Glossary & Help file

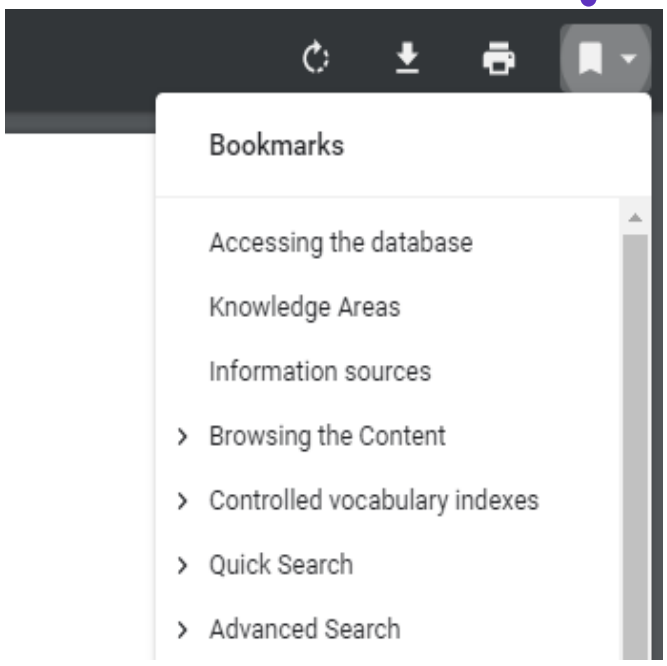
Cortellis Drug Discovery Intelligence

Welcome

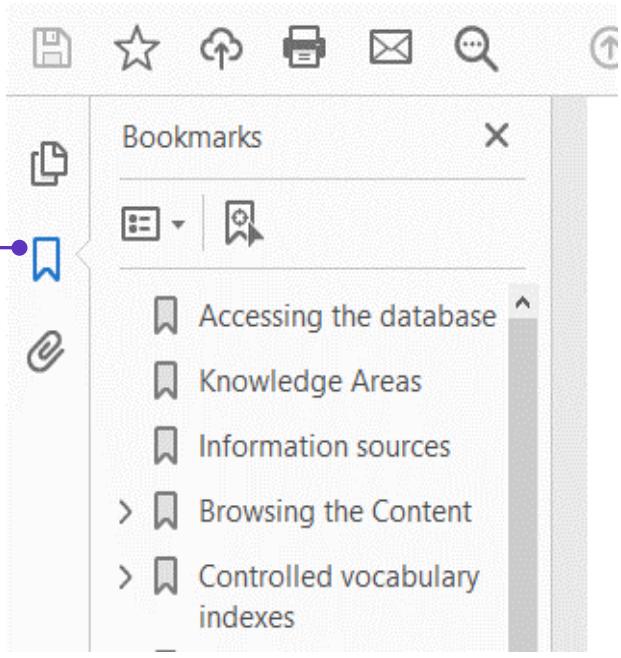
Access the broadest, deepest, most accurate source of R&D intelligence that has been manually curated, validated, and shared using a solution built *by* scientists *for* scientists.

Cortellis Drug Discovery Intelligence focuses exclusively on pharma and drug development, harmonizing and integrating essential biological, chemical, and pharmacological data from disparate sources into a single platform.

Tip: the best way to navigate this Glossary / Help File is to use the bookmarks in your web browser…



… or download the PDF file and use the bookmarks in your document reader.



Accessing the Database

System Requirements

The following systems are supported, latest versions are preferred.

Devices	• Desktop • Laptop • (Cortellis Drug Discovery Intelligence is not optimized for Tablet or Mobile)
Operating Systems	• Windows • MacOS
Browsers	• Chrome • Firefox • Edge • Safari • Internet Explorer v11 – **NOTE**, from August 2021 Microsoft does no longer update IE11 and as a consequence, Clarivate does no longer support this browser. We recommend you switch to one of the other supported browsers.
Export	• Filename.xlsx; requires spreadsheet software such as Microsoft Excel or similar • Filename.sdf, reqires a structure data file reader such as DataWarrior from OpenMolecules.org • Filename.brd, requires business intelligence software from Bizint Smart Charts • Filename.bpd, requires business intelligence software from Bizint Smart Charts • Filename.pdf requires a PDF reader such as Adobe Reader, available to download for free from the Adobe website.
Additional	• Pop-up blockers need to be disabled • No plug-ins are needed

Logging on

Access to Cortellis Drug Discovery Intelligence™ is via a username, which is your email, and a password. You will be required to update your password every 180 days.

Your password for Cortellis Drug Discovery Intelligence is the same as for the following Clarivate products:

- Cortellis Competitive Intelligence
- Cortellis Drug Discovery Intelligence
- Cortellis Competitive Intelligence
- Cortellis Generics Intelligence
- Cortellis CMC
- Drug Research Advisor
- Key Pathway Advisor
- Web of Science

Therefore, if you reset your password for any one of the above products, your new password will be the same for all.

If you forget your password, simply click the “forgot password” link on the home page and request an email be sent to you with instructions to reset your password.

If your institution has single sign-on (SSO) access to Cortellis Drug Discovery Intelligence, you will not need a password to log in, simply follow the instructions provided by your organization.

Terms of Use

The terms of use can be found **here**.

Clarivate™

Knowledge Areas

The data in Cortellis Drug Discovery Intelligence is organized by "Knowledge Areas". You can focus your search on specific knowledge areas, get an overview of content across all knowledge areas, and navigate between related content in the different knowledge areas.

For example, you can generate a list of drugs in development for a condition; reduce the list based on related pharmacological activity (Experimental Pharmacology knowledge area); and rationalize the pharmacological effect by exploring the related Genes & Targets.

Knowledge Area	Coverage	Continuous coverage since	Description
Drugs & Biologics	663K+ (88% having a chemical structure)	1988	Information on bioactive compounds (chemical and biologics), including the status of development in the drug pipeline
Genes & Targets	47K+ genes/drug targets 270K+ genetic variants	2004	Use relationships between genes and diseases to explore disease mechanisms and potential new targets Use relationships between drugs, targets, and diseases to explore new approaches to treat a disease
Organic Synthesis	40K+ synthetic schema 178K+ intermediates & reagents	1970s	Plan your routes of synthesis using schema, intermediates, reagents, and end products for drugs currently on the market or in development
Experimental Pharmacology	3.1M+ data points	1998	Benchmark your lead compounds using data from *in vitro* and *in vivo* experimental studies on interactions between drugs and their targets
Experimental Models	195K+ models, 80K+ with drugs tested	2012	Identify the best experimental models using data on emerging and validated animal models that replicate the important aspects of a human disease process
Pharmacokinetics	1.3M+ data points	2000	Will your drug reach the target effect site? Data from experimental and clinical studies that define the absorption, distribution, metabolism, and excretion (ADME) profile of a drug. Includes parent compounds and metabolites
Drug Metabolism	50K metabolic reactions	1990	Understand the metabolism of a given drug (enzymes and reactions involved, metabolites) or of similar drugs to reduce metabolic liabilities or optimize your lead
Drug-Drug Interactions	60K+ unique interactions 3.9K+ drugs	2013	The action of a drug on the efficacy or toxicity of another drug
Clinical Studies	452K+ clinical study records	2000	How well have drugs in development translated from the preclinical to human setting? Information on clinical trials of drugs currently in use or under study
Organizations	42K+ commercial and academic entities	2000	Track activity from your competitors, or possible acquisitions, using information on public and private companies, academic centres, and research institutions active in the field of pharmaceuticals and biotechnology
Literature	3M+ records	1988	Datapoints in Cortellis Drug Discovery Intelligence are supported with citations to the current biomedical literature; abstracts and proceedings from congresses and symposia; and company communications

Patents	532K+ patent families	1988 – WO, EP, JP, US Sep 2010 – CN, KR, IN	The most recent patent literature reflecting drug research activity from around the world
Disease Briefings	167 reports	2000	Need an overview of selected diseases? Read the dynamic disease summaries, including the current status and future trends in drug therapy
Biomarkers (requires additional subscription)	46K+ biomarkers 2.4M+ uses	2007	Identify the most applicable biomarkers for your drug discovery needs

Information Sources

The data in Cortellis Drug Discovery Intelligence is curated by scientists for scientists. The editorial team are responsible for selecting relevant articles from the following sources, and for curating the data obtained from these sources.

Source type	Description
Biomedical literature*	More than 1,500 journals reviewed annually in the areas of medicinal chemistry, organic synthesis, experimental pharmacology, clinical pharmacology, biomarkers, and genomics • Includes peer-reviewed articles • Excludes preprints deposited prior to peer review
Congresses*	More than 160 conferences reviewed annually in the areas of medicinal chemistry, organic synthesis, experimental pharmacology, clinical pharmacology, biomarkers, and genomics
Pharma & biotech company web pages	Company communications

Regulatory agencies

Agency	Country/Region	Coverage
Food and Drug Administration (FDA)	US	All knowledge areas, including Biomarkers
European Medicines Agency (EMA)	Europe	All knowledge areas, except Biomarkers
Pharmaceuticals and Medical Devices Agency (PMDA)	Japan	All knowledge areas, except Biomarkers
Therapeutic Goods Administration (TGA)	Australia	All knowledge areas, except Biomarkers

ClinicalTrials.gov

Patents (issuing country and turnaround times shown)

Issuing country	Availability of initial citation and link to drug product	Fully analyzed with additional chemistry and pharmacology
WO, EP	1-2 days after publication	1-2 weeks after initial citation
JP	5-6 days after publication	1-2 weeks after initial citation
US	7-8 days after publication	1-2 weeks after initial citation
CN, KR, IN	25 days after publication	1-2 weeks after initial citation

* The time for literature and congress records to be included is usually 0–2 weeks from the date the information is first made available to Clarivate.

Home Page

The opening page of Cortellis Drug Discovery Intelligence. Use this page to browse the latest:

Novel Drug Targets: Search & Alert

Allows you to quickly search for the latest novel drug targets, targets for a specific condition or for a specific product category, and drug targets that recently reached clinical phases. You can also set up alerts to be notified on novel drug targets of interest.

Latest News

Contains a selection of articles from our sister product BioWorld Science™, and that we think will be of interest to Cortellis Drug Discovery users.

Click on these articles to go to the corresponding drug, gene, or biomarker records, and to link out to BioWorld Science.

Pathway Maps, Targetscapes and Disease Briefings

Quick-search widget to access **pathway maps, targetscapes** and **disease briefings** content.

Latest Insights

Shortcuts that take you to pre-filtered results

Shortcut	What it is	Comments
The Starting Line	New Molecular Entities added in the last 4 months	• Results displayed with the most recent at the top • Results from the last 4 months are shown • This is a quick view of the latest NMEs. For a more detailed view, follow the hyperlink to the same results in Drugs & Biologics
Pipeline on the Move	New milestones added to a drug in R&D	• Results displayed with the most recent milestone date at the top • Results from the last year are shown • Use Apply Filters to refine your results to your milestones and targets of interest
Gateways to Clinical Studies	Clinical studies added in the last 8 days	• Results displayed with the most recent at the top • Equivalent to: Advanced Search > Clinical Studies > Available Since > then complete the "From" field in format DD/MM/YYYY for the last 8 days AND > Add Literature > Publication Year = then complete the "From" field in format YYYY for last year.

Tip: if you want to receive an alert when an NME enters the pipeline, try:

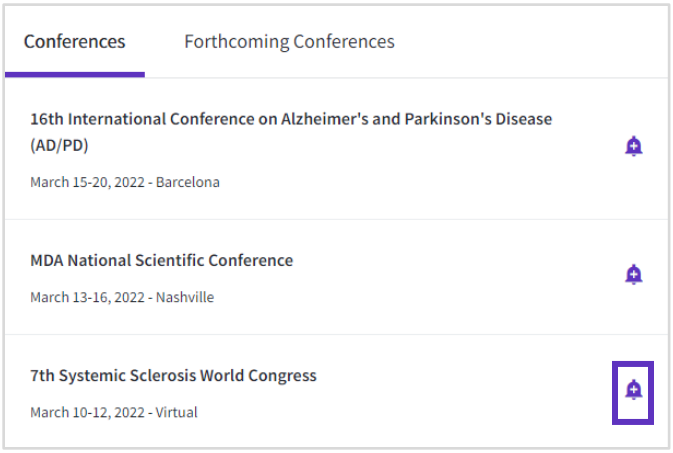
1. Advanced Search > Drugs & Biologics > Select Field = New Molecular Entity > Check *Yes* > Search.
2. Apply filters.
3. Select Options (…) in the top right of the screen, then *Save & Alert* and complete the dialog box.

Conferences and Forthcoming Conferences

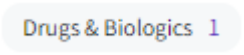
Conferences provides quick access to the data that was published at the latest conferences. Note that Clarivate's editors use conference publications, online abstracts, posters and presentations, and in many cases, they attend the conferences to glean additional insight.

Forthcoming Conferences provides awareness of the congresses planned to be covered in the near future.

Monitor new content from recent and forthcoming conferences from the homepage by clicking on the bell icon.



Note: click the conference title to see the *Literature List* of posters and presentations associated with the conference. Then from the *Literature List*:



Click the pill button below each title to view content related to that specific title. **Or**….

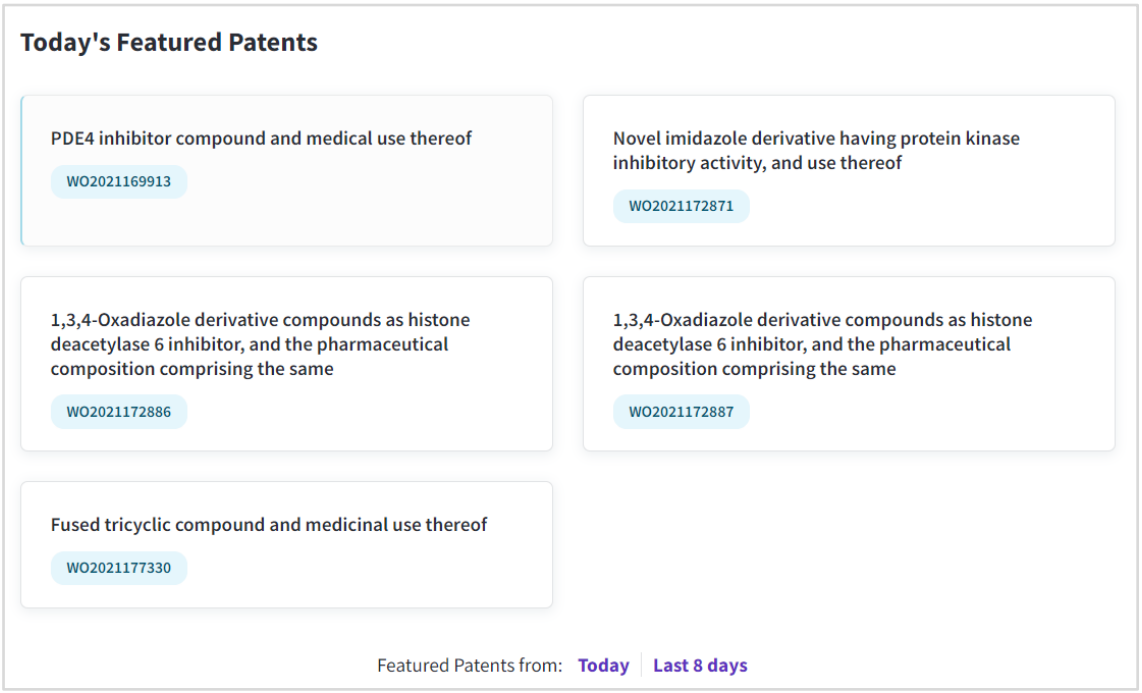
Click the *Related content* button at the top-right of the results list to view all content that has been curated for this conference.

Note that for the latest conferences, the poster title may be indexed in the *Literature List* before Clarivate's scientists have completed their analysis. Check back frequently or set an alert on the *Literature List* to stay up to date on the latest information from that conference.

Today’s Featured Patents

Patents selected by our editors.

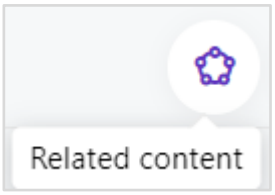
Click each item to go to the corresponding patent record or scroll to the bottom of this panel and select if you want to view today’s featured patents in the Patents knowledge area; or the featured patents from the past 8 days.

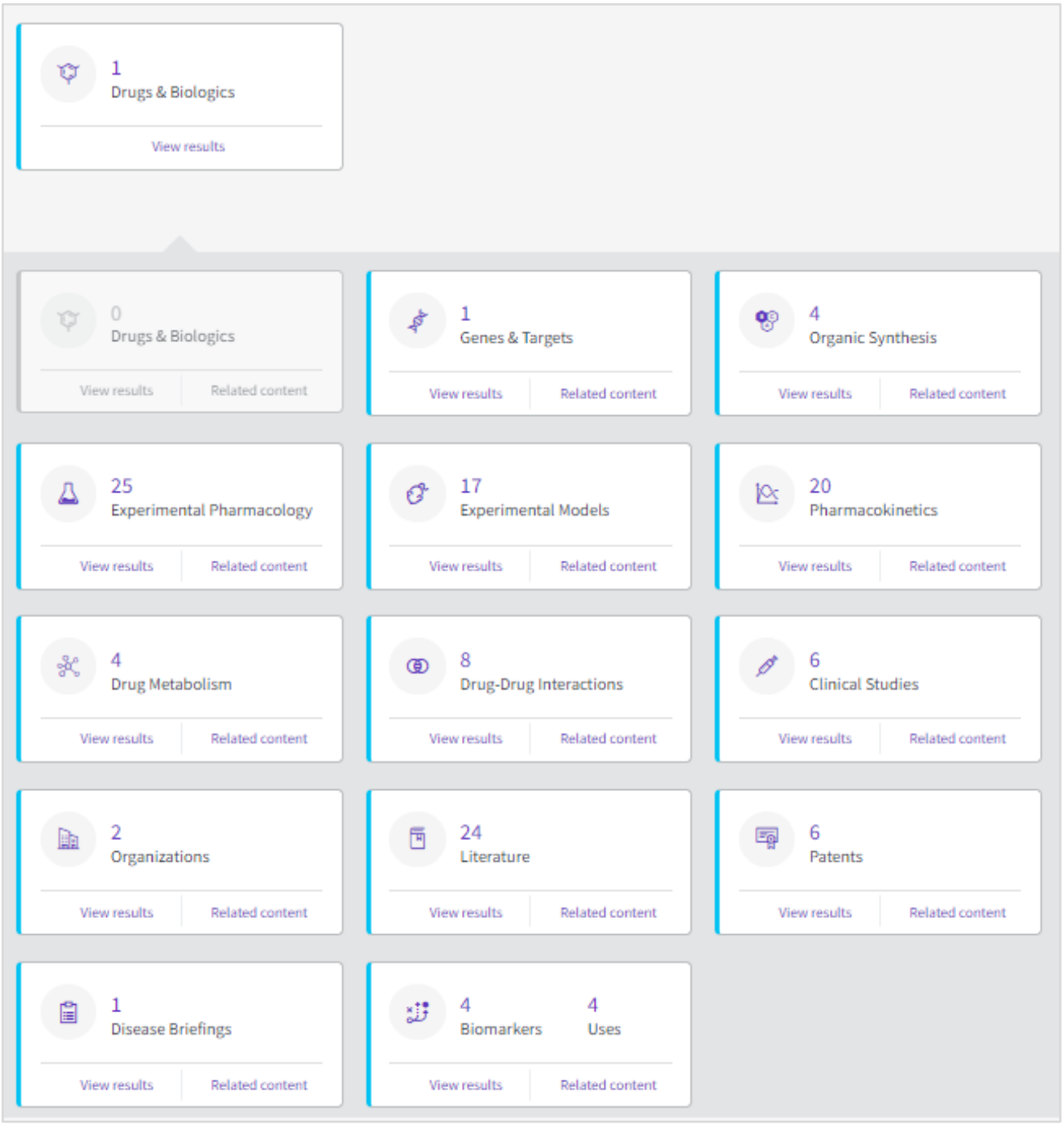


All Related Content

All content related to your query.

- Accessible via Quick Search, with knowledge area selector = *All*.
- Accessible from a record or results list via the *Related content* button in the top right of your screen.

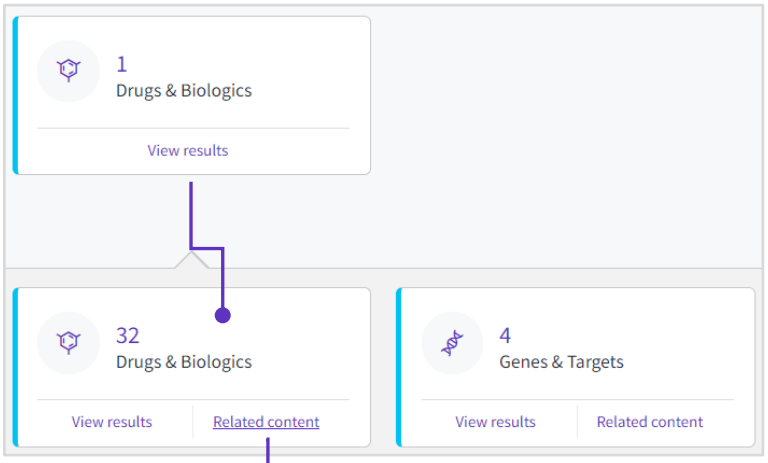




Although the content in Cortellis Drug Discovery Intelligence is organized into knowledge areas, it is also interlinked across knowledge areas. This is extremely powerful for exploring the science that lies behind a drug or biomarker development program.

For example, a drug will be linked to its corresponding pharmacological data in the Experimental Pharmacology knowledge area. This is useful if you want to benchmark the pharmacological activity of a drug or group of drugs.

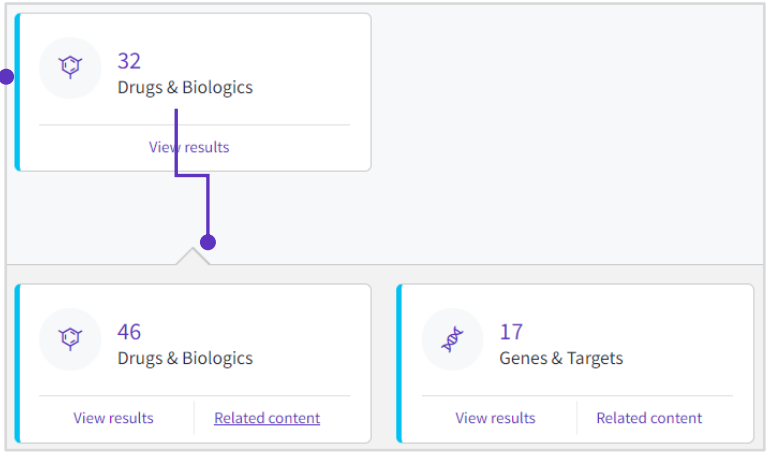
For example, where known, a drug will be linked to its molecular target in the Genes & Targets knowledge area. This is useful if you want to explore all the conditions, therapies and genetic variants associated with your target of interest.



Tip: Clarivate's scientists create relationships between records. In this example, the drug Sirolimus is related to 32 other rapamycins and 4 Genes & Targets.

Click the Related content link to expand your search to include an additional 14 Drugs & Biologics (total 46) and 13 Genes & Targets (total 17).

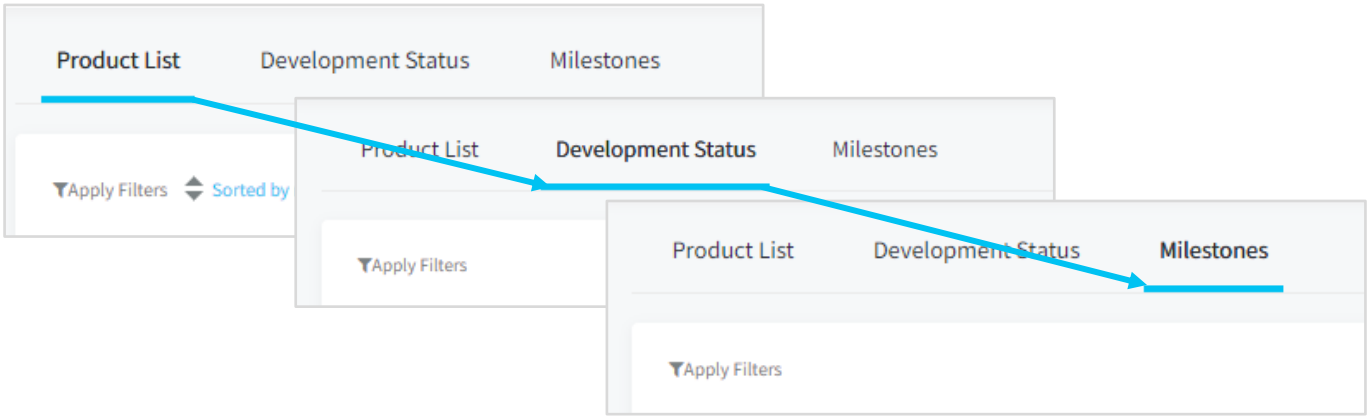
This is useful when your initial search gave fewer results than you expected, or when you wish to expand your search to capture related concepts.



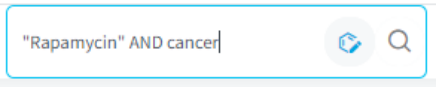
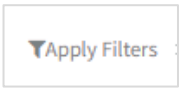
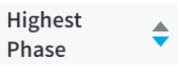
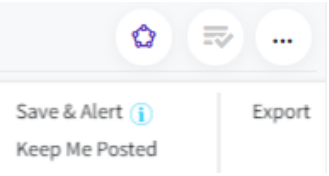
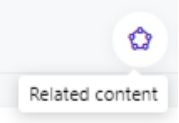
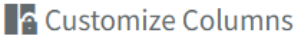
Results List

A summary table displaying the results of your search.

Note that in some knowledge areas the results are distributed across multiple tabs:



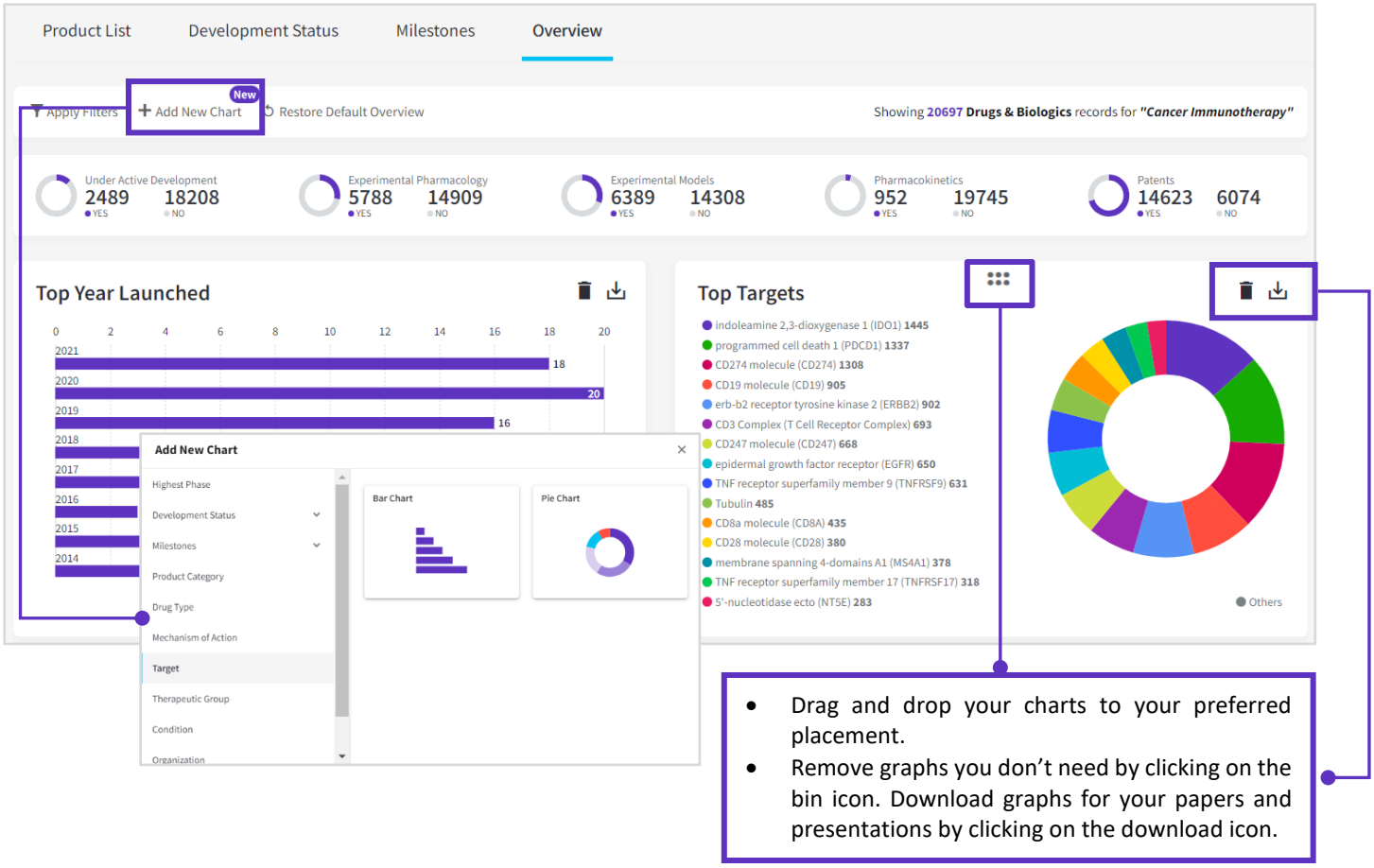
Actions from a Results List

Action	Icon	Use
Refine your search		• If you used Quick Search to obtain your results, you can continue to refine your results by adding terms to the Quick Search box
Apply Filters		• Get an overview of the frequency of results per filter category • Refine your results using the controlled-vocabulary terms in the filter indexes
Sort results		• Rank your results using the up and down arrows in the column headers • Your sorting preferences are saved for your next visit
Save & Alert		• Receive an email when new results match your search criteria
Export		• Export the results list for further analysis and to create reports
View related content		• Navigate to related content in other knowledge areas
Share Search		• Generate a link to your search to share with others • Share Search is available from all results pages, your saved Searches & Alerts and your Search History
Select records		• Manually filter your results and view the selected list • Receive an email when new content is added to a selected record using *Options > Keep me Posted* • Export selected results
Rows per page		• Select the number of rows you want to visualize in your results page
Customize columns		• Show/hide columns • Reorder columns • Your preferences will be saved automatically

Results Overview

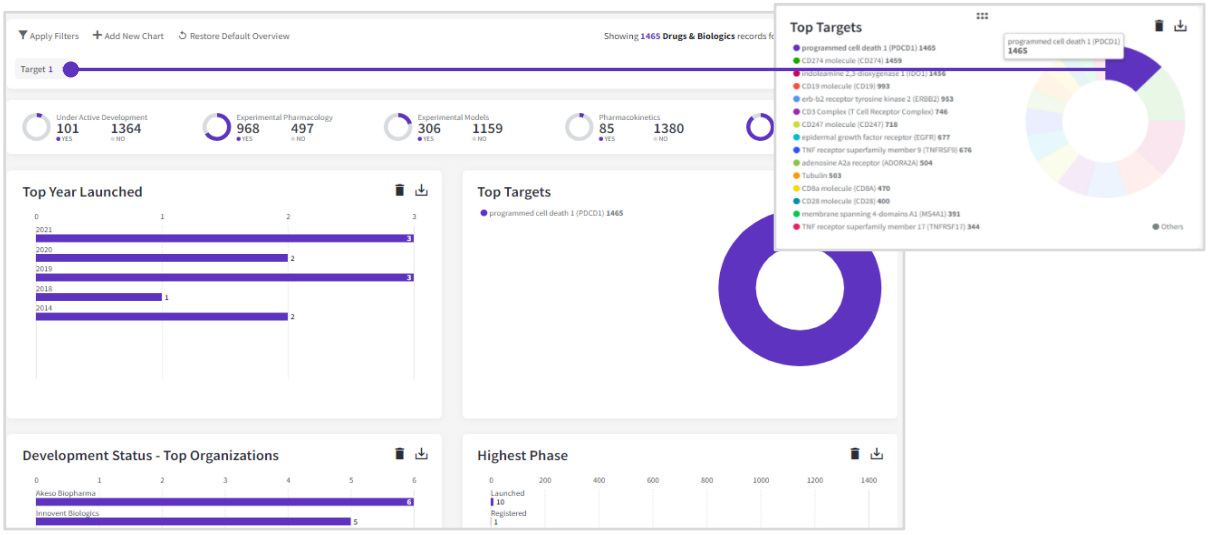
A graphical interactive display of your results list. This overview is available for Drugs & Biologics, Genes & Targets, Patents, Literature, Experimental Pharmacology, Pharmacokinetics, Clinical Studies and Biomarkers to easily spot trends in your results.

1. Customize your overview graphs by adding categories to visualize.



- Drag and drop your charts to your preferred placement.
- Remove graphs you don't need by clicking on the bin icon. Download graphs for your papers and presentations by clicking on the download icon.

2. Click on any of the bars/pie charts to refine your results. This will update all the graphs with the applied filter.



Records

A compilation of facts about a single object such as a drug, a gene, an experimental result etc.

Navigate from a results list to a record

From the Results Table:	Action
Drugs & Biologics Product list	Click on Entry Number
Drug & Biologics Development Status	Click on Main Name
Drug & Biologics Milestones	Click on Main Name
Genes & Targets	Click on Name
Organic Synthesis	Click on Title
Experimental Pharmacology	Click on View Record
Experimental Models	Click on Model
Pharmacokinetics	NA
Drug Metabolism	Click on the arrowhead to the left of each row
Clinical Studies	Click on the Study Name
Organizations	Click on Name (Click on hyperlink to open a new window and go to the web page of that organization)
Literature	NA
Patents	Click on the Title
Disease Briefings	Click on the Disease Briefing
Biomarkers	Click on the Biomarker Name
Biomarker Uses	Click on View Use

Tip: to browse consecutive records and return to the results list, use the navigation buttons on the top right of the screen:

Navigate from record to record, and from a record back to the results list

Related Content

All content related to the record. Use the links in the *Related Content* widget to explore data in other knowledge areas of the database

Clarivate Links

Related content that is available in other Clarivate databases (separate subscriptions required).

MetaCore

A systems biology tool to help you view your experimental results and OMICS data in the context of human diseases. Use this database to:

- Reduce the risk in your OMICS analysis
- Establish the biological rationale for your drug's mechanism
- Realize the potential of your biomarkers

Target Druggability

A preclinical drug development portal to help you select drug targets with the greatest potential for success. Use this database to:

- Explore target validity.
- Inspect known and putative targets by condition of interest
- Mark, group, and compare targets
- Analyze drug research and competition for a target of interest
- Explore relevant targets and conditions for a drug of interest
- Research target-related drugs focusing on a mechanism of action
- Explore target-related drugs for a condition of interest
- Investigate early drug repurposing

OFF-X

A safety and toxicity intelligence portal for drugs and targets of pharmacological interest. Use this database to identify off-target interactions, and plan accordingly.

VeriSIM Life

An AI driven solution that uses multi-disciplinary scientific methods to predict drug translatability into the clinic. Use this tool to identify compounds that offer anticipated value for the treatment or cure of a specific disease.

Cortellis Clinical Trials Intelligence

A comprehensive resource to help you accelerate clinical trial planning including site selection, protocol design, biomarker identification and key competitive intelligence.

Included	• Link from a CDDI biomarker record to a list of clinical trials (in Cortellis CTI) that used the biomarker for drug development.

Web of Science

Navigate seamlessly from Literature area to Web of Science.

Bioworld Science

Navigate seamlessly from ¨Latest News¨ on the homepage to the BioWorld Science site.

External Links

Related content in non-Clarivate databases.

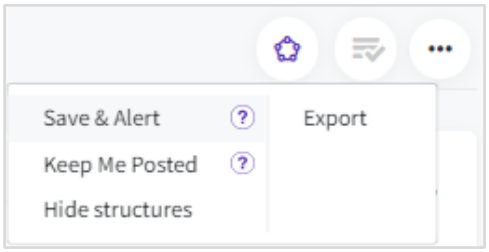
Available Since

Date when the record first appeared in Cortellis Drug Discovery Intelligence.

Search/filter by *Available Since* to retrieve new records added since your last search.

Tip: if you need to keep up to date when new records added for your topic of interest, consider saving your query and setting an alert:

1. Run your search and refine the results using filters.
2. Click the Options icon on the top right of your results list (…) and select *Save & Alert.*
3. Follow instructions in the dialog box

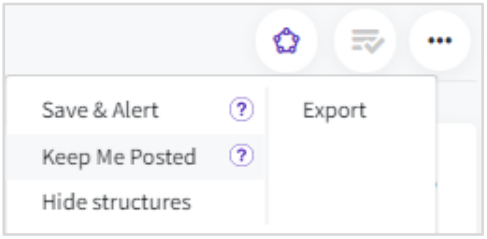


Last Updated

Date when the record was last updated with new information.

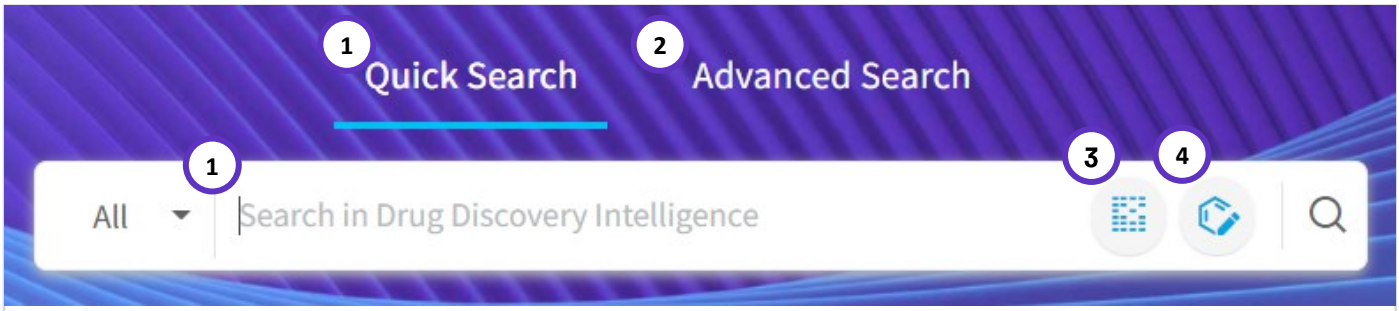
Search/filter by *Last Updated* to retrieve existing records that have been updated since your last search.

Tip: if you need to keep up to date on new information added to existing records, consider *Keep Me Posted* for your records of interest.



Search

Find content relevant to your question or topic of interest using one of three search options; and then refine your results using the filters.



1. Use the auto-suggested terms in Quick Search to quickly find content related to your query, then refine your search results using filters.
2. Use Advanced Search to browse the controlled vocabulary indexes and specify which fields to search in.
3. Use Sequence search to find drugs containing a specific or similar sequence to yours.\
4. Use Structure Search for content that is the same, similar or contains your compound of interest.

Note: you can access any of these searches from the homepage, as shown, or from any *Results* or *Record* page.

Note: that Structure Search can be used in either *Quick Search* or *Advanced Search.*

But before exploring each search type in detail, there are some generally applicable rules when searching in Cortellis Drug Discovery Intelligence:

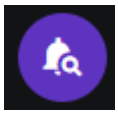
Search using Controlled Vocabularies

Controlled vocabularies are lists of words with fixed definitions that are used by Clarivate's editors to index the content in Cortellis Drug Discovery Intelligence.

Because controlled vocabularies are used to organize the data, this means that you can reliably retrieve the data using those same index terms when you search the database. Using controlled vocabularies is generally the most accurate way to search the database.

How to access the *Controlled Vocabulary* indexes:

From	Access method
Quick Search	Use the auto-suggested terms: these are drawn from the following controlled vocabulary indexes: • Drugs & Biologics Main name, Code names, Generic name and Brand names • Genes & Targets main names, synonyms and target family name • Organization names • Conditions • Product category • Molecular and Cellular mechanisms of action
Advanced Search	Click the Advanced Search tab or icon, then select a knowledge area, then a field Click the controlled vocabulary index icons to browse the indexes:  • Indicates a flat list with the terms ordered alphabetically  • Indicates a hierarchical list. Once you have opened a hierarchical index, you can view it either by hierarchical order, or as a flat list ordered alphabetically
Results list	*Apply Filters* the terms in the filter lists come from the controlled vocabulary indexes



Tip: set up a Controlled Vocabulary alert to stay up to date on new terms added to the controlled vocabulary indexes.

Free-text search

In general, it is best to use the auto-suggested terms in Quick Search, or the index terms in Advanced Search. This is because Clarivate's scientists use the controlled vocabularies to index the data, and so you can reliably retrieve the data using those same index terms when you search the database.

However, if you have tried using the indexes, and still don't find your term of interest, you can still search by free text, just remember to enclose phrases in double quotes.

Examples where Free-Text searches can be useful

Search concept	Example
Drug entry number	"999999"
CAS Resgistry number	"35453-19-1"
Clinical study name	"I-SPY2"
Title of an article (literature or patent)	"Drug repurposing against COVID-19: Focus on anticancer agents"
Patent number	"WO2014103310"

Controlled Vocabulary versus Free text search

A free-text search will look for records that match the phrase that you type, whereas using a term from the controlled-vocabulary indexes will look for records that have been indexed with that term by Clarivate's scientists.

For example, searching by the controlled-vocabulary index term "Cancer, breast" will find all records that have been indexed with that condition; whereas searching by the free text "breast cancer" will find all records that include that phrase, but not records indexed with "Cancer, breast".

Typically, the controlled-vocabulary approach is more precise, and you can be sure to get all records relevant to the search term. But occasionally you may wish to broaden your search to include any records with mention of a text string such as "breast cancer", in which case you can combine both controlled-vocabulary and free text in the same search.

For example, "Cancer, breast" OR "breast cancer".

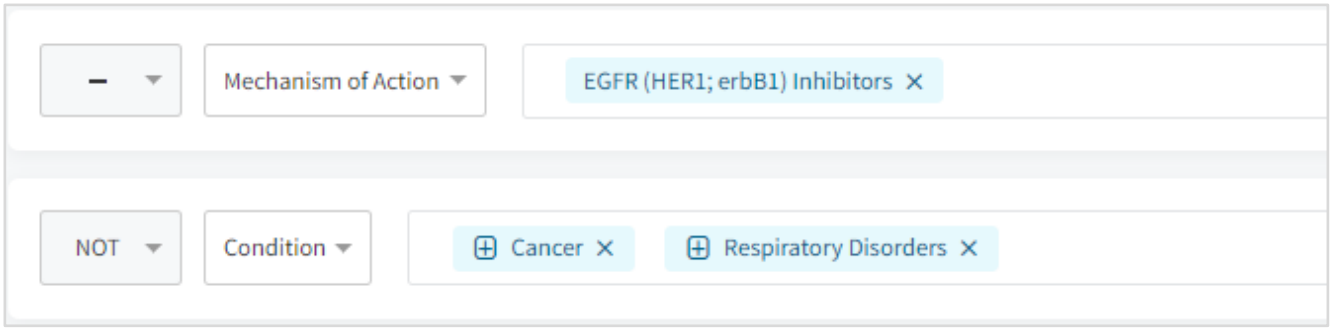
Combining search terms

Quick search and Advanced Search allow the Boolean operators AND / OR / NOT and parenthesis to combine operations.

