Novartis AG
Investor Relations

Novartis Oncology Pipeline Update

June 15, 2020

NOVARTIS | Reimagining Medicine

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Agenda

Our strategy in Oncology

Pipeline updates across our therapeutic modalities

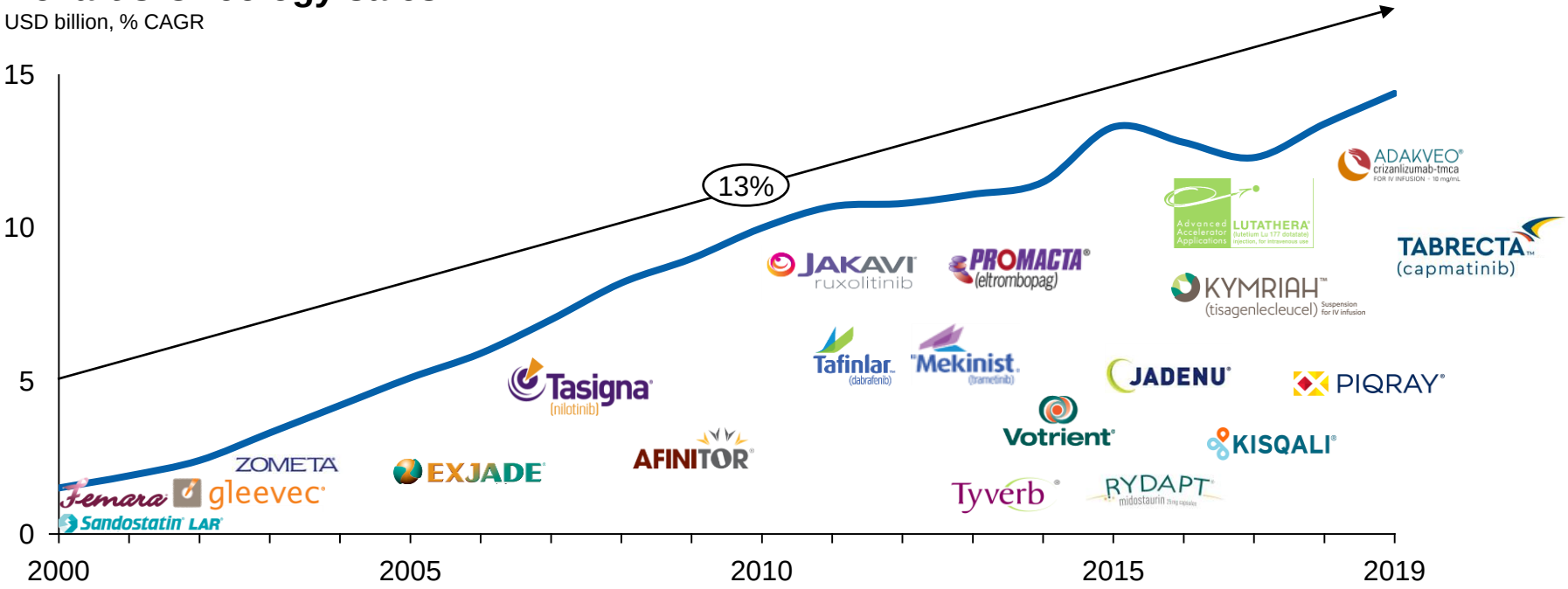
- Targeted Therapies: Kisqali®, Piqray®, Tabrecta™, Tafinlar®+Mekinist®, LXH254, TNO155, Asciminib
- Immunotherapies: Canakinumab, MBG543, Spartalizumab
- Radioligand: Lutathera®, ^{177}Lu-PSMA-617
- Cell & Gene: Kymriah®, YTB323

Q&A

Strong track record of pioneering innovation in Oncology

Novartis Oncology sales

USD billion, % CAGR



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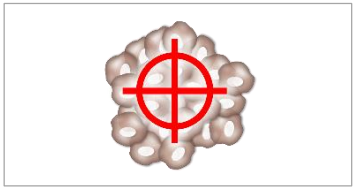
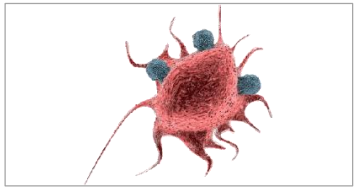
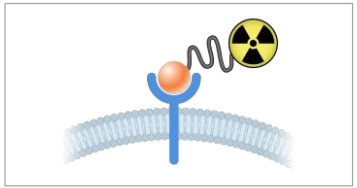
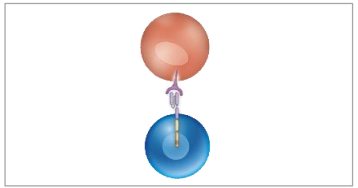
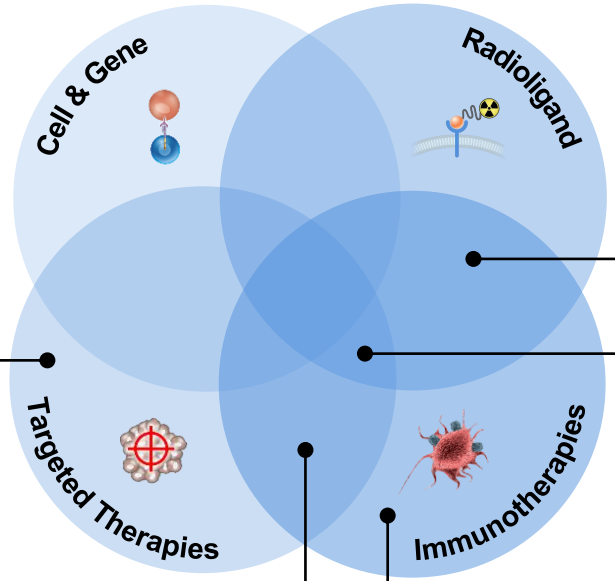
Four therapeutic modalities to drive future growth

	Targeted Therapies	Immunotherapies	Radioligand	Cell & Gene
				
Select pipeline assets and opportunities	**Kisqali**® in adjuvant BC **Alpelisib** in ▪ HER2+ advanced BC ▪ TNBC ▪ Head & neck ▪ Ovarian cancer ▪ PROS **Adakveo**® in sickle cell disease **Tabrecta**™ in NSCLC, single agent and combinations **Jakavi**® in GvHD, and combinations (platform) in MF **Asciminib** in CML **LXH254** in RAS/RAF mutant melanomas and lung cancer **TNO155** in solid tumors	**Canakinumab** in ▪ adjuvant NSCLC ▪ 1st line NSCLC ▪ 2nd line NSCLC **Spartalizumab+Tafinlar®+ Mekinist®** in metastatic melanoma **Spartalizumab combinations** (platform) in metastatic melanoma **Spartalizumab+LAG525+ carboplatin** in TNBC **Spartalizumab+Tabrecta**™ in NSCLC **MBG453** in MDS and AML **VPM087** in CRC and RCC **NIS793** in solid tumors	**Lutathera**® in 1st line grade 2/3 advanced GEP-NET **^{177}Lu-PSMA-617** in prostate cancer **^{177}Lu-PSMA-R2** in prostate cancer **^{177}Lu-NeoB** in multiple solid tumors **^{177}Lu-FF58** in glioblastoma	**Kymriah**® in ▪ r/r DLBCL after 1st relapse ▪ r/r follicular lymphoma ▪ r/r adult ALL ▪ combinations (pembrolizumab; ibrutinib) in r/r DLBCL ▪ pediatric NHL ▪ 1st line high risk pediatric and young adult ALL **YTB323** in ▪ r/r DLBCL ▪ r/r CLL combination with ibrutinib **PHE885** in r/r MM **Other targets:** BCMA&CD19, CD22&CD19, CD123, EGFRvIII

Ability to integrate drugs across modalities to increase depth and duration of response

SELECTED EXAMPLES



TT + TT

Tabrecta™ + EGFR in NSCLC
LXH254 (B/C-RAF) + LTT462 (ERK) in NSCLC, Melanoma
LXH254 + Mekinist® in NSCLC, Melanoma
LXH254 + Kisqali® in Melanoma
TNO155 (SHP2) + Kisqali® in NSCLC, CRC

TT + IO

Tafinlar® + Mekinist® + Spartalizumab in Melanoma
Tabrecta™ + Spartalizumab in NSCLC
TNO155 + Spartalizumab in NSCLC
HDM201 + MBG453 (TIM3) in AML

RLT + IO[1]

Lutathera® + PD-1 in NET
^{177}Lu-PSMA-617 + PD-1 in mCRPC

CAR-T + IO

Kymriah® + PD-1 in DLBCL
CAR-T EGFRvIII + Spartalizumab in Glioblastoma

IO + IO

Canakinumab + PD-1 in NSCLC
Spartalizumab + TGFβ in Multiple Solid Tumors

1. Investigator-initiated trials

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Data from more than 170 abstracts[1] presented at ASCO, EHA and AACR

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KISQALI® ribociclib

OS data in patients with visceral mets

Tafinlar® (dabrafenib) + Mekinist® (trametinib)

COMBI-AD 5-year analysis

^{177}Lu-PSMA-617

TheraP IIT data

EHA EUROPEAN HEMATOLOGY ASSOCIATION

MBG453

Phase 1 data in MDS and AML

Asciminib

3-year data in TKI-intolerant patients

AACR American Association for Cancer Research®

TABRECTA™ (capmatinib)

