IUPHAR/BPS Guide to PHARMACOLOGY Database Report

September 2026

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Introduction

This database report provides an overview of recent progress and the current status of the IUPHAR/BPS Guide to PHARMACOLOGY (GtoPdb) since our last report, made in December 2025. Previous reports are online on our downloads page. Here are direct links to our most recent reports: Dec 2025, Apr 2025, Nov 2024, Apr 2024 and Nov 2023. We have reduced redundancy between the reports by purging sections without significant changes. Thus, if you remember any aspect that is not here, it may well be in a previous report (and by all means enquire).

Zenodo repository of reports:

- December 2025 doi: 10.5281/zenodo.17939275
- April 2025 doi: 10.5281/zenodo.15342610
- November 2024 doi: 10.5281/zenodo.14046004
- April 2024 doi: 10.5281/zenodo.11046804
- November 2023 doi: 10.5281/zenodo.1007801

Key Updates / Notifications

- 4 Database release (2025.4, 2026.1, 2026.2 & 2026.3)
    - 489 new ligands
    - 109 new and updated approved drugs
    - 35 new targets added
    - Overall, 839 new ligand-target interactions added, 771 of which are quantitative

GtoPdb User Authentication and Commercial Access

GtoPdb website authentication has been developed over the last 6 months and was implemented on our live website on 18th August 2026. Alongside this, commercial organisations are required to pay fees to access the website.

This development means users are required to register to GtoPdb in order to login and access the website. In addition, we have also implemented authentication for access to our REST API (Web Services). These now require users to register and be given an API Key to access the API.

These changes have required a few key pieces of development:

- New Java and JSP files used in the system.

  This is mainly servlets and jsps to support the registration and login processes, which include methods to verify users (by email), allow users to change their password and log when users login and out of the site.

- An associated and dedicated users database

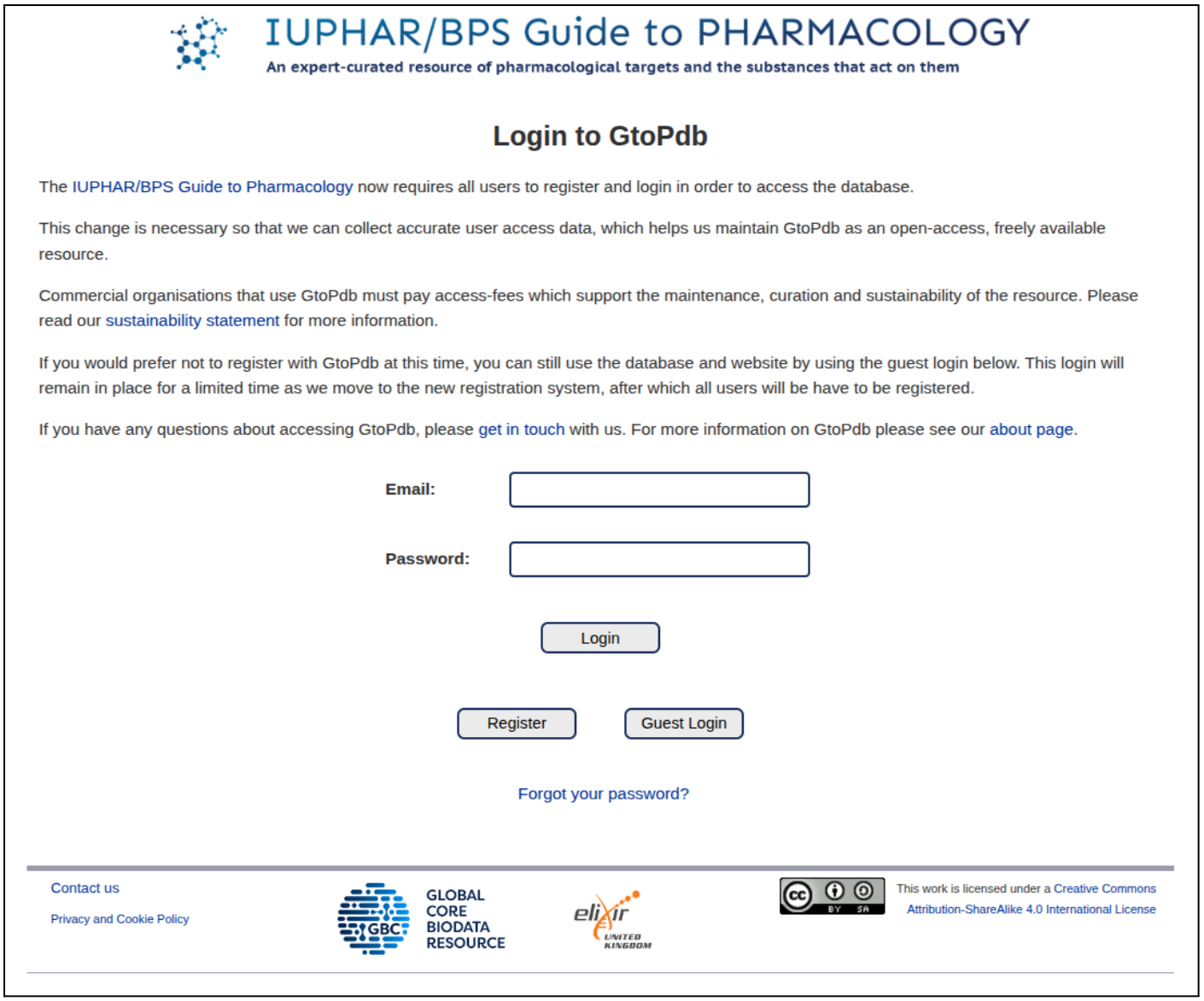
  This stores and manages users registration, password management and logging usage. This is also set up to support associating users with their organisations which forms part of managing commercial access to GtoPdb (see later).

- Web service API key generation, revocation, rotation and logging

  These are servlets that allow the issuing of API Keys and managing their usage, including rate limiting.

Although the majority of pages are under authentication control we have kept a few openly accessible. This includes the home and about pages.

The new login page (see below) is simple and provides a link for users to register and to reset their password. We also implemented a temporary ‘Guest’ login so users could bypass registration to support temporary continuity of access. This feature was removed at the 2026.3 database release (16th September 2026).



Why we have made these changes

These changes are necessary to help us collect accurate user access data and to manage commercial access to the resource. The IUPHAR/BPS Guide to Pharmacology (GtoPdb) has, since its inception 15 years ago, been an open-access, freely available resource. We would have liked to have been able to continue to maintain it as such, but financial realities no longer make this sustainable. With this threat to our ability to ensure the GtoPdb's sustainability going forward, we have moved to a model that applies an access fee to commercial organisations.

There will be no cost for users from non-commercial organisations.

Commercial organisations that use GtoPdb now pay access-fees which support the maintenance, curation and sustainability of the resource. Commercial users should read our sustainability statement for more information on commercial access fees.

Analysis of GtoPdb Users

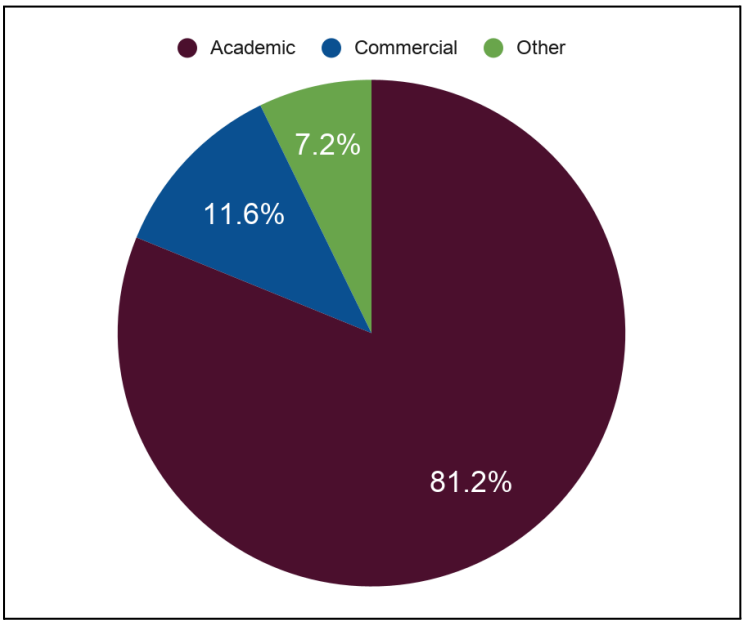
Our user registration system is open, allowing anyone to register by completing the online registration form. The only requirement is for users to have a verifiable email address. Users are sent a verification link to their registered email address and once clicked, they become a verified user.

Below are statistics on our users which encompass about 1 month's worth of data, from 18th August 2026 to 21st September 2026.

