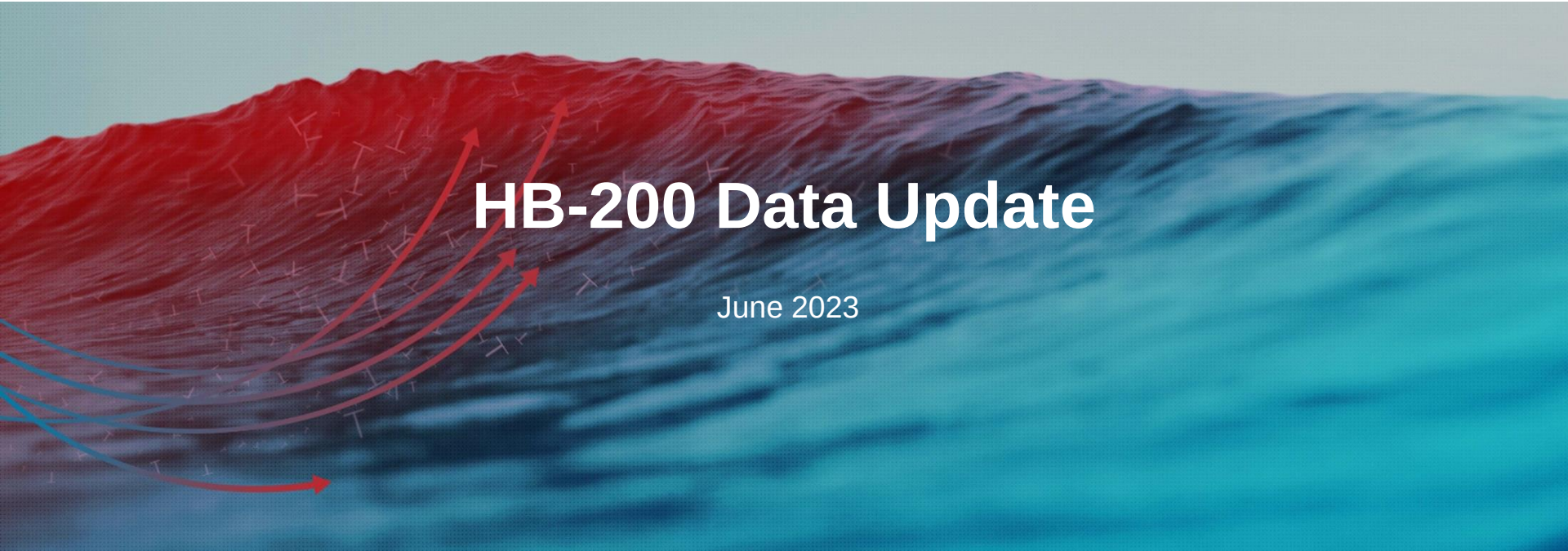


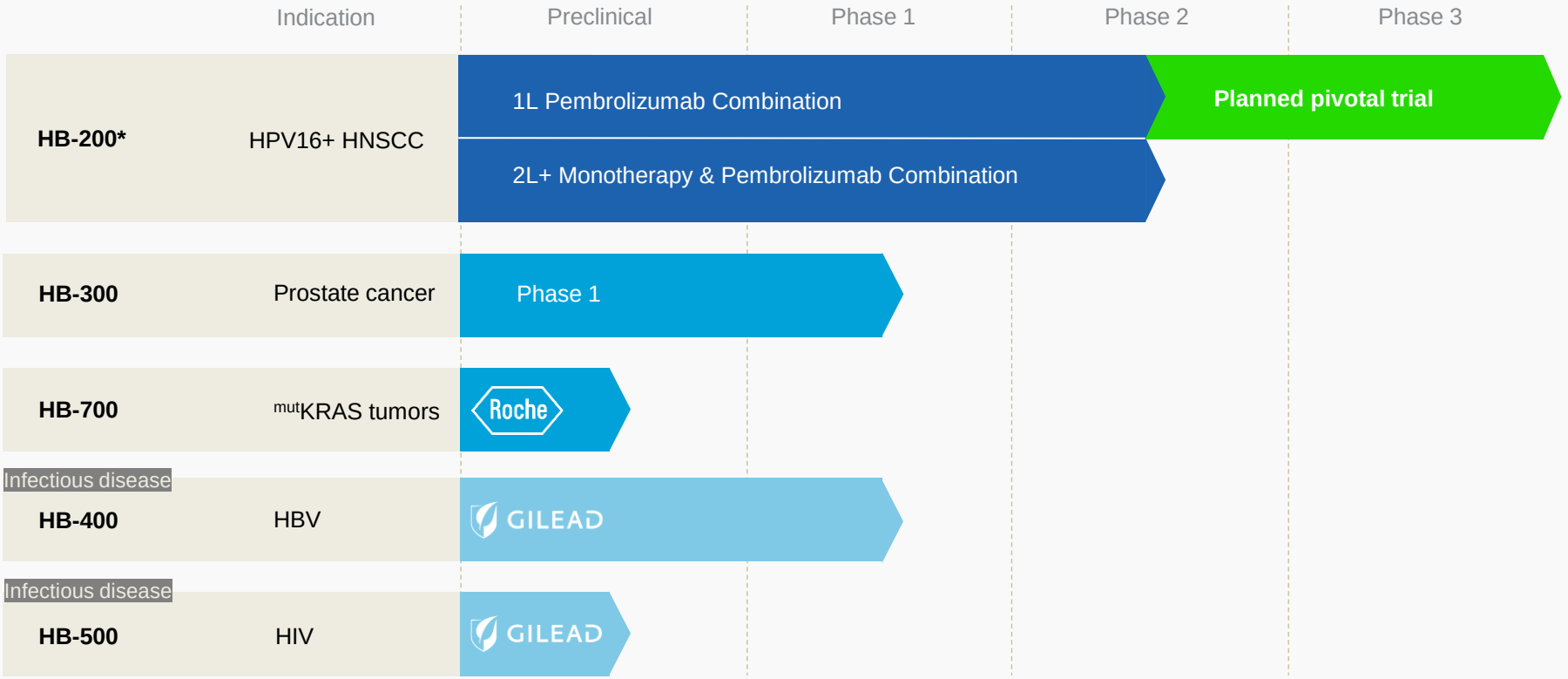
HB-200 Data Update

June 2023

Disclaimer

This presentation and other related material may contain a number of “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including statements regarding HOOKIPA’s expectation about any or all of the following: (i) the success, cost and timing of HOOKIPA’s product development activities and clinical trials; (ii) the timing, scope or likelihood of regulatory filings and approvals, including timing of Investigational New Drug Application and Biological Licensing Application filings for HOOKIPA’s current and future product candidates, and final U.S. Food and Drug Administration, European Medicines Agency or other foreign regulatory authority approval of HOOKIPA’s current and future product candidates; (iii) HOOKIPA’s ability to develop and advance its current product candidates and programs into, and successfully complete, clinical studies; (iv) HOOKIPA’s manufacturing, commercialization and marketing capabilities and strategy; (v) the potential benefits of and HOOKIPA’s ability to maintain its collaboration with Gilead Sciences, Inc., and establish or maintain future collaborations or strategic relationships or obtain additional funding; (vi) risks relating to business interruptions resulting from the coronavirus (COVID-19) disease outbreak or similar public health crises and other matters that could affect the sufficiency of existing cash to fund operations and HOOKIPA’s ability to achieve the milestones under the agreement with Gilead; and (vii) the rate and degree of market acceptance and clinical utility of HOOKIPA’s current and future product candidates. Forward-looking statements can be identified by terms such as “believes,” “expects,” “plans,” “potential,” “would” or similar expressions and the negative of those terms HOOKIPA has based these forward-looking statements largely on its current expectations and projections about future events and financial trends that it believes may affect its business, financial condition and results of operations. Although HOOKIPA believes that such statements are based on reasonable assumptions, forward-looking statements are neither promises nor guarantees and they are necessarily subject to a high degree of uncertainty and risk. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond HOOKIPA’s control, you should not rely on these forward-looking statements as predictions of future events. These risks and uncertainties include, among others: outcomes of HOOKIPA’s planned clinical trials and studies may not be favorable; that one or more of HOOKIPA’s product candidate programs will not proceed as planned for technical, scientific or commercial reasons; availability and timing of results from preclinical studies and clinical trials; uncertainty about regulatory approval to conduct clinical trials or to market a products; uncertainties regarding intellection property protection; and those risk and uncertainties