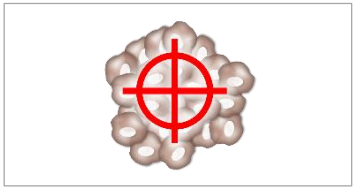
Brain mets data

TNO155

New Drugs on the Horizon Symposium

1. Including investigator-initiated trials / third party abstracts

Four therapeutic modalities to drive future growth

	Targeted Therapies	Immunotherapies	Radioligand	Cell & Gene
				
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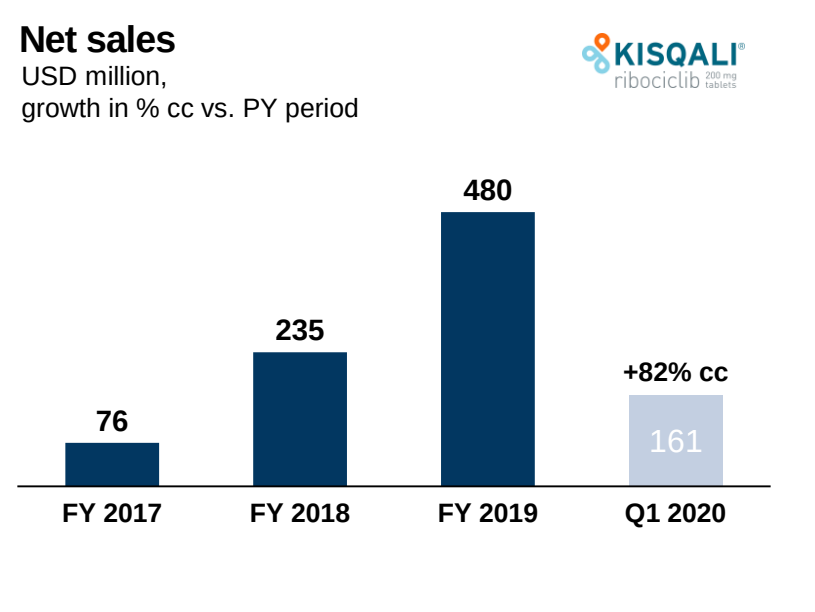
Kisqali®: Only CDK4/6 proven to extend the lives of patients in two Phase 3 trials



- Kisqali® was the fastest growing CDK4/6 inhibitor in Q1 2020, benefitting from two positive OS readouts (MONALEESA 3 & 7); third study (MONALEESA 2) expected to read out OS in 2021
- Kisqali® has a differentiated profile vs. other CDK4/6 inhibitors, with preferential inhibition to CDK4 vs. CDK6, and a high concentration to inhibit the target
- RWE evidence data shows that Kisqali® is well tolerated with lower incidence and severity of neutropenia vs. palbociclib[1]
- NATALEE adjuvant study on track to complete enrollment in this year, with readout in 2022

1. Schwartzberg, L.S., Zarate, J.P., Chandiwana, D., et. al. Real-world incidence, duration, and severity of treatment-emergent (TE) neutropenia among patients (pts) with metastatic breast cancer (MBC) treated with ribociclib (RIB) or palbociclib (PAL). J of Clin Onc. 2020;38(15 suppl).

MONALEESA 3 & 7 data in visceral metastases, including liver, reinforce differentiated profile

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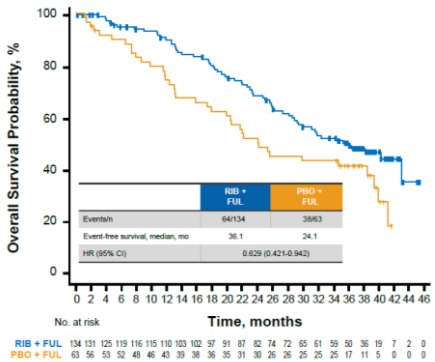
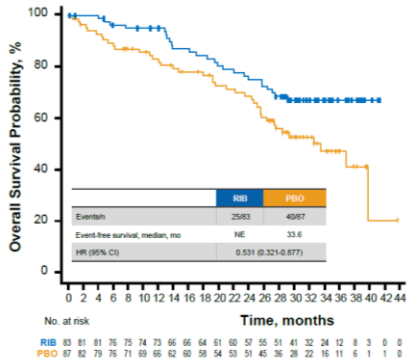
OS in patients with liver metastases

A. ML-3



B. ML-7 NSAI Cohort



- Presence of visceral metastases generally signifies a poor prognosis in HR+/HER2− metastatic breast cancer
- Approximately 60% of patients had visceral metastases in MONALEESA 3 & 7
- Similar to the overall population, there was a consistent OS and PFS benefit in patients with visceral metastases, including those with liver metastases, in both trials
- Safety profile was consistent with the overall patient population

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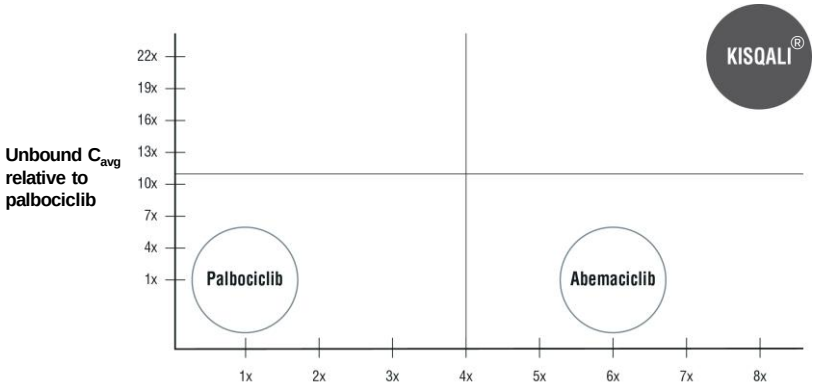
Evidence suggests there are differences among CDK4/6 inhibitors

Select differences among CDK4/6 inhibitors[3-7]



- CDK4 is a critical driver of HR+/HER2- advanced breast cancer, while CDK6 drives hematological toxicities[1,2]
- Kisqali® inhibits CDK4 8x more than CDK6 in vitro[3,4]
- Higher unbound C_{avg} (average free drug concentration at steady state) means more drug is available to act on tumor cells[4-7]
- At clinically relevant doses and adjusting for differences in potency against CDK4/6 and protein binding, Kisqali® should provide greater CDK4 inhibition in vivo than competitors

1. Yu Q, Sicinska E, Geng Y, et al. Requirement for CDK4 kinase function in breast cancer. Cancer Cell. 2006;9(1):23-32. 2. An H-X, Beckmann MW, Reifenberger G, Bender HG, Niederacher D. Gene amplification and overexpression of CDK4 in sporadic breast carcinomas is associated with high tumor cell proliferation. Am J Pathol. 1999;154(1):113-118. 3. Kim S, Tiedt R, Loo A, et al. The potent and selective cyclin-dependent kinases 4 and 6 inhibitor ribociclib (LEE011) is a versatile combination partner in preclinical cancer models. Oncotarget. 2018;9(81):35226-35240. 4. Chen P, Lee NV, Hu W, et al. Spectrum and degree of CDK drug interactions predicts clinical performance. Mol Cancer Ther. 2016;15(10):2273-2281;(suppl tables). 5. Infante JR, Cassier PA, Gerecitano JF, et al. A phase I study of the cyclin-dependent kinase 4/6 inhibitor ribociclib (LEE011) in patients with advanced solid tumors and lymphomas. Clin Cancer Res. 2016;22(23):5696-5705. 6. Flaherty KT, LoRusso PM, DeMichele A, et al. Phase I, dose-escalation trial of the oral cyclin-dependent kinase 4/6 inhibitor PD 0332991, administered using a 21-day schedule in patients with advanced cancer. Clin Cancer Res. 2012;18(2)568-576. 7. Patnaik A, Rosen LS, Tolaney SM, et al. Efficacy and safety of abemaciclib, an inhibitor of CDK4 and CDK6, for patients with breast cancer, non-small cell lung cancer, and other solid tumors. Cancer Discov. 2016;6(7):740-753.

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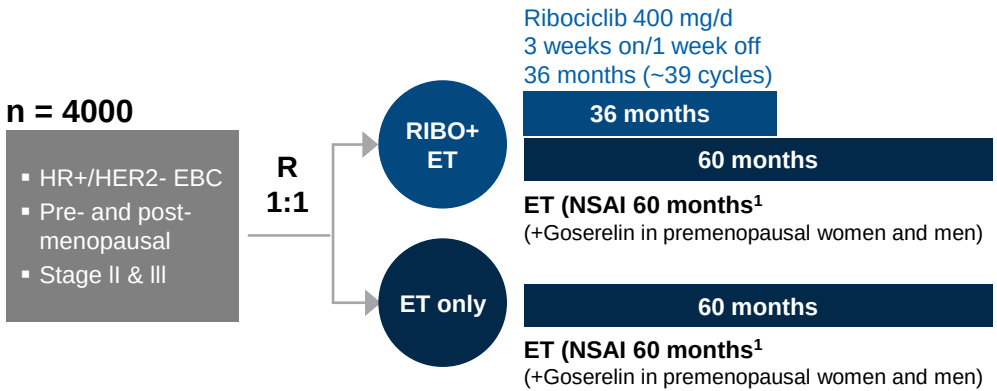
NATALEE: Pivotal Phase 3 study in adjuvant setting on track for readout in 2022

NATALEE trial design



Unique aspects vs. other CDK4/6i adjuvant studies

Longer treatment duration: 3 years vs. 2 years

Lower dose than in metastatic setting: 400mg vs. 600mg

More homogeneous patient population: Intermediate and high-risk patients per AJCC defined prognostic factors

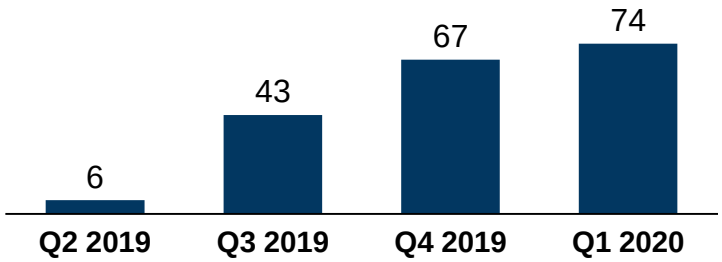
1. Letrozole or anastrozole; treatment with NSAI may start up to 12 months before study treatment start date.