For example, to find EGFR inhibitors that are not in development for either cancer or respiratory disorders.

In Quick Search:

In Advanced Search:



Special characters

The following special characters are allowed:

Character	Description	Example
Hyphen*	Hyphen is ignored	Search by FK-506 or FK506 will retrieve the same results
[space]*	Spaces are ignored	Patent number "WO 2014103310" or "WO2014103310" will retrieve the same results
Asterisk	Replaces a text string	Asthm* will retrieve results related to Asthma and Asthmatic
Question mark	Replaces a character	Asthm? Will retrieve results related to Asthma but NOT Asthmatic
Apostrophe		Alzheimer's

Note, because hyphens and spaces are ignored, quick search can on rare occasions lead to "unusual results". For example, a Quick Search by drug identifier "AT-845" retrieves an unrelated patent that describes a different drug that was effective *at 8.45* mcg/ml. In this example, a quick check of the drug record shows there are no related patents.

Quick Search

Quick Search is the fastest and most convenient way to access the data in Cortellis Drug Discovery Intelligence.

- Use Quick Search with the auto-suggested terms to search by keywords; then refine your search results using filters.
- Use Advanced Search to browse the Controlled Vocabulary indexes and specify precisely which fields to search in.

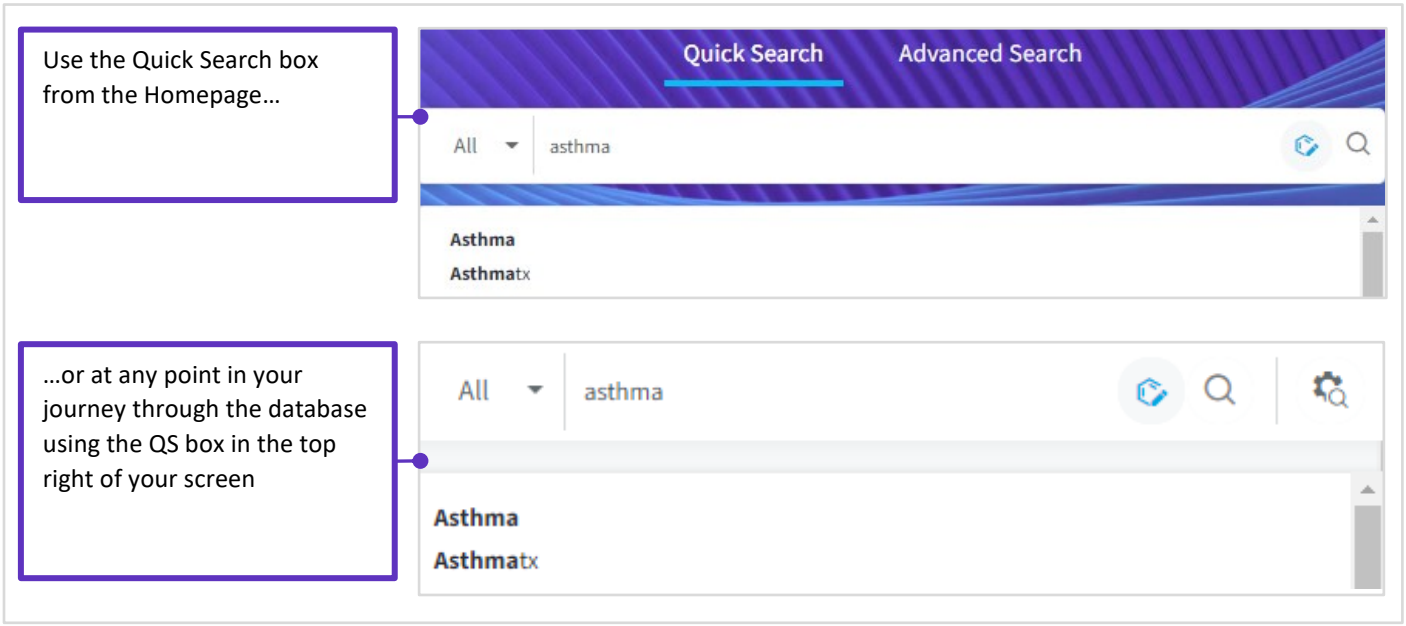
In this section you will learn:

- How to use the auto-suggested terms for the quickest way to retrieve data.
- How to refine your search results using Quick Search.

Note that it is also possible to include chemical structure searches in your quick search; see the section on Structure Search

Auto-Suggested terms

This is the fastest and most intuitive way to retrieve data:



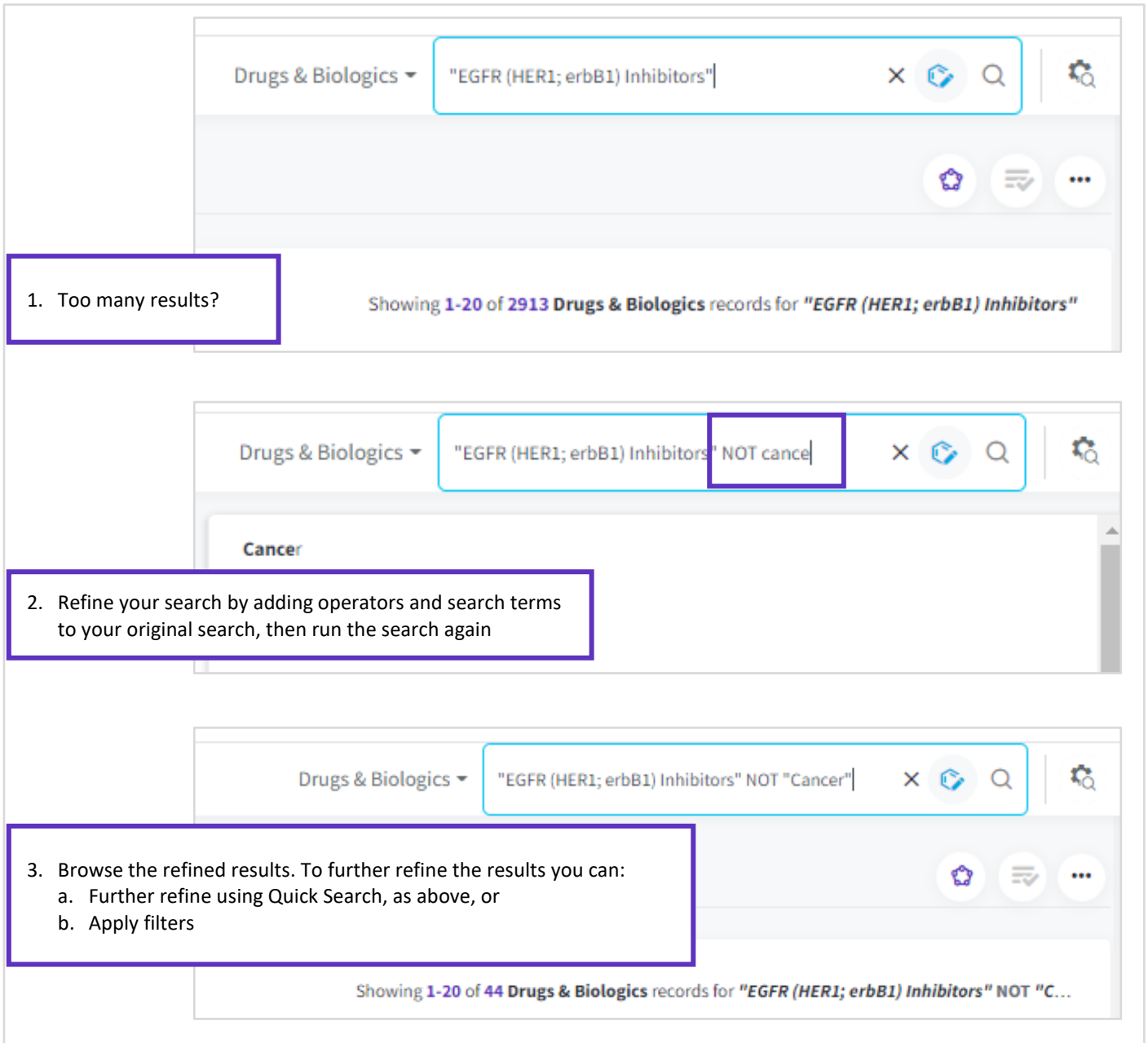
When you begin typing your term or phrase of interest in the Quick Search box, a list of suggested terms appears. These terms are drawn from the following Controlled Vocabulary indexes:

- Drugs & Biologics Main name, Code names, Generic name, and Brand names
- Genes & Targets main names, synonyms, and target family name
- Organization names
- Conditions
- Product category
- Molecular and Cellular mechanisms of action

Clarivate's scientists use the controlled vocabulary indexes to curate the content, and for that reason we recommend using the auto-suggested terms to search for the content. If you don't find your term of interest in the Quick Search autosuggested terms, try the Advanced Search indexes.

Refining your results

Once you have run a search, you can further refine your result list by adding terms to the Quick Search box in the results page. **For example**, if you have searched for “EGFR (HER1; erbB1) inhibitors” and find too many results, you can modify the search from the results page by adding *NOT “Cancer”* to exclude EGFR inhibitors that have been explored for use in cancer treatments.



1. Too many results?
2. Refine your search by adding operators and search terms to your original search, then run the search again
3. Browse the refined results. To further refine the results you can:
   a. Further refine using Quick Search, as above, or
   b. Apply filters

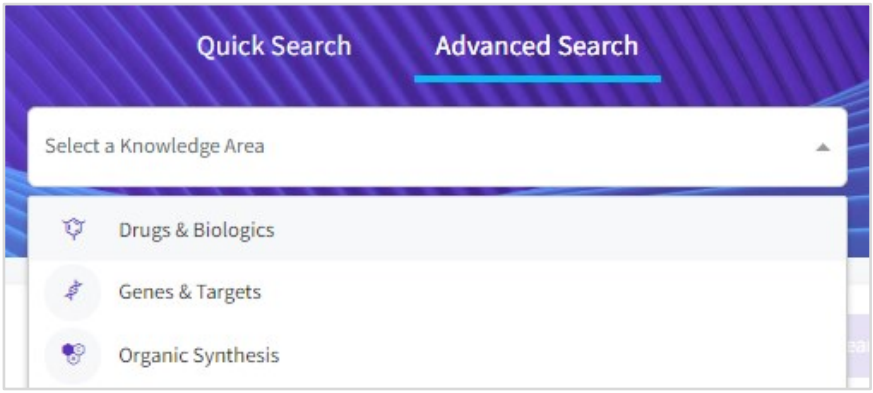
Advanced Search

Use Advanced search when you want to:

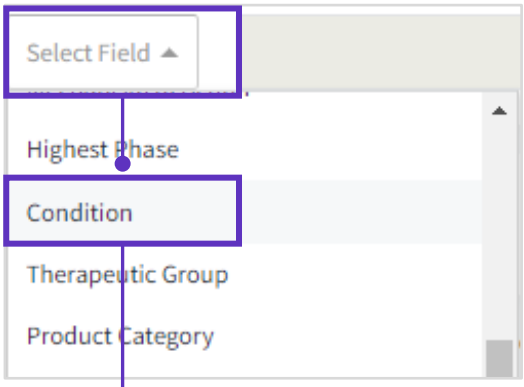
- Specify which field to search in, or
- Browser the controlled vocabulary index terms
- Build a complex query specifying multiple fields
- Include fields from other knowledge areas in your search

How to access advanced search:

1. Go to Advanced Search.
2. Select a Knowldedge Area.



3. Select a Field.

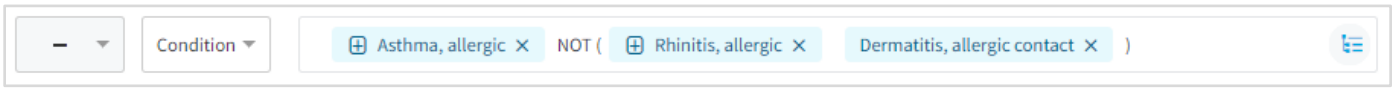


4. Click the Controlled Vocabulary button to search or browse for your terms on interest.

Combining multiple terms in the same field

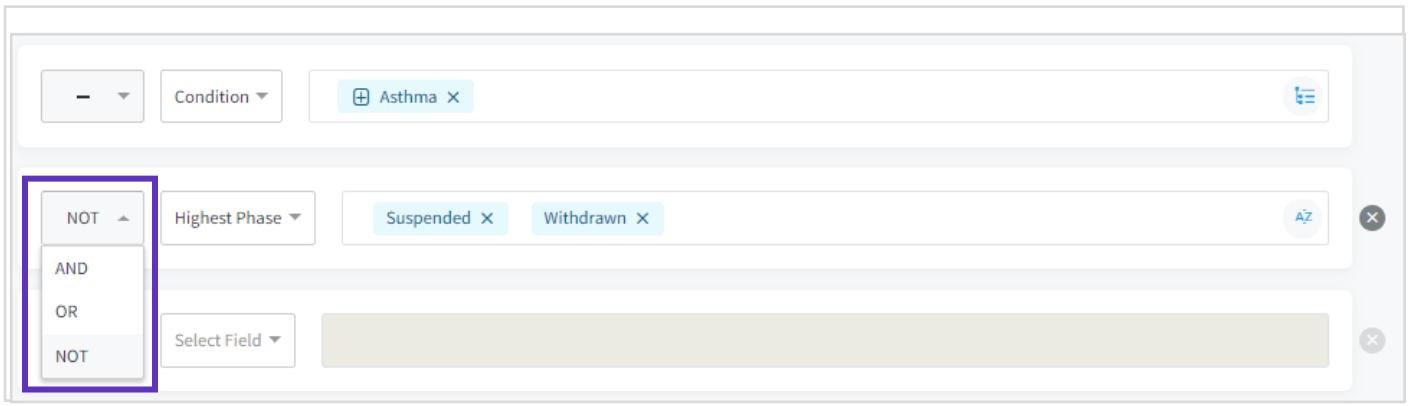
Within a search field you can add as many terms as you like and combine them with Boolean operators

- Select as many terms as you wish from the Controlled Vocabulary index
- Combine free-text and index terms in the same search field
- The default operator within the same search field in Advanced Search is OR
- You can add the Boolean operators AND or NOT as well combine operations using parenthesis



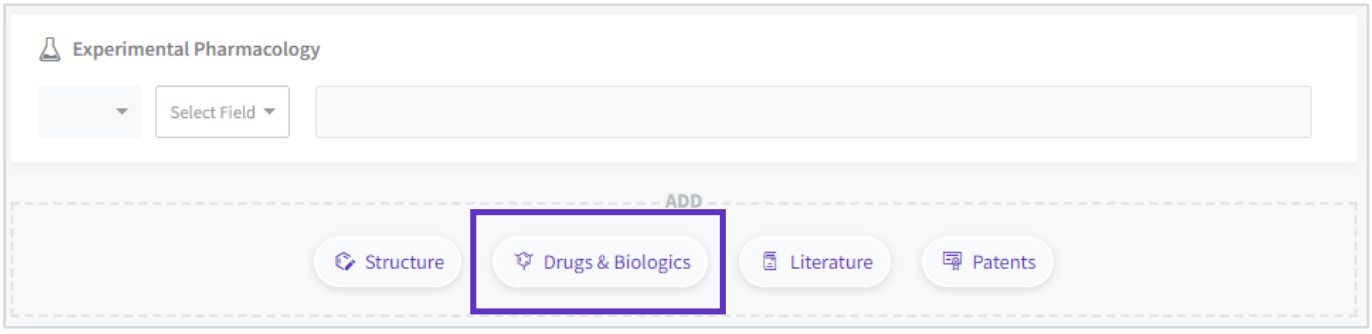
Combining multiple Fields

You can add as many search fields as you like and combine them with Boolean operators, AND, OR, NOT.



Search using fields from related knowledge areas

If the *Select a Field* option does not list the field you want to search by, then it may be possible to search your knowledge area of interest using fields from other knowledge areas.



For Example, to search for Experimental Pharmacology results obtained using the drug “Rapamycin”, go:

1. Advanced Search > Select a knowledge area = *Experimental Pharmacology*
2. Click *Add Drugs & Biologics* (screenshot above)
3. Select a field = *Drug Name* > Click on the drug name index and search for the drug “Rapamycin” > *Select* and *Apply*
4. *Search*

Note, you get the same results using this approach as you would if you had gone:

1. Advanced Search > Select a knowledge area = *Drugs & Biologics*
2. Select a field = *Drug Name* > Click on the drug name index and search for the drug “Rapamycin” > *Select* and *Apply*
3. *Search*
4. Click the All-Related Content icon in the top right of your results list > Click on the Experimental Pharmacology results overview card.

Cross-index searching is available in Advanced Search for all Knowledge Areas.

Advanced Search limits

- If you return to the Advanced Search, you will find your most recent query is remembered. This will be cleared when you run your next advanced search or log out.
- When adding fields from related knowledge areas to your search, the search limit is 50,000 records. If your search exceeds this limit, you will be asked to refine your search.

Quick Search versus Advanced Search

- Use Quick Search with the auto-suggested terms to search by keywords; then refine your search results using filters.
- Use Advanced Search to browse the controlled vocabulary indexes and specify precisely which fields to search in.

Quick Search versus Advanced Search

Search Characteristic	Quick Search	Advanced Search
Specify a Knowledge area	Yes	Yes
Search all knowledge areas at once	Yes	No. However, you can still access all related information from your results list, or a specific record
Auto-suggested terms ("type ahead")	Yes	No
Browse the controlled-vocabulary indexes	No	Yes
Specify which fields to search in	No	Yes
Free text allowed?	Yes	Yes
Special characters	Yes	Yes
Boolean operators and parenthesis	Yes • Default operator is **AND**. Eg. A quick search for WO 2014103310 will retrieve the correct patent	Yes • Default operator is **OR** between terms in the same search box. Eg, Patents > Patent Number = WO 2014103310 will be treated as two search terms with an OR operator between them and retrieve all patents with the term "WO" in the patent title. • Default operator is **AND** between search fields
Structure search	Yes	Yes
Sequence search	Yes	Yes
Date fields	No	Yes
Yes/No fields	No	Yes
Save & Alert available	Yes	Yes
Combined search available	Yes	Yes

Structure Search

With structure search you can:

- Find data on compounds that are like yours using similarity search
- Find compounds that contain a key intermediate using substructure search
- Find exact matches to your structure of interest
- Find information related to your chemical structure across all Knowledge Areas

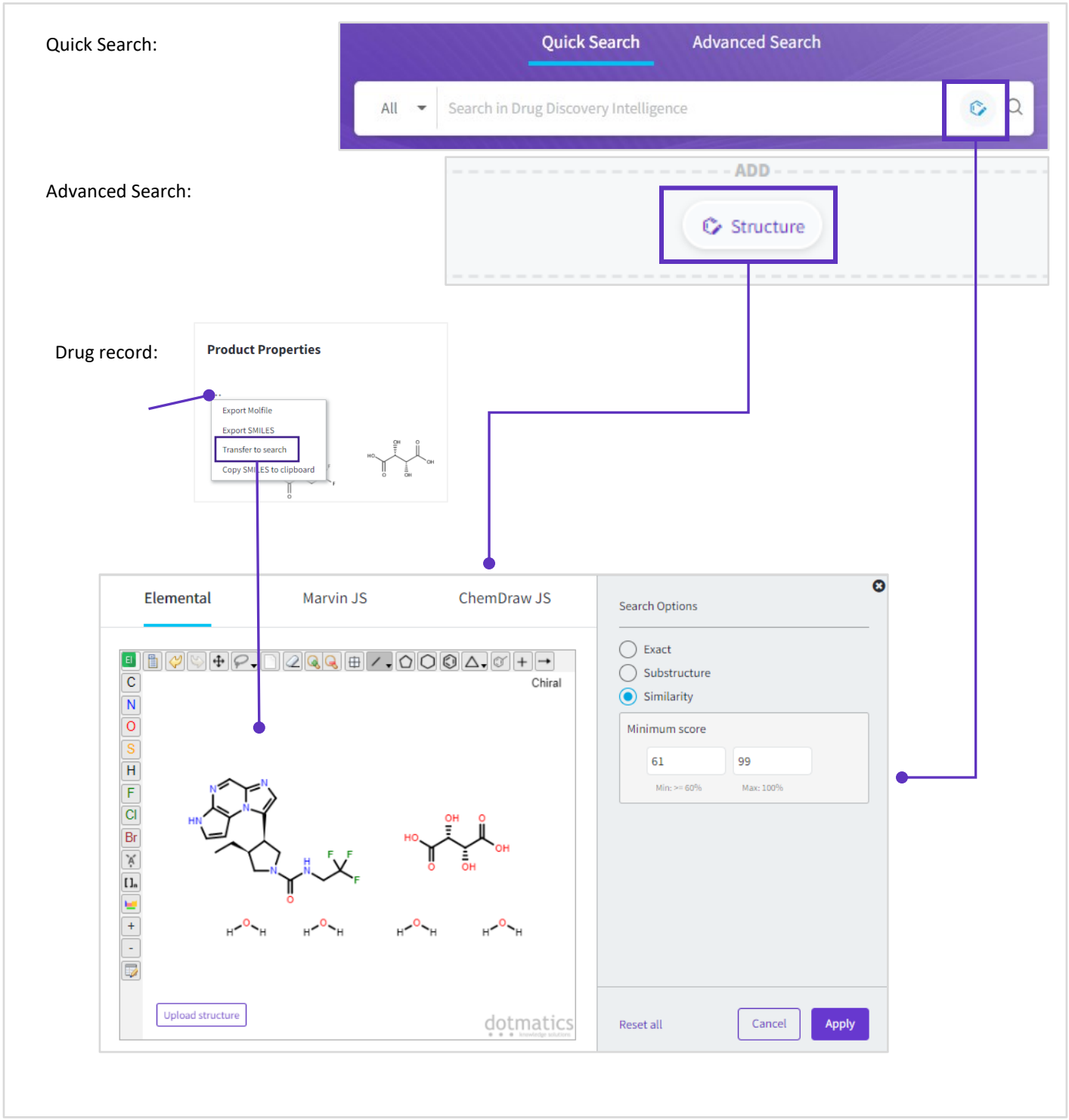
At the back end, the structure search functionality is powered by JChem from ChemAxon Ltd; and similarity search uses the “Chemical Hashed Fingerprints” method that is built into JChem. For further information on similarity searching see **https://docs.chemaxon.com/display/docs/Similarity+search**

In this section you will learn:

- How to open the structure search dialog box
- About the different structure search editors that are available in Cortellis Drug Discovery Intelligence

How to access the Structure Search dialog box

You can reach the Structure Search dialog box from Quick Search, Advanced Search, or your drug record of interest:



Structure Editors

Cortellis Drug Discovery Intelligence is compatible with three chemical structure editors for drawing and submitting chemical structure searches:

Elemental

Elemental from Dotmatics. For additional support, please register to access the Dotmatics support site: **https://support.dotmatics.com/login/auth**

Marvin JS

Marvin JS from ChemAxon Ltd. For additional support, see

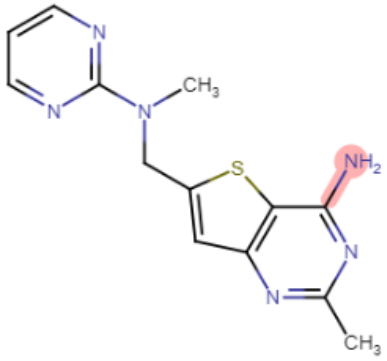
- User guide: **https://docs.chemaxon.com/display/docs/Marvin+JS+User%27s+Guide**
- Frequently asked questions: **https://docs.chemaxon.com/display/docs/Marvin+JS+FAQ**
- YouTube tutorials: **https://www.youtube.com/playlist?list=PLA3Ev2ngKC0TY2p59vJhlYGm-wmrLaWp6**
- Examples: **https://marvinjs-demo.chemaxon.com/latest/examples/index.html**

Marvin JS versus Marvin Desktop

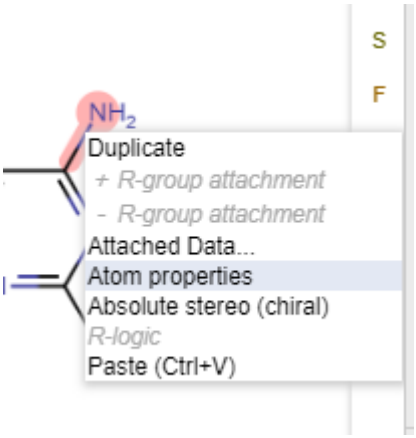
If you use Marvin Sketch and wish to use it in conjunction with the Marvin JS editor in Cortellis Drug Discovery Intelligence, you need to be aware of the following:

4. Copy/Paste: the standard copy/paste command (ctrl + C) will not work because Marvin Sketch uses OLE format in Windows, and this is not compatible with most browsers. As a workaround, you can select your structure in Marvin Sketch desktop > Edit > Copy as MRV (ctrl + M) > then paste into Marvin JS as usual. Further details can be found in the Marvin JS FAQ document
5. Marvin Sketch includes more drawing features than the JS version. For example, in Marvin Sketch it is possible to specify CYC (carboalicyclic) as an R-group extension for use with ChemAxon's Markush tool. CYC cannot be specified in the JS version. In this case, the workaround is:

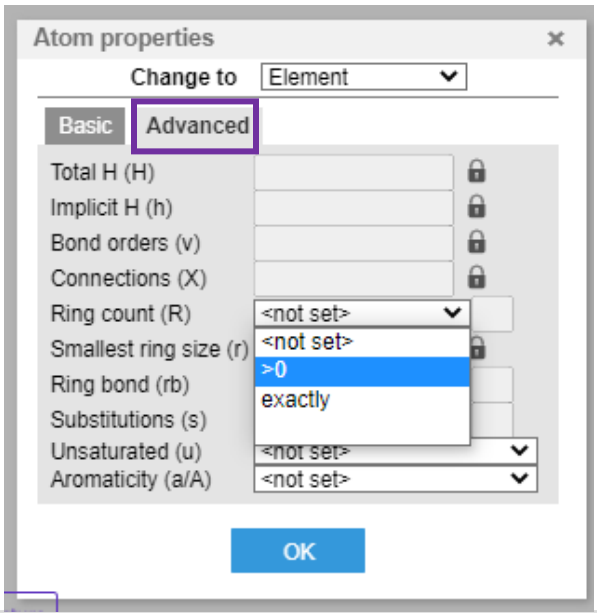
a. Draw at least one atom that would be part of the CYC ring:



b. Right-click on the atom and select *Atom Properties*:



c. From the *Advanced* menu, set *Ring count* >0:



ChemDraw

ChemDraw from PerkinElmer. For additional support, see

- User guide: **https://chemdrawdirect.perkinelmer.cloud/js/docs/User%20Guide/ChemDraw%20JS.htm**
- Frequently asked questions: **https://www.perkinelmer.com/lab-solutions/resources/docs/FAQ_ChemDraw-JS_013036_01.PDF**
- KnowledgeBase: **https://informatics.perkinelmer.com/Support/KnowledgeBase/**

Copy-Paste from/to ChemDraw JS

- To copy and paste structures from the ChemDraw JS dialog box in CDDI to ChemDraw Desktop, BIOVIA Draw, or Marvin Sketch you may need to enable the ChemDraw Web Clipboard in your browser. To do this, please follow the ChemDraw instructions on **Activating Extended Copy and Paste Functionality**
- If you are copying and pasting between the ChemDraw JS and the ChemDraw Desktop app, you do not need to enable the ChemDraw Web Clipboard. In this case, please follow these instructions: **Copying and Pasting CDXML Text Data without ChemDraw Web Clipboard**

Copy-Paste SMILES

You can copy-paste a SMILE string into ChemDraw JS provided you have activated the extended copy-paste functionality (see above).

1. Copy your SMILE string into your clipboard
2. Click in the ChemDraw JS editor box
3. Use Ctrl + V to past the SMILE string into the ChemDraw JS editor and it will convert to the structure in a few moments.

Sequence Search

With sequence search you can:

- Find drugs & biologics that have a sequence that partially or completely aligns with yours
- Find exact matches to your drug sequence of interest
- Find information related to your drug sequence across all Knowledge Areas

At the back end, the sequence search functionality is powered by BLAST, a sequence comparison algorithm from NCBI used to search sequence databases for optimal alignments to a query. For further information on BLAST see **https://www.ncbi.nlm.nih.gov/books/NBK62051/**

In this section you will learn:

- About sequence coverage
- How to open the sequence search dialog box
- About the different BLAST programs available in Cortellis Drug Discovery Intelligence
- About the sequence search results parameters

Sequence coverage

Cortellis Drug Discovery Intelligence includes +32K sequences linked to 13K unique products. Sequence content is added:

- Prospectively – Fully comprehensive coverage (if the sequence is disclosed, most likely through a patent).
- Retrospectively - Will expand to be comprehensive from phase I/II UAD to Launched for all product categories. This is the current coverage:

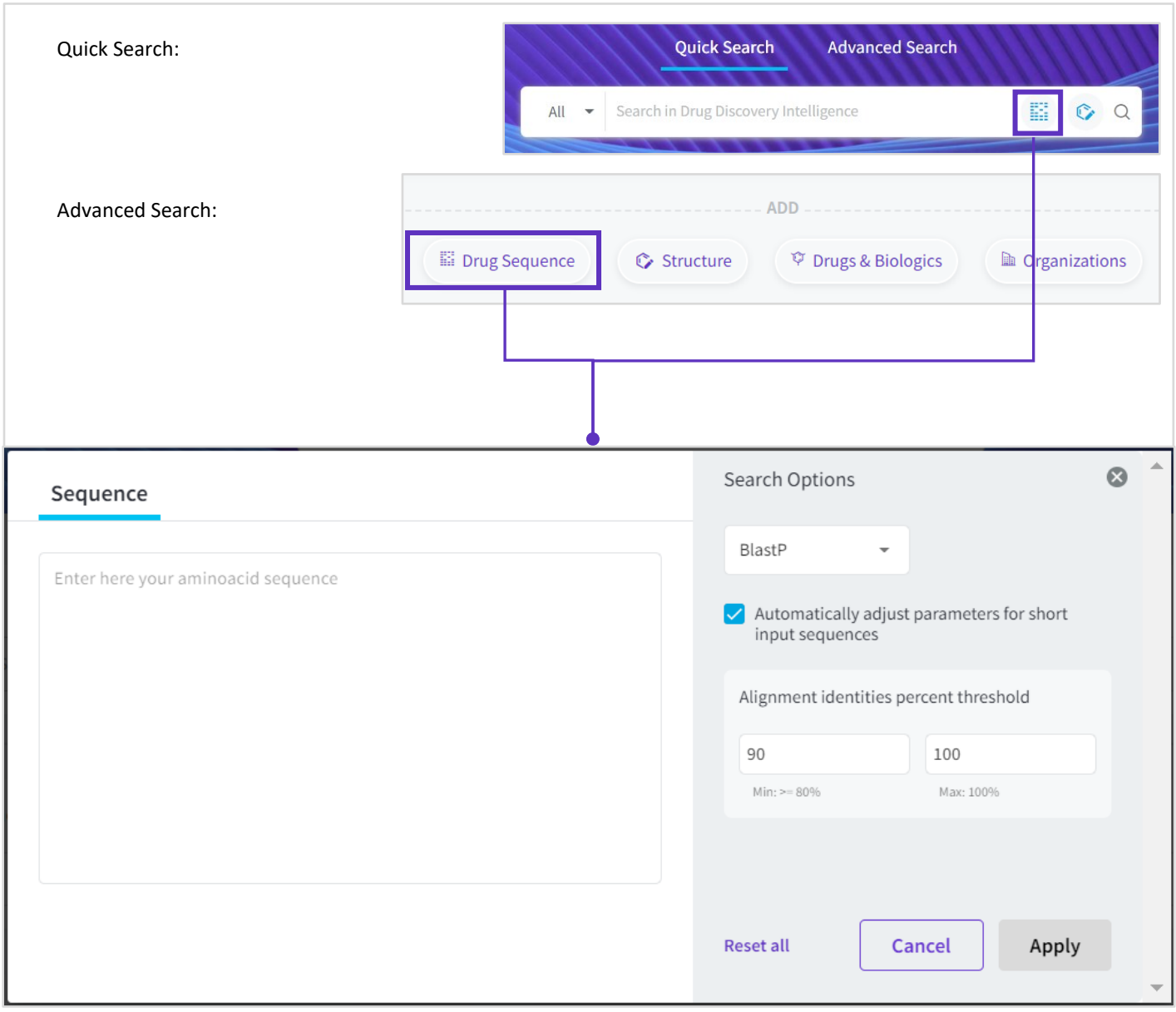
Product Category	Retrospective Coverage
Antibodies	From phase I/II UAD to Launched
Recombinant proteins	Launched
Antisense therapies	Launched
RNA Interference	Launched
Cell therapies	Launched
Vaccines	Launched
Oligonucleotides	Launched
Peptides	Launched

How to access the Sequence Search dialog box

You can reach the Sequence Search dialog box from either Quick Search, or Advanced Search:

Quick Search:

Advanced Search:



BLAST programs

Cortellis Drug Discovery Intelligence allows to run sequence queries using one of two BLAST programs:

Nucleotide BLAST (BlastN)

Use it to run a nucleotide query

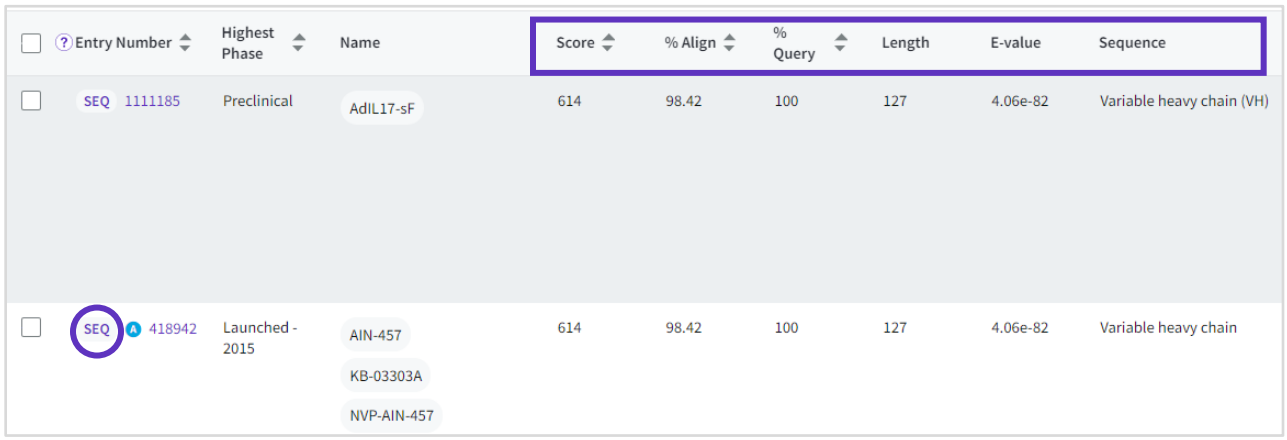
Protein BLAST (BlastP)

Use it to run a protein query

BLAST Algorithm Parameters

- **Alignment identities percent threshold:** Extent to which two aligned sequences have the same exact nucleotides or amino acids in the same positions. Percentages range from 80 to 100, with a default value of 90.
- **Automatically adjust parameters for short input sequences:** Select this option to automatically adjust word size and other parameters for ≤30 sequence queries.
- **Rest of algorithm parameters:** Default value recommended by BLAST are used.

Sequence Search results parameters



Entry Number	Highest Phase	Name	Score	% Align	% Query	Length	E-value	Sequence
SEQ 1111185	Preclinical	AdIL17-sF	614	98.42	100	127	4.06e-82	Variable heavy chain (VH)
SEQ 418942	Launched - 2015	AIN-457 KB-03303A NVP-AIN-457	614	98.42	100	127	4.06e-82	Variable heavy chain

- **Score**: A numerical value that describes the overall quality of an alignment. Higher numbers correspond to higher similarity.
- **% Alignment:** The extent to which two sequences (nucleotide or amino acid) have the same residues at the same position in an alignment, expressed as a percentage. The higher the percentage, the more significant the match.
- **% Query:** Percentage of the query length that is included in the aligned segments.
- **Length:** Length of the target sequence that was matched with the sequence of interest.
- **E-value**: Expected number of times that the given alignment score would appear in a random database of a given size.
- **Sequence:** Name of the sequence matching the query.
- **SEQ:** Click on this icon to see the sequence without opening the Drugs & Biologics entity page.

Note: If a product has multiple sequences matching the search query (e.g. CDR and variable heavy chain sequence), the values displayed in the results table are those for the sequence with the higher Score.

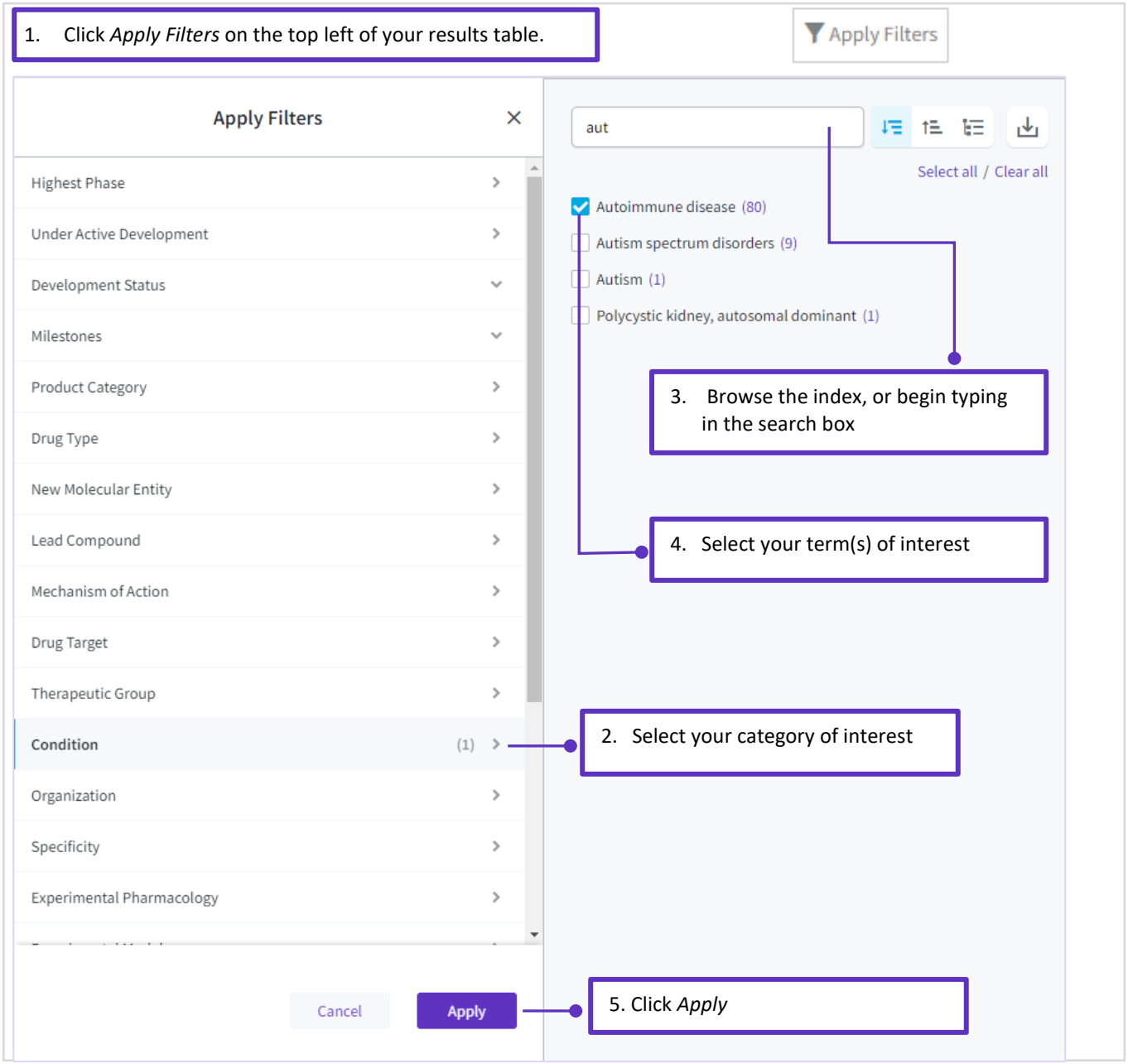
Filter

Separate irrelevant content from your results list by applying filters.