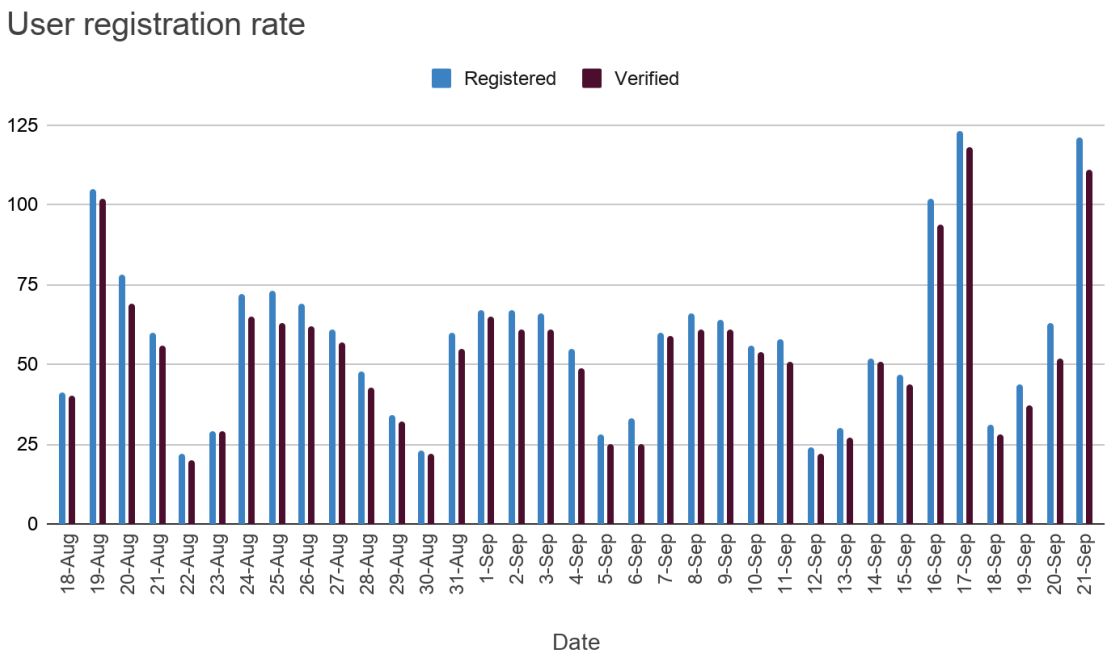
User registration roles and rates

As of 21st Sep 2026 we had 1,996 verified users, with the majority coming from academia. The remaining 20% are either commercial, a total of 232 verified users, or declared their roles as 'Other'.

Role	Registered Users	Verified Users	Verified Users (%)
Academic	1752	1620	81.16%
Commercial	241	232	11.62%
Other	167	144	7.21%
All	2160	1996	100.00%



User registration rate since the authentication system went live on 18th August 2026 has been quite steady. An initial early spike has been followed by an average daily sign up of around 50 users. A second, more recent spike from the 16th September probably follows the database release made that day which removed the guest login functionality.



Users by country

We collect data on which country our users are from. Below is a breakdown of users by country, restricted to those with 10 or more users. Data collated on 21st September 2026

Country	Registered	Verified
China	399	363
United States	349	329
United Kingdom	154	138
Spain	118	112
India	106	96
Australia	106	85
Mexico	99	90
Germany	76	72
France	59	57
Brazil	51	44
Canada	36	34
Japan	36	35
Italy	33	32
Korea	28	27
Denmark	23	21

Russian Federation	23	21
Chile	23	22
Colombia	22	20
Turkey (Türkiye)	22	20
Sweden	22	21
Switzerland	19	18
Netherlands	19	19
Indonesia	19	16
Belgium	18	18
Austria	18	18
Taiwan	16	16
Nigeria	15	15
Hungary	13	13
Bangladesh	11	8
Argentina	11	11
Malaysia	11	11

Login analysis

We now track when users login to the website. Between 18th August and 21st September a guest login functionality was available and this accounted for around 68% of all logins.

Login counts

	All	Probably Human	Probably Bots
Guest User	7,554	3,839	3,715
Verified Users	3,624		
Total	11,178		

Login frequency

These tables show how often users login to GtoPdb.

	Verified Users	Verified Users (%)
Logged in once	1041	52.15%
Logged in more than once	924	46.29%
No logins	31	1.55%

Just over half of all verified users have, so far, only logged in once to the website. A small percentage have never logged in.

	Verified Users	Ave. Interval (days)	Verified Users (%)
Daily (approx)	115	0.7	12.45%
Every few days	193	2.47	20.89%
Weekly (approx)	368	6.03	39.83%
Bi-weekly/Monthly	248	12.87	26.84%

Of the users that have logged in more than once (784), the above table shows the frequency with which those users are accessing the website.

API Keys

We implemented the requirement to use an API Key (specific to each user) for accessing the GtoPdb REST API (Web Services).

So far, **~20 users** have requested an API Key.

The use of API keys is logged in the database and is also rate limited to a maximum of 60 requests per minute. Enforcing this is aimed at improving the API functionality and improving our site performance as it guards against high volume agents and users overwhelming the server.

GtoPdb Website Analytics - Go Access

We have recently been using GoAccess to analyse the Apache log files to help us monitor user activity on the GtoPdb website. The raw access log files require filtering in order to extract meaningful data. First, the file is cleaned of known bots, giving a 'Clean' version of the log file, which is then further refined to extract users that are more heavily engaged with the site (Engaged Human Users).
The Engaged Human Users refinement is much more likely to reflect genuine user engagement with GtoPdb, although is likely to still contain some more sophisticated bots or website scraping access.

Metric	June 2026	July 2026	August 2026	Definition
Total Clean Visitors	854,212	941,004	903,266	Unique IPs after removing all known bot signatures. Represents the maximum potential human audience (including casual bounces).
Engaged Human Users	**125,270**	**75,284**	**79,925**	**Unique IPs with >5 requests in the clean log. Represents high-confidence active users (students/staff/researchers).**

GoAccess visitors counts for August 2026

The table below shows more focussed counts for each week over the month of August. These cover the time period when we implemented user authentication and so act as a way to monitor requests being made to the website.

We do see a drop in the week following the change, however there also was a spike in activity in the week prior and during the change. This may be attributable to users actively registering/requesting registration, but also an increase in our own testing activity on the server.

	Requests	Total Clean Visitors	Unique Visitors	**Engaged Visitors**
26 Jul - 01 Jul	635,863	365,981	71,605	**15,886**
02 Aug - 08 Aug	858,906	293,980	102,736	**27,265**
09 Aug - 15 Aug	1,132,024	336,600	167,069	**31,241**
16 Aug - 22 Aug	1,209,358	221,283	75,911	**19,675**
23 Aug - 29 Aug	438,860	125,895	44,952	**13,034**
30 Aug - 05 Sep	451,674	121,387	57,299	**13,556**
06 Sep - 12 Sep	397,340	124,044	30,836	**9,937**
13 Sep - 19 Sep	369,780	153,941	40,155	**11,418**

Requests: The total count of every single file requested from GtoPdb.
Total Visitors: Unique IPs after removing all known bot signatures
Unique Visitors: The estimated number of distinct people (or automated bots) that visited GtoPdb.
Engaged Visitors: Unique IPs with >5 requests in the total visitors set
Blue indicated post user authentication

Monthly statistics	**Sep 2025 - Aug 2026**	**Dec 2024 - Nov 2025** (*last report figures*)
Engaged Sessions	22,256	37,900
Active Users	24,315	29,550
Page views	77,451	208,885
Pages / Eng. Session	3.48	5.51
Avg. Session Duration	00:03:56	00:03:56
Views per Active User	7.07	7.07

The above table summarises the access statistics for the Guide to Pharmacology over the last year, comparing against our previous reporting period (Dec 2024 - Nov 2025). The decline in numbers is noted and we are aware that when substantial changes were made to the GtoPdb website in October 2025 this led to a drop in numbers collected by Google Analytics.

The table below shows the breakdown per country from Google Analytics, showing the 20 countries with the most engaged sessions. It should be noted that the high count for Singapore is likely bot traffic, exemplified by the low engaged sessions per user figure.

	Country	Total users	Active users	Sessions	↓ Engaged sessions	Engaged sessions per active user	Views	Views per session
	Total	292,008	291,783	344,987	267,077	0.92	929,412	2.69
1	China	191,114	191,000	196,338	154,701	0.81	384,614	1.96
2	United States	37,507	37,448	44,901	38,721	1.03	158,802	3.54
3	United Kingdom	7,377	7,359	16,631	13,512	1.84	80,845	4.86
4	India	5,025	5,020	7,441	6,327	1.26	24,700	3.32
5	Singapore	18,802	18,797	19,044	5,861	0.31	16,487	0.87
6	Germany	3,110	3,096	4,841	3,915	1.26	18,210	3.76
7	Japan	2,318	2,310	4,061	3,352	1.45	14,793	3.64
8	Australia	1,966	1,963	3,686	2,977	1.52	20,762	5.63
9	Spain	1,900	1,895	3,367	2,887	1.52	17,605	5.23
10	Brazil	1,905	1,897	3,228	2,726	1.44	13,343	4.13
11	Canada	1,844	1,841	3,130	2,647	1.44	13,537	4.32
12	Mexico	1,889	1,883	2,992	2,597	1.38	12,026	4.02
13	France	1,876	1,869	2,825	2,406	1.29	10,768	3.81
14	Italy	1,208	1,205	2,101	1,815	1.51	8,724	4.15
15	South Korea	1,240	1,235	2,072	1,705	1.38	10,955	5.29
16	Russia	828	826	1,631	1,420	1.72	6,106	3.74
17	Poland	1,204	1,203	1,440	1,311	1.09	4,151	2.88
18	Hong Kong	1,080	1,066	1,638	1,267	1.19	6,675	4.08
19	Denmark	599	598	1,388	1,153	1.93	5,202	3.75
20	Netherlands	930	925	1,305	1,123	1.21	4,862	3.73

Download Statistics - Google Analytics

Data for Sep 2025 - Aug 2026 shows total file downloads of 3,447 during this period, which is a decrease on our previous reporting period (7,523 (Dec 24 - Nov 26)).

Year		2025	2026	Totals
	Event name	Event count	Event count	↓ Event count
	Total	2,038 59.1% of total	1,409 40.9% of total	3,447 100.0% of total
1	file_download	2,038	1,409	3,447

GtoPdb Content

These database statistics were compiled on 16th September 2026 from the 2026.3 release. All database statistics can be found at https://www.guidetopharmacology.org/databaseContent.jsp.

