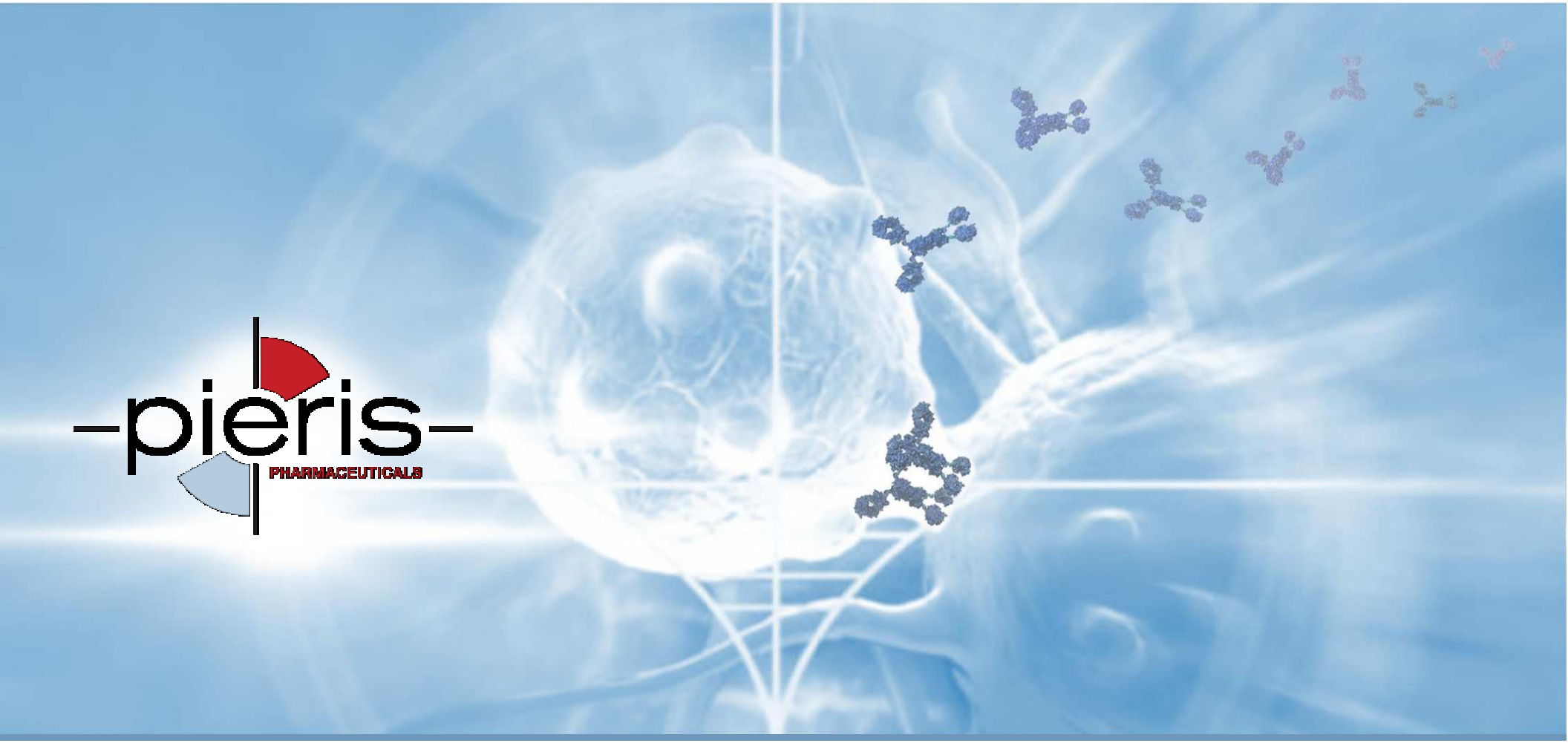


Costimulatory T-cell engagement by PRS-343, a 4-1BB(CD-137)/HER2 bispecific

Shane A. Olwill, Ph.D.

