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): **January 10, 2022**

Blueprint Medicines Corporation

(Exact name of registrant as specified in its charter)

Delaware	**001-37359**	**26-3632015**
(State or other jurisdiction of incorporation)	(Commission File Number)	(I.R.S. Employer Identification No.)

45 Sidney Street **Cambridge, Massachusetts**	**02139**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(617) 374-7580**

(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 (§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. ☐

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common stock, par value $0.001 per share	BPMC	Nasdaq Global Select Market

Item 7.01 Regulation FD.

From time to time, the Company presents and/or distributes to the investment community at various industry and other conferences slide presentations to provide updates and summaries of its business. The Company is posting to the "Investors & Media" portion of its website at http://ir.blueprintmedicines.com/ a copy of its current corporate slide presentation. A copy of the presentation is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

The information in Item 7.01 of this Current Report on Form 8-K, including Exhibit 99.1 attached hereto, is intended to be furnished and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such filing.

Item 8.01 Other Events.

On January 10, 2022, the Company issued a press release announcing its corporate goals for 2022 and certain other business updates. A copy of the press release is filed herewith as Exhibit 99.2 to this Current Report on Form 8-K and incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	**Description**
99.1	Corporate slide presentation of Blueprint Medicines Corporation dated January 10, 2022
99.2	Press release issued by Blueprint Medicines Corporation on January 10, 2022
104	Cover Page Interactive Data File (embedded within the Inline XBRL document and incorporated as Exhibit 101)

SIGNATURES

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.

BLUEPRINT MEDICINES CORPORATION

Date: January 10, 2022

By: /s/ Jeffrey W. Albers
Jeffrey W. Albers
Chief Executive Officer


blueprint™
MEDICINES
Pioneering the
Science of Time
Cyndi N.
Systemic mastocytosis patient

Forward-looking statements

This presentation contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. The words "aim," "may," "will," "could," "would," "should," "expect," "plan," "anticipate," "intend," "believe," "estimate," "predict," "project," "potential," "continue," "target" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. In this presentation, forward-looking statements include, without limitation, express or implied statements regarding plans, strategies, timelines and expectations for the current or future approved drugs and drug candidates of Blueprint Medicines Corporation (the "Company"), including timelines for marketing applications and approvals, the initiation of clinical trials or the results of ongoing and planned clinical trials and data publications; the anticipated benefits of the Company's ISM Symptom Assessment Form; the Company's scientific platform expansion plans; the Company's plans, strategies and timelines to nominate development candidates; plans and timelines for additional marketing applications for avapritinib and pralsetinib and, if approved, commercializing avapritinib and pralsetinib in additional geographies or for additional indications; the potential benefits of any of the Company's current or future approved drugs or drug candidates in treating patients; preliminary financial results; and the Company's financial performance, strategy, goals and anticipated milestones, business plans and focus.

The Company has based these forward-looking statements on management's current expectations, assumptions, estimates and projections. If such expectations, assumptions, estimates and projections do not fully materialize or prove incorrect, the events or circumstances referred to in the forward-looking statements may not occur. While the Company believes these expectations, assumptions, estimates and projections are reasonable, such forward-looking statements are only predictions and involve known and unknown risks, uncertainties and other important factors, many of which are beyond the Company's control and may cause actual results, performance or achievements to differ materially from those expressed or implied by any forward-looking statements. These risks and uncertainties include, without limitation, risks and uncertainties related to the impact of the COVID-19 pandemic to the Company's business, operations, strategy, goals and anticipated milestones, including the Company's ongoing and planned research and discovery activities, ability to conduct ongoing and planned clinical trials, clinical supply of current or future drug candidates, commercial supply of current or future approved drugs, and launching, marketing and selling current or future approved drugs; the Company's ability and plans in establishing a commercial infrastructure, and successfully launching, marketing and selling current or future approved products; the Company's ability to successfully expand the approved indications for AYVAKIT® /AYVAKYT® (avapritinib) and GAVRETO® (pralsetinib) or obtain marketing approval for AYVAKIT/AYVAKYT in additional geographies in the future; the delay of any current or planned clinical trials or the development of the Company's drug candidates or the licensed drug candidate; the Company's advancement of multiple early-stage efforts; the Company's ability to successfully demonstrate the efficacy and safety of its drug candidates and gain approval of its drug candidates on a timely basis, if at all; the timing and results of preclinical and clinical studies for the Company's drug candidates, which may not support further development of such drug candidates or may impact the anticipated timing of data or regulatory submissions; actions or decisions of regulatory agencies or authorities, which may affect the initiation, timing and progress of clinical trials or marketing applications; the Company's ability to obtain, maintain and enforce patent and other intellectual property protection for AYVAKIT/AYVAKYT, GAVRETO or any drug candidates it is developing; the Company's ability to develop and commercialize companion diagnostic tests for any of the Company's current or future approved drugs or drug candidates; the Company's ability to successfully expand its operations and scientific platform and the costs thereof and the success of the Company's current and future collaborations, partnerships and licenses. These and other risks and uncertainties are described in greater detail under "Risk Factors" in the Company's filings with the Securities and Exchange Commission ("SEC"), including its most recent Annual Report on Form 10-K, as supplemented by its most recent Quarterly Report on Form 10-Q, and any other filings it has made or may make with the SEC in the future. The Company cannot guarantee future results, outcomes, levels of activity, performance, developments, or achievements, and there can be no assurance that its expectations, intentions, anticipations, beliefs, or projections will result or be achieved or accomplished. The forward-looking statements in this presentation are made only as of the date hereof, and except as required by law, the Company undertakes no obligation to update any forward-looking statements contained in this presentation as a result of new information, future events or otherwise. Accordingly, readers are cautioned not to place undue reliance on these forward-looking statements.

This presentation also contains estimates, projections and other statistical data made by independent parties and by the Company relating to market size and growth and other data about the Company's industry. These data involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of the Company's future performance and the future performance of the markets in which the Company operates are necessarily subject to a high degree of uncertainty and risk.

Blueprint Medicines is a global leader in precision therapy

AYVAKIT® avapritinib | tablets

GAVRETO® pralsetinib | 100mg capsules

Ongoing global collaboration with Roche and Genentech for the development and commercialization of GAVRETO

OUR FIRST DECADE OF ACHIEVEMENT

2 internally discovered medicines

FDA approved across **5** indications

within **10** years, and with

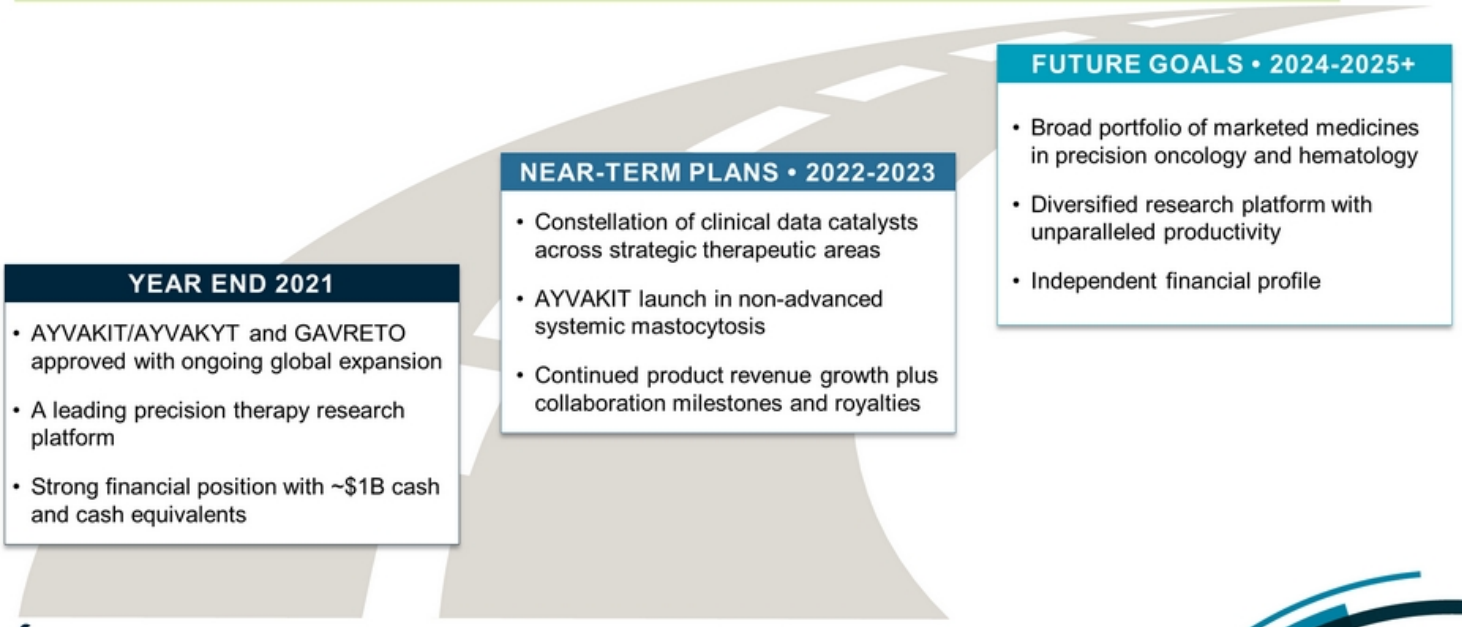
5 breakthrough therapy designations

BROAD AND GROWING PORTFOLIO WITH 10 PRECISION THERAPIES IN DEVELOPMENT

AYVAKIT is approved for the treatment of adults with unresectable or metastatic GIST harboring a PDGFRA exon 18 mutation, including PDGFRA D842V mutations, and adult patients with advanced SM, including aggressive SM, SM with an associated hematologic neoplasm and mast cell leukemia. GAVRETO is approved for the treatment of adult patients with RET-fusion positive NSCLC, adult and pediatric patients with advanced or metastatic RET-mutant medullary thyroid cancer who require systemic therapy and adult, and pediatric patients with advanced or metastatic RET fusion-positive thyroid cancer who require systemic therapy and who are radioactive iodine-refractory. FDA, U.S. Food and Drug Administration; GIST, gastrointestinal stromal tumor; NSCLC, non-small cell lung cancer; SM, systemic mastocytosis.

