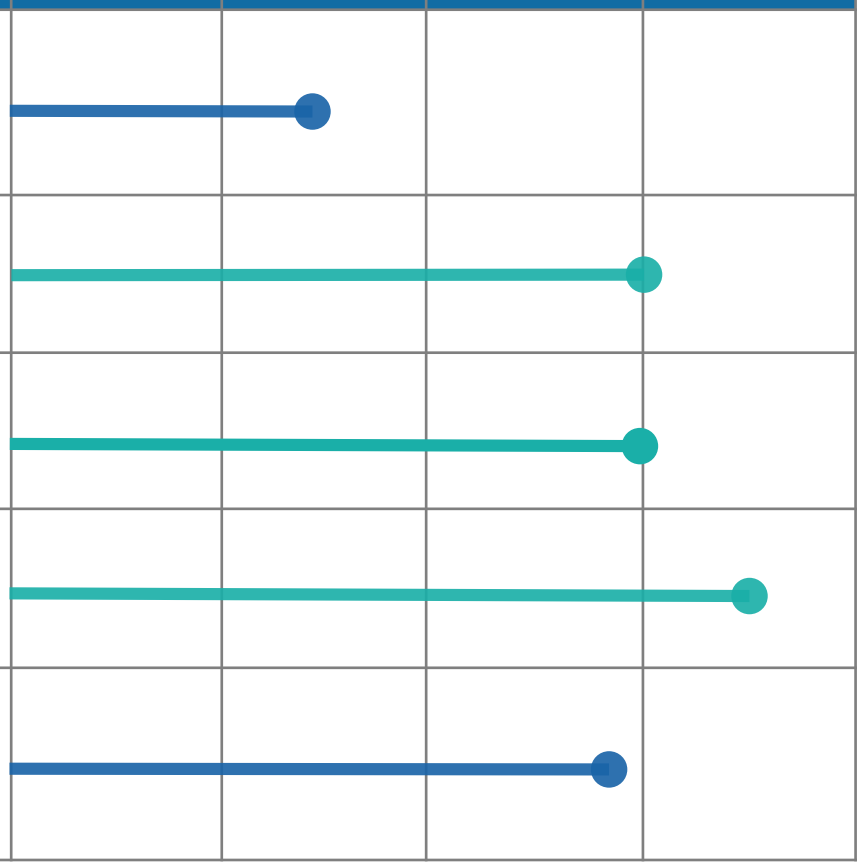
Focusing on novel targeted therapies in blood cancers

- Development
  - Two late stage assets addressing important unmet medical needs
  - Pacritinib
    - Two Phase 3 myelofibrosis trials completed
    - Phase 2 myelofibrosis trial – interim analysis 2Q 2018
  - Pixantrone
    - EU Conditional approval for 3rd/4th line aggressive B-cell NHL
    - Phase 3 second-line lymphoma trial - topline data expected 3Q 2018

- Corporate
  - New Management
  - New independent Directors
  - Cash runway into 2020
  - Major shareholders included BVF, NEA, Stonepine and OrbiMed

Our Pipeline – Hematology Focus

Program	Indication	Phase 1	Phase 2	Phase 3	Approved
Pacritinib	PAC203: Myelofibrosis, patients following ruxolitinib therapy (active)[1]				
	PERSIST-2: Myelofibrosis (platelets ≤100,000/µL)				
	PERSIST-1: Myelofibrosis (all platelet counts)				
PIXUVRI® (pixantrone) SERVIER	Relapsed Aggressive B-cell NHL				
	PIX306: Aggressive NHL, 2nd line, combination with rituximab (active)[2]				