November 2016

SITC Annual Meeting

Forward Looking Statements

Statements in this presentation that are not descriptions of historical facts are forward-looking statements that are based on management's current expectations and assumptions and are subject to risks and uncertainties. In some cases, you can identify forward-looking statements by terminology including "anticipates," "believes," "can," "continue," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "will," "would" or the negative of these terms or other comparable terminology. Factors that could cause actual results to differ materially from those currently anticipated include, without limitation, risks relating to the results of our research and development activities, including uncertainties relating to the discovery of potential drug candidates and the preclinical and clinical testing of our drug candidates; the early stage of our drug candidates presently under development; our ability to obtain and, if obtained, maintain regulatory approval of our current drug candidates and any of our other future drug candidates; our need for substantial additional funds in order to continue our operations and the uncertainty of whether we will be able to obtain the funding we need; our future financial performance; our ability to retain or hire key scientific or management personnel; our ability to protect our intellectual property rights that are valuable to our business, including patent and other intellectual property rights; our dependence on third-party manufacturers, suppliers, research organizations, testing laboratories and other potential collaborators; our ability to successfully market and sell our drug candidates in the future as needed; the size and growth of the potential markets for any of our approved drug candidates, and the rate and degree of market acceptance of any of our approved drug candidates; developments and projections relating to our competitors and our industry; our ability to establish collaborations; our expectations regarding the time which we will be an emerging growth company under the JOBS Act; our use of proceeds from this offering; regulatory developments in the U.S. and foreign countries; and other factors that are described more fully in our Annual Report on form 10-K filed with the SEC on March 23, 2016. In light of these risks, uncertainties and assumptions, the forward-looking statements regarding future events and circumstances discussed in this report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. You should not rely upon forward-looking statements as predictions of future events. The forward-looking statements included in this presentation speak only as of the date hereof, and except as required by law, we undertake no obligation to update publicly any forward-looking statements for any reason after the date of this presentation to conform these statements to actual results or to changes in our expectations.

Presenter Disclosure Information

Shane A. Olwill

- The following relationships exist related to this presentation:
  - Full time employee of Pieris Pharmaceuticals Inc.

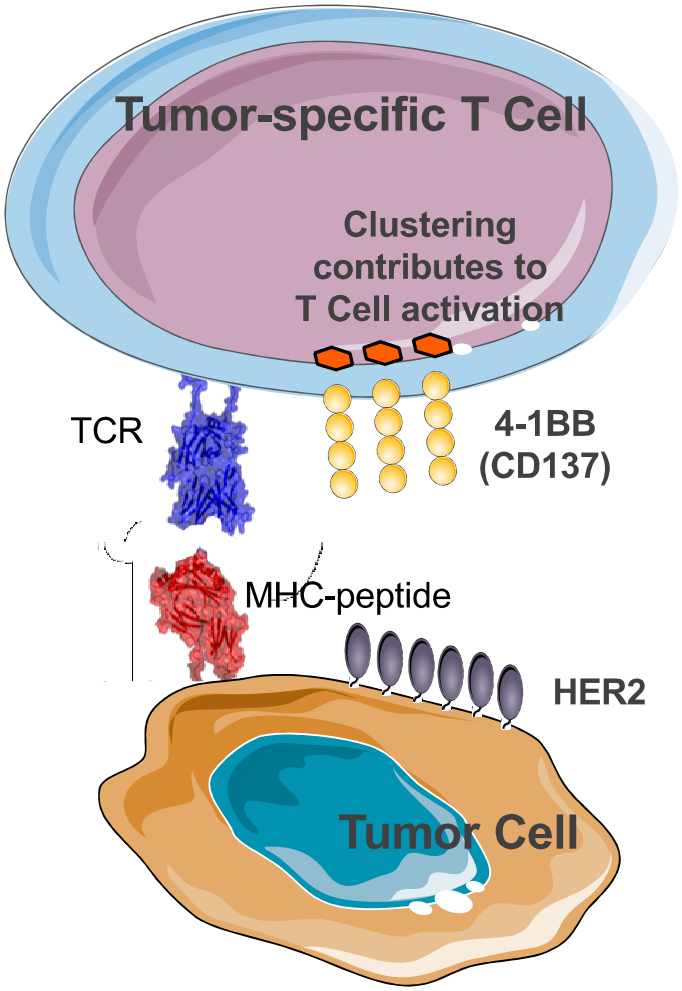
PRS-343 is a First-in-Class TME-activated Co-stim Agonist

4-1BB (CD137) – Key TNFR Family Costimulatory Target

- Marker for tumor-specific T cells in TME
- Ameliorates T cell exhaustion
- Critical for T cell expansion
- Induces anti-tumor cytolytic activity
- Drives central memory T cell differentiation for sustained response