Piqray®: Strong launch as first and only PI3Kα inhibitor, with significant expansion opportunities

Net sales

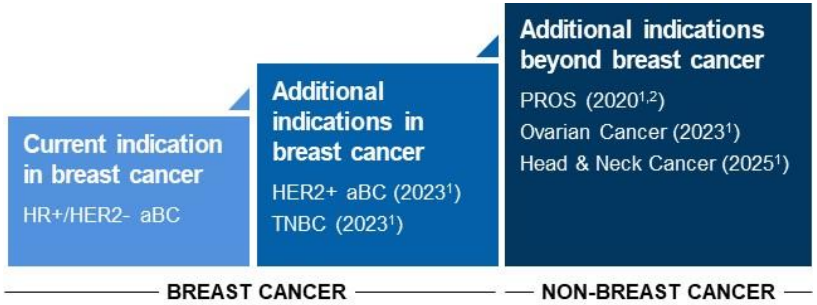
USD million

PIQRAY® (alpelisib) tablets



- Continued uptake driven by expanded coverage and strong Rx momentum
- Continued uptake in PIK3CA testing, with goal to reach a rate of 40% by YE 2020
- Expanding geographical footprint with approvals in 13 markets
- Positive CHMP opinion received in May 2020

EPIK expansion



Potential opportunity to serve an additional ~100k patients, more than tripling the number of patients in the current indication

TNBC trial enrolled first patient in June 2020; HER2+ aBC trial expected to start enrollment next

1. Refers to first filing year. 2. Filing in US based on RWE study. PROS = PI3K Related Overgrowth Syndrome aBC = advanced Breast Cancer

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BYLieve study reinforces efficacy of Piqray® use in post CDK4/6 setting with manageable side effects

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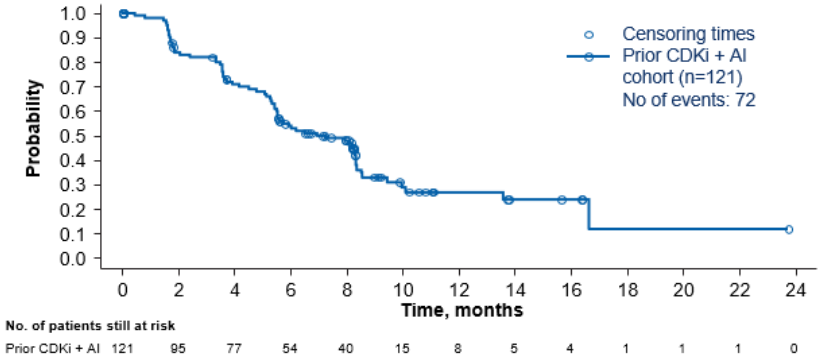
Efficacy data



Primary endpoint for the prior CDKi + AI cohort was met (lower bound of 95% CI was > 30%), with 50.4% of patients alive without disease progression at 6 months

Secondary endpoint of median PFS was 7.3 months (95% CI, 5.6-8.3)

Safety profile

Safety profile observed in BYLieve suggests that AE management strategies are effective:

- Fewer overall AE-related discontinuations (20.5% in BYLieve vs. 25% in SOLAR-1)
- Fewer discontinuations due to hyperglycemia (1.6% vs. 6.3%)

Overall approach to further mitigate AEs:

- Multiple safety studies ongoing (NVS and IIT) to optimize hyperglycemia management
- Continuing medication education

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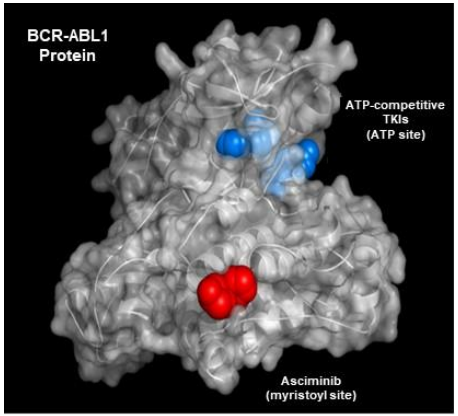
Oncogene dependency is a key therapeutic vulnerability in human cancers

EUROPEAN HEMATOLOGY ASSOCIATION

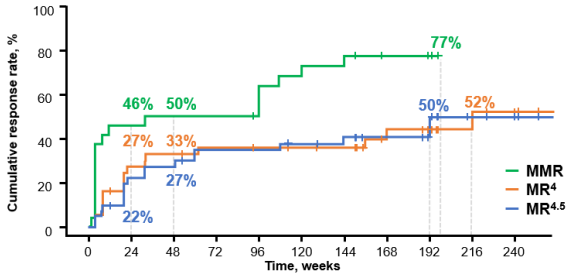
Asciminib: First-in-class STAMP inhibitor



Asciminib is different from other TKIs as it is thought to specifically target the BCR-ABL1 myristoyl pocket (STAMP)

3-year follow-up of TKI intolerant patients in Phase 1 study

Cumulative Molecular Response Rates[a]



Number at risk, n[b]						
MMR	24	12	8	5	0	0
MR^4	38	24	21	19	7	3
MR$^{4.5}$	42	28	24	20	8	4
Cumulative number of events, n						
Patients with MMR	0	12	15	18	18	18
Patients with MR^4	0	12	13	13	15	16
Patients with MR$^{4.5}$	0	12	14	16	18	18

MR^4, *BCR-ABL1*^{IS} ≤ 0.01%; MR$^{4.5}$, *BCR-ABL1*^{IS} ≤ 0.0032%.
[a] As of the cutoff date of August 30, 2019; [b] Calculated based on the number of patients evaluable for response and without that response at baseline.

- Asciminib monotherapy was well tolerated and showed promising clinical activity in TKI intolerant patients
- 75% of patients were on treatment and in MMR after a median follow-up of over three years
- Median duration of treatment with asciminib was 32 months, vs. 3 months on previous therapy
- Pivotal Phase 3 study in 3rd line CML on track for readout in H2 2020, first submission in Q1 2021

ATP = Adenosine Triphosphate; TKI = Tyrosine Kinase Inhibitor.

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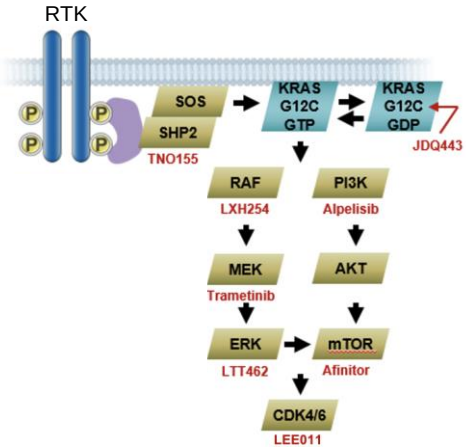
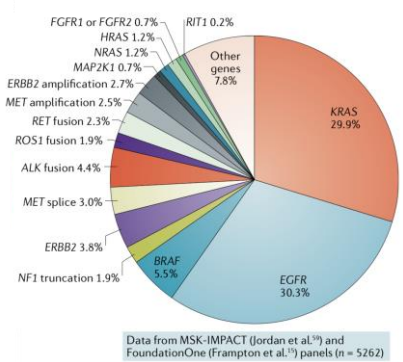
Targeting RTK/RAS/MAPK signaling in solid tumors

RTK/RAS/MAPK pathway

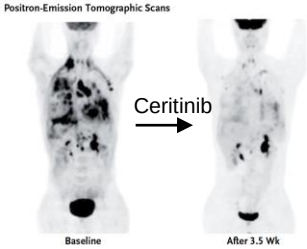


Metastatic lung adenocarcinoma[1]

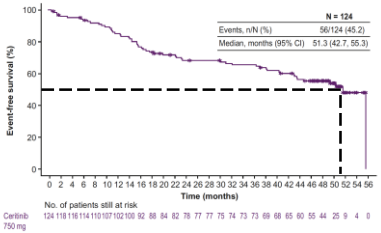


- Roughly 1/3 to 1/2 of NSCLC patients have targetable genetic alterations
- To date, 7 molecular subsets of NSCLC can be targeted with standard of care therapies (EGFR, ALK, ROS1, RET, BRAF, TRK, MET)

Dramatic clinical responses[2]



Prolonged overall survival[3]



1. Skoulidis and Heymach, Nat Rev CA, 2019. 2. Shaw NEJM Ph1 ceritinib 2014 (ASCEND 1). 3. Nishio JTO Ph2 ceritinib 2020 (ASCEND 3 study)

Tabrecta™, approved by FDA in May, ready for omni-channel launch amid pandemic conditions

TABRECTA™ (capmatinib) tablets 150 mg · 200 mg

Current indication

- 3-4% of NSCLC patients have METex14 mutations, associated with poor prognosis and modest benefit from existing therapies
- Tabrecta™ is the first and only therapy approved by the FDA to specifically target METex14 mutated metastatic NSCLC
- Simultaneous FDA approval of METex14 CDx on FoundationOne®CDx tissue-based test; liquid test under development
- NCCN guidelines updated 9 days after approval, with Tabrecta™ as preferred option for MET mutant NSCLC, line agnostic
- Wave-based launch leveraging robust digital capabilities to accelerate patient access amid pandemic conditions
- Japan approval expected H1 2020

Maximizing potential

- Additional studies planned as monotherapy: Phase 3, brain metastases, tumor agnostic
- Moving into combinations:
  - PD-L1 high expressers regardless of MET status, in combination with pembrolizumab
  - METex14 skipping regardless of PD-L1 status, in combination with spartalizumab
  - Post-EGFR, in combination with EGFR inhibitor

Differentiated profile with clinical activity in METex14 mutated and MET amplified NSCLC

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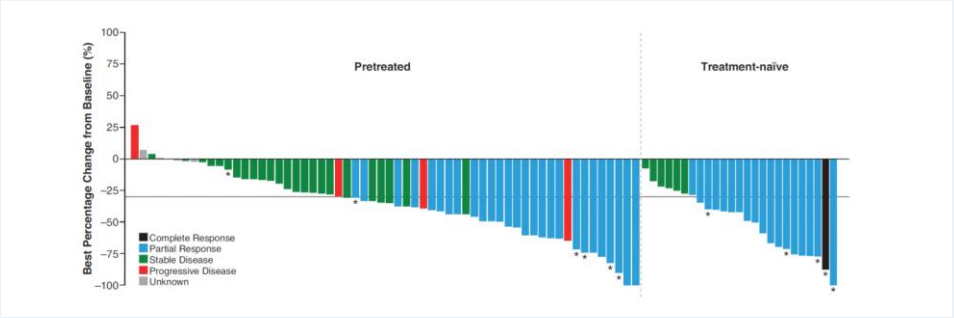
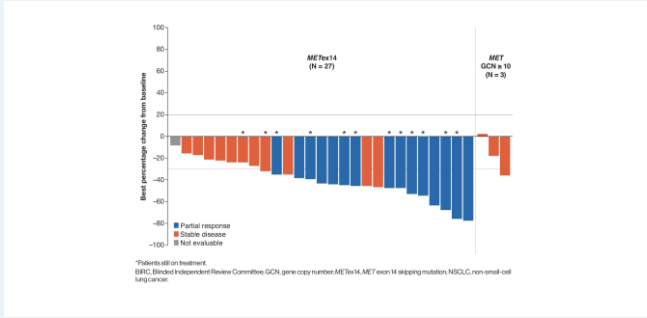
Results from cohorts 4 and 5b of GEOMETRY mono-1