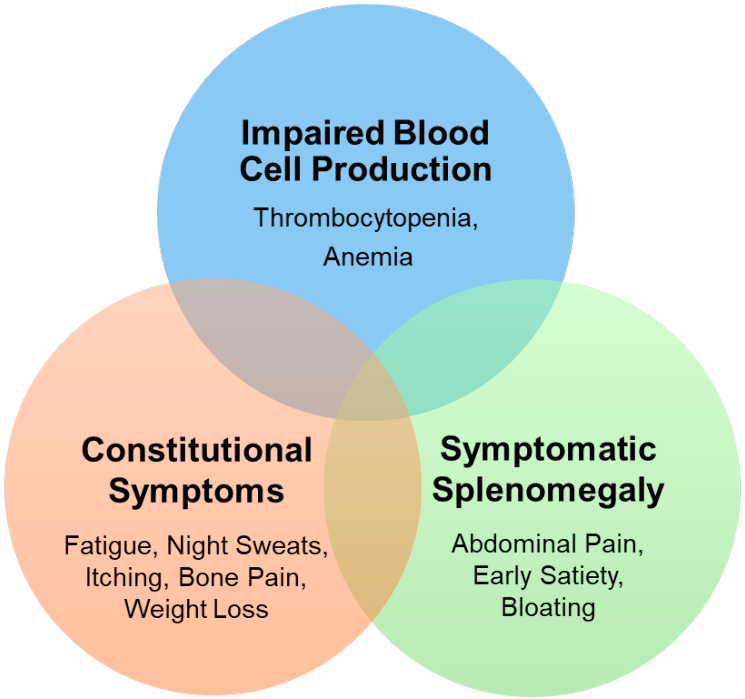


1. PAC203 Protocol amendment #2: removed platelet count entry criteria, interim analysis to be conducted with 6 patients/arm;
2. E.U. confirmatory Phase 3 trial. PIXUVRI® has conditional approval in the E.U. Servier holds PIXUVRI right in all markets ex-US.

Myelofibrosis and Unmet Medical Needs

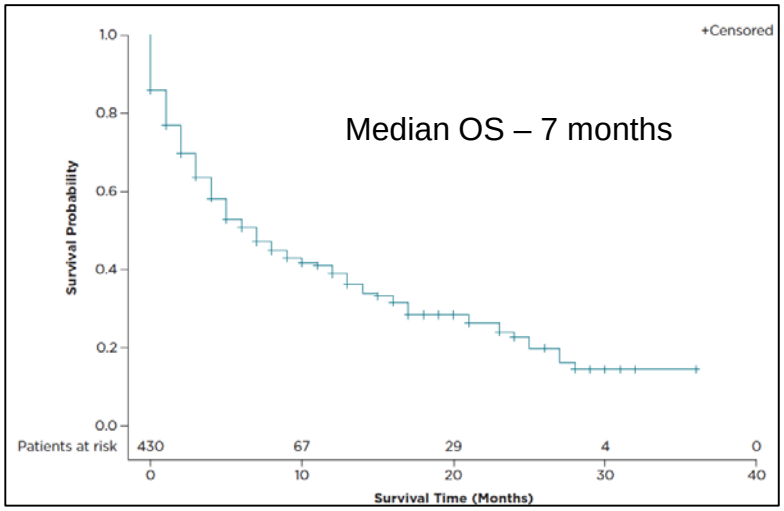
- Malignant bone marrow cancer with median survival 6 years after diagnosis
- Only approved therapy is Jakafi/Jakavi (ruxolitinib)
- Unmet medical needs
  - Prior ruxolitinib therapy
    - Inadequate response or toxicity
  - Thrombocytopenia
    - Disease or drug-related

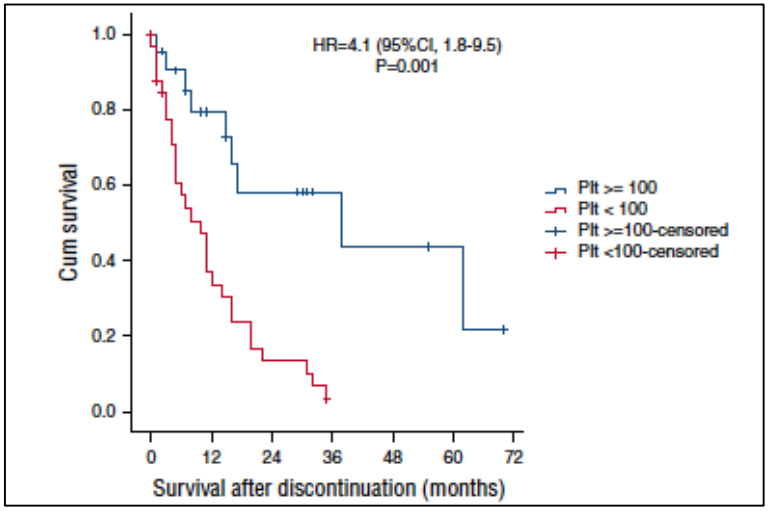
Debilitating Symptoms



Ruxolitinib Discontinuations

Poor survival following ruxolitinib discontinuation[1,2]





