

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, DC 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): **January 13, 2019**

**Trovagene, Inc.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction  
of incorporation or organization)

**001-35558**  
(Commission File Number)

**27-2004382**  
IRS Employer  
Identification No.)

**11055 Flintkote Avenue**  
**San Diego, CA 92121**  
(Address of principal executive offices)

Registrant's telephone number, including area code: **(858) 952-7570**

(Former name or former address, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

**Title of each class:**

Common Stock

**Trading Symbol(s)**

TROV

**Name of each exchange on which registered:**

Nasdaq Capital Market

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 communication 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 as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter). 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**

Trovogene, Inc. (the "Company") intends to conduct meetings with third parties in which its corporate slide presentation ("Company Presentation") will be presented. The Company Presentation is attached to this Current Report on Form 8-K as Exhibit 99.1 and incorporated into this Item 7.01 by reference.

In accordance with General Instruction B.2 of Form 8-K, the information furnished under this Item 7.01 of this Current Report on Form 8-K and the exhibit attached hereto are deemed to be "furnished" and shall not be deemed "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that section, nor shall such information and exhibit 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.

**Item 9.01. Financial Statements and Exhibits.**

(d) *Exhibits.*

99.1 [Company Presentation](#)

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.

Dated: January 13, 2020

TROVAGENE, INC.

By: /s/ Thomas Adams  
Thomas Adams  
Chief Executive Officer

# Trovagene Oncology

Investor Presentation  
January 2020



# Forward-Looking Statements

Certain statements in this presentation are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may be identified by the use of words such as "anticipate," "believe," "forecast," "estimated" and "intend," or other similar terms or expressions that concern Trovogene's expectations, strategy, plans or intentions.

These forward-looking statements are based on Trovogene's current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. While the list of factors presented in the 10-K is considered representative, no such list should be considered to be a complete statement of all potential risks and uncertainties. Unlisted factors may present significant additional obstacles to the realization of forward-looking statements. Forward-looking statements included herein are made as of the date hereof, and Trovogene does not undertake any obligation to update publicly such statements to reflect subsequent events or circumstances.

# Company At-A-Glance

Clinical-stage oncology therapeutics company, developing **onvansertib**, an oral and highly-selective Polo-like Kinase 1 (PLK1) inhibitor

- Selectively targets PLK1, a proven therapeutic target; overexpressed in most cancers
- Stops division of cancer cells while limiting impact to normal cells
- Proven safety and preliminary efficacy in 3 clinical programs (mCRC, mCRPC, AML)
- Presentation of efficacy data from all 3 Phase 2 clinical trials in 2020

San Diego, CA

Nasdaq: TROV

**Clinical Development Plan:** Complete Phase 2 clinical trials of onvansertib in combination with standard-of-care therapies, in colorectal cancer, prostate cancer and acute myeloid leukemia, and advance to registrational trials

# Investment Highlights



## Ovansertib

1<sup>st</sup>-in-class, 3<sup>rd</sup>-generation, safe and well-tolerated, oral PLK1 inhibitor that selectively targets the PLK1 enzyme and blocks cancer cell division



## Clinical Efficacy Demonstrated

3 ongoing clinical trials with demonstrated efficacy in patients who have developed resistance to standard-of-care or who have relapsed disease



## Predictive Biomarkers

Assessment of response to treatment derived from a simple blood test



## Validating Combination Clinical Trials

- metastatic colorectal cancer (mCRC): onvansertib + FOLFIRI® /Avastin®
- metastatic castrate-resistant prostate cancer (mCRPC): onvansertib + Zytiga®
- acute myeloid leukemia (AML): onvansertib + decitabine