Not for promotional use.

Our path to potential transformative growth and an independent financial profile



YEAR END 2021

- AYVAKIT/AYVAKYT and GAVRETO approved with ongoing global expansion
- A leading precision therapy research platform
- Strong financial position with ~$1B cash and cash equivalents

NEAR-TERM PLANS • 2022-2023

- Constellation of clinical data catalysts across strategic therapeutic areas
- AYVAKIT launch in non-advanced systemic mastocytosis
- Continued product revenue growth plus collaboration milestones and royalties

FUTURE GOALS • 2024-2025+

- Broad portfolio of marketed medicines in precision oncology and hematology
- Diversified research platform with unparalleled productivity
- Independent financial profile

blueprint MEDICINES

Our path to potential transformative growth and an independent financial profile

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AYVAKIT launch update: strong performance with significant growth potential

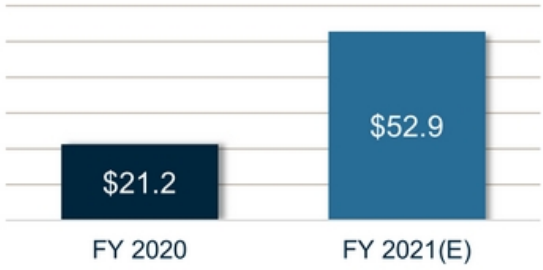
AYVAKIT® avapritinib | tablets

~550 patients with GIST or advanced SM treated with commercial AYVAKIT in the U.S. to date

ANTICIPATED GROWTH CATALYSTS

- Obtain EMA decision for advanced SM in 1H 2022
- Report top-line registration-enabling PIONEER trial data in non-advanced SM in mid-2022
- Submit sNDA to FDA for non-advanced SM in 2H 2022

AYVAKIT GLOBAL REVENUE ($, MILLIONS)[1]



ESTIMATED $20.0M AYVAKIT REVENUE IN Q4 2021[1]

1. Includes unaudited AYVAKIT Q4 2021 revenue. Full Q4 and full-year 2021 financial results to be reported in February 2022. EMA, European Medicines Agency; FY, full-year; sNDA, supplemental New Drug Application.

Breadth of early AYVAKIT prescribing for advanced SM in the U.S.

DISEASE SUBTYPES[1]

PRIOR TREATMENT[1]

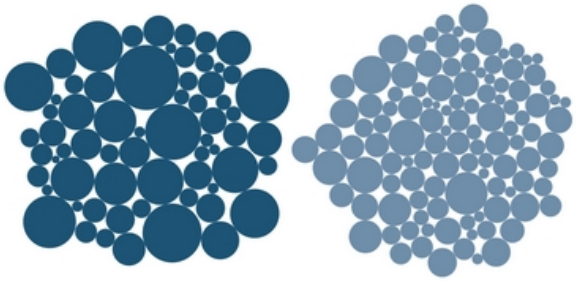
55% TREATMENT NAIVE

PATIENT HISTORY[1]

20% WITH FIRST OBSERVED SM DIAGNOSIS IN 2021

QUANTITATIVE VISUALIZATION OF INSTITUTIONS PRESCRIBING AYVAKIT[2]

55%
VOLUME FROM ACADEMIC CENTERS & TEACHING HOSPITALS



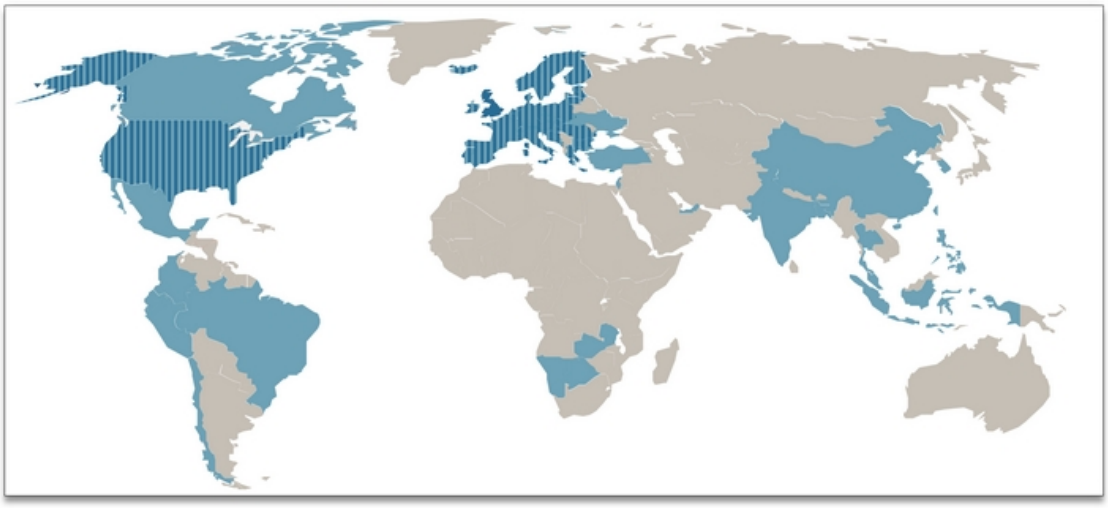
45%
VOLUME FROM COMMUNITY PRACTICES & CLINICS

Over **180** healthcare providers have prescribed AYVAKIT for advanced SM since launch

1. AYVAKIT usage based on analyses of available claims data using SM diagnosis codes and other features including prior therapies & prior AHN diagnoses. Treatment naïve share represents those without observed prior use of tyrosine kinase inhibitors or other cytoreductive therapies. Reported data represent estimations only. 2. Includes estimated advanced SM demand volume post-approval. Circles represent individual accounts with size of circle representing estimated volume. ASM, aggressive SM; MCL, mast cell leukemia; SM-AHN, SM with an associated hematologic neoplasm.

Two years after our first approval, we're bringing medicines to patients globally

~50 COUNTRIES WITH ≥1 APPROVAL OR MARKETING APPLICATION UNDER REVIEW



AYVAKIT® avapritinib tablets

GAVRETO® pralsetinib

Blueprint Medicines

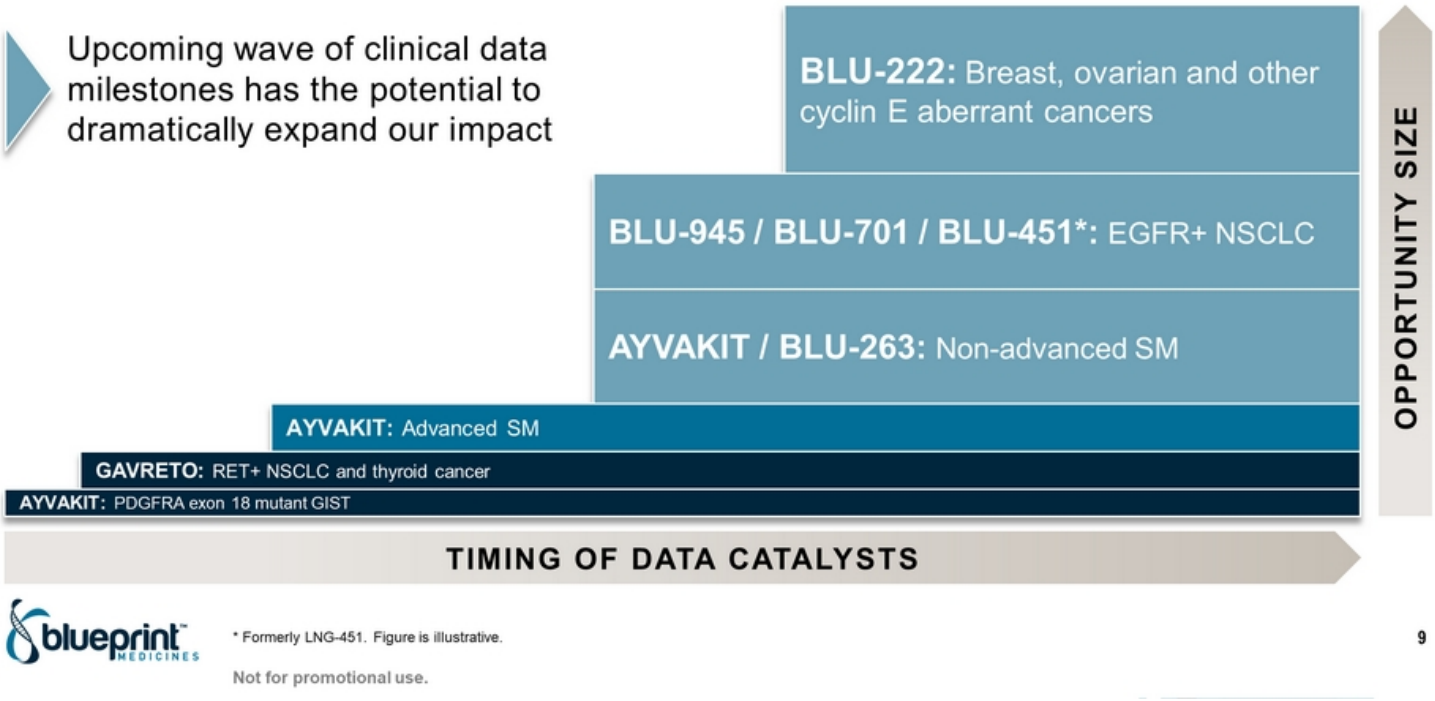
Strategic partner

Updated as of January 1, 2022. Strategic partnerships include global collaboration with Roche and Genentech for GAVRETO, collaboration with CStone Pharmaceuticals for AYVAKIT and GAVRETO in Greater China, and distribution agreement with Neopharm Ltd. for AYVAKYT in Israel.