Targets	**Number of (Human) UniProt IDs**
7TM receptors	400
Nuclear hormone receptors	48
Catalytic receptors	253
Ligand-gated ion channels	81
Voltage-gated ion channels	144
Other ion channels	55
Enzymes	1334
Transporters	555
Other protein targets	277
Human targets with ligand interactions	2068
Human targets with quantitative ligand interactions	1808
Human targets with approved drug interactions	772
Human Primary Targets with approved drug interactions	357
Total number of targets	**3147**

Ligands	**Number of Ligands**

Synthetic organics	9861
Metabolites	514
Endogenous peptides	841
Other peptides including synthetic peptides	1623
Natural products	558
Antibodies	507
Inorganics	39
Approved drugs	2248
Withdrawn drugs	123
Drugs with INNs	4022
Labelled ligands	662
Unique PubChem CIDs	11623
Ligands with target interactions	11419
Ligands with quantitative interactions (approved drugs)	10072 (1276)
Ligands with clinical use summaries (approved drugs)	4398 (2246)
Total number of ligands (PubChem SIDs)	**13989**
Number of binding constants curated from the literature	**22630**

GtoPdb Entity Growth

Growth rates are documented in earlier reports and our 2016, 2018, 2020, 2022, 2024 and 2026 NAR papers. Updates come via subcommittee contributions to the Concise Guide, and the continued tagging of pre-existing targets and ligands with comments and references to GtoImmuPdb and GtoMPdb.

	Sep 21	Mar 22	Oct 22	Apr 23	Aug 23	Mar 24	Oct 24	Apr 25	Sep 25	Mar 26	Sep 26
Target protein IDs	**2995**	**3000**	**3007**	**3021**	**3039**	**3067**	**3068**	**3097**	**3112**	**3127**	**3147**
Ligands total	**11025**	**11271**	**11532**	**11893**	**12164**	**12590**	**12862**	**13130**	**13503**	**13727**	**13989**
Approved drugs	1689	1734	1787	1865	1919	1981	2019	2098	2139	2197	2248
PubChem CIDs	8262	8462	8633	9307	9852	10168	10469	10667	10938	11201	11623

Targets

New protein targets:

34 new proteins have been curated since our last report, the table below includes the additions made in all three of the 2026 releases. Oncology is by far the most highly represented area (50%) for inclusion of new therapeutic targets

Target ID	Family	Gene symbol	Name	Comment	Therapeutic or experimental area
3353	Myosin heavy chains, class II (MYH)	*MYH9*	myosin heavy chain 9	Target of natural product ginsenoside Ra1	Sepsis
3328	RAS subfamily	*TBC1D15*	TBC1 domain family member 15	Involved in mitochondria-lysosome interactions and autophagy; experimental inhibitor probe curated	RAS-like GTPase/mitochondria–lysosome regulation
3342	Macrophage migration inhibitory factor (MIF) family proteins	*DDT*	D-dopachrome tautomerase	Cytokine-like activity, implicated in tumorigenesis and inflammation; experimental inhibitor curated	Oncology/immunology
3358	Immunoglobulin like domain containing proteins	*TREM1*	triggering receptor expressed on myeloid cells 1	Immunomodulatory potential; 2 inhibitors curated	Oncology/immunology
3348	Homeobox TFs	*Meox1*	mesenchyme homeobox 1	Inhibited by the natural product ligustilide	Oncology, fibrosis
3329	Spliceosome proteins	*RBM39*	RNA binding motif protein 39	The aryl sulfonamides indisulam and tasisulam acts as molecular glue degraders	Oncology

3332	Basic helix-loop-helix (BHLH) TFs	*OLIG2*	oligodendrocyte transcription factor 2	CNS-specific TF; ongogene in some CNS tumours; inhibitor CT-179 granted FDA orphan drug designation to treat gliomas (2017)	Oncology
3335	Basic helix-loop-helix (BHLH) TFs	*MYC*	MYC proto-oncogene, bHLH transcription factor	Important oncogene; no direct small molecule inhibitors reported but a PROTAC has been curated; "Interdictor" molecules are being designed that interfere with MYC translation at the ribosome	Oncology
3338	Rho GEFs	*VAV1*	vav guanine nucleotide exchange factor 1	2 molecular glue degraders curated, one is a Ph1 clinical candidate	Oncology
3340	Gelsolin/villin cytoskeleton proteins	*AVIL*	advillin	Oncogene in glioblastoma; small molecule inhibitor of binding to β-actin curated	Oncology
3341	Methionine turnover	*MAT2A*	methionine adenosyltransferase 2A	Crucial for SAM biosynthesis in MTAP-deficient cancers, and proposed as synthetic lethal target; several allosteric inhibitors curated including one former clinical lead (Servier; development terminated in 2022)	Oncology
3347	Poly ADP-ribosylating PARPs and poly(ADP-ribose) glycohydrola	*PARG*	poly(ADP-ribose) glycohydrolase	A small molecule oncology clinical lead inhibitor has been curated	Oncology

	se				
3349	Basic helix-loop-helix (BHLH) TFs	*ARNT*	aryl hydrocarbon receptor nuclear translocator	Molecular glue degrader curated	Oncology
3350	Translational GTPases	*HBS1L*	HBS1 like translational GTPase	Synthetic lethal target for anti-tumour drug development	Oncology
3351	Cyclins	*CCNA1*	cyclin A1	Small peptide inhibitors curated	Oncology
3352	Cyclins	*CCNB1*	cyclin B1	Small peptide inhibitors curated	Oncology
3355	Major cadherins	*CDH6*	cadherin 6	Target of lead ADC raludotatug deruxtecan	Oncology
3356	CD molecules	*KLRB1*	killer cell lectin like receptor B1 (CD161)	Target of oncology lead mAb rezorstobart	Oncology
3362	CD molecules	*LILRB4*	leukocyte immunoglobulin like receptor B4	Immunosuppressive immune checkpoint receptor, implicated in tumour immune evasion. Small molecule and mAb inhibitors curated	Oncology
3331	Immunoglobulin like domain containing proteins	*TREM2*	triggering receptor expressed on myeloid cells 2	Functions as a lipid-sensing receptor; target for neurodegenerative diseases; agonist/activator tool compounds and Ph1 clinical candidate curated	Neurodegenerative diseases
3344	CDK5 regulatory proteins	*CDK5R1*	cyclin dependent kinase 5 regulatory subunit 1	A small molecule inhibitor has been curated	Neurodegenerative diseases
3345	CDK5 regulatory proteins	*CDK5R2*	cyclin dependent kinase 5 regulatory subunit 2	Curated as a the 2nd member of the protein family	Neurodegenerative diseases

3339	STAT transcription factors	*STAT1*	signal transducer and activator of transcription 1	Obesity-driven STAT1 signaling in the liver has been linked to metabolic dysfunction-associated steatohepatitis (MASH); experimental inhibitor probe curated	Metabolic disease
3359	Immunoglobulin like domain containing proteins	*FCGR2B*	Fc gamma receptor IIb	Anti-FCGR2B mAb curated	Inflammatory diseases
3336	S1: Chymotrypsin	*MASP2*	MBL associated serine protease 2	Anti-MASP2 antibodies are proposed to reduce thrombotic microangiopathy and blood vessel damage	Haematology
3330	Nucleoside synthesis and metabolism	*SAMHD1*	SAM and HD domain containing deoxynucleoside triphosphate triphosphohydrolase 1	Additional target of the EPHrin receptor inhibitor NVP-BHG712	A dNTPase involved in DNA repair, immune response, proliferation and tumorigenicity
3343	Ataxin proteins	*ATXN2*	ataxin 2	Target of a novel degron	Degrader design
3346	E3 ubiquitin ligase components	*KLHL12*	kelch like family member 12	A small molecule binding ligand is curated, as evidence that this E3 ligase could be used for PROTAC degrader design	Degrader design
3354	E3 ubiquitin ligase components	*UBR2*	ubiquitin protein ligase E3 component n-recognin 2	A small molecule binding ligand is curated	Degrader design
3357	E3 ubiquitin ligase components	*FBXO22*	F-box protein 22	A FBXO22-engaging PROTAC is curated	Degrader design

3360	C19: Ubiquitin-specific protease	*USP7*	ubiquitin specific peptidase 7	5 inhibitors curated	*nb added to expand coverage of peptidases with pharmacological modulators*
3361	C19: Ubiquitin-specific protease	*USP30*	ubiquitin specific peptidase 30	4 inhibitors curated	*nb added to expand coverage of peptidases with pharmacological modulators*
3334	2-Acylglycerol ester turnover	*ABHD4*	abhydrolase domain containing 4, N-acyl phospholipase B	Another enzyme in the family; no selective inhibitors reported	*nb added to expand coverage of enzymes involved in 2-Acylglycerol ester turnover*
3337	Kinetochore proteins	*SUGT1*	SGT1 assembly cochaperone of MIS12 kinetochore complex	Target of natural product Notoginsenoside-Fa	*nb added in response to BJP author request for hyperlinks*

Ligands

Curation of new ligands is generally guided by the target family subcommittees as part of routine update processes. Where targets don't have a formal GtoPdb subcommittee, curators are able to independently add ligands when pharmacological relevance is demonstrated. Caveat: new ligands will only be added to GtoPdb when the curators can confirm name-to-structure associations, find citable evidence that confirms MMOA and a source of quantitative interaction data.

Additional ligand sources include the medicinal chemistry literature, INN lists from the WHO, DrugHunter (https://drughunter.com/), first disclosures from scientific meetings (such as AACR and ACS), patents, and information produced by chemical vendors such as MedChem Express and competitive intelligence resources (that are not paywalled, *e.g.* FiercePharma and FirstWord Pharma). New ligands (and less frequently, targets) are also added on request by BJP/BJCP/PR&P authors as part of the journal submission process, so that hyperlinks to the GtoPdb can be included in the published articles. The requests are vetted by the senior curator to ensure relevance before the decision is made to include in the GtoPdb (or not). More than 100 ligands have been added from reviews of new proposed INN lists (PL134/135), first disclosures, and MedChemExpress who produce reliable reviews of drugs in development (including structures from first disclosures) and drug approvals (in particular from agencies that we find it difficult to devote time to- *e.g.* their list of 12 new approvals for small molecule drugs in Japan and China MedChemExpress on X: "🚀Small Molecule NME Approvals Surge in H1 2026). In common with target

curation, ligand curation is “oncology heavy”, but with more spread across immunological and inflammatory diseases, metabolic and cardiovascular diseases, and neurological diseases for example.