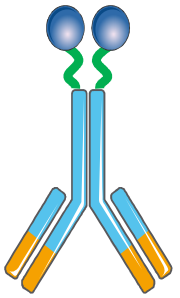
HER2 – Strongly Validated Tumor Target

- Restricted expression on normal tissue
- Multiple HER2+ tumors with high-unmet need
  - Breast, Gastric, Esophageal, Colorectal, Biliary, Pancreas, Bladder, Ovarian, Endometrial, Lung (AdenoCa), Salivary Duct, Head/Neck
- Mediates drug trafficking and cross-linking at the tumor bed



PRS-343

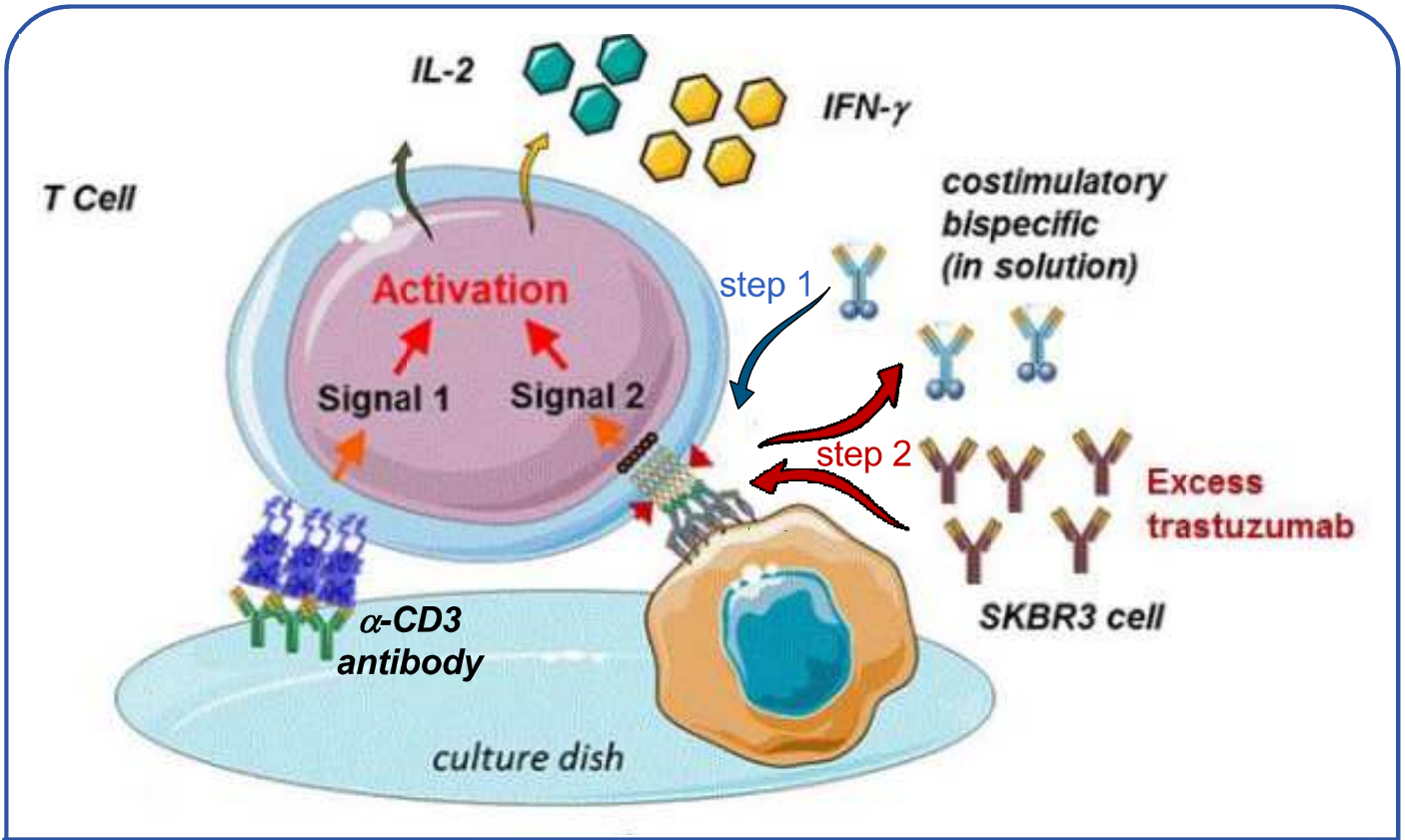
4-1BB-targeting Ac



HER2-targeting mAb

SITC Poster Number: 182
Saturday, Nov 12th

PRS-343 Demonstrates Targeted T Cell Activation Ex Vivo

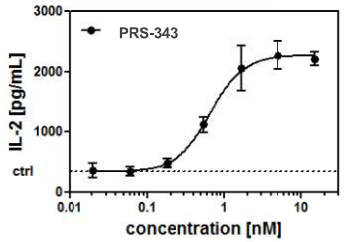


(Step 1) PRS-343 potently activates T cells mediated by 4-1BB cross-linking upon binding to HER2-positive tumor cells (SKBR3)