Not for promotional use.

We're primed to bring the promise of precision therapy to broad populations

Upcoming wave of clinical data milestones has the potential to dramatically expand our impact



* Formerly LNG-451. Figure is illustrative.

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blueprint MEDICINES

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SYSTEMIC MASTOCYTOSIS

STRATEGIC THERAPEUTIC AREA

Pioneering the Science of Time

Every day, we seek to transform science into more time for life. Time to be with families, time to be productive community members, time to feel the small moments of joy that shape our lives.

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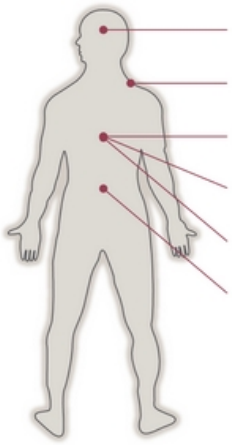
Systemic mastocytosis, a rare mast cell disease with high medical need

SYSTEMIC MASTOCYTOSIS SYMPTOMS



- Brain fog
- Pruritis, flushing and pigmented skin lesions
- Life-threatening organ infiltration and damage
- Unpredictable, life-threatening anaphylaxis
- Debilitating fatigue
- GI upset with vomiting, diarrhea and nausea

95% of SM cases driven by the KIT D816V mutation

ADVANCED SM[1]

6 months to 3.5 years median overall survival based on disease subtype

NON-ADVANCED SM[2]

30% had ≥1 emergency room visit in prior year

51% take ≥3 prescription medicines for SM

65% reported SM impacted their ability to work

90% feel SM controls their life to some extent

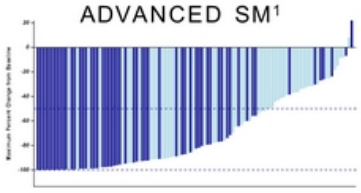
Worse physical functioning and mental health reported than patients with colorectal or lung cancer

1. Sperr WR, et al. Lancet Haematol, 2019. 2. Data from the TouchStone Survey presented at American Society of Hematology annual meeting in December 2020.

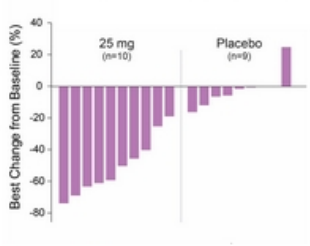
Avapritinib is a clinically validated, highly potent inhibitor of KIT D816V

REDUCED MAST CELL BURDEN

ADVANCED SM[1]

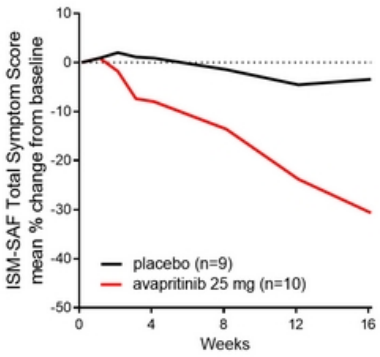


NON-ADVANCED SM[2]



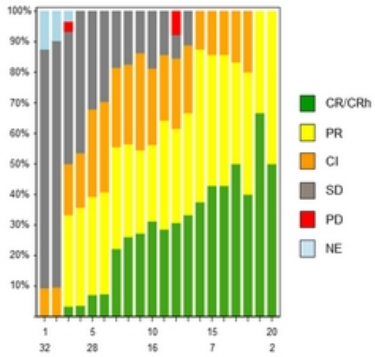
IMPROVED DISEASE SYMPTOMS

NON-ADVANCED SM[2]



INDUCED DEEP AND DURABLE RESPONSES

ADVANCED SM[1]



Safety data support evaluation of chronic treatment

1. Top-line EXPLORER and PATHFINDER data reported in September 2020. Data cutoff: May 27, 2020 for EXPLORER and June 23, 2020 for PATHFINDER, with response assessments per central review completed in September 2020. 2. Data reported at AAAAI Annual Meeting in March 2020. Data cutoff: December 27, 2019.

Broad clinical strategy designed to address the spectrum of medical need in non-advanced SM

Avapritinib

- FDA breakthrough therapy designation granted for moderate to severe indolent SM

PIONEER

Phase 2 trial in non-advanced SM

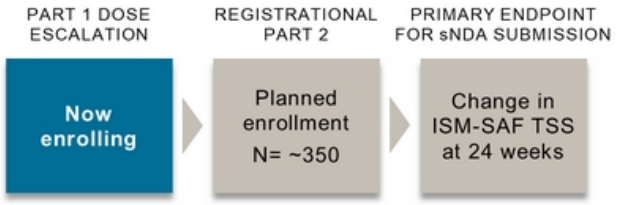
Plan to report top-line registration-enabling Part 2 data in mid-2022

BLU-263

- Next-generation KIT D816V inhibitor
- Opportunity to reach a broader population of patients with SM, based on potential for optimized risk-benefit profile

HARBOR

Phase 2/3 trial in non-advanced SM



Plan to present data in 2H 2022

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ISM-SAF, indolent SM symptom assessment form; RP2D, recommended part 2 dose; TSS, total symptom score.

ISM-SAF is a patient-reported outcomes tool developed with input from SM patients, disease experts and global regulatory authorities

ISM-Symptom Assessment Form

- Clinical benefit measure and primary endpoint for PIONEER trial
- Designed with input from disease experts, patients and regulatory authorities to support regulatory approval[1]
- ISM-SAF produced reliable, construct-valid, sensitive scores when administered in PIONEER Part 1 to patients with indolent SM[2]

Symptom	Domains	Score
Abdominal pain	GI (0 – 30)	Scored 0 – 10 daily (24-hour recall) on a handheld device 0 is no symptoms 10 is worst Analyzed as a 14-day moving average
Diarrhea		
Nausea		
Spots	Skin (0 – 30)	
Itching		
Flushing		
Brain Fog	Neurocognitive (0 – 30)	
Headache		
Dizziness		
Bone pain		
Fatigue		

Total Symptom Score (0-110)

1. Taylor, et al. Orphanet J Rare Dis, 2021. 2. Padilla, et al. Orphanet J Rare Dis, 2021. GI, gastrointestinal.

ISM-SAF TSS correlates with symptom and quality of life measures

CLINICALLY IMPORTANT TSS OUTCOMES

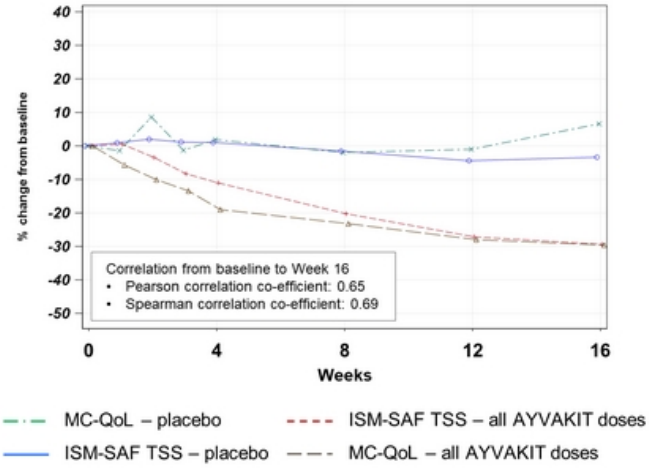
~30% reduction in ISM-SAF TSS

- 30% reduction in TSS is correlated with 1 to 2-point change on PGIS symptom questionnaire[1]
- 2-point reduction on PGIS is associated with change from severe to mild symptoms[2]

~30% difference in ORR versus placebo

- Registration-enabling symptom assessment tools have shown ORR differences of ~15-40% versus placebo (e.g., linaclotide, ruxolitinib)[2]

PIONEER PART 1 DATA SHOW TSS CORRELATES WITH MC-QOL[3]



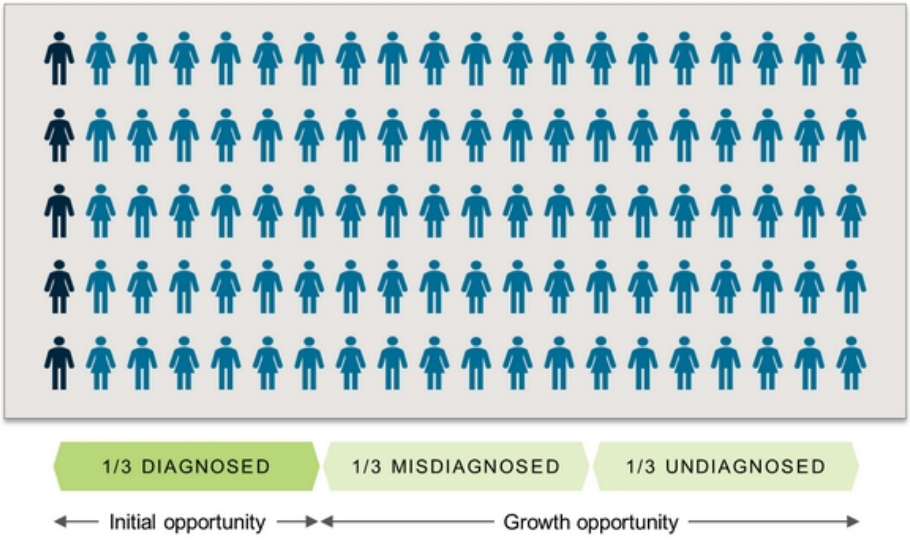
1. Padilla, et al. Orphanet J Rare Dis, 2021. 2. Linaclotide and ruxolitinib prescribing information. 3. Data reported at AAAAI annual meeting in March 2020. Data cutoff: December 27, 2019. PGIS, Patient Global Impression of Symptom Severity; ORR, overall response rate.

