



March 19-21, 2018 | Boston, MA

Immune Checkpoint Modulator Clinical Combinations E-Book

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How can you select the most rational immune checkpoint combination strategy to pursue?

The IO space is advancing at an alarming rate. This progression is undoubtedly positive, with an unprecedented number of options available to patients, however it has made defining your combination strategy more difficult than ever before.

With potential combinations targeting every facet of the immune response and beyond, it's difficult to define how synergy will be achieved.

To help you navigate this complexity, this e-book will go beyond headline statistics to delve into the details of checkpoint combinations, providing you with a more granular insight into some of the most promising approaches currently being developed.

Did you know?



1,600+

combination trials involving immune checkpoint modulators are currently underway

87

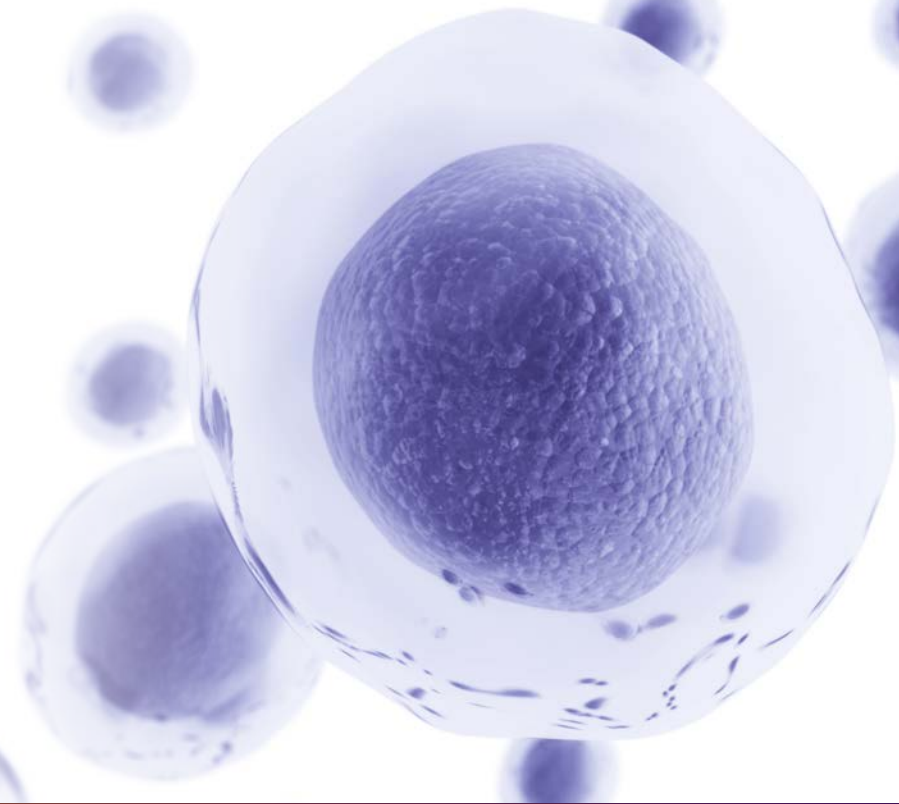
drugs targeting immune checkpoint modulators are currently in combination trials

Engaging The Tumor Microenvironment Using Pathways Beyond PD-1

In order to deliver a potent and holistic anti-tumor immune response, a variety of different pathways are currently being developed, aimed at engaging both the innate and adaptive immune systems.

These pathways are particularly interesting to explore in combination with existing approaches. The table below gives the number of combination clinical trials currently under way with a variety of these pathways.

As you can see, IDO checkpoint modulators are involved in the highest number of combination trials. It's also clear that there has been a shift towards clinical trials in more advanced phases.



Combinations involving checkpoint modulators engaging the TME

Checkpoint modulators involved in innate immunity or tumor microenvironment	Number of combination clinical trials
IDO	52
NKG2A	5
KIR	12
STING	2
CD73	3

