Targeting Immune Checkpoints in Cancer Immunotherapy Drug Pipeline Update

Description: The Targeting Immune Checkpoints in Cancer Immunotherapy: Drug Pipeline Update is the most up to date and comprehensive pipeline review and competitive assessment you can get on this hot and fast moving area in cancer immunology. There are two sides of immune checkpoint control; those which activate and those which inhibit T-cell activation. The Targeting Immune Checkpoints in Cancer Immunotherapy: Drug Pipeline Update covers both sides extensively.

There are currently four approved immune check point inhibitors, namely Yervoy (ipilimumab), Opdivo (nivolumab), Keytruda (pembrolizumab) and Tecentriq (atezolizumab). Bristol-Myers Squibb's Yervoy, a CTLA4 targeting antibody, was first to be approved in 2011 for the treatment of patients with unresectable or metastatic melanoma. In 2014 came two more approvals, Opdivo was first approved in Japan through Ono Pharmaceutical and later followed by Merck & Co's Keytruda. Both Keytruda and Opdivo are PD-1 inhibitors and were first approved for treatment of melanoma. In 2016 Roche's PD-L1 inhibitor Tecentriq was granted an accelerated approval by the US FDA for the treatment of people with locally advanced or metastatic urothelial carcinoma. Collectively, immune checkpoint inhibitors are currently approved for the treatment of five different cancer types: bladder cancer, Hodgkin's lymphoma, melanoma, non-small cell lung cancer and renal cancer. The world-wide Q2 2016 sales for these drugs were; Yervoy (241m USD), Opdivo (840m USD), Keytruda (314m USD) and Tecentriq (19m CHF).

There are today 120 companies plus partners developing 227 immune checkpoints drugs in 835 developmental projects in cancer. In addition, there are 4 suspended drugs and the accumulated number of ceased drugs over the last years amount to another 19 drugs. Targeting Immune Checkpoints In Cancer Immunotherapy Drug Pipeline Update lists all drugs and gives you a progress analysis on each one of them. Identified drugs are linked to 71 different targets. All included targets have been cross-referenced for the presence of mutations associated with human cancer. To date 66 out of the 66 studied drug targets so far have been recorded with somatic mutations. The software application lets you narrow in on these mutations and links out to the mutational analysis for each of the drug targets for detailed information. All drugs targets are further categorized on in the software application by 23 classifications of molecular function and with pathway referrals to BioCarta, KEGG, NCI-Nature and NetPath.

Drug Pipeline Update at a Glance

Investigators
Includes more than 120 principal companies plus their collaborators. There is direct access from inside the application to web pages of all principal companies.

Note: You are able to sort and find drugs according to companies and partners from drop-down menus in the application. You may also sort and find drugs according to country of companies.

Drug name & Synonyms
Lists commercial, generic and code names for drugs.

Developmental stage
This Drug Pipeline Update contains 227 immune checkpoints drugs in development, which have a total of 835 developmental projects in cancer. In addition there are suspended and ceased drugs.

Pipeline Breakdown According to Number of Drugs
Marketed# 4
Pre-registration# 2
Phase III# 11
Phase II# 36
Phase # 86
Preclinical# 103
No Data# 1
Suspended# 4
Included immune checkpoints drugs are also in development for 131 other indications, where of 115 are different cancer indications.

Note: You are able to find and sort drugs according to type of indication from drop-down menu in the application.

Targets
Mutations
All targets are cross-referenced with the Catalogue of Somatic Mutations in Cancer (COSMIC). It is designed to store and display somatic mutation information and related details and contains information relating to human cancers. To date 66 out of the 66 studied drug targets so far have been recorded with somatic mutations and the software application lets you narrow in on these mutations and links out to the mutational analysis for each of the drug targets for detailed information.

Biological Structures
The identity of available biological structures on 50 drug targets was retrieved from the RCSB Protein Databank for you to easily review the 407 structures available today among drug targets.

Identified drugs are linked to more than 71 different targets, divided into 23 classifications of molecular function:
- Antigen binding
- Carboxypeptidase activity
- Catalytic activity
- Cell adhesion molecule activity
- Cysteine-type peptidase activity
- Cytokine activity
- Defense/immunity protein activity
- G-protein coupled receptor activity
- Growth factor activity
- Heat shock protein activity
- Molecular function unknown
- Oxidoreductase activity
- Receptor activity
- Receptor binding
- Receptor signaling complex scaffold activity
- RNA-directed DNA polymerase activity
- Serine-type peptidase activity
- Structural constituent of cytoskeleton
- T cell receptor activity
- T cell receptor binding
- Transcription regulator activity
- Transmembrane receptor activity
- Transmembrane receptor protein tyrosine kinase activity

Sub-Cellular Localization
Identified targets are categorized into 14 different primary and alternate sub-cellular localizations:
- Cell surface
- Clathrin-coated vesicle
- Cytoplasm
- Endoplasmic reticulum
- Endosome
- Extracellular
- Golgi apparatus
- Kinetochore
- Lysosome
- Mitochondrion
- Nucleolus
- Nucleus
- Plasma membrane
- Vesicle

Note: You are able to find and sort drugs according to target gene name, protein name, molecular function of target, target localization, presence of mutations and availability of biological structures of target from drop-down menus in the application.