In this section you will learn:

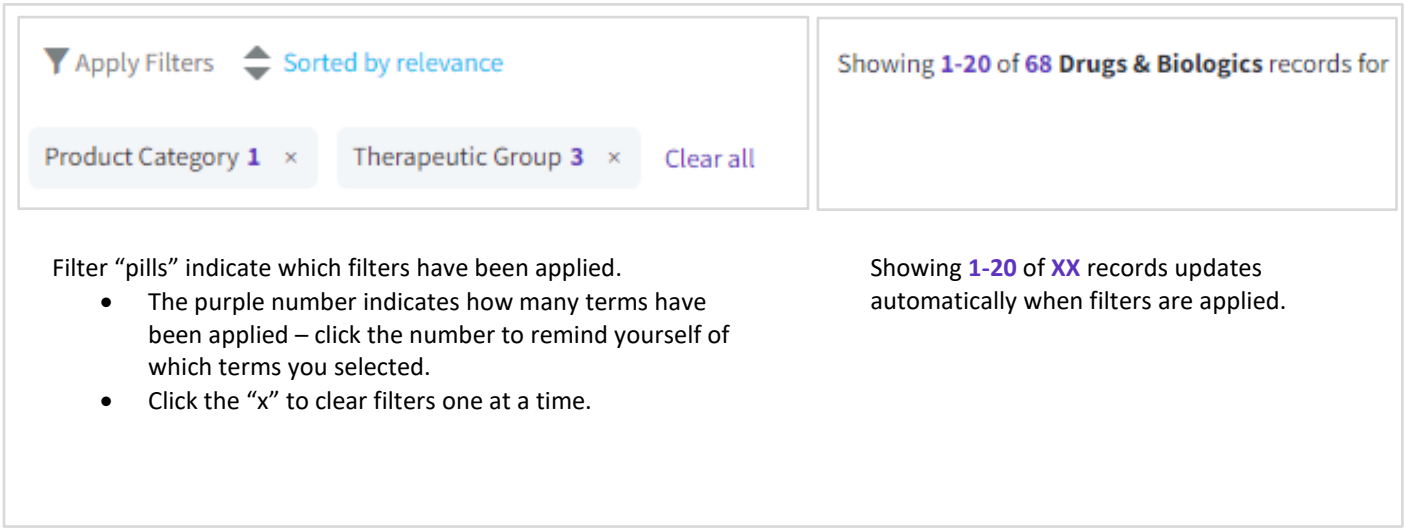
- How to filter
- When to use frequency or hierarchy view in the filters
- How to filter using graphs in areas with *Overview*

How to Filter



Filtered results

Once you have applied filters, your results table is updated as follows:



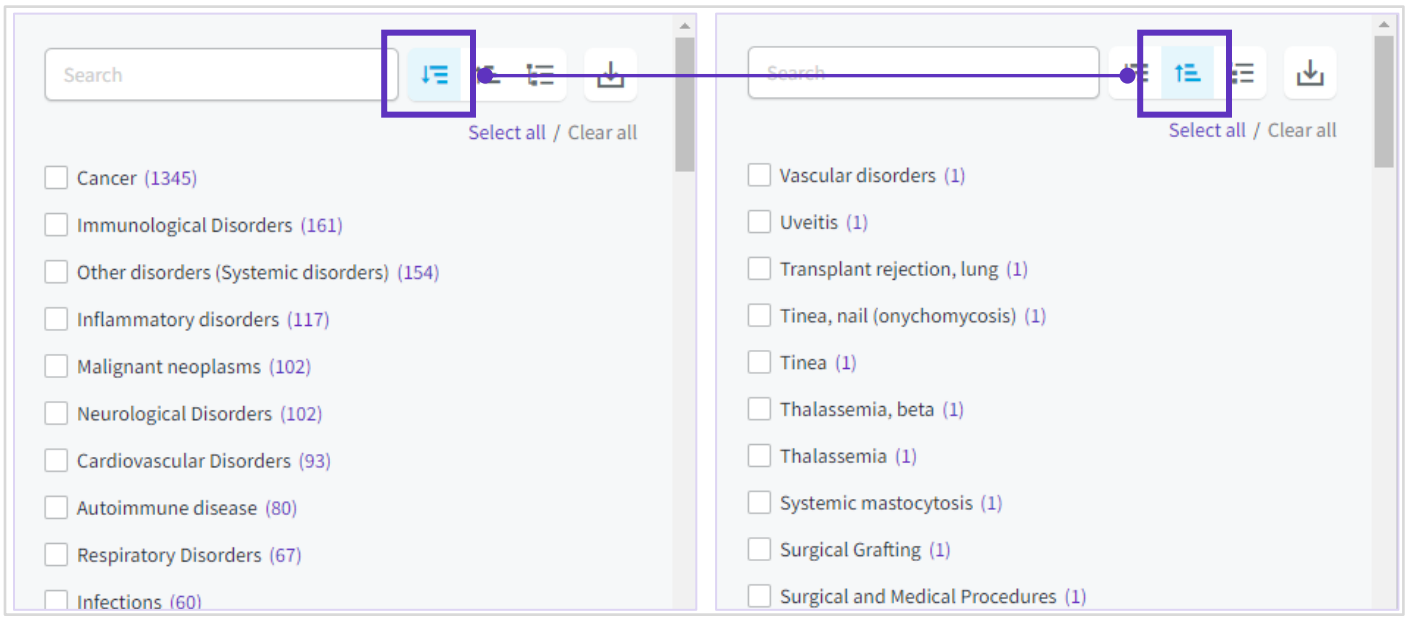
Filter "pills" indicate which filters have been applied.

- The purple number indicates how many terms have been applied – click the number to remind yourself of which terms you selected.
- Click the "x" to clear filters one at a time.

Showing **1-20** of **XX** records updates automatically when filters are applied.

Sort by Ascending / Descending

By default the filter terms are listed in descending order of the number of results per term (shown in parenthesis), but you can switch the order using the ascending/descending buttons:



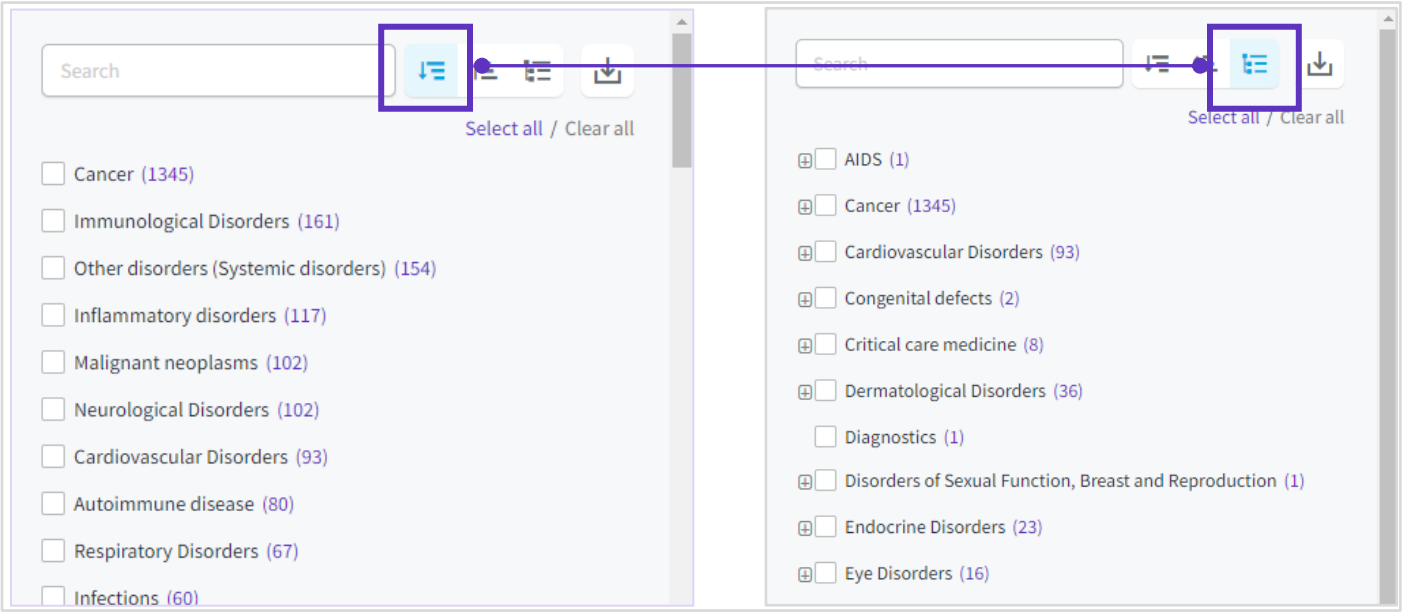
This can be useful for exploring novelty within a filter category. For example:

- In the example shown above, I have searched Drugs & Biologics by the Product Category = "Rapamycins" and filtered by *Conditions*. As expected, the most frequent conditions are Cancer and Immunological Disorders. However, by switching to Descending order, I can see novel conditions such as Uveitis and Thalassemia that I might want to explore further.

- Try doing the same with the Drugs & Biologics filter *Drug Target* to look for novel targets.

Hierarchical view

Some filters such as *Condition* allow you to browse the terminology using a hierarchical view:

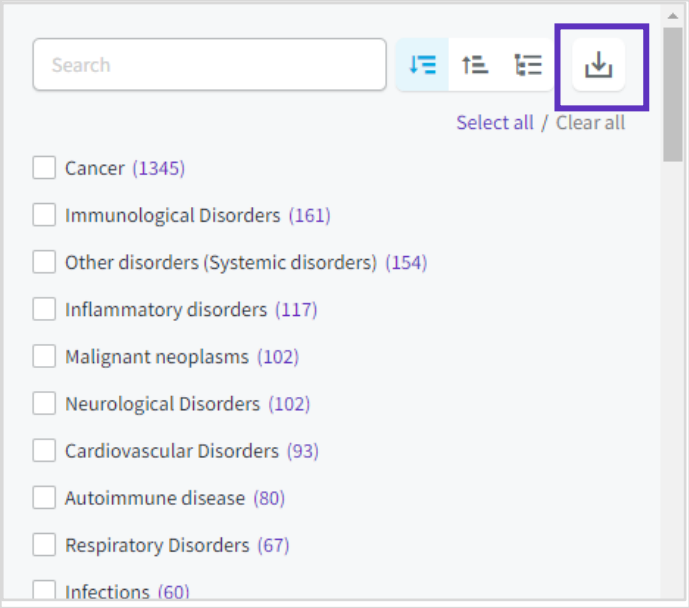


This can be useful when:

- You have searched the filter category for your term of interest, but don't find it. Browse the hierarchy to find the closest related term.
- The filter you applied was too strict, then loosen your stringency by browsing the hierarchy and filtering by the parent term.
- The filter you applied was not strict enough, then tighten your stringency by browsing the hierarchy and filtering by a child term.

Export the filter terms

The filter displays the first 100 terms in each category. Occasionally you may wish to see all terms that match your results, in which case, use the export feature:

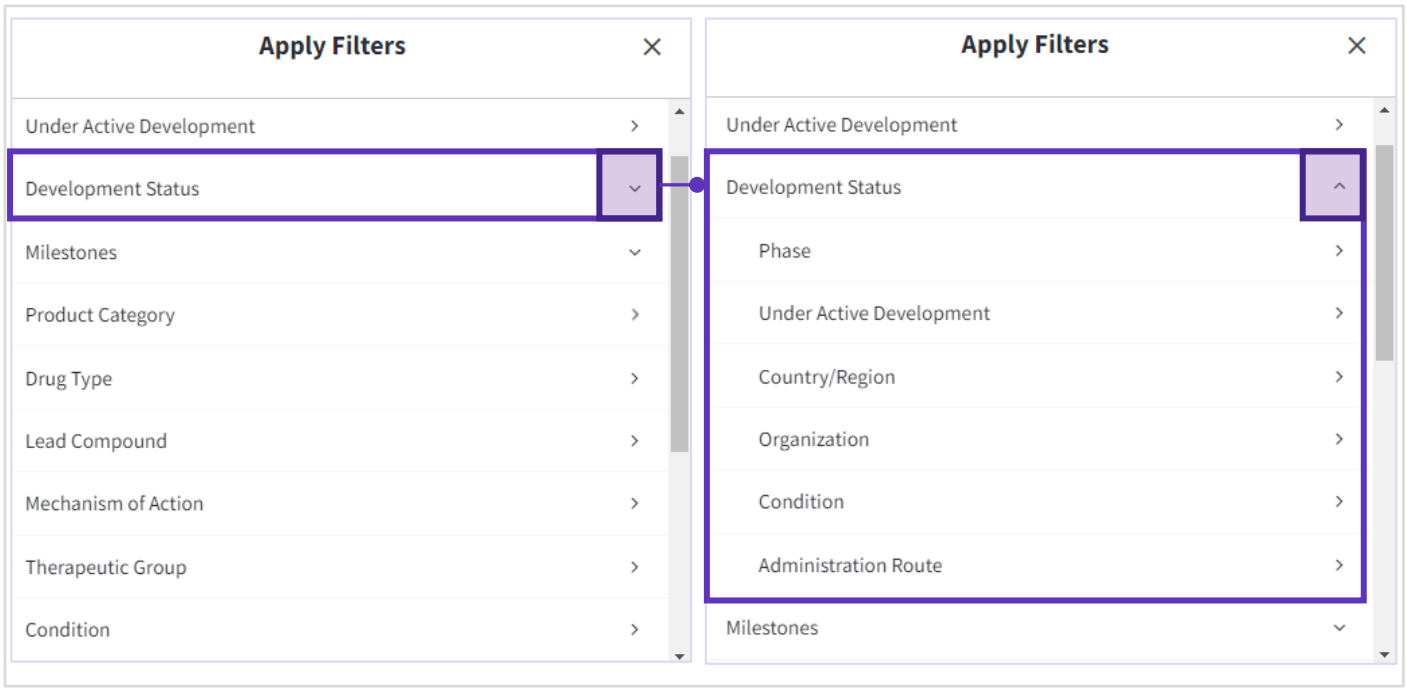


This can be useful:

- To analyze the distribution of your search results across the controlled vocabulary terminology used in the filters.

Filter sub-menus

Some filters have sub-filters within them. Click the downward-pointing arrowheads to reveal the sub-filters:



Filter using graphs

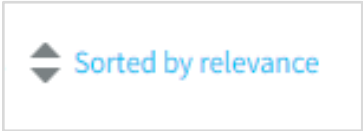
From the *Overview* pages (available in Drugs & Biologics, Patents, Experimental Pharmacology, Pharmacokinetics, Clinical Studies, Literature and Biomarkers) you can view your results as graphs and download them for your presentations. You may filter the graphs by clicking on a segment of interest. The Overview page will automatically be refreshed to reflect your selected filter.

Sort

Besides filtering, sorting your results lists is a great way to bring the most relevant data to the top of your list.

Sort by relevance

When you run a search, the results are displayed in order of “relevance”.



Relevance is based on the following parameters:

- The frequency of the query term relative to all terms in searchable fields in the record
- The count of the query term in the record
- Specific weighting that is particular to each knowledge area:
  - In Drugs & Biologics, higher phases are scored higher
  - In Drugs & Biologics, when searching by structure similarity, drugs are sorted by similarity score
  - In Genes & Targets, records with organism = *Homo sapiens* are scored higher

Note that you can sort the Literature list by relevance or by publication date.

Sort by column header

Besides the default *Sorted by relevance*, sorting your results by other criteria is an integral part of data analysis and may allow you to answer questions such as:

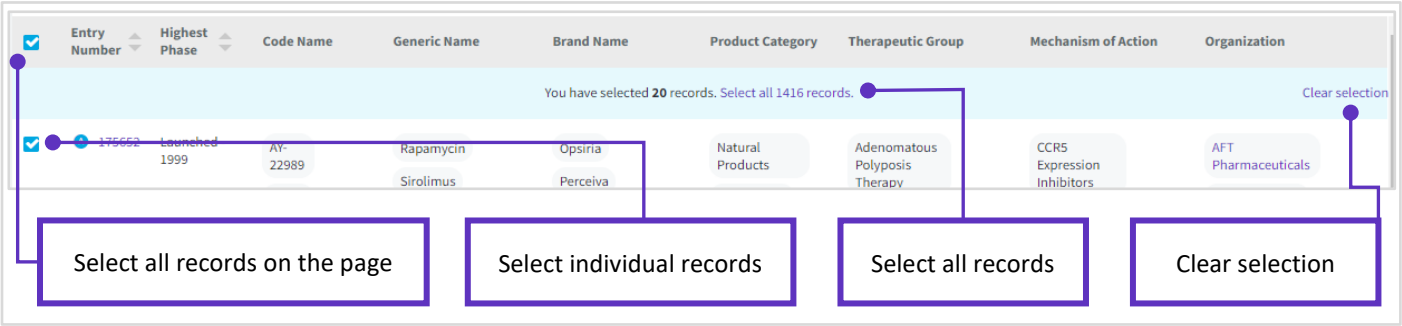
- Which Genes & Targets are associated with disease but not drugs (novelty)?
- Which drugs have been launched most recently (competitive intelligence)?
- Which biomarkers have the most supporting documentation (strength of evidence)?

Bi-directional triangles in the column headers indicate that the column can be sorted by ascending or descending order. Column sort applies only to columns that have one term per cell. For example, in Drugs & Biologics results, there is only one “Highest phase” per drug record, but there may be many “Therapeutic groups” – thus it is possible to sort by Highest phase, but not by Therapeutic group.

Your sorting preferences will be saved for your next visit.

Checkboxes

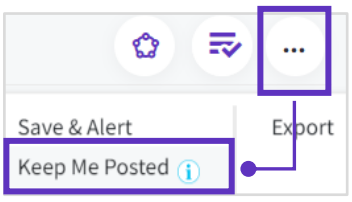
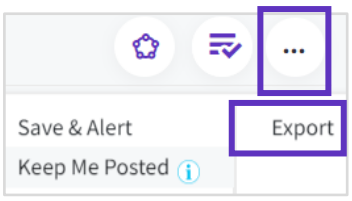
How to select records



Checkbox Actions

Select one or more records and use checkboxes to:

Checkbox Actions

Action	Icon	Use
View related content		View related content in other knowledge areas
View selected records		Remove unselected records from your list
Keep me Posted		Receive an alert each time a selected record is updated Note that using Keep me Posted with checkboxes is only available for Drugs & Biologics, Genes & Targets, Patents and Literature knowledge areas
Export		Export selected records

Creating Alerts

Having completed your search for information on a topic, you can use *Alerts* to stay up to date on new data added to the database going forwards.

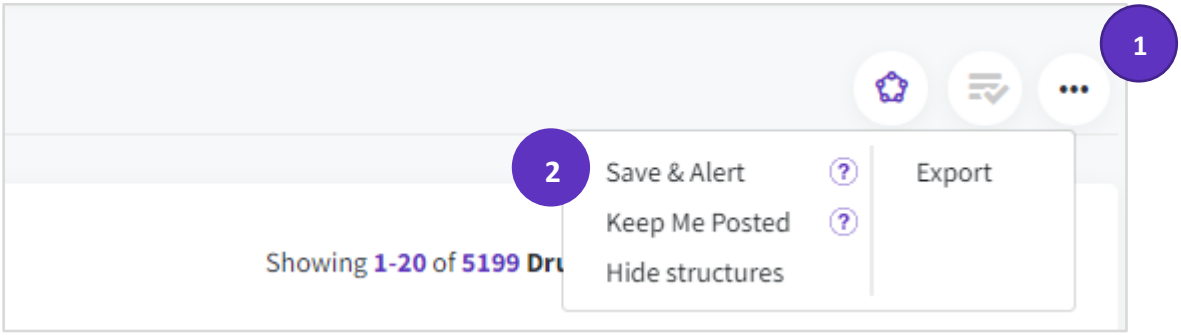
Use alerts to:

- Be notified of new results matching a search you had previously run, using *Save & Alert*
- Monitor changes within your record of interest using *Keep me Posted* alerts
- Know when new terms are added to a *Controlled Vocabulary* of interest

Save & Alert

Use this option when you have run a search, completed your analysis and wish to stay up to date as new results are added matching your search criteria.

How To save your results and set up an alert:

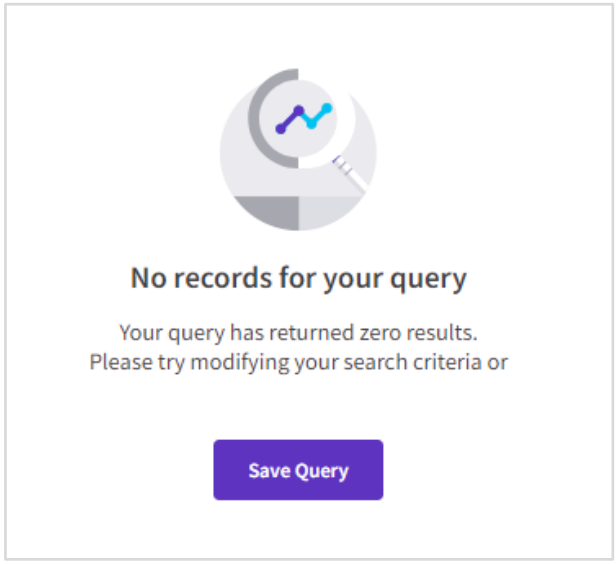


1. Run your search, apply filters and then click the *Options* (…) button.
2. Click *Save & Alert* and complete the dialog box.

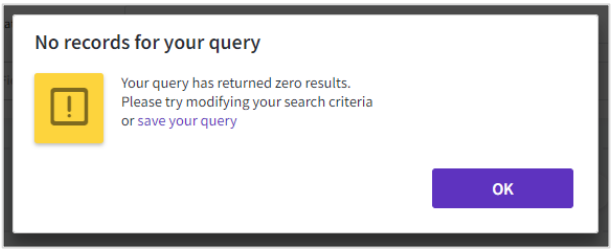
Your search gave 0 results?

You can still save your search and receive alerts if new content is added that matches your criteria.

From Quick Search



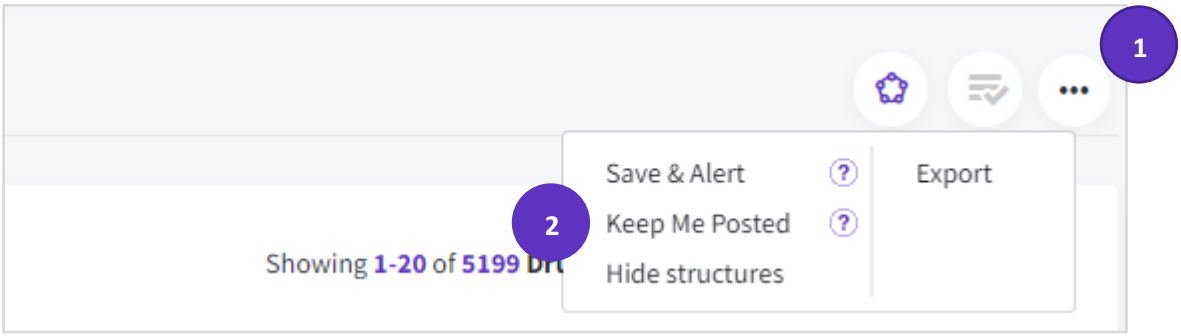
From Advanced Search



Keep Me Posted

Use this option if you want to be notified of updates to individual records of interest.

How To stay up to date on records of interest:



1. Go to your record of interest, or select several using checkboxes, then click the *Options* (…) button.
2. Click *Keep Me Posted* and complete the dialog box.

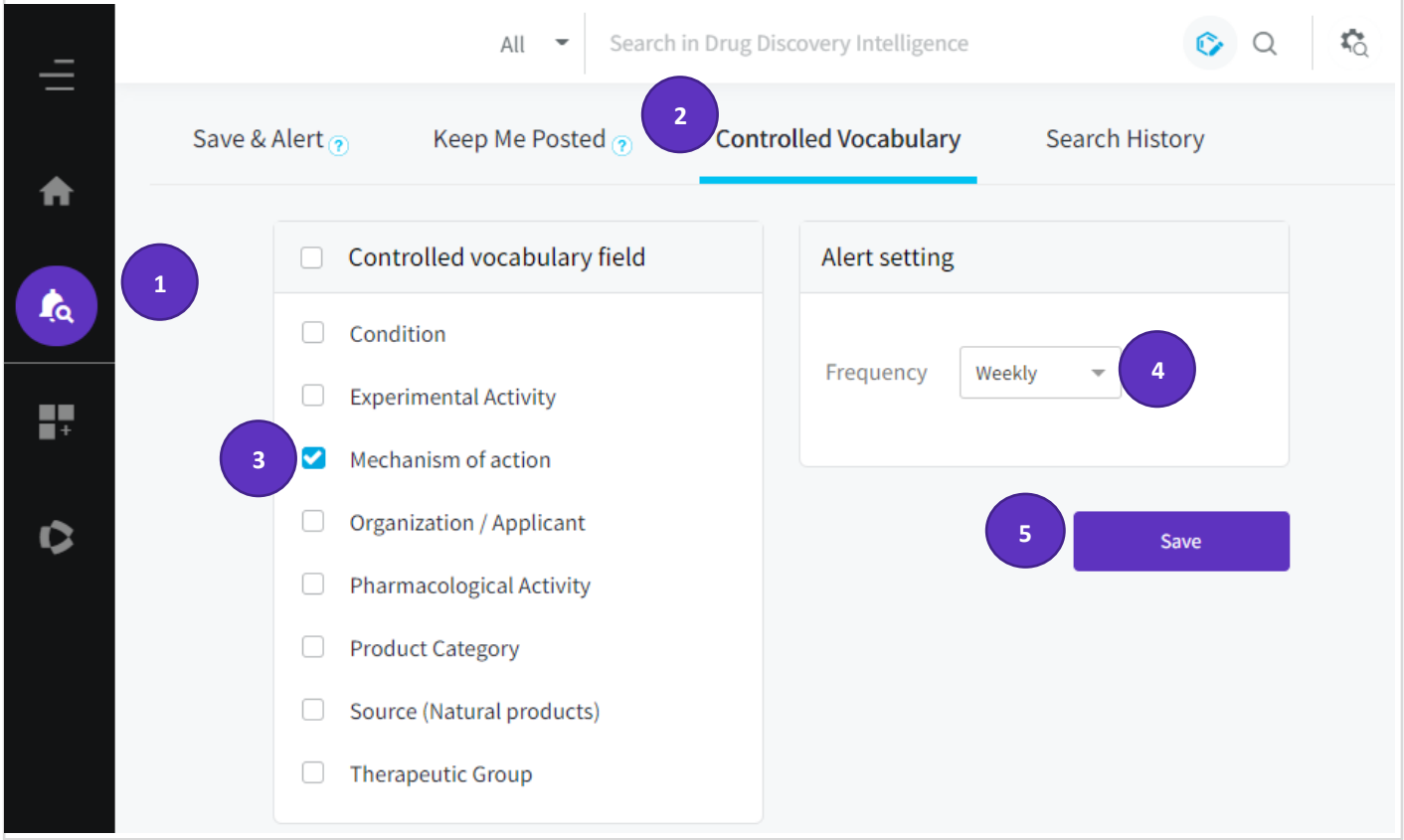
Controlled Vocabulary

Controlled vocabulary alerts are a good way to learn of new categories being added to the controlled vocabulary indexes.

Controlled Vocabulary alerts are useful for:

Scenario	Index
Be notified of new organizations entering the competitive landscape. **Note** that new organizations are added to the list either the first time they file for a drug patent, or that they release information about their first drug in development.	Organization / Applicant
Be notified of first-in-class drugs **Note** that new mechanisms are only added to the list when there is experimental data to demonstrate that a drug has this mechanism	Mechanism of Action
Be notified of new ways of categorizing drugs	Product Category
Be notified of emerging diseases	Conditions

How to set a *Controlled Vocabulary* alert



E-mail notifications

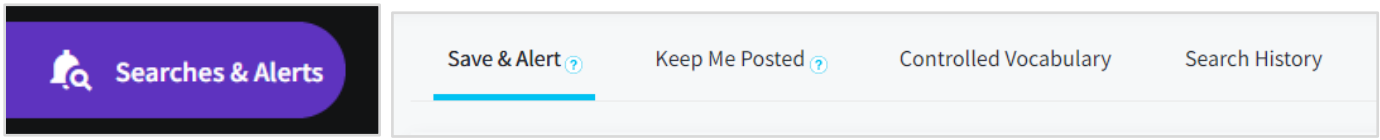
You will receive an e-mail message when new results are available. Follow the links in the emails to view the results in Cortellis Drug Discovery Intelligence.

What do the different links mean in the email notifications?

Alert type	Links	Result
Save & Alert	View results in this notification	Click this link when you want to view new results that have been added since your last alert.
	Results since last visit	This link is useful if you have not kept up to date with all your alert emails. Click this link when you want to view results since the last time you checked.
	All results	View all results as if you ran the query again from zero
Keep me Posted	View records	Takes you to a results list containing the records that have been updated.
Controlled vocabulary	View records	Takes you to the overview page where you can view all records that have been associated with the new term

Searches & Alerts

Click the Searches & Alerts symbol to browse your saved searches, alerts, and search history (last 8 days)

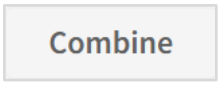


Search History

Included	• Quick Search, with Knowledge Area selected. • Advanced Search.
Excluded	• Quick Search results, with "All" knowledge areas selected. • Applied filters.

Combining your Searches & Alerts

Combine 2 searches from the Save & Alert or Search History tabs. Combined searches must belong to the same Knowledge Area.



Managing your Searches & Alerts

The following actions can be applied:

Edit settings: edit the name, description, frequency, and recipients of your alert.

Edit query:

- If you ran a *Quick Search* then saved your query, this action will take you back to your results where you can edit your search in the quick search box and/or apply filters, then save again.
- If you ran an *Advanced Search* then saved your query, this action will take you back to the advanced search dialog page where you can add more search parameters, search, and then save your edited query.
- In either scenario, this action will create a new saved query, and will not overwrite your existing query.

Run query

Save & Alert: save a search from your search history and set an alert.

Delete query

Share search

Export

Exporting data from Cortellis Drug Discovery Intelligence allows you to:

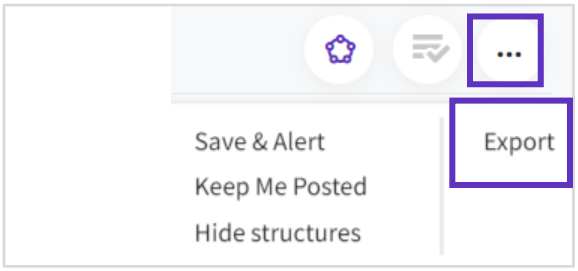
- Share data with colleagues from your organization (subject to copyright clause in Clarivate's **Terms of use**)
- Combine with data from other sources
- Create datafiles to search other sources
- Prepare graphics for presentation

In this section you will learn:

- **How to export**
- **Export file formats**
- **How to create a PDF file from your export**
- **Export limits**

How to export

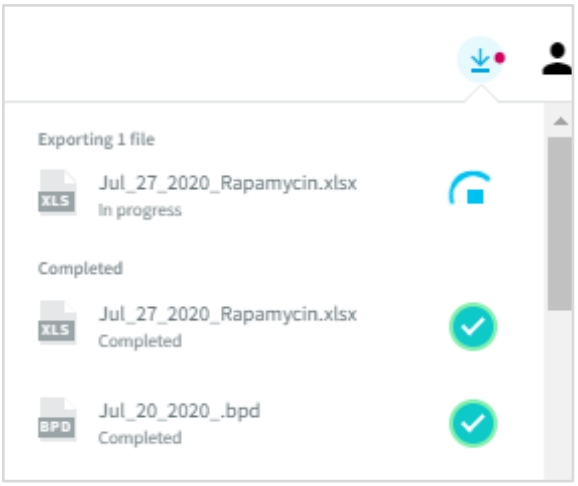
1. Select the (…) options icon in the top right of your results screen, then select *Export.*
2. Follow the instructions in the *Export* dialog box.
3. Your field exporting preferences will be saved for your next visit.



4. A small red dot on the download center and the scrolling wheel indicate that your export is being generated.

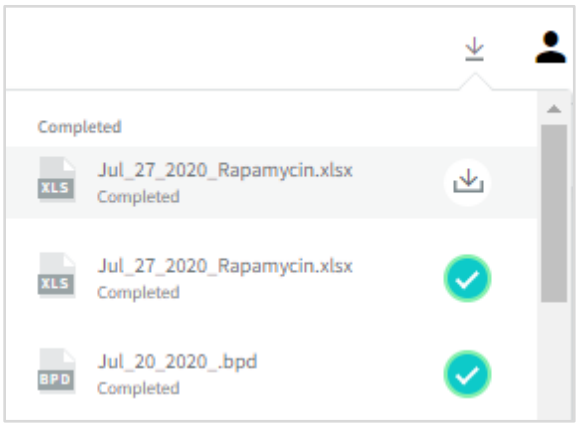
   Note, you can continue to work in Cortellis Drug Discovery Intelligence whilst your export is being generated.

   To cancel your export, just click the blue *In Progress* wheel.



5. Once the Export has been generated, the download centre icon will flash, and the export will be downloaded automatically to your browser window.

   Note, click on the download centre icon to download your export again.
   - Up to 25 exports can be stored in the download centre
   - Your export is available to download again for up to 1 month from when it was generated
   - You may remove exports you don't need anymore



Occasionally an export might fail, indicated by the orange warning symbol. If this occurs repeatedly, please contact Clarivate customer support at **https://support.clarivate.com/LifeSciences/**

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Export formats / Knowledge area

Knowledge area / Function	What can be downloaded	.xlsx	.pdf	.png	.jpg	.brd	.bpd	.sdf	.mol	.mrv	.smi	.ris
Drugs & Biologics	Results list	Y	Y			Y		Y				
	Record	Y	Y			Y		Y				
	Structure can be downloaded from the (…) symbol next to the structure in the drug record								Y		Y	
	Charts can be downloaded from the Drugs & Biologics Overview page			Y								
Genes & Targets	Results list	Y										
	Record	Y										
Organic Synthesis	Results list includes 2 tabs in export: Synthesis Intermediates	Y	Y				Y					
	Record	Y	Y				Y					
Experimental Pharmacology	Results list	Y						Y				
	Mean / Median calculations	Y						Y				
Experimental Models	Results list	Y										
Pharmacokinetics	Results list	Y						Y				
	Mean / Median calculations	Y						Y				
Drug-Drug Interactions	Export not available yet											
Clinical Studies	Results list	Y										
Organizations	Results list includes 3 tabs in export: General information Products in pipeline Marketed products	Y										
	Record includes 3 tabs in export: General information Products in pipeline Marketed products	Y										
Literature	Results list	Y										Y

Patents	Results list by Patent Number	Y					Y	Y				
	Results list by Patent Family	Y										
	Record	Y	Y				Y	Y				
	Patent source document can be downloaded from the patent record		Y									
	Charts can be downloaded from the Patents Overview page			Y								
Disease Briefings	Record		Y									
Biomarkers	Results list	Y										
Structure editor	Marvin JS			Y	Y				Y	Y		

Description of file extensions

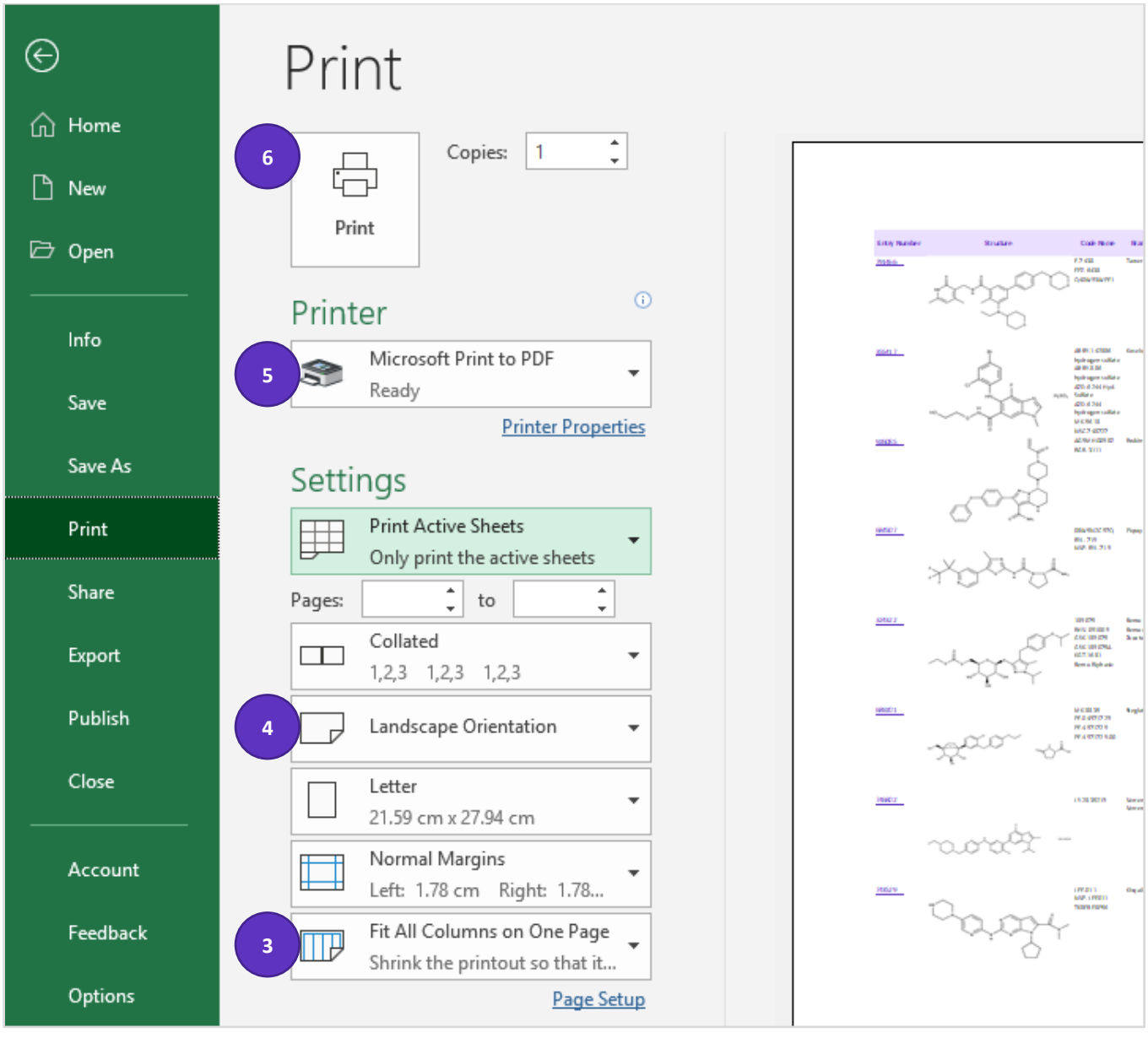
File extension	Description
.xlsx	Microsoft Excel spreadsheet
.pdf	Portable Document Format
.png	Portable network graphics. File format for saving digital images
.jpg	Joint Photograhic Experts Group. File format for saving digital images
.brd	Bizint Smart Charts Drug Development Suite. Supports analysis of drug pipeline and clinical trial data as a foundation for competitive intelligence and product lifecycle planning.
.bpd	Bizint Smart Charts for Patents. Helps you create, customize and distribute tabular reports combining data from the leading patent, gene sequence and non-patent literature databases.
.sdf	Structure data file. File format for saving chemical structure data
.mol	MDL molfile. File format for saving chemical structure data
.mrv	ChemAxon Marvin document. File format for saving chemical structure data for use with ChemAxon Marvin desktop applications
.smi	Simplified molecular-input line-entry specification (SMILES)

Converting your export to PDF

This is not a feature of Cortellis Drug Discovery Intelligence, but you may find these steps handy.

How to save in PDF format from Microsoft Excel

1. Export to Excel, and sort/filter/adjust your columns as desired
2. > File > Print >



Export limits

- Each export operation exports a maximum of 2000 records
- Results lists can be exported, but not individual records
- Export is not available to people participating in a trial of Cortellis Drug Discovery Intelligence
- Export to PowerPoint and to Word is not available

Drugs & Biologics

In Cortellis Drug Discovery Intelligence, Drugs & Biologics are:

- Products that are intended for use in the diagnosis, cure, mitigation, treatment, or prevention of a disease in humans.
- Products that interact with a biological target such as an enzyme, channel or receptor and are intended to affect the structure or function of the human body.

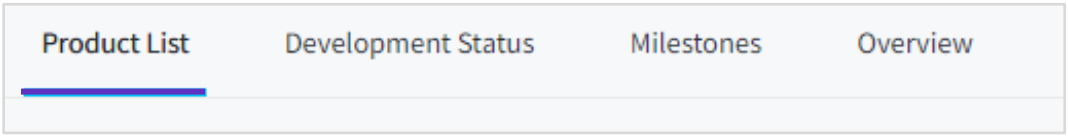
In this help file, the term “drug” is used interchangeably with “Drugs & Biologics”.

Included	• Small-molecule drugs • Biologics • Synthetic and natural products • Radiopharmaceuticals • Diagnostic agents • Therapeutics • Prophylactics • Drug – device combination products
Excluded	• Cosmetics • Veterinary drugs • Agricultural products • Devices • Eobiotics (endogenous compounds)

Drug versus Biologic

Molecule	Definition	
Drug	Drugs that can enter the cell easily and typically have a molecular weight of <900 Daltons	
	Included	• 0 – 350 Da • >350 – 500 Da • >500 – 750 Da • >750 Da
	Excluded	• Generics
Biologic	Generally large, complex molecules produced through biotechnology in a living system	
	Included	• Any chemically synthesized polypeptide, or protein that is greater than 40 amino acids in length • Antibodies • Vaccines • Fusion proteins • Antisense therapies and RNA interference • Gene therapies • Cell therapies • Oncolytic viruses • Combination biologic + small molecule • Follow-on products – biological products highly similar to another approved biological product (reference) and expected to produce the same clinical result as the reference drug • Biosimilars – follow-on products approved by the EMA/FDA/PMDA regulatory agencies

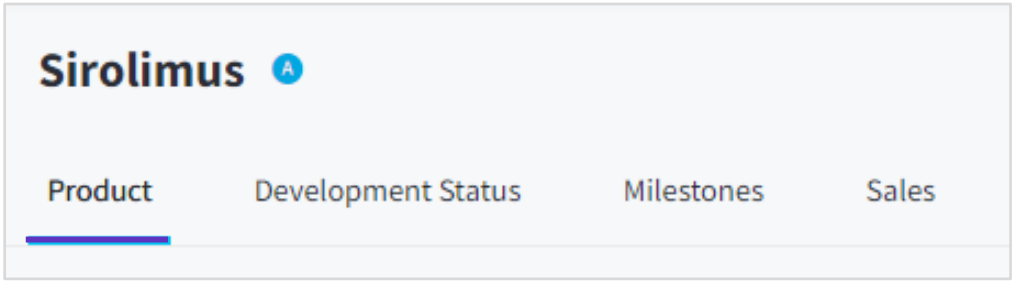
Drugs & Biologics Results List



Information is displayed across four tabs:

- **Product List**
- **Development Status**
- **Milestones**
- **Overview**

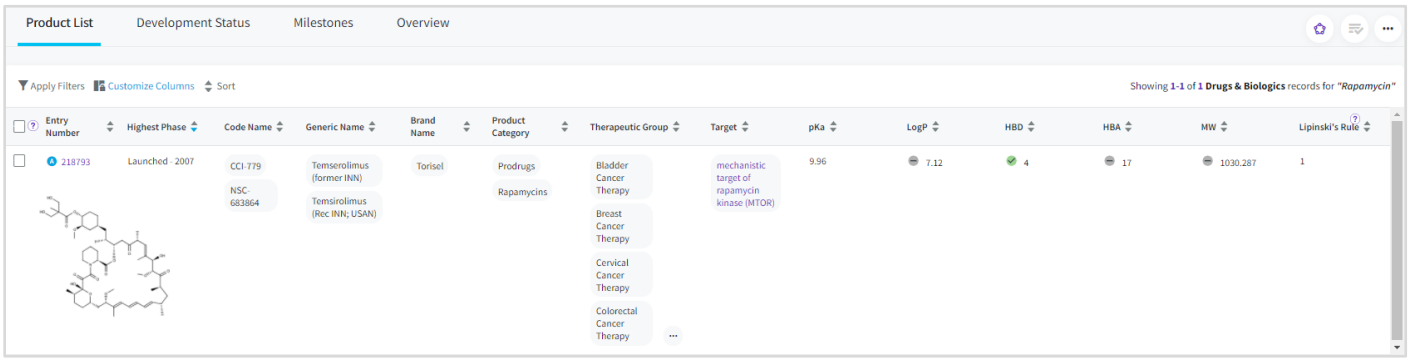
Drugs & Biologics Record



Information is displayed across four tabs:

- **Product** – General information about the product
- **Development Status**
- **Milestones**
- **Sales** – Revenue and sales for selected launched drugs. Data also available through the Organizations knowledge area

Product



Entry Number

A seven-digit unique identifier assigned to every product in Cortellis Drug Discovery Intelligence

Entry numbers are assigned sequentially

Highest Phase

Each drug can have multiple development programs. The Highest Phase is the phase of the most advanced development program.

A drug will have only one Highest Phase, though may have multiple development phases corresponding to the different development programs of that drug

When a product is not under active development, the highest phase corresponds to the stage it had reached while being under active development.

If the product is commercialized, the highest phase is always Launched whether it is under active development or not.

Sort or Filter by Highest Phase when you want to identify drugs by their most advanced development phase, irrespective of the condition they are being developed for, or the country/organization that is developing them.