## Established Manufacturing and Drug Supply

FDA approved, GMP facility for production of raw material and finished drug












# Significant Value Creation in 2020

Efficacy  
Data

From 3 Ongoing  
Phase 2 Trials

In 2020

# 2020 Key Inflection Points

1H2020 Key Inflection Points	Event	Timing
<b>Colorectal Cancer:</b> Phase 1b Safety and Efficacy Data		January 25 <sup>th</sup>
<b>Prostate Cancer:</b> Phase 2 Efficacy Data		February 13 <sup>th</sup>
<b>Acute Myeloid Leukemia:</b> Biomarker Data		April 24 <sup>th</sup> – 29 <sup>th</sup>
<b>Prostate Cancer:</b> Phase 2 and Correlative Biomarker Data		April 24 <sup>th</sup> – 29 <sup>th</sup>
<b>Acute Myeloid Leukemia:</b> Phase 2 Efficacy Data		June 11 <sup>th</sup> – 14 <sup>th</sup>
2H2020 Key Inflection Points	Event	Timing
<b>Prostate Cancer:</b> Phase 2 Efficacy Data		Sept. 18 <sup>th</sup> – 22 <sup>nd</sup>
<b>Colorectal Cancer:</b> Phase 2 Efficacy Data		Sept. 18 <sup>th</sup> – 22 <sup>nd</sup>
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# Onvansertib is a Platform for Value Creation

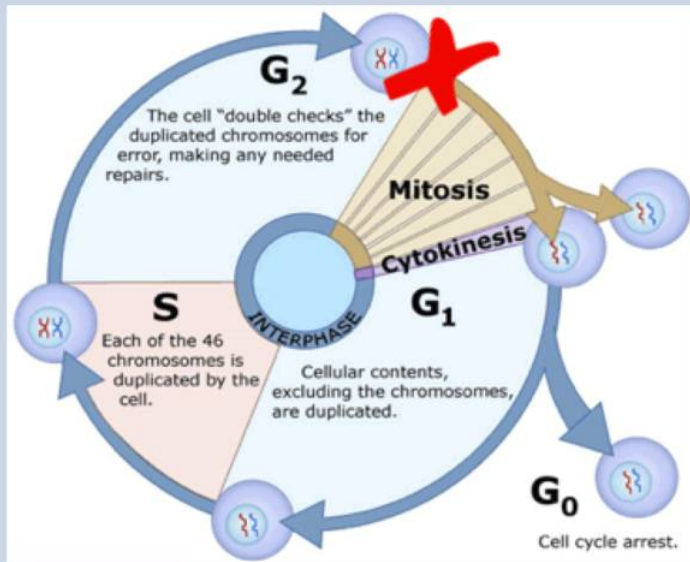
- ▶ **Clinical Programs Based on Scientific Rationale:** supported by preclinical and synergy data, and integration of biomarkers to rapidly assess response to treatment
- ▶ **Addressing Significant Medical Needs:**
  - overcome resistance to standard-of care drugs
  - extend duration of response and progression-free survival

	Indication	Preclinical	Phase 1/1b	Phase 2/2b	Next Milestone
<b>Onvansertib Solid Tumors</b>  <i>(2 INDs in Place)</i>	mCRC	<i>Onvansertib + FOLFIRI® /Avastin® in KRAS-mutated colorectal cancer</i>			<b>Q1 2020 ASCO-GI</b>
	mCRPC	<i>Onvansertib + Zytiga® /prednisone in metastatic castrate-resistant prostate cancer</i>			<b>Q1 2020 ASCO-GU</b>
<b>Onvansertib Hematologic</b>  <i>(1 IND in Place)</i>	AML	<i>Onvansertib + decitabine in relapsed or refractory acute myeloid leukemia cancer</i>			<b>Q2 2020 AACR, EH</b>

IND = Investigational New Drug; mCRPC = metastatic castrate-resistant prostate cancer; mCRC = metastatic colorectal cancer; TNBC = triple-negative breast cancer; AML = acute myeloid leukemia

# Onvansertib Mechanism of Action

Inhibition of PLK1 causes arrest of cell division and subsequent cell death<sup>1</sup>



<sup>1</sup>Zitouni et al., Nat Rev Mol Cell Biol. 2014 Jul;15(7):433-52

Synergistic in combination with chemotherapies and targeted therapies



# Optimal Attributes for a Safe and Effective Drug



Indication:  
metastatic KRAS-Mutated Colorectal Cancer (mCRC)