Significant initial target SM patient population, with high growth potential

75,000 SM PATIENTS IN MAJOR MARKETS

5-10%
ADVANCED SM

90-95%
NON-ADVANCED SM



Major markets include U.S., France, Germany, Italy, Spain, the United Kingdom and Japan. Cohen S et al Br J Haematol (2014) 166(4):521-8 and World Bank Population data. Reported data represent estimations only.

We're executing a comprehensive plan to accelerate SM patient identification

RAISE AWARENESS VIA EDUCATION

- Multiple ongoing healthcare provider and patient education programs designed to unmask signs and symptoms of disease

SUPPORT ACCESS TO TESTING

- Sponsored no-charge KIT D816V testing program with LabCorp Oncology now available for patients with suspected SM

GENERATE EVIDENCE

- PROSPECTOR screening study initiated to assess KIT D816V prevalence in patients with evidence of mast cell activation

ENHANCE TESTING INFRASTRUCTURE

- Highly sensitive blood-based KIT D816V testing is recommended and available at laboratories covering >80% of SM patients
- Ongoing community engagement to generate testing and treatment algorithms

LUNG CANCER

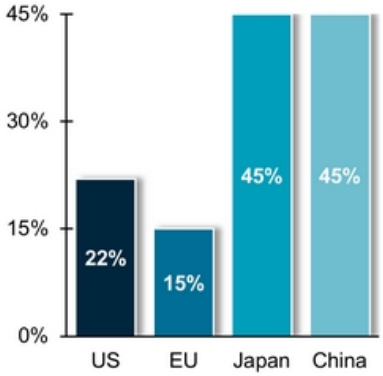
STRATEGIC THERAPEUTIC AREA

Precision that Moves

We help patients stay one step ahead with therapies that adapt to disease evolution. This includes solving for treatment resistance and intractable sites of progression, as well as pioneering innovative combinations to prolong benefit.

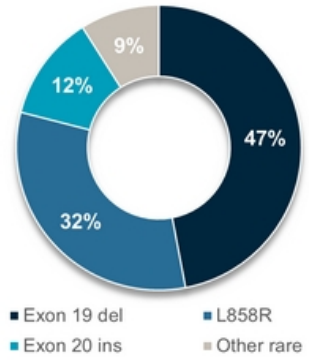
Significant medical needs in EGFR-driven non-small cell lung cancer

EGFR MUTATIONS ARE THE SECOND MOST COMMON ONCOGENIC DRIVER IN NSCLC[1]



Estimated EGFR mutation rates in NSCLC adenocarcinoma

>90% OF ACTIVATING EGFR MUTATIONS ARE EXON 19 DELETIONS, L858R OR EXON 20 INSERTIONS[2]



Frequency of activating EGFR mutations in a recent U.S. multi-center study

EXON 19 DELETION & L858R

- Treatment resistance is a major issue, and no therapies are approved post osimertinib
- CNS is a common site of progression

EXON 20 INSERTION MUTATIONS

- All approved and investigational therapies have important safety, efficacy and/or CNS activity limitations

1. Datamonitor, SEER, Incidence and Prevalence Database, GBD 2019, WHO, IARC, RKI, Cancer Research UK, Siegel 2015 CA Cancer J Res, Sonoda 2019 Cancer Manag Res. 2. Riess 2018 J Thorac Oncol. CNS, central nervous system; Del, deletion; Ins, insertion.

Commercial foundation in RET+ NSCLC, with a comprehensive EGFR pipeline

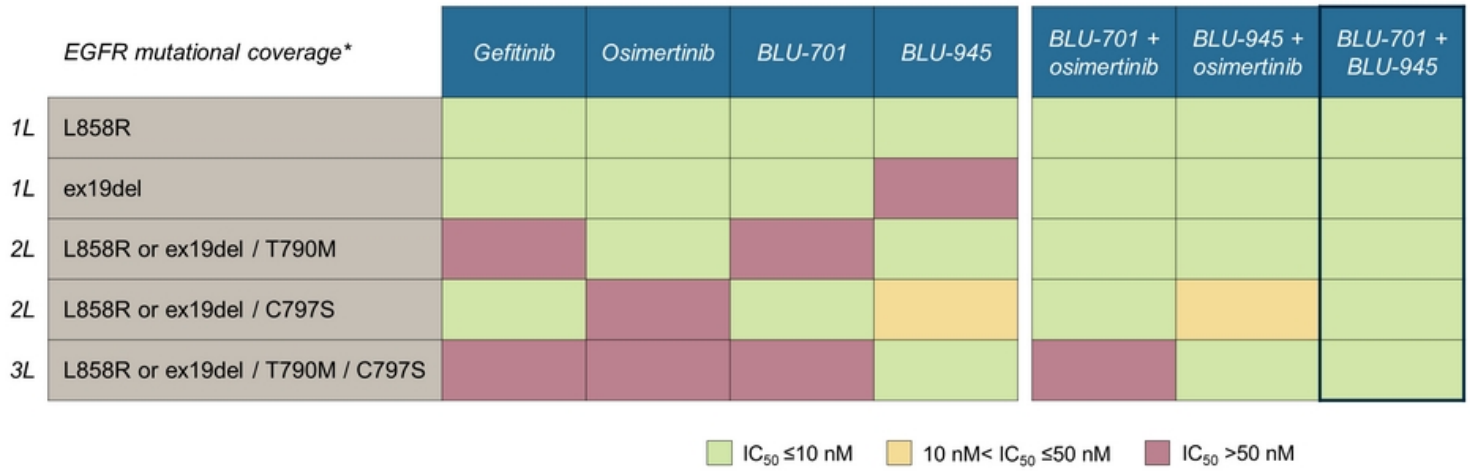
	Therapeutic targets	Program status
GAVRETO® (pralsetinib)	• RET fusions and predicted resistance mutations	• Approved for first-line treatment of metastatic RET fusion+ NSCLC in the US and EU
BLU-945	• EGFR L858R or exon 19 deletion plus on-target resistance mutations	• Phase 1/2 SYMPHONY trial enrolling
BLU-701	• EGFR L858R or exon 19 deletion plus on-target resistance mutations • Highly brain penetrant*	• Phase 1/2 HARMONY trial enrolling
BLU-451 (formerly LNG-451)	• EGFR exon 20 insertion mutations • Highly brain penetrant*	• IND submitted to FDA

COMPLETED ACQUISITION OF LENGO THERAPEUTICS IN DECEMBER 2021

NSCLC, non-small cell lung cancer; IND, investigational new drug application. *Based on preclinical models.

BLU-945 and BLU-701 designed to provide broad coverage of EGFR mutations

T790M & C797S: MOST COMMON ON-TARGET RESISTANCE TO 1G AND 3G, RESPECTIVELY



* Based on biochemical IC_{50}. 1L, first line; 2L, second line; 3L, third line; 1G, first generation; 3G, third generation; 4G, fourth generation; nM, nanomolar.

BLU-945: potential first-in-class triple-mutant EGFR inhibitor, with exceptional wild-type EGFR selectivity to enable combinations

POTENCY ON RESISTANCE MUTANTS[1]

	BLU-945	gefitinib	osimertinib
L858R/T790M	**1.2**	4679.8	4.7
ex19del/T790M/C797S	**4.4**	4864.7	>10000
L858R/T790M/C797S	**2.9**	6707.7	7754.6

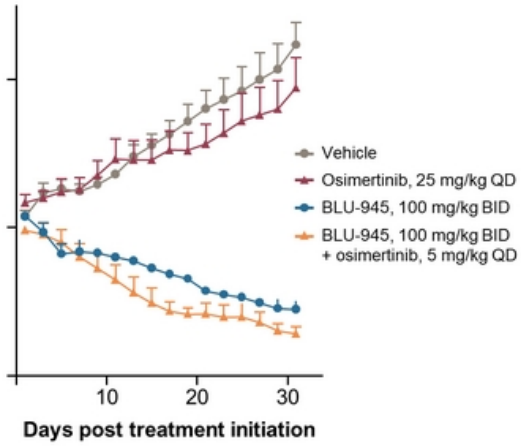
WILD-TYPE SELECTIVITY[2]

Wild-type EGFR	**544.4**	16.5	115.9

- BLU-945 demonstrated robust CNS activity in preclinical models

ANTI-TUMOR ACTIVITY ALONE AND IN COMBINATION WITH OSIMERTINIB

Ex19del/T790M/C797S triple mutant PDX model



Data presented at AACR 2021 Annual Meeting. 1. Cellular inhibition IC_{50} (nM) in NCI-H1975 (EGFR double mutant) and Ba/F3 (EGFR triple mutant) cell lines. 2. Cellular inhibition IC_{50} in A431 (wild-type EGFR) cell line. Wild-type EGFR selectivity shading: green = >50 nM; yellow = >10 nM, ≤50 nM. PDX, patient-derived xenograft.