Phase Definitions

See also the **comparison table of phases and designations**

Phase	Definition
Biological testing	Product tested *In-vitro* Product described in a patent
Preclinical	In-vivo testing in animals has been reported in non-patent sources
IND filed	Application has been filed with the competent authority requesting permission to test the drug in humans Equivalent to Investigational New Drug (IND) Application in the United States
Clinical	The product is known to have been administered to humans in clinical trials, but the study phase is unknown
Phase 0	Human micro dosing studies to a small number of subjects to gather preliminary data on the agent's pharmacokinetic properties
Phase I	Early studies in humans to determine the safety, safe dose range and side effects associated with increasing doses of the drug. The metabolism and pharmacologic actions of the drug are also studied. Usually conducted in a small group of healthy volunteers
Phase I/II	Studies involving phase I and primary phase II trials
Phase II	The study is larger than phase I, and typically conducted in patients that have the condition the drug is targeting. The phase II study is to see if the drug is effective, and to further evaluate the common side effects and safety of the drug
Phase II/III	Studies involving phase II trials and primary phase III trials
Phase III	Large controlled and uncontrolled trials initiated after the phase I and II evidence suggests the drug is likely to be effective. These studies are intended to confirm the effectiveness, monitor the side effects, and collect additional information to support the drug labelling
Pre-registered	The drug sponsors have formally requested approval to market the drug. This phase is the equivalent of a New Drug Application (NDA) in the United States, or a or Marketing Authorization Application (MAA) in the European Union
Recommended approval	The regulatory authority has recommended the drug be approved for marketing. In the United States, the recommendation is given by the corresponding FDA Advisory Committee In the European Union, a Positive Opinion is issued by the Committee for Medicinal Products for Human Use (CHMP)
Registered	The regulatory authority has approved the drug for marketing, but the drug is not yet available on the market
Launched	The drug is being marketed.
Discontinued	The development program has stopped
Withdrawn	The product has been withdrawn from the market after launch
Undetermined	The development status is unknown
Not applicable	Herbal preparations or extracts that are under study as a drug, and already available on the market as an unregulated health food supplement Technologies are indexed as not applicable

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Code Name

Symbol assigned by the organization developing the drug.

Included	• Acronyms • Short descriptive acronyms
Excluded	• Chemical supplier codes

Generic Name

Unique non-proprietary drug names. For example, Acetaminophen is the generic name of the proprietary drug Tylenol.

Included	• Names assigned by the United States Adopted Names (USAN) council • International Non-Proprietary Names (INN) assigned by the World Health Organization • Non-systematic chemical names • Common names • Short descriptive terms

Brand Name

The registered or trademarked name of a drug

Product Category

A controlled-vocabulary index that describes what the product is, rather than how it works (Mechanism of Action), or what it is used for (Therapeutic Group). Product categories include Chemical Categories, Biological Factors, Biotechnology Medicines (Antibodies, Vaccines etc.), Radiopharmaceuticals, Delivery Systems, and Hormones amongst others.

Therapeutic Group

A controlled-vocabulary index that describes the pathological process that the drug is intended to treat. For example, Atopic dermatitis and Eczema belong to *Dermatologic Drugs*, whereas Melanoma belongs to *Oncolytic Drugs.*

Target

The molecular target(s) to which the drug binds.

Mechanism of Action

Describes a biochemical interaction through which a drug produces its pharmacological effect.

Mechanisms are named using the following formula: [name of drug target (molecular or cellular)] + [name of pharmacological effect].

- **Molecular Mechanisms**: a specific biochemical interaction between drug and target molecule.
- **Cellular Mechanisms**: a non-specific biochemical interaction drug and cellular process or biological pathway.

The term Drugs acting on [receptor name] receptors is used when products act on a family of receptors (e.g., acetylcholine receptors) but information on which receptor is being bound is not specified.

Included	• Drugs can have multiple MoAs of molecular or cellular types
Excluded	• Where drugs have pharmacological activity against a broad range of targets, only the mechanisms for the most relevant targets are indexed. For example, in **https://pubmed.ncbi.nlm.nih.gov/32479083/**, supplementary table 1, describes the pharmacological activity of stausporine (control compound) against over 200 kinases – The corresponding mechanisms have not been indexed for Stausporine.

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The main pharmacological effects in the Mechanism of Action index

Effect	Description
Inhibitor	The drug retards or stops the activity (enzyme) or production (gene expression) of its target
Activator/Inducer	The drug increases the activity (enzyme, protein) or production (gene expression) of its target
Ligand	Products that bind to a receptor (they have an affinity constant for the given receptor) but it is not known if they act as agonists or antagonists
Modulator	Products that bind to an allosteric site rather than the orthosteric site of the receptor and modulate the effect of the orthosteric ligands. Modulator is also used to describe mechanisms that are not acting on receptors. This is a wide definition meaning that a product modulates the activity of an effector (e.g., an enzyme or protein) without the exact mechanism being specified
Agonist	The drug binds to the receptor and fully activates it
Antagonist	The drug binds to the receptor (either in the primary site or in an allosteric site) and blocks its activity or blocks the effect of other agonists
Inverse agonist	The drug that binds to the same receptor site as an agonist but induces a pharmacological response that is opposite to that of the agonist
Blocker	The drug prevents the opening of ion channels in order to produce a physiological response in a cell

Organization (Originator)

The body that invented or created the drug.

Physico-Chemical properties

Properties calculated using ChemAxon's Physico-Chemical plugins. For additional support, see ChemAxon's user guides: **Calculator Plugins User's Guide | ChemAxon Docs**

Property	Description
pKa	Equilibrium constant between the protonated and deprotonated forms of the compound, based on it's partial charge distribution at pH7.4
LogS	Aqueous solubility. Measured as log (solubility measured in mol/l)
LogP	The logarithm of the partition coefficient is the ratio of the concentration of the compound in octanol to its concentration in water. This is a measure of its lipophilicity and is useful to help predict the penetration of drugs through biological membranes
LogD	The logarithm of the distribution coefficient is the ratio of the sum of the concentrations of all species of the compound (cation, anion and neutral) in octanol to the sum of the concentrations of all species of the compound in water
TPSA	Topological Polar Surface Area; formed by polarized atoms of the compound. Shows good correlation with passive molecular transport through membranes and useful to estimate the transport properties of drugs.
Rotatable Bonds	Number of rotatable bonds in the compound. One of the topological descriptors

Aromatic Rings	Number of aromatic rings in the compound. One of the topological descriptors
HBD	Hydrogen Bond Donor: the sum of atoms in the molecule which have hydrogen donor properties
HBA	Hydrogen Bond Acceptor: the sum of atoms in the molecule which have hydrogen acceptor properties
MW	Molecular Weight

Lipinski's Rule

Number of physic-chemical parameters (0-4) that comply with Lipinski's rule.

Lipinski's rule of five states that the absorption or permeation of a molecule is more likely when:

- (Molecular weight <=500 g/mol) AND
- (LogP <=5) AND
- (Hydrogen bond donor count <=5) AND
- (Hydrogen bond acceptor count <=10)

Historical note: it is called *rule of five* because the parameters are all multiples of five.

Drug Type

This is a controlled vocabulary index accessible through *Advanced Search* or *Apply Filters*. It can be a useful method to include or exclude drugs or biologics from your search results.

Term	Definition	
Biotechnologies	Biologics produced with the aid of living organisms	

	Included:	• Product category = *Biotechnology medicines*. This includes:
		  • Antibodies and antibody mimetics
		  • Gene therapies
		  • Antisense therapies and RNA therapies
		  • Cell, tissue and Phage therapy
		  • Recombinant proteins
		  • Vaccines

	Excluded	• Drug type = *Peptides*
Combinations	A combination of two or more active ingredients combined in a single dosage form	
	Included	• Combination drugs • Fixed dose combinations
Drug conjugates	The union of a drug with another compound	
	Included	• Antibody-drug conjugates (ADCs) • Polymer-drug conjugates • Peptide-drug conjugates • Phospholipid-drug conjugates • Aptamer-drug conjugates
Herbals	Drugs derived from herbs	
	Included	• Product category = *Herbals*

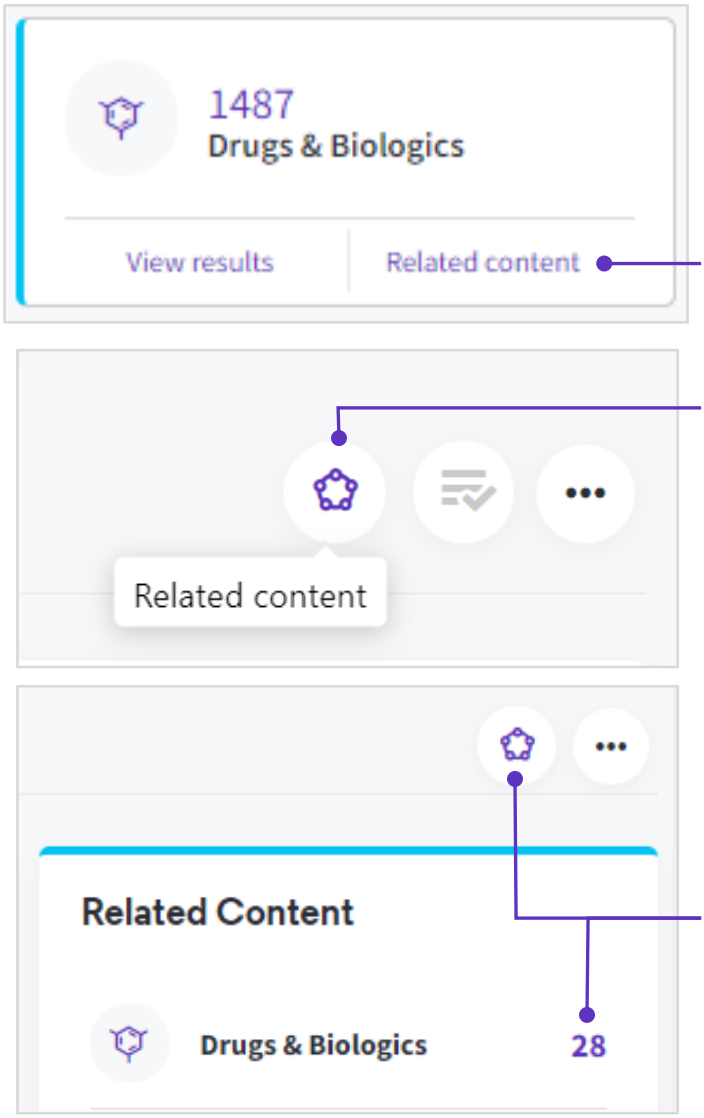
Peptides	Short strings of amino acids	
	Included	• Product category = *Peptides*, except:
	Excluded	• Peptides that also have Product category = *Recombinant proteins* (these are Drug Type = Biotechnologies) • Peptides that also have Product category = *Biological source-derived proteins* (these are Drug Type = Biotechnologies)
Polymers	large molecules made up of a linked series of repeated simple monomers	
	Included	• Product category = *Polymers*
Small molecules	Chemical compounds weighing less than 750 daltons	
	Excluded	• Small molecules with Product category = *Polymers* • Small molecules with Product category = *Peptides*
Others	All other drug types not categorized by the above terms	

Related Drugs & Biologics

Drugs with shared characteristics are related to each other. These relationships are useful when looking for "sister" compounds that are part of a series of related drugs.

If	Then
A series of drugs is being mentioned for the first time	All drugs mentioned in the same source document will be related, and one will be designated a *Lead compound*
A related drug has previously been indexed in the database	Relationships are created for the following: • Salt derivatives are related to each other, and to the corresponding free base/acid • Stereoisomers and tautomers • Metal complexes • Drugs with isotopic labels are related to each other and to the unlabeled parent • Immunoconjugates are related to their corresponding drug and antibody components • Drugs and pro-drugs are related to their metabolites • Mixtures such as fixed dose combinations, co-crystals, herbal extracts, and antibiotic complexes are related to each active component of the mixture • Formulations are related to their active ingredients • Compounds that are structurally very similar are related. For example: biosimilars; murine/human antibodies; amide/acid peptides • Product series produced by a specific production technology • Products without a structure or description can be related to a product with structure/description when they both come from the same organization, target the same condition, and have the same mechanism of action. • Free agents and resin-supported agents are related – only in the Organic Synthesis knowledge area

Three ways to view related Drugs & Biologics:



1. From the *Content Overview* page.
2. From a Drugs & Biologics record.
3. From a Drugs & Biologics results list.

Structure / Sequence

Included	• Atoms and bonds are drawn in full for small molecule drugs and peptides up to 9 amino acids • Peptides from 10-40 aa are drawn in 3-letter sequence
Excluded	• Peptides over 40 aa are considered biologics and sequences are not shown

Structure / Sequence Entry Date

the date the structure or sequence of a product was added to the record.

Included	• Structure Entry Date is shown for drug records with structures entered after August 1, 2012 • View source link is available for structures entered after October 17, 2012 • Sequence Entry Date is shown for biologics records with sequences entered after December 1, 2019, and a few select sequences before that date. • View source link is available for sequences entered after December 1, 2019

Structure / Sequence Entry Date – View Source

The source document from which the structure or sequence was obtained.

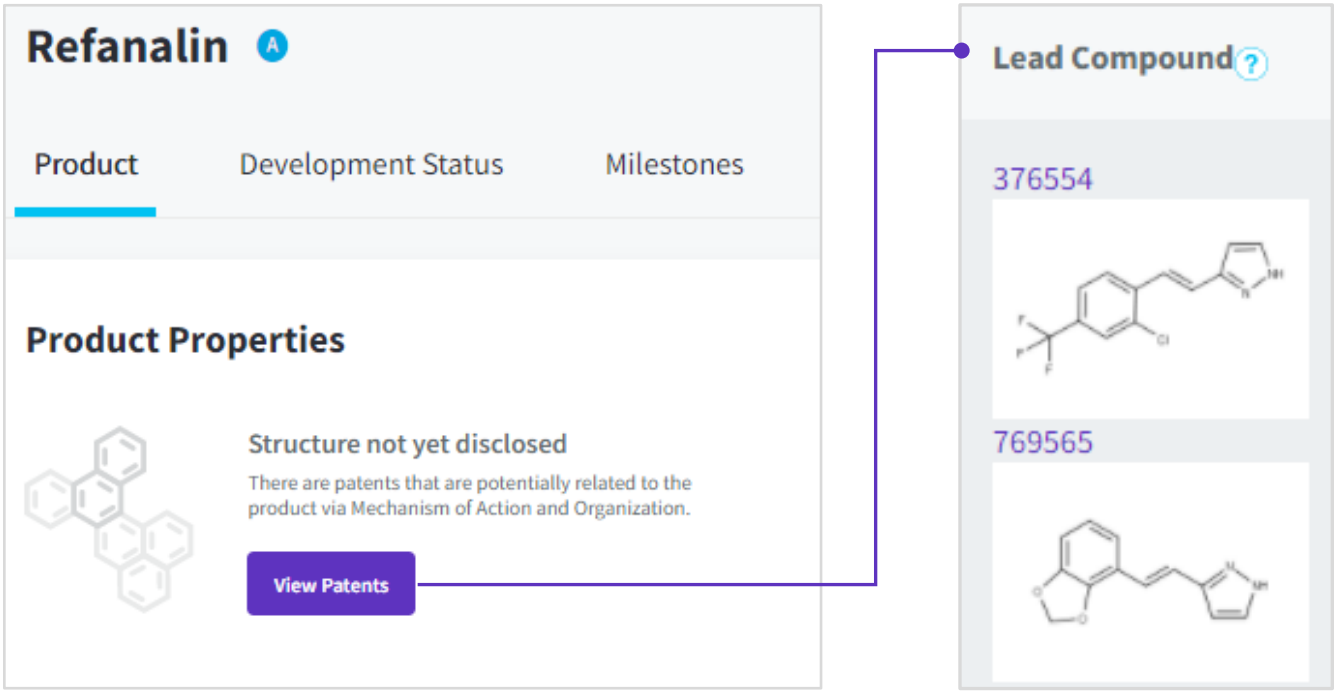
Source types	• Regulatory agency documents (including generic name lists from **USAN council** and **WHO International Nonproprietary Names (INN)** • Corporate communications and websites • Journal articles • Conference abstracts • Patents

Structure not yet disclosed

If the structure has not been disclosed, you may be able to get additional information from related patents:

Included	Patents where the product has the same *Molecular* mechanisms of action, AND the patent applicant (or any of its affiliates) is the same as the originator organization for that drug.
Excluded	Patents where the product has the same *Cellular* mechanisms of action.

How to view potentially related structures:



InChI™

The IUPAC **In**ternational **Ch**emical **I**dentifier is a non-proprietary identifier for chemical substances that can be used in printed and electronic data sources, enabling easier linking of diverse data compilations.

Included	• Standard InChI: **https://iupac.org/who-we-are/divisions/division-details/inchi/** • Standard InChIKey A condensed 27-character representation of the full InChI string, making it ideal for database indexing and retrieval

Chemical Name / Description

Shows the name of each of the elements or sub-compounds that make up the chemical

If the compound has no defined structure, then a short description is given

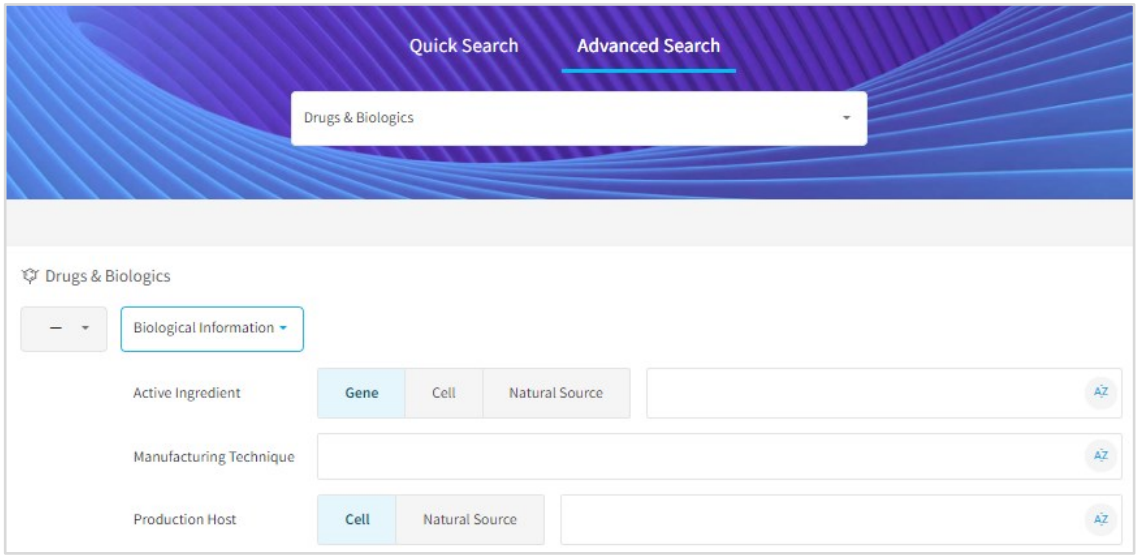
CAS Registry Number®

A unique identifier assigned to chemical substances in the CAS Registry®.
https://www.cas.org/support/documentation/chemical-substances

View Biological Information

Under this link there is a table with indexed information on the biologic, such active ingredient, manufacturing technique, and production host. Links to the source of the information are also provided.

Biological information is searchable from Advanced Search, under Drugs & Biologics:



Under Active Development

The Under Active Development (UAD) label appears on products that are actively moving through the drug R&D pipeline from preclinical stages through registration.

The following conditions must be met for a drug to be *Under Active Development:*

If			Then
Development status	=	• Preclinical testing • IND filed • Clinical • Phases 0-III • Pre-registered, Registered • Recommended Approval	Included
	=	• Biological testing • Launched* • Withdrawn • Discontinued	Excluded
Development activity	=	Development activity of the product has been reported over the past 12-18 months via: • Company press releases • Clinical trial registers • Mention in annual reports • Citation on the company's website (appears in the company's pipeline chart)** • Peer reviewed journal articles*** • Conferences***	Included

* Launched drugs that are not being investigated for new conditions, in new regions or by new organizations are not considered Under Active Development

** If a product appears in a company's pipeline chart and remains there without any change in status or update (even if over 18 months without any updates) then the product will still be indicated as UAD.

*** Journal articles and conferences are only used as sources for development activity if new scientific results are reported AND it is evident that the product is actively moving through the drug development pipeline

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Prescription / Designation Type

Drugs with a *Prescription / Designation Type* have been granted a special status by a regulatory agency to speed their development and incentivize their use. See the **comparison table of phases and designations** for further information.

The Prescription/Designation Type is assigned to a drug record irrespective of its development status or milestones and can be searched using the controlled vocabulary index in Advanced Search.

Term	Authority	Definition
Emergency Use Authorization	All	A drug that is authorized for use during public health emergencies
Pediatric	All	A drug that is authorized for use in pediatric populations
Orphan drug	All	Products that are intended for the diagnosis, prevention, or treatment of rare diseases or life-threatening or chronically debilitating conditions where it is unlikely that expected sales of the product would cover the sponsor's investment in its development. Orphan drugs receive support from regulatory authorities in the clinical development design, market approval application process, as well as certain market exclusivity following market launch
Advanced therapy medicinal product	EMA	Medicines for human use that are based on genes, tissues or cells, and offer groundbreaking new opportunities for the treatment of disease and injury. They benefit from a single evaluation and authorization procedure
Breakthrough therapy	FDA	Breakthrough therapy designation is for new drugs or biologics that are intended to treat a serious or life-threatening condition, and preliminary evidence suggests that it may offer substantial improvement on one or more clinically significant endpoints over other available therapies. This designation offers all the benefits of fast track designation and an FDA commitment to work closely with the sponsor to ensure an efficient drug development program
Fast track	FDA	The Fast Track designation is for new drugs or biologics that are intended to treat a serious or life-threatening condition and have potential to address an unmet medical need. The FDA takes appropriate actions to expedite development and review of the approval application for fast products
PRIME (PRIority MEdicines)	EMA	For medicines that may offer a major therapeutic advantage over existing treatments, or benefit patients without treatment options. Through PRIME, the European Medicines Agency offers early and proactive support to medicine developers to optimize the generation of robust data on a medicine's benefits and risks and enable accelerated assessment of medicines applications
Qualified infectious disease product (QIDP)	FDA	The QIDP designation encourages development of antibacterial and antifungal drugs for the treatment of serious or life-threatening infections. The QIDP offers regulatory advantages over standard designations, such as an additional 5 years of exclusivity, priority review for marketing applications, and eligibility for Fast Track designation
Rare pediatric disease	FDA	A process designed to encourage development of drugs for the prevention and treatment of rare pediatric diseases. The FDA defines a rare pediatric disease as a rare disease that is serious or life-threatening and primarily affecting individuals from age zero to 18. Under this designation the FDA award priority review vouchers to sponsors of rare pediatric disease product applications
Regenerative medicine advanced therapy	FDA	The RMAT may be granted to regenerative medicine therapies (cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products) intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such disease or condition. An RMAT designation includes all the benefits of the fast track and breakthrough therapy designation programs, including early interactions with FDA.
Sakigake	MHLW	A process designed to promote the development of innovative pharmaceutical products, medical devices, and regenerative medicines that can cure a serious illness, unless an established therapy is already available. Applies only to products initially developed in Japan.

- EMA, European Medicines Agency
- FDA, Food and Drug Administration, USA

- LHLW, Ministry of Health, Labor and Welfare, Japan

Lead Compound

When a series of 'sister' compounds are described in a patent or literature article, the series has a designated *Lead compound*

Included	When pharmacology data are presented, the compound with best overall activity profile (efficacy in animal studies, or in-vitro cell-based studies; and in-vivo pharmacokinetics) will be the one designated as the lead compound in the series
How to	Use the *Lead Compound* Yes/No checkboxes in the Filters or Advanced Search to limit your results to lead compounds-only
Uses	Useful when identifying compounds in the earliest stage of development, i.e., Biological Testing and you need to limit the results to the most active in a series

Note, the use of the term 'lead compound' by Clarivate is not a prediction of which compound from the series will go into preclinical or later development. It is simply a tool that allows users who are searching for large volumes of data to pull out a single representative compound from a series, thereby reducing the 'background noise'.

Update History

A history of what type of information was added to the product record, and when.

If you do not see the link "Updates History" in the product record, it means there have not been any updates yet.

This content can be exported by clicking on the download icon within the Update History section.

Product Summary

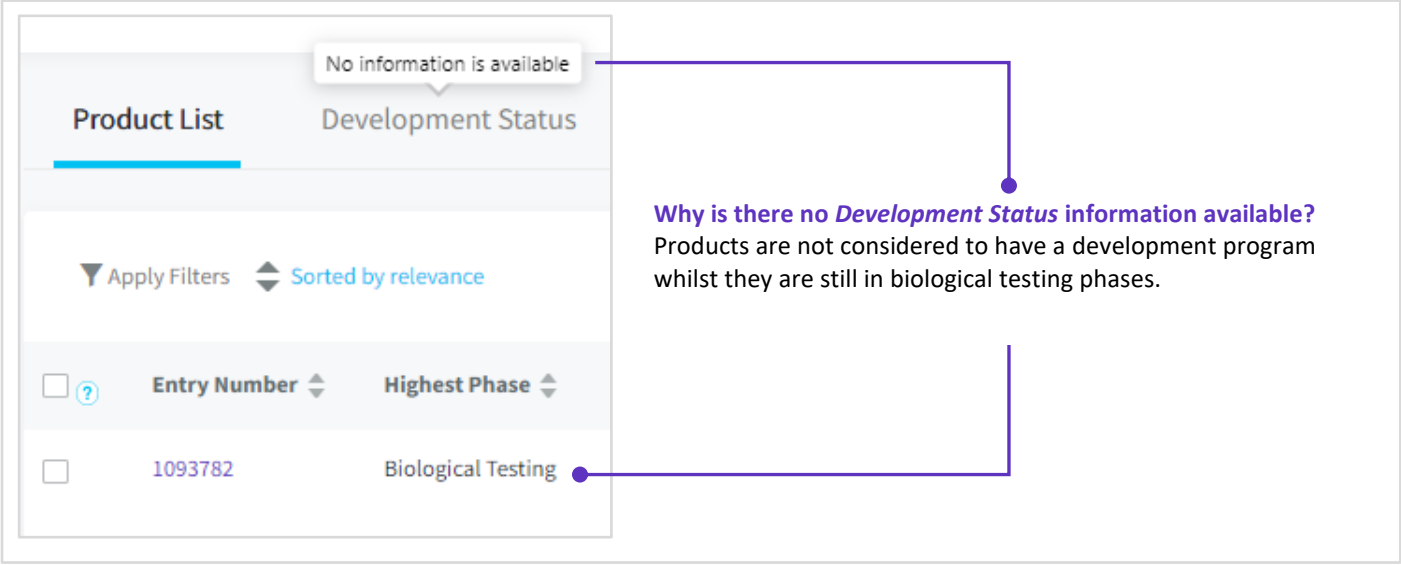
Free text statement of the particulars of the drug.

Written by Clarivate's scientists.

Development Status

Describes the drug's development. A drug may have multiple development programs, and each line in the *Development Status* tab represents a development program.

Included	• At a minimum, a development status must include the development status phase, condition and organization. • All development status phases are covered for development programs in the US, European Union (E.U.) and Japan. • Development status phases *Registered* and *Launched* are included irrespective of geographic region. (The Milestones section has greater coverage by geographic region.)
Excluded	• Products with Highest Phase = "Biological Testing".



Phase

Describes the stage in the development pipeline of a drug.

See Highest Phase for a full list of terms

Condition

The state of health

Included	• Pathological state • Other physical states of the body or body functions

Indication

A free-text field that provides more details about the patient population being treated

Formulation

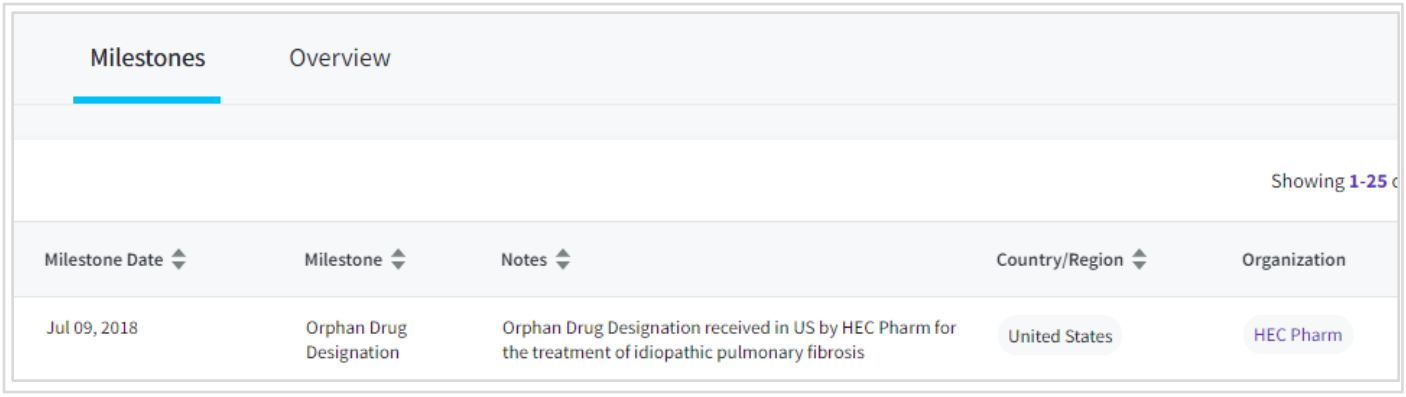
The chemical substance is prepared according to the formula described.

Note, you can search by formulation using Advanced Search > Drugs & Biologics > Development Status > Formulation. This is a free-text field and can be searched using keywords such as "Capsules", "Cream", "Lotion", "Gel", "Infusion", "Injection", "Extended-release", "nanoparticles", "Ointment", "Powder", "Solution", "Sachet", "Stent", "Suspension", "Tablets" and others.

Milestones

A key event in the development of a drug.

Included	• At a minimum, a milestone must include the year, milestone (see table below) and organization.
Excluded	• Products in biological testing are not considered to be in development, and therefore no milestones are created • If a source document describes a development program and a milestone, but without a milestone date, then a development status entry might be created, but NOT the corresponding milestone



Milestone

Acquired	Product has been acquired by an organization
Advanced therapy medicinal product (ATMP) designation	Only applicable for the EU EMA. ATMPs are medicines for human use that are based on genes, tissues or cells, and offer groundbreaking new opportunities for the treatment of disease and injury. They benefit from a single evaluation and authorization procedure
ANDA filed or approved	Abbreviated new Drug Application (ANDA), applies only to the US FDA. An ANDA is submitted to the FDA for review and possible approval of a generic product. Generic drugs must demonstrate equivalence in safety and efficacy to the brand name drug it references. Once approved, an applicant may manufacture and market the generic drug
Application withdrawn	An NDA, sNDA, BLA, sBLA, ANDA (US); MAA (EU); pre-registered (other countries) application has been withdrawn because the drug's sponsor was unable to satisfy the regulatory agencies' requirements.
Approvable letter	Only applicable for the US FDA. An official communication from the FDA to an application for approval sponsor that allows the commercial marketing of the product. An approvable letter informs the applicant that the FDA has completed the scientific review of its application for approval and determined that it can be approved pending resolution of minor deficiencies. No longer being issued as of August 2008 (see Complete Response Letter).
Available for out licensing	The product is available for out licensing.
BLA filed or approved	Biological License Application (BLA), applies only to the US FDA. A request to introduce a biologic product into the US market.
Breakthrough Therapy	Applies only to the US FDA.

	Breakthrough therapy designation is for new drugs or biologics that are intended to treat a serious or life-threatening condition, and preliminary evidence suggests that it may offer substantial improvement on one or more clinically significant endpoints over other available therapies. This designation offers all the benefits of fast track designation and an FDA commitment to work closely with the sponsor to ensure an efficient drug development program
Clinical	The product is known to have been administered to humans in clinical trials, but the study phase is unknown.
Co-developed	Two or more organization are collaborating to develop an asset, under an agreement. All parties share the development costs
Complete response letter	Applies only to the US FDA. In August 2008, the FDA discontinued using "Approvable letters" (see above) when making decisions on marketing applications. In their place, the FDA issues a "Complete response letter" to indicate that the review cycle for an application has been completed, and that the application is not ready for approval.
CTA filed	Clinical Trial Application (CTA). Applies only to the European Medicines Agency (EMA), Health Canada and European State Regulatory Agencies. Authorization has been requested for a clinical trial on a medicinal product for human use.
Discontinued	The development program has stopped.
Emergency Use Authorization	A drug that is authorized for use during public health emergencies. Includes "Interim Order Authorization" issued by Health Canada. In Cortellis Drug Discovery Intelligence this milestone applies only when the *Milestone Condition* = "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection (COVID-19)".
Fast Track designation	Applies only to the US FDA. The Fast Track designation is for new drugs or biologics that are intended to treat a serious or life-threatening condition and have potential to address an unmet medical need. The FDA takes appropriate actions to expedite development and review of the approval application for fast products
IDE filed	Investigational Device Exception (IDE). Applies only to the US FDA. The IDE allows an investigational device to be used in a clinical study in order to collect safety and effectiveness data to support a Premarket Approval Application (PMA)
IND filed	Investigational new drug (IND). Applies to the US FDA and other regulatory agencies except for the EMA, Health Canada and European Regulatory State Agencies. When a drug's sponsor wants to test a molecule for therapeutic potential in humans, it is designated as a new drug and the sponsor must apply for an IND. The IND allows the sponsor to ship the investigational drug across state lines for the purposes of clinical investigation
Launched	The drug has been launched on the market
Licensed	An organization licenses a drug when it sells all or part of the rights it holds on the drug to another organization. For example, the owner can sell rights to develop the drug for a specific condition or to develop and market the drug in specific countries
License agreement terminated	A previous license agreement has expired or been cancelled
License option agreement	A company retains the right to obtain a license on an asset at some time in the future
License option not exercised	A company that has previously signed an License option agreement reports that the option will not be exercised
MAA filed or approved	Marketing Authorization Application (MAA). Applies only to the EU EMA.

	An application made to a European regulatory authority for approval to market a medicine within the European Union
MAA refusal	Marketing Authorization Application (MAA) refusal. Applies only to the EU EMA. Applicable to those drugs that have been filed for approval, have received a first negative opinion by the Committee for Medicinal Products for Human Use (CHMP), and after a requested re-examination by the company, the EMA still finds the drug not ready for approval
NDA filed or approved	New Drug Application (NDA), applies only to the US FDA. The NDA is a formal proposal from the drug's sponsor to the FDA that they approve the new drug for sale and marketing in the US
Negative opinion	Applies only to the EU EMA. The Committee for Medicinal Products for Human Use (CHMP) reviews all medical products for which community-wide marketing approval is sought. If the CHMP considers that the product cannot be approved, they issue a negative opinion
Not Approvable letter	Applies only to the US FDA. A Not Approvable Letter informs the sponsor seeking Premarketing Approval (PMA) of a device that the FDA has completed the scientific review of the PMA and does not believe that it can be approved because of the significant deficiencies identified in the letter. No longer being issued as of August 2008 (see Complete Response Letter)
Not Recommended approval	Applies only to the US FDA An FDA advisory committee, made up of outside experts, considers that the drug is not approvable.
On hold	A sponsor has temporarily put its product development program on hold. Usually as a voluntary measure.
On-hold lifted	Hold on drug development is lifted
Orphan Drug designation	Products that are intended for the diagnosis, prevention, or treatment of rare diseases or life-threatening or chronically debilitating conditions where it is unlikely that expected sales of the product would cover the sponsor's investment in its development. Orphan drugs receive support from regulatory authorities in the clinical development design, market approval application process, as well as certain market exclusivity following market launch
Phase 0	Human micro dosing studies to a small number of subjects to gather preliminary data on the agent's pharmacokinetic properties
Phase I	Early studies in humans to determine the safety, safe dose range and side effects associated with increasing doses of the drug. The metabolism and pharmacologic actions of the drug are also studied. Usually conducted in a small group of healthy volunteers
Phase I/II	Studies involving phase I and primary phase II trials
Phase II	The study is larger than phase I, and typically conducted in patients that have the condition the drug is targeting. The phase II study is to see if the drug is effective, and to further evaluate the common side effects and safety of the drug
Phase II/III	Studies involving phase II trials and primary phase III trials
Phase III	Large controlled and uncontrolled trials initiated after the phase I and II evidence suggests the drug is likely to be effective. These studies are intended to confirm the effectiveness, monitor the side effects, and collect additional information to support the drug labelling
PMA filed or approved	A premarket approval (PMA, the equivalent of an NDA for drugs). Applies only to the US FDA. A formal proposal from a medical device's sponsor to the FDA that they approve the new device for sale and marketing in the US. PMA applies only to Class III medical devices which are ones that support or sustain human life or is of substantial importance in preventing impairment of human health or presents a potential, unreasonable risk of illness or injury
Preclinical	In-vivo testing in animals has been reported in non-patent sources

Pre-registered	The drug sponsors have formally requested approval to market the drug. This phase is the equivalent of a New Drug Application (NDA) in the United States, or a or Marketing Authorization Application (MAA) in the European Union
PRIME designation	Priority Medicines (PRIME) scheme. Applies only to the EU EMA. For medicines that may offer a major therapeutic advantage over existing treatments, or benefit patients without treatment options. Through PRIME, the European Medicines Agency offers early and proactive support to medicine developers to optimize the generation of robust data on a medicine's benefits and risks and enable accelerated assessment of medicines applications
Positive opinion	Applies only to the EU EMEA. When the Committee for Medicinal Products for Human Use (CHMP) considers that the medicinal product is approvable it gives a positive opinion
Qualified Infectious Diseases Product (QIDP)	Applies only to the US FDA. The QIDP designation encourages development of antibacterial and antifungal drugs for the treatment of serious or life-threatening infections. The QIDP offers regulatory advantages over standard designations, such as an additional 5 years of exclusivity, priority review for marketing applications, and eligibility for Fast Track designation
Rare pediatric designation	Applies only to the US FDA. The FDA defines a rare pediatric disease as a rare disease that is serious or life-threatening and primarily affecting individuals from age zero to 18. Under this designation the FDA award priority review vouchers to sponsors of rare pediatric disease product applications
Recommended approval	The regulatory authority has recommended the drug be approved for marketing. In the United States, the recommendation is given by the corresponding FDA Advisory Committee. In the European Union, a Positive Opinion is issued by the Committee for Medicinal Products for Human Use (CHMP)
Registered	The regulatory authority has approved the drug for marketing, but the drug is not yet available on the market
Regenerative Medicine Advance Therapy (RMAT) designation	Applies only to the US FDA. The RMAT may be granted to regenerative medicine therapies (cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products) intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such disease or condition. An RMAT designation includes all the benefits of the fast track and breakthrough therapy designation programs, including early interactions with FDA.
Sakigake designation	Applies only to the Japan Ministry of Health, Labour and Welfare (MHLW). Sakigake is a system that promotes the development of innovative medicines, medical devices and regenerative medicines that can cure a serious illness, unless an established therapy is already available. Applies only to products initially developed in Japan.
sBLA filed or approved	Supplemental Biological License Application (sBLA). Applies only to the US FDA. A request to authorize a change in the manufacturing process or label of a biologic product. Changes may include a new formulation, strength, or indication
sNDA filed or approved	Supplemental New Drug Application (sNDA). Applies only to the US FDA. A request to authorize a change in the manufacturing process or label of a drug. Changes may include a new formulation, strength, or indication
Withdrawn	The product has been withdrawn from the market after launch

Milestone Notes

Free-text comments added by Clarivate's scientists.

Pharmacology

Includes all target-related experimental activity values for the drug.

Target Action

Primary – Those activities related to the primary target actions for the drug.

Other – Those activities related to non-primary target actions for the drug.

Included

- Apply filters.
- Download.
- Click **See Results in Experimental Pharmacology** to analyze further

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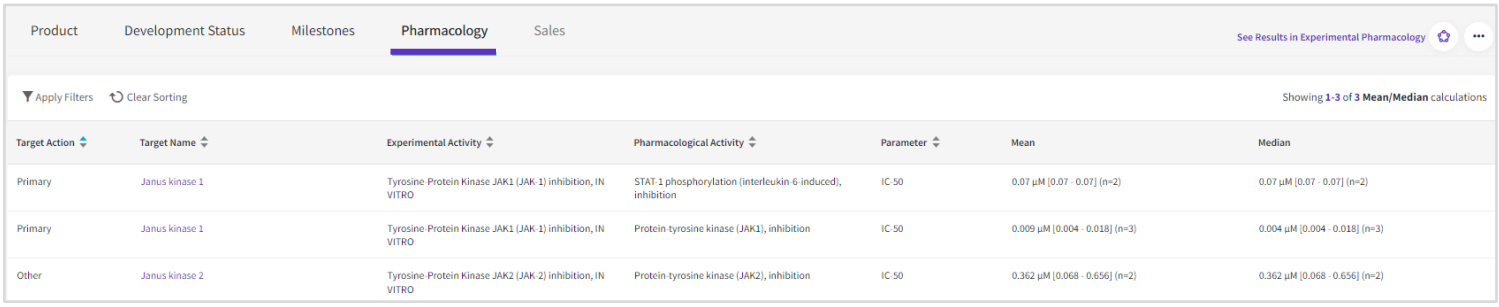

Overview

Search results displayed as graphs.

Included

- Apply filters. Filters are retained across tabs
- Download graph in .png format
- Click a segment on a graph to refine the visualization
- There are a few categories that appear by default. Use *Add New Chart* to customize the Overview to your needs

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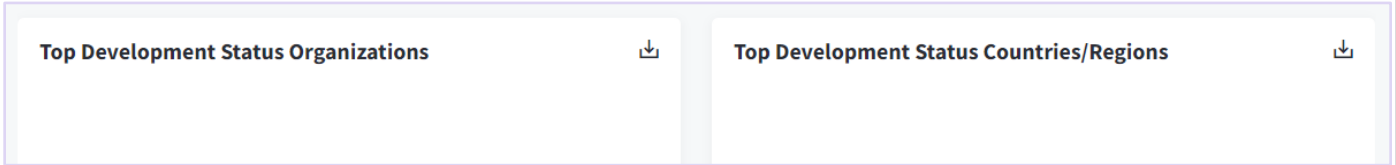
Why are the Development Status charts empty?



Drugs and biologics in the biological testing or preclinical phases are not considered to have a development program, and therefore the *Development Status* charts will be empty.

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Highest Phase, Phase, Designation and Milestone Comparison Table

There are four different fields used to describe how a drug moves through the development pipeline:

<table>
<tr><th>Field</th><th>Description and Uses</th></tr>
<tr><td>Highest Phase</td><td>Each drug can have multiple development programs. The Highest Phase is the phase of the most advanced development program.
• A drug will have only one Highest Phase, though may have multiple development phases corresponding to the different development programs of that drug.
• Sort or Filter by Highest Phase when you want to identify drugs by their most advanced development phase, irrespective of the condition they are being developed for, or the country/organization that is developing them.