Approved drugs

We continue curating approved drugs, which now total 56 for 2026, across the approval agencies that we are able to easily follow. 12/56 are not curated as they don’t meet our curation criteria, or in the case of the two antisense oligonucleotides, are in the curation pipeline. The full list (as of release 2026.3) is available here https://www.guidetopharmacology.org/GRAC/DrugApprovalsForward

The approved agents that are not curated are listed in the table below

INN	Type	Indication	Target	Approval	reason for not curating
copper histidinate	amino acid chelate	To treat Menkes disease	n/a	US FDA approval 12/01/2026	A copper-chelated drug that bypasses the defective ATP7A transporter-mediated copper absorption process in the gut of pediatric patients with Menkes disease
pegzilarginase-nbln	peptide	To treat hyperarginemia in adults and pediatric patients two years and older with arginase 1 deficiency	n/a	US FDA approval 23/02/2026	Enzyme replacement therapy
tividenofusp alfa-eknm	peptide	To treat Hunter syndrome (mucopolysaccharidosis type II/MPS II)	n/a	US FDA accelerated approval granted in March 2026	Enzyme replacement therapy
insulin icodec-abae	peptide	To treat type 2 diabetes	Insulin R	EU EMA May 2024, US FDA	Another insulin analogue

		mellitus		in March 2026	
dadoquatrane	sm	MRI contrast agent	n/a	US FDA in June 2026	We don’t routinely curate clinical imaging reagents
bevacizumab-vikg	mAb	To treat wAMD	VEGFA	EU EMA 2024, US FDA July 2026	Biosimilar to originator product Avastin
lutetium (177Lu) vipivotide tetraxetan	peptide, radiotherapeutic	To treat advanced To treat PSMA-positive metastatic prostate cancer	Folate hydrolase (prostate-specific membrane antigen) 1	US FDA July 2026	radiotherapeutic
florquinitau F18	radioligand	To identify tau neurofibrillary tangle pathology	tau	US FDA August 2026	PET tracer
rusfertide	peptide	To treat erythrocytosis in adults with polycythemia vera	n/a	US FDA August 2026	Peptide mimetic of hepcidin (LEAP-1)
floretyrosine F 18	radioligand	To image progressive glioma	n/a	US FDA September 2026	PET tracer
zilganersen	ASO	To treat Alexander disease	glial fibrillary acidic protein (GFAP) transcripts	US FDA September 2026	In curation pipeline
bepirovirsen	ASO	To treat HBV infection	HBV transcripts	Japan August 2026	In curation pipeline? non-human target

Guide to nucleic acid class drugs: New project

BBSRC funding for this new project began on 1st August 2026. This will build upon the pilot project that was undertaken in 2023/4, and will ultimately result in the creation of a portal dedicated to the presentation of data around the structure, pharmacology and clinical potential of selected nucleic acid class drugs.

The link below takes you to the list of nucleic acid class ligands that are currently in the GtoPdb

https://www.guidetopharmacology.org/GRAC/LigandListForward?type=Nucleic-acid

The scientific team supporting the project have a BJP article in review: "Curation and classification of nucleic acid drugs in the IUPHAR/BPS Guide to Pharmacology"

The first meeting of the steering group for this project is scheduled for 16th October 2026.

Concise Guide to Pharmacology

The Concise Guide provides concise overviews, mostly in tabular format, of the key properties of approximately 1900 drug targets, and about 7000 interactions with about 3900 ligands. There is an emphasis on selective pharmacology (where available), plus links to the Guide to Pharmacology database, which provides more detailed views of target and ligand properties. It is produced in close conjunction with the Nomenclature and Standards Committee of the International Union of Basic and Clinical Pharmacology (NC-IUPHAR), therefore, providing official IUPHAR classification and nomenclature for human drug targets, where appropriate.

The 6th Edition (2023/24) of the Concise Guide to Pharmacology was published online in December 2023.

The 7th Edition (2025/26) of the Concise Guide to Pharmacology was published online in December 2025.

Editors:

Steve Alexander (Nottingham) Transporters, Enzymes, Other proteins

Eamonn Kelly (Bristol) GPCRs

Alistair Mathie (London), Emma Veale (Kent) Voltage-gated ion channels

Alasdair Gibb (London) Ligand-gated ion channels

Chloe Peach (Nottingham) Catalytic receptors

- In total >100 updates for protein families were received (summarised by target class in the table below).
- All updates were processed, and new content was included in GtoPdb release v2025.3 (10th Sept).

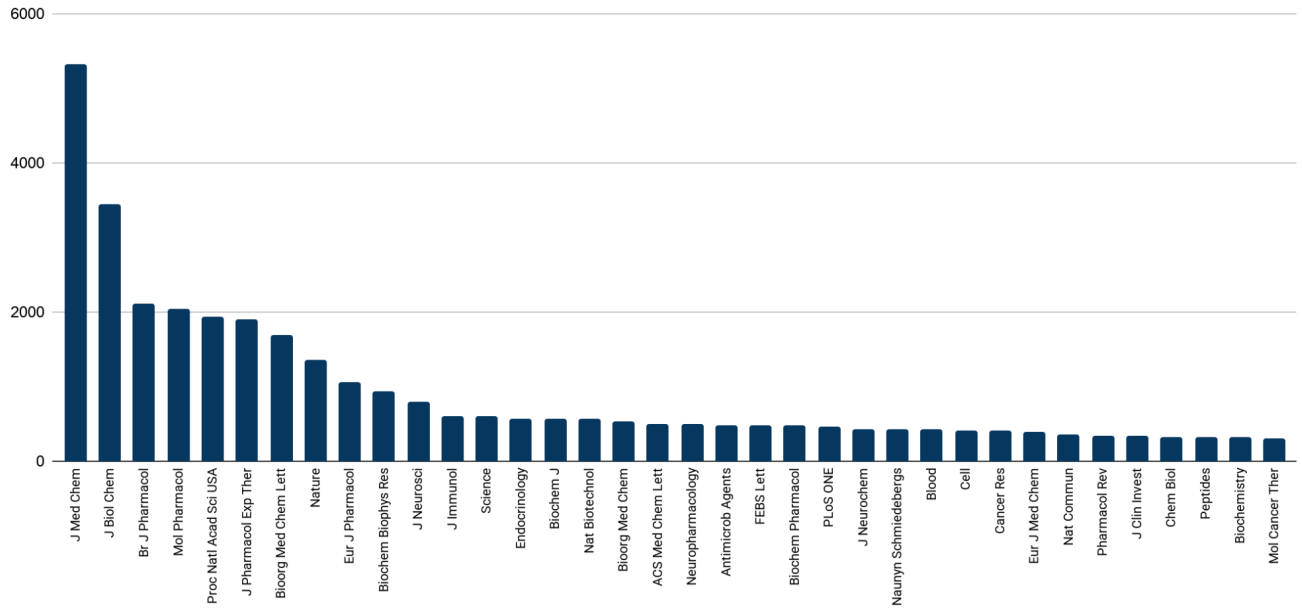
Target class	Number of families updated
GPCRs	45
Ion channels	17 (VGIC, LGIC & Other IC)
Transporters	7
Catalytic receptors	29
Enzymes	7 (plus Proteinases by Chris Southan, Kinases by Elena)

Nuclear hormone receptors	4

Analysis of journals contributing to curated data

The following table and graph show the count of unique articles from journals curated in the GtoPdb. The table is restricted to the top 15 journals with most unique articles curated. The graph expands this to all journals with over 200 unique curated articles.

Title	Curated articles in GtoPdb
J Med Chem	5315
J Biol Chem	3450
Br J Pharmacol	2120
Mol Pharmacol	2042
Proc Natl Acad Sci USA	1933
J Pharmacol Exp Ther	1902
Bioorg Med Chem Lett	1696
Nature	1352
Eur J Pharmacol	1069
Biochem Biophys Res Commun	933
J Neurosci	801
J Immunol	612
Science	611
Endocrinology	576
Biochem J	565



AntibioticDB and Global Antibiotic Research and Development Partnership

Our collaboration with AntibioticDB (ADB; www.antibioticdb.com), which ran from 2019 to May 2026, successfully extended the coverage of antibacterial compounds in GtoPdb and provided comprehensive chemistry and pharmacology for select antibacterials curated within ADB. The partnership was supported by funding from the Global Antibiotic Research and Development Partnership (GARDP; https://gardp.org/).

Currently we have **759 ligands** tagged in GtoPdb as 'antibacterial' and **736** of these have links to compounds at ADB. **283** of the curated antibacterials are approved drugs. The antibacterials in the GtoPdb include approved drugs, WHO essential Medicines-listed medicines, drugs in clinical development, and a number of investigational and experimental compounds.

As part of our work in curating antibacterial compounds in GtoPdb, we now have a dedicated landing page for antibacterials (https://www.guidetopharmacology.org/GRAC/AntibacterialsForward). This page consolidates information on antibacterials in GtoPdb, providing information on our collaboration with ADB and giving details about our inclusion criteria for curating antibacterials. The page includes a full table of all the antibacterial ligands curated in the database, with hyperlinks to the specific ligand summary pages for each compound. The table has separate tabs that provide information and links for the curated bacterial protein targets, additional resources and for references and further reading.