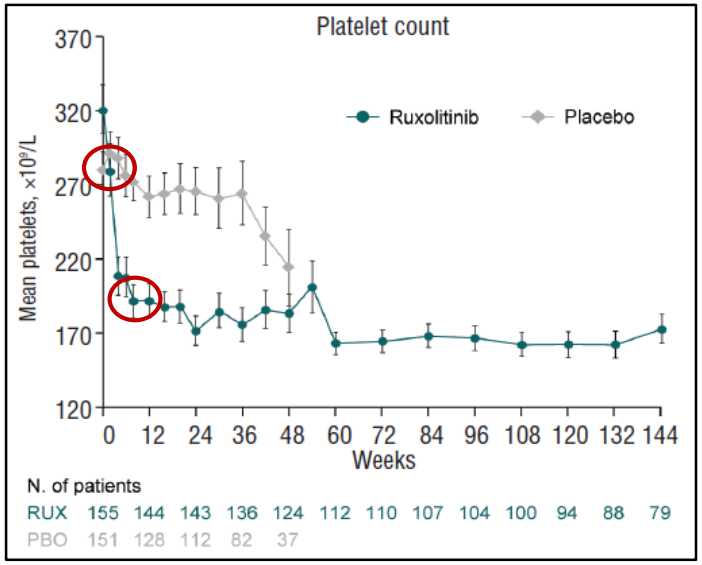
50% of patients discontinue ruxolitinib by 3 years[3,4]

- Overall survival is 7-14 months[1,2]
- Shorter OS in thrombocytopenic patients (<100,000/µL) [1]

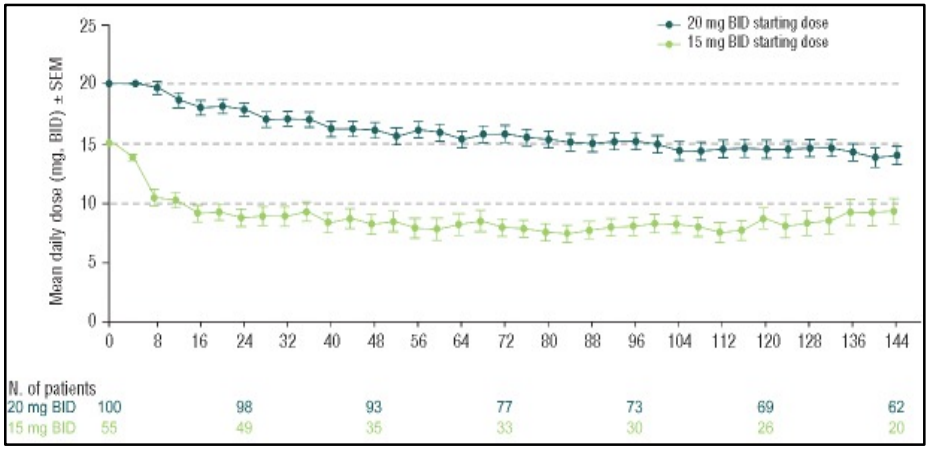
1. Newberry, Blood 2017; 2. Mehra, et al. ASH 2016 poster, Abstract 4769; 3. Cervantes, Blood 2013; 4. Verstovek, Haematologica 2013.

Thrombocytopenia and ruxolitinib

Significant and rapid decline in platelet counts with ruxolitinib at doses of 15-20mg BID[1]



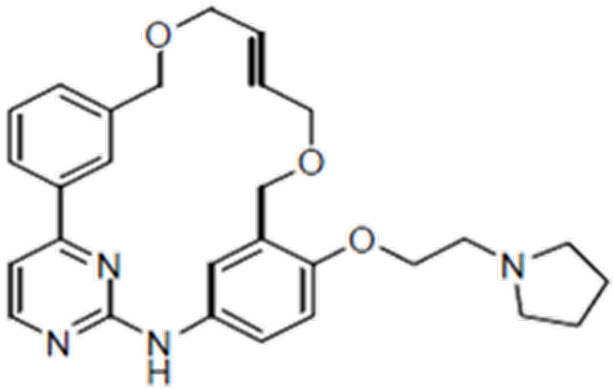
….associated with dose reductions



….which potentially reduces clinical benefit[2]

1. Verstovsek, et al., Haematologica, 2015 May; 100(4): 479–488; 2. Ruxolinitib NDA Clinical Pharmacology and Biopharmaceutical Review(s), FDA 2011.