Target Expression Profile
Direct links are provided from inside the application to 85 protein expression profiles of 55 drug targets in various human tissues and cancer types, cell lines and primary cells, including up to:
- 48 different normal tissue types
- 20 different types of cancer
- 47 cell lines
- 12 samples of primary blood cells

Pathway Referals
Identified targets have been cross referenced against their involvement in different cellular pathways, according to BioCarta, KEGG, NCI-Nature and NetPath.
- BioCarta# 77 Pathways
- KEGG# 103 Pathways
- NCI-Nature# 81 Pathways
- NetPath# 19 Pathways

Note: You are able to find and sort drugs according to targeted pathways from drop-down menus in the application.

Mechanism
In total there are different drug mechanism of action represented in this Drug Pipeline Update.

Note: You are able to find and sort drugs according to mechanism of action from drop-down menu in the application.

Compound
Identified drug compounds are described by:

Compound type, Chemical name, CAS Number and molecular weight

Note: You are able to sort and find drugs according to compound type from drop-down menu in the application.

Drug Profile
Progress analysis and review of drug development. A typical drug profile reports on, depending on stage of development and available information:

Drug Name & Synonyms
Presentation of drug name and synonyms

Principal Company & Partners
Presentation of principal company and partners

Target and Molecular Function of Target
Described target(s) is/are presented with:
Official Gene Symbol – Chromosome Location – Gene & Protein Name – Molecular Function

Target Localization
Described target(s) is/are presented with primary and alternate localizations.

Target Expression Profiles
Links to protein expression profile(s) of target(s) in various human tissues, cell lines and primary cells, including up to:
48 different normal tissue types
20 different types of cancer
47 cell lines
12 samples of primary blood cells

Mutation
All targets are cross-referenced with the Catalogue of Somatic Mutations in Cancer (COSMIC). It is designed to store and display somatic mutation information and related details and contains information relating to human cancers.

Biological Structures
The identity of available biological structures on drug targets was retrieved from the RCSB Protein Databank for you to easily review what available structures of drug targets exist.

Targeted Pathways
Described target(s) is/are matched for the involvement in cellular pathways according to BioCarta, KEGG, NCI-Nature and NetPath.

Mechanism
Drug mechanism of action

Developmental Projects
Summary field of developmental projects for the drug, including indication, developmental stage and status.
Example:
Cancer, myeloma – Phase II Clinical Trial – Active
Cancer, prostate – Phase III Clinical Trial – Ceased

Drug BioSeeker Group’s software
Short introduction to drug

Compound Data
Compound type, Chemical name, CAS Number and molecular weight

Patent Data
Available patent information related to the drug is presented here.

Fillings and Approvals
Approvals and submissions
Analyst comments

Deals & Licensing
Collaborations and deals
Availability for licensing

Phase IV Data
Available Phase IV development data, developmental history and scientific data.

Phase III Data
Available Phase III development data, developmental history and scientific data.

Phase II Data
Available Phase II development data, developmental history and scientific data.

Phase I Data
Available Phase I development data, developmental history and scientific data.

Phase 0 Data
Available Phase 0 development data, developmental history and scientific data.

Preclinical Data
Available preclinical development data, developmental history and scientific data.

Discovery Data
Available discovery development data, developmental history and scientific data.
Application Features
Search, Find and Filter Panel with Initial Result Presentation
With this panel you can define your selectivity in each drug search with up to 24 different drug specific parameters. Each parameter has multi-select options to them and can be used as either an inclusion parameter or exclusion parameter.

The initial result table is a dynamic sortable table which gives you a fast overview of found results and can be narrowed down further by your own additional keywords.

Direct linkage from inside the application to related internet resources
- Drug data is linked to search engines like Google and PubMed
- Drug target data is linked directly to BioCarta, Human Protein Atlas, KEGG, NCI-Nature, NetPath etc.
- Direct links to company web pages of companies

Dynamic Report Generator
The dynamic report generator lets you with ease and speed generate html reports directly in your web browser (Internet Explorer and FireFox), whether it is a single drug profile or an entire search you want have a report of.

System Requirements
- Operating system: Windows (2000/XP/Vista/7/8) for Mac Users the service is only available online
- Browser Application (Internet Explorer, Firefox, Chrome, Safari)
- Internet access (to access related internet resources)

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