Recent progression: A large proportion of IDO trials have begun in the last year



42%

of trials involving IDO have started in 2017 or are due to begin in 2018

Recent IDO trials are at more advanced stages of development



3%

of trials beginning before 2017 are in phase 3



33%

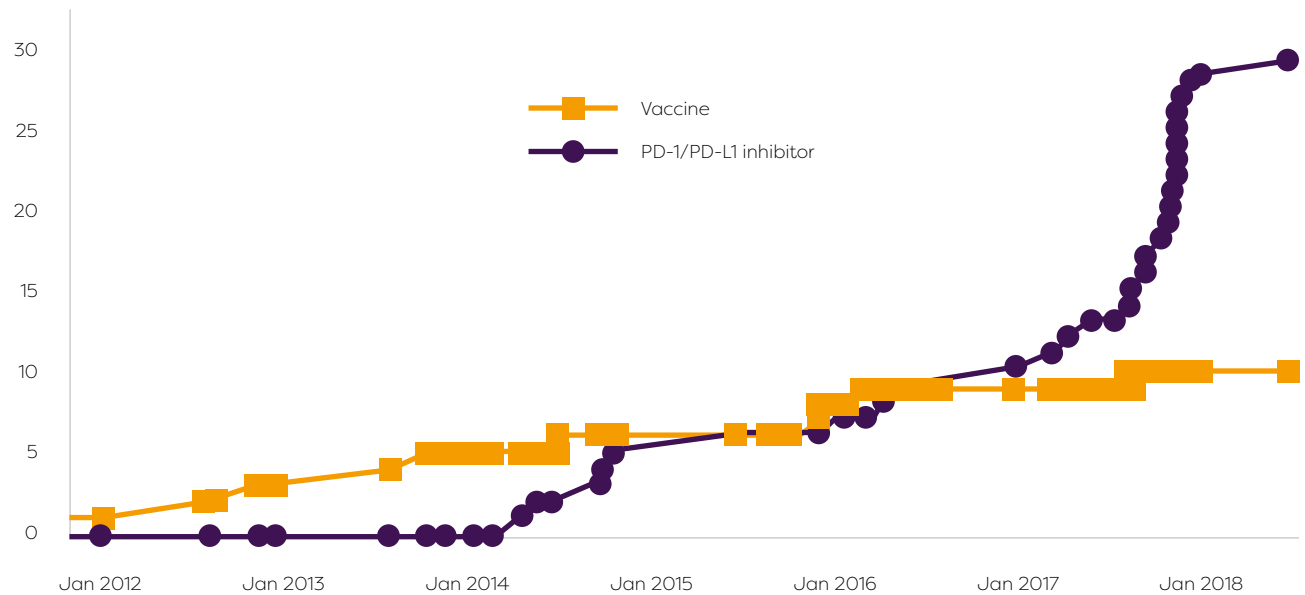
of the trials starting in 2017/2018 are in phase 2/3 and 3

Focus On: IDO

Recently there has been an increase in the number of combination trials engaging IDO as a target.

Interestingly, initial combination strategies primarily involved a variety of vaccines, including dendritic cell, peptide and live-attenuated cancer cell approaches, approaches. This has now shifted to combinations involving PD-1 and PD-L1 inhibitors.

Cumulative number of IDO combination trials with vaccines and PD-1/PD-L1 inhibitors



Companies Developing IDO Inhibitor Combinations



Incyte
31 trials



NewLink Genetics
13 trials



BMS
5 trials



Kyowa Hakko Kirin
1 trial



Eli Lilly
1 trial

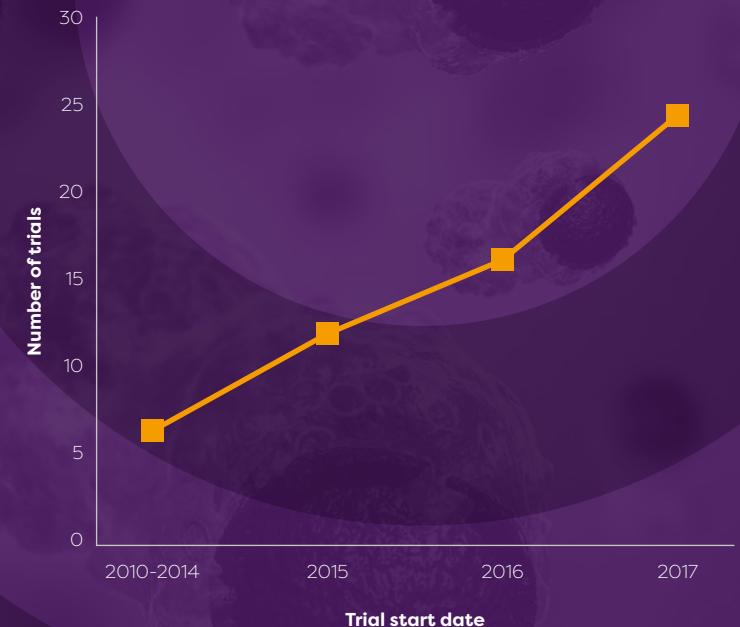
Focus On: IO/ADC Combinations

An interesting strategy to enhance the efficacy of checkpoint modulators is through combination with antibody drug conjugates (ADCs).

The rationale behind such combinations is based on evidence that ADC payloads can activate dendritic cells and synergize with checkpoint modulators to stimulate immunogenic cell death. See the table below for a break down of the ADCs and checkpoint modulators involved in these trials, as well as the disease indications in which they are being tested.