Pacritinib: Novel JAK2 inhibitor



- Oral JAK2 inhibitor
- Over 1200 patients treated in clinical trials
- Orphan drug designation for myelofibrosis in US and EU
- Patent protection until 2026/2030 (plus term extension)

Significant Market Opportunity for Pacritinib

Prevalence

Ruxolitinib Naïve ~19K[1]

Thrombocytopenia (platelets ≤100K)
~8K patients[1]

Ruxolitinib Treated ~13K[1]

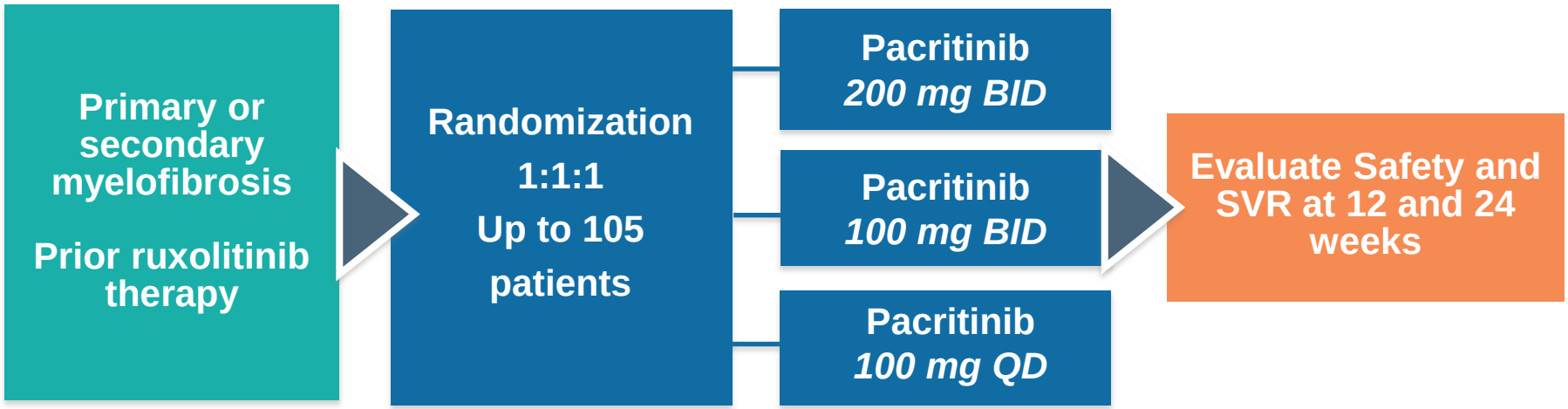
Ruxolitinib Discontinuations
~7K patients[2]

Low Dose Therapy
~4K patients[3,4]

Pacritinib US/EU Addressable Market
~19K patients

Company estimates based on: 1. SmartAnalyst Quantitative Web survey (N=120); 2. 2015 ZS Pacritinib MD Treatment Flow US/EU5; 3. IMS Jakafi Prescription data Q3 2014; 4. 2017 Kantar Health MF Opportunity Assessment.