If — Then
The drug is under active development — • Highest Phase = the phase of the most advanced development program that is being actively pursued
• Occasionally you might find a drug with some development programs that are active and others that are inactive. In this case, the drug's Highest Phase = the development status phase of the highest active development program; and inactive programs for that drug are ignored
The drug is no longer under active development — • There are no active development programs for this drug, and therefore, Highest Phase = the phase of the most advanced development program
The drug has been launched — • Highest Phase = always "Launched", irrespective of whether the drug is under active development or not</td></tr>
<tr><td>Prescription/Designation Type</td><td>A regulatory designation that is applied irrespective of the development program.
These drugs have been granted a special status by a regulatory agency to speed their development and incentivize their use. Often the designation is given because the drug addresses an area of unmet medical need or has substantial advantages over existing treatments.
• This index uses similar terminology to Milestones, but where a milestone is an event that has a date, a Prescription/Designation Type is not an event, and a date is not needed. For example, a press release states the FDA has granted a rare pediatric disease designation, orphan drug designation and fast track designation to BLU-782 (EN 1061893), though no date was specified for when these designations were given.
• Search by Prescription/Designation Type when you want to identify drugs that have received a special regulatory designation irrespective of the condition they are being developed for, the country/organization that is developing them, or the date the designation was given</td></tr>
<tr><td>Development Status Phase</td><td>The Development Status Phase describes the stage in drug development for any given program.
Each drug can have multiple development programs, and each development program is described in a separate row in the Development Status tab.
• A drug may have multiple Development Status Phases.
• Use Development Status Phase in combination with other Development Status filters to identify drugs by specific development programs. For example, a search for Development Status Condition = Cancer, AND Development Status Phase = Phase II will retrieve a list of drugs that have development programs that are in phase II for cancer treatment at the time of the search
• Sort or Filter by Development Status Phase in combination with other Development Status fields such as Condition, Country/Region or Organization when you want to identify drugs by their specific development programs</td></tr>
<tr><td>Milestone</td><td>Just as each drug can have multiple development programs; so, each development program can have multiple milestone events as it moves through the development pipeline. Therefore, a drug may have multiple Milestones
• For example, a drug development program may advance from preclinical to clinical phase I testing – this event is a milestone; and then subsequently advance from phase I to phase II testing – this would be another milestone event.
• Sort or Filter by Milestone in combination with other Milestone fields such as Condition, Country/Region or Organization when you want to identify drugs by their specific milestone events.</td></tr>
</table>

Condition, Development Status Condition and Milestone Condition

Condition refers to the physiological state of the body and its functions. The *Conditions* controlled vocabulary index is used at three distinct levels within the Drugs & Biologics area:

- At the highest level, a Condition term is directly associated with a product when the product is intended to diagnose or to treat a condition. All drugs and biologics in Cortellis Drug Discovery Intelligence are associated with a condition; and searching or filtering by Condition is the broadest form of search. It will retrieve all drugs and biologics associated with the condition irrespective of whether it is in biological testing (discovery) or it is in the development pipeline
- At the next level, a Development Status Condition is associated with a drug development program once the drug has entered the drug development pipeline. Searching or filtering by Development Status Condition will only identify drugs where development activity has been reported for that condition, and excludes all drugs in biological testing
- At the most detailed level, Milestone Condition refers to a milestone event in the drug's development for that condition. Searching or filtering by Milestone + Milestone Condition will identify drugs that have passed certain milestone events in their development for a given condition.

Therapeutic Group versus Condition

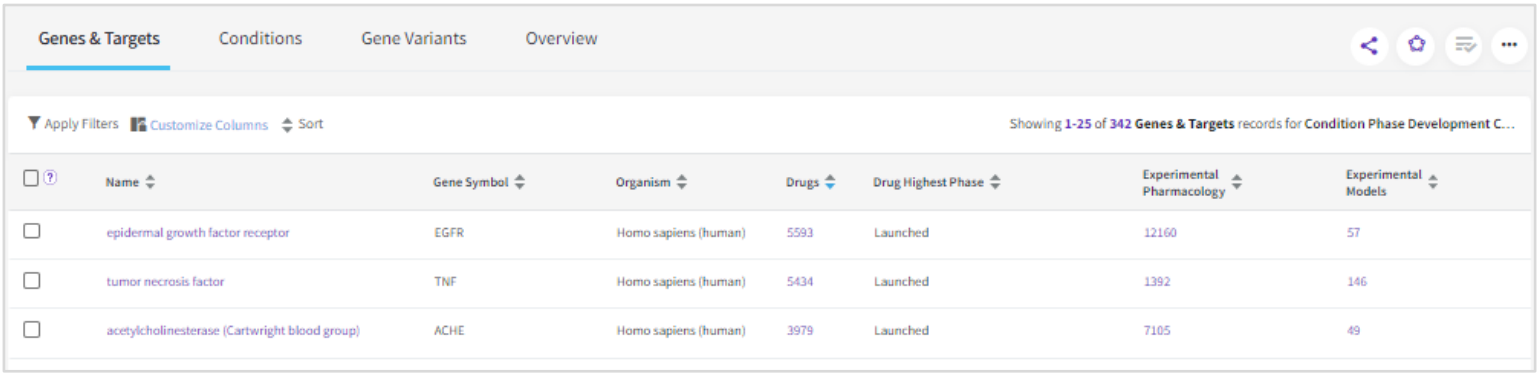
There is some overlap between these two concepts as they both relate to physiological states. Therapeutic Group can be a useful alternative to Condition because it allows the user to segment results in different ways. For example, "Hypertension" is found in the *Conditions* index, and "Antidiuretics", a class of drugs used to treat hypertension is found in the *Therapeutic Group* index.

Genes & Targets

DNA segments and the corresponding polypeptide chains.

Use this knowledge area to find validated and potential druggable targets.

Genes & Targets Results table



Drugs

Drugs are associated with targets via a ***Mechanisms of Action***.

Drug Highest Phase

The most advanced development program for the drug, irrespective of the condition, country or organization developing the drug. See ***Highest Phase*** in the Drugs & Biologics chapter.

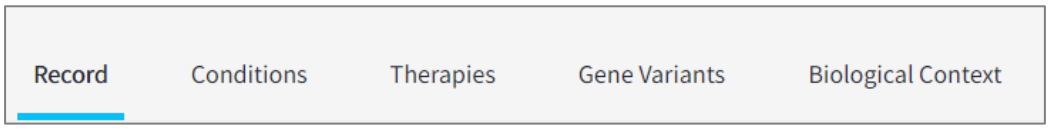
Condition Filters

There are several ways to search (advanced search), filter, rank and view the Genes & Targets data by *Condition*, all of them use the same *Conditions* controlled vocabulary, but apply slightly rules and give different results:

Filter	Description	Rules
Condition	Broadest filter. Used to evaluate all conditions associated with a gene/target.	• The development status conditions of drugs related via a Mechanism of Action • The development status conditions of biotechnology therapies where the gene or protein is a component of the therapy • Biological rationale implicates a gene/target in a pathological process (see Targetscapes) • The gene variant conditions
Condition Phase Development > Condition, Highest Phase and Under Active Development	Filter for drug targets where the drug is in a specific phase of development for the condition. Useful to validate genes/targets according to the development status of associated drugs.	• The development status conditions of drugs related via a Mechanism of Action
Gene Variant > Condition	Filter for genes where a gene variant – condition has been tested. Useful to find potential novel drug targets.	• The gene variant conditions

Genes & Targets Record

Note the five tabs across the top dividing the content into distinct areas:



Gene/Target Name, Symbol, Synonyms, Biological Processes, Subcellular Location, Molecular Function and Tissue Expression

Main name and symbol obtained from the HUGO Gene Nomenclature Committee (HGNC).
Synonyms are taken from the Entrez and Uniprot databases, scientific articles, meeting abstracts or patents.
Biological processes are taken from Entrez Gene.
Subcellular Locations are taken from Uniprot (GO – Cellular Component).
Molecular Function is taken from Entrez Gene and Tissue Expression from NCBI.
These are the **Experimental evidence codes** considered: Inferred from Experiment (EXP), Inferred from Direct Assay (IDA), Inferred from Physical Interaction (IPI), Inferred from Mutant Phenotype (IMP), Inferred from Genetic Interaction (IGI), and Inferred from Expression Pattern (IEP). In addition, only Traceable Author Statement (TAS) processed are included.

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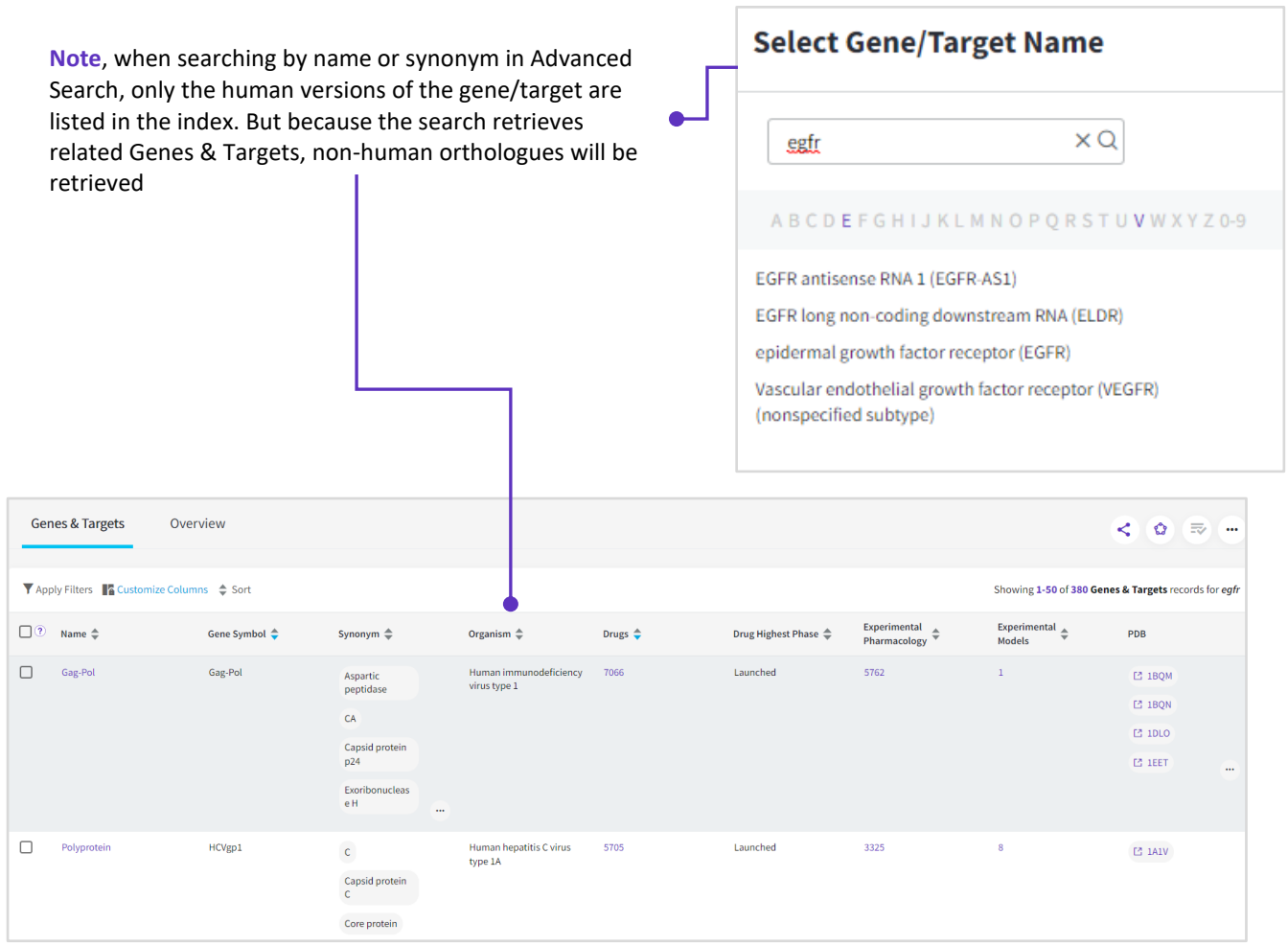
Note, when searching by name or synonym in Advanced Search, only the human versions of the gene/target are listed in the index. But because the search retrieves related Genes & Targets, non-human orthologues will be retrieved



Related Genes & Targets

Included	• Orthologs • Complex/subunit relationships

Conditions Tab

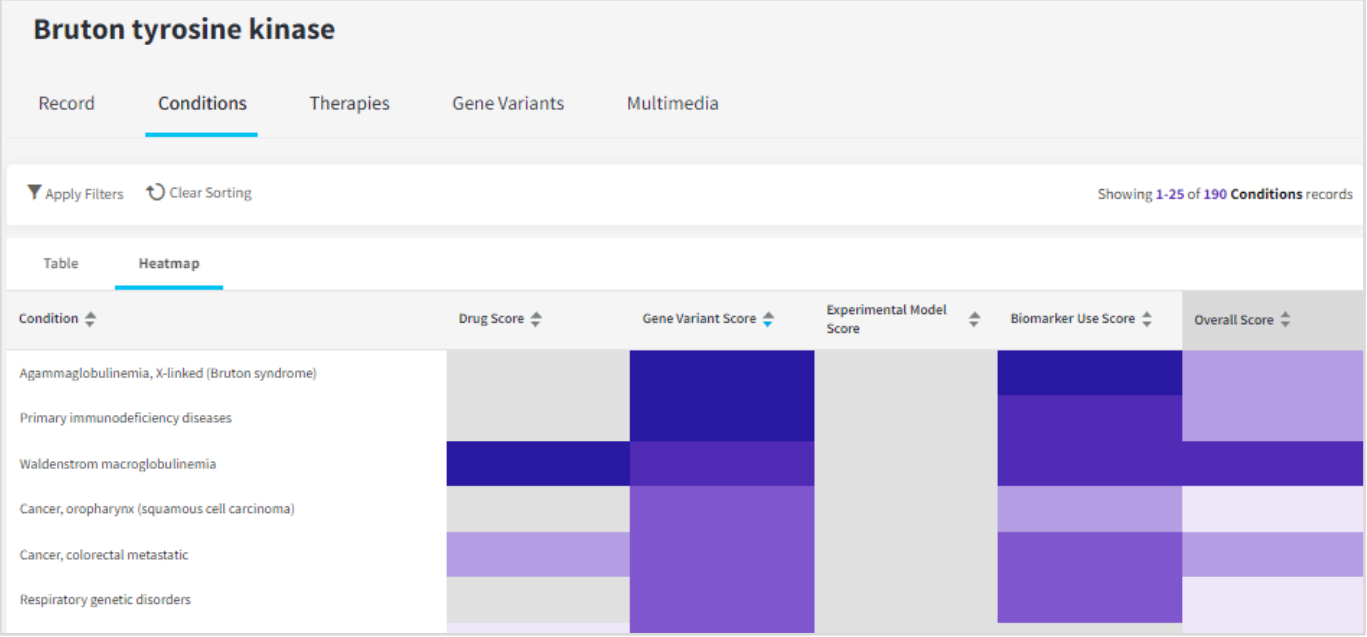
Use this area to:

- Understand the evidence behind a gene/target – condition association.
- Rank conditions based on strength of evidence.
- Explore possible new conditions that your drug could be developed for.
- Repurpose a drug to potential new conditions.

Heatmap

Shows all conditions associated to the target and provides a series of scores to rank the strength of the evidence behind a target-disease association. These scores are in-house algorithms designed to facilitate the target validation process and support different use cases, with the two main use cases being:

- Target identification and prioritization
- Drug repurposing



Score definitions

OVERALL SCORE

The Overall Score is a composite of 4 scores drawn from 4 different areas within Cortellis Drug Discovery Intelligence:

1. The Drug Score, based on the drug-target-condition association.
2. The Gene Variant Score, based on the gene variant-condition association.
3. The Experimental Model Score, based on the experimental model-condition association.
4. The Biomarker Use Score, based on the biomarker use-condition association.

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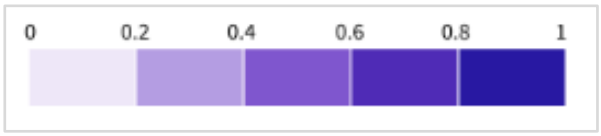
CALCULATION OF OVERALL SCORE

The Overall Target-Condition Score is calculated by taking into consideration the above 4 scores (each described in more detail further down).

Scores range from 0 to 1, and each composite score is weighted differently according to Cortellis editorial criteria:

$$Overall\ Score = \frac{\left((Drug\ Score * 6) + (Gene\ Variant\ Score * 1.5) + (Experimental\ Model\ Score + 1.5) + (Biomarker\ Use\ Score * 1)\right)}{10}$$

For easier visualization, scores are displayed following a color scale. The value of the score is displayed when hovering over the target-disease cell. Information behind the score can be easily accessed by clicking on the cell of interest.



DRUG SCORE

The Drug Score ranks the strength of evidence behind a target-condition association based on:

a) Number of drugs associated to the target via the mechanisms of action which are associated to the condition of interest.

b) Highest phase of development of the drugs in a) for the condition of interest.

c) Number of drugs Under Active Development in a) for the condition of interest.

See Drug Score algorithm details

GENE VARIANT SCORE

Genetic modifications can cause, increase or decrease the risk for a particular disease. Cortellis Drug Discovery Intelligence provides information about the genetic variants described for the different diseases as well as their effect (e.g., causative, increased risk, undetermined…)

The Gene Variant Score ranks the strength of the biological evidence behind a target-condition association based on:

a) The number of gene variants associating a target to a disease.

b) The effect of the gene variants in a).

c) The number of sources supporting b).

See Gene Variant Score algorithm details

EXPERIMENTAL MODEL SCORE

Experimental Models are key to predicting the efficacy/safety of a therapeutic agent in humans. Often, models are manipulated to replicate a human condition, symptom, or syndrome by genomic variation. In Cortellis Drug Discovery Intelligence details on the model genomic variation are described within the characteristics (e.g., knock-out, knock-in, knock-down…).

The Experimental Model Score ranks the strength of the evidence supporting a given Target-Condition association based on:

a) The characteristics of the experimental model.

b) The number of Drugs associated to a).

c) The number of sources associated to a).

See Experimental Model Score algorithm details

BIOMARKER USE SCORE

Biomarker uses describe the context in which a biomarker has been studied. It is defined by the role of the biomarker (e.g., diagnosis, monitoring disease progression, screening…), the associated condition, and the validity (depending on how widely accepted they are among the scientific community).

The Biomarker Use Score ranks the strength of evidence supporting a given Target-Condition association based on:

a) The type of roles behind the target-condition association.

b) The Highest Validity for the roles in a).

c) The number of supporting literature and patents.

See Biomarker Use Score algorithm details

Table

Shows all conditions associated to the target based at least on one of these factors:

- **Drugs**

Clickable links to drugs associated with the target via a mechanism of action. Only drugs with the corresponding development status condition are included.

- **Condition Highest Phase**

Of the drugs included in the *Drugs* column, the most advanced drug development status phase for the condition is shown. Useful to rank conditions based on how far the associated drugs have got down the development pipeline

A - at least one drug is under active development for that condition

- **Gene Therapies**

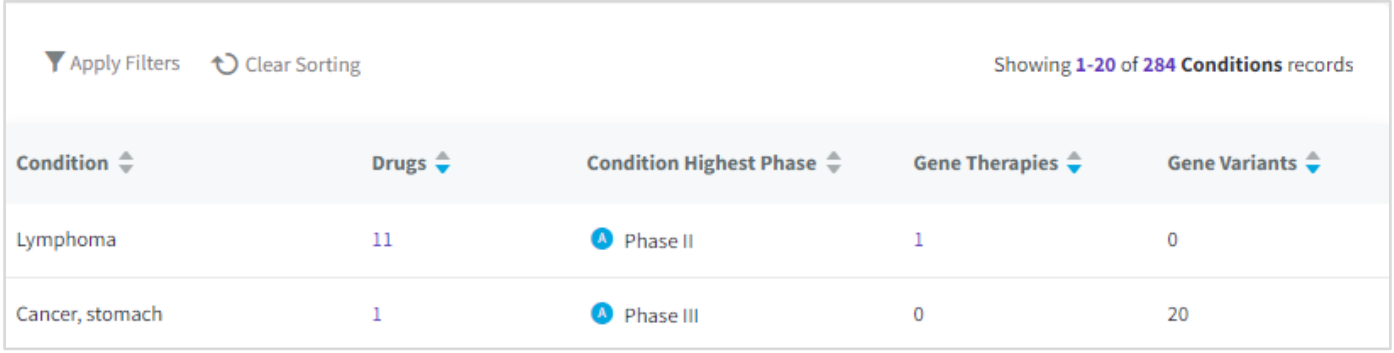
Clickable links to biotechnology drugs where the gene/protein is a component of the therapy.

- **Gene Variants**

Number of gene variants associated with each condition. Useful to understand the strength of evidence for a condition when there is little or no evidence from associated drugs.

Tip. To identify novel conditions for a target:

1. Sort by Gene Variants column to bring conditions with most gene variants to the top
2. Sort by Drugs column to bring conditions with 0 drugs to the top.
3. Top ranked conditions are those with most evidence from gene variant association studies and without evidence from drug interaction studies



Therapies

Use this area to link to the related content in the Drugs & Biologics area

Mechanisms of Action

A list of mechanisms by which drugs act on the target. See the section Target

The molecular target(s) to which the drug binds.

Mechanism of Action for a description of this index.

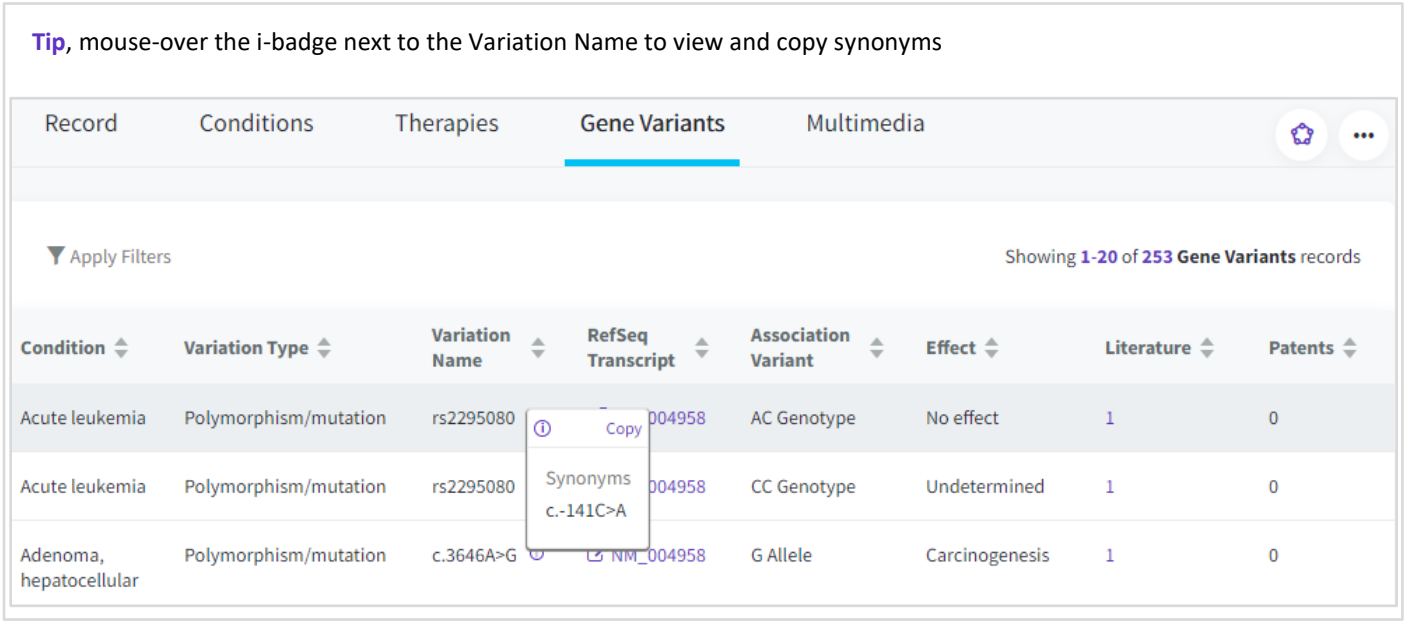
Gene Therapies

A list of biotechnology therapies where the gene/protein is a component of the therapy

Gene Variants

Describes the association between a genetic variation and a condition.

Tip, mouse-over the i-badge next to the Variation Name to view and copy synonyms



Variation Type

Polymorphism /mutation (SNP)	A single nucleotide variation in a genetic sequence that occurs at appreciable frequency in the population (MESH). SNPs occur when a single nucleotide (building block of DNA) is replaced with another. These changes include: missense mutations, synonymous mutations, frameshift variants, nonsense (stop-gain mutations), inversions, and also nucleotide insertions, nucleotide deletions and nucleotide duplications.
Gene deletion	Deletion of the sequence of a whole gene. Deletion of a gene or part of a gene can lead to a disease of abnormality (*National Human Genome Research Institute*).
Gene amplification	Increase in the number of copies of a gene. It is the replication of a gene (at a single locus) so that multiple copies can be transcribed at once.
Gene duplication	Process by which the sequence of a gene is duplicated. In contiguous gene duplication, the duplicated sequence coexists within the boundaries set by the start and stop signals for protein synthesis of the original, resulting in a larger transcription product and protein at the expense of the preexisting protein. In discrete gene duplication, the duplicated sequence is outside the start and stop signals, resulting in two independent genes and gene products. Gene duplication may result in a multigene family; supergenes or pseudogenes (*MESH*). Gene duplication involves copying a gene multiple times.
Allelic loss	The loss of one allele at a specific locus, caused by a deletion mutation; or loss of a chromosome from a chromosome pair, resulting in abnormal hemizygosity. It is detected when heterozygous markers for a locus appear monomorphic because one of the alleles was deleted. When this occurs at a tumor suppressor gene locus where one of the alleles is already abnormal, it can result in neoplastic transformation (*MESH*).
Epigenetic change	A genetic process by which the adult organism is realized via mechanisms that lead to the restriction in the possible fates of cells, eventually leading to their differentiated state. Mechanisms involved cause heritable changes to cells without changes to DNA sequence such as DNA methylation, which results in selective gene expression or repression (*MESH*). Changes in the regulation of the expression of gene activity without alteration of genetic structure (*NCI Thesaurus*).

Variable number of tandem repeats	Tandem arrays of moderately repetitive, short (10-60 bases) DNA sequences which are found dispersed throughout the genome, at the ends of chromosomes (telomeres), and clustered near telomeres. Their degree of repetition is two to several hundred at each locus. Loci number in the thousands but each locus shows a distinctive repeat unit (*MESH*).
Short tandem repeats	A variety of simple repeat sequences that are distributed throughout the genome. They are characterized by a short repeat unit of 2-8 base pairs that is represented up to 100 times *(MESH).*

Variation Names

Polymorphism /mutation (SNP)

- If the genetic variant is a single nucleotide polymorphism (SNP), the SNP number should be identified from the dbSNP database (http://www.ncbi.nlm.nih.gov/sites/entrez?db=snp). The SNP numbers always start with "rs" followed by numbers, for example, rs36219204. Whenever the genetic variant has an "rs" number available, this will be the main name of the genetic variant in Cortellis Drug Discovery Intelligence.
- When the genetic variant does not have an "rs" number, then it can be named by describing the nucleotide change at the genomic (for example, g.5432C>G) or coding sequence (c.345A>T) level.
- Similarly, a variant can be named by the amino acid change, e.g. L45P, in which case the change must be described as p.Leu45Pro or p.L45P.

Type	GV name
Polymorphism/mutation (nucleotide insertion)	c.51_52insGAGA
Polymorphism/mutation (nucleotide duplication)	c.2091dup
Polymorphism/mutation (nucleotide deletion)	c.446_449del
Polymorphism/mutation (frameshift variants)	p.Arg97Profs*23
Polymorphism/mutation (stop-gain variants)	p.Arg97Profs*23
Polymorphism/mutation (inversion variants)	c.166_167inv

Epigenetic changes

Depending on what authors mention in the full text, it can be "Hypermethylation", "Methylation", "Hypomethylation", "Promoter Hypermethylation", etc.

Type	GV name
Epigenetic change	Hypomethylation

Gene duplication

Gene Short name followed by *dup*.

Type	GV name
Gene duplication	ERB3dup

Gene deletion

Gene Short name followed by *del.*

Type	GV name
Gene deletion	ERB3del

Gene amplification

Gene Short name followed by *amp*.

Type	GV name
Gene amplification	ERB3amp

Allelic loss

Gene Short name followed by *LOH.*

Type	GV name
Allelic loss	ERB3LOH

Variable number of tandem repeats

Repeated sequence between brackets and the number or range of the repetitions. When the number of the repetitions is not detailed, we will write *n*.

Type	GV name
Variable number of tandem repeats	(CAG)n
Variable number of tandem repeats	(CAG)2-5
Variable number of tandem repeats	(86bp)n

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Association Variant

It is the combination of the “Prefix” and the “Disease Association”:

- Prefix: name of the allele(s) that are associated with the disease/drug response.
- Disease association: it indicates if the association is with the allele, genotype, haplotype, compound heterozygote, etc.

Disease association	Definition	Possible prefixes
Allele	The gene variant associates with the disease/drug response with the allele.	A, C, G, T,dup, del, ins, etc.
Compound heterozygote	The patient bears 2 different pathogenic mutations in the same gene. When two different SNPs are carried by the paternal and maternal chromosomes for one gene; in other words, the maternally-inherited gene carries a variant SNP at one location, and the paternally-inherited gene carries a variant SNP at a different location. Examples: [rs12345(;)rs4567] c.[845G>A(;)187C>G] [rs12345;rs4567] c.[845G>A;95_96delG] [rs12345];[rs4567] c.[845G>A];[187C>G	The prefix will be a composition of sev prefixes. For example: AAC TLOH Adel
Diplotype	The patient is heterozygous for mutations at two separate genetic loci, which together manifest disease. Examples: MEFV:[rs12345];TNFRSF1A:[rs3445] MEFV:c.[442G>C];TNFRSF1A:c.[224C>T]	The prefix will be a composition of sev prefixes. For example: AAC TLOH Adel
Double heterozygote	The patient is heterozygous for mutations at two separate genetic loci, which together manifest disease. Examples: MEFV:[rs12345];TNFRSF1A:[rs3445] MEFV:c.[442G>C];TNFRSF1A:c.[224C>T]	The prefix will be a composition of sev prefixes. For example: AAC TLOH Adel
Genotype	The authors specify the zygosity of both alleles of the patient/s. Examples: rs3135388 c.569 G>A (CAG)2-5	The prefix contains the 2 alleles, it car homozygote or heterozygote. For exa TT TG (CAG)3(CAG)3
Haplotype	It is a set of DNA variations, or polymorphisms, from the same chromosome that tend to be inherited together. It can also be assigned when articles mention that one patient carries more than one genetic variant and the patient is not a compound heterozygote or a double heterozygote. Examples: [rs3745393;rs3745393;rs17160147; rs17202517]. HSPA1L:[rs2075799];HSPA1A:[rs1043618; rs562047];HSPA1B:[rs539689]	The prefix will be a composition of sev prefixes. For example: AAC TLOH Adel
Hemizygote	An individual having only one allele at a given locus. The reason may be that the mutation is present in the X chromosome in males, or it can be due to the loss of the other allele through a mutation (e.g., chromosome deletion).	The prefix is the single allele. For exan A, C, T, G

	Example: c.569 G>A	
Homoplasmy	The situation in which there is no mixture of mitochondrial DNA endowment in a patient. Example: m.4302A>G	The prefix is the allele of the mitochondrial DNA. For example: A, C, T, G
Loss of heterozygosity	The loss of one allele at a specific locus, caused by a deletion mutation; or loss of a chromosome from a chromosome pair, resulting in abnormal hemizygosity.	• LOH
Not specified	Selected when the full text does not mention the exact disease association.	Depends on the info available in the full text.

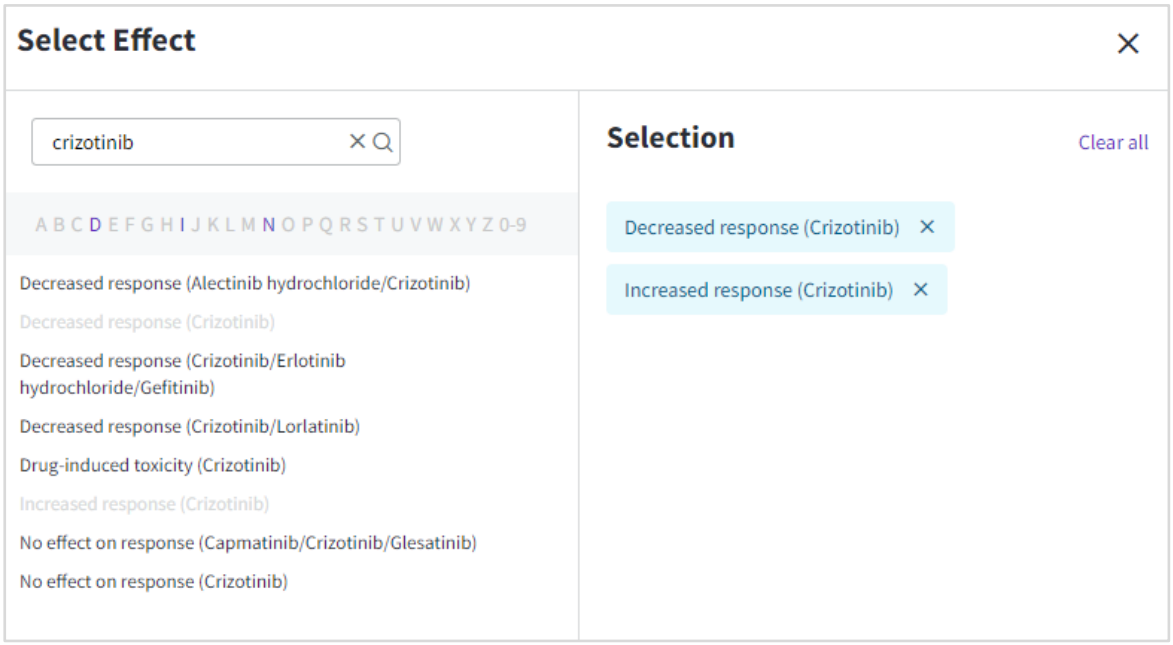
Effect

The process through which the genetic variation influences the condition or treatment response.

Increased risk	The presence of the selected allele/genotype/haplotype is associated with a higher probability of developing the disease. This can be clearly mentioned in the article, or it can be indicated with an odds ratio higher than 1 and a significant P value. Authors can also mention: “there is a positive correlation between the A allele and cancer development”, which means that the A allele is associated with increased risk of cancer.
Decreased risk	The presence of the selected allele/genotype/haplotype is associated with a lower probability of developing the disease. This can be clearly mentioned in the article, or it can be indicated with an odds ratio lower than 1 and a significant P value. If the article mentions that the presence of the genetic variant is protective, decreased risk should be selected as the effect. Authors can also mention: “there is a negative correlation between the A allele and cancer development”, which means that the A allele is associated with decreased risk of cancer.
Causative	The presence of the selected allele/genotype/haplotype is directly causing the disease. This means that an individual carrying the mutation will have the disease. This can be clearly mentioned in the article or can be indicated if there are pedigree studies, inheritance of the disease is mentioned, there is a description of the mode of inheritance of the disease (dominant, recessive), there are functional studies of the mutant protein or authors conclude that the mutation is pathogenic because they use methods of prediction, for example, SIFT, PolyPhen2, MutationTaster, CADD. If all the methods lead to the same conclusion, we can consider that the effect is causative. If some methods say that the mutation is pathogenic, while others say that is benign or silent, the effect will be “undetermined”.
No effect	The genetic variant is not associated with the disease (p> or = 0.05). If the article does not mention any p value but there is an odds ratio with a confidence interval (CI) that includes the 1, e.g., OR= 2.5, CI (0.98-5.5), the association is non-significant, and the effect should be “no effect”, “no effect on prognosis”, “no effect on response” or “no effect on toxicity”. If authors use methods of prediction of the pathogenicity of the mutation (for example, for example, SIFT, PolyPhen2, MutationTaster, CADD) and all methods lead to the conclusion that the mutation is benign or neutral, then the effect should be “No effect”.
Good prognosis	The genetic variant is associated with a favorable outcome, for example, prolonged survival.
Undetermined	The effect of the mutation on the disease is not clear.
Poor prognosis	The genetic variant is associated with an unfavorable outcome, for example, decreased survival.

No effect on prognosis	The genetic variant has no effect on outcome.
Increased response (product)	The presence of the genetic variant is associated with better response to the drug. If the authors say that the genetic variant affects the prognosis of the patients, for example, increased disease-free survival, even if they do not mention anything about the response to the drug, the effect should be increased response (product). This effect should also be applied when a mutation is identified after sequencing the DNA from patients sensitive to a specific treatment AND there are functional studies confirming the sensitivity of such mutation to that specific treatment (generally by transfecting the mutation into disease cell lines).
Decreased response (product)	The presence of the genetic variant is associated with worse response to the drug. If the authors say that the genetic variant affects the prognosis of the patients, for example, decreased disease-free survival, even if they do not mention anything about the response to the drug, the effect should be decreased response (product). This effect should also be applied when a mutation is identified after sequencing the DNA from patients resistant to a specific treatment AND there are functional studies confirming the resistance of such mutation to that specific treatment (generally by transfecting the mutation into disease cell lines). EXAMPLE: T790M mutation and gefitinib: PMID 15737014.
No effect on response (product)	The genetic variant has no effect on the response to the drug.
No response (product)	The presence of the genetic variant renders the individual unresponsive to the drug. For example, carriers of the A allele of the c.35A>T SNP in the ABCB1 gene do not respond to treatment with docetaxel.
Drug-induced toxicity (product)	The presence of the genetic variant is associated with drug-induced adverse events.
Decreased drug-induced toxicity (product)	The presence of the genetic variant is associated with decreased risk of drug-induced adverse events.
No effect on drug-induced toxicity (product)	The presence of the genetic variant has no effect on drug-induced adverse events.

Tip, to identify gene variants that influence/predict a response to a drug, use Advanced Search > Genes & Targets > Gene Variant > Effect > index > search for the generic name of the drug, and select the appropriate responses. If the drug has no generic name, use the code name. For example, to look for gene variants that affect the response to *Crizotinib*:



Applying these filters will retrieve a list of corresponding genes. After that you will need to click on each gene individually, go to the *Gene Variants* tab and *Apply Filters* > reapply the same criteria as above.

Biological Context

Images and cartoons showing the gene/target in the context of molecular pathways and biological processes.

Pathway maps

Graphic images representing complete biochemical pathways or signaling cascades in a commonly accepted sense. Pathway maps can refer to pathological or physiological processes.

Please note, these pathway maps are interactive so that you can trace cascades and navigate to associated targets.

Targetscapes

Images that map the molecular landscape for a condition, showing druggable targets and their effects on biological processes.
Please note, these images are interactive so that you can navigate to your target of interest from the targetscape.

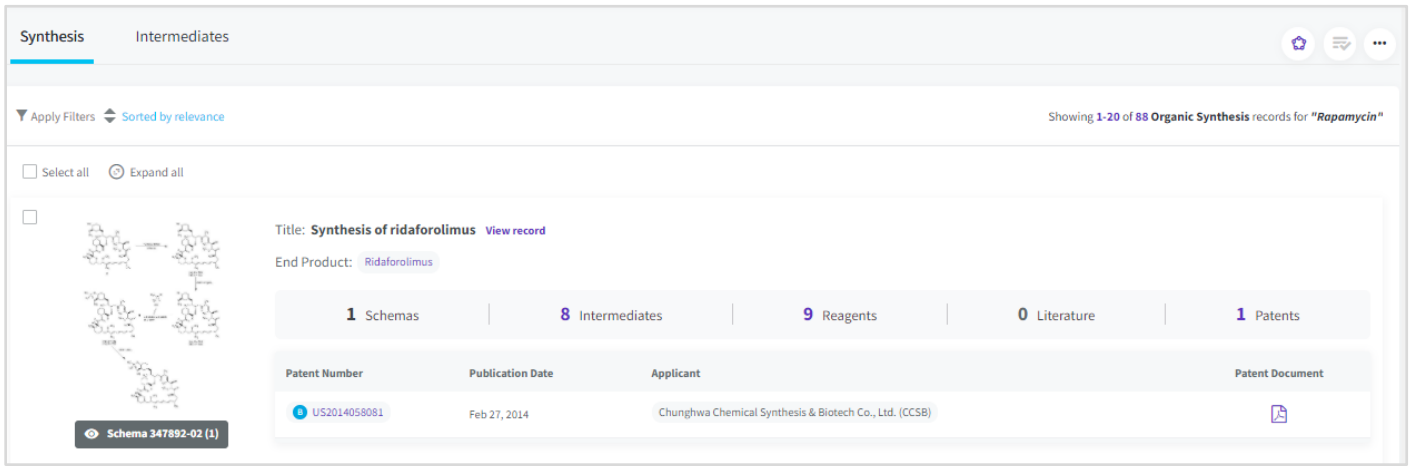
Animations

Animated cartoons that describe the gene/target in the context of biological processes and conditions.

Organic Synthesis

This knowledge area describes the process of producing drugs.

You can use keywords, CAS registry number®, and/or structure search to retrieve end products, intermediates and reagents.



Synthesis

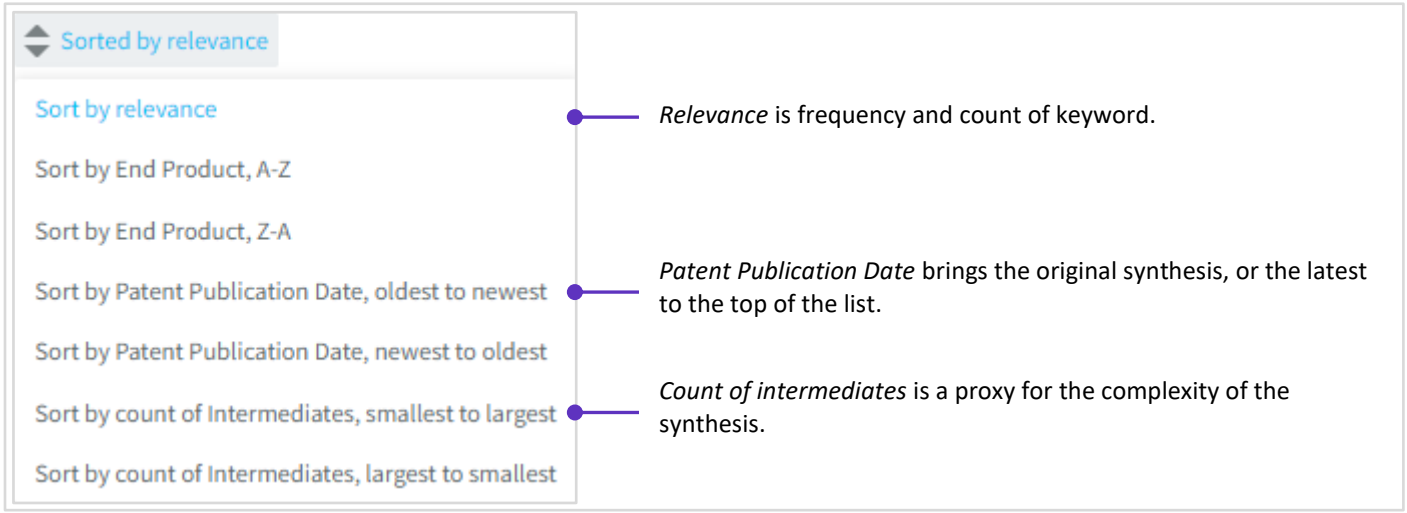
Synthesis describes an end-to-end route of synthesis. Note that if the route of synthesis is complex, it may be broken down into stages and each stage drawn out as a *Schema*, hence a synthesis may have multiple schema.

