

Immuno-Oncology II: Next Wave IO Targets and Modalities



Cancer Progress by Defined Health
New York, NY | March 8-9, 2016

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Immuno-Oncology II: Next Wave IO Targets and Modalities

Moderator:

Jeffrey M. Bockman, PhD, Vice President, Defined Health

Panelists:

- *Kenneth C. Carter, PhD, President and Chief Executive Officer, NexImmune*
- *Alessandra Cesano, MD, PhD, Chief Medical Officer, NanoString Technologies*
- *Thomas F. Gajewski, MD, PhD, Professor of Medicine, University of Chicago*
- *Rachel W. Humphrey, MD, Chief Medical Officer, CytomX Therapeutics, Inc.*
- *Christoph Lengauer, PhD, MBA, Chief Scientific Officer, Blueprint Medicines*
- *Peter Sandor, MD, MBA, VP, Head of Oncology Therapeutic Area in Marketing Strategy, Astellas Pharma*

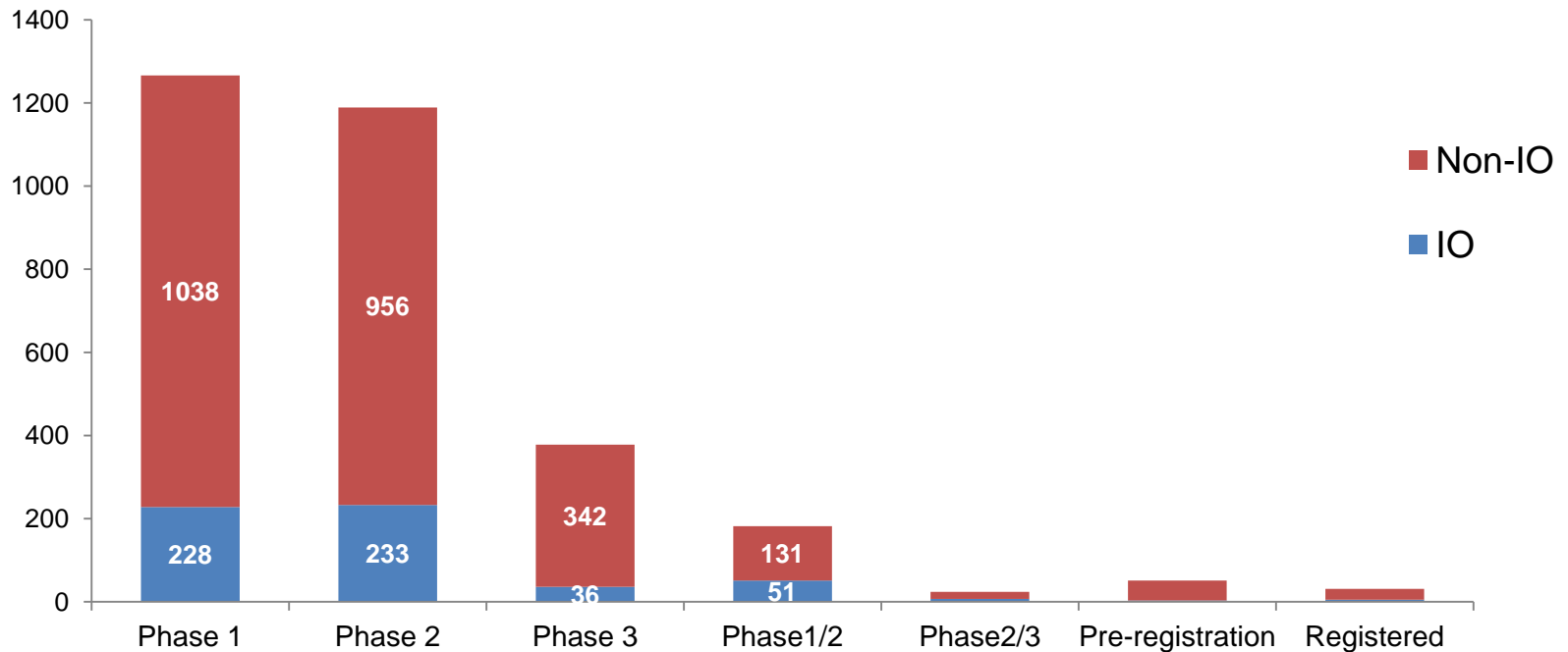
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Non IO v. IO Cancer R&D