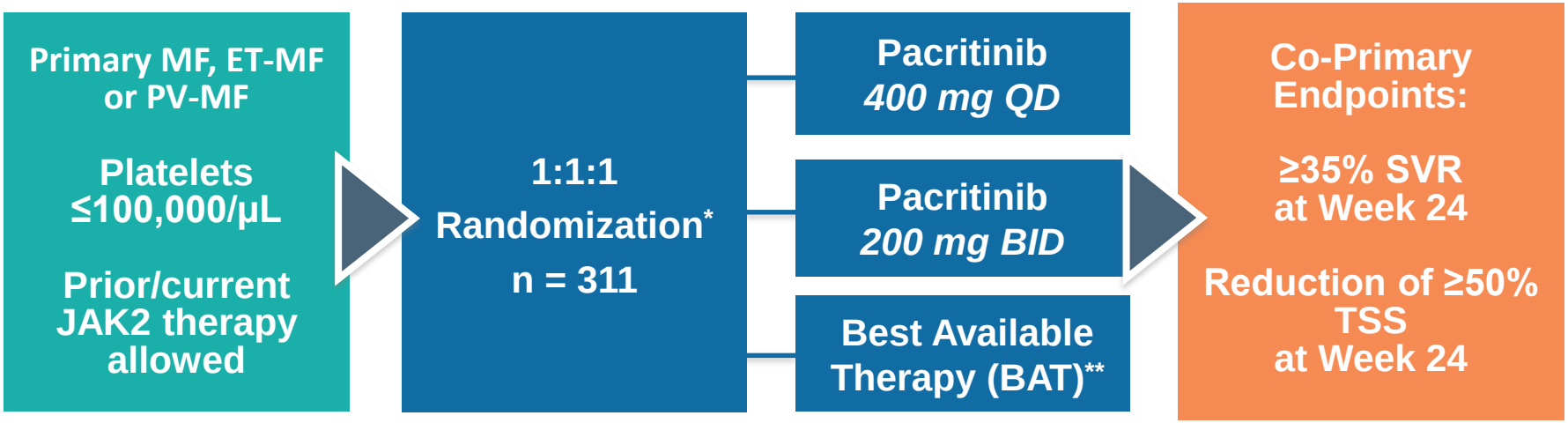
On-going PAC203 Clinical Trial



- Second-line dose ranging study
- Interim data analysis 2Q 2018
- Complete enrollment mid-2018
- Topline data expected 1Q 2019

SVR, ≥35% spleen volume reduction; Protocol amendment #2: removed platelet count entry criteria, interim analysis to be conducted with at least 6 patients/arm

PERSIST-2 Phase 3 Myelofibrosis



- Multinational study in MF patients with thrombocytopenia
- Enrollment completed in February 2016; 221 patients completed 24 weeks of therapy
- Published in JAMA Oncology 2018

SVR, spleen volume reduction; TSS, total symptom score; *Cross-over from BAT allowed after assessment of the primary endpoint at week 24, or after progression; ** BAT may include ruxolitinib. Mascarenhas J, et al., JAMA Oncology 2018.

PERSIST-2: Efficacy Results

Better efficacy with 200 mg BID dosing at 24 weeks

Endpoint	Statistics	PAC 200 mg BID (N=74)	PAC 400 mg QD (N=75)	PAC BID+QD (N=149)	BAT (N=72)
≥35% SVR	%	22	15	18	3
	95% CI	12.9-32.7	7.6-24.7	12.3-25.3	0.3-9.7
	P value vs BAT	0.001	0.02	0.001	-
Reduction of ≥50% TSS	%	32	17	25	14
	95% CI	22.0-44.3	9.6-27.8	18.1-32.6	6.9-24.1
	P value vs BAT	0.01	0.65	0.08	-

Persist-2 clinical study report; Mascarenhas J, et al., JAMA Oncology 2018.

