

Your SciFinderⁿ team

Team contact:
kfaerber@acs-i.org



SCIFINDERⁿ
A CAS SOLUTION

Medicinal Chemistry in SciFinderⁿ

Search Question

- Identify relevant protein checkpoint inhibitors of apoptosis-regulating protein PD-1 with a special focus on antibodies
- Obtain recent patents related to these inhibitors and locate the substance information

The Search History allows for a quick start



Filter by

^ **Result Type**

- All (49)
- Patent Markush (40)
- Reactions (378)
- References (2,554)
- Retrosynthesis (172)

[View All](#)

^ **Date**

Start Date to End Date

March, 2020						
SU	MO	TU	WE	TH	FR	SA
	1	2	3	4	5	6
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

🕒 Search History (5,002)

March 11, 2020

2:23 PM

Substances Amisulpride (1)

[Rerun Search](#)

[Edit Search](#)

12:24 PM

References pd or "Programmed cell death protein" or "programmed cell death ligand" (608K)

[Rerun Search](#)

[Edit Search](#)

Boolean and Phrase Search allow for customized precise searches

Rerun Search from history

More than 600k results are retrieved

Filter by

- Document Type
 - Journal (470K)
 - Patent (116K)
 - Review (34K)
 - Biography (26)
 - Book (265)
 - [View All](#)
- Substance Role
 - Adverse Effect (74)
 - Analytical Study (1,877)
 - Biological Study (4,531)
 - Combinatorial Study (6)
 - Formation (1,310)
 - [View All](#)
- Language

References (608,921) Sort: Relevance ▾ View: Full Abstract ▾

Substances ▾ Reactions ▾ Cited By ▾ Save

1

Biomarkers for predicting efficacy of pd-1/ pd-l1 inhibitors
By: Yi, Ming; Jiao, Dechao; Xu, Hanxiao; Liu, Qian; Zhao, Weiheng; Han, Xinwei; Wu, Kongming
Molecular Cancer (2018), 17, 129/1-129/14 | Language: English, Database: CAPlus

A review. **Programmed cell death protein 1/programmed cell death ligand 1 (PD-1/PD-L1)** is a neg. modulatory signaling pathway for activation of T cell. It is acknowledged that **PD-1/PD-L1** axis plays a crucial role in the progression of tumor by altering status of immune surveillance. As one of the most promising immune therapy strategies, **PD-1/ PD-L1** inhibitor is a breakthrough for the therapy of some refractory tumors. However, response rate of **PD-1/PD-L1** inhibitors in overall patients is unsatisfactory, which limits the application in clin. practice. Therefore, biomarkers which could effectively predict the efficacy of **PD-1/PD-L1** inhibitors are crucial for patient selection. Biomarkers reflecting tumor immune microenvironment and tumor cell intrinsic features, such as **PD-L1** expression, d. of tumor infiltrating lymphocyte (TIL), tumor mutational burden, and mismatch-repair (MMR) deficiency, have been noticed to associate with treatment effect of anti-**PD-1**/anti-**PD-L1** therapy. Furthermore, gut microbiota, circulating biomarkers, and patient previous history have been found as valuable predictors as well. Therefore establishing a comprehensive assessment framework involving multiple biomarkers would be meaningful to interrogate tumor immune landscape and select sensitive patients.

Full Text ▾ Substances (5) Reactions (0) Cited By (49) Citation Map

Most relevant results appear at the top

Using the search function in the concept filter allows us to focus on keywords related to 'programmed cell death protein 1'

The screenshot displays the SCIFINDER concept filter interface. On the left, a sidebar shows a list of concepts with checkboxes: Humans (73K), Male (49K), Parkinson disease (46K), Female (45K), and Homo sapiens (41K). A 'View All' link is visible below the list. An arrow points from this link to the central search window.