Cancer Pipeline by Highest Phase



Cortellis, Defined Health

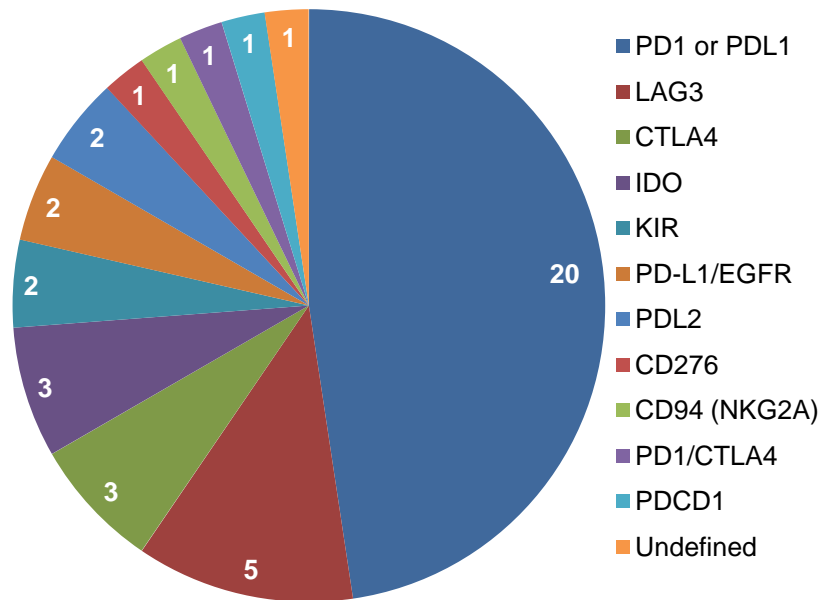
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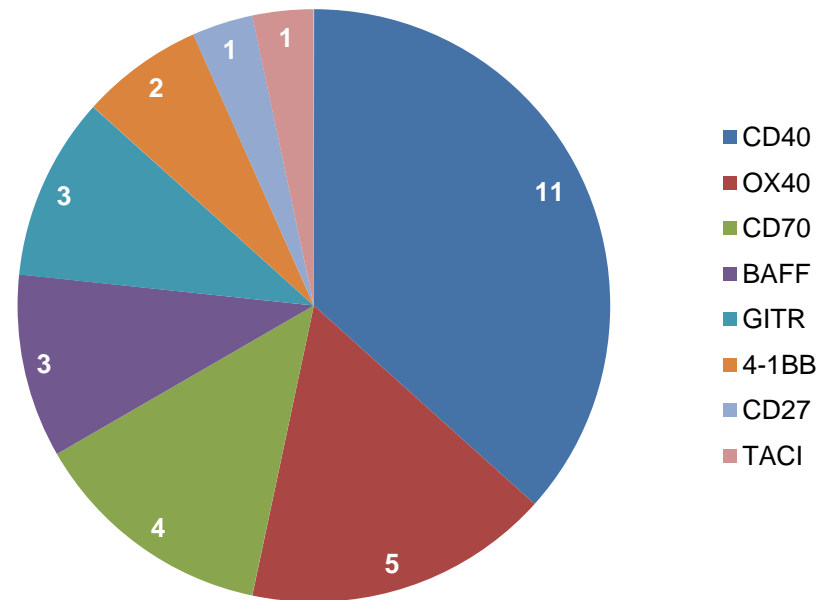


Top Targets Include PD1 (Checkpoints) and CD40 and OX40 (Costims)