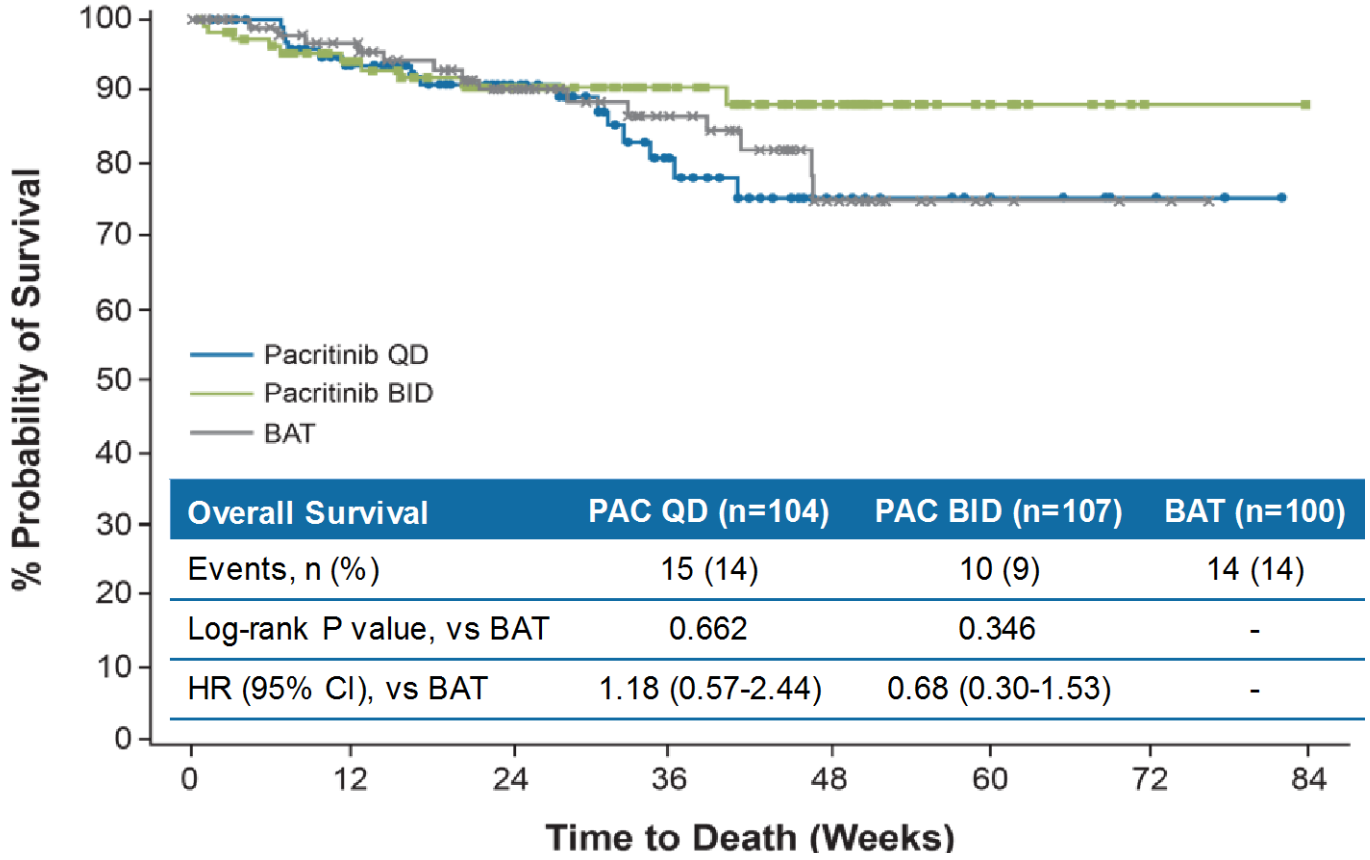
PERSIST-2: Efficacy Results in the Second-line Setting

Patients previously treated with ruxolitinib (and other JAK inhibitors) demonstrated greater benefit with pacritinib versus BAT at 24 weeks

Efficacy	PAC 200 mg BID (N=33)	PAC 400 mg QD (N=33)	BAT (N=34)
≥35% SVR (%)	18	6	3
Reduction of ≥50% TSS (%)	30	12	15

SVR, ≥35% spleen volume reduction, TSS, ≥50% reduction in total symptom score at week 24 from baseline; Persist-2 clinical study report.

PERSIST-2: Overall Survival



Overall Survival	PAC QD (n=104)	PAC BID (n=107)	BAT (n=100)
Events, n (%)	15 (14)	10 (9)	14 (14)
Log-rank P value, vs BAT	0.662	0.346	-
HR (95% CI), vs BAT	1.18 (0.57-2.44)	0.68 (0.30-1.53)	-

Data censored at date of clinical hold; Mascarenhas J, et al., JAMA Oncology 2018.