Intermediates

A substance formed during the chemical synthesis, and before the end-product is obtained.

Click the Intermediates tab to see a list of intermediates required for the displayed Synthesis records.

Sort by …



End-Product

The result of the reaction schema; the desired product

Schema

A graphical representation of the synthesis of the end-product; the route of synthesis

Schema summary

A concise description of the reaction schema

Note that the Organic Synthesis Advanced Search offers the ability to run a free-text search of the summary

Reagent

A chemical agent used in the synthesis of the end-product

Suppliers

Organizations whose business is to supply the reagent or intermediate.

Patent applicant (Originator)

If the applicant that filed for a patent on the synthesis is the same as the organization that invented the end-product, then the term “Originator” appears in parenthesis next to the applicant’s name.

Structure Search in Organic Synthesis

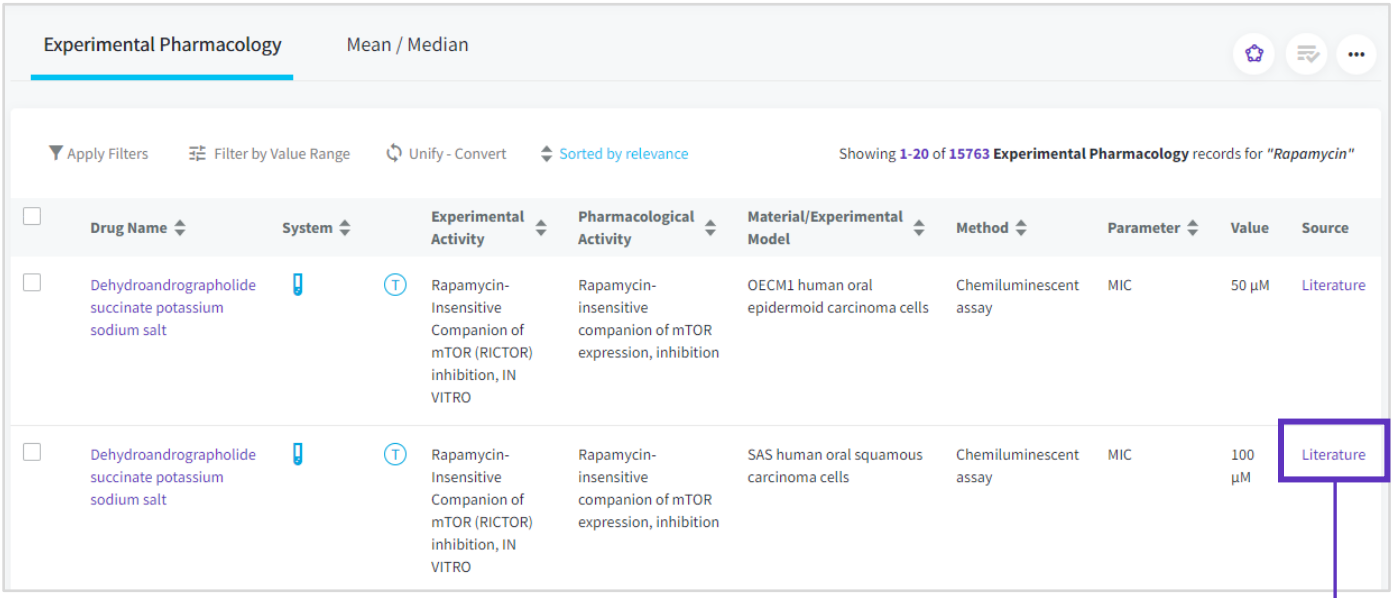
Structure search will search both end-products and intermediates and retrieve results as follows:

The Synthesis tab contains:	• Routes of synthesis where the end-product matches your query structure. • Routes of synthesis where an intermediate matches your query structure.
The Intermediates tab contains:	• All intermediates required to synthesize the end-products listed in the Synthesis tab, irrespective of whether they match the structure search query. • Intermediates that match the query structure.

Experimental Pharmacology

Describes the effect of a therapeutic agent on preclinical models of human conditions.

Experimental Pharmacology Results list and Record



Click the *Source* link to see the Experimental Pharmacology Record

System

Describes the system in which the experimental studies were conducted

Included

- *In vitro* cell-based models
- *In vivo* animal models
- *Ex-vivo* models

Excluded

- *Studies in humans*

Experimental Activity

Provides further details of the system in which the experimental studies were conducted.

Included

1. The name of the **condition/toxicity/target** that the experimental system replicates *In vivo* animal models

   - **Condition** name – where the experimental system is designed to replicate the effect of a drug on a condition
   - **Toxicity** name – where the experimental system is designed to replicate the toxic effect of a drug and/or reduce a toxic effect
   - **Target** name – where the experimental system is designed to probe the drug's mechanism of action

2. The **action** of the drug on the target/condition/toxicity. For example, inhibition, activation, reduction, induction, etc

3. The biological **system** in which the drug was tested. For example, *in vitro*

Pharmacological Activity

Describes the pharmacological response to the drug.

Included

1. The biological process that the drug has affected. For example, mitogenesis, calcium influx, gene expression, phosphorylation etc., including any toxic processes.
2. The drug's effect on the process. For example, induction, potentiation, increase, decrease, etc.

Material / Experimental model

Names the system in which the experimental studies were conducted.

Included	• Proteins • Primary cells and cell lines • Bacterial cells • Viruses • Tissues / Organs • Organisms
Excluded	• Studies in humans

Method

Experimental *method* used to measure the pharmacological activity.

Parameter

The characteristic that was measured.

Abbreviation	Parameter
CC	Cytotoxicity
EC	Effective concentration
IC	Inhibitory concentration
Ka	Absorption constant
Kb	Equilibrium dissociation constant (antagonist)
Kd	Equilibrium dissociation constant
Ki	Affinity/inhibitory constant
Ki(h)	Affinity/inhibitory constant (high affinity component)
Ki(l)	Affinity/inhibitory constant (low affinity component)
LD	Lethal dose
MBC	Minimum bactericidal concentration
MCC	Minimum cytotoxic concentration
MEC	Minimum effective concentration
MED	Minimum effective dose
MFC	Minimum fungicidal concentration
MIC	Minimum inhibitory concentration

MLD	Minimum lethal dose
MPC	Mutation prevention concentration
MTD	Maximum tolerated dose
MUD	Minimum ulcerogenic dose
NTD	Non-toxic dose
TC	Toxic concentration
UD	Ulcerogenic dose
pA-2	Antagonism constant
p	Used to indicate the log form

Value

The quantity of drug required to exert a pharmacological effect and modulate the activity.

Included	• Reported mean values
Excluded	• Median • Modal

Administration Regimen

The dosing schedule. E.g., Once daily, Twice daily, Once a month, etc.

Access the controlled vocabulary index via Advanced Search, or Filters.

View the *Administration Regimen* in the Experimental Pharmacology record:

Abbreviations used in Adminstration Regimen

Abbreviation	Regimen
b.i.d.	Twice daily
o.d.	Once daily
q.i.d	Four times daily
s.d.	Single dose
t.i.d.	Three times daily
o.d. x 3d	Once daily for 3 days
1x/3 wks x 2h	Once every 3 weeks for 2 hours

Source

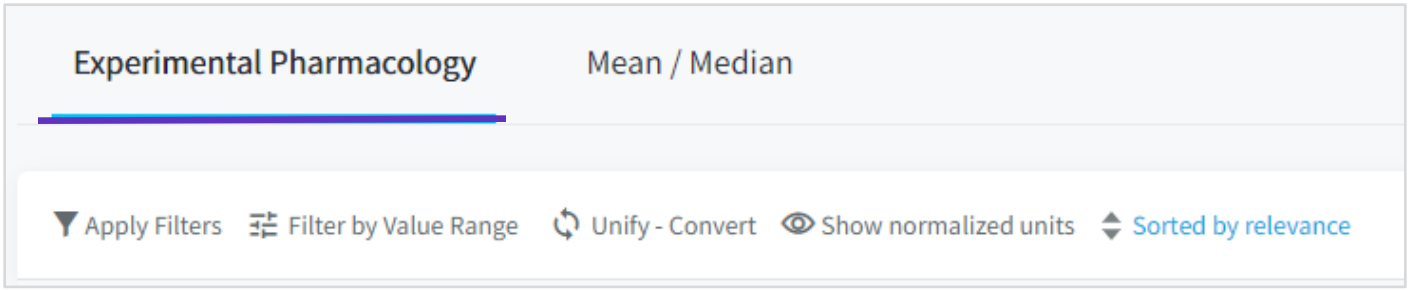
Click the link to go to the full Experimental Pharmacology record; to go to the original document from which the data was obtained; and to see other experimental details taken from the same document.

Included

- Literature
  - Journal articles with original research findings
  - Publications from conferences (posters, abstracts, oral presentations)
- Patents

Experimental Pharmacology analytical tools

Get an overview of your area of research using the analytical tools to transform and combine related datapoints.



Use the analytical tools to:

- Compare data from multiple experiments by unifying experimental parameters or converting units.
- View the distribution of pharmacological activity values, and filter the experiments based on activity ranges using Filter by Value Range.
- Benchmark the pharmacological activity of a drug or class of drugs by calculating the Mean/Median values from multiple experiments and then compare your drug or a competitor/collaborators' drug to the benchmark.
- Convert all units to normalized parameters µg or µmol.

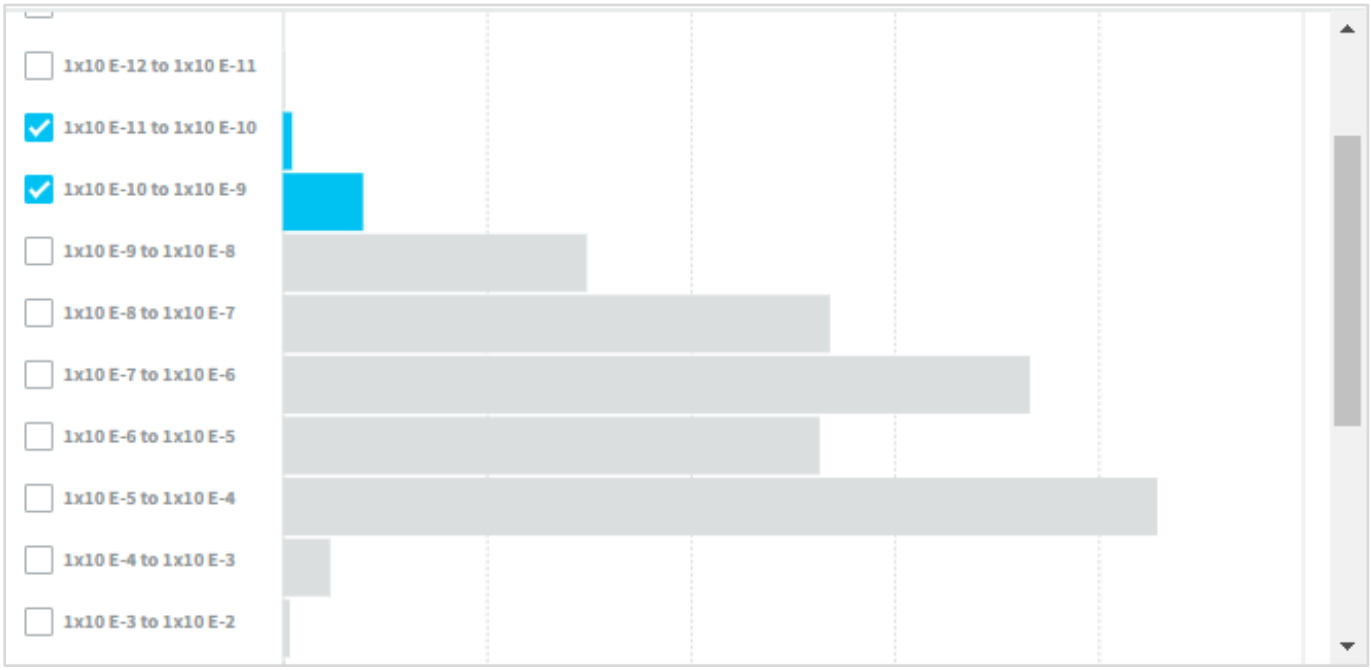
Tip: We suggest you Unify / Convert the data before any other types of analysis, this will ensure data is comparable and include the maximum number of results in your analysis.

Filter by value range

This feature allows you to:

- View the distribution of pharmacological activity in a histogram chart
- Filter the experiments based on activity data ranges

Tip: To include all relevant results, you should consider unifying parameters and converting units before you filter by value range.

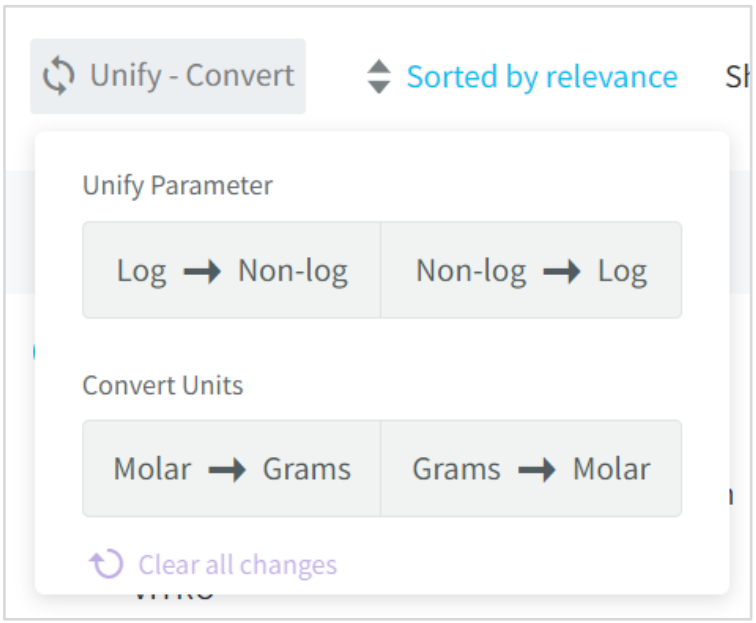


Unify

Experimental parameters such as half-maximal inhibitory concentration (IC-50) may be reported in log (pIC-50) or non-log (IC-50) form. Unify allows you to change all parameters into one form for inclusion in subsequent analysis.

Convert

The amount of drug required to exert a pharmacological effect can be measured as a unit of weight (E.g., grams) or amount (E.g., Moles). Convert allows you to change all effects into one form for inclusion in subsequent analysis.



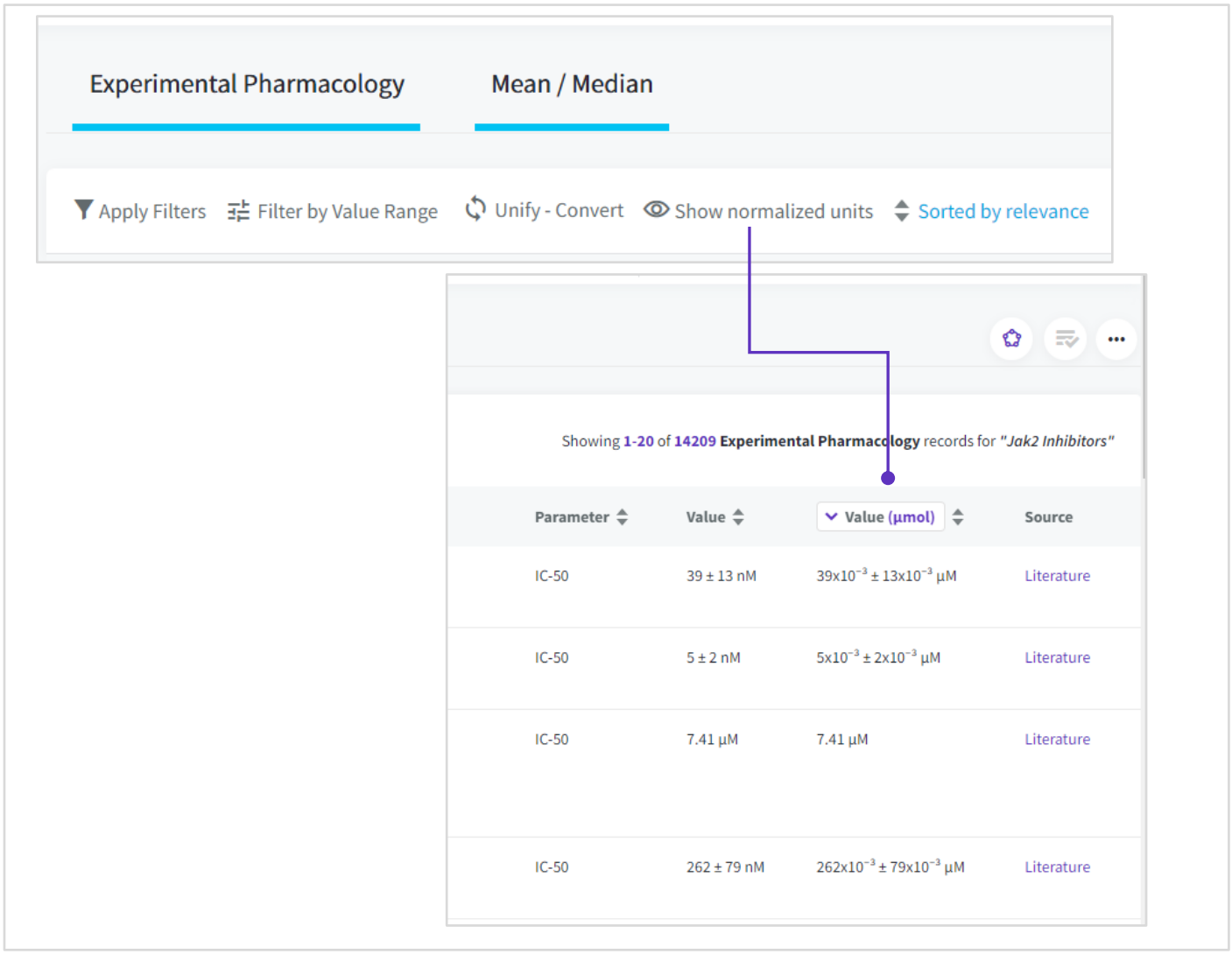
Show/Hide normalized units

The *Value* column shows the amount of drug required to exert a pharmacological effect, as reported in the source document. Therefore, the drug concentration may be shown in mM, µM, nM, pM, mg/l, µg/l, ng/l etc, depending on how it was reported in the source document.

Because the value is reported in different units, you will not be able to easily compare data across multiple experiments from different sources.

Show normalized units allows you to transform the values to a single unit so that you can compare the data. Clicking this button adds an extra column to your results list where you can select between **µmol** or **µg**.

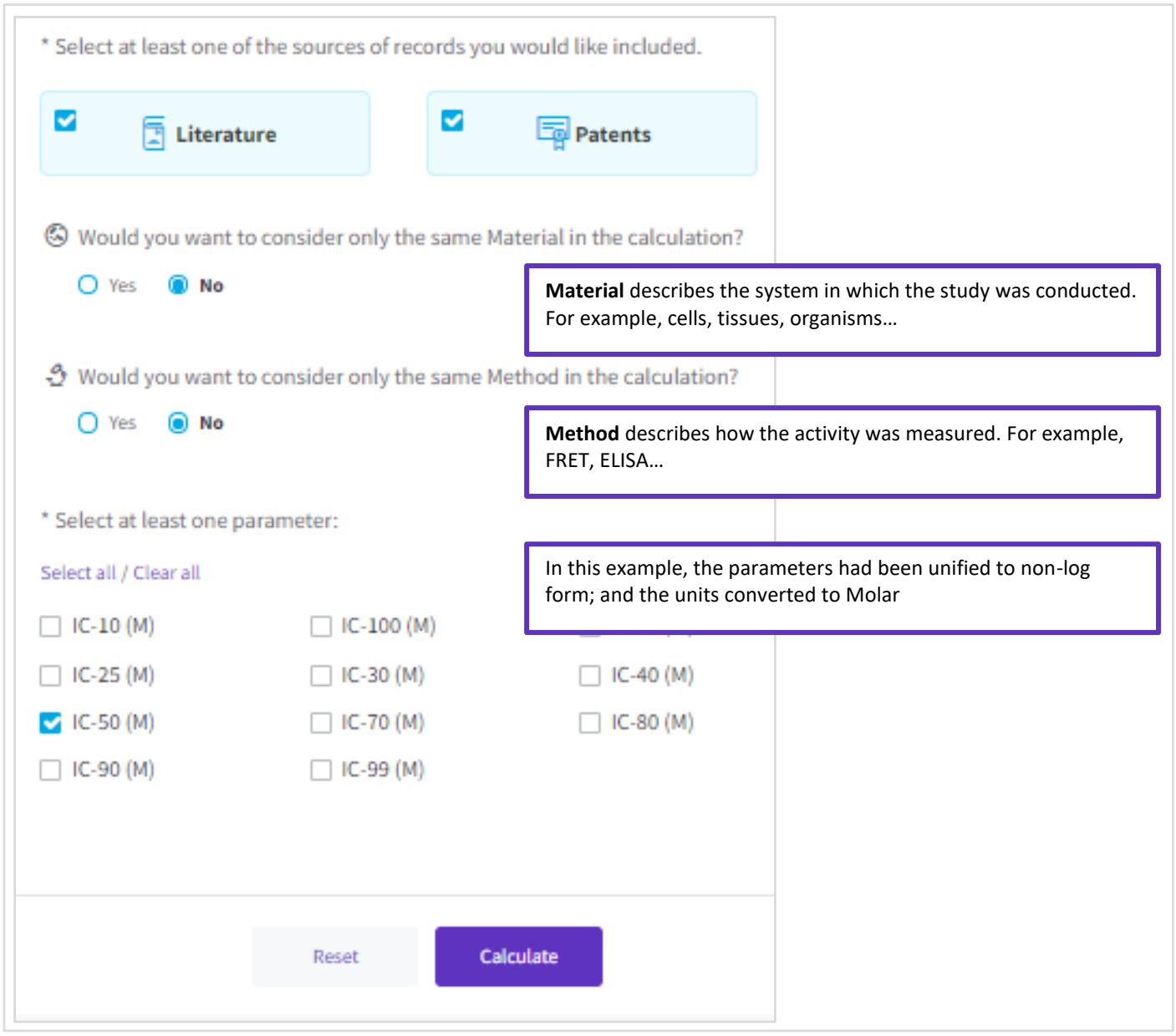
Note that experiments with units other than molar or grams (e.g IU/Kg, IU/KG/h or U/l), and those without a unit will not be normalized.



Mean / Median

Compare your drug to the mean / median activity of its drug class.

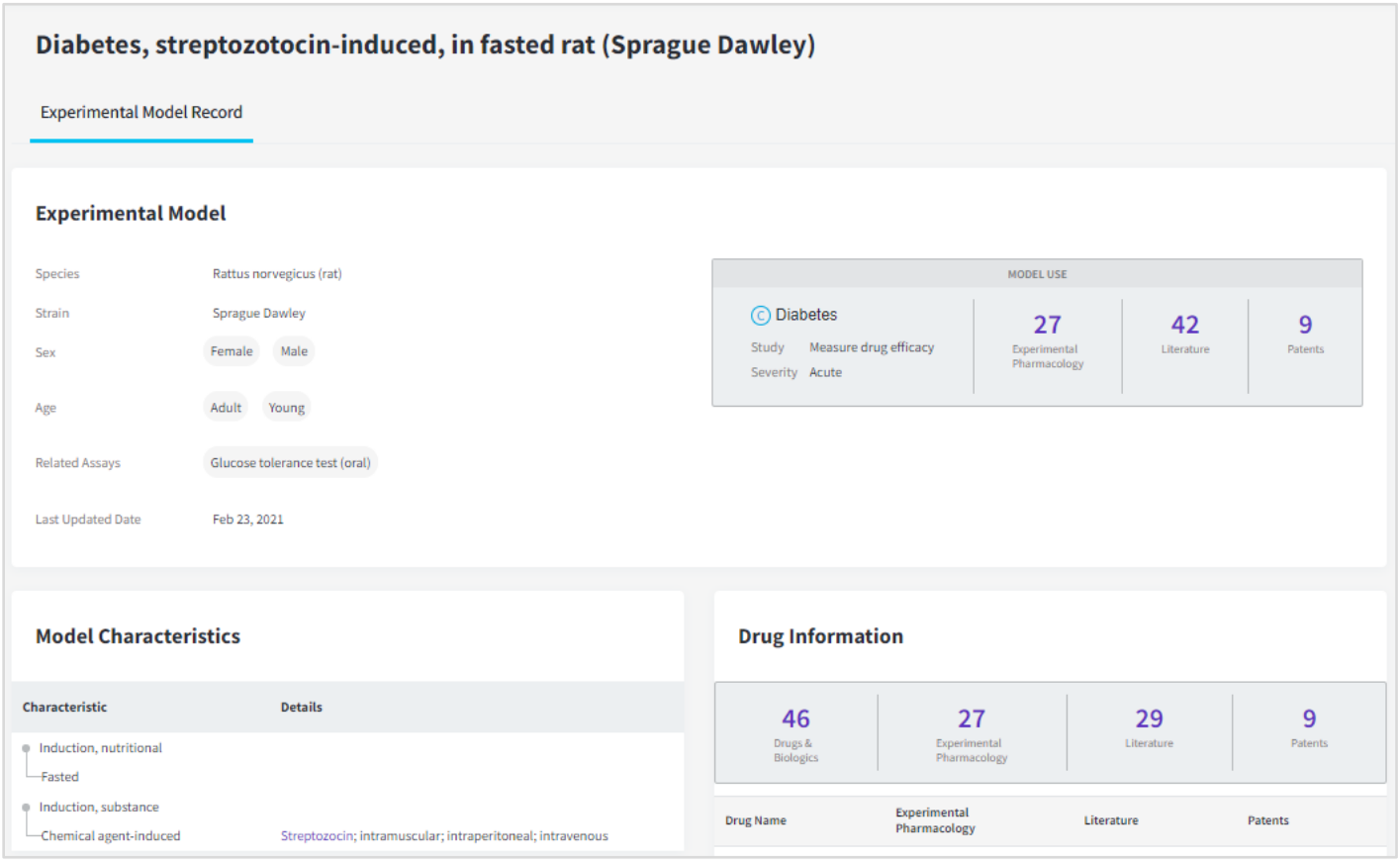
Tip. to include all relevant results, you should consider unifying parameters and converting units before you calculate mean/median.



Experimental Models

Non-human test systems used to predict the safety or efficacy of a therapeutic agent in humans.

Included	• *in-vivo* models with a pathological condition that replicates many of the important aspects of a corresponding human condition • *in-vivo* models with patient-derived grafts or human organoids grafts • *in-vivo* studies without a pathological condition that focus on validating a drug's mechanism
Not included	• *in-vitro* experimental models • *ex-vivo* experimental models • studies evaluating medical devices / delivery systems / technologies / OTCs • studies reporting published results (e.g. reviews)



Experimental model name

[target, condition, or toxicity], [model characteristics], [species, (strain)]

Related Assays

Methods used to validate the model and to measure the outcome

Model Characteristics

How the animal was manipulated to replicate the human condition, symptom, or syndrome.

Included	• Induction mechanism (electrical, infection, nutritional, substance, surgery) • Genomic variation • Grafts • Immunological status • Reproductive status • Pharmacological target

Model Use

The intended use of the model and related information

Included	T	Target - Model used for target validation studies
	C	Condition – Model used for drug efficacy studies
	Tx	Toxicity – model used for adverse event studies

Study

Included	• Pharmacodynamic studies; relates to target-validation studies • Measure drug efficacy; relates to condition studies • Measure drug toxicity; relates to toxicity studies

Severity

Acute / Chronic

Drug Information

Drugs tested in this experimental model and related pharmacology, literature, and patents

Pharmacokinetics

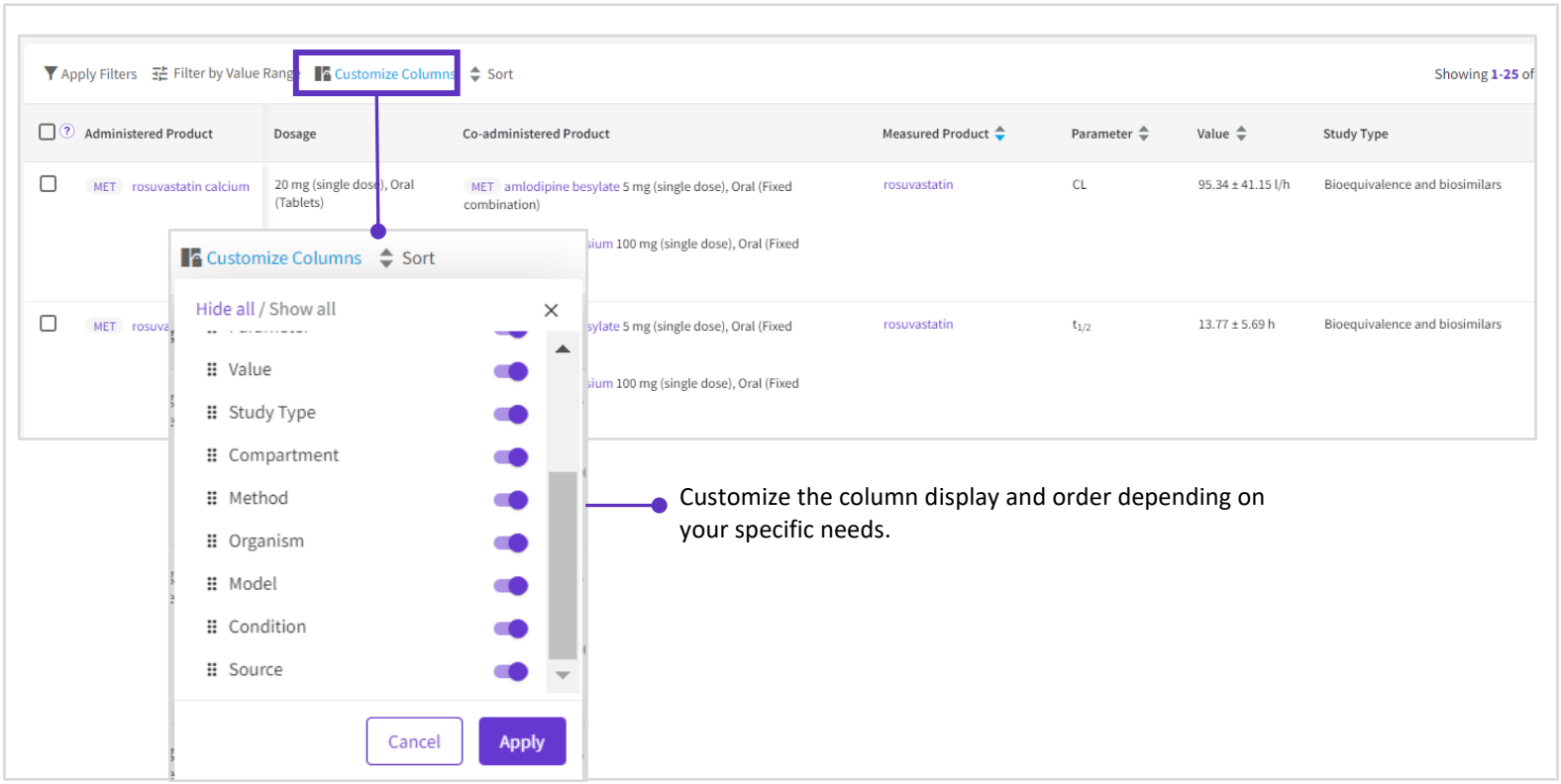
The bodily absorption, distribution, metabolism, and excretion of drugs.

Included	• Studies in healthy humans • Studies in humans with a pathology • Studies in animals • Toxicokinetic studies are included, and the PK results are indexed in the PK knowledge area, and the toxicity results are indexed in the Experimental Pharmacology knowledge area
Excluded	• In vitro metabolism studies

The pharmacokinetics record

A PK study typically gives several results. Each result is represented as one record in the PK knowledge area.

Fields	• Administered product • Administered product dosage value and unit • Measured product • Measured product parameter, value and unit • Model • Condition • Study type • Compartment • Method • Organism • Source



Metabolism

Schema depicting the routes of degradation of a drug.

This content is accessible via:

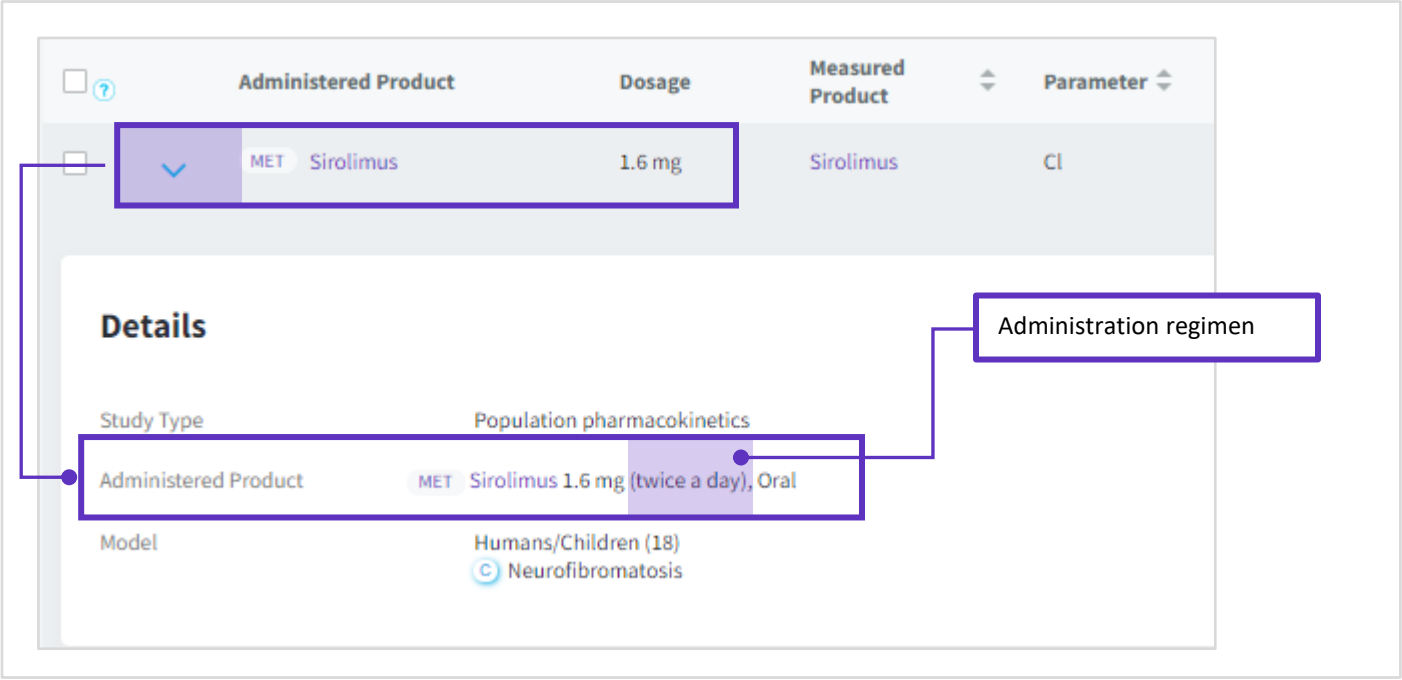
1. The “MET” button that appears next to a result in the Pharmacokinetics knowledge area.
2. The “METABOLISM” button that appears below the structure in a drug record.

Administration regimen

The dosing schedule. E.g. Once a day, Twice a day, Once a month, etc.

Access the controlled vocabulary index via Advanced Search, or Filters

View the Administration regimen by viewing the details of a pharmacokinetics record:



Parameter

Abbreviation	Definition
AUC (A-B)	Area under curve for a given interval from time A to time B (hours)
BR (A-B)	Biliary recovery between time A and time B (hours)
Cl	Clearance; the rate of elimination by all routes (or by specified route(s) and mechanism(s) of elimination, as indicated by a letter in parenthesis)
Cl (B)	Biliary clearance
Cl (H)	Hepatic clearance
Cl (I)	Intestinal (or faecal) clearance
Cl (R)	Renal clearance
Cl (XR)	Extra-renal (non-renal) clearance
Cmax	Peak concentration
Cmin	Trough concentration
Css	Average plasma concentration of an administered drug at steady state
ER (A-B)	Recovery in exhaled air from time A to time B (hours)
F	Bioavailability
FR (A-B)	Faecal Recovery between time A and time B (hours)
GIR (A-B)	Gastrointestinal recovery
Ka	Absorption constant
Kel	Elimination rate constant
MAT	Mean absorption time
MR	Milk recovery
MRT	Mean retention time
PB	Protein binding
Q	Intercompartmental clearance
SR (0-24)	Amount of drug recovered in semen, expressed in % for 0 to 24 hours after administration
t1/2	Half-life

t1/2 alpha	Distribution half-life
t1/2 beta	Elimination half-life
t1/2 gamma	Terminal elimination half-life
t1/2 (a)	Absorption half-life
tlag	Lag time
Tmax	Time to peak concentration
UR (A-B)	Urinary recovery from time A to time B (hours)
Vd	Volume of distribution
Vd (c)	Central volume of distribution
Vd (p)	Peripheral volume of distribution
Vss	Volume of distribution steady state

Modifiers for PK Parameters

Modifier	Description
(A-B)	Time A to time B in hours
_t	Total (drugs plus metabolite)
_u	Unbound drug
Ratio	Ratio: this only applies to expositional parameters (AUC Cmax, Cmin, Css, etc.) and not to those related to speed (Cl, t1/2, etc.). As a relation, the parameter is adimensional
(c)	Central
(p)	Peripheral
(B)	Biliary
(H)	Hepatic
(R)	Renal
(XR)	Extra-renal (non-renal)

Compartment

A controlled vocabulary list of areas of the body in which the drug was measured.

Note, some compartments name two areas of the body, separated by a slash (/). In these cases, the drug was measured in both compartments, and a ratio is given:

Administered Product	Dosage	Measured Product	Parameter	Value	Compartment	Method	Organism	Source
Rifampicin	70 pg	Rifampicin	Cmax Ratio	0.0846	Brain/blood	PET	Mice	Antimicrob Agents Chemother (2015)

In this example, the peak concentration (Cmax) of rifampicin in the brain was 0.0846 times the peak concentration in the blood

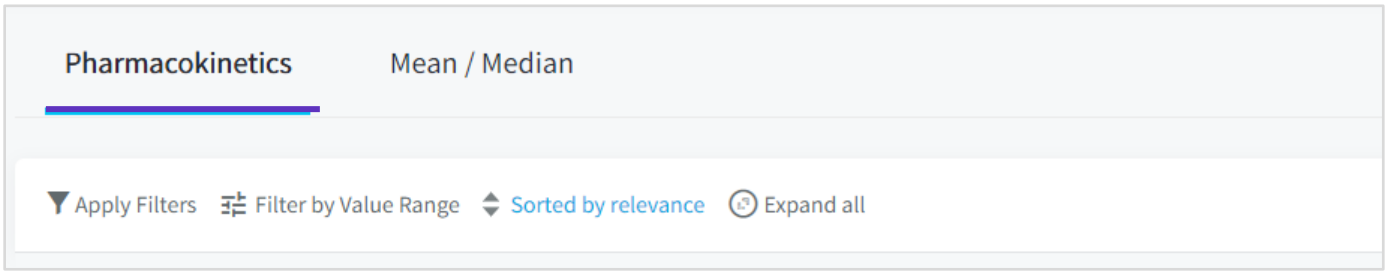
Administration Route

Abbreviation	Route of administration
bucc.	Buccal
e.d.	Epidural
i.a.	Intraarterial
i.art.	Intraarticular
i.car.	Intracardiac
i.col.	Intracolonic
i.cor.	Intracoronary
i.c.v.	Intracerebroventricular
I.d.	Intraduodenal
i.g.	Intragastric
i.i.	Intraileal
i.int.	Intraintestinal
i.j.	Intrajejunal
i.m.	Intramuscular
i.n.	Intranasal
i.o.	Intraocular

i.otic.	Intraaortic
i.p.	Intraperitoneal
i.p.v.	Intra portal vein
i.str.	Intrastriatal
i.t.	Intratracheal
i.thec.	Intrathecal
i.tymp.	Intratympanic
i.uter.	Intrauterine
i.v.	Intravenous
i.vag.	Intravaginal
i.ves.inst	Intravesical instillation
i.vitr.	Intravitreous
infiltr.	Infiltration
inhal.	Inhaled
p.o.	Per os; oral
pharing.	Oro-pharingeal
rect.	Rectally
rinse	Mouth rinse
s.c.	Subcutaneous
s.conj.	Subconjuntiva
s.gin.	Subgingivally
s.l.	Sublingual
top.	Topical

Pharmacokinetics analytical tools

Get an overview of your area of research using the analytical tools to transform and combine related datapoints.



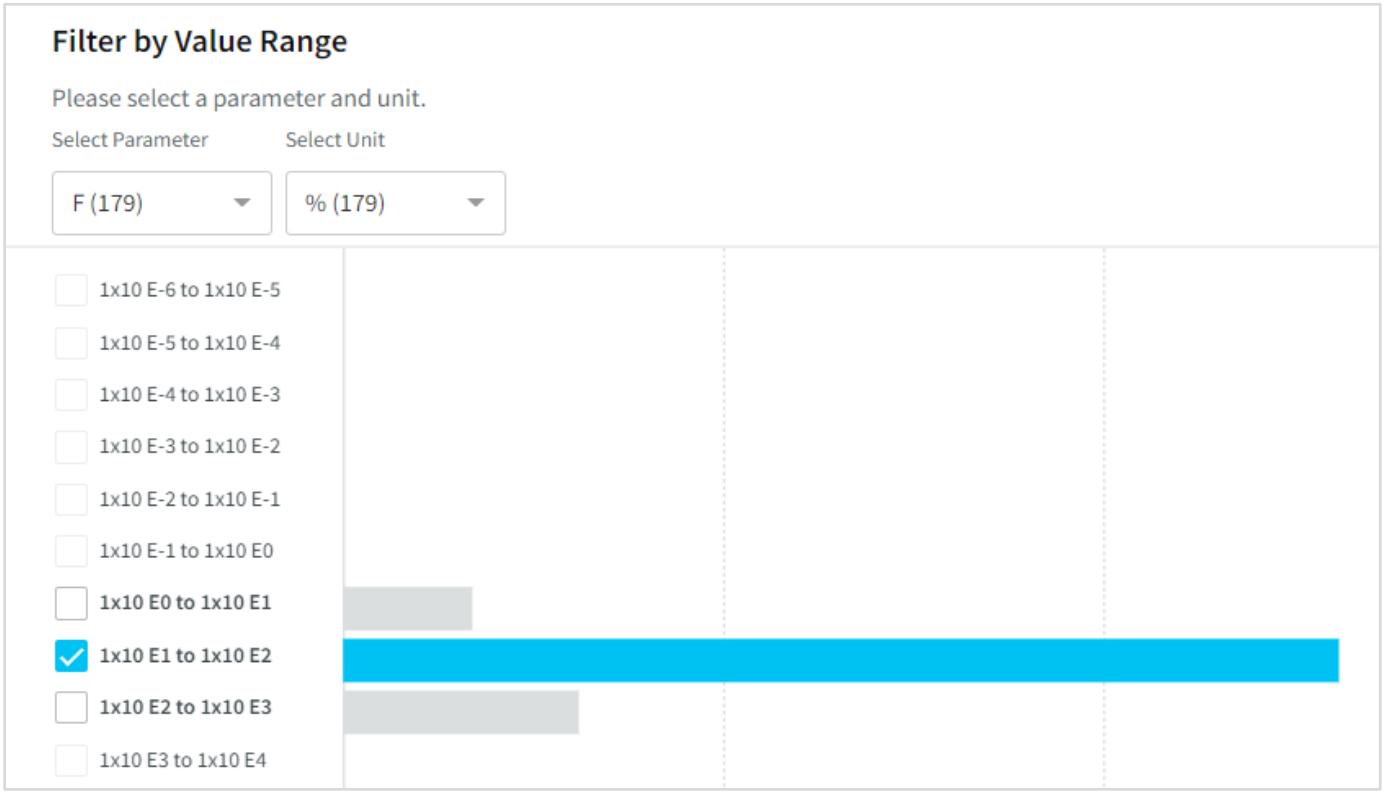
Use the analytical tools to:

- View the distribution of pharmacokinetic activity values, and filter the experiments based on value ranges using **Filter by Value Range**.
- Benchmark the pharmacokinetic activity of a drug or class of drugs by calculating the **Mean/Median** values from multiple experiments and then compare your drug or a competitor/collaborators' drug to the benchmark.