Checkpoint Programs by Target

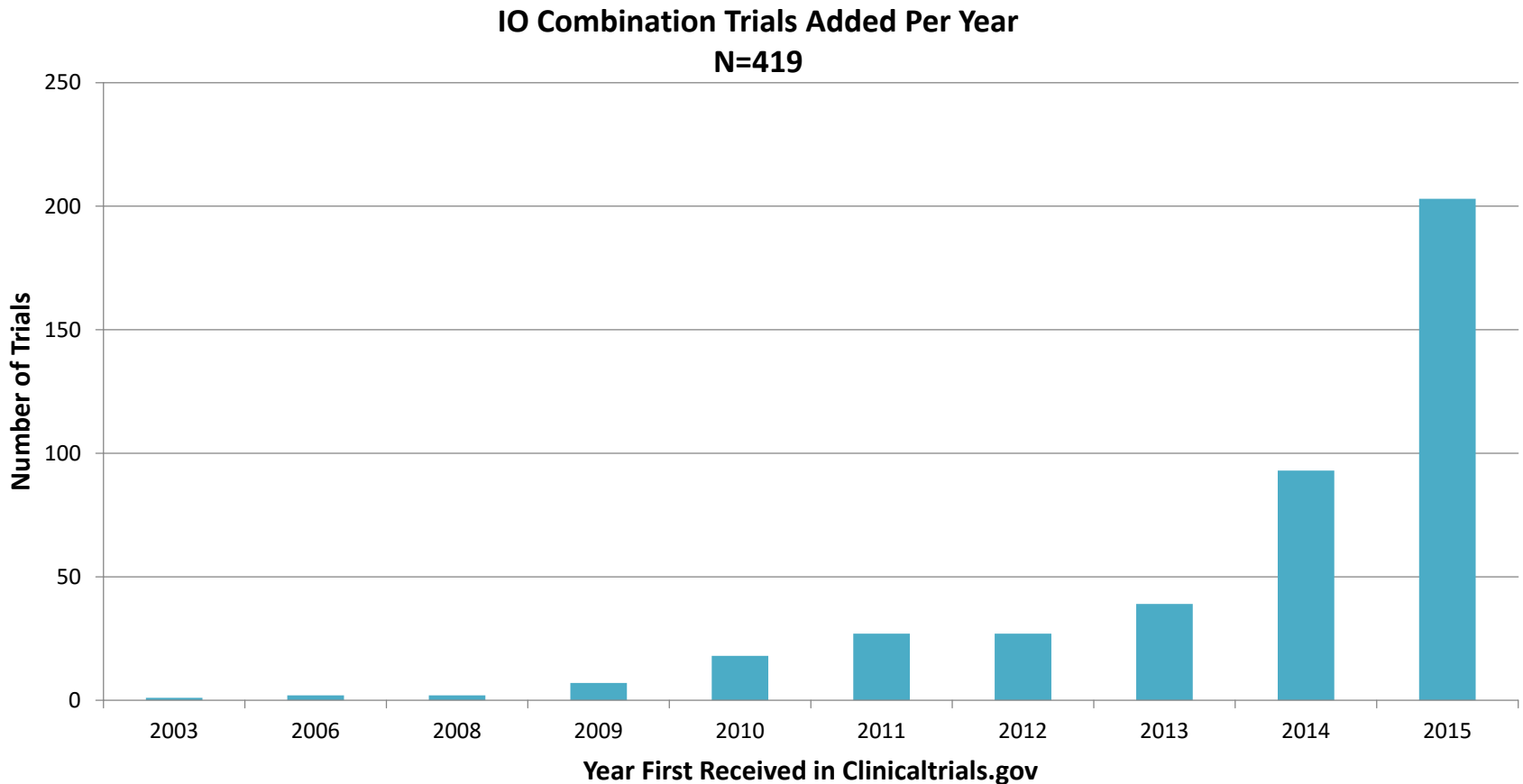


Costim Programs by Target



Adis R&D Insight, Thomson Reuters Cortellis

Significant Growth in IO Combination Trials - More Than Doubling 2014 to 2015



Clinicaltrials.gov (Data retrieved Nov 18, 2015), Defined Health

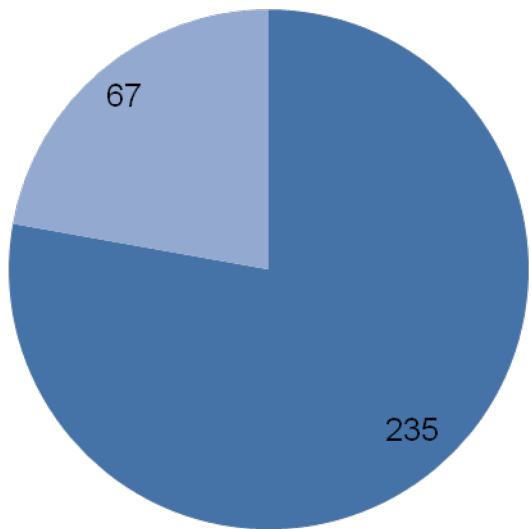
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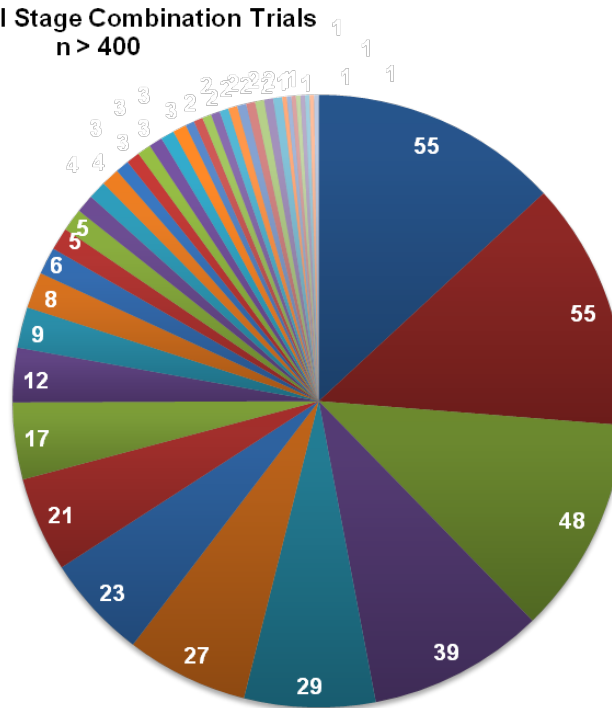
Majority of Industry-Funded IO Combination Trials Sponsored by Majors

Industry Funded IO Combo Trials (N=302)



- Sponsored by Large Pharma (BMS, Merck, AZ, Roche, Pfizer)
- Sponsored by Other Companies

All Clinical Stage Combination Trials n > 400



- 3+ Agents Combined Together
- Checkpoint + Chemotherapy
- Checkpoint + Checkpoint
- Checkpoint + Targeted KI
- Checkpoint + Radiation
- Checkpoint + Vaccine
- 3+ Agents Compared in Different Arms
- Checkpoint + Antibody
- Checkpoint + Cytokine
- Checkpoint + Costim
- Checkpoint + Other targeted therapy
- Checkpoint + SOC
- Checkpoint + IDO Inhibitor
- Checkpoint + Oncolytic virus
- IDO + Vaccine
- Checkpoint + Epigenetic modulator
- Chemokine + Chemotherapy
- Costim + Antibody
- Checkpoint + Ablation
- Checkpoint + ACT
- Checkpoint + Oligopeptides
- Chemokine + SOC
- Chemokine + Targeted KI
- IDO + Chemotherapy
- ACT + Chemotherapy
- Checkpoint + Antibody (ADC)
- Checkpoint + Chemokine
- Checkpoint + CSF1R
- Checkpoint + PARP Inhibitor
- Checkpoint + Small molecule
- Checkpoint + Stem cell transplant
- Checkpoint + TLR agonist
- Checkpoint + Undefined
- Costim + Radiation
- Stem cell transplant + Vaccine
- Chemokine + Antibody
- Chemokine + Other targeted agent
- Chemokine + Stem cell transplant
- Costim + Chemokine
- Costim + Chemotherapy
- Costim + Targeted KI
- Costim + Vaccine
- IDO Inhibitor + Targeted KI