USC Norris Comprehensive  
Cancer Center  
Keck Medicine of USC

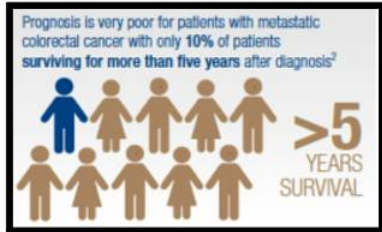
 MAYO CLINIC  
Cancer Center



 trovagene  
ONCOLOGY

# Improving Response and Progression-Free Survival

## Metastatic Colorectal Cancer (mCRC)



- ▶ Only a 5% response rate to standard-of-care FOLFOX/FOLFIRI<sup>1</sup>
- ▶ Onvansertib + FOLFIRI<sup>®</sup> significantly reduces tumor growth<sup>3</sup>
- ▶ Biomarkers drive therapy decisions<sup>2</sup>
- ▶ KRAS mutation is a biomarker for clinical response to onvansertib
- ▶ KRAS mutation in 50% of mCRC<sup>2</sup>

## Establishing a Successful Path Forward:

- Positive results from Phase 1b/2 trial may provide an opportunity for Phase 2b registrational trial and Fast Track Designation
- Biomarker increases likelihood of success by enabling rapid, quantitative assessment of KRAS mutation and patient response to treatment

<sup>1</sup>King et al, Frontline Strategies for Metastatic CRC, 2016, Amer J Hem/Onc; Loree&Kopetz; <sup>2</sup>Van Custem E, Borràs JM, Castells A et al. Improving outcomes in colorectal cancer. Where do we go from here? J Cancer. 2013 Jul; 49(11): 2476–85.; Recent Developments in treatment of mCRC, 2017, Ther Adv Med Onc; <sup>3</sup>Investigator Brochure, Data-on-file, Trovogene

# Rationale for Onvansertib + FOLFIRI<sup>®</sup> /Avastin<sup>®</sup> in KRAS-Mutated Metastatic CRC

Onvansertib Targets KRAS Mutations Through Downstream Effects on Tumor Cell Division



Cracking KRAS

## ▶ Synthetic Lethality

- CRC tumor cells harboring KRAS mutation are more vulnerable to cell death with PLK1 inhibition
- Tumor cell viability is more sensitive to onvansertib in KRAS-mutated vs KRAS wild-type isogenic cell lines

## ▶ Synergy

- Onvansertib + irinotecan (the “IRI” in FOLFIRI) are synergistic in CRC cell lines
- Combination demonstrated significantly greater tumor growth inhibition than either drug alone

## ▶ Proof-of-Concept Clinical Response

- Phase 1 trial in solid tumors: 3 of 5 patients with stable disease had KRAS mutation; 2 in CRC and 1 in pancreatic cancer

# Demonstrating Clinical Benefit in KRAS-Mutated CRC as New Second-Line Treatment

**Trial Design: Phase 1b/2, multi-center, open label trial in mCRC**

Onvansertib + FOLFIRI®/  
Avastin® (bevacizumab)

Phase 1b (n=18)  
Phase 2 (n=26)

Onvansertib administered orally,  
days 1-5 every 14-days (2 courses  
of treatment in every 28-day cycle)

## **Efficacy Endpoints:**

**Primary:** overall response in patients who receive  $\geq 1$  cycle (2 courses) of treatment

**Correlative Biomarker:** decreases in KRAS mutation burden and response to treatment

**Current Standard-of-Care FOLFIRI®/Avastin® Clinical Response:** overall response is ~5%; median progression-free survival (PFS) is ~6 months<sup>1</sup>