Moving forward, we will continue this collaboration to support the development and maintenance of ADB, with funding from GARDP (until May 2029). Our focus will be data entry for ADB, although we will also curate suitable compounds for the GtoPdb as time permits. Additionally, we will maintain existing ADB software functionality and build an API to improve database accessibility.

For further information about our work with ADB please refer to previous Database Reports. This collaboration has also been described in more detail in our 2022 NAR update:

> Harding SD, Armstrong JF, Faccenda E, Southan C, Alexander SPH, Davenport AP, Pawson AJ, Spedding M, Davies JA; NC-IUPHAR. The IUPHAR/BPS Guide to PHARMACOLOGY in 2022: curating pharmacology for COVID-19, malaria and antibacterials. Nucleic Acids Research, Volume 50, Issue D1, 7 January 2022, Pages D1282–D1294, https://doi.org/10.1093/nar/gkab1010. PMID: 34718737.

We contributed to a recent manuscript that provides further information about ADB:

> Galarion LH, Hennessy A, Harding SD, Armstrong JF, Pentz-Murr A, Davies JA, O'Neill AJ, Piddock LJV. AntibioticDB: An Updated and Improved Open-Access Database for the Antibacterial Research and Development Community. ACS Infect Dis. 2026 Mar 13;12(3):1135-1141. doi: 10.1021/acsinfecdis.5c00955. Epub 2026 Feb 23. PMID: 41728851.

GtoPdb Web-Application Developments

Drug Approvals

Each year, the Guide to Pharmacology Curation Team puts together a list of the latest approved drugs from FDA, EMA and MHRA as well as first-time approvals from other agencies.

We have now used this information to build a drug approvals page. This shows these approved drugs, in sortable tables, organised by year of approval. The majority of these drugs are curated in the database, and if so they are hyperlinked to their respective summary pages from the INN in the table. We still list drugs that we don't curate (because they don't meet our inclusion criteria), although these will not be hyperlinked.

Recently we have improved the drug approval tables to better display the primary targets and include a column showing the approval source (national authorities) and year. The table also includes a tab for 2026, showing the most recent approvals.

A screenshot of the drug approval page is shown below:

Drug Approvals

Each year, the Guide to Pharmacology Curation Team puts together a list of the latest approved drugs from FDA, EMA and MHRA as well as first-time approvals from other agencies. The majority of these will be curated in the database, and they are hyperlinked to their respective summary pages from the INN in the tables below. There are some cases were we have listed an approved drug but it doesn't have a link because it will not have been curated.

2026 | 2025 | 2024 | 2023 | 2022 | 2021

Drug Approvals in 2026

INN	Trade Name	Type	Indication	Therapeutic Target	Comments	Approval Sources
copper histidinate	Zycubo	sm	To treat Menkes disease		US FDA approval 12/01/2026: A copper-chelated drug that bypasses the defective ATP7A transporter-mediated copper absorption process in the gut of pediatric patients with Menkes disease	
difamilast	Adquey	sm	To treat mild to moderate atopic dermatitis	phosphodiesterase 4D		US FDA (2026) Japan PMDA (2021)
pegzilarginase-nbln	Loargys	peptide	Enzyme replacement therapy to treat hyperarginemia in adults and pediatric patients two years and older with arginase 1 deficiency, in conjunction with dietary protein restriction		US FDA approval 23/02/2026	
navepegritide	Yuviwel	peptide	To increase linear growth in pediatric patients 2 years and older with achondroplasia with open epiphyses	Guanylyl cyclase-B		US FDA (2026)
linerixibat	Lynavoy	sm	To treat cholestatic pruritus associated with primary biliary cholangitis	Sodium/bile acid and sulphated solute cotransporter 2		US FDA (2026)
icotrokinra	Icotyde	peptide	To treat moderate-to-severe plaque psoriasis in patients who are candidates for systemic therapy or phototherapy	Interleukin-23 receptor		US FDA (2026)
relacorilant	Lifyorli	sm	To treat advanced/previosly	Glucocorticoid receptor	In combination with	US FDA (2026)

Connectivity

Links to other resources

As we have reported previously, GtoPdb has built many collaborative connections with other resources, many of which are reciprocal. The table below shows the number of ligands and targets with out-links to each of the named resources. The table is not exhaustive, but shows those specialist resources we link with and resources that have reciprocal links back into GtoPdb.

Site	Ligand Links	Site	Target Links
PubChem (CID)	**11632**	**GPCRdb**	**372**
ChEMBL	**7225**	**ChEMBL**	**2430**
Reactome	**322**	**Resolute (SLC)**	**421**

AntibioticDB	**736**	**BioParadigms (SLC)**	**387**
IMGT/mAb-DB	**460**	**HGNC**	**3169**
DrugCentral	**1747**	**NCBI (Entrez) Gene**	**3122**
Wikipedia	**3040**	**Ensembl Gene**	**3167**
CAS Registry	**6933**	**RefSeq Protein**	**1968**
GPCRdb	**4324**	**UniProt**	**3231**
BindingDB	**2208**		

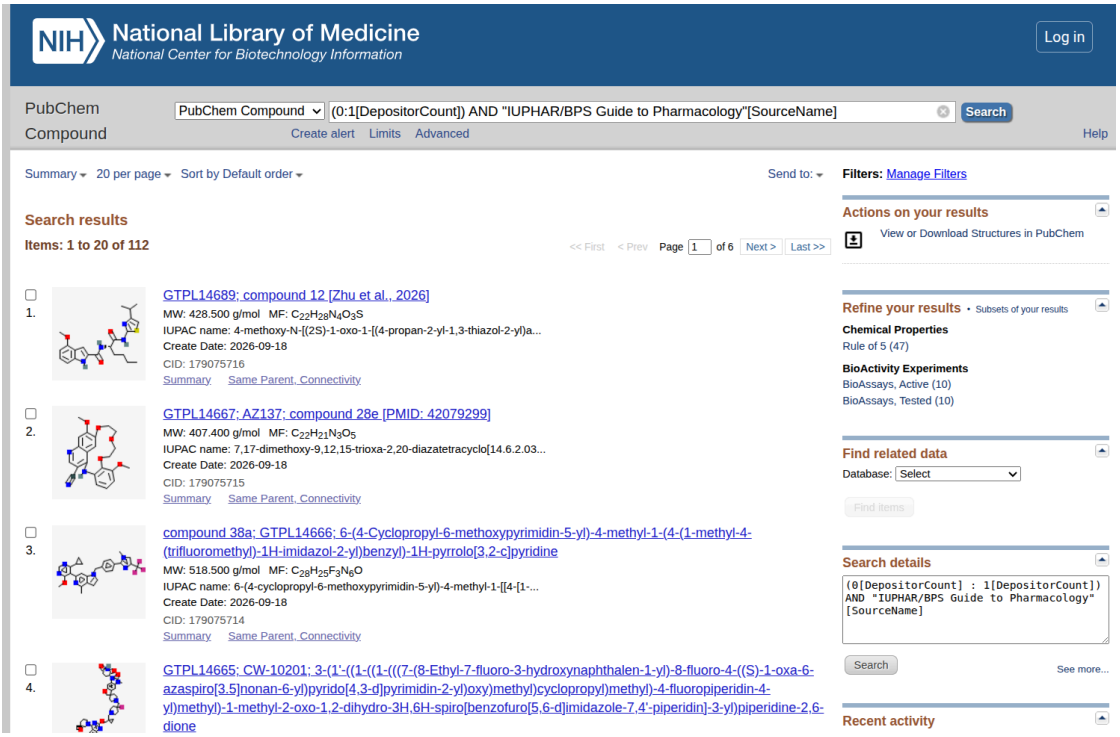
We have a long-standing collaboration with HGNC on shared nomenclature interests and our adherence to mapping HGNC-approved human gene symbols and names to NC-IUPHAR nomenclature. In addition, we have built links between more specialist resources such as GPCRdb. GtoPdb submits data to NCBI via their link-out utility, which indexes our PMIDs (https://pubmed.ncbi.nlm.nih.gov/?term=loprovguidpharm[SB], 33 449 PMIDs) with additional links for genes, nucleotides, and proteins. We also submit to Europe PMC (https://europepmc.org/) through their external links service (https://europepmc.org/LabsLink). Using this service, links are added from Europe PMC articles to related GtoPdb target and ligand data where the article is a reference to a curated pharmacological interaction in GtoPdb. A full list of the 8677 Europe PMC articles with GtoPdb data links (at the time of writing) can be retrieved from https://europepmc.org/search?query=%28LABS_PUBS%3A%221969%22%29. Wherever we have cross-links to other resources, we maintain contacts with the teams concerned and do our best to ensure these are regularly refreshed.

Pubchem Connectivity

We submit GtoPdb ligands (as substances) to PubChem at each database release. One of the strengths of GtoPdb is our regular release cycle, with new database releases approximately every quarter. As a consequence, GtoPdb can often be the first submitter of a substance to PubChem.

For example, a query of PubChem for compounds where IUPHAR/BPS Guide to Pharmacology is the source and where there is only one depositor, shows 112 compounds as of 22nd September 2026.

https://www.ncbi.nlm.nih.gov/pccompound?term=(0%3A1%5BDepositorCount%5D)%20AND%20%22IUPHAR%2FBPS%20Guide%20to%20Pharmacology%22%5BSourceName%5D



PubChem Substances are community-provided compounds, and many entries may exist for the same molecule. Each may contain different information about the molecule, depending on the information provided by the submitter. PubChem extracts the unique chemical structures from Substance records (standardisation) and stores them as PubChem Compounds. This means that substance records from different data sources about the same molecule are aggregated in a common Compound record in PubChem.

Following our September 2026 database release, 2026.3, all 13,872 ligands in GtoPdb have been submitted to PubChem and therefore have PubChem SIDs.