described under the heading “Risk Factors” in HOOKIPA’s Annual report on Form 10-K filed with the U.S. Securities and Exchange Commission on March 15, 2023 and in any other subsequent filings made by HOOKIPA with the U.S. Securities and Exchange Commission, which are available at www.sec.gov. Existing and prospectus investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date they are made. HOOKIPA disclaims any obligation or undertaking to update or revise any forward-looking statements contained in this presentation, other than to the extent required by law. This presentation shall not constitute an offer to sell or the solicitation of an offer to buy these securities, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation, or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

Building a Pipeline for the Novel Arenaviral Vector Technology Platform:
Pioneer product HB-200 nearing pivotal trial as a combination-therapy



- *HB-200 means 2-vector therapy with alternating application of HB-201 = LCMV, HB-202 = PICV vectors, encoding HPV16 E6/E7 antigens*

HB-200 Development Program:
Fundamental questions answered positively, unlocking potential of platform

HB-200 + Pembrolizumab is potentially more effective than Pembro alone	• **HB-200 + pembrolizumab combination doubles ORR in 1st line** • **ORR 43% vs. pembrolizumab 19%***
HB-200 is clinically active alone	• **Clinical responses in monotherapy in CPI resistant patients** • **Monotherapy shows preliminary mOS 14.2 mo. (ITT pop.)**
Is HB-200 driving expected T cell biology?	• **Unprecedented tumor-specific CD8+ T cells** • **HB-200 induced T cell infiltration in tumors associated with clinical benefit**
HB-200 shows favorable safety profile	• **Favorable safety profile from over 130 patients** • **In monotherapy and in combination**

** Harrington Updated Data KEYNOTE-048 JCO 2023*

HB-200 Development Program:
The totality of the data support progression into a pivotal study

- HB-200 + Pembrolizumab is potentially more effective than Pembro alone
- HB-200 is clinically active alone
- HB-200 is driving expected T cell biology
- HB-200 shows favorable safety profile

Preparations for Pivotal 1st Line HNSCC Trial

Evaluation of additional development opportunities

HB-200 Phase 1/2:
132 patients enrolled as of March 31, 2023

Phase 1 Monotherapy HPV16+ HNSCC Dose Escalation & RP2D Confirmation N=93	**2L-6L** **2-vector therapy** 11 patients at optimal dose Follow-up data	2L and later lines 2-vector therapy 18 patients added Data developing	2L and later lines 2-vector therapy 12 patients at other doses	2L and later lines 1-vector therapy 20 patients	Non-HNSCC HPV+ tumors 1/2-vector therapy 32 patients
Phase 2 Pembrolizumab Combination HPV16+ HNSCC N=39	1L Safety run-in 1-vector therapy 3 patients	**1L** **2-vector therapy** **14 patients evaluable** 20 treated	2L+ Safety run-in 1-vector therapy 1 patient	**2L-7L** **2-vector therapy** **5 patients evaluable** 15 treated	**1L and later lines** **2-vector therapy** 2 treated*

