

Cortellis Application Programming Interfaces

Cortellis
Powering Life Sciences Innovation

 **Clarivate**
Analytics

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The challenge

Teams across your organization want fast and simple access to current information in order to make reliable, evidence-based decisions for their research.

With everyone utilizing multiple sources of information as well as a wide variety of applications and systems, efficiently accessing and using information to accelerate projects can be a challenge. Your teams need the right information at the right place and time in order to have a more productive R&D process.

The solution

Integrate key content and information into the tools and processes your teams use every day. With *Cortellis* Informatics Application Programming Interfaces (APIs), you can gather information from market-leading *Clarivate Analytics* life sciences solutions and feed it into the systems that drive your business.

Give your users more advanced options for leveraging our intelligence within your internal applications. The APIs allow integration of *Clarivate* information with your proprietary content and public data sources into a single, comprehensive view so your researchers can find what they are looking for quickly and see it in the context of their work.

Gain the flexibility to decide how and where our information is delivered within your company. Seamless, on-demand access to the most trusted life sciences intelligence on the market via desktop and mobile applications will enhance and accelerate your R&D.

What can you do with Cortellis APIs?

APIs retrieve information directly from *Clarivate* databases, enabling many opportunities to integrate information across your organization. This gives your users instant access to the same information across the board, saving time and reducing the risk of wasted or duplicated effort. Leveraging *Cortellis* APIs you can:

- embed high-quality *Clarivate* information into the systems that drive your business
- build and present automatically updated dashboards or infographics
- automatically pull content into TIBCO Spotfire®, Tableau Software and Microsoft Excel® spreadsheets
- generate your own customized reports
- run tailored alerts to monitor hot topics and trends or key changes for your assets
- access on the fly competitive, scientific, clinical, patents and regulatory information
- build mobile applications that leverage *Clarivate* content
- build internal tools for your users to post and internally share comments related to the data from the API
- combine *Clarivate* data with proprietary or third party data in any kind of application (Intranet, Biovia Pipeline Pilot®, Inova Software™, Tableau, TIBCO Spotfire software, ELNs) as well as perform analytics
- Integrate *Clarivate* information into your own database

Cortellis APIs

Analytics

Aggregate data to build a competitive landscape for any indication, action or company and display all competing drugs complete with their development histories. You can then visualize your results in analytics tools such as TIBCO Spotfire®, Tableau, or QlikView software.

- Import information into specific analysis tools, allowing precise manipulation of the data to display exactly what is required
- Build visual dashboards, instantly displaying at a glance a candidate’s progression through trials
- Compare aggregated trial adverse events between drugs to evaluate their safety profile

Content includes:

- drug pipeline events
- patent applications
- trial summaries
- adverse events reported in trials



Drug pipeline

Biomarkers

Find biomarkers and their uses across the full spectrum of drug discovery and development.

- Find validated biomarkers for clinical trials and cross-reference with the Clinical API to identify stratified populations
- Find suitable proof of concept and proof of mechanism biomarkers
- Inform your biomarker discovery programs by accessing the universe of known markers

Content includes:

- biomarker summaries
- individual records for each distinct use, including validity and associated evidence



Biomarker uses

Clinical

Access detailed information for trials across all therapy areas. See relevant clinical trials by biomarker, patient segment, drug, company, or indication, and get breaking news on drug development from press releases and conferences.

- Stay up to date with the latest clinical trials information and get to the data quickly
- Be confident that the results returned reveal the most up-to-date trial outcomes and adverse event information

Content includes:

- summaries of select journal articles from 1964 to date
- clinical trials content comprised from international registry sources
- trial outcomes from journals, conferences, and press releases
- pharmaceutical company press releases and information from major conferences