- Capmatinib is highly active in previously treated and treatment-naïve METex14 NSCLC patients; in the 1L setting, ORR 67.9%, DCR 96.4%, mPFS 12.4 mos
- Among 13 patients with brain mets at baseline, intracranial responses were achieved in 54%, including 31% with CR; intracranial disease control achieved in 92% (AACR 2020)
- Among patients with high-level MET amplification (GCN≥10), capmatinib also showed activity, with ORR 29% and 40% in previously treated and treatment-naïve patients, respectively (cohorts 1a and 5a)

Results from cohort 6 of GEOMETRY mono-1



- Capmatinib achieved meaningful efficacy in 2L patients with METex14 (ORR 48.4%, DCR 90.3%), confirming previously reported results
- Although no responses were observed in the 3 patients with MET GCN≥10, all 3 had tumor regression and SD by RECIST
- Patients received capmatinib without fasting restrictions, supporting administration with and w/o food (as per USPI)

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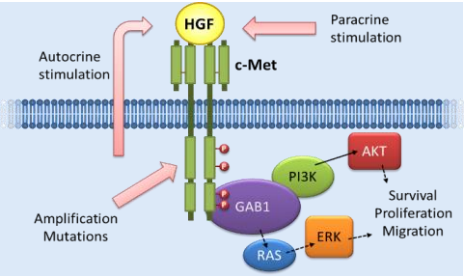
Expanding Tabrecta™ into first-line combinations with PD-1 agents in NSCLC



- MET also plays a role in immuno-modulation in the following populations of the tumor microenvironment:
  - Neutrophils
  - Dendritic cells
  - T cells
- Combination of capmatinib (INC280) with anti-PD-1 enhances antitumor immunity irrespective of MET status

INC280I12201

Study design
A randomized, open label, multicenter Phase 2 study evaluating the efficacy and safety of INC280 plus pembrolizumab versus pembrolizumab alone as first-line treatment for locally advanced or metastatic non-small cell lung cancer with PD-L1≥ 50%

Objective
To assess efficacy of INC280+ pembrolizumab combination vs. pembrolizumab monotherapy

Status
Enrolling, FPFV in Jan 2020

INC280J12201

Study design
A Phase 2, double-blind, placebo-controlled study consisting of a run-in part of INC280 plus spartalizumab, followed by a randomized part of INC280+spartalizumab vs. INC280+ spartalizumab matching placebo

Objective
By adding spartalizumab to INC280, improve PFS and OS with maintained ORR in 1L NSCLC patients with METex14 skipping mutations compared to INC280 alone

Status
FPFV expected in July 2020

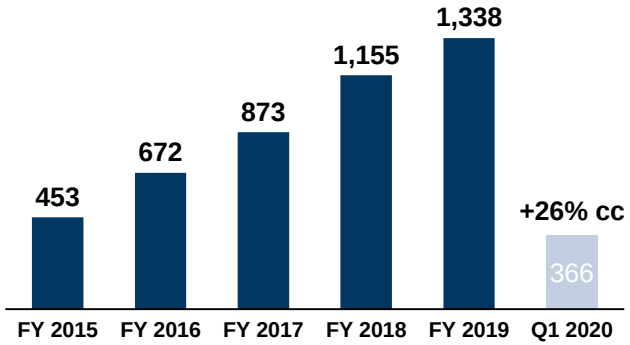
Tafinlar®+Mekinist®: 5-year analysis shows long-term benefit of adjuvant treatment in BRAF+ melanoma

ASCO 20 Virtual

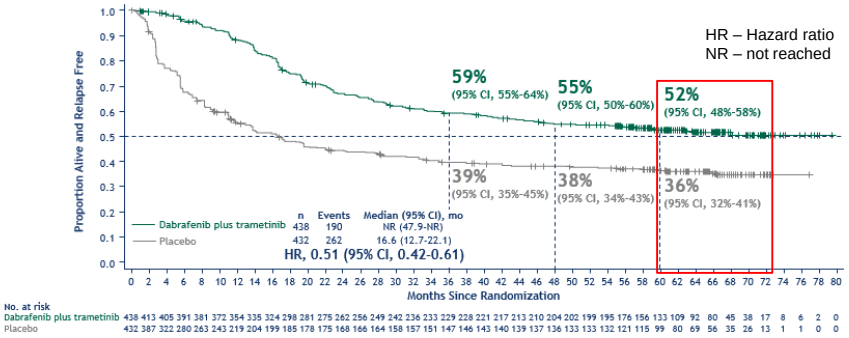
Net sales

Tafinlar® (dabrafenib) + Mekinist® (trametinib)

USD million
growth in % cc vs. PY period



COMBI-AD 5-year analysis



- More than half of BRAF+ patients treated with adjuvant Tafinlar®+Mekinist® were relapse-free at 5 years, with curve trending towards plateau
- Longest follow-up to-date from a Phase 3 study of any contemporary adjuvant therapy

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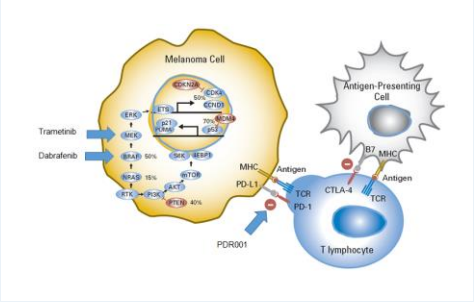
Additional data from COMBI-i parts 1 and 2 show durable anti-tumor activity of triplet therapy

ASCO20 Virtual

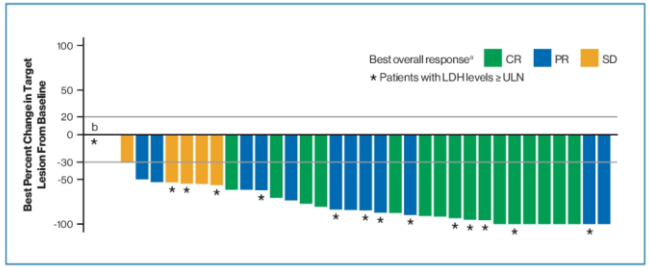
Rationale for combining Tafinlar®+Mekinist® with anti-PD-1



MAPK inhibition may favorably alter the tumor microenvironment for an augmented and potentially synergistic immune response

McArthur GA & Ribas A,
J Clin Oncol 2013;31:499–506

Data from Phase 3 COMBI-i study safety run-in / biomarker cohort



CR, complete response; LDH, lactate dehydrogenase; PR, partial response; SD, stable disease; ULN upper limit of normal.

[a] One patient with SD had a best percent change of 0% in the target lesion, while best percent change could not be calculated for 1 patient because best overall response was unknown.

[b] Best percent change in the target lesion was not available for 1 patient with progressive disease.

Increased response rates vs. previously reported:

Triplet (spartalizumab+dabrafenib+trametinib, or S+D+T) treatment exhibited an ORR of 78%, including a promising CR rate of 44% in unresectable or metastatic BRAF-mutant melanoma

S+D+T may be associated with a high frequency of durable responses, with 24-month PFS and OS rates of 41% and 74%, respectively

No new safety signals were observed; AEs were consistent with the inclusion of each study drug

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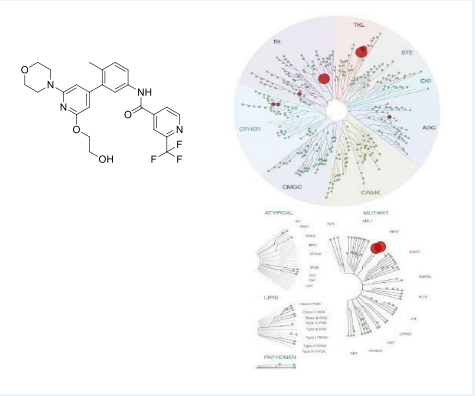
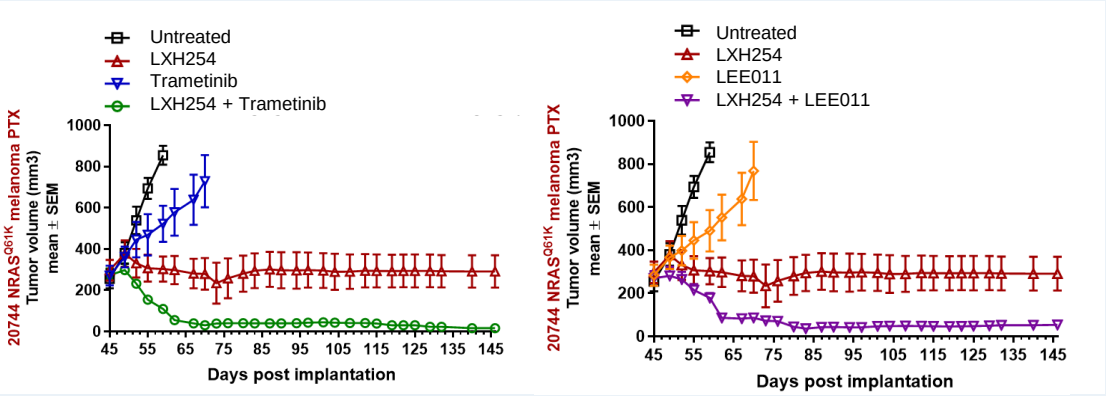
LXH254: Potentially best-in-class B/C-RAF inhibitor in RAS/RAF mutant melanomas and lung cancers

Highly potent and selective



- LXH254 inhibits both dimeric and monomeric B- and CRAF kinases
- B/CRAF inhibition targets RAS-mutant tumors and BRAF mutants both V600E and nonV600E

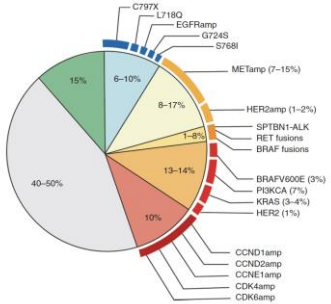
Tumor growth inhibition as single agent or in combination