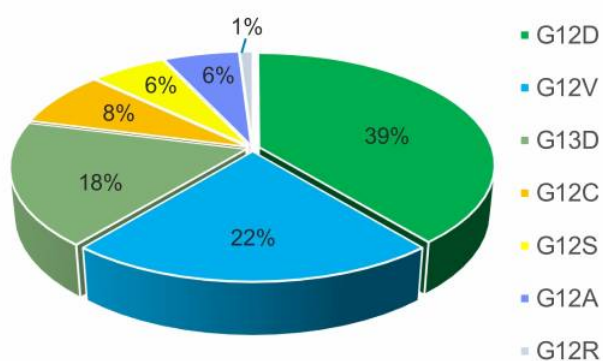
## **Onvansertib: Achieving Clinical Success**

- 5 of 26 (~20%) patients achieve clinical response confirmed by radiographic scan
- Patient median progression-free survival (PFS) of >6 months

<sup>1</sup>King et al, Frontline Strategies for Metastatic CRC

# Clinical Data Shows Onvansertib Effectively Targets KRAS Mutations in CRC

## Colorectal Cancer

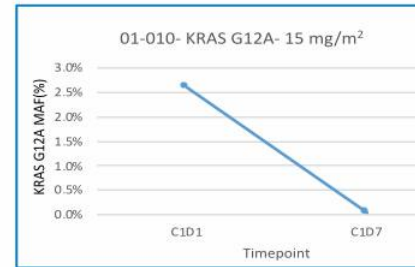
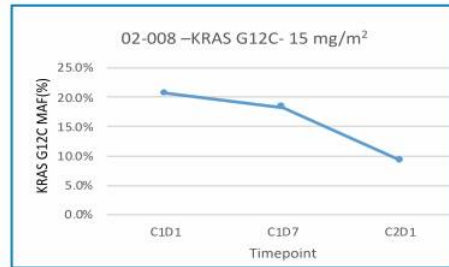
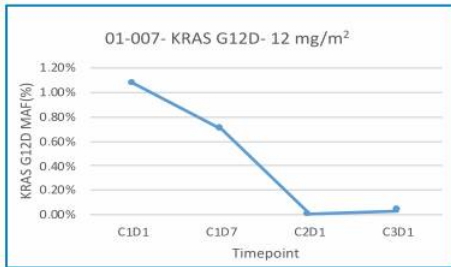
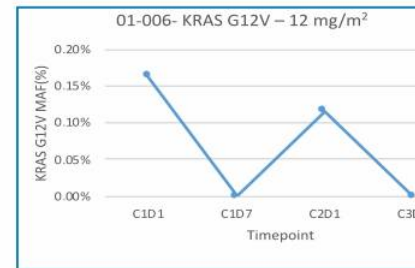
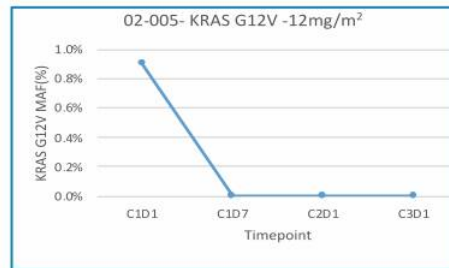
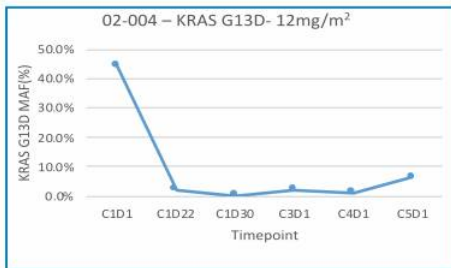


- ▶ To-date, KRAS mutation decreased in all 6 patients completing their 1<sup>st</sup> cycle of onvansertib treatment
- ▶ Mutations identified in these patients account for near 100% of those associated with CRC
  - G12D (39%), G12V (22%), G13D (18%), G12C (8%), G12S (6%), G12A (6%), G12R (1%)
- ▶ Other drugs in development target only G12C which accounts for <10% of the KRAS mutations in CRC

<sup>1</sup>Jones et al. Specific Mutations in KRAS Codon 12 Are Associated with Worse Overall Survival in Patients with Advanced and Recurrent Colorectal Cancer; BJC Feb. 2017