BLU-701: potential best-in-class coverage of activating EGFR mutations, plus C797S osimertinib-resistant mutants

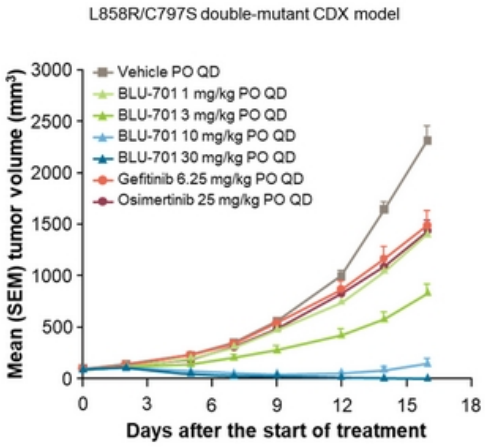
POTENCY ON ACTIVATING & RESISTANCE MUTANTS[1]

	BLU-701	gefitinib	osimertinib
ex19del	**3.3**	4.6	5.0
L858R	**3.3**	4.2	10.3
ex19del/C797S	**1.8**	6.1	>8000
L858R/C797S	**3.3**	3.8	>7000

WILD-TYPE SELECTIVITY[2]

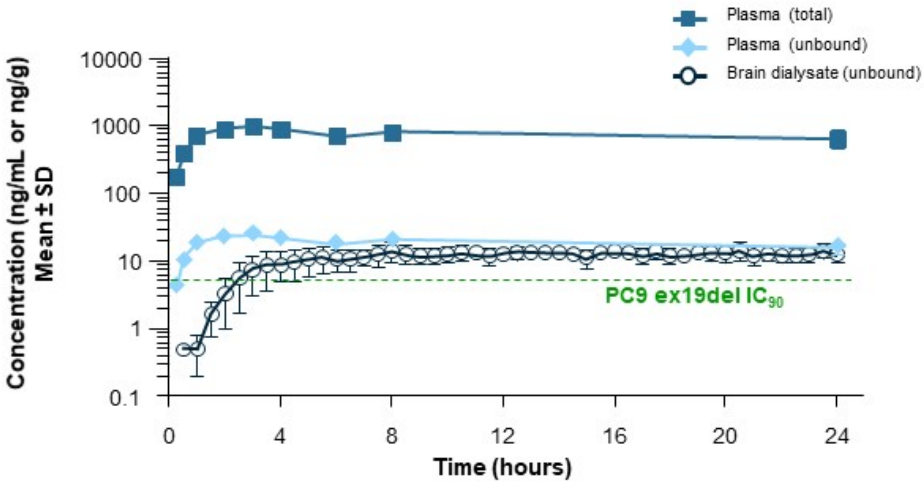
Wild-type EGFR	**107.3**	16.6	113.6

SINGLE AGENT ANTI-TUMOR ACTIVITY



Data presented at AACR 2021 Annual Meeting. 1. Cellular inhibition IC_{50} (nM) in Ba/F3 cell lines. 2. Cellular inhibition IC_{50} in A431 (wild-type EGFR) cell line. Wild-type EGFR selectivity shading: green = >50 nM; yellow = >10 nM, ≤50 nM. PO, oral administration. CDX, cell-line derived xenograft.

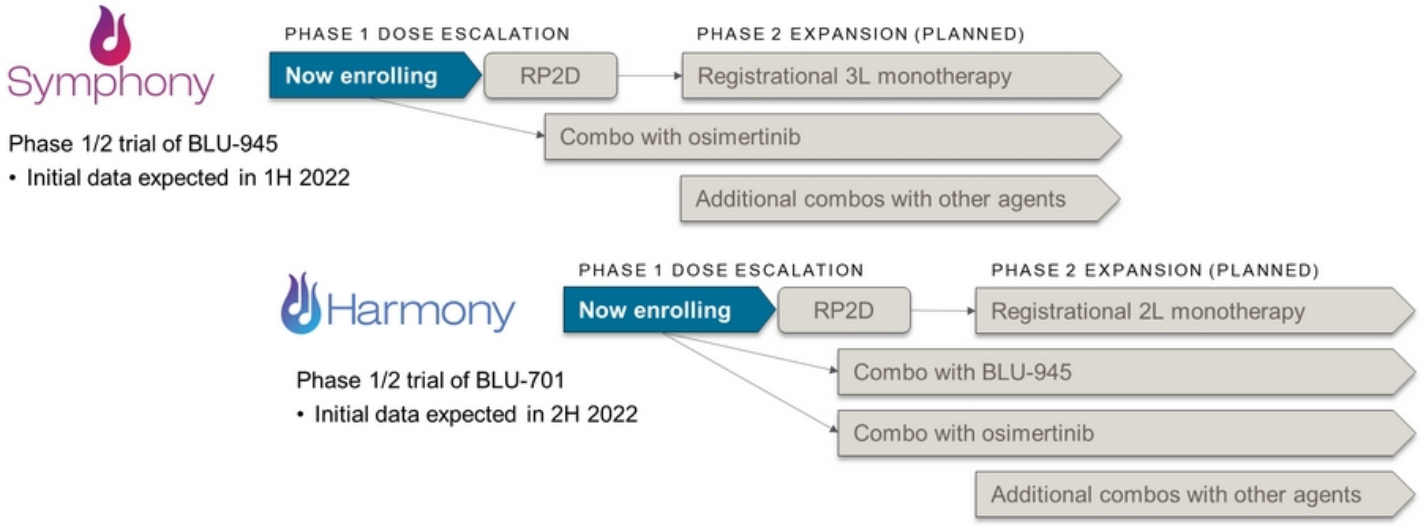
BLU-701 plasma and brain concentrations are comparable in preclinical models, suggesting significant brain penetration



Compound	IV infusion $Kp_{u,u}$ (C_{ss})[a]
BLU-701	0.98
Gefitinib	0.11
Osimertinib	0.30

BLU-701 30 MG/KG ACHIEVED CONCENTRATIONS ABOVE IC_{90} IN PLASMA AND BRAIN DIALYSATE

Ongoing clinical programs designed to rapidly explore combination therapies



PLAN TO RAPIDLY INITIATE COMBINATION COHORTS BASED ON INITIAL PHASE 1 DATA

RP2D, recommended Phase 2 dose.

BLU-451: a potential best-in-class EGFR exon 20 precision therapy

- **Potent inhibition** of all common EGFR exon 20 insertion variants
- **Brain penetrant** with robust activity in a preclinical intracranial model
- **Highly selective** over wild-type EGFR and off-target kinases
- **Oral administration**, with well-characterized preclinical pharmacology

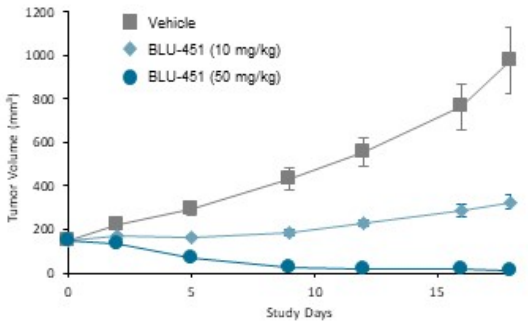
BLU-451 PRECLINICAL PROFILE HAS POTENTIAL TO TRANSLATE INTO IMPROVED SAFETY AND EFFICACY, INCLUDING IN PATIENTS WITH BRAIN METASTASES

Preclinical data show BLU-451 is highly selective, potent and CNS penetrant

HIGHLY SELECTIVE OVER WILD-TYPE EGFR (CELLULAR ACTIVITY IC50, NM)

	BLU-451
WT EGFR	1,630
EGFR Exon 20 insertion variants: SVD	53
EGFR Exon 20 insertion variants: ASV	78
EGFR Exon 20 insertion variants: NPH	75
EGFR Exon 20 insertion variants: FQEA	61
EGFR Exon 20 insertion variants: NPG	7

ROBUST ANTI-TUMOR ACTIVITY IN AN EGFR EXON 20 MODEL

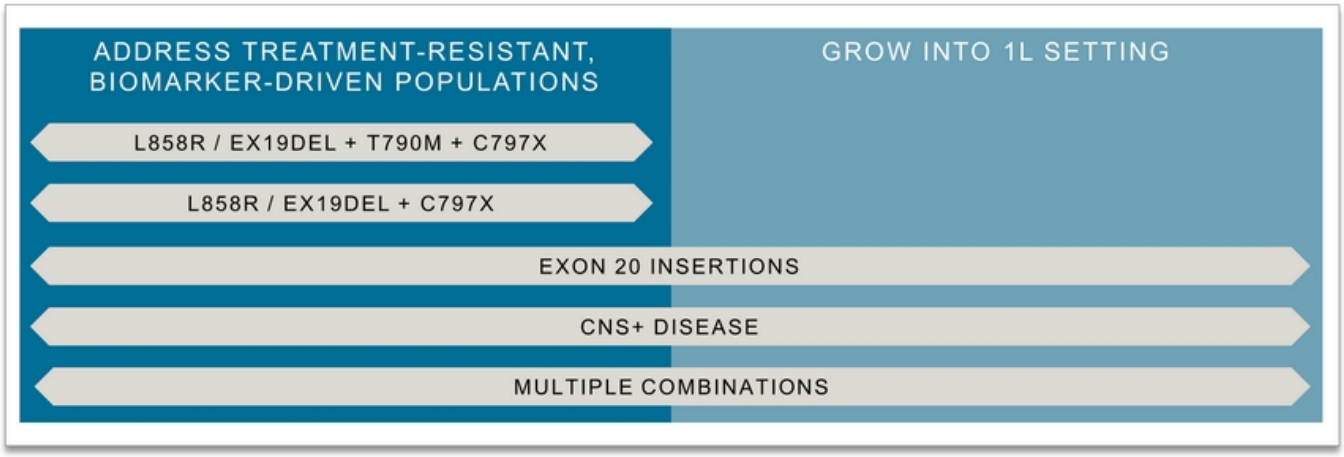


HIGHLY CNS PENETRANT: $KP_{U,U}$ = 0.66

PLAN TO PRESENT DETAILED PRECLINICAL DATA FOR BLU-451 IN 1H 2022

Lengo Therapeutics data on file. WT EGFR lines comprise A431, H2073, and Ba/F3 WT EGFR cells. In vivo efficacy demonstrated in LU0387 PDX model.