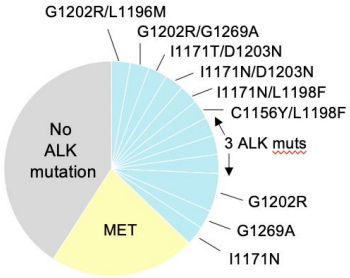
- Antitumor activity of LXH254 single agent observed in patients with KRAS-mut and BRAF-mut cancers
- Preclinical data show robust activity in vertical combinations with MEK, ERK, and CDK4/6 inhibitors
- Favorable tolerability profile of LXH254 enables combinations, with potential benefit for BRAF-mut NSCLC patients (~4% of NSCLC), and BRAF-mut or NRAS-mut melanomas (~50% BRAF-mut, ~20% NRAS-mut)
- Clinical studies evaluating LXH254 in combination with LTT462 (ERKi), Mekinist® (MEKi), Kisqali® (CDK4/6i) and spartalizumab (anti-PD-1) in RAS/RAF mutant NSCLC and melanoma ongoing

Almost all patients develop resistance to targeted therapies: Role of SHP2 phosphatase

1L Tagrisso® in EGFR[1]



2L+ Lorbrena® in ALK[2]

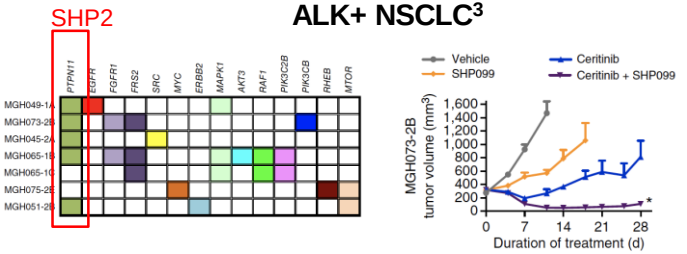


Multiple and diverse resistance mechanisms can develop in patients treated with targeted therapies, leading to clinical relapse

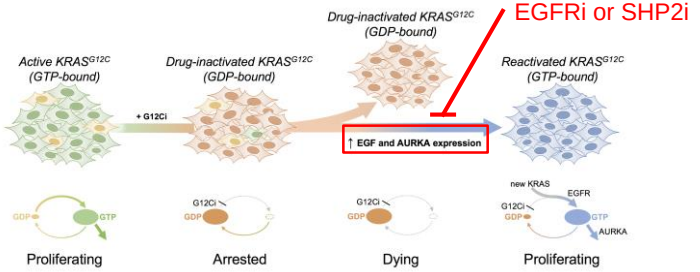
For highly selective, next-generation targeted agents, resistance is often mediated by off-target mechanisms that lead to MAPK re-activation

Combination strategies that target both the oncogenic driver and downstream signaling pathways are urgently needed

ALK+ NSCLC[3]



KRASG12C NSCLC[4]



1. Leonetti Br J Cancer 2019. 2. Dagogo-Jack, Clin Canc Res, 2020. 3. Dardaei Nat Med 2018. 4. Based on Xue Nature 2020

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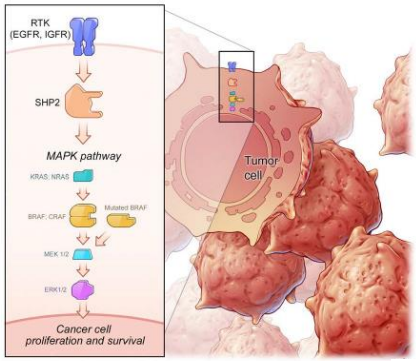
TNO155: A first-in-class inhibitor of SHP2

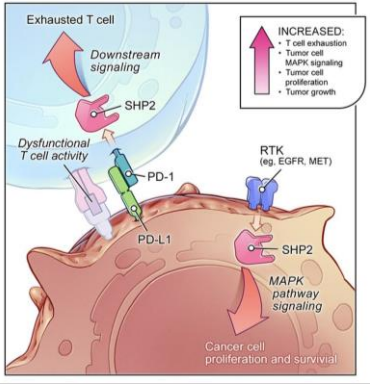
AACR American Association for Cancer Research

Required for RTK signaling



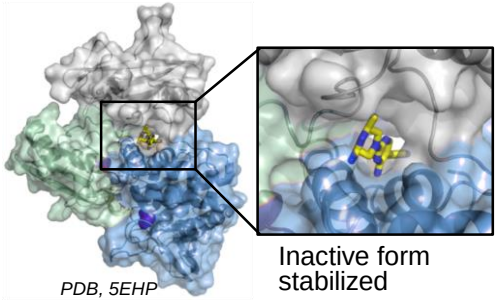
RTK-SHP2-RAS-MAPK pathway activation has been implicated across the majority of human cancers

Downstream transducer of PD-1



SHP2 is a downstream transducer of PD-1 signaling, a critical immune checkpoint in human malignancies

First SHP2i to enter the clinic



Ideal drug-like properties (e.g. high permeability, solubility, no CYP450 inhibition, ideal preclinical PK profile)

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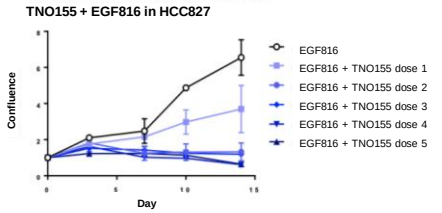
TNO155: Broad combination strategy to blanket the MAPK pathway

TNO155X2101

HCC827 (EGFRmut) tolerant cells



Study design

An open-label, multi-center, Phase 1, dose finding study of oral TNO155 in adult patients with advanced solid tumors

Objective

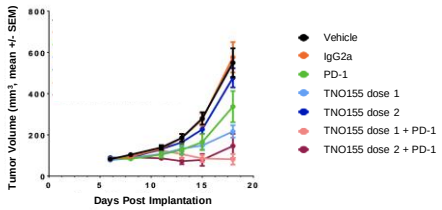
To characterize the safety and tolerability of TNO155 as a single agent and in combination with **nazartinib** (EGF816) in solid tumors, and to identify recommended regimen(s) and dose(s) for future studies

Status

Enrolling, FPFV in May 2017

TNO155B12101

MC38 syngeneic mouse model



Study design

A Phase 1b, open-label, multi-center study of TNO155 in combination with **spartalizumab** or **Kisqali®** (ribociclib) in selected malignancies

Objective

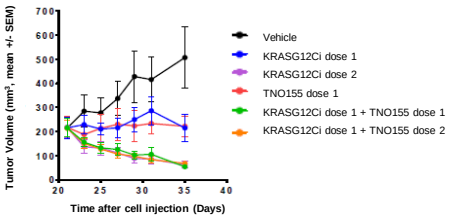
To characterize the safety, tolerability, and efficacy of TNO155 in combination with spartalizumab or ribociclib, and to identify the MTD and/or RDE for each combination

Status

Enrolling, FPFV in July 2019

TNO155C1*

MIA PaCa-2 (PDAC, KRAS$^{G12C/G12C}$) with G12Ci



Study design

A Phase 1/2 trial of **MRTX849** in combination with TNO155 in patients with advanced solid tumors with KRASG12C mutation

Objective

To characterize the safety, tolerability, PK, and efficacy of MRTX849 combined with TNO155 in patients having advanced solid tumors with KRASG12C mutation

Status

Enrolling, FPFV in April 2020

*Study sponsored by Mirati

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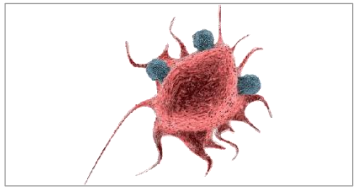
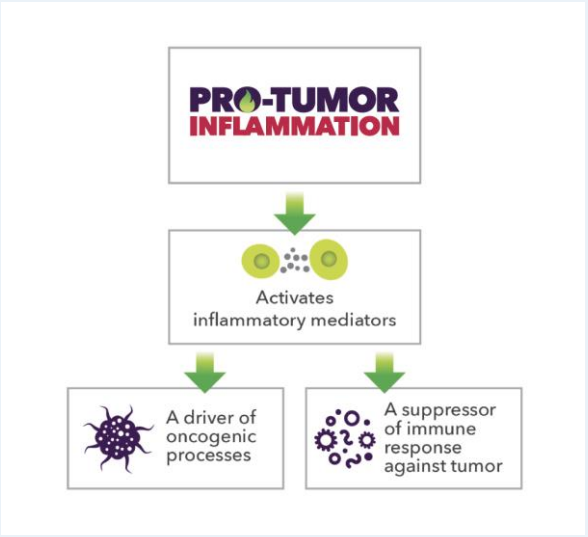
Four therapeutic modalities to drive future growth

	Targeted Therapies	Immunotherapies	Radioligand	Cell & Gene
Select pipeline assets and opportunities	**Kisqali**® in adjuvant BC **Alpelisib** in ▪ HER2+ advanced BC ▪ TNBC ▪ Head & neck ▪ Ovarian cancer ▪ PROS **Adakveo**® in sickle cell disease **Tabrecta**™ in NSCLC, single agent and combinations **Jakavi**® in GvHD, and combinations (platform) in MF **Asciminib** in CML **LXH254** in RAS/RAF mutant melanomas and lung cancer **TNO155** in solid tumors	 **Canakinumab** in ▪ adjuvant NSCLC ▪ 1st line NSCLC ▪ 2nd line NSCLC **Spartalizumab+Tafinlar®+ Mekinist®** in metastatic melanoma **Spartalizumab combinations** (platform) in metastatic melanoma **Spartalizumab+LAG525+ carboplatin** in TNBC **Spartalizumab+Tabrecta™** in NSCLC **MBG453** in MDS and AML **VPM087** in CRC and RCC **NIS793** in solid tumors	**Lutathera**® in 1st line grade 2/3 advanced GEP-NET **^{177}Lu-PSMA-617** in prostate cancer **^{177}Lu-PSMA-R2** in prostate cancer **^{177}Lu-NeoB** in multiple solid tumors **^{177}Lu-FF58** in glioblastoma	**Kymriah**® in ▪ r/r DLBCL after 1st relapse ▪ r/r follicular lymphoma ▪ r/r adult ALL ▪ combinations (pembrolizumab; ibrutinib) in r/r DLBCL ▪ pediatric NHL ▪ 1st line high risk pediatric and young adult ALL **YTB323** in ▪ r/r DLBCL ▪ r/r CLL combination with ibrutinib **PHE885** in r/r MM **Other targets:** BCMA&CD19, CD22&CD19, CD123, EGFRvIII