(Step 2) Addition of excess HER2-targeting trastuzumab prevents PRS-343 binding to HER2-positive cells and results in a loss of activity, as intended, confirming mode of action

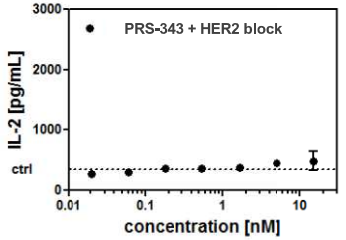
PRS-343 in presence of HER2-positive tumor cells (step 1)

Cell activation = IL-2 response



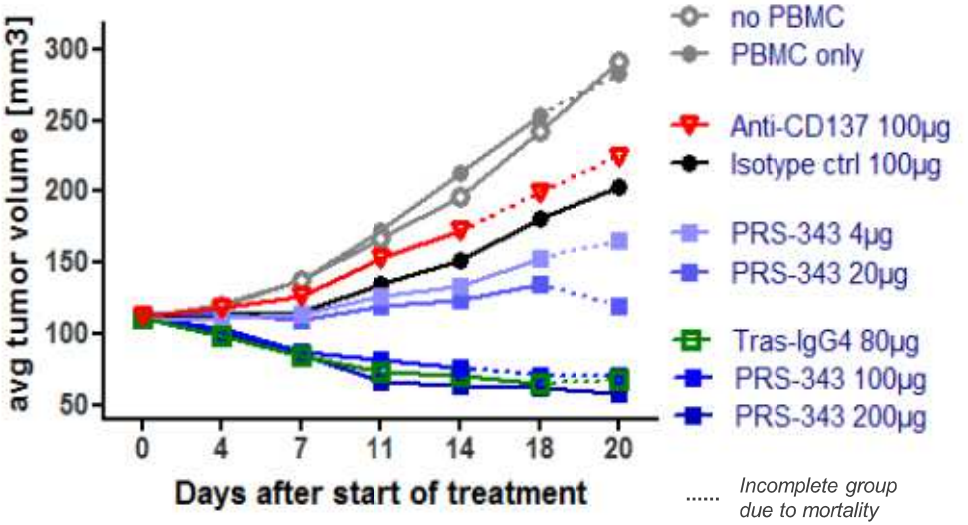
PRS-343 in solution, following addition of excess trastuzumab (step 2)

IL-2 response with HER2 blockade



PRS-343 Shows Bifunctional Activity –
Dose-dependent Tumor Growth Inhibition & CD8(+)TIL Expansion in SK-OV-3 Model

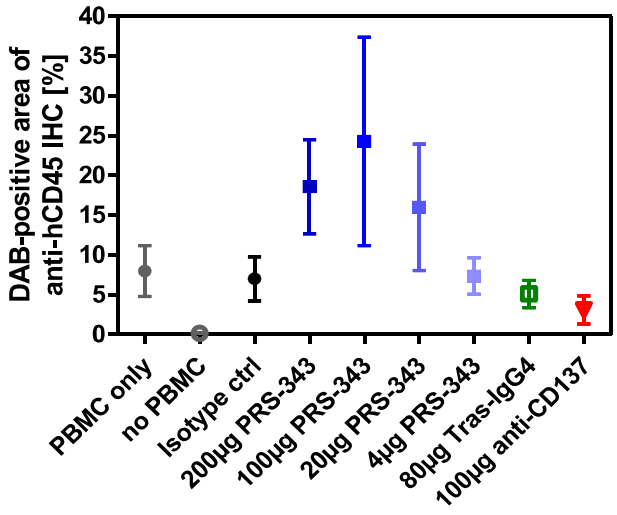
Tumor growth (Median)