The central search window is titled 'Concept' and has tabs for 'Top Count', 'Alphanumeric', and 'Search'. The 'Search' tab is active. The search input field contains 'programmed cell death', and a 'Search' button is to its right. A callout box above the search results states: 'All concepts are shown which contain the query terms'. Below the search bar, it indicates '5 Selected'.

The search results are displayed in a grid of 15 items, each with a checkbox and a label: 'Programmed cell death (46)', 'Programmed Cell Death 1 Ligand 2 Protein (388)', 'Programmed cell death 1 ligand 2 proteins (1,401)', 'Programmed cell death 1 ligand protein inhibitors (51)', 'Programmed cell death 1 ligand proteins (44)', 'Programmed Cell Death 1 Receptor (4,763)', 'Programmed cell death 6-interacting proteins (40)', 'Programmed cell death protein 1 (15K)', 'Programmed cell death protein 10 (95)', 'Programmed cell death protein 11 (23)', 'Programmed cell death protein 1 inhibitors (845)', 'Programmed cell death protein 2 (45)', 'Programmed cell death protein 4 (429)', 'Programmed cell death protein 5 (79)', 'Programmed cell death protein 6 (128)', 'Programmed cell death protein 8 (194)', and 'Programmed cell death proteins (716)'. The checkboxes for 'Programmed cell death 1 ligand protein inhibitors (51)', 'Programmed cell death 1 ligand proteins (44)', 'Programmed Cell Death 1 Receptor (4,763)', 'Programmed cell death protein 1 (15K)', 'Programmed cell death protein 1 inhibitors (845)', and 'Programmed cell death protein 1 ligand proteins (44)' are checked.

On the right, another sidebar shows the same list of concepts as the left sidebar, but with the following items checked: 'Programmed cell death protein 1 (15K)', 'Programmed Cell Death 1 Receptor (4,763)', 'Programmed cell death protein 1 inhibitors (845)', 'Programmed cell death 1 ligand protein inhibitors (51)', and 'Programmed cell death 1 ligand proteins (44)'. A 'View All' link is at the bottom of this sidebar. A callout box below this sidebar states: 'Additional concepts might be selected subsequently'.

At the bottom of the search window, there are 'Apply' and 'Cancel' buttons.



Analyze all indexed substances, even if based on large answer sets

Filter by

- Document Type
 - Journal (15K)
 - Patent (4,746)
 - Review (2,844)
 - Biography (1)
 - Clinical Trial (173)
 - View All
- Substance Role
 - Analytical Study (1)
 - Biological Study (5)
 - Uses (5)
- Language
 - English (18K)
 - Chinese (1,455)
 - Japanese (371)

References (20,432) Sort: Relevance View: Full Abstract

Substances Reactions Cited By Save

Get all substances indexed for these 20k documents

efficacy of pd-1/ pd-l1 inhibitors

By: Yi, Ming; Jiao, Dechao; Xu, Hanxiao; Liu, Qian; Zhao, Weiheng; Han, Xinwei; Wu, Kongming
Molecular Cancer (2018), 17, 129/1-129/14 | Language: English, Database: CAPlus

A review. Programmed cell death protein 1/programmed cell death ligand 1 (PD-1/PD-L1) is a neg. modulatory signaling pathway for activation of T cell. It is acknowledged that PD-1/PD-L1 axis plays a crucial role in the progression of tumor by altering status of immune surveillance. As one of the most promising immune therapy strategies, PD-1/ PD-L1 inhibitor is a breakthrough for the therapy of some refractory tumors. However, response rate of PD-1/PD-L1 inhibitors in overall patients is unsatisfactory, which limits the application in clin. practice. Therefore, biomarkers which could effectively predict the efficacy of PD-1/PD-L1 inhibitors are crucial for patient selection. Biomarkers reflecting tumor immune microenvironment and tumor cell intrinsic features, such as PD-L1 expression, d. of tumor infiltrating lymphocyte (TIL), tumor mutational burden, and mismatch-repair (MMR) deficiency, have been noticed to associate with treatment effect of anti-PD-1/anti-PD-L1 therapy. Furthermore, gut microbiota, circulating biomarkers, and patient previous history have been found as valuable predictors as well. Therefore establishing a comprehensive assessment framework involving multiple biomarkers would be meaningful to interrogate tumor immune landscape and select sensitive patients.