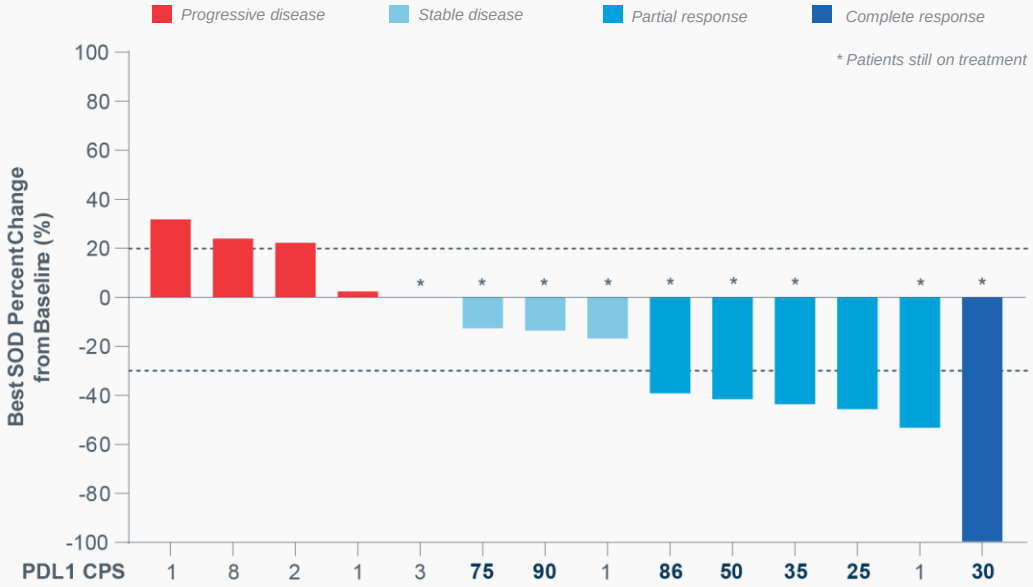
Data reported today

- *Preliminary Data: Includes unmonitored and unverified data based on current EDC data or data provided by Investigators. Data is subject to change.*
- *H 200-001 (NCT04180215)*

- **HB-200 + Pembrolizumab combination doubles ORR of Pembrolizumab in 1st line**

HB-200 + Pembrolizumab as 1L Treatment Shows 43% ORR

All responses confirmed under RECIST 1.1



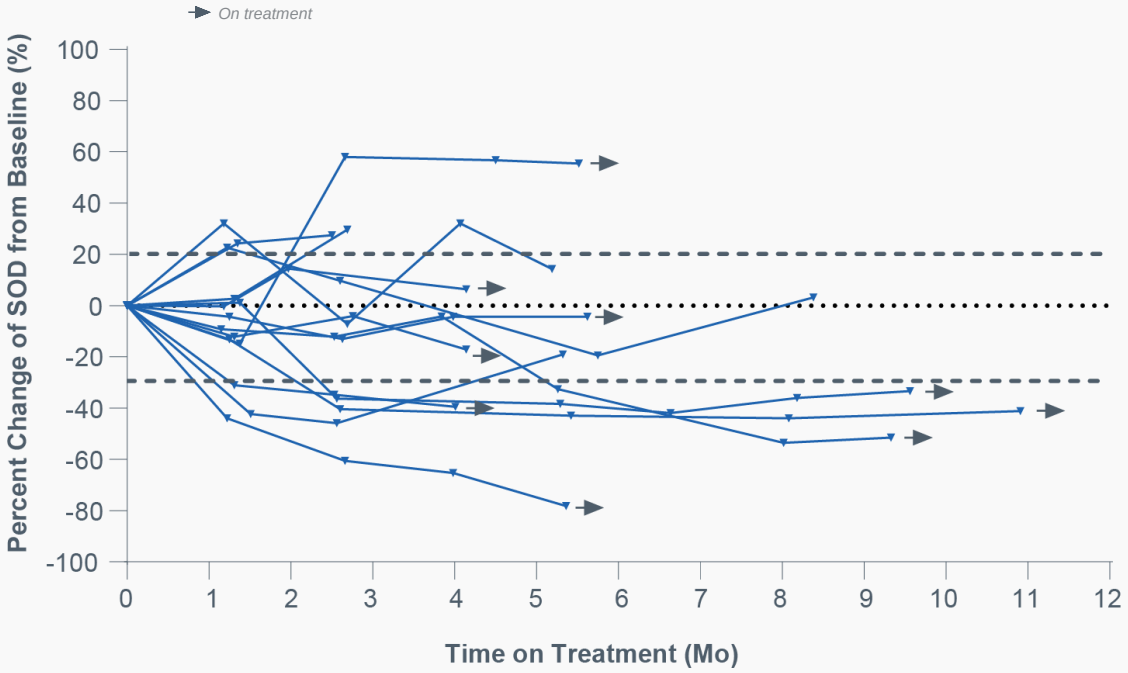
- **Objective Response Rate is 43% (6/14)**
  - **1 confirmed CR**
  - **5 confirmed PR**
- **Disease Control Rate is 71% (10/14)**
  (DCR = SD+PR+CR)

Data cut-off 31-Mar-2023; 14 oropharynx cancer patients evaluable from 15 with at least 3 mo. follow up (≥ 2 scans); median follow-up 5.6 mo
Responses assessed by RECIST v1.1 per investigator assessment; RECIST: Response Evaluation Criteria in Solid Tumors; SOD: Sum of diameters of target lesions
Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.
ORR= Objective Response Rate; DCR= Disease Control Rate; CR=Complete Response; PR=Patrial Response; SD=Stable Disease; PD=Progressive Disease

