SI Appendix for:

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Clustered patterns of species origins of nature-derived drugs and clues for future bioprospecting

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SI Appendix Table S1 List of nature-derived new molecular entity drugs approved by FDA in 2009 and 2010

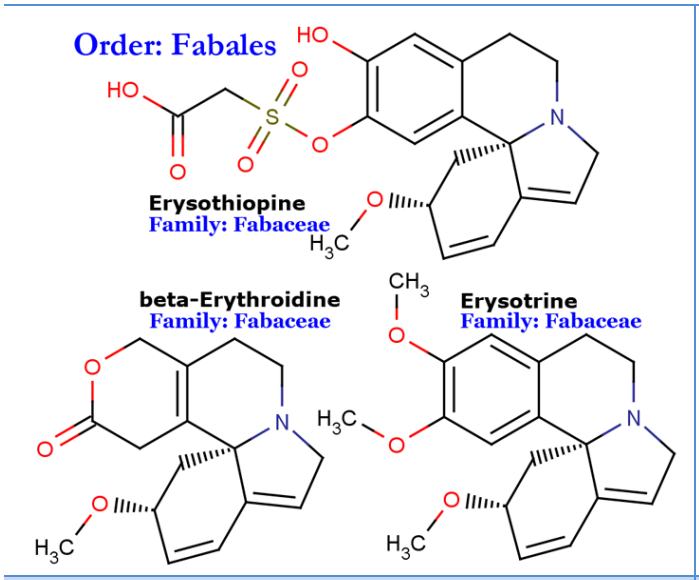
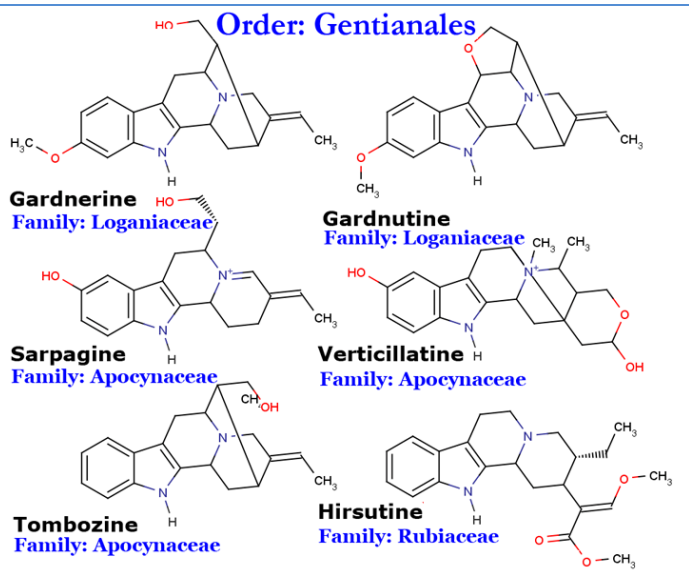
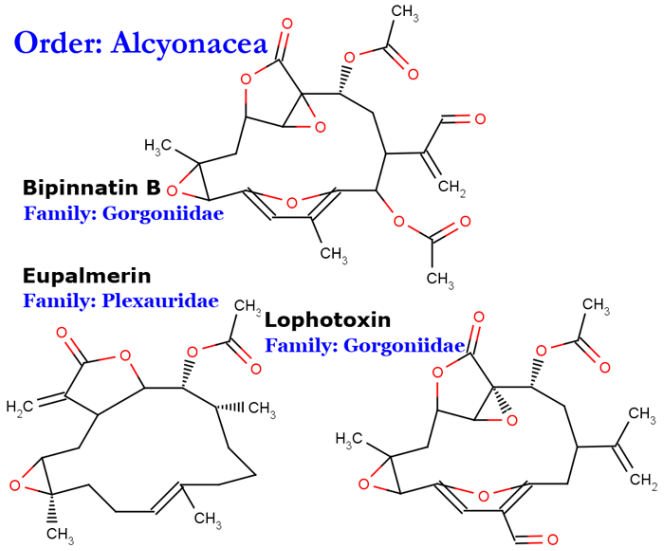
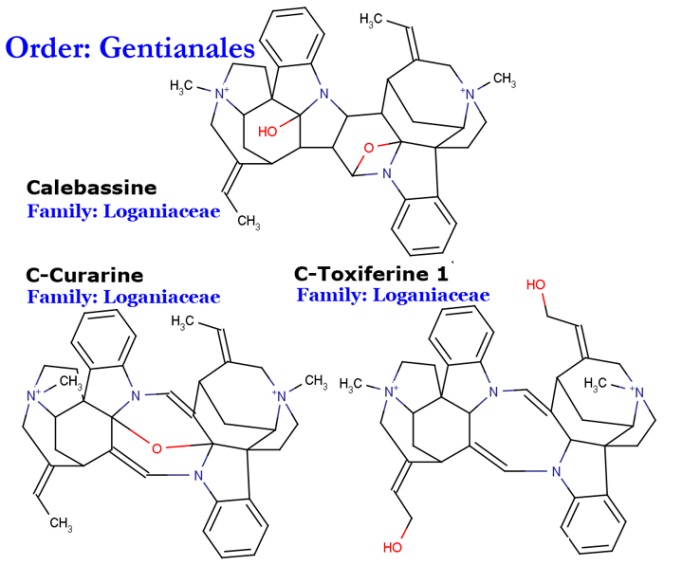
Drug name	Year of FDA approval	Drug relationship to natural product	Species origin (family) of natural product	Therapeutic class	Target and drug action	Exploration status of species family at time of drug approval
Liraglutide	2010	Peptidomimetic of GLP-1 peptide	Human (Hominidae)	Anti-diabetes	Glucagon-like peptide 1 receptor agonist	Existing drug-productive family with drugs approved before 1960 against oncological diseases
Fingolimod	2010	Semi-synthetic derivative of myriocin	Isaria sinclairii (Cordycipitaceae)	Immuno-suppressive	Sphingosine-1-phosphate receptor S1PR1	Non-drug-productive family inside existing drug-productive cluster formed in 1962
Velaglucerase alfa	2010	Recombinant protein	Human (Hominidae)	Gaucher disease	Recombinant human acid beta-glucosidase	Existing drug-productive family with drugs approved before 1960 against oncological diseases
Cabazitaxel	2010	Semi-synthetic derivative of taxol	Taxus brevifolia (Taxaceae)	Anticancer	Microtubule stabilizer	Existing drug-productive family with drugs approved 1993 against oncological diseases