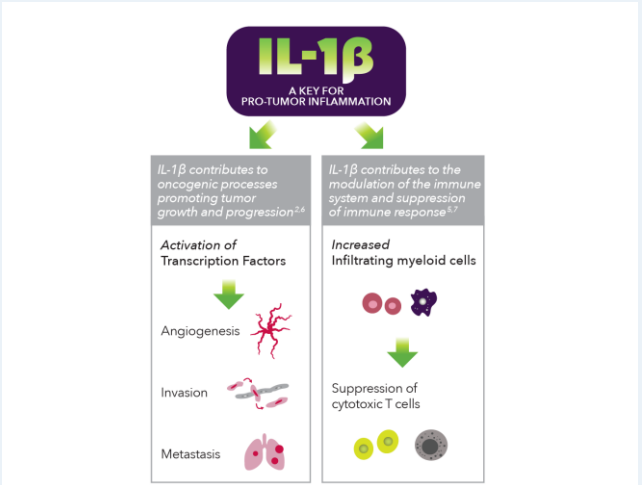
IL-1β plays a key role in pro-tumor inflammation, a driver of tumor survival, growth and progression[1,2]

Novartis is leading research on the role of pro-tumor inflammation (PTI) as a driver of cancer

Processes occur creating a tumor microenvironment conducive to PTI[3,4]



There is preliminary evidence that IL-1β facilitates PTI by activating tumor processes and recruiting immunosuppressive cells[2,5]

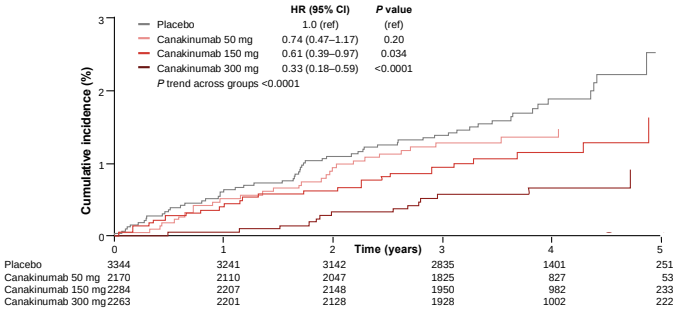


1. Carmi Y, et al. J Immunol. 2013;190(7):3500-3509. 2. Chaudhry SI, et al. Oncogene. 2013;32(6):747-758. 3. Grivennikov SI, er al. Cell. 2010;140(6):883-899. 4. Greten FR, Grivennikov SI. Immunity. 2019;51(1):27-41.
5. Bunt SK, et al. J Immunol. 2006;176(1):284-290. 6. Taniguichi K, et al. Nat Rev Immunol. 2018;18(5):309-325. 7. Chen L, et al. Cell Mol Life Sci. 2018;75(11):2045-2058.

CANTOS: IL-1β antibody demonstrates reduction of lung cancer incidence and mortality

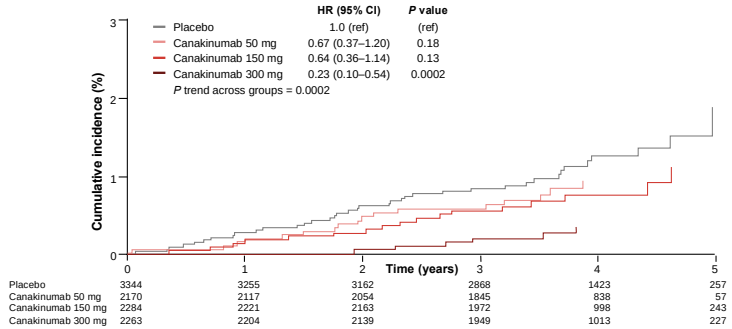
Lung cancer incidence

Dose-dependent effect, 67% relative risk reduction, P<0.0001 (canakinumab 300mg)



Lung cancer mortality

Dose-dependent effect, 77% relative risk reduction, P=0.0002 (canakinumab 300mg)



Adapted from Ridker et al, Lancet, 2017

CANOPY: Three Phase 3 studies ongoing with canakinumab in NSCLC, first to read out in Q4 2020

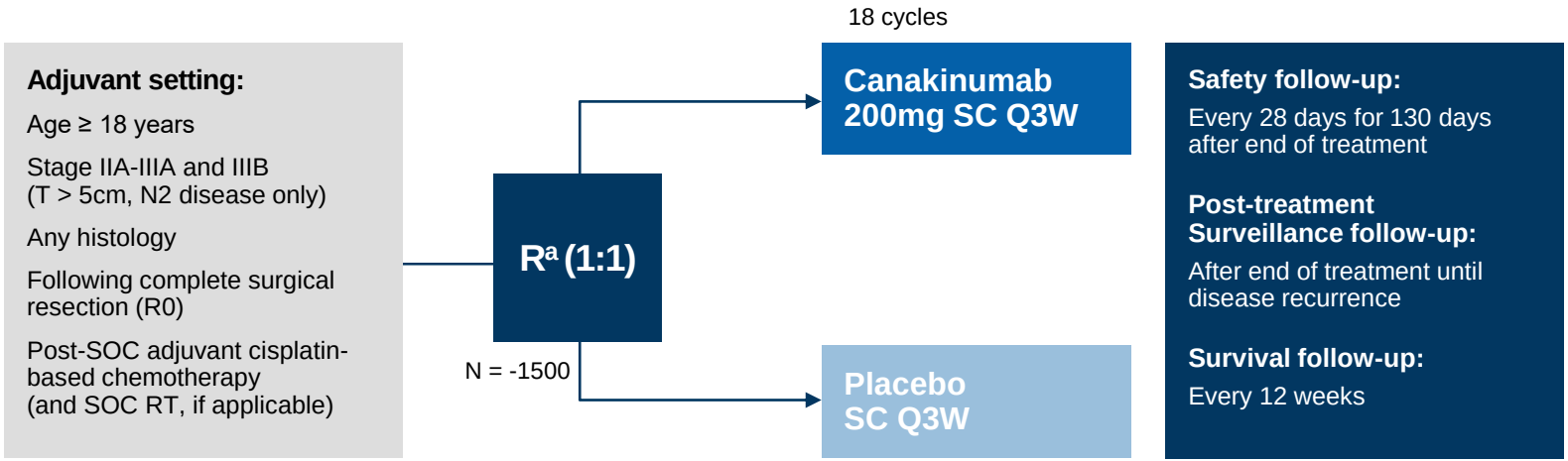
CANakinumab **O**utcomes in **P**atients with NSCLC Stud**Y**

Indication	Patient population	Trial design	Status as of Jun 2020	Planned filing
Adjuvant NSCLC (CANOPY-A)	High-risk Stage II-III	Canakinumab vs. placebo (n=1500 with 1:1 randomization) after post-resection chemotherapy	~40% of patients enrolled	2023
1st line NSCLC (CANOPY-1)	Non-mutated, no prior treatment for metastatic disease or Stage III unresectable	Platinum doublet chemotherapy and pembrolizumab with or without canakinumab (n=600 with 1:1 randomization)	Enrollment completed; interim analysis expected in Q4 2020	2021
2nd line NSCLC (CANOPY-2)	Non-mutated with no more than 2 prior lines of metastatic treatment (PD-1 ± chemo)	Docetaxel with or without canakinumab (n=226 with 1:1 randomization)	Enrollment completed; final analysis expected in 2021	2021
Neoadjuvant NSCLC (CANOPY-N; Phase 2)	Stage IB - IIIA	Canakinumab, canakinumab+pembrolizumab or pembrolizumab (n=110 with 2:2:1 randomization)	First patient enrolled in Q4 2019; ~20% of patients enrolled	Not registrational study

Phase 3 adjuvant study design presented at ASCO

ASCO20 Virtual

CANOPY-A Study Design



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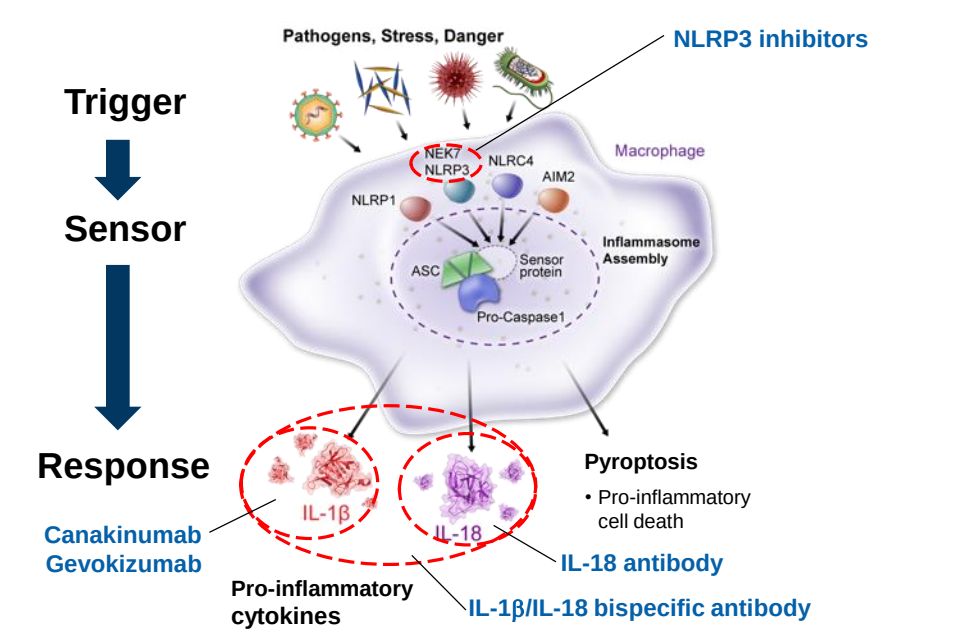
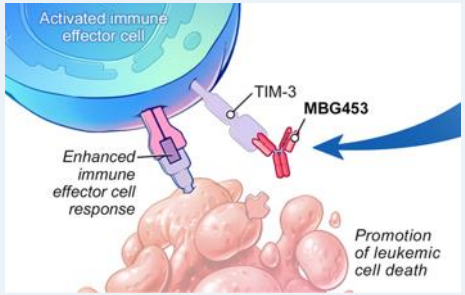
Next-generation inflammasome inhibitors are under development for cancer and other diseases