Broad EGFR-driven NSCLC franchise strategy with paths to first-line setting



INITIATED STRATEGIC COLLABORATION FOR BLU-701 & BLU-945 WITH ZAI LAB IN GREATER CHINA IN Q4 2021

C797X comprises multiple variants including C797S.

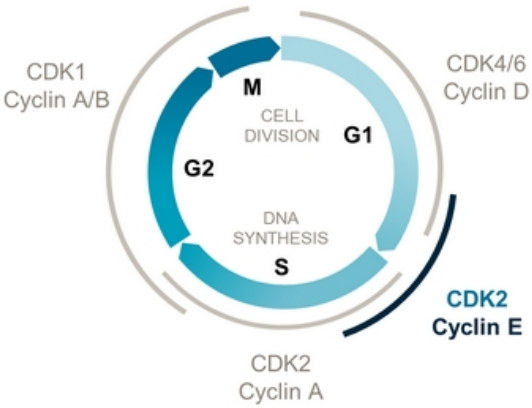
ADDITIONAL PIPELINE PROGRAMS

The Urgency of Now

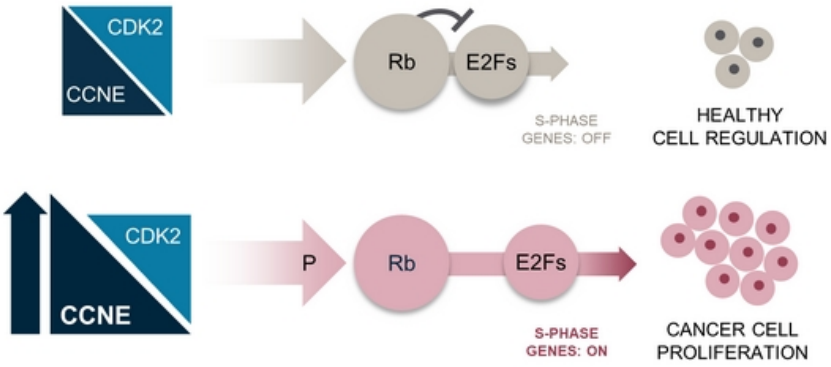
We are constantly on the move, relentless in our determination to accelerate development of new therapies, expedite clinical trials and quickly bring approved medicines to patients worldwide.

Aberrant cyclin E unleashes cellular proliferation

CDK-CYCLIN COMPLEXES REGULATE THE CELL CYCLE



ABERRANT CYCLIN E (CCNE1) DRIVES PROLIFERATION

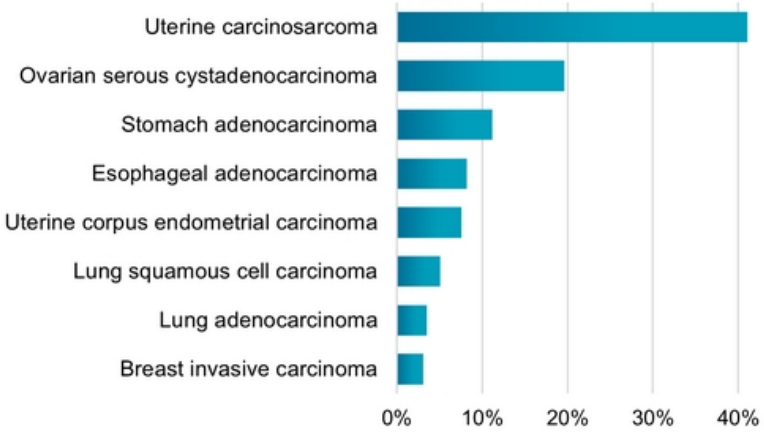


Aberrant CCNE hyperactivates CDK2, dysregulating Rb protein phosphorylation and E2F transcription factor activation of S-phase genes, resulting in cancer cell proliferation

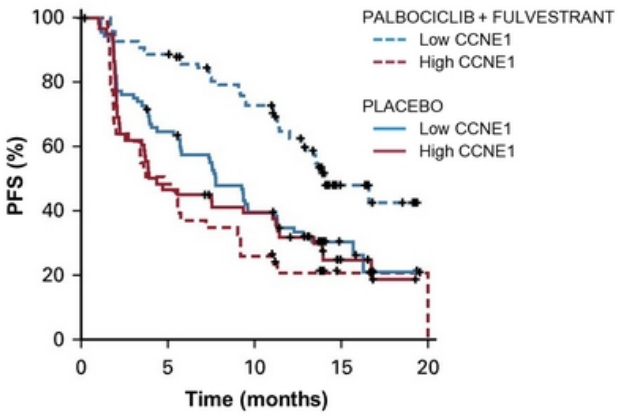
E2F, E2F transcription factor; P, phosphorylation; Rb, retinoblastoma protein.

Aberrant CCNE is a disease driver in multiple cancers

REPRESENTATIVE TUMOR TYPES BY CCNE1 AMPLIFICATION FREQUENCY[1]



LOWER PFS IN PALBOCICLIB-TREATED HR+ BREAST CANCER WITH HIGH CCNE1[2]



1. CCNE1 amplification frequency represented as percentage of total patient samples. Data from the National Cancer Institute's The Cancer Genome Atlas Program (www.cancer.gov/tcga). 2. Turner, et al. Cyclin E1 expression and palbociclib efficacy in previously treated hormone receptor-positive metastatic breast cancer. J Clin Oncol, 2019.

Our highly selective and potent CDK2 inhibitors spare CDK anti-targets

KEY ANTI-TARGETS

		ENZYME ACTIVITY IC_{50} (NM)					
	Kinome S (10)	CDK2	CDK1	CDK4	CDK6	CDK7	CDK9
BLU0298	0.045	2.6	233.6	377.4	275.2	6941.2	6115.1
BLU1954	0.055	0.2	110.1	114.5	190.6	3928.9	849.1
BLU2256	0.040	0.1	152.9	116.9	393.2	4826.4	9063.2

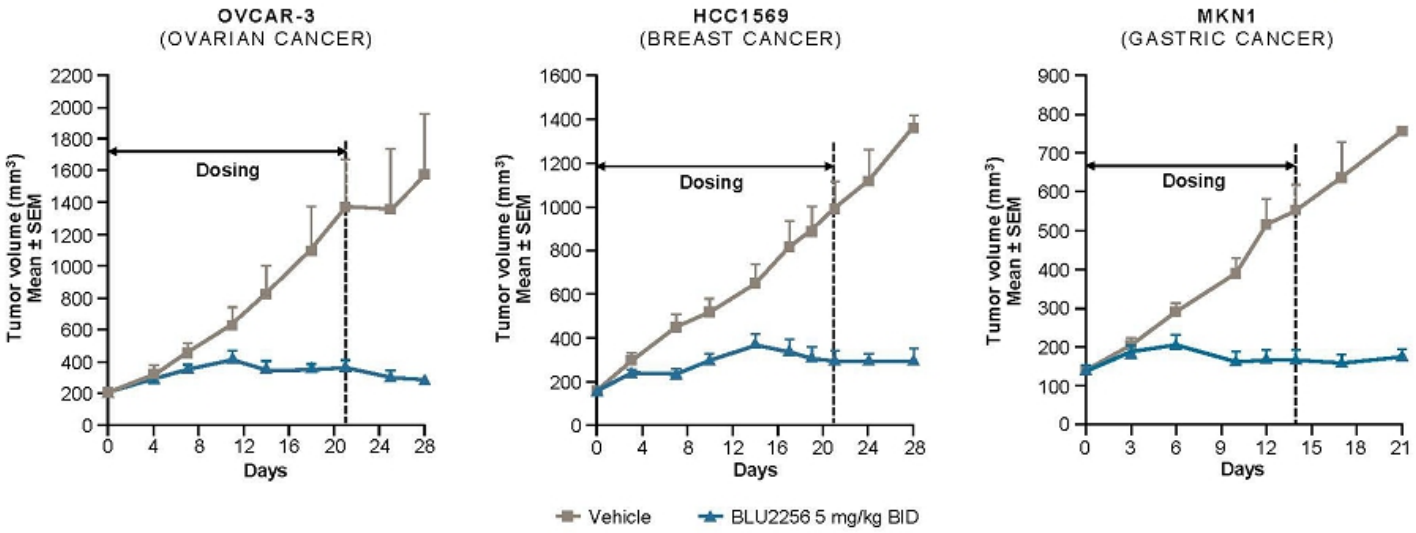
ASSOCIATED TOXICITIES: Gastrointestinal | Hematologic

PLAN TO PRESENT PRECLINICAL DATA FOR BLU-222 IN 1H 2022

Data presented at AACR 2021 Annual Meeting.

Not for promotional use.

Selective CDK2 inhibition led to sustained anti-tumor activity in CCNE1-amplified *in vivo* models



PLAN TO PRESENT PRECLINICAL DATA FOR BLU-222 IN 1H 2022

Data presented at AACR 2021 Annual Meeting. BID, twice daily.