Our PubChem connectivity is enhanced by the addition of curatorial (depositor) comments that we provide when submitting compounds. These depositor comments can be viewed on a substance page at PubChem (see example for azithromycin below). We include ligand general comments, clinical use comments and flagged whether the compound is an approved drug and whether it is tagged as relevant to immunopharmacology, antimalarial pharmacology or antibacterial.

3 Depositor Comments

IUPHAR/BPS Guide to Pharmacology (GtoPdb) Comment: Azithromycin is a macrolide antibacterial with broad-spectrum activity against Gram-positive and atypical bacteria. The compound also has antimalarial activity. Azithromycin is one of the watch group antibacterials in the the World Health Organization's Model List of Essential Medicines (link provided in the Classification table below). The Malaria tab on this ligand page provides additional curator comments of relevance to the Guide to MALARIA PHARMACOLOGY.

gtopdb_approved - Substance is an approved drug in GtoPdb.

gtopdb_who - Substance is included in WHO Essential Medicines List.

gtopdb_antibacterial - Substance is tagged as an antibacterial in GtoPdb.

gtopdb_synthetic_organic - GtoPdb identifies this substance as a synthetic organic ligand

gtopdb_clinical_use: Azithromycin is approved for use in both the US and the UK. It is also available in other countries under various trade names, click here to link to Drugs.com's list of internationally marketed azithromycin drugs.

gtopdb_immuno - Substance is curated in IUPHAR Guide to Immunopharmacology (GtoImmuPdb).

GtoImmuPdb Comment: Azithromycin alleviates the severity of rheumatoid arthritis by antagonising the unfolded protein response component of heat shock protein family A (Hsp70) member 5 (HSPA5; a.k.a. glucose-regulated protein 78/GRP78) [PMID:34664264]. Direct binding of azithromycin to HSPA5 was suggested by a drug affinity responsive target stability (DARTS) screening assay, and was confirmed by cellular thermal shift assay. Azithromycin competes with ATP for binding to the ATPase active site of HSPA5.

gtopdb_malaria - Substance is curated in IUPHAR/MMV Guide to Malaria Pharmacology (GtoMPdb).

Depositor comments section of PubChem SID 178103124.

Our blog post from December 2022 illustrates how users can exploit these tags when using PubChem. This was reproduced with kind permission from Dr. Chris Southan's blog post: Exploiting the Guide to Pharmacology substance (SID) tags in PubChem

A more recent blog post by Dr. Chris Southan focuses on Exploiting minable connectivity from GtoPdb

PubChem Statistics for GtoPdb

The stats for the 2026.3 release (with 2025.3 in brackets) are as follows (N.B. the links below can be slow but if they do time out try purging your browser cache).

1. Substances (SID) that we submit to PubChem (refreshing previous submissions) are up to 13,872 (13,520).
2. Those that have defined chemical structures are merged into 11,674 (11,211) Compound Identifiers, CIDs (i.e. small molecules and peptides below ~ 70 residues)
3. From our 10,938 CIDs, 9,669 have vendor matches
4. The select "IUPHAR/BPS Guide to PHARMACOLOGY"[SourceName] AND gtopdb_approved [Comment] now retrieves 2,248 SIDs (2,139) which links to 1,939 approved drug CIDs
5. Of our SIDs, 1,637 (1,543) are tagged in GtoImmuPdb and 415 (394) of these are approved drugs
6. Of our CIDs, 1,129 are tagged in GtoImmuPdb (Immunopharmacology)
7. Of our SIDs, 143 are tagged in GtoMPdb and 25 of these are approved drugs
8. Of our CIDs, 140 are tagged in GtoMPdb (Malaria Pharmacology)
9. Of our SIDs, 759 are tagged as antibacterial and 283 of these are approved drugs
10. Of our CIDs, 738 are tagged as antibacterial
11. We have 2,521 (2,372) structures that are not in ChEMBL
12. 112 (68) structures where GtoPdb is unique as the source. In most cases this is because we were first to extract the paper or patent and push the ligand structures into PubChem where they get linked to the PubMed entries (see Link out section below). There may be some cases where our stereo configuration is unique (InChIKey) but related to other entries (InChKey inner layer). Inspection of " Related Compounds" and "Same Connectivity" will indicate this.
13. We continue to curate clinical monoclonal antibodies with the PubChem Substance select "IUPHAR/BPS Guide to PHARMACOLOGY"[SourceName] gtopdb_antibody" returning 507 SIDs. Adding "gtopdb_approved" gives 207.

The ability to combine selects and filters of our own PubChem entries, find related linked sets (e.g. pivoting from Substances to Compounds) and compare these to other sources in PubChem becomes very informative and powerful. Users are also reminded that, via the InChIKeys or SMILES strings, any of our ligand downloads (including combinations or parts of) can be cast against PubChem using their Identifier Exchange Service to allow detailed exploration of the extensive PubChem links. Users needing guidance for PubChem interrogations are welcome to contact us.

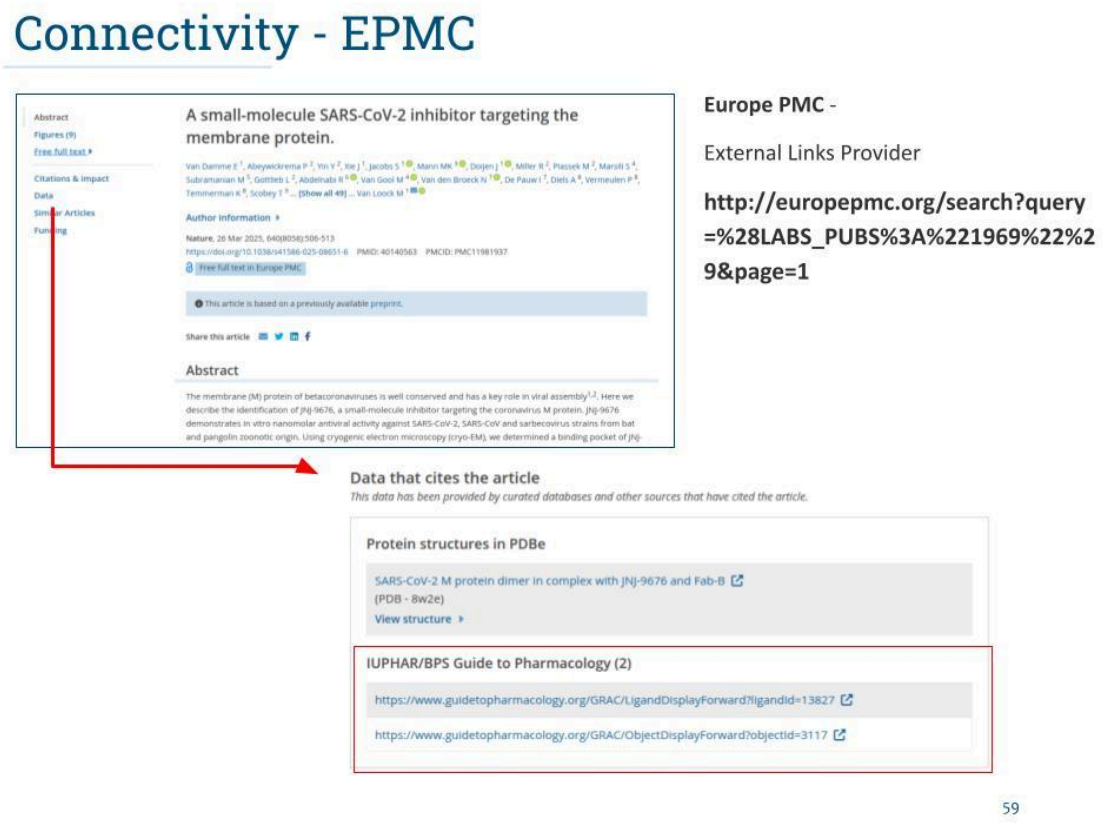
NCBI LinkOuts

GtoPdb maintains sets of links in the NCBI LinkOut service, to the Protein, Nucleotide, Gene and PubMed databases. Our links are updated frequently. Below is the count of all NCBI database records that contain 'LinkOuts' to GtoPdb. The PubMed count covers all references in the databases including reviews and additional reading for target families. Note that the LinkOut pointers link users back to the database. For various technical reasons associated with NCBI mapping stringencies the three sets of entity links have an element of over-counting with redundancy. However the PubMed links are clean because they are assigned via our own curation.

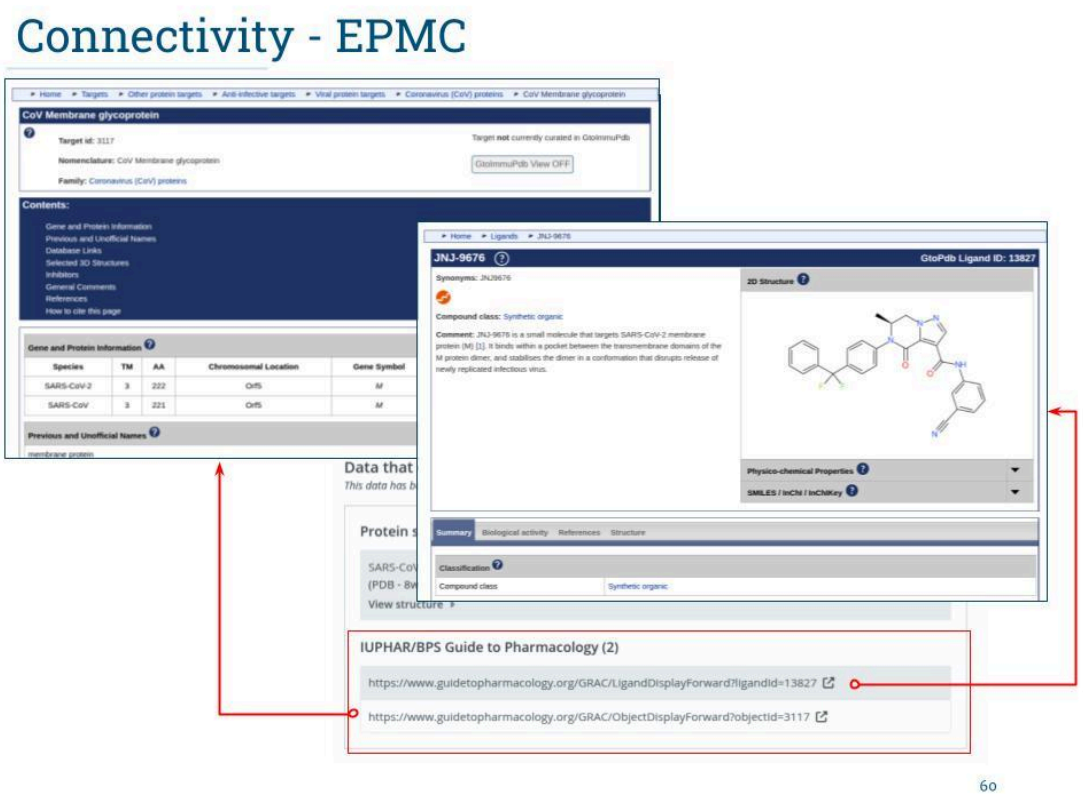
Protein	5,940
Nucleotide	5,888
Gene	8,796
PubMed	34,711 (https://pubmed.ncbi.nlm.nih.gov/?term=loprovguidpharm[SB])