# Decreases in Plasma KRAS Mutation Shown in All Patients Treated with Onvansertib



- ▶ Changes in plasma KRAS mutation level is an early marker for therapeutic response
- ▶ Significant decrease in KRAS mutation levels within the 1<sup>st</sup> treatment cycle are highly predictive of tumor regression as measured by radiographic scans
- ▶ Decreases in plasma KRAS-mutated circulating tumor DNA, to a non-detectable level, observed in 5 patients within the first cycle of treatment, and highly predictive of tumor regression by radiographic scans

Tie et al., 2015, Annals of Oncology 26: 1715–1722

Indication:  
metastatic Castrate-Resistant Prostate Cancer (mCRPC)



Beth Israel Deaconess  
Medical Center



MASSACHUSETTS  
GENERAL HOSPITAL

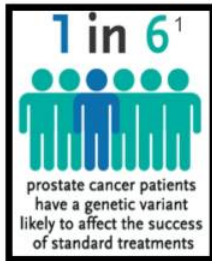
CANCER CENTER



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# Overcoming Resistance and Extending Efficacy

## Metastatic Castrate-Resistant Prostate Cancer (mCRPC)



- ▶ Resistance develops to standard-of-care therapy, Zytiga® and Xtandi®, within 9-15 months<sup>3</sup>
- ▶ Onvansertib + Zytiga® are synergistic in combination
- ▶ Combination significantly increase arrest of cell division
- ▶ Up to 40% AR-V7 resistance; very aggressive mutation and no effective treatment options<sup>2</sup>

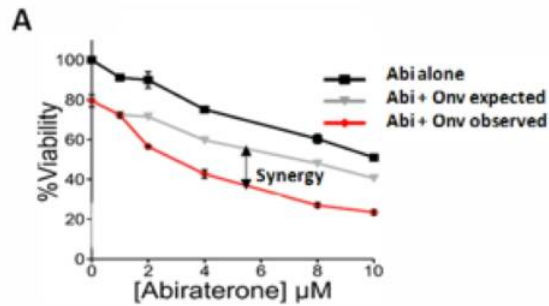
## Establishing a Successful Path Forward

- Positive results from Phase 2 trial may provide an opportunity for a Phase 2b registrational trial
- Proactively assessing AR-V7 enables correlation of status (+/-) with response to onvansertib treatment
- Effective treatment of AR-V7+ patients could lead to Breakthrough Designation

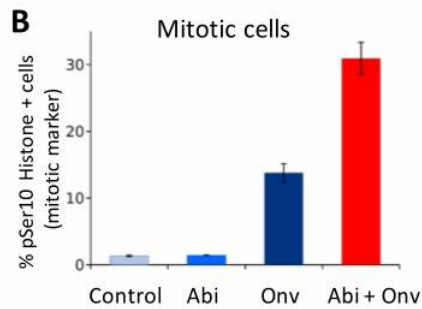
<sup>1</sup>Nicolosi P, Ledet E, Yang S et al. Prevalence of germline variants in prostate cancer and implications for current genetic testing guidelines. JAMA Oncol. Published online February 7, 2019; <sup>2</sup>Armstrong et al. JCO 37: 1120- <sup>3</sup>Zhang et al., 2015, Cell Cycle 14:13, 2142—2148; <sup>3</sup>Antonarakis, Emmannel – Current Understanding of Resistance to Abiraterone and Enzalutamide in Advanced Prostate Cancer; Clinical in Hematology & Oncology – May 2016 – Volume 14, Issue 5; <sup>4</sup><https://www.grandviewresearch.com/industry-analysis/prostate-cancer-therapeutics-market>

# Rationale for Onvansertib + Zytiga® in Metastatic Castrate-Resistant Prostate Cancer (mCRPC)

Onvansertib + Zytiga® (abiraterone) demonstrates synergy in mCRPC model (C4-2)<sup>1</sup>