On track to initiate broad BLU-222 clinical development program

PHASE 1/2 TRIAL OF BLU-222
IN CCNE1 ABERRANT CANCERS

PHASE 1 DOSE ESCALATION

Multiple dose cohorts → RP2D

- Safety
- Preliminary clinical activity
- Patient selection strategy

PHASE 2 EXPANSION

- Monotherapy – CCNE1 tumor(s) with accelerated development path
- Monotherapy – multiple other CCNE1 tumors (basket cohort)
- Combo with chemotherapy – multiple CCNE1 tumors
- Combo with CDK4/6i + ER antagonist – ER+/HER2- breast cancer

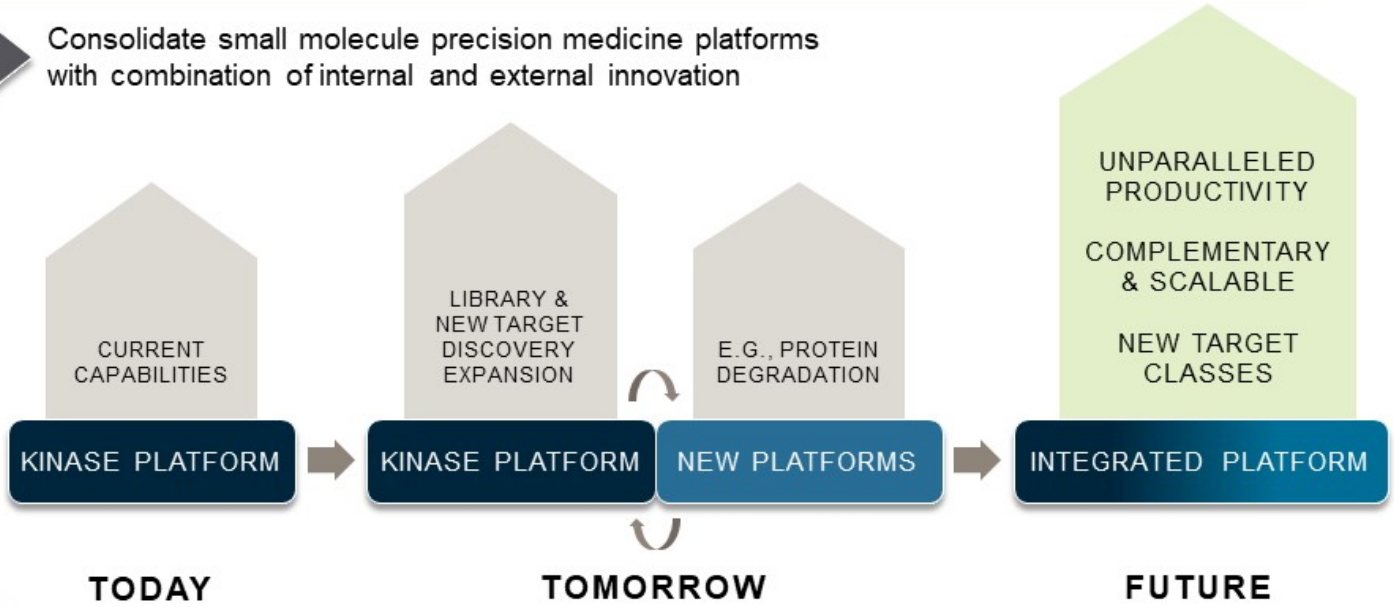
PLAN TO INITIATE VELA TRIAL OF BLU-222 IN Q1 2022

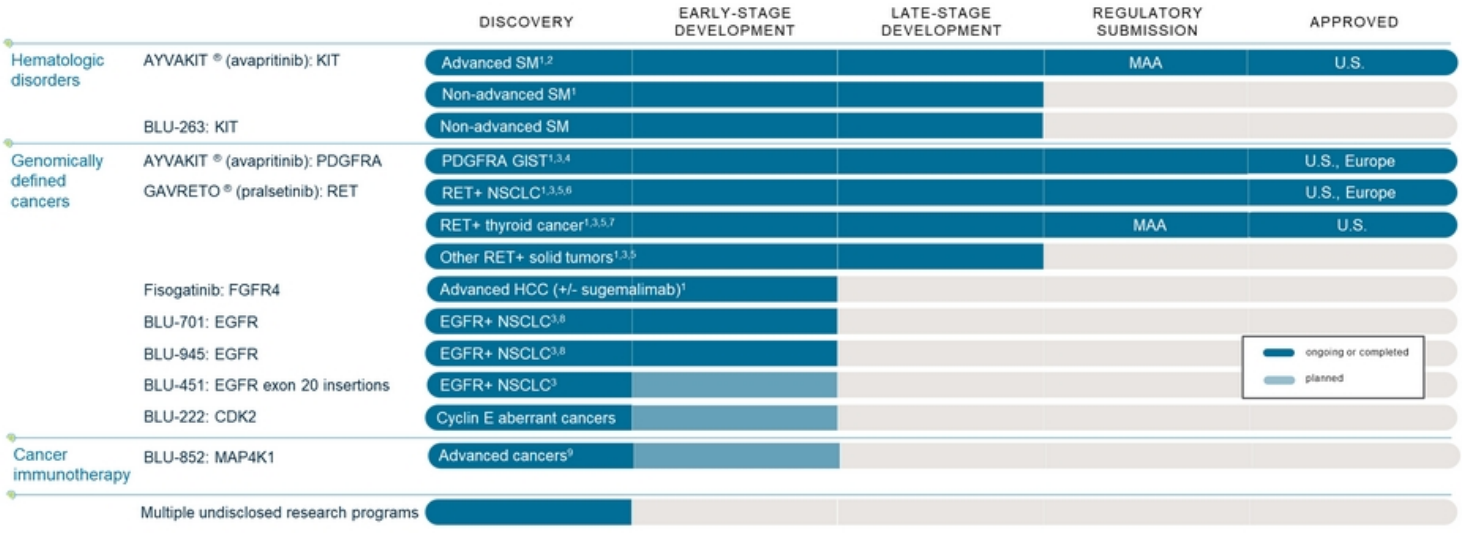
CCNE1, cyclin E; CDK4/6i, CDK4/6 inhibitor; ER, estrogen receptor.

Not for promotional use.

Planned research platform expansion to drive innovation & expanded productivity

Consolidate small molecule precision medicine platforms with combination of internal and external innovation





1. CStone Pharmaceuticals has exclusive rights to develop and commercialize avapritinib, pralsetinib and fisogatinib in Mainland China, Hong Kong, Macau and Taiwan. 2. Approved in the U.S. for the treatment of adults with advanced SM, including aggressive SM, SM with an associated hematologic neoplasm and mast cell leukemia. 3. Unresectable or metastatic disease. 4. Approved in the U.S. for the treatment of adults with unresectable or metastatic GIST harboring a PDGFRA exon 18 mutation, including PDGFRA D842V mutations. Received conditional marketing authorization in Europe under the brand name AYVAKYT® for the treatment of adults with unresectable or metastatic GIST harboring the PDGFRA D842V mutation. 5. In collaboration with Roche. Blueprint Medicines and Roche have co-exclusive rights to develop and commercialize pralsetinib in the U.S., and Roche has exclusive rights to develop and commercialize pralsetinib outside the U.S., excluding the CStone territory. 6. Received accelerated approval in the U.S. for the treatment of adults with metastatic RET fusion-positive NSCLC. Continued approval may be contingent on a confirmatory trial. Received conditional marketing authorization in Europe for the treatment of adults with advanced RET fusion-positive NSCLC not previously treated with a RET inhibitor. 7. Received accelerated approval in the U.S. for the treatment of patients with advanced or metastatic RET-mutant medullary thyroid cancer and RET fusion-positive thyroid cancer. Continued approval may be contingent on confirmatory trials. 8. Zai Lab has exclusive rights to develop and commercialize BLU-701 and BLU-945 in Mainland China, Hong Kong, Macau and Taiwan. 9. In collaboration with Roche. Blueprint Medicines and Roche are conducting activities for up to two programs under the collaboration, including the program targeting MAP4K1. For one of the programs, Blueprint Medicines has U.S. commercial rights and Roche has ex-U.S. commercialization rights. For one of the programs, Roche has worldwide commercialization rights. GIST, gastrointestinal stromal tumors; HCC, hepatocellular carcinoma; MAA, marketing authorization application; NSCLC, non-small cell lung cancer; SM, systemic mastocytosis.

Updated as of January 10, 2022.

Not for promotional use.

A breadth of planned value-driving milestones across our portfolio

Expand SM leadership	• Obtain EMA approval and launch AYVAKYT in advanced SM in Europe in 1H 2022 • Report topline registration-enabling PIONEER Part 2 trial data for AYVAKIT in non-advanced SM in mid-2022 • Submit sNDA to the FDA for AYVAKIT in non-advanced SM in 2H 2022 • Present data from the HARBOR trial of BLU-263 in non-advanced SM in 2H 2022
Advance programs toward registration	• Present preclinical data for the combination of BLU-945 and BLU-701 in EGFR-driven NSCLC in 1Q 2022 • Present initial SYMPHONY trial data for BLU-945 in EGFR-driven NSCLC in 1H 2022 • Present initial HARMONY trial data for BLU-701 in EGFR-driven NSCLC in 2H 2022 • Initiate Phase 1/2 trial of BLU-451 in Exon 20 insertion positive NSCLC in 1Q 2022 • Present preclinical data for BLU-451 in Exon 20 insertion positive NSCLC in 1H 2022 • Initiate VELA trial of BLU-222 in cyclin-E aberrant cancers in 1Q 2022 • Present preclinical data for BLU-222 in cyclin-E aberrant cancers in 1H 2022 • Submit additional marketing applications for GAVRETO for RET-altered NSCLC and thyroid cancers across multiple global geographies in 2022, via ongoing Roche collaboration
Grow R&D pipeline	• Nominate two new development candidates in 2022 • Share the company's precision therapy research vision, including scientific platform expansion plans, at an R&D Day in 2H 2022

Our path to potential transformative growth and an independent financial profile

YEAR END 2021

- AYVAKIT/AYVAKYT and GAVRETO approved with ongoing global expansion
- A leading precision therapy research platform
- Strong financial position with ~$1B cash and cash equivalents

NEAR-TERM PLANS

- Constellation of clinical across strategic therape
- AYVAKIT launch in non systemic mastocytosis
- Continued product reve collaboration milestones

FUTURE GOALS • 2024-2025+

- Broad portfolio of marketed medicines in precision oncology and hematology
- Diversified research platform with unparalleled productivity
- Independent financial profile

blueprint MEDICINES

Not for promotional use.