Europe PMC

GtoPdb maintains records in the Europe PMC External Links Service. Unlike the larger set of NCBI Outlinks, these publication links are restricted to papers from which GtoPdb interaction data have been curated. These link targets and/or ligands mentioned in the article back to GtoPdb detailed pages.



The above figure shows an example of the links from PMID:40140563. Under the 'Data' tab on the left-hand side the data cited in the article can be found. This shows 3 links back to GtoPdb ligands and targets. Below shows how these data links navigate users to GtoPdb Target and Ligand pages.



As of 18th September 2026 there were 9,180 articles in Europe PMC with links to GtoPdb targets and/or ligands. The EPMC interface query is (LABS_PUBS:"1969")

Full URL: https://europepmc.org/search?query=%28LABS_PUBS%3A%221969%22%29 (screenshot below)

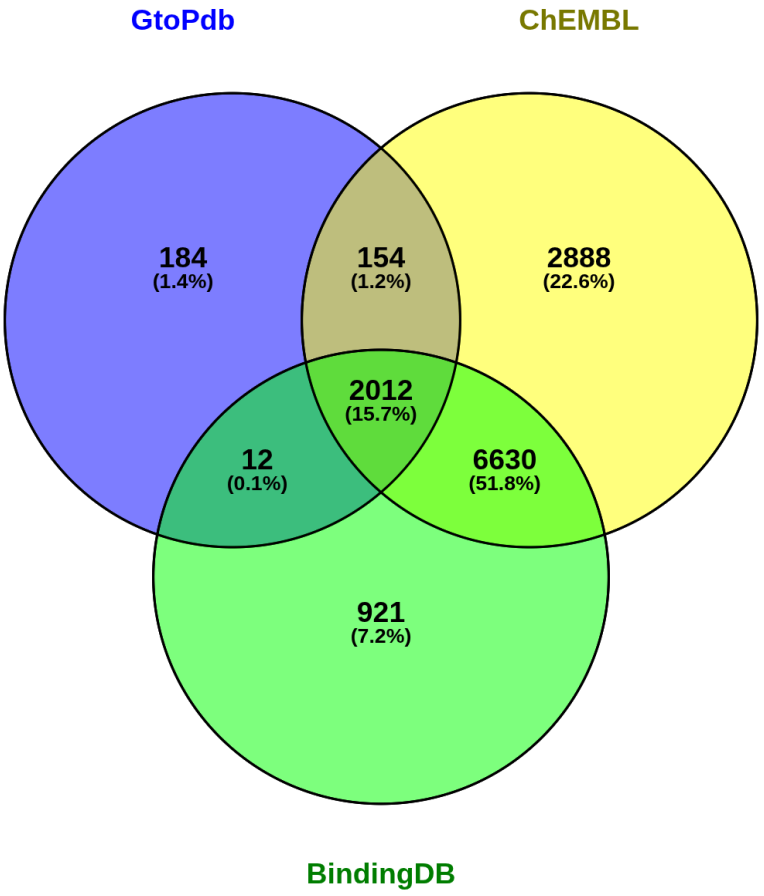
EBI UniProtKB/Swiss-Prot cross-references

Below are the metrics for UniProt 2025_04 chemistry sources. The context for these has been given in previous reports. They provide valuable protein < > chemistry mappings including our own targets where we have curated quantitative ligand interactions of generally < 1uM. Note that SwissLipids curated chemical interactions are for metabolites rather than activity modulators.

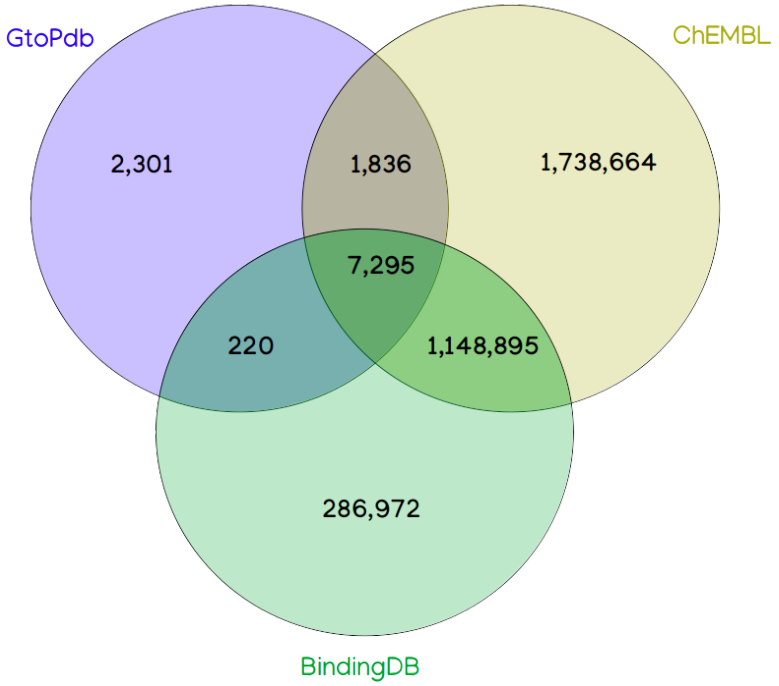
DB-0127	BindingDB	9,575 UniProtKB entries
		8,679 reviewed UniProtKB entries
		896 unreviewed UniProtKB entries
DB-0174	ChEMBL	11,684 UniProtKB entries
		10,567 reviewed UniProtKB entries
		1,117 unreviewed UniProtKB entries

DB-0239	DrugCentral	3,169 UniProtKB entries
		2,983 reviewed UniProtKB entries
		186 unreviewed UniProtKB entries
DB-0182	IUPHAR/BPS Guide to Pharmacology	2,362 UniProtKB entries
		2,344 reviewed UniProtKB entries
		18 unreviewed UniProtKB entries
DB-0197	SwissLipids	1,398 UniProtKB entries
		1,394 reviewed UniProtKB entries
		4 unreviewed UniProtKB entries

Even though these sources have different ways of curating, it is informative to compare and contrast. Below is a Venn diagram showing the comparison of UniProtKB identifiers between GtoPdb, ChEMBL and BindingDB. GtoPdb target overlap with both ChEMBL and BindingDB is extensive, GtoPdb has 196 not in ChEMBL and 338 not in BindingDB.



This second Venn shows UniProtKB counts are taken from the UniProtKB Chemistry Databases (https://www.uniprot.org/database?query=*&facets=category_exact%3AChemistry+databases). Diagram drawn using Venny 2.1.0 (https://bioinfogp.cnb.csic.es/tools/venny/). The update frequency of these cross-references may be variable depending on the sources.CID counts are taken using the advanced PubChem Compound search (https://www.ncbi.nlm.nih.gov/pccompound), specifying source name in the query (i.e. 'IUPHAR/BPS Guide to PHARMACOLOGY'[SourceName]).



Around 22% of GtoPdb compounds do not overlap with ChEMBL. ChEMBL extracts all assay data, including ADMET determinations, from a paper whereas GtoPdb usually extracts just the lead compound but will also curate reported secondary target activity. In the comparison with BindingDB, 36% of GtoPdb compounds do not overlap. BindingDB's uniqueness is mainly their patent curation; it also has an arrangement with ChEMBL from which it subsumes just the individual protein target-mapped data..

HGNC

We continued to use HGNC gene identifiers and names for targets in GtoPdb. In total this covers 3,000 human targets. We also use HGNC nomenclature for updating protein names and gene names as part of our regular database update process.

GPCRdb

There are 938 links from 372 GPCR protein targets in GtoPdb to GPCRdb (https://gpcrdb.org/). This gives users specific pointers to GPCRdb's detailed features, curation of mutations, sequence display toolbox and residue numbering system. There are also now 4,263 links from GtoPdb ligand pages to GPCRdb, following work done by GPCRdb to pick up endogenous ligand data from GtoPdb.

Bibliometrics

Nucleic Acids Research Database Issue

Our latest submission to the Nucleic Acids Research Database Issue was accepted and published online in November 2025 and due to be published in the Database Issue in January 2026.

Harding SD, Armstrong JF, Faccenda E, Southan C, Alexander SPH, Davenport AP, Spedding M, Davies JA. The IUPHAR/BPS Guide to Pharmacology in 2026. Nucleic Acids Res. 2025 Epub ahead of print. doi: 10.1093/nar/gkaf1067. PMID: 41160876.

This currently has 15 citations in PubMed and 24 in EPMC.