Clinical trial sites

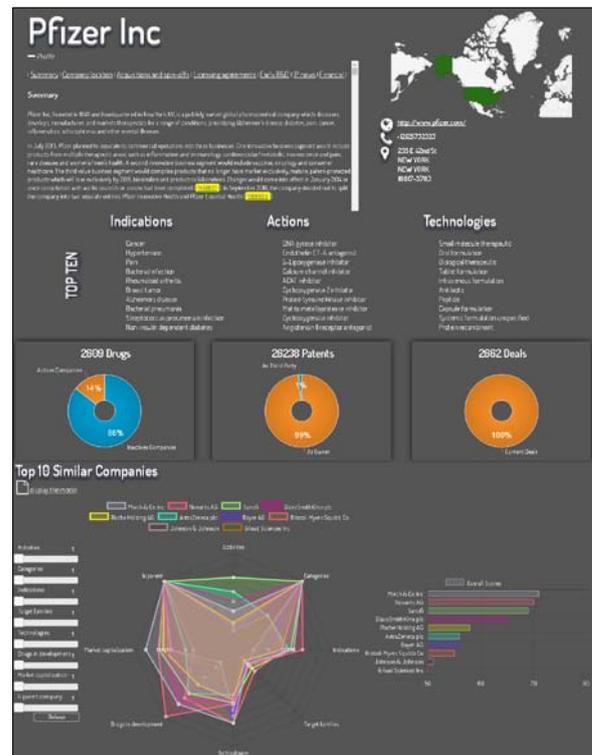
Company Analytics

Use pre-defined functions to get patent expiry, patent activity by therapeutic areas, financials for batches of drugs and to compare companies. Ability to identify similar companies:

- Compare patent, pipeline, financial, and deal information across organizations
- Use key performance indicators to contrast organizations
- Find similar companies by size, market cap, and drug development activity

Content includes:

- company, drug, and deal data from Investigational Drugs API
- patents information from Patents API



Company analytics

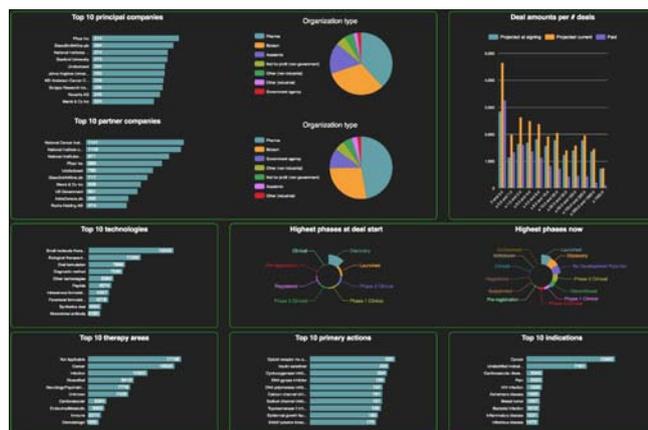
Deals Intelligence

Access comprehensive biopharma deals information allowing you to search for potential partners, conduct due diligence, assess deal value and explore deal structures and terms.

- Develop and implement strategic partnering plans
- Supplement resources for specific licensing opportunities or business development strategies
- Build comparables for deals and alliances
- Review deal histories of prospective partners

Content includes:

- Key information on a deal: parties involved, deal type, territories, total projected value, indications and technologies
- Drug involved in the deal and its highest phase at deal start and now
- Patent information or contracts
- Summary of the deal in addition to a detailed breakout of individual events with dates, event types, related drugs, payments
- Detailed financials including milestones, equity, upfront payments and royalty rates
- If the deal is a merger or acquisition, information will be available



Deals dashboard

Drug Design

Build QSAR analyses from experimental results reported in literature and patents. Compare IC50 and binding affinity for a range of compounds interacting with a target, and find ADME properties for compounds with a given substructure.

Content includes:

- pharmacokinetics/pharmacodynamics experimental results from literature
- experimental pharmacology results from literature and patents
- details of bioactive substances from early patenting to launch

642818	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	affinity	Recombinant human receptor	0.0000027 M
		IC-50	affinity	Recombinant human receptor	0.0000014 M
640223	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	agonism	HayO2 human Papariblastoma cells transfected with receptor	4.3E-7 M
653229	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	agonism	HayO2 human Papariblastoma cells transfected with receptor	2.7E-8 M
653233	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	agonism	HayO2 human Papariblastoma cells transfected with receptor	6.0E-8 M
Ampropranolol	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	affinity	Human receptor	> 0.00002 M
Apigenin	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	agonism	T97F1 human acute monocytic leukemia cells	0.0000079 M
69L-48462	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	affinity	Escherichia coli transfected with human receptor	2.2E-8 M
Caffeoyl acid	<chem>CC1=CC=C(C=C1)C2=CC=CC=C2C3=CC=CC=C3</chem>	IC-50	agonism	HayO2 human Papariblastoma cells transfected with human receptor	0.000000 M