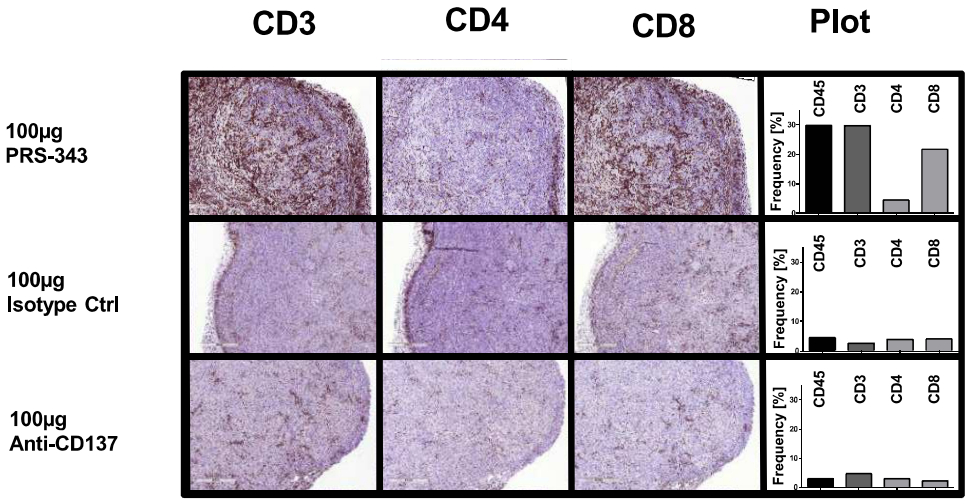
SK-OV-3 tumor model

- PRS-343 shows dose-dependent tumor growth inhibition, which is dominated by anti-HER2 activity
- PRS-343 leads to strong and dose-dependent lymphocyte infiltration in tumors; monospecific anti-HER2 mAb (IgG4 backbone) lacks this activity
- Monospecific anti-CD137 benchmark mAb shows insignificant response compared to isotype control and no significant tumor infiltration of lymphocytes

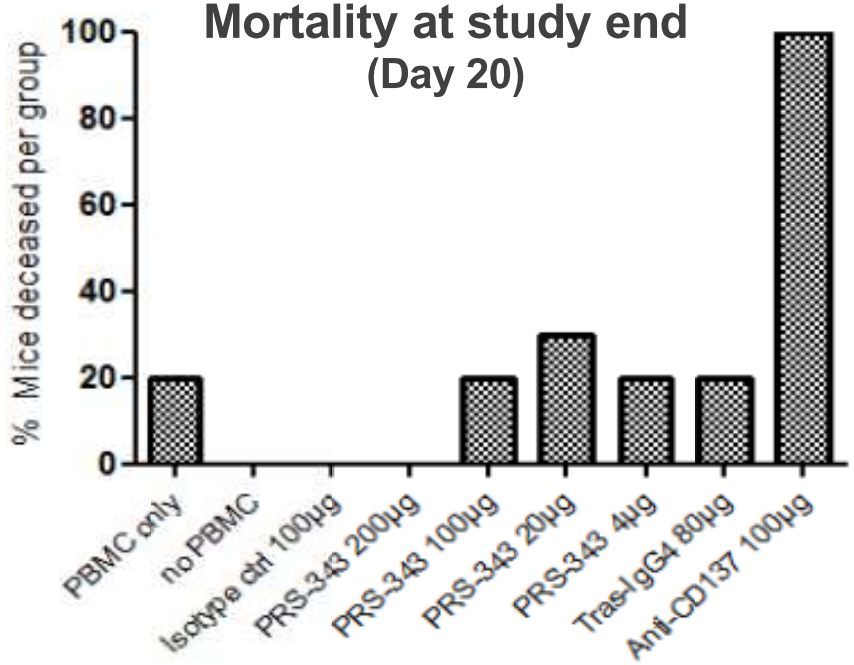
TIL (digital quantitation of hCD45 by IHC)