Pembrolizumab 1L:
ORR: 19 % DCR: 47 %[1]

1 Harrington Updated Data KEYNOTE-048 JCO 2023

HB-200 + Pembrolizumab 1st Line
Sustained responses in majority of patients



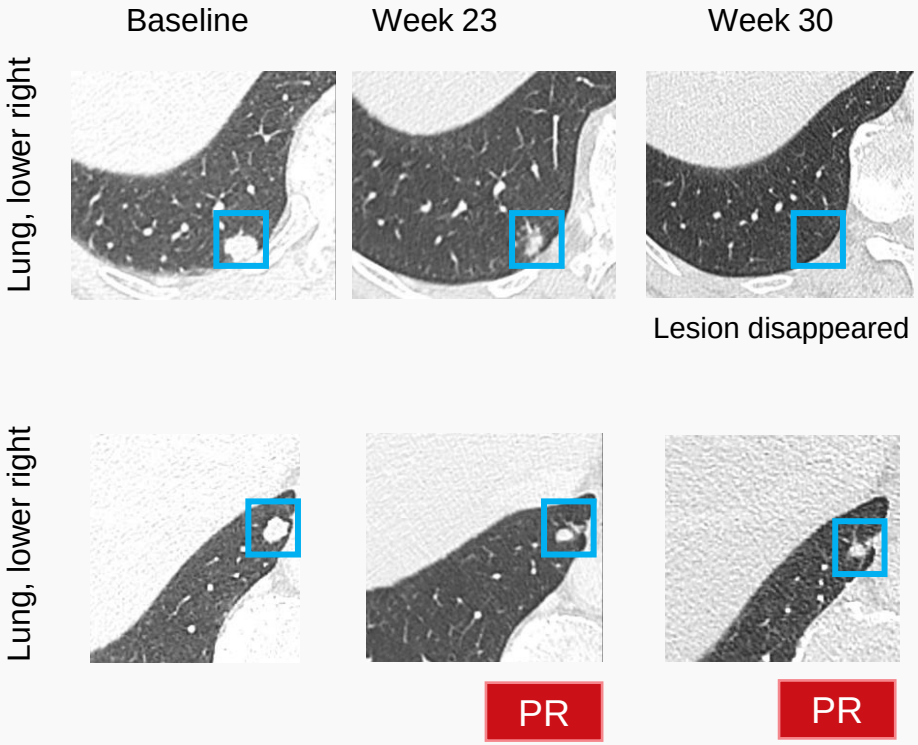
- **Shows Trends toward Durable Responses and Prolonged Disease Control**
- **mPFS not reached**
- **mOS not reached**

Data cut-off 31-Mar-2023; 14 oropharynx cancer patients /20 treated with HB-202/HB-201 + pembrolizumab in the 1L setting evaluable for efficacy *(at least ≥ 2 scans); median follow-up 5.6 mo*
Responses assessed by RECIST v1.1 / iRECIST per investigator assessment; RECIST: Response Evaluation Criteria in Solid Tumors, iRECIST: immune RECIST; SOD: Sum of diameters of target lesions
Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

HB-200 + Pembrolizumab Demonstrate Durable Response and Tumor Reduction in Lung Lesions – Patient 1

Patient 1:

- 67-year-old male
- HPV16+ oropharynx cancer (CPS 1)
- Refractory to platinum-based chemoradiation (< 3 months)
- **Response**: PR in lung metastases at 5 months
- **Status**: Ongoing treatment at 10 months

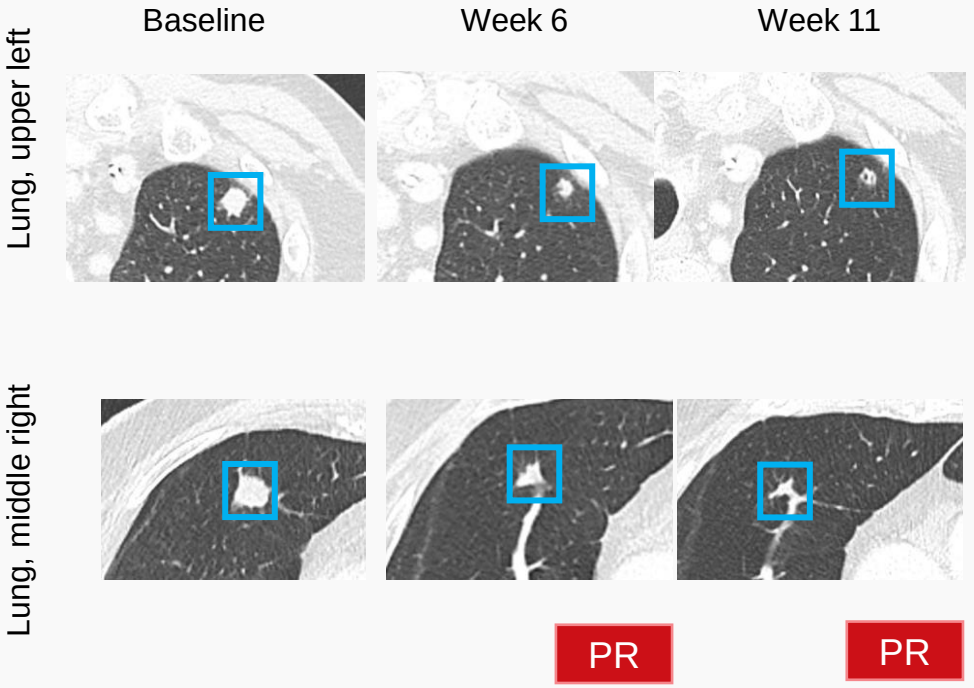


Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

HB-200 + Pembrolizumab Demonstrate Durable Response and Tumor Reduction in Lung Lesions – Patient 2