Drug Design experimental results

Drug-Drug Interactions

Determine the effect of a drug or a metabolite on another drug’s pharmacokinetic or pharmacodynamic profile with manually curated content.

- Understand which drug-drug interactions exist
- Understand a drug’s pharmacokinetic exposure and pharmacodynamics interference
- Optimize the ADME profile and effectiveness of drug candidates
- Perform quantitative analysis of interactions between drugs and patients using appropriate models

Content includes:

- records extracted or updated from
 - all FDA labels and EMA EPARs for US- and EU- approved drugs
 - literature (articles from peer review journals, conferences, and meeting abstracts) since 2013
- For each record: at least one interaction study associated with a given reference, model, outcome, potential adverse event(s), and risk

Comparing drug-drug adverse interactions

Investigational Drugs

Build a complete pipeline database with the ability to add your internal data and/or commentary.

- Combine everything known within the organization to ensure confidence that the landscape is as complete as possible
- Display competitive intelligence information (drugs, competitors, phases, technologies, indications, and actions) the way you want it in an easy-to-access format tailored to your specific needs

Content includes:

- monographs for drugs and drug candidates
- profiles of drug-development organizations
- deals details
- backgrounds for key diseases with profiles of key targets and supporting bibliographic references

Drug dashboard

Ontologies

Search and browse *Cortellis* ontologies. Map drug names, diseases, and actions.

- Deploy proven ontologies, saving time and resources in creating your own ontologies
- Access a “dictionary” of *Clarivate* names and synonyms, making it easier and faster to get to the information needed
- Auto-index free text to *Cortellis* ontologies to provide context from other *Cortellis* APIs

Content includes:

- controlled vocabulary terms owned and maintained by *Clarivate*: Actions, Indications, Technologies, Companies, Conditions, Target Classification, Tissues, Processes, Organisms, Fluids, Localizations, Cell Lines, Molecular Functions, Patient Segment, Trial Endpoints, Development Status, Country, Exclusion Criteria, Inclusion Criteria, and Literature
- drug synonyms and mappings
- mappings of *Clarivate* disease identifiers to standard ontologies (MeSH, ICD9/10, MedDRA, and Orphanet) and target identifiers to SwissProt

Opportunity Monitor

Match the in-licensing candidates in your system to *Cortellis* using our custom matching algorithms.

- Generate ad hoc reports on changes by the events you specify from any date to discover what has happened to past review candidates
- Set up and manage email alerts for sets of drug candidates

Content includes:

- drug monographs from the Investigational Drugs API
- drug synonyms from the Ontologies API
- custom table of drug pipeline events

Query Drug	Query Company	Found Drug	Found Company	Rank	Strategy	Matches
doxorubicin	Celision Corp	doxorubicin	Celision Corp	90	Full	<input type="checkbox"/> doxorubicin (heat-sensitive liposomes, cancer), Celision [40750] <input type="checkbox"/> EGEN-001 [55111]
pelareorep	Oncolytics Biotech Inc	pelareorep	Oncolytics Biotech Inc	100	Full	<input type="checkbox"/> Reolysin [34003]
afibercept	Regeneron Pharmaceuticals Inc	afibercept	Regeneron Pharmaceuticals Inc	50	Full	<input type="checkbox"/> afibercept (intravitreal, AMD), Regeneron/Bayer [33547] <input type="checkbox"/> afibercept (intravenous, cancer), Regeneron/Sanofi [29992] <input type="checkbox"/> afibercept (sustained release, wet AMD) Ocular Therapeutix/Regeneron Pharmaceuticals [103795]
belinostat	TopoTarget UK Ltd	belinostat	TopoTarget UK Ltd	100	Full	<input type="checkbox"/> belinostat (v, cancer), Onco/Spectrum [39158]
celecoxib	GD Searle	celecoxib		31	DrugOnly	<input type="checkbox"/> celecoxib [12135] <input type="checkbox"/> valdecoxib [17856] <input type="checkbox"/> COX-2 inhibitors, Pharmacia [8595]