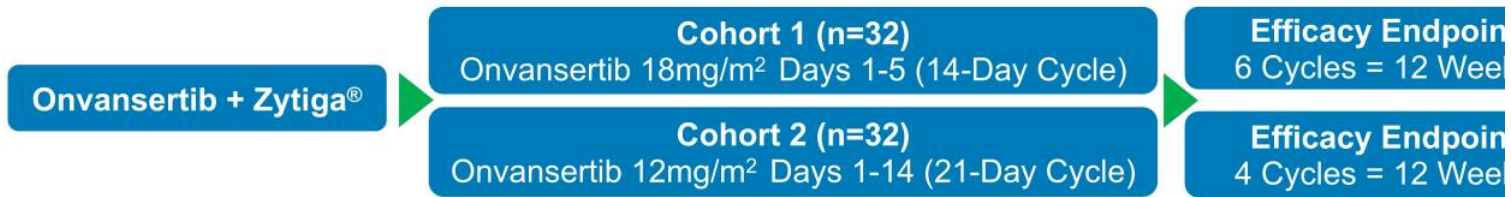
Onvansertib + Zytiga® (abiraterone) significantly increases mitotic arrest<sup>1</sup>



<sup>1</sup>Patterson & Yaffe, 2019, MIT

# Overcoming Resistance and Extending Efficacy

## Trial Design: Phase 2 multi-center, open label trial in mCRPC



## Efficacy Endpoint – Internationally Recognized Prostate Cancer Working Group (PCWG)

Primary: disease control evaluated as PSA decline or stabilization (PSA rise <25% over baseline)

Correlative Biomarker: androgen receptor variant 7 (AR-V7) status and correlation with patient response

**Current Standard-of-Care Zytiga® Clinical Response:** median radiographic progression-free survival (RPFS) is ~7 months<sup>1</sup>

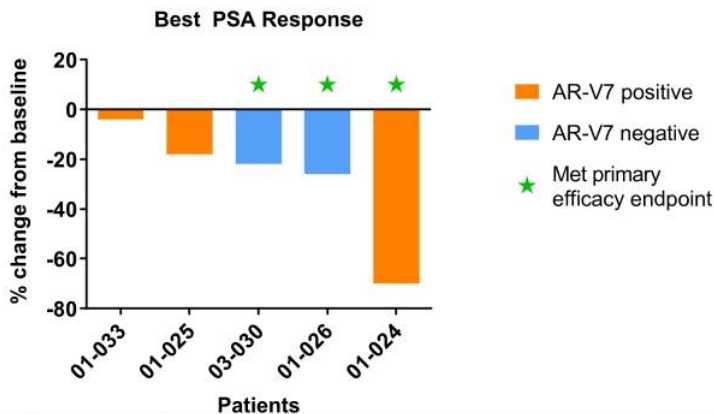
## Onvansertib: Achieving Clinical Success

- 6 of 32 (~20%) patients achieve primary efficacy endpoint of disease control at 12 weeks (PSA stabilization or decrease); confirmed by radiographic scan
- Patients achieve median RPFS of ≥7 months

Note: radiographic assessment by RECIST v1.1 [CR = disappearance of all target lesions, PR = ≥30% decrease, PD = ≥20% increase, SD = does not meet criteria for PR nor PD]

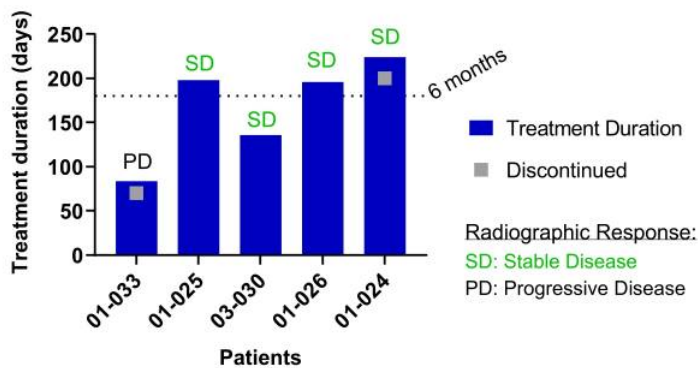
<sup>1</sup>Hussain et al., ESMO 2019

# Efficacy Demonstrated by PSA Disease Control and Confirmed by Radiographic Scan



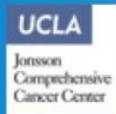
- ▶ Threshold for demonstrating onvansertib efficacy:
  - $\geq 20\%$  of patients achieve primary efficacy endpoint of PSA stabilization
- ▶ To date, 3 of 5 patients in this cohort have met the efficacy endpoint