TIL phenotyping



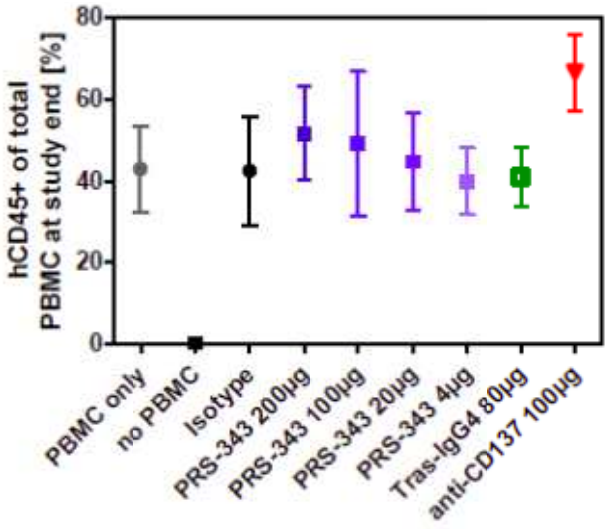
Anti-4-1BB mAb (but not PRS-343) Expands Peripheral Lymphocytes and Accelerates GvHD[1]



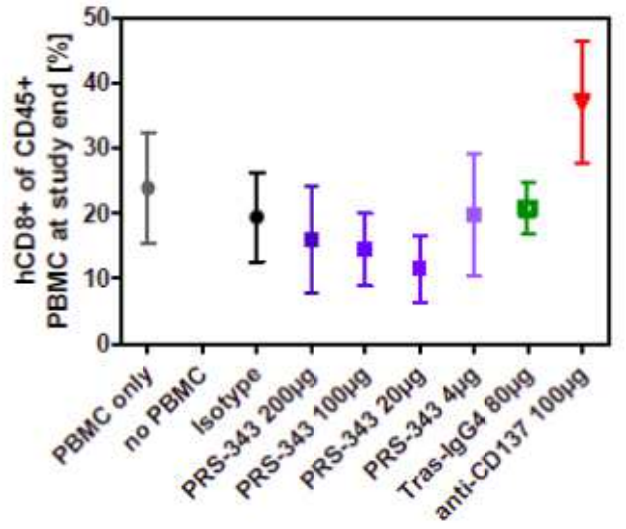
- Anti-CD137 benchmark mAb shows accelerated GvHD with significant mortality at day 20 in line with literature data[2]
- Toxicity corresponds with expansion of CD8-positive T cells in PBMC for this group

PBMC phenotyping at day 19

% CD45+ of PBMC

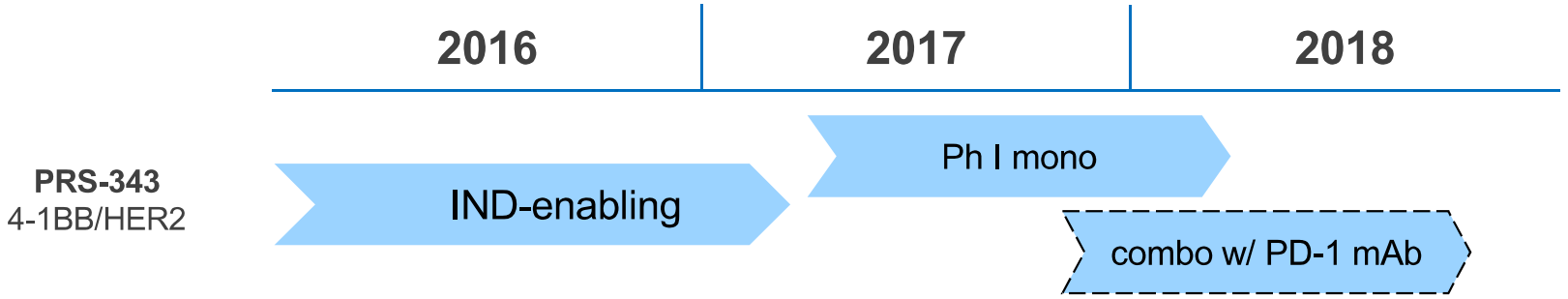


% CD8+ of CD45+



[1] GvHD = graft vs host disease
[2] Sanmamed et al., Cancer Res. 2015 Sep 1;75(17):3466-78.

PRS-343: IND Enabling Activities on track to support a FIM in H1 2017



Targeted Indication Characteristics

Known Immune Component

- Existing tumor-infiltrating lymphocyte (TIL) repertoire
- Validated role of CD137

High Medical Need

- Populations where current HER2 therapies don't work

Straightforward Registration Path

- Manageable trial size and duration with clear endpoints

Muscle-invasive Bladder Cancer	Advanced Gastric Cancer	Resistant Metastatic HER2+Breast Cancer
✓	✓	✓
✓	✓	✓
✓	✓	✓

Pieris Pharmaceuticals, Inc.

255 State Street
Boston, MA 02109
USA
info@pieris.com