Patient 2:

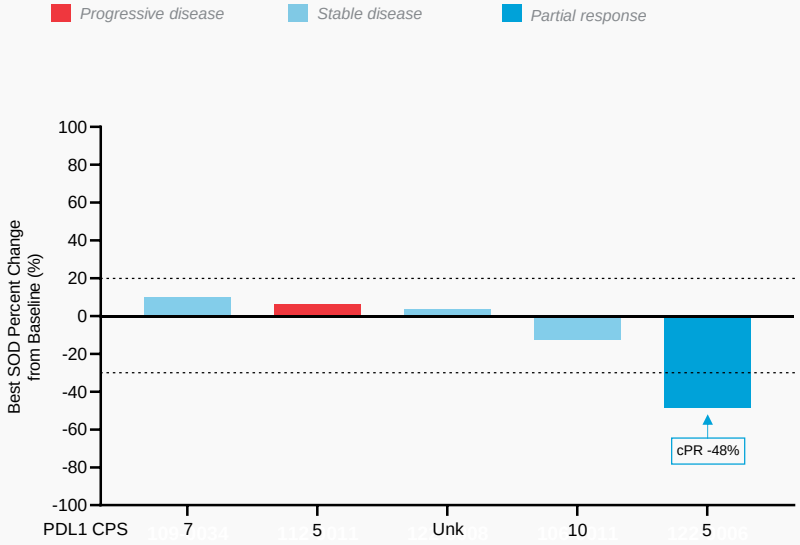
- 75-year-old male
- HPV16+ oropharynx cancer (CPS 86)
- 1L setting
- **Response**: rapid response in lung metastases since Week 6
- **Status**: Ongoing treatment at 4.5 months



Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

- HB-200 + Pembrolizumab combination doubles ORR of Pembrolizumab in 1st line
- **Activity in 2nd Line+ (combination and monotherapy)**

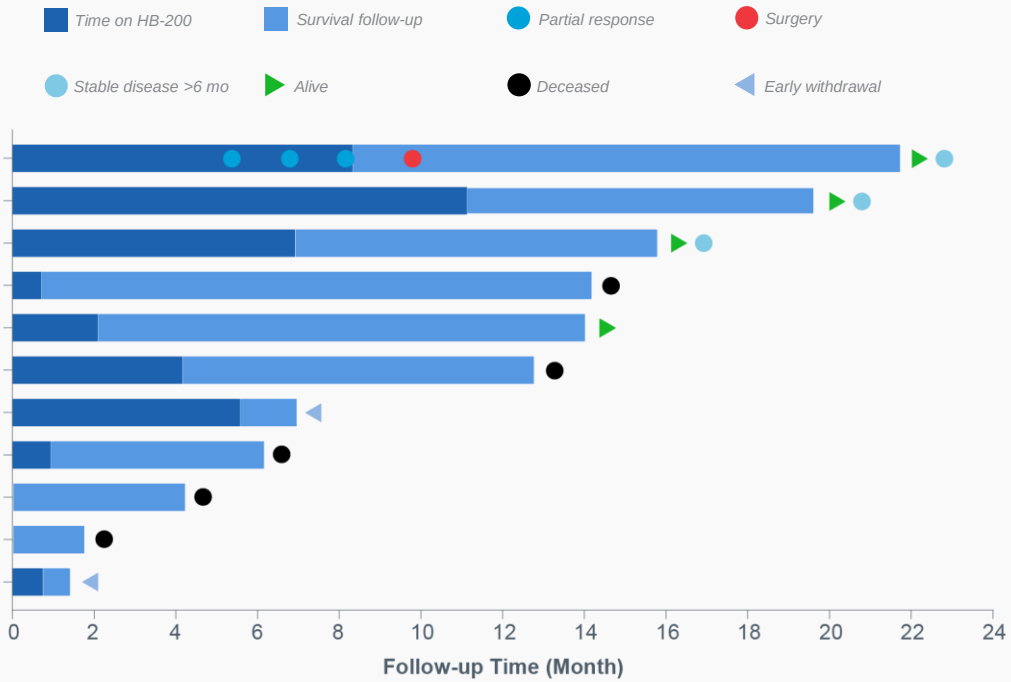
HB-200 Activity in 2nd Line+ in Combination with Pembrolizumab



- **15 patients heavily pre-treated (2L – 7L), 5 patients evaluable**
- **ORR:**
  - **1/5 patients with cPR**
  - **3/5 patients with SD**
- **Preliminary mPFS: 5.3 months**

Data cut-off 31-Mar-2023; 5/14 oropharynx cancer patients treated with HB-200 + pembrolizumab in the 2L and later line setting evaluable for efficacy *(at least ≥ 2 scans); median follow-up 4.2 mo*
Responses assessed by RECIST v1.1 : Response Evaluation Criteria in Solid Tumors; SOD: Sum of diameters of target lesions
Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