- Ongoing and planned clinical trials to assess in MDS, MPN, CRC and TNBC
- 6 novel antibodies and LMWs are currently being clinically developed and are potentially available for hematology indications
- Interest in expanding to chemoprevention in high-risk populations

MBG453: Targeting TIM-3 in hematology

MBG453 mechanism



In vitro data shows that targeting TIM-3 with inhibitory antibody MBG453[1-3]:

- Re-awakens immunity to restore an anti-leukemic immune response
- Selectively targets the LSC and blasts

Broad 'S**TIM**ULUS' trial program initiated in myeloid malignancies

Ongoing Phase 1 trial in HR-MDS and AML

Up to 207 Adult Patients

- Unfit, newly diagnosed AML, ineligible for standard chemotherapy
- R/R AML, ineligible for standard chemotherapy
- IPSS-R high- or very high-risk MDS (HR-MDS)

Patients with prior HMA treatment for MDS/AML were excluded

Decitabine
Days 1-5
20 mg/m²

Azacitidine
Days 1-7
75 mg/m²

MBG453 Day 8
240 mg
400 mg
800 mg

MBG453 Day 22
240 mg
400 mg

28-day treatment cycles

Additional study arms
- MBG453 ± spartalizumab
- Spartalizumab + decitabine
- Spartalizumab + decitabine + MBG453

ClinicalTrials.gov identifier: NCT03066648[a]

8 countries

11 trial centers

Primary Endpoints:
Maximum tolerated dose/recommended dose; safety and tolerability

Secondary Endpoints:
Preliminary efficacy, pharmacokinetics

[a]Multi-arm, open-label, phase Ib dose escalation and expansion study of MBG453 as a single-agent or in combination with HMAs or spartalizumab.

1. Kikushige Y et al., Cell Stem Cells, 2010. 2. Dama P et al., J. Immunotherapy Cancer, 2019. 3. Kong Y et al., Blood Cancer J., 2015.

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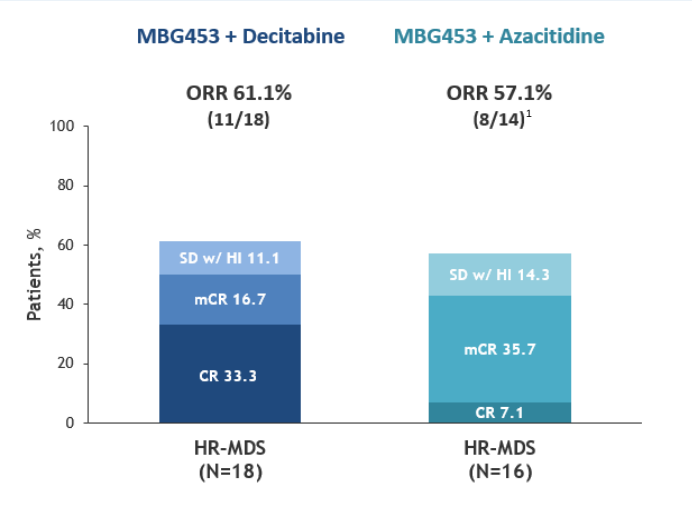
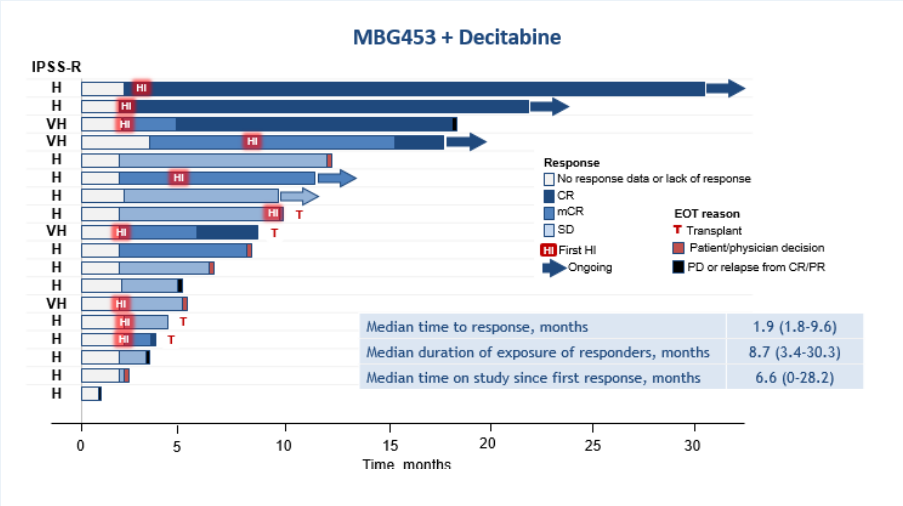
MBG453+HMA provides promising and durable response rates in ongoing Phase 1 trial

High CR/mCR rate with good safety profile and emerging durability in HR-MDS





1. Denominator is 14 (vs. N=16 in category label) due to 2 patients not yet reaching the time-point for their first scan.

Building MBG453 backbone across myeloid diseases

STIMULUS program

HR-MDS

STIMULUS-MDS-1

Phase 2 ongoing, enrollment expected to complete in 2020

STIMULUS-MDS-2

Phase 3 ongoing, enrollment started in June 2020

Unfit AML

STIMULUS-AML-1

Phase 2 combo HMA + venetoclax, enrollment expected to start H2 2020

Novel combinations

MDS/AML

Phase 1 combo with HDM201[1] ongoing

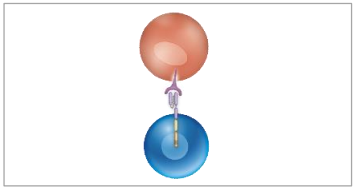
Myelofibrosis

Phase 1b/2 combo with Jakavi® ongoing

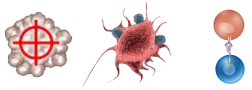
Phase 1 combo without Jakavi® in post-JAKi patients

1. HDM201: MDM2 inhibitor

Four therapeutic modalities to drive future growth

	Targeted Therapies	Immunotherapies	Radioligand	Cell & Gene
				
Select pipeline assets and opportunities	**Kisqali**® in adjuvant BC **Alpelisib** in ▪ HER2+ advanced BC ▪ TNBC ▪ Head & neck ▪ Ovarian cancer ▪ PROS **Adakveo**® in sickle cell disease **Tabrecta**™ in NSCLC, single agent and combinations **Jakavi**® in GvHD, and combinations (platform) in MF **Asciminib** in CML **LXH254** in RAS/RAF mutant melanomas and lung cancer **TNO155** in solid tumors	**Canakinumab** in ▪ adjuvant NSCLC ▪ 1st line NSCLC ▪ 2nd line NSCLC **Spartalizumab+Tafinlar**®**+ Mekinist**® in metastatic melanoma **Spartalizumab combinations** (platform) in metastatic melanoma **Spartalizumab+LAG525+ carboplatin** in TNBC **Spartalizumab+Tabrecta**™ in NSCLC **MBG453** in MDS and AML **VPM087** in CRC and RCC **NIS793** in solid tumors	**Lutathera**® in 1st line grade 2/3 advanced GEP-NET **^{177}Lu-PSMA-617** in prostate cancer **^{177}Lu-PSMA-R2** in prostate cancer **^{177}Lu-NeoB** in multiple solid tumors **^{177}Lu-FF58** in glioblastoma	**Kymriah**® in ▪ r/r DLBCL after 1st relapse ▪ r/r follicular lymphoma ▪ r/r adult ALL ▪ combinations (pembrolizumab; ibrutinib) in r/r DLBCL ▪ pediatric NHL ▪ 1st line high risk pediatric and young adult ALL **YTB323** in ▪ r/r DLBCL ▪ r/r CLL combination with ibrutinib **PHE885** in r/r MM **Other targets:** BCMA&CD19, CD22&CD19, CD123, EGFRvIII

Maximizing Kymriah® to deliver CAR-T to more patients



Driving Kymriah® in market

$93m
Q1 sales
+109% cc vs. PY

90%
final products
made available to patients globally, including OOS

25
countries
where Kymriah® is available and reimbursed

240+
qualified
treatment centers worldwide

RWE
demonstrated comparable efficacy and improved safety versus pivotal trials

Expanding manufacturing

7
global sites
Stein, Les Ulis, Morris Plains, FBRI, Fraunhofer, Cell Therapies & CBMG

125%
capacity increase
Q1 2020 vs. Q1 2019

2800+
therapies
delivered for patients cumulatively

Moving into new indications

7
clinical trials
DLBCL in 1st relapse, r/r FL, adult r/r ALL, r/r DLBCL combo with pembrolizumab, r/r DLBCL combo with ibrutinib, pediatric NHL, 1L high risk pediatric & young adult ALL

FDA
designation
Regenerative Medicines Advanced Therapy (RMAT) designation received for r/r FL

Advancing our cell therapy pipeline

Platform priorities

Kymriah®: Seven trials to research new or expanded indications focused on B cell malignancies

Activated Rapid Manufacturing (ARM): Advancing a next-generation process to improve manufacturing reliability/simplicity, turnaround time, and possibly safety/efficacy

YTB323: First CAR-T using ARM platform, Phase 1 ongoing

Other targets: Including BCMA for multiple myeloma, CD22 for ALL, and combinations

Cell therapy pipeline

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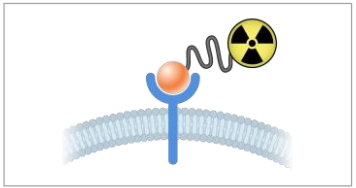
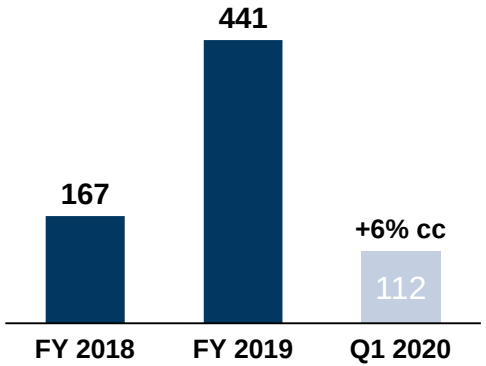
Four therapeutic modalities to drive future growth