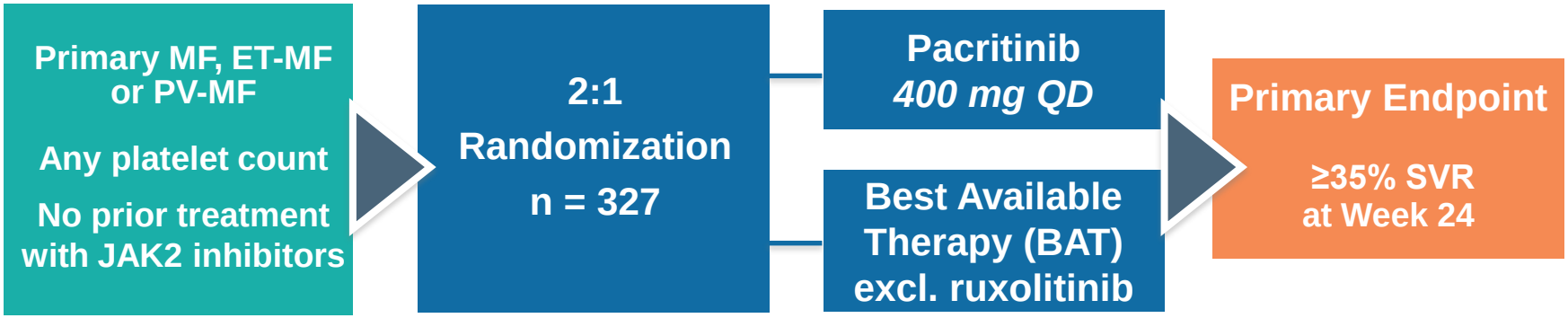
PERSIST-2: Adverse Events (≥15%)

Less GI toxicity with BID dosing

Adverse Event (%)	PAC 400 mg QD (N=104)	PAC 200 mg BID (N=106)	BAT (N=98)
Diarrhea	67	48	15
Nausea	38	32	11
Thrombocytopenia	33	34	23
Anemia	28	24	15
Vomiting	21	19	5
Fatigue	17	17	16
Peripheral Edema	13	20	15
Dizziness	14	15	5
Abdominal Pain	19	9	19
Pyrexia	11	15	3

Mascarenhas J, et al., JAMA Oncology 2018.

PERSIST-1 Phase 3 Myelofibrosis



- Multinational study in MF patients with any platelet count
- Published in Lancet Haematology 2017

Mesa RA, et al., Lancet Haematology 2017.

PERSIST-1: Spleen Volume Reduction

≥35% SVR at 24 weeks	PAC 400mg QD	BAT	P-value
Overall	19% (N=220)	5% (N=107)	0.0003
Platelets			
≤100,000/µl	17% (N=72)	0% (N=34)	0.0086
≤50,000/µl	23% (N=35)	0% (N=16)	0.045

*SVR, ≥35% spleen value reduction; Mesa RA, et al., Lancet Haematology 2017.

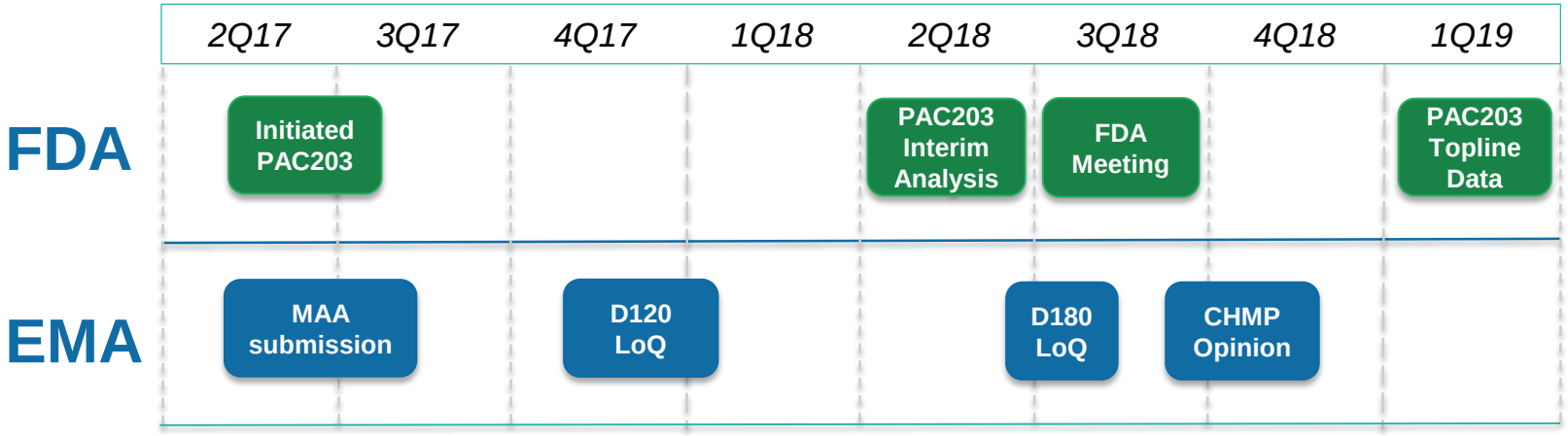
PERSIST-1: Adverse Events (>10%)