HB-200 Phase 1 Monotherapy Follow-up in 2nd Line+ Preliminary mOS: 14.2 Months

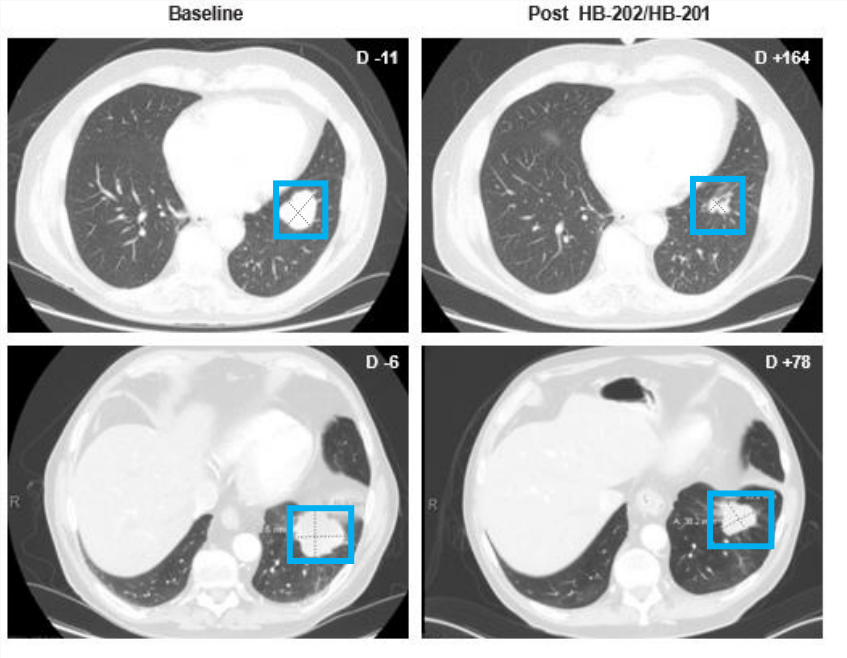


- **Monotherapy activity supports HB-200 potential in combinations**
- **mOS not reached in evaluable patients**
- **Preliminary Median Overall Survival (mOS): 14.2 Months**

Update on Initial Cohort of HB-200 in Monotherapy

Data cut off 31 Mar 2023. Survival follow-up for 11 ITT (intent-to-treat) patients who received HB200 monotherapy at the same doses moved forward to Phase 2. Median follow-up: 12.8 mo (range 1.4-21.7 mo).
Preliminary Data: includes unmonitored and unverified data based on current EDC data. Data is subject to change.

HB-200 Monotherapy: 2 Case Studies



Case 1:

- 65-year-old male with HPV16+ oropharynx cancer
- **Prior treatment:** pembrolizumab + lenvatinib
- **Response**: PR -33% in lung lesion 5 months into treatment
- **Status**: Discontinued treatment at 8 months, surgical resection of lung lesion at 10 months. No residual tumor. Ongoing long-term follow-up at 22 months

Case 2:

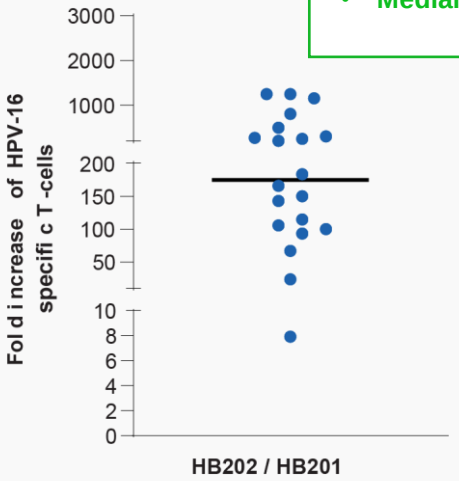
- 75-year-old male with HPV16+ oropharynx cancer
- **Prior treatment:** 4 lines of therapy, incl. Chemo and CPI
- **Response**: near PR -29% in lung metastases after 2.6 months
- **Status**: Continued on HB-200 monotherapy until progression after over 11 months of therapy; added pembrolizumab per protocol and remains on study at 20 months.

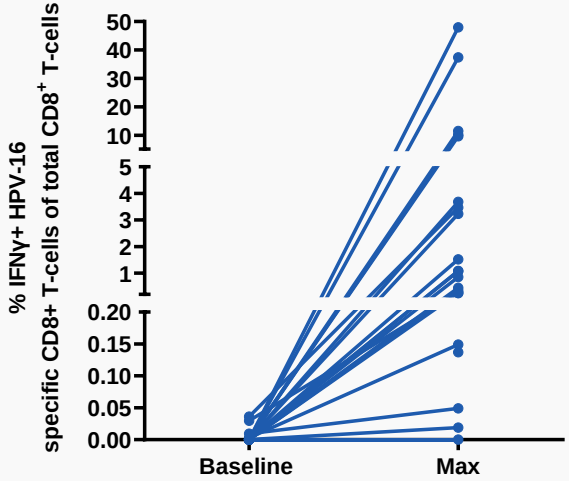
Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

- HB-200 + Pembrolizumab combination doubles ORR of Pembrolizumab in 1st line
- Activity in 2nd Line+ (combination and monotherapy)
- **Highly functional T cell response associated with clinical benefit**

HB-200 Monotherapy: Unprecedented CD8+ T cell Response

- **Increase of tumor specific T cells[1]: up to 1250 fold**
- **Median: 174 fold**