	Targeted Therapies	Immunotherapies	Radioligand	Cell & Gene
				
Select pipeline assets and opportunities	**Kisqali**® in adjuvant BC **Alpelisib** in ▪ HER2+ advanced BC ▪ TNBC ▪ Head & neck ▪ Ovarian cancer ▪ PROS **Adakveo**® in sickle cell disease **Tabrecta**™ in NSCLC, single agent and combinations **Jakavi**® in GvHD, and combinations (platform) in MF **Asciminib** in CML **LXH254** in RAS/RAF mutant melanomas and lung cancer **TNO155** in solid tumors	**Canakinumab** in ▪ adjuvant NSCLC ▪ 1st line NSCLC ▪ 2nd line NSCLC **Spartalizumab+Tafinlar**®**+ Mekinist**® in metastatic melanoma **Spartalizumab combinations** (platform) in metastatic melanoma **Spartalizumab+LAG525+ carboplatin** in TNBC **Spartalizumab+Tabrecta**™ in NSCLC **MBG453** in MDS and AML **VPM087** in CRC and RCC **NIS793** in solid tumors	**Lutathera**® in 1st line grade 2/3 advanced GEP-NET **^{177}Lu-PSMA-617** in prostate cancer **^{177}Lu-PSMA-R2** in prostate cancer **^{177}Lu-NeoB** in multiple solid tumors **^{177}Lu-FF58** in glioblastoma	**Kymriah**® in ▪ r/r DLBCL after 1st relapse ▪ r/r follicular lymphoma ▪ r/r adult ALL ▪ combinations (pembrolizumab; ibrutinib) in r/r DLBCL ▪ pediatric NHL ▪ 1st line high risk pediatric and young adult ALL **YTB323** in ▪ r/r DLBCL ▪ r/r CLL combination with ibrutinib **PHE885** in r/r MM **Other targets:** BCMA&CD19, CD22&CD19, CD123, EGFRvIII

Lutathera®: On track for blockbuster status in NET; real-world safety data featured at ASCO

Net sales

USD million,
growth in % cc vs. PY period



Blockbuster potential in current indication

Ongoing NETTER-2 study for 1st line use in advanced GEP-NET patients with high proliferation rate tumors (G2/3 segment) represents an incremental opportunity

Next wave of innovation in RLT includes ^{177}Lu-PSMA-617 for mCRPC, including earlier lines, along with moving to alpha emitters and new targets

ASCO'20 Virtual

- Real-world safety data from US expanded access program showed that Lutathera® is well-tolerated in patients with advanced NETs
- Treatment-related adverse events (TRAEs) were generally mild or moderate and mostly gastrointestinal
- Few patients experienced grade 3/4 TRAEs
- The safety profile was consistent with the results of the Phase 3 NETTER-1 trial and other previous studies

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TheraP: First randomized trial with ^{177}Lu-PSMA-617, initiated and sponsored by ANZUP, presented at ASCO

TheraP study design

ANZUP Cancer Trials Group Limited | ASCO20 Virtual

Aim

To determine the activity and safety of Lu-PSMA vs. cabazitaxel

Key eligibility

- mCRPC post docetaxel suitable for cabazitaxel
- Progressive disease with rising PSA and PSA ≥ 20 ng/mL
- Adequate renal, hematologic and liver function
- ECOG performance status 0-2

↓

^{68}Ga-PSMA + ^{18}F-FDG PET/CT

- PSMA SUVmax > 20 at any site
- Measurable sites SUVmax > 10
- No FDG positive/PSMA negative sites of disease
- Centrally reviewed

R

^{177}Lu-PSMA-617

8.5 GBq IV q6 weekly
↓ 0.5GBq each cycle
Up to 6 cycles

SPECT/CT @ 24 hours

Suspend Rx if exceptional response; recommence upon progression

200 men 1:1 randomization
11 sites in Australia

Stratified by:

- Disease burden (>20 sites vs. ≤ 20 sites)
- Prior enzalutamide or abiraterone
- Study site

CABAZITAXEL

20mg/m^2 IV q3 weekly,
Up to 10 cycles

80% power to detect a true absolute difference of 20% in the PSA response rate (from 40% to 60%), with a 2-sided type 1 error of 5% and allowance of 3% for missing data.

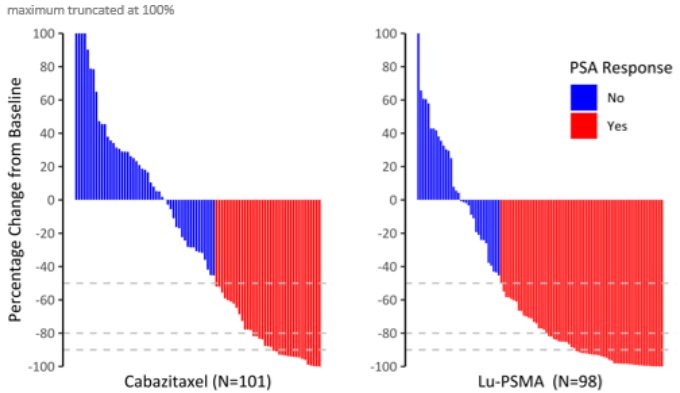
THERA-P is an independent investigator-initiated trial (IIT) sponsored by ANZUP: Australian & New Zealand Urogenital and Prostate (ANZUP) Cancer Trials Group. All data are taken from the ANZUP presentation at the 2020 ASCO Annual Meeting by Michael Hofman, MBBS. THERA-P is different from VISION; Novartis awaits the VISION study readout in H2 2020.

TheraP IIT showed higher PSA activity and less toxicity vs. an active comparator

Primary endpoint: PSA ≥ 50% response (PSA50-RR)

ANZUP Cancer Trials Group Limited | ASCO20 Virtual

Best PSA Response



PSA50-RR	37%	66%
(95%CI)	(27-46%)	(56-75%)

Lu-PSMA had **29% absolute** (95% CI 16%-42%; p<0.0001) greater PSA ≥ 50% response rate compared to cabazitaxel

Relatively fewer Grade 3-4 AEs for ^{177}Lu-PSMA-617 vs. cabazitaxel

Promising PSA response rate, awaiting radiographic endpoint

Results highlight potential clinical activity of ^{177}Lu-PSMA-617

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Pivotal Phase 3 VISION study of ^{177}Lu-PSMA-617 on track to read out in H2 2020

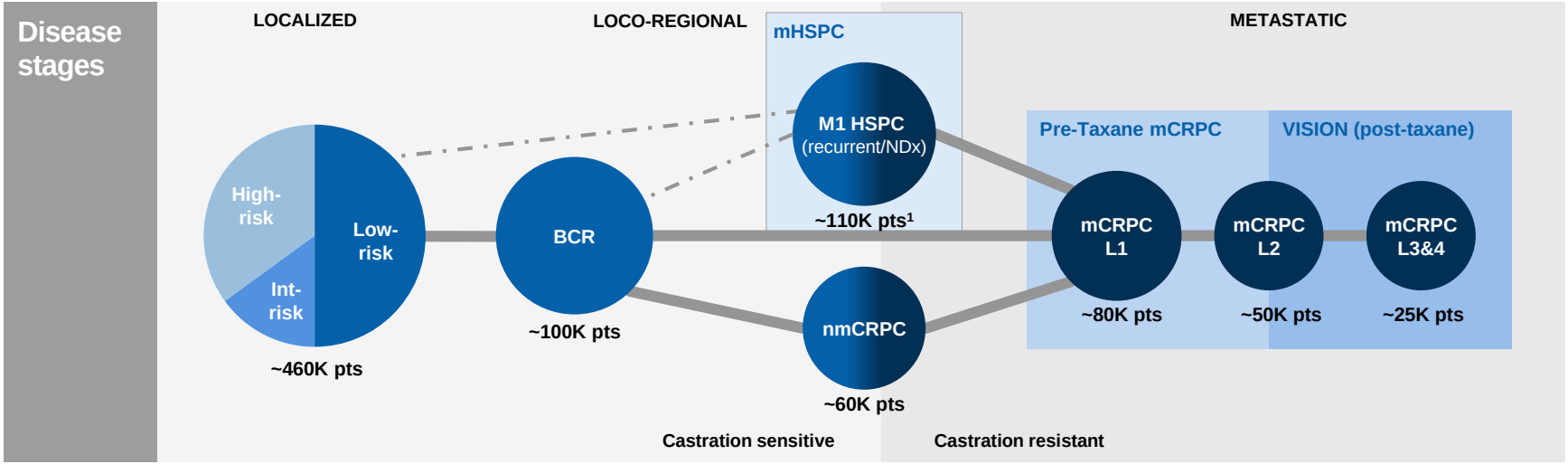
VISION study design

Important differences vs. TheraP study

	TheraP	VISION
Comparator	Head-to-head vs. cabazitaxel	Versus best standard of care (excluding cabazitaxel)
Patient population	Eligible for cabazitaxel and not FDG+/PSMA-; one prior taxane regimen	One or two prior taxane regimens, not currently candidate for cabazitaxel; not CT+/PSMA-
Primary endpoints	PSA response	rPFS & OS

1. Best standard of care / best supportive care: broad range of active treatment options, excluding investigational agents and chemotherapy. 2. NAAD = Novel Androgen Axis Drug (abiraterone or enzalutamide).

Plans to take ^{177}Lu-PSMA-617 into earlier lines, where there is significant unmet need



Priority focus

- Pre-taxane setting for metastatic Castration-Resistant Prostate Cancer (mCRPC)
- Metastatic Hormone-Sensitive Prostate Cancer (mHSPC)

Sources: J Clin Oncol. 2016 Apr 20; 34(12): 1402–1418; Aggarwal, Rahul R., et al. "Emerging Categories of Disease in Advanced Prostate Cancer and Their Therapeutic Implications." 15 June 2017; Kantar Health CancerMPact: US, EU5 & JP, Incidence 2020, w/ tx rate applied. 1. Incl 1L & 2L mHSPC

Q&A

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