Adverse Event (%)	PAC 400mg QD (N=220)	BAT (N=106)
Diarrhea	55	10
Nausea	27	7
Anemia	24	20
Thrombocytopenia	17	14
Vomiting	16	6
Fatigue	10	9
Abdominal Pain	10	9
Peripheral Edema	8	12
Pyrexia	5	10

Mesa RA, et al., Lancet Haematology 2017.

Regulatory Strategy and Target Timelines

- Pacritinib seeks to address significant unmet medical needs in MF
  - Prior exposure to ruxolitinib (Jakafi/Jakavi)
  - Thrombocytopenia (platelets ≤100,000/μL)
- Utilize PAC 203 data to confirm that the 200mg BID dosing regimen has the most favorable risk-benefit profile; topline data expected1Q19
- MAA resubmitted to EMA; Day 120 List of Questions received, submit responses in 2Q 2018



Mascarenhas J, et al., ASH 2016. Abstract LBA-5.

PIXUVRI: Approved in Europe

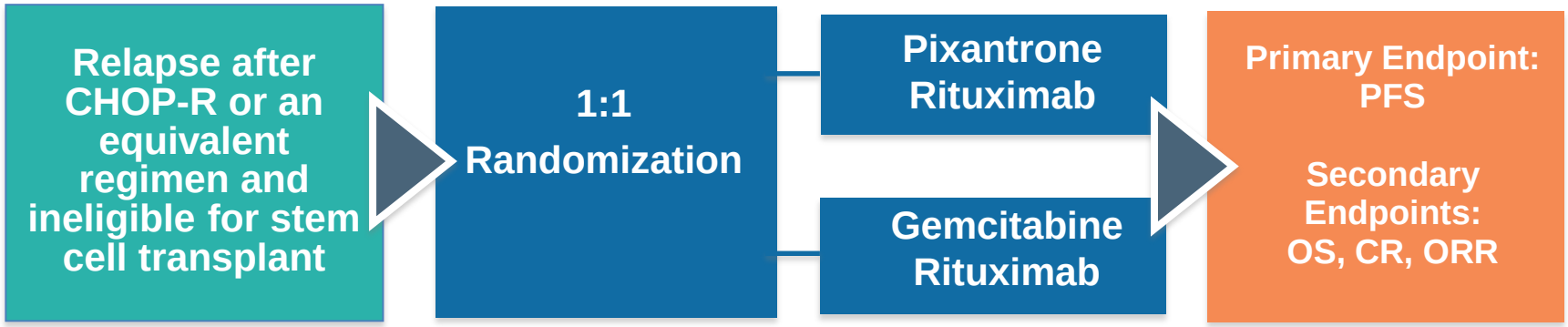
Pixuvri®
(P I X A N T R O N E)

SERVIER

- Conditional approval in 2012
- 3rd - 4th line aggressive B-cell NHL
- Partnered with Servier (ex-US)

PIXUVRI: PIX306 Study

Phase 3 post-marketing commitment study



- Aggressive B-cell NHL or Follicular Grade 3 Lymphoma
- Enrollment completed August 2017
- Top-line results expected 3Q 2018
- If positive, potential to support a 2nd line label extension

Financial and Corporate

Financial Overview

Ticker “CTIC”	
Exchange	NASDAQ: CTIC
Shares Outstanding as of 03/31/18	~58mm
Cash as of 03/31/18	~$104.6mm
Debt as of 03/31/18	~$16mm

Upcoming Milestones

- 2Q 2018
  - PAC203 interim data analysis
  - Pacritinib MAA D120 LoQ responses submission

- 3Q 2018
  - PAC203 complete enrollment
  - CHMP opinion on Pacritinib MAA
  - PIX306 Phase 3 top-line data

- 1Q 2019
  - PAC203 top-line data

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