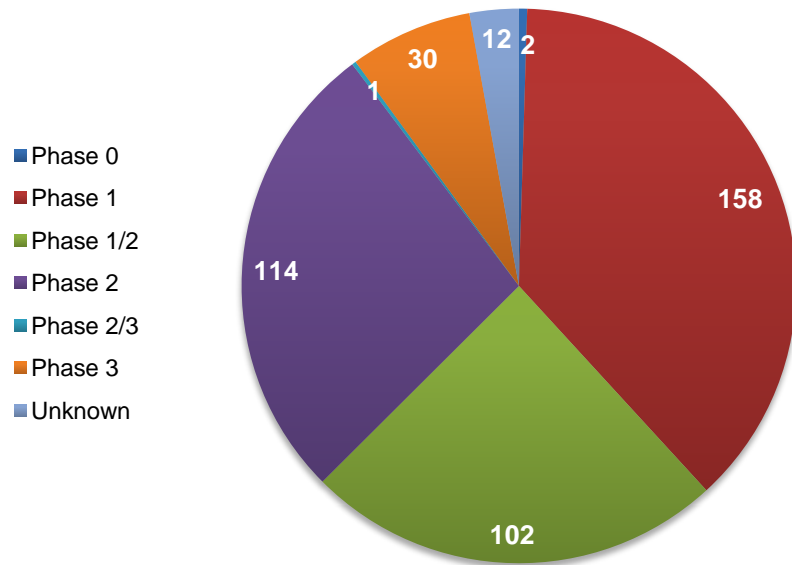
Clinicaltrials.gov

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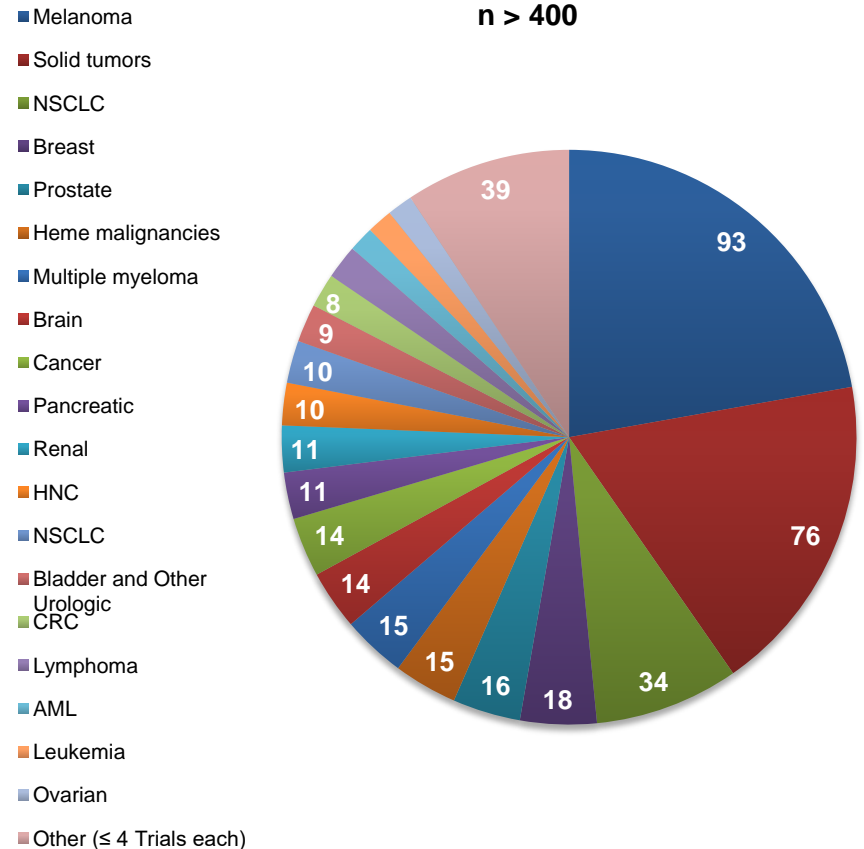


Combination Clinical Studies in IO

Phases of All Clinical Stage Combination Trials
n > 400



Indications of All Clinical Stage Combination Trials
n > 400



Clinicaltrials.gov (Data retrieved Nov 18, 2015), Adis Insight, Thomson Reuters Cortellis, Defined Health