Citations for our previous NAR updates are shown in the table below.

CGTP and NAR Citations

We continue to get high citation rates in our previous NAR Database Issues and Concise Guide articles because BJP and BJCP select these as reference citations for the GtoPdb outlinks. Top of the list is our NAR 2018 entry (PMC5753190) with 1,568 citations (according to EPMC) or 1,434 (according to PubMed) and 1,884 by Google Scholar. See the table below for links and details of other highly cited NAR and CGTP papers.

	EPMC	PubMed	Google Scholar
NAR 2018	1,568	1,434	1,884
NAR 2016	999	943	1,241
NAR 2014	794	748	927
NAR 2020	166	113	238
NAR 2022	128	87	162
NAR 2024	163	113	237
CGTP 17/18 Enzymes	576	565	654
CGTP 15/16 Enzymes	518	515	581
CGTP 13/14 GPCRs	506	467	687
CGTP 17/18 GPCRs	519	472	747

Below are the citations from the most recent editions of the Concise Guide, 2023/24 and 2025/26. The 2023/24 Enzymes chapter has 388 citations and the G protein-coupled receptors chapter has 322 citations (all via EPMC). The most recent edition, 2025/26 was published online on 29th December 2025.

CGTP Chapter (link to 2025/26)	Citations (obtained from EPMC)

	2023/24	2025/26
Enzymes	388	76
G protein-coupled receptors	322	49
Introduction and Other Proteins	210	65
Catalytic Receptors	141	44
Ion Channels	186	56
Transporters	135	20
Nuclear Hormone Receptors	80	9

SARS-CoV-2 Review

Our BJP SARS-Cov-2 review has acquired 54 citations (EPMC) and an Altmetric ranking of 277.

Alexander SPH et al. A rational roadmap for SARS-CoV-2/COVID-19 pharmacotherapeutic research and development: IUPHAR Review 29. Br J Pharmacol. 2020 Nov;177(21):4942-4966.

Other citation metrics

- As outlined in previous reports we track various metrics for the GtoPdb team and NC-IUPHAR affiliated papers in PubMed, PubMed Central , European PubMed Central (EPMC) Kudos entries and Altmetrics.
- Research output by members of the GtoPdb Curation team can be seen via ORCID IDs for which we have JLS 0000-0002-5275-6446 , EF 0000-0001-9855-7103 , AJP 0000-0003-2280-845X, CS 0000-0001-9580-0446, SDH 0000-0002-9262-8318 and JFA 0000-0002-0524-0260.
- The overall citation performance has resulted in team members JFA, SDH, JLS, EF, AJP, CS and JAD, along with IUPHAR co-authors, SPHA, MS, and APD being listed in the Clarivate 2025 rankings of Highly Cited Researchers.
- GtoPdb team members have 220 cumulative co-authored publications

Below are the (live) April 2024 bibliometric updates compared to the November 2020 metrics. These are given with EPMC links which have the advantage over PubMed of directly generating a citation ranking for any set (but with lower citation rates than PubMed, Google Scholar or WOS).

- The team is on their 10th NAR Database Issue from 2009 to 2026
- IUPHAR reviews in BJP: 41.
- IUPHAR Pharmacological Reviews: 120
- The cumulative BJP “Concise Guide” set is 54 papers (including the 2025/26 edition)

General overview of database team activities

GtoPdb Team Interactions

For more details of previous and continuing interactions please see previous reports.

Global Core Biodata Resource

Since December 2023, the IUPHAR/BPS Guide to Pharmacology has been a Global Core Biodata Resources (GCBRs). The original announcement article can be viewed here: https://globalbiodata.org/global-biodata-coalition-announces-outcome-of-2023-global-core-biodata-resource-selection-process/

This makes GtoPdb one of 52 GCBR designated by the Global Biodata Coalition (GBC). Through the GCBR designation, the Global Biodata Coalition (GBC) seeks to draw attention to the most critical set of global biodata resources and to better understand the challenges and needs for biodata long-term stability. GCBRs are resources of fundamental importance to global life sciences and biomedical research communities, providing open access and long-term preservation of key biological data.

The GCBR selection process was open to biodata resources globally that were able to meet several stringent eligibility criteria and more than 90 resources submitted expressions of interest across the two rounds of GCBR selection. The assessment process for GCBRs was undertaken by a panel of more than 50 independent expert reviewers against a series of criteria that included scientific focus, the size and reach of the user communities, quality of service, governance, and impact on global research.

ELIXIR

Engagement continues with this important Europe-wide bioinformatics infrastructure initiative. Our involvement with ELIXIR-UK brings closer ties with other key UK bioinformatics resources and facilitates collaboration on the use of standard ontologies and identifiers. This is valuable as we continue seeking to ensure GtoPdb is a FAIR-compliant (Findable, Accessible, Interoperable, Reusable) resource.

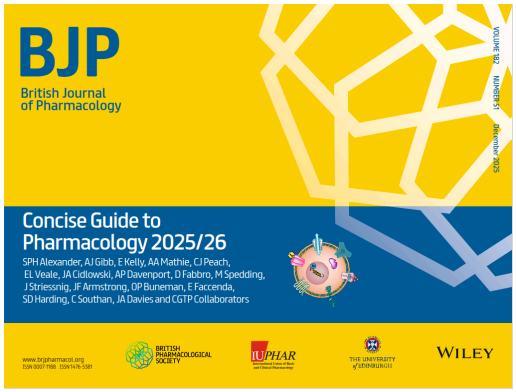
We are part of ELIXIR-UK though as one facet of the University of Edinburgh's membership. As reported before, we have an entry in the ELIXIR bio-tools directory as one of the official UK ELIXIR Node Services.

We were represented by Dr. Chris Southan at the ELIXIR UK All-Hands Meeting, Exeter, in October 2025.

Concise Guide to Pharmacology

Listed here are our most recent publications.

The 7th edition of the Concise Guide to Pharmacology (2025/26) was published on 29th December 2025.



"The Concise Guide to Pharmacology 2025/26 marks the seventh edition in this series of biennial publications in the British Journal of Pharmacology. Presented in landscape format, the guide provides a comparative overview of the pharmacology of drug target families. The concise nature of the Concise Guide refers to the style of presentation, being clear, accessible, and well-structured, rather than the scope of the content, which spans approximately 500 pages. The Concise Guide summarises the key pharmacological properties of around 1900 human drug targets, and nearly 7000 interactions, involving around 4400 ligands. While the content is a substantially condensed version of the more detailed information and links available at the www.guidetopharmacology.org website, the printed guide serves as a permanent, citable, point-in-time record, that remains stable despite ongoing updates to the online database"

Citation example for the Introduction chapter:

Alexander SPH et al. The Concise Guide to PHARMACOLOGY 2025/26: Introduction and Other Protein Targets. Br J Pharmacol. 2025 Dec;182 Suppl 1(Suppl 1):S1-S23. doi: 10.1111/bph.70229. PMID: 41461576; PMCID: PMC13480412.

NAR Update

Our most recent database update paper was accepted and published online in late 2025 and is included in the 2026 Nucleic Acids Research Database Issue.

Harding SD, Armstrong JF, Faccenda E, Southan C, Alexander SPH, Davenport AP, Spedding M, Davies JA. **The IUPHAR/BPS Guide to PHARMACOLOGY in 2026**. Nucleic Acids Res. 2025 Epub ahead of print. doi: 10.1093/nar/gkaf1067. PMID: 41160876.

Outreach and Social Media

We use mainstream social media outlets for five primary purposes 1) outreach to potential new users and/or followers 2) informing on new features or releases 3) enhancing awareness of our publications and presentations 4) fostering contacts with our direct collaborators and other followers (including many other databases) 5) establishing reciprocity with key followers and collaborators.

BlueSky

We have established a BlueSky Profile gtopdb.bsky.social. As of 18th September 2026 we have 96 followers. Please connect with us if you use this platform and would like to be kept up-to-date with GtoPdb database release and other news.

LinkedIn

The Curation Team continues to encourage Subcommittee Chairs and collaborators to increase their reciprocal connectivity as individual LinkedIN users. This expands our collective inter-network reach for posting updates, new papers etc. (N.B. interested readers of this report are encouraged to make connection requests from GtoPdb and IUPHAR scientists they know). Our own LinkedIN group page now has **726 followers**, up from 652 in December 2025.

Guide to Pharmacology Blog

Our Edinburgh blog (http://blog.guidetopharmacology.org/) has received 4,166 visitors between Sep 25 and Aug 26 - an average of 347 visitors per month. Over the same period there have been 5,952 views of our blog (496 per month). This is a big increase on the 2,213 visitors and 3,737 views in our last report.

The blog is our primary news feed and includes database release updates, new features, technical items or articles. Our regular posts with expert commentaries on hot topics relevant to pharmacology are particularly popular, always ranking in the top 5 posts for any given month.

Team member Chris Southan maintains his own (http://cdsouthan.blogspot.com/) where relevant posts include cross-pointers to GtoPdb.

Hot Topics

An established feature, our Hot Topics in Pharmacology track and highlight new significant papers in pharmacology and drug discovery. These are communicated to us from Subcommittee members or picked up from Social Media. For a selection we commission concise commentaries from our expert contacts.

In 2026 to date we have added 119 new hot topics.

Engaging with Us

As is implicit from the Social Media section above, it is crucial to extend our external presence and impact. Thus, the more readers of this document who “connect” with us, (via whichever of the channels above they use for their own professional profile) the more our outreach extends. This has mutual advantages, in particular re-posts and LinkedIN likes are useful for extending the alerting network for new releases, publications, meeting slide sets and blog posts. Note also that each time you either save one of our publications to your own Mendeley account or mention it in a post, blog or PubMed commons comment (but make sure you specify a DOI or PubMed link for the auto-indexing) the Altmetrics score.