Exhibit 99.2

Blueprint Medicines Provides 2022 Portfolio Goals Targeting Expanded Precision Therapy Leadership

– Achieved full-year 2021 preliminary global net product revenue for AYVAKIT of approximately $52.9 million, representing an increase of approximately 150% over 2020 based on strong initial U.S. demand in advanced SM –

– Registration-enabling PIONEER trial of AYVAKIT in non-advanced systemic mastocytosis fully enrolled, with data expected in mid-2022 –

– Plan to report initial SYMPHONY trial data for BLU-945 in EGFR-driven lung cancer in 1H 2022 –

– Initiated HARMONY trial of BLU-701 in EGFR-driven lung cancer, with initial data expected in 2H 2022 –

– Plan to initiate clinical trials of BLU-451 (formerly LNG-451) in EGFR exon 20 insertion positive lung cancer and BLU-222 in cyclin E aberrant cancers in Q1 2022 –

CAMBRIDGE, Mass., January 10, 2022 – Blueprint Medicines Corporation (NASDAQ: BPMC) today outlined upcoming portfolio milestones that are anticipated to extend its position as a leading precision therapy company.

“With two precision therapies expanding their global reach across multiple approved indications, four INDs filed from our portfolio in 2021, and a range of clinical data inflection points anticipated over the next 12 to 18 months, Blueprint Medicines is entering a new, transformative phase of growth,” said Jeff Albers, Chief Executive Officer of Blueprint Medicines. “As we look ahead to 2022, we have the foundation in place to dramatically expand our opportunity to improve the lives of increasingly broad populations of patients with cancer and blood disorders. We will do this by advancing our systemic mastocytosis franchise to improve treatment across the spectrum of disease, progressing multiple innovative precision therapies for lung cancer and other genomically defined cancers toward registration, and diversifying our scientific platform to maintain unparalleled research productivity. Supported by strong commercial performance for AYVAKIT in advanced systemic mastocytosis and a clear pathway to financial independence, we are well positioned to usher in a new era of leadership and innovation in the field of precision medicine.”

The company’s key strategies and upcoming goals are to:

1. Expand the company’s leadership position in systemic mastocytosis (SM), improving treatment options for patients across the spectrum of the disease.

AYVAKIT®/AYVAKYT® (avapritinib) and BLU-263: SM

- Obtain regulatory approval from the European Medicines Agency and launch AYVAKYT in advanced SM in Europe in the first half of 2022.
- Report topline data from the registration-enabling Part 2 of the PIONEER trial of AYVAKIT in non-advanced SM in mid-2022.
- Submit a supplemental new drug application to the U.S. Food and Drug Administration for AYVAKIT in non-advanced SM in the second half of 2022.
- Present data from the HARBOR trial of BLU-263 in non-advanced SM in the second half of 2022.

2. Advance a robust portfolio of innovative clinical programs towards registration.

BLU-945 and BLU-701: EGFR-driven NSCLC

- Present preclinical data supporting the combination of BLU-945 and BLU-701 in the first quarter of 2022.
- Present initial clinical data from the Phase 1/2 SYMPHONY trial of BLU-945 in the first half of 2022.
- Present initial clinical data from Phase 1/2 HARMONY trial of BLU-701 in the second half of 2022.

BLU-451 (formerly LNG-451): EGFR exon 20 insertion-positive NSCLC

- Initiate a Phase 1/2 trial of BLU-451 in the first quarter of 2022.
- Present preclinical data for BLU-451 in the first half of 2022.

BLU-222: Cyclin-E aberrant cancers

- Initiate the Phase 1/2 VELA trial of BLU-222 in the first quarter of 2022.
- Present preclinical data for BLU-222 in the first half of 2022.

GAVRETO® (pralsetinib): RET-altered cancers

- Submit additional marketing applications for GAVRETO for RET-altered NSCLC and thyroid cancers across multiple additional global geographies in 2022, via the company's ongoing global collaboration with Roche.

3. Grow the R&D pipeline with diverse, high-value programs from company's prolific scientific platform.

Research

- Expand pipeline with two new development candidates in 2022.
- Share the company's research vision, including scientific platform expansion plans, at an R&D Day in the second half of 2022.

Financial Guidance

Blueprint Medicines also announced preliminary[1] global product revenues for AYVAKIT for full year 2021 and the fourth quarter of 2021 were approximately $52.9 million, and $20.0 million, respectively, representing an increase of approximately 150 percent and 230 percent over the same periods in 2020 based on strong initial U.S. demand in advanced SM. Full year 2021 total revenues, including collaboration revenues, are expected to be at the higher-end of previous guidance of $170-$180 million. Cash, cash equivalents and investments as of December 31, 2021 were approximately $1.0 billion.[1] Based on its current operating plans, Blueprint Medicines continues to expect that its existing cash, cash equivalents and investments, together with anticipated future product revenues, will provide sufficient capital to enable the company to achieve a self-sustainable financial profile.

[1]The preliminary selected financial results are unaudited, subject to adjustment, and provided as an approximation in advance of the Company's announcement of complete financial results in February 2022.

About Blueprint Medicines

Blueprint Medicines is a global precision therapy company that invents life-changing therapies for people with cancer and blood disorders. Applying an approach that is both precise and agile, we create medicines that selectively target genetic drivers, with the goal of staying one step ahead across stages of disease. Since 2011, we have leveraged our research platform, including expertise in molecular targeting and world-class drug design capabilities, to rapidly and reproducibly translate science into a broad pipeline of precision therapies. Today, we are delivering approved medicines directly to patients in the United States and Europe, and we are globally advancing multiple programs for systemic mastocytosis, lung cancer and other genomically defined cancers. For more information, visit www.BlueprintMedicines.com and follow us on Twitter (@BlueprintMeds) and LinkedIn.

Cautionary Note Regarding Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, without limitation, statements regarding plans, strategies, timelines and expectations for Blueprint Medicines' current or future approved drugs and drug candidates, including timelines for marketing applications and approvals, the initiation of clinical trials or the results of ongoing and planned clinical trials; plans to expand Blueprint Medicines' scientific platform; Blueprint Medicines' plans, strategies and timelines to nominate development candidates; plans and timelines for additional marketing applications for avapritinib and pralsetinib and, if approved, commercializing avapritinib and pralsetinib in additional geographies or for additional indications; the potential benefits of any of Blueprint Medicines' current or future approved drugs or drug candidates in treating patients; the potential benefits of Blueprint Medicines' collaborations; preliminary selected financial results; and Blueprint Medicines' strategy, goals and anticipated financial performance, milestones, business plans and focus. The words "aim," "may," "will," "could," "would," "should," "expect," "plan," "anticipate," "intend," "believe," "estimate," "predict," "project," "potential," "continue," "target" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Any forward-looking statements in this press release are based on management's current expectations and beliefs and are subject to a number of risks, uncertainties and important factors that may cause actual events or results to differ materially from those expressed or implied by any forward-looking statements contained in this press release, including, without limitation, risks and uncertainties related to the impact of the COVID-19 pandemic to Blueprint Medicines' business, operations, strategy, goals and anticipated milestones, including Blueprint Medicines' ongoing and planned research and discovery activities, ability to conduct ongoing and planned clinical trials, clinical supply of current or future drug candidates, commercial supply of current or future approved products, and launching, marketing and selling current or future approved products; Blueprint Medicines' ability and plans in continuing to establish and expand a commercial infrastructure, and successfully launching, marketing and selling current or future approved products; Blueprint Medicines' ability to successfully expand the approved indications for AYVAKIT/AYVAKYT and GAVRETO or obtain marketing approval for AYVAKIT/AYVAKYT in additional geographies in the future; the delay of any current or planned clinical trials or the development of Blueprint Medicines' current or future drug candidates; Blueprint Medicines' advancement of multiple early-stage efforts; Blueprint Medicines' ability to successfully demonstrate the safety and efficacy of its drug candidates and gain approval of its drug candidates on a timely basis, if at all; the timing and results of preclinical and clinical studies for Blueprint Medicines' drug candidates, which may not support further development of such drug candidates or may impact the timing of data publications or regulatory submissions; actions of regulatory agencies, which may affect the initiation, timing and progress of clinical trials; Blueprint Medicines' ability to obtain, maintain and enforce patent and other intellectual property protection for AYVAKIT/AYVAKYT, GAVRETO or any drug candidates it is developing; Blueprint Medicines' ability to develop and commercialize companion diagnostic tests for AYVAKIT/AYVAKYT, GAVRETO or any of its current and future drug candidates; Blueprint Medicines' ability to successfully expand its operations and scientific platform and the costs thereof; and the success of Blueprint Medicines' current and future collaborations, partnerships or licensing arrangements. These and other risks and uncertainties are described in greater detail in the section entitled "Risk Factors" in Blueprint Medicines' filings with the Securities and Exchange Commission (SEC), including Blueprint Medicines' most recent Annual Report on Form 10-K, as supplemented by its most recent Quarterly Report on Form 10-Q and any other filings that Blueprint Medicines has made or may make with the SEC in the future. Any forward-looking statements contained in this press release represent Blueprint Medicines' views only as of the date hereof and should not be relied upon as representing its views as of any subsequent date. Except as required by law, Blueprint Medicines explicitly disclaims any obligation to update any forward-looking statements.

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