Filter by value range

This feature allows you to:

- View the distribution of pharmacokinetic activity in a histogram chart
- Filter the experiments based on pharmacokinetic value ranges

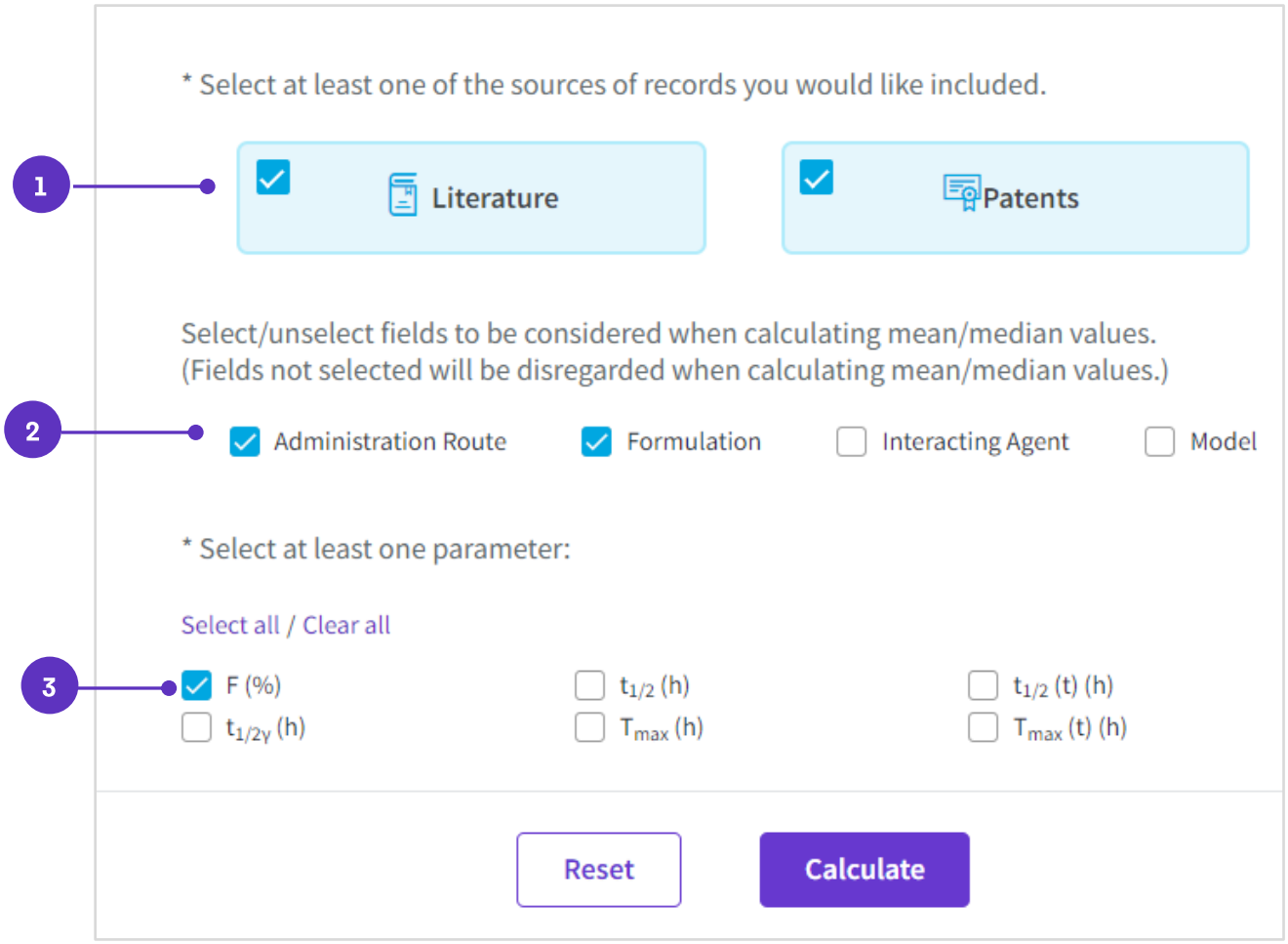


Mean / Median

Compare your drug to the mean / median pharmacokinetic activity of its drug class.

Tip. Customize your calculation by:

1. Only Including experiments that come from a specific source type (literature or patents)
2. Only Including experiments that use the same administration route, formulation, interacting agent, or model
3. Selecting the parameter to compare

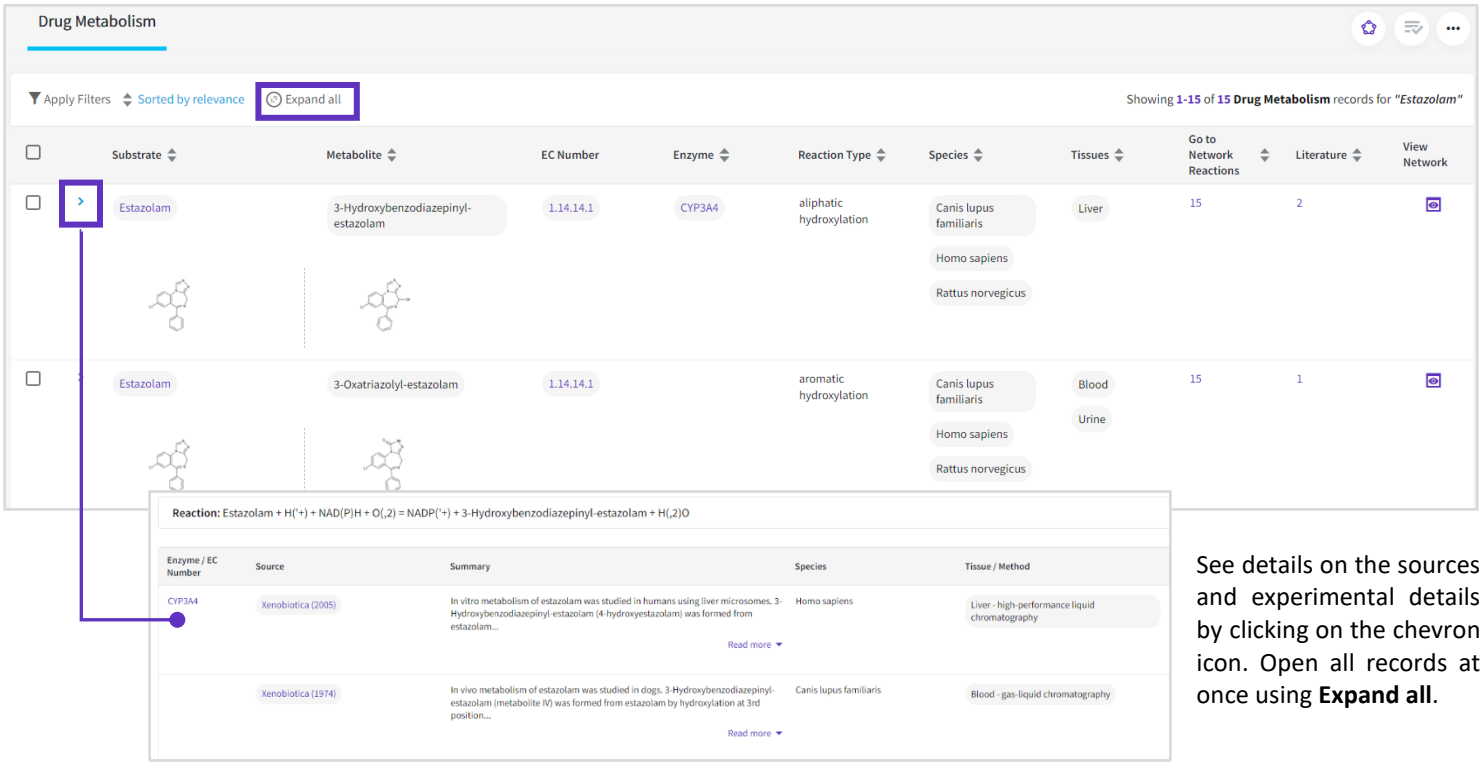


Drug Metabolism

The breakdown of drugs by living organisms, usually specialized enzymatic systems.

Included	• Small molecule metabolites proved to occur *in vitro* or *in vivo* in humans • Metabolites for synthetic peptides (up to 50 aa)
Not included	• Metabolism for biologics • Trace or suspected metabolites

Results List



See details on the sources and experimental details by clicking on the chevron icon. Open all records at once using **Expand all**.

Substrate

Substance acted upon

Metabolite

Intermediate or product of metabolism

EC Number

The Enzyme Commission number: numerical classification scheme for enzymes, based on the chemical reactions they catalyze.

Enzyme

Substance that acts as a catalyst in living organisms

Reaction Type

Type of metabolic reaction (e.g. aromatic hydroxylation)

Species

Model used in the experiment according to the source

Tissue/Method

Material and method used in the experiment according to the source

Summary

Short description of the reaction

Go to Network Reactions

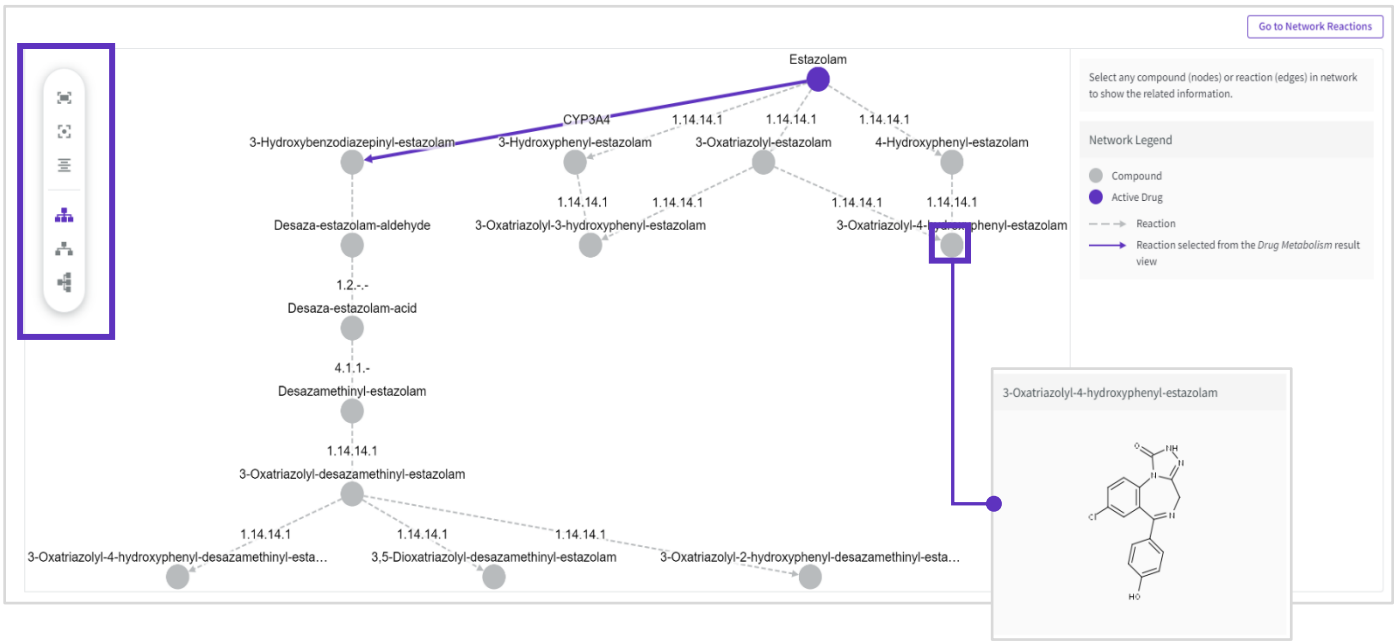
List of reactions that are part of the same metabolic schema

Literature

Sources of the metabolic reaction

View Network

Click to see a diagram with all reactions within that network. Switch between different graphical options to optimize visualization.

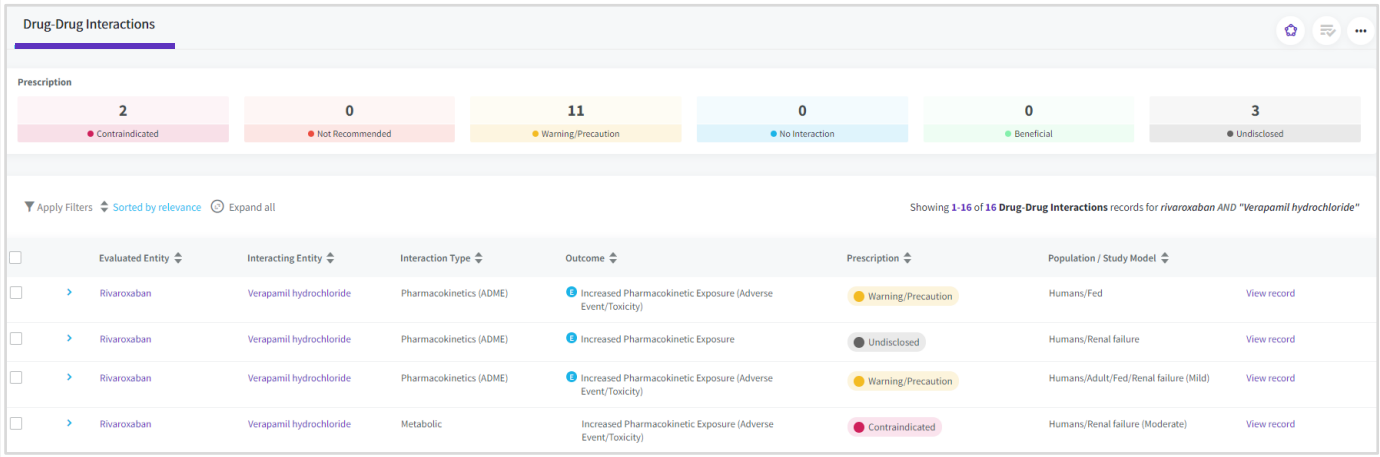


Click on any compound within the network to see its structure

Drug-Drug Interactions

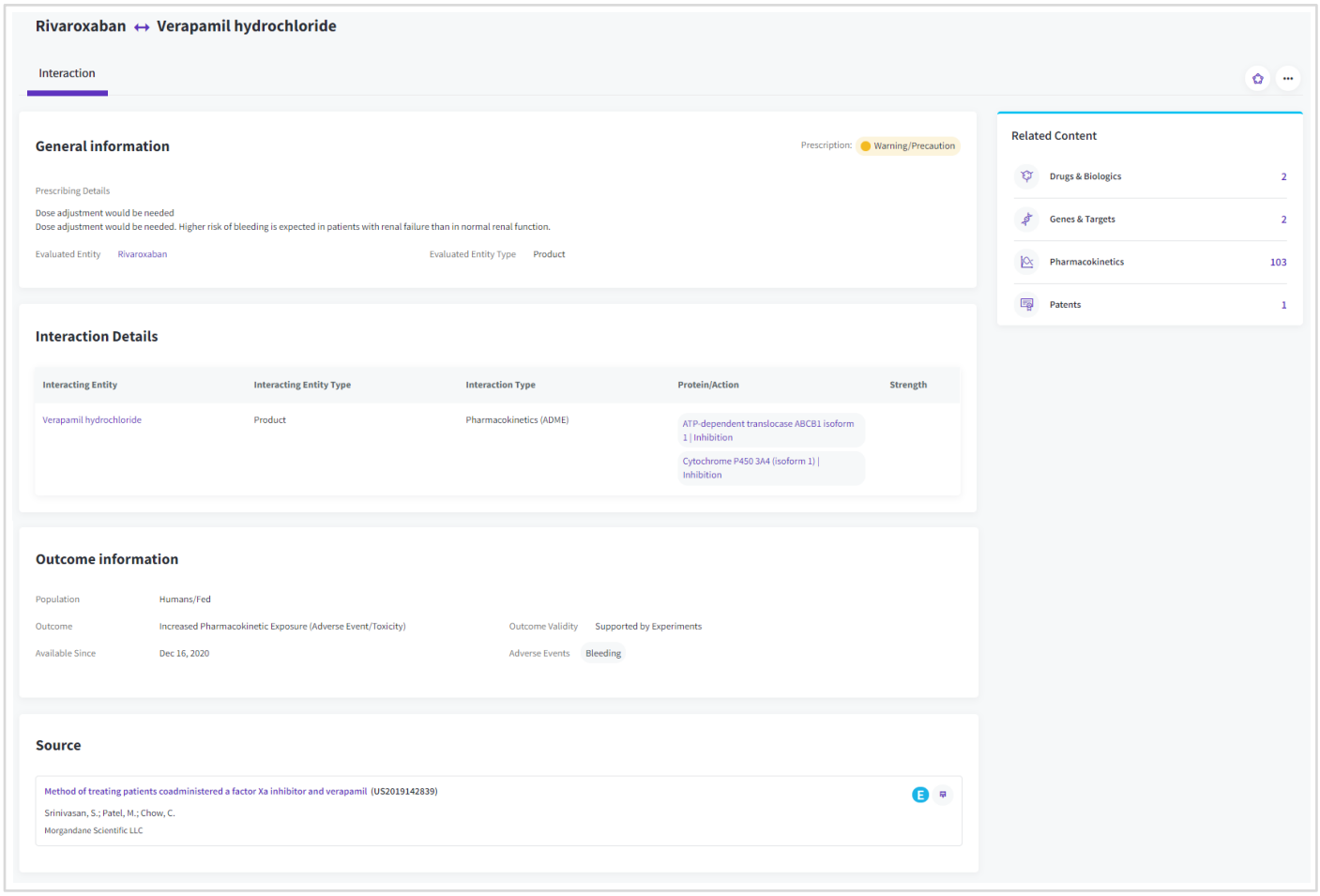
The action of a drug on the efficacy or toxicity of another drug.

Results List



The *Prescription* banner across the top gives an overview of the recommendations for the co-administered drugs in your search results.

Record



In this example: Verapamil hydrochloride [*Interacting Entity*] inhibits ABCB1 (isoform 1) and CYP3A4 (isoform 1) [*Protein/Action*], causing increased pharmacokinetic exposure [*Outcome*] of Rivaroxaban [*Evaluated Entity*]. This can result in elevated prothrombin time and bleeding [*Adverse Events*]. For this reason, there is a warning [*Prescription*] in the source document [*Literature*].

Evaluated Entity

The drug / Product Category / Therapeutic Group / Mechanism of Action being assessed.

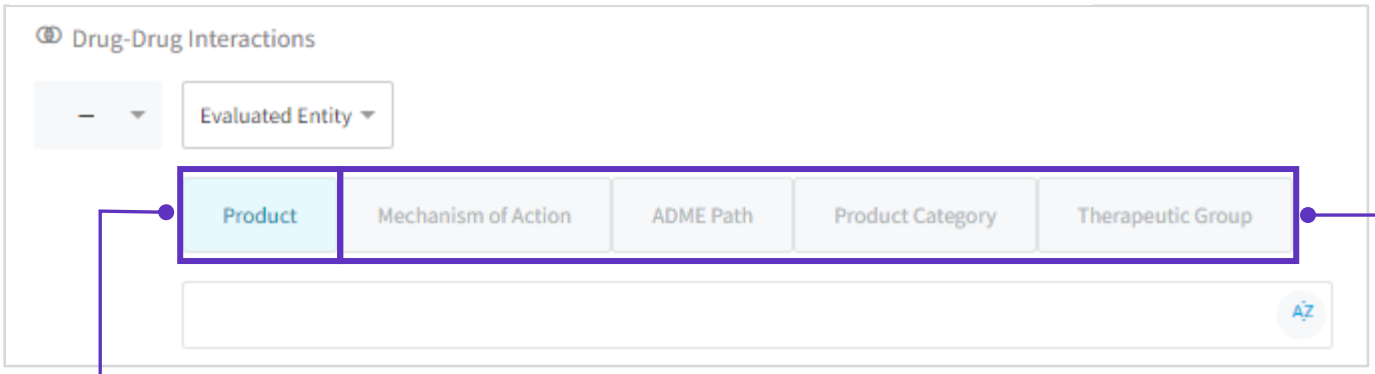
Quick Search by drug name or synonyms (evaluated or interacting entity) retrieves Drug-Drug Interactions.

Interacting Entity

The drug / Product Category / Therapeutic Group / Mechanism of Action that alters the efficacy or toxicity of the evaluated entity.

Evaluated and Interacting Entity Sub-types

Advanced Search > Drug-Drug Interactions > Select Field = Evaluated Entity or Interacting Entity:

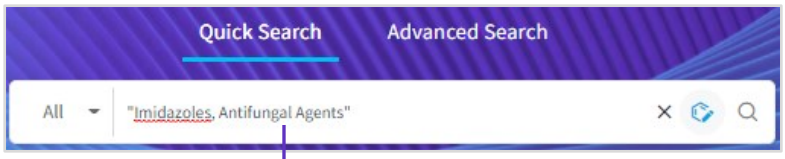


Use *Product* to search by product name or synonym.

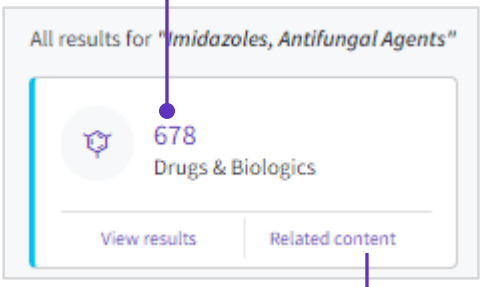
However, if the product was not named in the source, then Clarivate's scientists will index drug interactions by MoA, ADME Path, PC or TG. Use these fields to retrieve drug-drug interactions where no product was indexed.

Tip, if you want to identify **all** drug-drug interactions associated with a **Mechanism of Action**, **Product Category** or **Therapeutic Group**, you will need to search first for the drugs, and then the related DDI. For example:

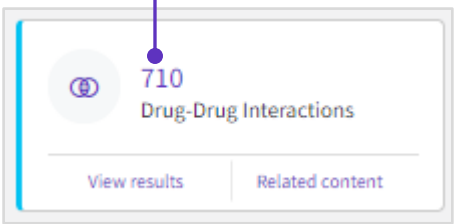
1. Quick Search



2. Click *Related content* for all content related to these drugs



3. Click *View results* to see DDI related to these imidazoles



4. Then check in Advanced Search for any DDI that are associated with Product Category = Imidazoles, but where the imidazole was not named in the source document: > DDI > Field = Evaluated Entity; Product Category = Imidazoles; OR Field = Interacting Entity; Product Category = Imidazoles.

ADME Path

The pathway by which a drug is absorbed, distributed, metabolized, or excreted.

Included	• Drugs acting on carriers (transporters and co-transporters) • Drugs acting on ADME enzymes • Drugs acting on neurotransmitters
Excluded	• This index is specific to the Drug-Drug Interactions area. You cannot search Drug & Biologics using this index.

Interaction Type

Describes how the interacting entity affects the pharmacokinetic/pharmacodynamic activity of the evaluated entity.

Outcome

The result of the interaction. Typically

- Increased or decreased exposure (*Pharmacokinetics*)
- Increased or decreased activity (*Pharmacodynamics*)
- No interaction

E - Indicates the outcome is supported by experimental data from a primary source. If there is no E-symbol, the drug-drug interaction was obtained from a reliable secondary source such as an FDA drug label.

Prescription

The instruction or recommendation when considering co-administration of the evaluated and interacting drugs.

- Contraindicated – Life-threatening
- Not Recommended – high risk of severe adverse effects
- Warning/Precaution – Caution advised, high risk of mild to moderate adverse effects
- No Interaction
- Beneficial – co-administration has an additive or synergistic effect on the wellbeing of the population/model
- Undisclosed – source document describes an interaction but there was insufficient data to assign a prescription

Population / Study Model

Population describes the characteristics of the group of people to which the prescription applies.

Study Model describes the non-human test system used to study the interaction.

Included	• Animal/Human • Race • Gender • Age group • Metabolic status • Food intake • Conditions

Protein

The molecular target of the interacting agent.

Quick Search by protein name or synonyms retrieves Drug-Drug Interactions.

Action

The effect of the interacting agent on the protein. Can be:

- Inhibition
- Substrate - The interacting entity is a substrate of the protein and is a competitive inhibitor to the evaluated entity
- Induction

Related Content

Related Content	Description	
Drugs & Biologics	• Evaluated entity • Interacting entity	
Genes & Targets	• Protein affected by the interacting entity	
Pharmacokinetics	• Pharmacokinetics of evaluated entity alone • Pharmacokinetics of evaluated entity metabolites • Pharmacokinetics of interacting entity alone • Pharmacokinetics of co-administered evaluated + interacting entities **Tip**, use this link to see how much the interacting entity affected the pharmacokinetic availability of the evaluated entity – see example below	
Patents / Literature	**Included**	• Biomedical literature, from 2013 • Congresses, from 2013 • FDA drug labels, from 2009 • Patents (WO, EP, US, JP, KR, CN, IN), from 2013
	Excluded	• Company communications • ClinicalTrials.gov • Drug labels from non-FDA agencies

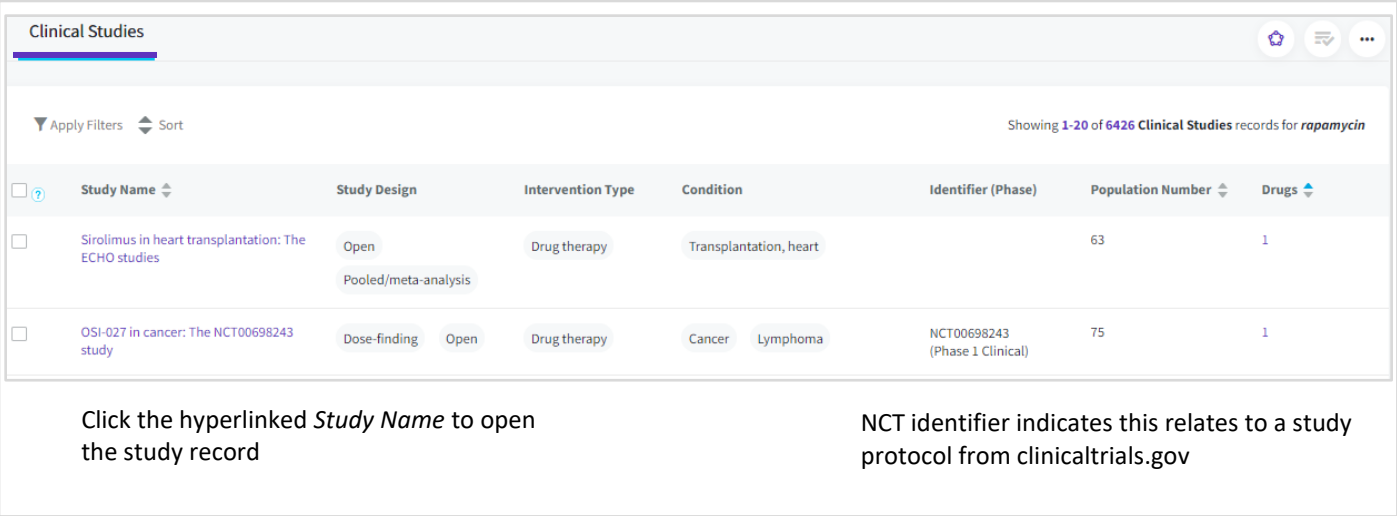
Tip: to see the underlying pharmacokinetic data for each drug separately or in combination, click the *Pharmacokinetics* link in the *Related Content* section of the record page.
Following the example we used above, Verapamil hydrochloride (interacting entity) has decreased the clearance rate of Rivaroxaban (evaluated entity), causing increased exposure to Rivaroxaban and a greater risk of adverse events.

MET	Rivaroxaban └ +1 co-administered product	20 mg	Rivaroxaban	Cl	62.9 ml/h/kg	Plasma
MET	Rivaroxaban	20 mg	Rivaroxaban	Cl	108 ± 47.6 ml/h/kg	Plasma

Clinical Studies

Studies conducted in the clinic and depending on direct observation of patients.

Included	• Clinical trial protocols from clinicaltrials.gov • Clinical trial results reported in journals, conferences, and press releases
Excluded	• Clinical trial protocols from other agencies



Click the hyperlinked *Study Name* to open the study record

NCT identifier indicates this relates to a study protocol from clinicaltrials.gov

Note, each *Clinical Studies* record in Cortellis Drug Discovery Intelligence corresponds to the analysis of one source document. Thus, where a clinical trial may be described by a protocol and multiple subsequent articles that describe the study results; in Cortellis Drug Discovery Intelligence these are represented as separate records in the clinical studies area, even if they pertain to the same study.

Phase

Clinical trial phase is only indexed for study protocols derived from clinicaltrials.gov. Phase is not indicated for data obtained from other sources.

Organizations

The governing body responsible for developing the drug or biomarker

Sales

Included	Data from: • Organization press releases • Quarterly/annual financial reports

Literature

Bibliographic list of the source documents from which the information was obtained.

PubMed

Link out to the PubMed citation and abstract

Crossref

Link out to the source document hosted on non-Clarivate sites

Web of Science

Link out to view the record in Web of Science

Show/Hide Summaries

Summary of the article, written by one of Clarivate's scientists

BioWorld Science

Drug discovery and development news articles published by **BioWorld Science**

Clarivate Journals

Drug monographs and review articles on recently approved drugs, and drugs in development. Articles come from Clarivate's journals *Drug Data Report*, *Drug of Today* and *Drugs of the Future*, hosted on **Journals on the Web**.

Source Type

Type of document from which the information is obtained.

Included	• Peer reviewed journal articles • Conference posters and abstracts • Protocols from ClinicalTrials.gov • Corporate publications, press releases and web-site content • Books

Patents

One of the information sources used to create content in Cortellis Drug Discovery Intelligence.

Included

- The following patent offices are covered:
  - World (WO)
  - European (EP)
  - Japanese (JP)
  - United States (US)
  - Chinese (CN)
  - Korean (KR)
  - Indian (IN)
- If a patent describes many compounds, then up to 8 will be indexed in Cortellis Drug Discovery Intelligence. These 8 are selected by:
  - Those that are claimed with pharmacological activity
  - Those with the best pharmacological activity profile (including lack of toxicity)
  - Compounds that are claimed for use as diagnostics
- If a patent describes several different chemical series, then representatives of each series will be selected based on the above criteria.

Searching by patent number

You can search for a specific patent using the patent number in Quick Search or Advanced Search > Patents > Patent number. A patent number search is free-text, and therefore it is important to enclose your patent number in quotes.

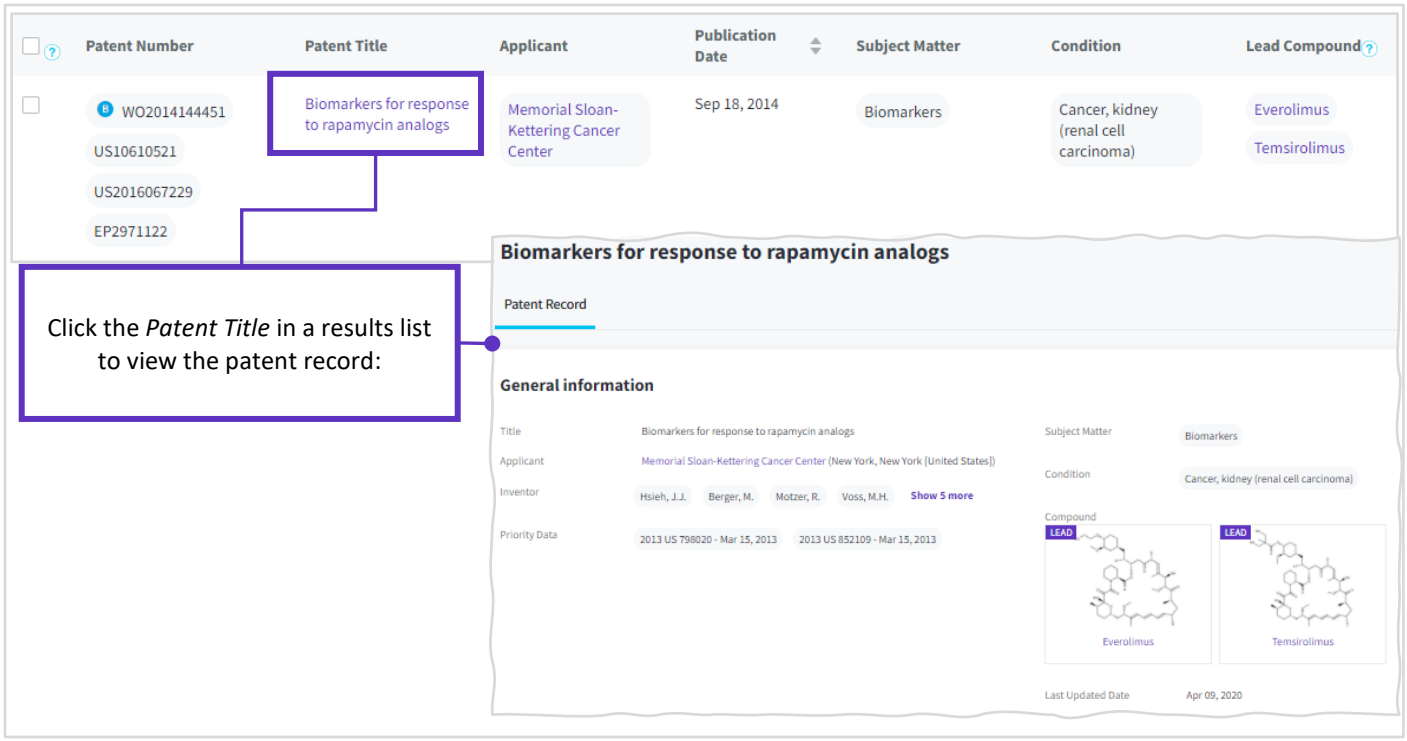
Patent number searches

Search term	Quick Search	Advanced Search
WO2014103310	1 result	1 result
“WO 2014103310”	1 result because the search ignores spaces (see special characters)	1 result because the search ignores spaces (see special characters)
WO 2014103310	1 result because Quick Search interprets this as “WO” AND “2014103310” (see Combining search terms)	>240,000 results because Advanced Search interprets this as “WO” OR “2014103310” (see Combining search terms)

Patent Record

In Cortellis Drug Discovery Intelligence, a record corresponds to a patent family.

How to access a patent record from the results list



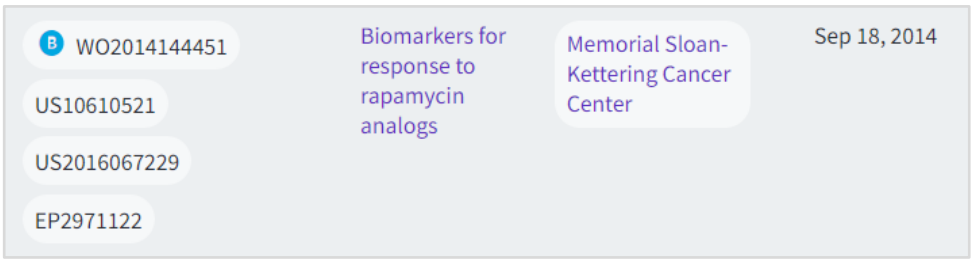
Patent Family

A collection of published patent documents relating to the same invention, or to several inventions sharing a common aspect, that are published at different times in the same country or published in different countries or regions. Each patent document in such a collection is normally based on the data for the application(s) on which the basis for its "priority right" has been claimed [Adapted from WIPO glossary of terms].

Basic Patent

The pioneering patent describing the technology for the first time.

Search by basic patent publication year in Advanced Search



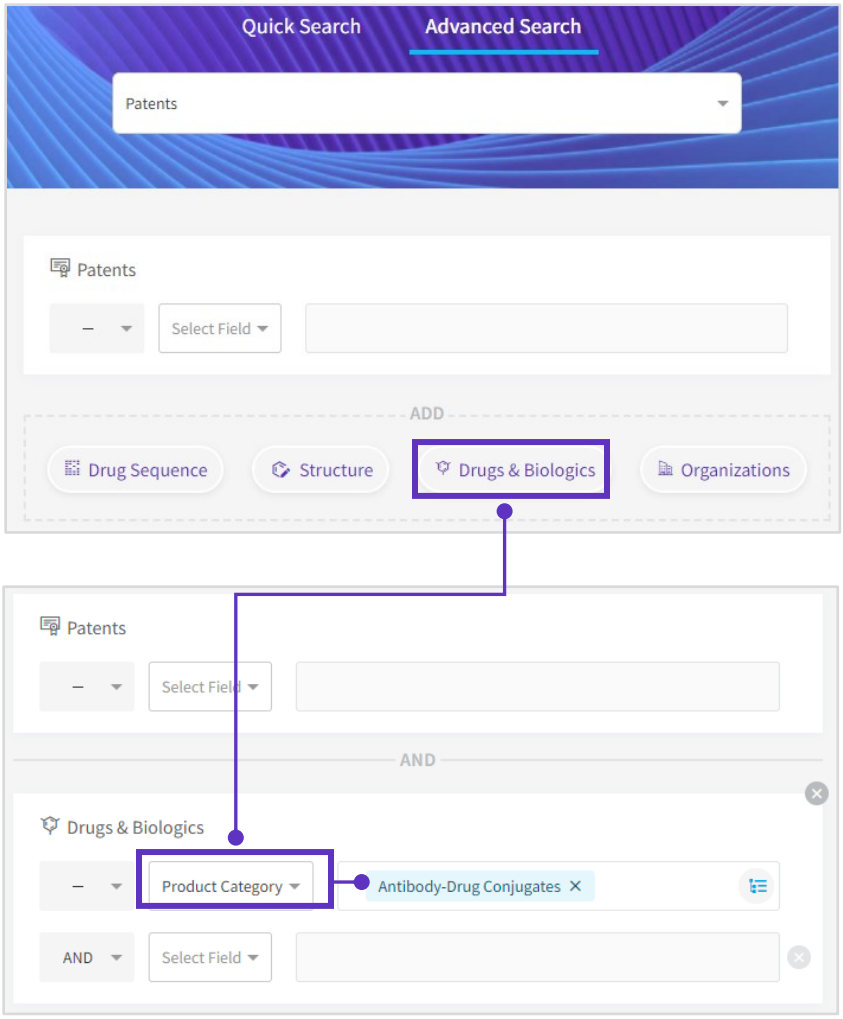
The *Basic Patent* is indicated by the blue B symbol.
Related improvement patents are contained within the same record and do not have this symbol.

Subject Matter

A controlled vocabulary index with key words that describe what the patent is about.

Included	• Comprehensive subject matter indexing from 2005 onwards
Excluded	• The subject matter index is not comprehensive prior to 2005. This means that if you search or filter by subject matter terms, you will miss some patents published prior to 2005.

Tip, if you don't find the subject matter you are looking for, consider looking for patents via the Drugs & Biologics Product Category index in Advanced Search:



Abstracts

A summary of the main points

Included	• **Drug Discovery Abstract**, written by one of Clarivarte's scientists • **Original Abstract**

Disease Briefings

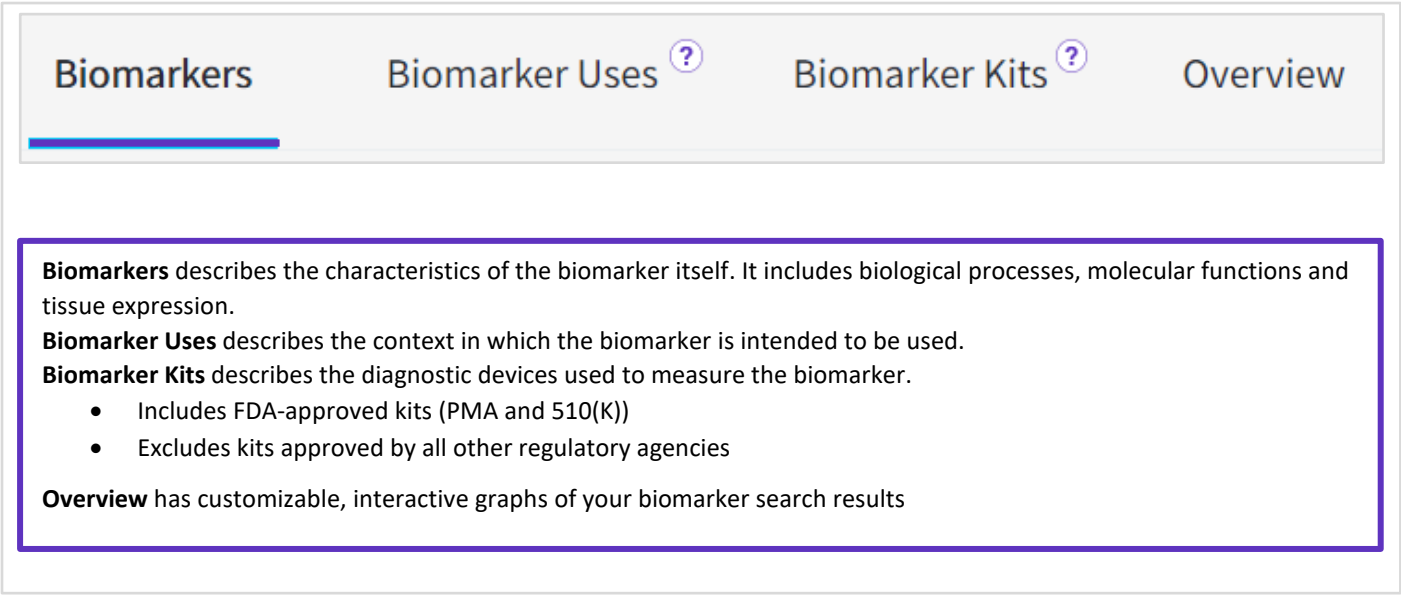
Disease Briefings are dynamic executive summaries on the status and trends in drug therapy for specific diseases and conditions. The text is updated regularly. It provides background information on the disease (pathophysiology, risk factors, epidemiology, and cost), as well as its diagnosis, prevention and treatment. Treatment is covered from a mechanistic standpoint, focusing on compounds currently used to prevent and/or treat the disease and those under active development. Disease Briefings present information in a fully referenced, text-based format accompanied by multimedia images and tables of drugs and biologics launched or under development for the disease, as well as links to related information and websites.