## Treatment Duration and Radiographic Response



- ▶ Threshold for demonstrating onvansertib efficacy:
  - Median of  $\geq 6$  months for radiographic progression-free survival (RPFS)
- ▶ To date, 3 of 5 patients have exceeded 6 months of RPFS

# Indication: Acute Myeloid Leukemia (AML)



# Addressing the Need for New Treatment Options

## Relapsed Acute Myeloid Leukemia (AML)

### CHANGING THE TREATMENT PARADIGM

- ▶ 5-year survival rate of only 25%<sup>1</sup>
- ▶ Standard-of-care is venetoclax + azacytidine or decitabine; resistance develops in ~11 months<sup>2</sup>
- ▶ Onvansertib induces cell death in AML model resistant to Venclexta®<sup>3</sup>

### Establishing a Successful Path Forward:

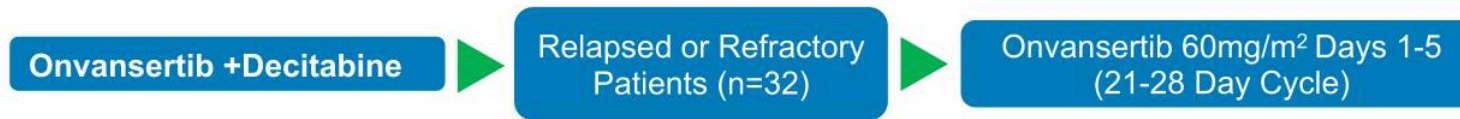
- Positive results from Phase 2 trial and Orphan Drug Designation may provide an opportunity for a Phase 2b registrational trial
- Opportunity to treat patients who relapse following first-line venetoclax
- Biomarker identifies patients most likely to respond, increasing likelihood of success

<sup>1</sup>National Cancer Institute SEER 2016; <sup>2</sup>DiNardo et al, Blood, 2019 <sup>3</sup>Valsasina et al., Mol Cancer Ther; 11(4) April 2012; <sup>3</sup>Trovagene, data on file



# Providing a New, Safe and Effective Treatment

## Trial Design: Phase 2 multi-center, open label trial in AML



### Efficacy Endpoint

Primary: safety and preliminary efficacy

**Correlative Biomarker:** Assess PLK1 inhibition (target engagement) by measuring changes in the PLK1 substrate pTCTP; evaluate predictive biomarkers associated with response to treatment

**Current Standard-of-Care Clinical Response:** Hypomethylating agents (decitabine and azacytidine) is 16.3% and IDH Inhibitors, ivosidenib (Agiros), is 30.4%; enasidenib (Celgene) is 26.6%<sup>2</sup>

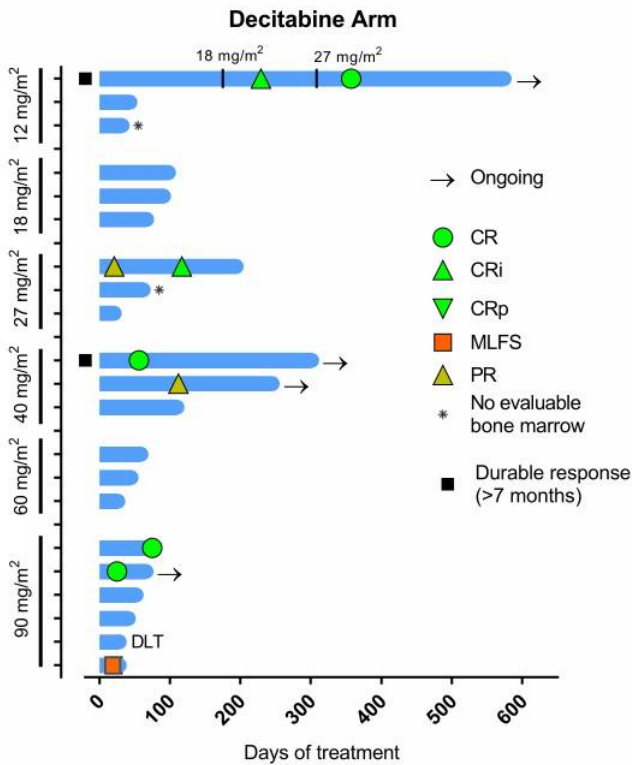
### Onvansertib: Achieving Clinical Success