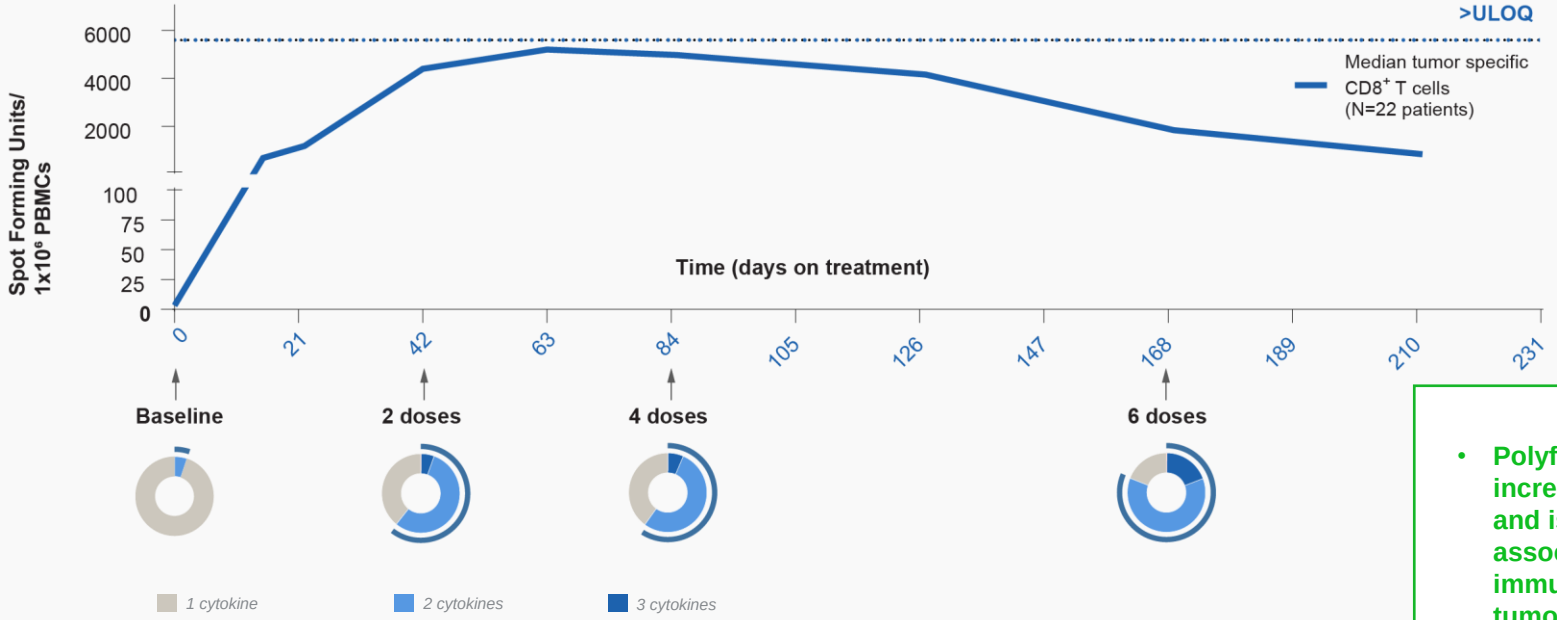


- **Conversion to functional tumor-specific CD8+ T cells[2]: up to: 48%**
- **57% of patients break 1% threshold**

Direct measurement of T cells without prior in vitro expansion of cells (all HNSCC patients treated with 2 vector therapy Q3W)

[1]HB200 two vector therapy mediated fold increase (max response on treatment vs before treatment) of systemic HPV-16 E7 and E6 specific T cells measured by ELISPOT;
[2]HPV-16 E6 and E7 specific CD8+ (killer) T cells out of total CD8+ T cells measured by intracellular cytokine staining;

HB-200 Monotherapy:
T cell longevity and polyfunctionality



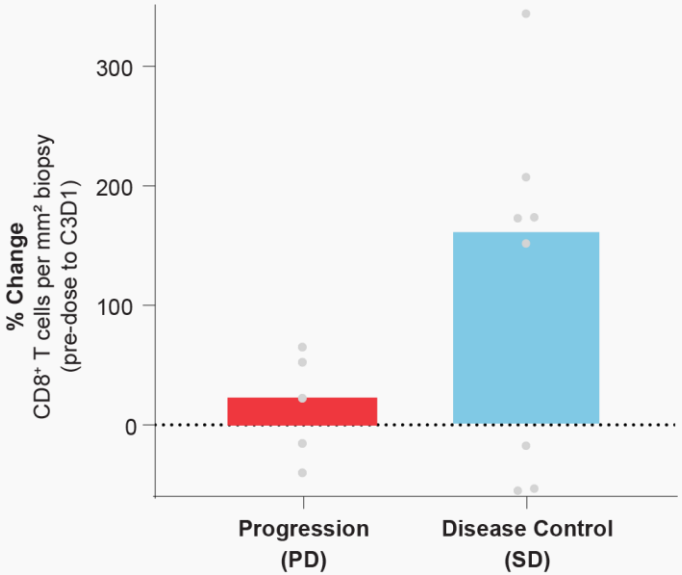
- **Polyfunctionality[1] increases over time and is known to be associated with immune control of tumors**

T cell kinetics by ELISPOT & analysis of IFN-g, IL-2, TNF-a and CD107a cytokine expression by intracellular cytokine staining at indicated timepoints

Pie charts indicate the percentage of tumor specific T cells expressing various numbers of cytokines (mean of all patients at indicated timepoints)

1 Polyfunctionality is the ability of T cells to carry out multiple functions simultaneously at the single cell level; The appearance of polyfunctional CD8+ effector cytotoxic T cells in vivo has been demonstrated to be a critical determinant of the success of immunological control of tumors (Imai N et al 2009, Yuan J et al 2008);

HB-200 Monotherapy – Association between T cell Induction and Clinical Outcome



- **Association Between HB-200 Induced CD8+ T Cells in Tumors and Clinical Benefit In Patients**
- **Greater CD8+ T cell infiltration observed in those with stable disease**

Analysis of all available paired tumor biopsies from Phase I monotherapy study; Bars represent median increase (% change) of tumor infiltrating CD8+ T cells during therapy
(i.e. 1 & 2 vector therapy, different administration (IV & IT), different tumor sites (Oropharyngeal; anal, cervical))
SD: Stable disease; PD: Progressive disease; C3D1: day 1 of third administration cycle