ADC	Immune Checkpoint Modulator	Disease indications
Polatuzumab vedotin	Atezolizumab	Lymphoma
Trastuzumab emtansine	Atezolizumab	Breast cancer
ABBV-399	Nivolumab	Solid tumors
BMS-986148	Nivolumab	Solid tumors
Brentuximab vedotin	Nivolumab	Hodgkin lymphoma
Brentuximab vedotin	Nivolumab +/- ipilimumab	Hodgkin lymphoma
Rovalpituzumab tesirine	Nivolumab, ipilimumab	Small cell lung cancer
Glembatumumab vedotin	Nivolumab, pembrolizumab, varlilumab	Melanoma
Anetumab ravtansine	Pembrolizumab	Mesothelioma
Brentuximab vedotin	Pembrolizumab	Hodgkin lymphoma
Mirvetuximab soravtansine	Pembrolizumab	Ovarian cancer
Trastuzumab emtansine	Pembrolizumab	Breast cancer
Enfortumab vedotin	Pembrolizumab, atezolizumab	Urothelial cell carcinoma

Cumulative growth in the number of ADC/checkpoint inhibitor clinical trials

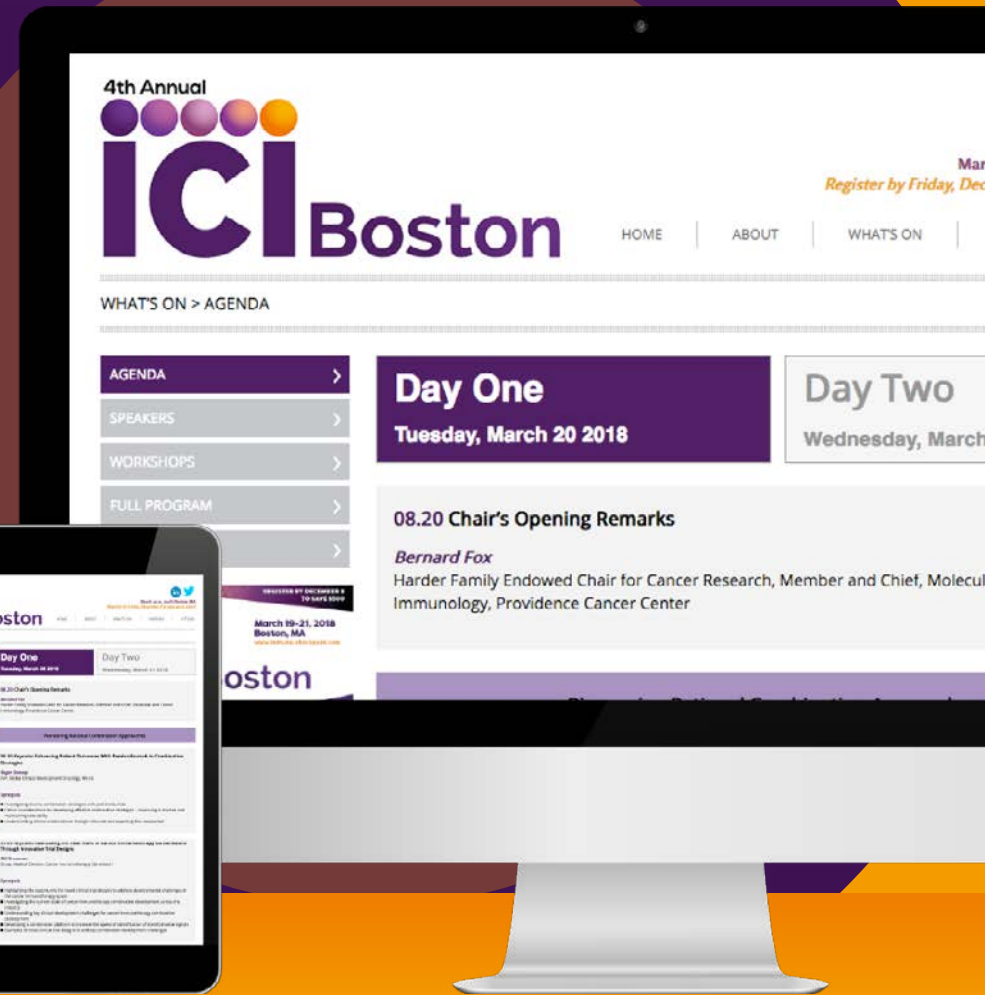




Learn More About Immune Checkpoint Modulators

Ready for more in-depth IO insights?

Join your peers at ICI Boston (March 19-21) to access cutting edge content directly from the leading experts in the immuno-oncology space.



Insights provided by Beacon IO Combination