Full Text Substances (5) Reactions (0) Cited By (49) Citation Map

Indexed substance set of any size can be effectively filtered to limit to PD-1 antagonists

Relevance ranking brings substances of interest to the top

Filter by

- Commercial Availability
 - Available (27K)
 - Not Available (681K)
- Reaction Role
 - Product (77K)
 - Reactant (32K)
 - Reagent (4,555)
 - Catalyst (3,616)
 - Solvent (1,369)
- Reference Role
 - Adverse Effect (13K)
 - Analytical Study (188K)
 - Biological Study (483K)

Substances (709,308) Sort: Relevance View Partial

References Reactions Suppliers

1 **946414-94-4** Image Not Available
Notes: A fully human IgG4 antibody blocking the programmed cell death-1 receptor
Unspecified
Nivolumab
Protein/Peptide Sequence
Sequence Length: 1308
5,104 References 1 Reaction 8 Suppliers

2 **1374853-91-4** Image Not Available
Unspecified
Pembrolizumab
3,995 References 0 Reactions 10 Suppliers

3 **1380723-44-3** Image Not Available
Unspecified
Atezolizumab
1,448 References 1 Reaction 6 Suppliers

Substance Class, Bioactivity and Target Indicator filters help us to focus on most relevant compounds

Substance Class	Bioactivity Indicator	Target Indicator
<input checked="" type="checkbox"/> Protein/Peptide Sequence (570K)	<input type="checkbox"/> Antitumor agents (37K)	<input type="checkbox"/> Proteinaceous antigens
<input checked="" type="checkbox"/> Manual Registration (123K)	<input type="checkbox"/> Pharmaceutical immunomodulators (28K)	<input type="checkbox"/> Cytokines (5,196)
<input type="checkbox"/> Organic/Inorganic Small Molecule (72K)	<input type="checkbox"/> Biopharmaceuticals (10K)	<input type="checkbox"/> Checkpoint molecules (4,108)
<input type="checkbox"/> Nucleic Acid Sequence (53K)	<input type="checkbox"/> Anti-infective agents (10K)	<input checked="" type="checkbox"/> Apoptosis-regulating proteins (3,733)
<input type="checkbox"/> ...	<input type="checkbox"/> Vaccines (8,708)	<input type="checkbox"/> Membrane proteins (3,665)
<input checked="" type="checkbox"/> Receptor antagonists (3,733)	View All	View All

Bioactivity and Target Indicators are available as filters, also for large answer sets. Filtering restricts our answer set to 3,733 substances

We focus on antibodies and peptides and limit the substances accordingly

The Bioactivity Indicators in the detailed record of Nivolumab show the target of interest

Substances (3,733)

CTRL+Click to open detailed record in a new tab

946414-94-4

Image Not Available

Notes: A fully human IgG4 antibody blocking the programmed cell death-1 receptor

Unspecified
Nivolumab

Protein/Peptide Sequence
Sequence Length: 1308

5,104 References | 1 Reaction | 8 Suppliers

13748

Substance Detail (1 of 3,733)

References (5,104) | Reaction (1) | Suppliers (8)

Unspec
Pembr
CAS Registry Number
016111 01 1

3,9 Refere
Nivolumab

Notes: A fully human IgG4 antibody blocking the programmed cell death-1 receptor

Bioactivity Indicators

- Receptor antagonists
 - [Programmed cell death protein 1 inhibitors \(322\)](#)
- Vaccines (119)
 - Cancer vaccines (171)

'Programmed cell death protein 1 inhibitors' is what we were looking for, click the blue text to go to the respective references

We explore Nivolumab related patents and determine the location of Nivolumab in the full-text with PatentPak