Biomarkers

Cortellis Drug Discovery Intelligence Biomarkers Module is an add-on module that requires an additional subscription.

Biomarkers have the potential to accelerate drug development, to lower the cost and improve efficiency, and to open the field to innovators. Use Cortellis Drug Discovery Intelligence Biomarker Module to test hypotheses of disease pathology and guide your decisions in drug and diagnostics development.

The information in Biomarkers module is organized into four sections:



Biomarkers describes the characteristics of the biomarker itself. It includes biological processes, molecular functions and tissue expression.
Biomarker Uses describes the context in which the biomarker is intended to be used.
Biomarker Kits describes the diagnostic devices used to measure the biomarker.

- Includes FDA-approved kits (PMA and 510(K))
- Excludes kits approved by all other regulatory agencies

Overview has customizable, interactive graphs of your biomarker search results

Biomarker

Biomarkers Module follows the definition in *Biomarkers, EndpointS, and other Tools* (**BEST**) from the FDA-NIH Biomarker Working Group: “A defined characteristic that is measured as an indicator of normal biological processes, pathogenic processes, or biological responses to an exposure or intervention, including therapeutic interventions”.

Excluded	• Descriptions of how a person feels • Symptoms • Clinical Outcome Assessments (COA)

Biomarker Use

The use describes the context in which the biomarker has been studied and includes an indication of potential utility (Role).

Included	• Condition • Population • Role • Validity • Technique • Substrate • Number of Supporting/Conflicting source documents • Numbers of associated drugs • Numbers of associated gene variants

Biomarker Kits

Describes the FDA-approved diagnostic devices used to measure the biomarker.

Included	FDA-approved diagnostic devices from the following **databases** • Premarket Approvals (PMA) • Premarket Notifications (510(K)s) • Humaitarian Device Excemption (HDE)
Excluded	• Diagnostic devices approved by any other regulatory agency • Other lab tests • Clinical Laboratory Improvement Amendments (CLIA) and CLIA – waived analytes

How to identify Biomarker Kits

1. If you know the name of the kit / company that makes the kit / Drug with co-diagnostic: Advanced Search > Biomarkers > Select Field = *Biomarker Kit* > Click the index button to the right of the search fields > Search for your term of interest and add to the Advanced Search box > Search.
2. If you do not know the name of the kit / company: complete your biomarker search as normal and apply filters > Select the *Biomarker Kits* tab > Click on the kit name to view details
3. If you are looking for a specific Drug – Co-diagnostic combination:
   a. From the drug record > Related Content = *Biomarkers* > Biomarker Kits > any of the kits with (CDx) in parenthesis next to it's name
   b. From a kit record > Identify the relevant biomarker use > Click the hyperlinked number under the *Drugs* column to identify the corresponding drug
4. If you are using biomarker controlled-vocabulary search from other knowledge areas in advanced search; biomarker kits are not included in this type of search.

Validity and Biomarker Use Validity

Validity is a controlled-vocabulary index used to describe the trustworthiness of the biomarker in the context of its (potential) clinical utility:

Validity	Description
Emerging	• The biomarker use is mentioned for the first time, usually from patents and press releases
Experimental	• The biomarker use has been reported in preclinical studies (laboratory and/or animal studies) or in human studies where there is insufficient data to assign a clinical role (role = *Disease profiling*).
Early Studies in Humans	• The biomarker has been studied in humans with study cohorts of less than 500 individuals. • Includes clinical trials and observational studies
Late Studies in Humans	• The biomarker has been studied in humans with study cohorts of greater than 500 individuals. • Includes clinical trials and observational studies
Recommended/Approved	• Biomarkers that can be measured by a kit that has been approved by the FDA (PMS, 510K and HDE) • Use of the biomarker is described in an FDA drug Label • Biomarker is Qualified as part of the FDA's **Biomarker Qualification** program. • **Tip**, for qualified preclinical safety markers, apply validity = Recommended/Approved and Population = species of animal model, eg "Rat". • Biomarkers that have been recommended by clinical societies of international standing (2007 – 2012)

The *Validity* index is used in three different locations in the Biomarkers Module:

Validity	Definition

Highest Validity	Each biomarker can have multiple uses. *Highest Validity* refers to the validity of the most advanced use, irrespective of the condition or role it was intended to be used in. A biomarker will have only one *Highest Validity.* **For example**, Use *Highest Validity* to differentiate established biomarkers, those under development, and experimental markers.
Highest Use Validity	Each biomarker can have multiple uses; each use is described in a separate row in the *Biomarker Uses* tab. The *Highest Use Validity* describes the trustworthiness of the biomarker in the context of the (potential) use. Use the *Highest Use Validity* in combination with the *Condition, Population* and *Role* to identify biomarkers by the context in which they could (potentially) be used. **For example**, a search for Biomarker Use Condition = Cancer, AND *Validity* = "Late Studies in Humans" will retrieve a list of biomarkers that have been applied in large, late-phase human cancer studies.
Techniques & Substrates Validity	Just as each biomarker can have multiple potential uses; it can also be measured using multiple different techniques and in different samples taken from the body. Click *View Use* at the end of each use line to see the details of how the biomarker was measured, and the validity of the use when the biomarker was measured using each different Technique & Substrate. *Techniques & Substrates Validity* refers to the (potential) clinical utility of the biomarker for that Use + Technique & Substrate combination; **not** the performance characteristics (sensitivity, specificity etc) of the Technique & Substrate. **Tip**: To identify the best approach to measure your biomarker of interest, sort by Technique & Substrate validity.

Biomarker Type

The focus is on molecular medicine, including human molecular biomarkers. However, there is partial coverage of other biomarker types included in the Biomarkers module:

Type	Definition	Example	Coverage
Proteomic	Variations in protein sequence, level and enzyme activity	Her2 protein level	2007+
Genomic	Variations in DNA sequence, chromosome structure, copy number and transcription levels	Her2 gene copy number	2007+
Biochemical	Chemical compounds that are found naturally in living organisms (Eobiotics)	Bilirubin	2007+
Cellular	Whole cells	Leukocyte count	2007-2012
Structural	Anatomical structures Includes lesions	Hippocampus volume Plaque volume	2010-2012
Anthropomorphic	Of the body shape/form	Body Mass Index	2007-2012
Physiological	Body processes, function. Includes velocity, duration, frequency, amplitude, force, and fractions (ratios of these parameters)	Systolic blood pressure	2010-2012

Tip: Most genomic/proteomic biomarkers are indexed with both biomarker types. To identify biomarker uses that are specifically Genomic or Proteomic, search or filter by > Biomarker Uses > Techniques > "Genetic Techniques" or "Protein Techniques".

Combination biomarkers

Algorithms or scores used to combine the results from a multiple biomarker panel to give a single outcome measure.

For example, “Oncotype DX” is a multi-gene expression diagnostic assay that predicts the likelihood of breast cancer recurrence.

- From within a combination biomarker record, the individual component biomarkers are listed under the section *Component biomarkers.*
- From within a component biomarker record, the combination biomarkers that use the component contributes to are listed under the section *Component of...*

Tip: You can include/exclude combination markers from your results using the Combination biomarker Yes/No options in the filters and in Advanced Search.

Product Modifier

A “Product Modifier” is linked to a biomarker when a Drug / Biologic is specifically named in a clinical recommendation and/or an FDA 510(k) Approval statement.

Use Advanced Search > Biomarkers > Product Modifier if you know the name of your drug and you are looking specifically for biomarkers that have been recommended/approved for that drug.

For all other drug – biomarker associations, see the section on Biomarker Use – Related Drugs & Biologics

Mechanism Modifier

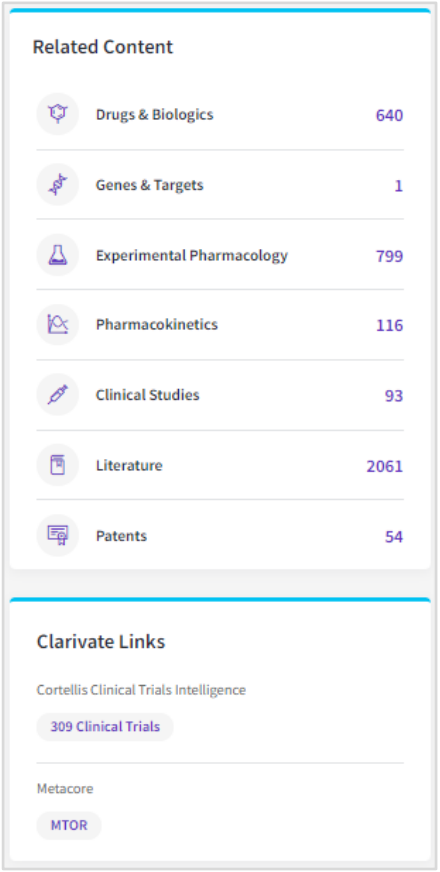
A mechanism modifier is linked to a biomarker when the biomarker is a target for a drug.

Related Content

Related Clinical Trials

Clinical Studies is a knowledge area within Cortellis Drug Discovery Intelligence; it includes clinical trial protocols from clinicaltrials.gov, and results reported in journals, conferences, and press releases. The focus is on providing supporting information for drug development and to help plan preclinical to clinical translation. Use the *Biomarkers to Clinical Studies* link to explore the relationship between a biomarker and a drug that has entered the clinical research stages of development.

Cortellis Clinical Trials Intelligence (separate subscription required) is a database of global clinical trials that covers protocol details such as biomarkers, endpoints, compounds, biologics, devices, inclusion/exclusion criteria and more. Use the *Biomarkers* to *Cortellis Clinical Trials Intelligence* link to understand how the biomarker has been applied in clinical trials



Cortellis Drug Discovery biomarkers are related to two types of clinical trial information:

Although Cortellis Clinical Trials Intelligence requires a separate subscription, you can still filter your biomarker search results within Cortellis Drug Discovery Intelligence using the following parameters that use Cortellis Clinical Trials data:

- *Used in Clinical Trial*: Boolean filter (yes/no) allows you to separate biomarkers used in clinical trials from purely experimental markers.
- *Phase*: explore which clinical trial phases the biomarker has been used in. For example, biomarkers used for mechanism validation are typically used in phase I studies, whereas surrogate markers are typically used in phase II and phase III studies.
- *Design*: use this filter to identify (for example) biomarkers that have been used in randomized controlled trials versus observational studies.

MetaCore

A systems biology tool to help you view your biomarkers in the context of human diseases. Use this database to establish the molecular relationship between a drug target and your biomarker of interest in the context of a disease pathology.

Update history

A history of what type of information was added to the biomarker record, and when.

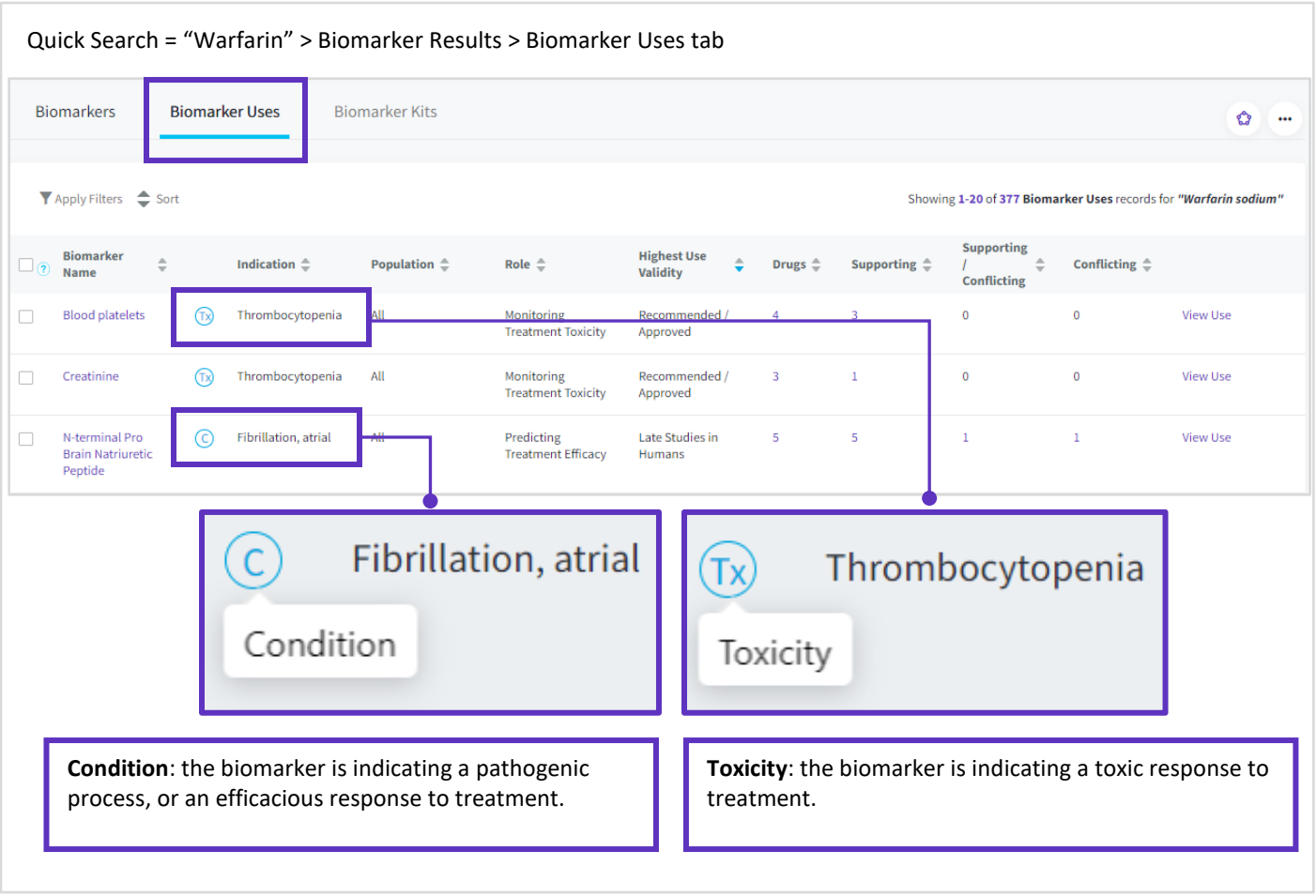
If you do not see the link “Updates History” in the biomarker record, it means there have not been any updates yet.

This content can be exported by clicking on the download icon within the Update History section.

Biomarker Use – Indication

There are two sub-types of biomarkers use, condition and toxicity:

Quick Search = “Warfarin” > Biomarker Results > Biomarker Uses tab



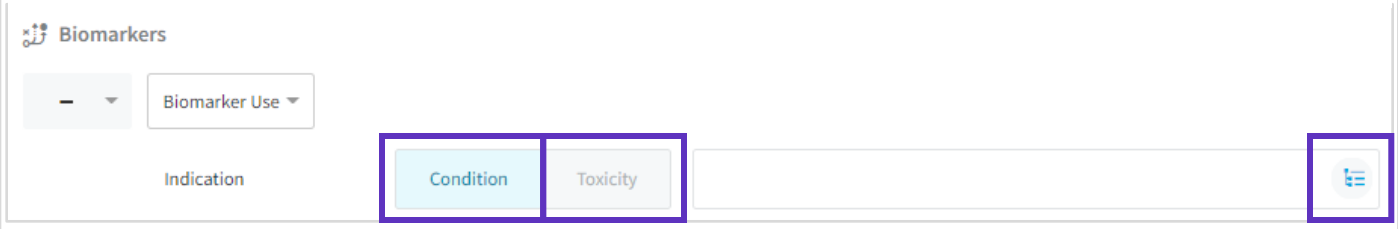
Condition: the biomarker is indicating a pathogenic process, or an efficacious response to treatment.

Toxicity: the biomarker is indicating a toxic response to treatment.

Specify a **Condition** using **Quick Search and Filters** as follows: Quick Search Biomarkers > Biomarker Uses Tab > Apply Filters > Biomarker Uses > Condition; then search/browse the conditions filter and select the relevant terms.

You can specify a **Condition** or a **Toxicity** using Advanced Search as follows:

Advanced Search > Biomarkers > Biomarker Use > Select Indication = Condition or Toxicity > Click the Controlled Vocabulary icon and search / browse the index and select the relevant terms.



Biomarker Use - Population

Characteristics of the organism that the biomarker pertains to.

The Population is indexed when the study population was discussed in the source document. Otherwise, the population is “All”.

Included

- Demographic parameters; age, gender, ancestry, weight range
- Comorbidities
- Stage/grade information relating to the condition
- Additional biomarker information pertinent to that population. For example, “Breast cancer, Triple negative (ER, PR, Her2)”
- If the biomarker use is for a non-human biomarker, for example in an animal model of a human disease, then the animal species will be described in the population field

Biomarker Use – Role

Describes how the biomarker has been (or could potentially be) used.

Role	Definition	Example
Diagnosis	This biomarker can differentiate between two conditions, typically diseased and healthy. This biomarker can be useful to identify the condition.	HbA1c to identify patients with type II Diabetes
Differential Diagnosis	This biomarker can differentiate between conditions with similar symptoms	Cortisol is used to differentiate Cushing syndrome and Addison's disease
Staging	This biomarker describes how far a disease has progressed in a patient.	Alpha-fetoprotein, human chorionic gonadotropin, and lactate dehydrogenase are used for staging testicular cancer
Prognosis	This biomarker predicts the course of the disease. The prediction is based on the usual course of the disease seen in patients without therapy.	Proliferation marker protein Ki-67 levels predict the probable outcome in patients with bladder cancer
Prognosis – Risk Stratification	This biomarker determines a person's risk of suffering a clinical event within a specified period	Natiuretic Peptides B are used to stratify heart disease patients by the likelihood of a cardiovascular event
Screening	This biomarker is used for early detection of potentially deadly diseases in an otherwise healthy population	Cholesterol levels in adults over 20 can indicate the likelihood of developing heart disease
Risk Factor	This biomarker indicates the potential for developing a disease in a person who does not currently have clinically apparent disease	There is a higher likelihood that people with mutations in the BReast CAncer genes 1 and 2 (BRCA1, 2) could develop breast cancer than those without mutations in these genes
Disease Profiling	This biomarker is used to obtain information about the disease, but there is insufficient data to assign a clinical role. The data is often obtained from high throughput analyses, for example transcript profiling.	
Toxicity Profiling	This biomarker is used to obtain information about the toxic reaction caused by a therapy, but there is insufficient data to assign a clinical role. The data is often obtained from high throughput analyses, for example transcript profiling.	
Predicting Drug Resistance	This role is no longer used. See "Predicting treatment efficacy".	
Predicting Treatment Efficacy*	This biomarker is measured before treatment and is used to identify patients who are likely to have a favorable response to the treatment. Potential uses include segmenting patient groups into sub-populations, stratification to different treatment arms, enriching clinical trials, personalized medicine	Her2 overexpression predicts an efficacious response to Her2-inbibitor therapy in patients with breast cancer
Predicting Treatment Toxicity*	This biomarker is measured before treatment and is used to identify patients who are likely to have an unfavorable response to the treatment.	Thiopurine methyltransferase (TPMT) genotype or enzyme activity predicts myelosuppression (toxicity) in Acute Lymphocytic Leukemia patients who are being considered for treatment with Mercaptopurine

	Potential uses include segmenting patient groups into sub-populations, stratification to different treatment arms, enriching clinical trials, personalized medicine	
Selection for Therapy	This biomarker is a sub-type of "Predicting Treatment Efficacy" and is applied specifically to biomarkers used in a clinical practice setting in order to personalize the treatment for the patient.	The BCR-ABL fusion protein is used to select patients for treatment with Bcr-Abl kinase inhibitors
Monitoring Disease Progression	This biomarker is measured serially and used to observe the progression of the disease.	Change in prostate-specific antigen (PSA) levels over time indicate the rate of progression of prostate cancer
Monitoring Treatment Efficacy*	This biomarker is measured serially and used to determine whether the treatment is producing the desired effect. Potential uses include surrogate endpoints to get an early read on treatment response.	Cancer Antigen 125 (CA125) levels can indicate the treatment efficacy in patients with ovarian cancer
Monitoring Treatment Toxicity*	This biomarker is measured serially and used to determine whether the treatment is producing any undesired effects (safety/toxicity). Potential uses include surrogate endpoints to get an early read on treatment response.	Serum creatinine may be used to monitor for drug-induced nephrotoxicity

* When biomarker role contains *Treatment*, then Treatment includes drug treatment, radiotherapy, hemodialysis or surgery.

Biomarker Use – Technique

The method used to measure the biomarker.

Use the filters or browse the *Techniques* index in Advanced Search to identify the modalities that have been used to measure the biomarker.

Biomarker Use – Substrate

The biological matrix in which the biomarker was measured.

The convention for Substrate depends on the condition and the biomarker type:

Condition	• If the condition pertains to an anatomical region, e.g. “Cancer, breast”, then the substrate will be “tissue” rather than “breast tissue”
Type	• For genomic biomarkers, the substrate will be the type of molecule measured, e.g. DNA, RNA etc • For protein biomarkers, the substrate will be “tissue” if it is obtained by biopsy (see comment above for Condition)

Use the filters or browse the *Substrate* index in Advanced Search to identify the body substances/parts in which the biomarker has been measured.

Biomarker Use - Supporting / Conflicting

Biomarker studies can either support the role of a biomarker in the context of a use, or refute it.

Rank your biomarker uses for strength of evidence (number of supporting / conflicting source documents) using the Table Sort buttons against the *Supporting* and *Conflicting* columns in the Biomarker Use results list.

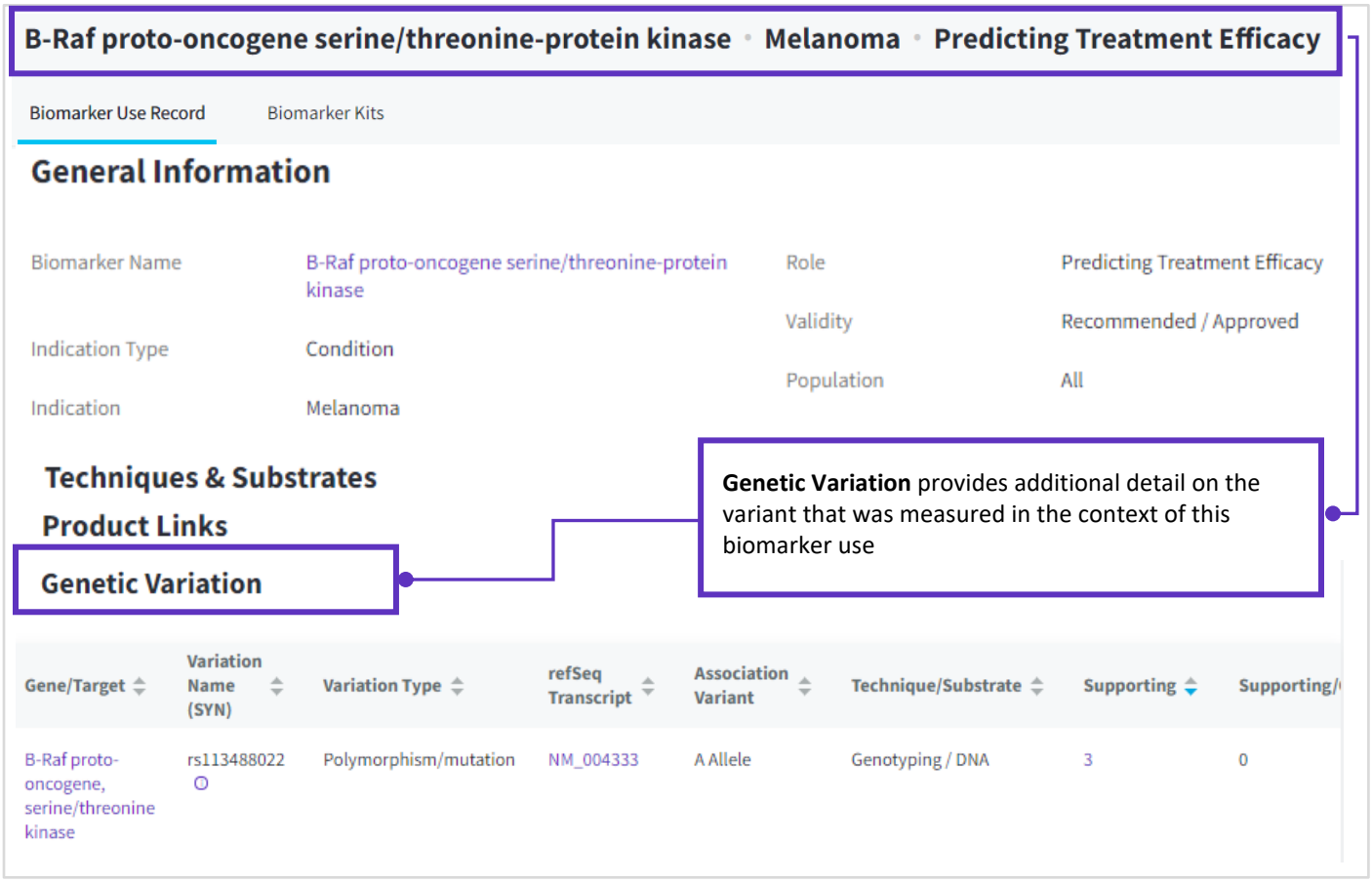
Attribute	Definition & Value
Supporting	Significant association (p =< 0.05) between the biomarker and its use. The results reported in the source documents strengthen the role of the biomarker in that use.
Conflicting	No significant association (p > 0.05) between the biomarker and its use. The results reported in the source documents weaken the role of the biomarker in that use.
Supporting / Conflicting	Mixed results were reported in the same study. For example, more than one polymorphism in a gene has been reported in the same study, and only some support the use of the gene as a biomarker in the context of the study.

Biomarker Use – Related Gene Variants

Genetic variants can serve as biomarkers:

- Either indicating an increased or decreased propensity for a condition (risk factor),
- Or predictive of outcome in relation to treatment.

In Cortellis Drug Discovery Intelligence, the biomarker is named for the gene / protein; and gene variants are associated within the biomarker uses.



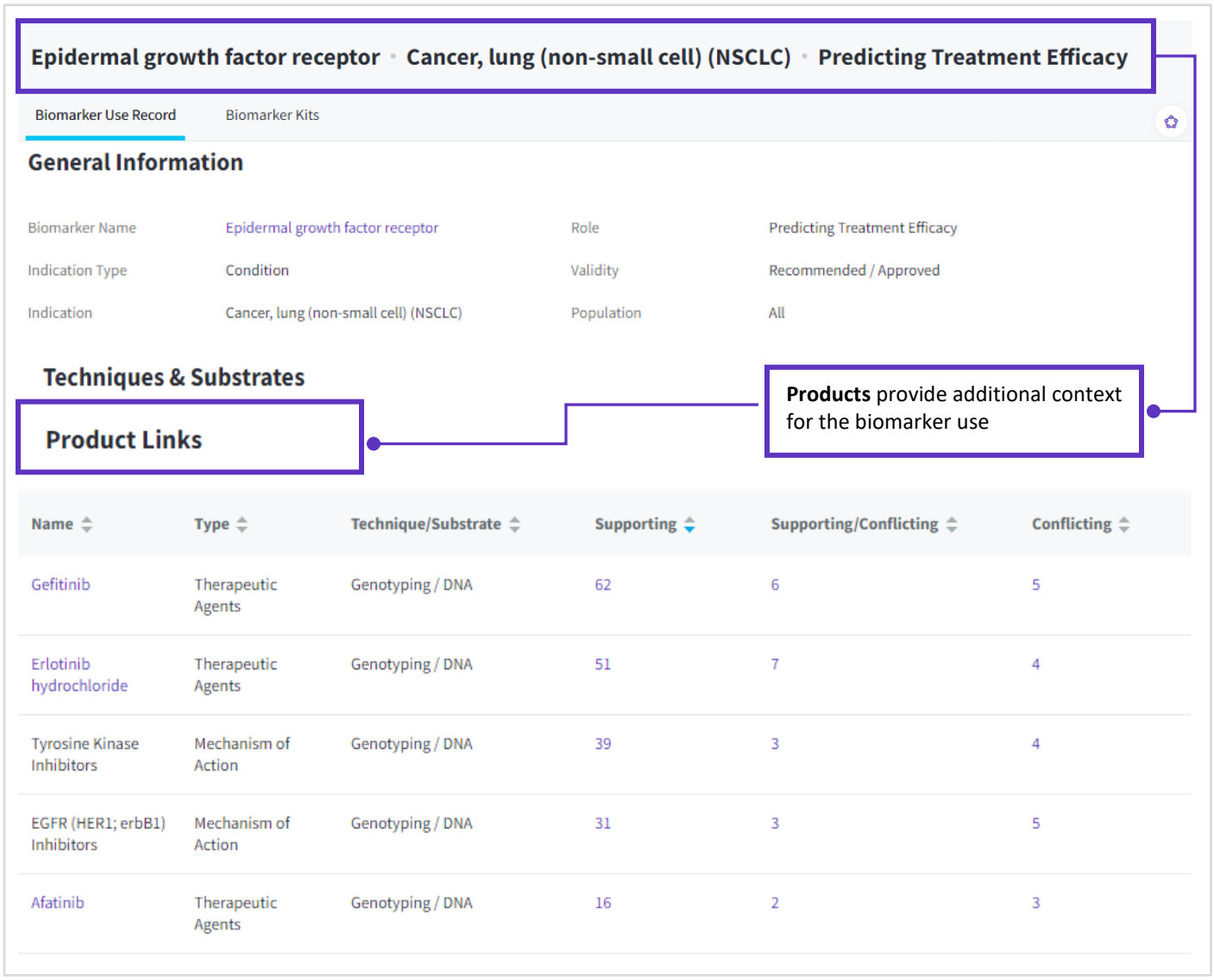
How to find Biomarker Uses associated with Genetic Variation:

1. If you know the name of your variant of interest: Advanced Search > Biomarkers > Biomarker Use Genetic Variant > Type the name of your variant of interest (free-text, include phrases in quotes)> Search.
2. Biomarker Use **Role** can identify biomarker uses associated with Genetic Variants: Advanced Search > Biomarkers > Biomarker Use > click the index button to the right of the *Role* search field > select your role of interest:
   a. Risk Factor – for biomarkers that increase/decrease the susceptibility to developing a condition
   b. Predicting treatment efficacy / toxicity – for biomarkers that increase/decrease the response to treatment
   c. Or any other role in combination with Biomarker Use Technique = *Genetic Techniques*
3. The Biomarker Use *Genetic Techniques* can be used to select biomarkers that are measured using genetic techniques, and the corresponding uses will often contain details of the variant that was measured

Biomarker Use – Product Links

Included

Product Type
- Therapeutic Agents = Drug or biologic was named in the data source
- *Therapeutic Group* = Drug was not named, but source described the biomarker use for this group of drugs
- *Product Category* = Drug was not named, but source described the biomarker use for this category of drugs
- *Mechanism of Action* = Drug was not named, but source described the biomarker use for drugs with this mechanism



Biomarkers can be used to predict or monitor an efficacious or a toxic response to therapy.

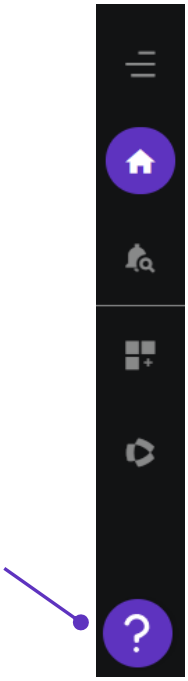
How to find Biomarker Uses associated with drugs:

1. If you know the name of your drug of interest: Advanced Search > Biomarkers > Biomarker Use Product Name > click the index button to the right of the search field > search for your drug of interest and add to the Advanced Search box > Search.
2. If you wish to find biomarker uses associated with a class of drugs, e.g. Product Category, Mechanism of Action, or Therapeutic Group: Advanced Search > Drugs & Biologics > Product Category (etc) > Click the index button to the right of the search field > Search for your category of interest and add to the Advanced Search box > Search > Apply filters as necessary > All Related Content > Click on the Biomarkers card (Biomarker uses).
3. Some data sources do not name the drug that was used in a biomarker study, but name a class of drugs, typically these sources are conference proceedings and guidelines from clinical societies. In these cases, the corresponding biomarker use is indexed with the appropriate Product Category / Mechanism of Action / Therapeutic Group, BUT they cannot be retrieved using the above method. To retrieve this data: Advanced Search > Biomarkers > Select Field = *Biomarker Use Product Category* (or mechanism or therapeutic group) > Click the index button to the right of the search field > Search for your category of interest and add to the Advanced Search box > Search.
   Note, options 2 and 3 above cannot currently be combined to retrieve all biomarker uses for a Product Category / Mechanism of Action / Therapeutic Group in a single search. The two searches need to be done separately and combined once the data is exported to excel
4. The Biomarker Use Role can also be used to identify biomarker uses associated with Drugs & Biologics: Advanced Search > Biomarkers > Biomarker Use > click the index button to the right of the *Role* search field > select your role of interest:
   a. Predicting treatment efficacy
   b. Predicting treatment toxicity
   c. Predicting drug resistance
   d. Monitoring treatment efficacy
   e. Monitoring treatment toxicity
   f. Selection for therapy

Additional Support and Giving Feedback

- The Resources & Updates center houses an extensive library of training material and provides links for you to contact us.
- The Share Feedback portal allows you to browse feedback on Cortellis Drug Discovery Intelligence, vote on requests made by others and submit your own feedback.

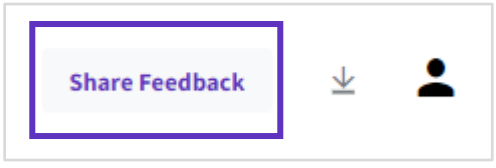
Resources & Updates



Section	Subsections	Content
Product updates		Recently added features and content
Guided tours		Step by step guides on how to do specified tasks such as managing alerts
Upcoming live training		Join our 30 minute quick-start sessions to get you going with Cortellis Drug Discovery Intelligence, and to ask questions of one of Clarivate's trainers
Training resources	All training resources	Explore videos, PDF guides, live training, this document and other resources
Drug Discovery insights		Upcoming specialist webinars, white papers etc
Contact us	Submit an inquiry	Submit your question or feedback via a web-based form
	Call us	List of phone numbers to call, organized by geographic region
	Other support options	Additional options include • Search/browse the knowledge base • Chat with customer support

When an enquiry is received, it is assigned to a member of our Customer Support team to resolve and answer. Most enquiries having to do with the database content or with how to accomplish a certain task are resolved directly. For those cases where additional expertise is required, enquiries are referred to a member of the Content Department or the Engineering/IT Department.

Share Feedback



Your feedback helps the Cortellis Drug Discovery Intelligence team to understand your needs, pain-points, and how best we can improve your product experience.

1. Click the Share Feedback button in the top right of your screen
2. Review the existing feedback and vote for the idea that would solve the issue you face. You can also add your comments to existing feedback. Your feedback and comments are anonymous.
3. If the feedback you wish to give is not listed and you see the option "Make a suggestion", then please submit new feedback by describing the problem you face and suggest possible solutions. Your feedback will be reviewed and published anonymously. Please note that duplicates will be merged.

If you submit feedback in a language other than English, we will request a translation on your behalf. This ensures your feedback can be read and voted upon by as wide an audience as possible.

Besides submitting your feedback through this forum, you can also discuss your feedback directly with one of our customer care representatives and they will address any concerns you have and can submit feedback on your behalf.

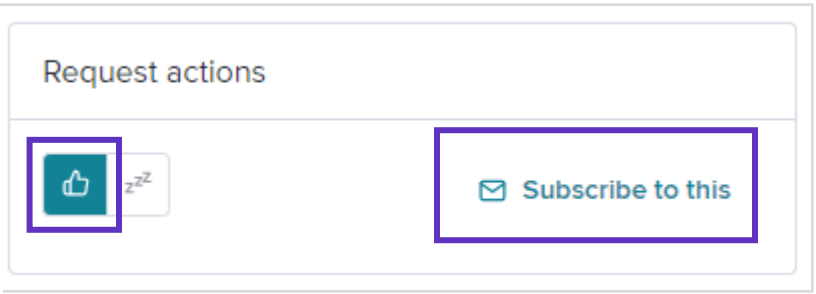
Feedback Status

Status	Definition
Awaiting Feedback	Feedback has been submitted by someone who uses Cortellis Drug Discovery Intelligence and reviewed by Clarivate staff. The Cortellis team is gathering further information on this feedback. Your votes and comments will help us to gauge demand, gather use cases and establish impact and value. To improve the chances that your feedback will be taken into development it is important to clearly described the problem you faced so that others can understand and vote on your feedback. It helps if you are also able to describe your current workaround (if you have one), and any other details that will help build a case for why this is an important request to you.
Planned	The Cortellis Drug Discovery Intelligence team have decided to make an improvement based on this feedback, but a date has not been fixed yet for its release.
Building	The improvement has been taken into development.
Released	The improvement has been released to the product. Most improvements are announced through the product updates section in the Resources & Updates center.
Declined	Occasionally, feedback is given that does not align with Clarivate's product strategy. In this case, the feedback status will be *Declined* and an explanation will be posted in the comments.

If you see feedback that interests you, you can:

1. Vote for it
2. Add your comments using the *Discussion* text box

Click *Subscribe to this* t o receive notifications of new comments or a change in status.



To receive notifications of when your feedback changes status,
To unsubscribe from email notifications, click on the "Manage Email Preferences" link in the footer of the email, or click the *Subsribed* link in the feedback portal.

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For more information contact Customer Service at **LS Product Support**

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ANNEX 1

Below are the full descriptions of the in-house scores used for the Conditions Heatmap in Gene & Targets:

Drug Score

$$Drug\ Score = \frac{\sum_{i=1}^{n} Wi}{\sum_{i=1}^{n} Wi + FD}$$

Wi = WnUADHighestPhase + (WUADHighestPhase*FUAD)

FD=1 (constant)

- WnUADHighestPhase - Weight of the highest phase for which the drug is not Under Active Development
- WUADHighestPhase - Weight of the highest phase for which the drug is Under Active Development
- If the drug is UAD, FUAD=4; otherwise FUAD=2

Based on **Clin Transl Sci 2018, 11(6), 597 (1),** we defined the following drug phase weights:

Drug Phase Weights

Drug Phase	**Weight (Wph)**	**Drug Phase**	**Weight (Wph)**
Biological testing	0.0025	Preregistered	0.875
Preclinical	0.085	Recommended Approval	1
IND Filed	0.23	Registered	1
Phase 0	0.2	Launched	1
Clinical	0.23	Suspended	0.23
Phase I	0.23	Not Applicable	0.23
Phase I/II	0.29	Not Determined	0.1
Phase II	0.29	Discontinued	0.23
Phase II/III	0.55	Withdrawn	0.7
Phase III	0.55		

Gene Variant Score

$$Genetic\ Variant\ Score = \frac{\sum_{i=1}^{n} Wi}{\sum_{i=1}^{n} Wi + FGV}$$

Wi = (WEffj * NGVj) + (WRef * NRef) + (WPat* NPat)

FGV = 1

- WEffj: weight for each Effect Type (described below)
- NGVj: number of different Effect Types for target-condition
- WRef: Weight of number of references. WRef = 0.05 (considering that the maximum number of references for a particular Gene Variant is 200)
- NRef: Number of references
- WPat: Weight of number of patents. WPat = 0.05 (considering that the maximum number of Patents for a particular Gene Variant is 20)
- NPat: Number of patents

*For each gene and condition, we count DISTINCT references and patents.

Effect Type weight

Effect Type	**Weight**
Causative	1
Increased Risk	0.8
Carcinogenesis	0.6
Poor prognosis	0.5
Trend increased risk	0.3
Undetermined	0.15
Other effects*	0.1

*Others are the rest of the Gene Variants except those starting by 'No effect', that are not considered for the algorithm

Experimental Models Score

$$Experimental\ Models\ Score = \frac{Sum(Wi)}{Sum\ (Wi) + FEM}$$

$$Wi = (WCH * CH) + \left(WNDrugs * \frac{NDrugs}{NDrugs + FND}\right) + \left(WNRefs * \frac{NRefs}{NRefs + FNR}\right) + \left(WNPats * \frac{NPats}{NPats + FNP}\right)$$

FEM = 8

- WCH: Weight of the characteristic
- NCH: Number of characteristics for each target-condition
- WNDrugs: Is the weight for the Number of Drugs
- NDrugs: Numbers of Drugs
- FND: Constant for Drug weight = 1
- WNRefs: Is the weight for the Number of Refs
- NRefs: Numbers of Refs
- FNR: Constant for Reference weight = 0.7
- WNPats: Is the weight for the Number of Pats
- NRefs: Numbers of Pats
- FNP: Constant for Patents weight = 1

Characteristics Weight

Characteristic	Weight	Characteristic	Weight
Knock-out	1	Transgenic antigen	1
Conditional Knock-out	1	Mutated	1
Knock-in	1	tRNA mutated	0.5
Conditional Knock-in	1	Conditional mutated	1
Knock-down	0.5	Dominant negative mutated	1
Conditional Knock-down	0.5	Conditional dominant negative mutated	1
Transgenic	1	CRISPR_CAS9 mediated editing	1
Conditional transgenic	1		

Biomarker Use Score

$$Biomarker\ Use\ Score = \frac{\sum_{i=1}^{n} Wi}{\sum_{i=1}^{n} Wi + FBU}$$

$$Wi = (WHV * NHV) + (WRL * NRL) + (WRefs * NRefs) + (WPats * NPats)$$

FBU = 1.5

- WHV: Weight of the Highest Validity
- NHV: Number of Hight Validity for each target-condition
- WRL: Weight of the Roles
- NRL: Number of Roles for each target-condition
- WRefs: Weight supporting references
- NRefs: Number of supporting references
- WPats: Weight supporting patents
- NPats: Number of supporting patents

Highest Validity Weight

Highest Validity	**Weight**
Emerging	0.0025
Experimental	0.085
Early studies in human	0.29
Late studies in human	0.55
Recommended / approved	1

Biomarker Role Weight

Biomarker Role	Weight
Monitoring disease progression	0.1
Diagnosis	1
Selection for therapy	0.1
Monitoring treatment efficacy	0.1
Monitoring treatment toxicity	0.1
Screening	0.1
Prognosis risk stratification	0.1
Prognosis	0.1
Predicting treatment toxicity	0.1
Predicting drug resistance	0.1
Risk factor	0.5
Predicting treatment efficacy	0.1
Staging	0.1
Differential diagnosis	0.5
Disease profiling	0.1
Toxicity profiling	0

Number of Reference Weight

W_BU_REFERENCES = 0.018

Number of Patents Weight

W_BU_PATENTS = 0.018

IMPORTANT DISCLAIMER

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