- HB-200 + Pembrolizumab combination doubles ORR of Pembrolizumab in 1st line
- Activity in 2nd Line+ (combination and monotherapy)
- Highly functional T cell response associated with clinical benefit
- **Favorable safety profile from over 130 patients**

HB-200 Monotherapy and Combination
Favorable safety profile across 132 patients in all settings

- Serious adverse events related to treatment: 7% of patients
- Treatment related-adverse events leading to dose reduction or discontinuation: 2% of patients
- No death related to treatment
- Data suggest that **Arenaviral therapies can safely be added** to any other immuno-therapy requiring more antigen-specific T cells

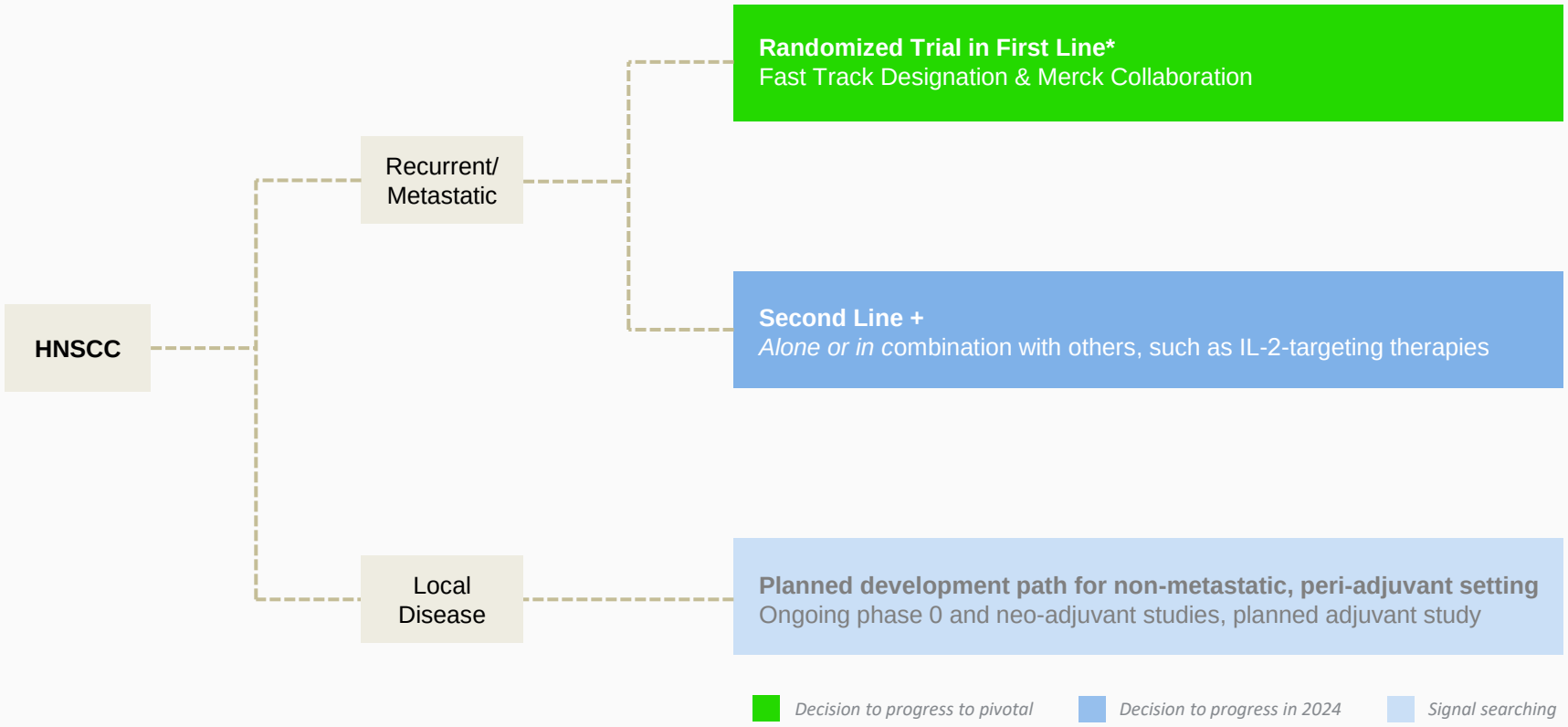
All participants (N=132)	Treatment related adverse events*	All adverse events
Any event	HB-201 73 (55%) HB-202 68 (52%) Pembrolizumab 25 (64%)	125 (95%)
Grade ≥3	17 (13%)	59 (45%)
Serious	9 (7%)	43 (33%)
Leading to dose reduction	2 (2%)	2 (2%)
Leading to discontinuation	3 (2%)	16 (12%)
Deaths	**0**	7 (5%)

Data as of 31-Mar-23
Preliminary Data: Includes unmonitored and unverified data based on current EDC data. Data is subject to change.

- *HB-200 means 2-vector therapy with alternating application of HB-201 = LCMV, HB-202 = PICV vectors, encoding HPV16 E6/E7 antigens*

- HB-200 + Pembrolizumab combination doubles ORR of Pembrolizumab in 1st Line
- Activity in 2nd Line+ (combination and monotherapy)
- Highly functional T cell response associated with clinical benefit
- Favorable safety profile from over 130 patients
- **Preparing randomized trial in 1st Line**

Development Opportunities For HB-200 in HPV+ HNSCC



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The totality of the data support progression into a pivotal study

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- HB-200 is clinically active alone
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Preparations for Pivotal 1st Line HNSCC Trial

Evaluation of additional development opportunities

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