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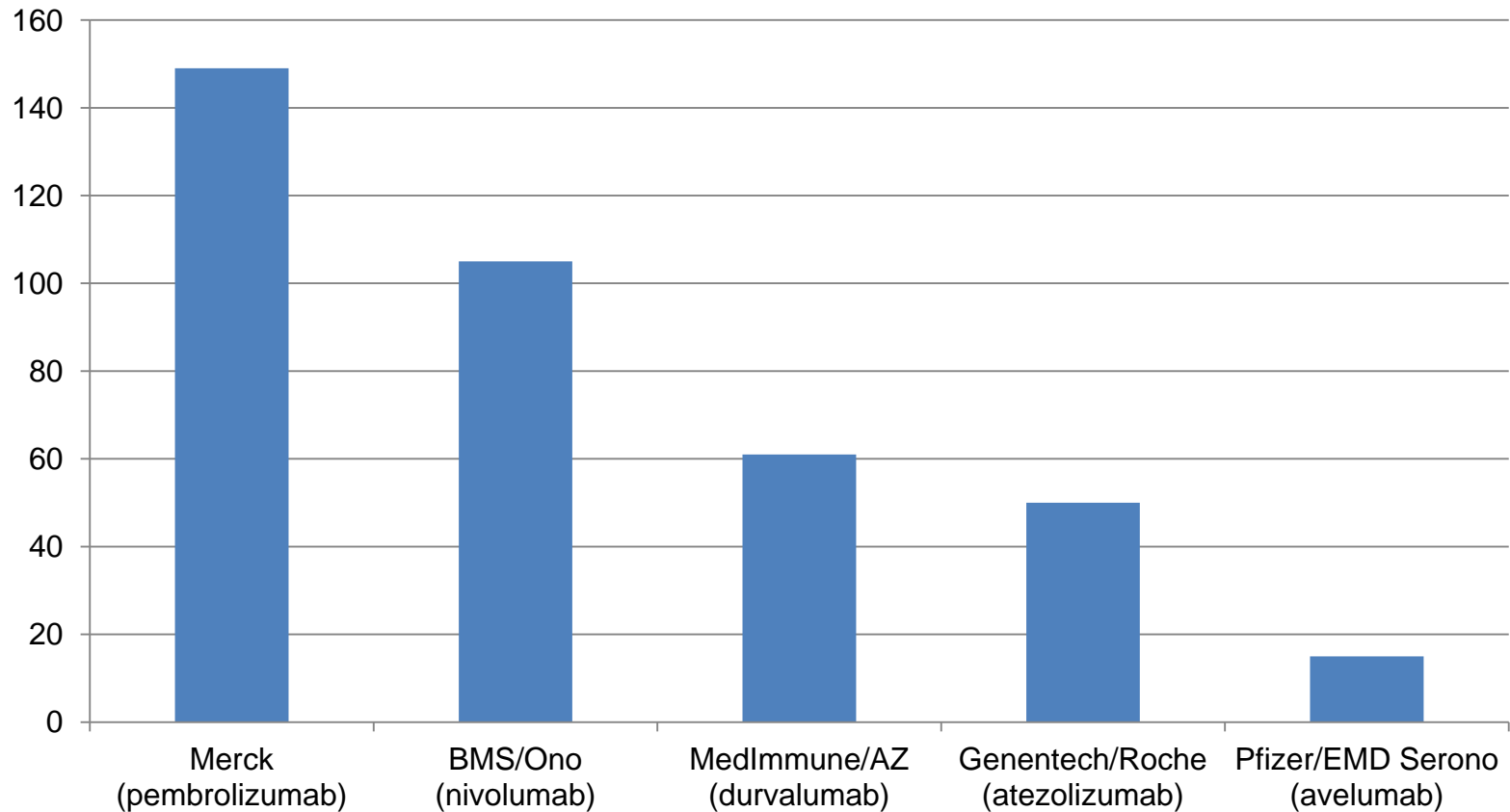
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CANCER PROGRESS
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Merck Sponsoring Most Checkpoint Trials Compared to Peers

Number of PD-1/PD-L1 Clinical Trials



Clinicaltrials.gov, Adis Insight, Thompson Reuters Cortellis

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An Incredibly Dynamic Space



Baxalta dives into CAR-T with

Published

February 26, 2016 | By [Damian Garde](#)

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Baxalta ([\\$BXLT](#)), soon to merge with Shire wading into the world of re-engineering T cells by signing a deal worth up to \$1.6 billion to gain some potential [immunotherapies](#).

Under an agreement with North Carolina's [BioSciences](#), Baxalta is paying \$105 million to collaborate on 6 so-called [CAR-T](#) projects that use the immune system's natural weapons and reinvent them in on cancer antigens. Precision BioSciences is leading the way for early-stage development in the collaboration and in once each therapy reaches Phase II, the company will receive 50% of the royalties.

Precision BioSciences is due as much as \$10 million per milestone, per the agreement, and the company will split profits 50-50 on any CAR-T therapy licensed to it.

The underlying assumption is that this approach, which mimics more closely than a single monoclonal antibody, will generate a stronger clinical response. Sym004, which comprises two different antibodies that target distinct antigens, is in a phase IIb trial in metastatic colorectal cancer. It also has an infectious disease arm of Basel, Switzerland-based Roche Holding AG.



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NanoString, Merck Partner to Develop CDx for Anti-PD-1 Therapy

Feb 29, 2016 | [a GenomeWeb staff reporter](#)

NEW YORK (GenomeWeb) – NanoString Technologies announced today that it has signed a collaboration agreement with Merck to develop a companion diagnostic to the pharmaceutical company's anti-PD-1 cancer therapy Keytruda (pembrolizumab).