- 10 of 32 (~30%) achieve complete response (CR + CRi)
- Median overall survival of >2 months for relapsed/refractory AML patients

<sup>1</sup>Stahl et al., Blood Adv. 2018 Apr 24;2(8):923-932; <sup>2</sup>DiNardo et al, N Engl J Med. 2018 Jun 21;378(25):2386-2398; <sup>3</sup>Stein et al., Blood. 2017 Aug 10;130(6):722-731

# Phase 1b Completed Trial Efficacy Summary

## Patients Treated with $\geq 1$ Cycle (n=36)



- ▶ At the 4 higher dose levels (27 to 90 mg/m<sup>2</sup>), CR/CRi was observed in:
  - 5 of 16 (31%) patients in the decitabine Arm
- ▶ Median time to achieve CR/CRi was 4 cycles (range 1-7)
- ▶ Durable responses for >7 months

<sup>1</sup>Jones et al. Specific Mutations in KRAS Codon 12 Are Associated with Worse Overall Survival in Patients with Advanced and Recurrent Colorectal Cancer; BJC Feb. 2017

Corporate



# Strong Patent Portfolio

- ▶ **Core Technology: 3 Issued Patents to 2030 in US, Europe and Asia with extension to 2035 in**
  - Compound (onvansertib): US 8614220
  - Salt forms of onvansertib: US 8648078
  - Combinations with anti-neoplastic compounds: US 8927530
- ▶ **Evergreening: Combination Therapy**
  - Exclusive license from MIT for 2 US issued patents with broad method claims for combination of PLK inhibitor + anti-androgen compounds to treat any cancer
    - US 9566280, US 10155006; Expiration 2035
- ▶ **Evergreening: Biomarkers**
  - Method for assessing PLK1 target phosphorylation status for identifying patients to be treated with PLK1 Inhibitors
    - PCT US1948044, Expiration 2039
  - Method for treating patient with a PLK inhibitor when there is a PSA rise
    - Provisional, Expiration 2040

# Business Development Strategy

## Objective: Joint Development and Commercialization Partnerships

- ▶ Financial and clinical support for company-sponsored and/or investigator sponsored (IST) studies
- ▶ Maintain rights in North America in part or in whole
- ▶ Co-develop and/or out-license specific indications in Japan and Europe
- ▶ Optimize development timelines while efficiently managing resources, internal and outsourced

## Current Co-Research Collaboration

- ▶ Co-research agreement with [Nektar Therapeutics](#) to evaluate onvansertib in combination with NKTR-102 in colorectal cancer

## Partnering Strategy

- ▶ Successful partnership with US pharma/biotech for co-development
- ▶ Successful partnership with Japan Pharma for co-development and/or out-licensing

# Financials

**2019 Raised Capital & Clinical Research Commitment**

- \$14.5 million









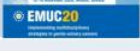


**Quarter Ending Cash and Cash Equivalents**

- Q4'18 = \$11.5M
- Q1'19 = \$11.3M
- Q2'19 = \$10.8M
- Q3'19 = \$ 9.0M

**Estimated Quarterly Cash Burn**

- ~\$4.0M

# 2020 Key Inflection Points

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Thank You



For additional information please  
contact: [ir@trovogene.com](mailto:ir@trovogene.com)