The screenshot displays the SciFinder interface for patent search results. On the left, there are filter options for Document Type (Patent selected), Language (English selected), and Publication Year (2010-2020). The main area shows a list of references. The first reference is titled "Compositions and methods for treating cancer with a combination of programmed death receptor (PD-1) antibodies and vicriviroc" by Giranda, Vincent L.; Pinheiro, Elaine M.; Li, Anlong. Below the title, there are buttons for "PATENTPAK", "Full Text", and "Citation Map". A callout box with a purple border and white background contains the text: "Either open the PatentPak Viewer from the summary page (shown here) or open the detailed substance record and click the PatentPak link of the substance of interest". A red line points from the callout box to the "PATENTPAK" button. Below the first reference, the second reference is partially visible, titled "Use of interleukin-7 and chimeric antigen receptor (CAR)-bearing immune effector cells for treating tumors". At the bottom of the interface, there is a table with columns: Patent, Language, Kind Code, and PatentPak Options. The first row shows "WO2020028400", "English", "A1", and "PDF | PDF+ | Viewer". The "PATENTPAK" button in this row is highlighted with a purple box.

Filter by

- Document Type
 - Journal (70)
 - Patent (252)
 - Review (18)
- Language
 - English (241)
 - Japanese (6)
 - Chinese (4)
 - Korean (1)
- Publication Year
 - 2010
 - 2020
 - No Min to No Max Apply

References (252) Sort: Publication Year: Newest View: Full Abstract

Substances Reactions Cited By Save

1

Compositions and methods for treating cancer with a combination of programmed death receptor (PD-1) antibodies and vicriviroc

By: Giranda, Vincent L.; Pinheiro, Elaine M.; Li, Anlong
World Intellectual Property Organization, WO2020033283 A1 2020-02-13 | Language: English, Database: CAplus

The present invention relates to methods of treating a cell proliferation disorder (e.g., cancer) comprising administering: (a) vicriviroc, or a pharmaceutically acceptable salt thereof, in combination with (b) nivolumab (or antigen binding fragment thereof) and kits containing such agents for the treatment

PATENTPAK Full Text Citation Map

2

Use of interleukin-7 and chimeric antigen receptor (CAR)-bearing immune effector cells for treating tumors

ark, Jaehan; Lee, Byung Ha; Choi, Dong Hoon
400 A1 2020-02-06 | Language: English, Database: CAplus

cer in a subject in need thereof, comprising administering to the subject a ; immune effector cells and an IL-7 protein (e.g., modified IL-7 protein).

Patent	Language	Kind Code	PatentPak Options
WO2020028400	English	A1	PDF PDF+ Viewer

Organization Publication Name

PATENTPAK Full Text Substances (24) Reactions (0) Cited By (0) Citation Map

PatentPak directly shows us where Nivolumab is present in the patent full-text

WO2020028400

The screenshot displays the PatentPak interface for patent WO2020028400. The top navigation bar includes the PatentPak logo, page controls (PAGE 90 / 120), zoom controls (ZOOM - +), and download options (DOWNLOAD PDF | PDF+). On the left, a sidebar titled 'Key Substances in Patent' lists two CAS RNs: 946414-94-4 (Nivolumab) and 1374853-91-4 (Immunoglobulin G4, anti-(human protein PDCD1...)). A callout box points to the Nivolumab entry with the text: 'Click icon/link to go to the location in the patent'. The main text area shows patent claims 67, 68, and 69. Claim 69 includes a list of checkpoint inhibitors: nivolumab, pembrolizumab, ipilimumab, atezolizumab, durvalumab, avelumab, and tremelimumab. A callout box points to this list with the text: 'This method patent claims the use of one or more of the listed checkpoint inhibitors'. Blue location pins are placed above each name in the list, and a red line connects the pin above 'nivolumab' to the callout box.

Your SciFinderⁿ team

Team contact:
kfaerber@acs-i.org

Medicinal Chemistry in SciFinderⁿ