Under the terms of the deal, NanoString will be responsible for developing, commercializing, and seeking regulatory approval for a diagnostic assay on NanoString's nCounter Dx Analysis System to predict patient response to Keytruda. The company will receive funding from Merck for the development of the diagnostic, and will be eligible for up to \$24 million for completing certain near-term milestones, as well as possible additional regulatory milestone payments.

The companies signed a [collaboration agreement](#) in May 2015 to develop an assay to evaluate the potential to predict Keytruda's benefit to patients.

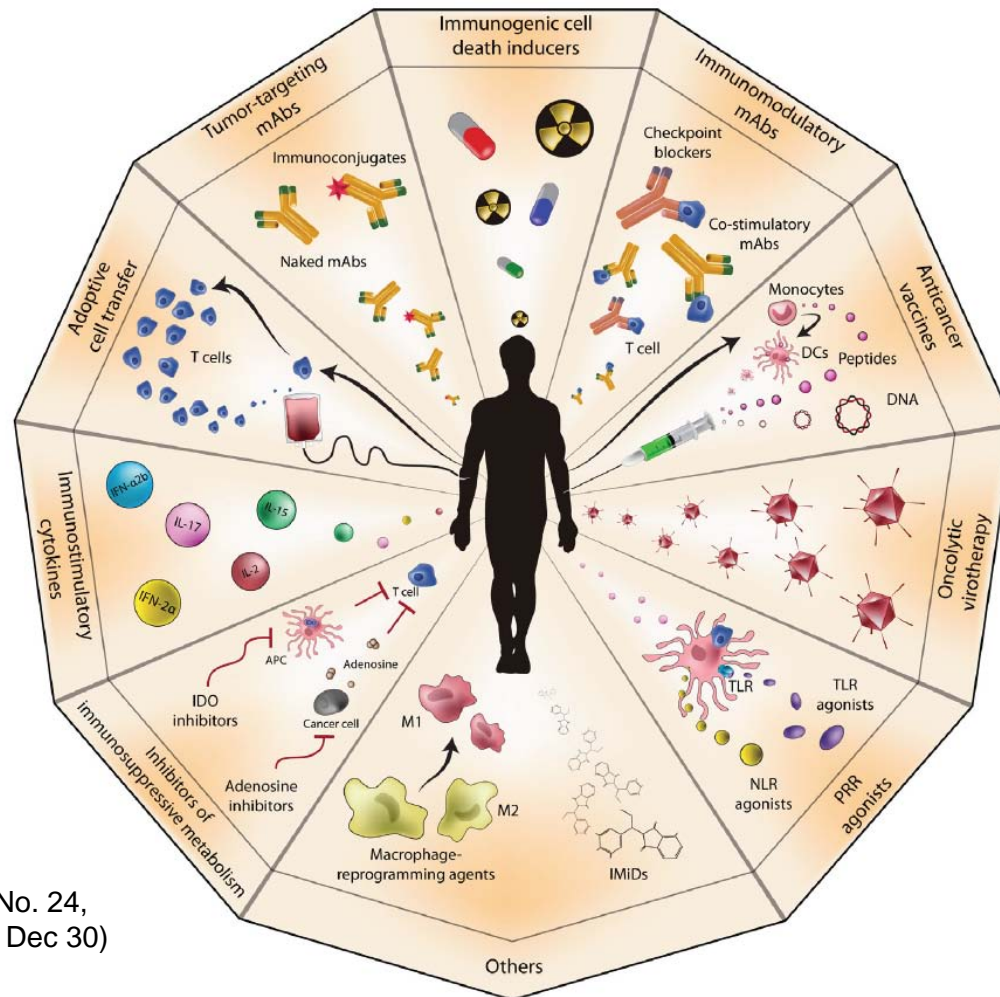
'We are excited to expand our collaboration with Merck to develop this novel assay for predicting response to anti-PD-1 therapies such as Keytruda,' said NanoString President and CEO Brad Gray in a statement. 'We believe this gene signature has the potential to become the basis for a universally available assay that serves as the 'gold standard' for informing treatment with immuno-oncology therapies.'

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Immunotherapy Offers a Diverse Toolkit of Platforms, Cellular & Molecular Targets



Oncotarget, Vol. 5, No. 24,
pp.12472-508 (2014 Dec 30)

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