The screenshot shows a web browser displaying a Nature Genetics article. On the right side, there is a sidebar for 'THOMSON REUTERS CORTELLIS'. The sidebar contains several colored buttons representing different categories of search results: Drug (23) in orange, Company (28) in purple, Indication (22) in blue, Action (7) in red, Technology (9) in green, and Biomarker (76) in pink. Each button has a small icon and a plus sign. The article text on the left discusses mutations in human proteins and the use of a computational tool called HotSpot3D to identify hotspots and interpret their functional implications.

Ontologies tagging

Monitor assets

Patents

View the competitive patent landscape around a particular drug, disease, inventor, or mechanism of action, or provide tailored patent alerting to workgroups.

- Find out the latest patent news for a given disease to guide research goals
- Find out which companies are active in a particular therapeutic area or technology

Content includes:

- patent families
- indexing to controlled vocabularies
- classification by patent type and therapy area
- manually curated titles and fielded abstracts, summarizing the invention
- selected chemical structures
- bibliographic information, including IPCs, filing dates, and inventors



Patent family results

Regulatory

Access regulatory reference documents, view summaries of procedures and reports, or build comparisons of regulations and drug approval documents from across the world.

- Fetch the most up-to-date regulatory documents and guidelines into your internal system
- Build a timeline of the development of a particular regulation
- Show a map view of relevant regulatory information

Content includes:

- current and historical regulatory reference documents, including legislation, guidelines, and approval packages
- regulatory summaries, including submission routes and local regulatory practice
- regulatory intelligence reports for tracking changes and preparing for inspections
- global regulatory comparisons of requirements and procedures across regulatory authorities



Regulatory search

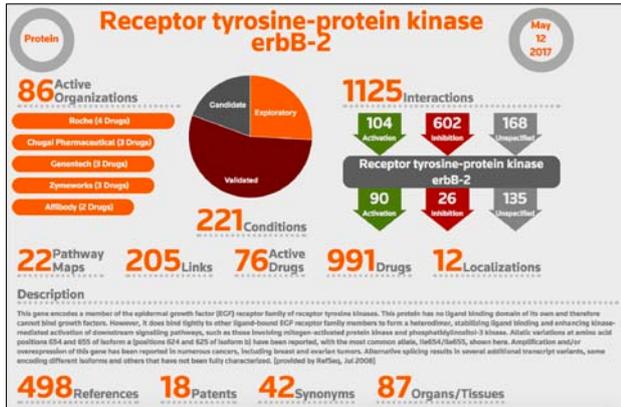
Targets

Build a “Targetpedia” with all information about a target and the drugs active on it.

- Combine proprietary data to build a comprehensive resource giving more confidence that everything known in the organization is displayed
- Stay up to date with all the latest drug targets’ information to facilitate better and faster business-critical decisions

Content includes:

- information on targets from patents, journals, meetings, trial registries, websites, regulatory bodies, and public databanks
- details including chemical structures of compounds known to interact with the target
- associated drugs with phase of development for each condition
- associated variant and biomarker information



Target dashboard

Who we are

Clarivate Analytics accelerates the pace of innovation by providing trusted insights and analytics to customers around the world, enabling them to discover, protect and commercialize new ideas faster. We own and operate a collection of leading subscription-based services focused on scientific and academic research, patent analytics and regulatory standards, pharmaceutical and biotech intelligence, trademark protection, domain brand protection and intellectual property management. *Clarivate Analytics* is now an independent company with over 4,000 employees, operating in more than 100 countries and owns well-known brands that include *Web of Science*, *Cortellis*, *Derwent*, *CompuMark*, *MarkMonitor* and *Techstreet*, among others.

To learn more, visit:

clarivate.com/cortellis-informatics

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