Ceftaroline fosamil	2010	Semi-synthetic derivative of cephalosporin	Acremonium (Acremonium)	Antibiotic	Cell wall disruptor	Existing drug-productive family with drugs approved 1964 against bacterial infections
Tesamorelin	2010	Recombinant protein	Human (Hominidae)	HIV lipodystrophy	Human GRF receptors	Existing drug-productive family with drugs approved before 1960 against oncological diseases
Dabigatran	2010	Peptidomimetic of fibrinogen sequence	Human (Hominidae)	Anticoagulant	Thrombin inhibitor	Existing drug-productive family with drugs approved before 1960 against oncological diseases
Pitavastatin	2009	Semi-synthetic derivative of mevastatin	Penicillium citrinum (Trichocomaceae)	Hyperlipidemia and mixed dyslipidaemia	3-hydroxy-3-methyl-glutaryl-CoA reductase inhibitor	Existing drug-productive family with drugs approved before 1960 against bacterial infections.
Vigabatrin	2009	Semi-synthetic derivative of GABA	Human (Hominidae)	Spasms and seizures	GABA transaminase inhibitor	Existing drug-productive family with drugs approved before 1960 against oncological diseases
Telavancin	2009	Semi-synthetic derivative of Vancomycin	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibiotic	Cell wall disruptor	Existing drug-productive family with drugs approved before 1960 against bacterial infections
Romidepsin	2009	Natural product	Chromobacterium violaceum (Neisseriaceae)	Anticacer	HDAC inhibitor	Existing drug-productive family with drugs approved in 1981 against bacterial infections.
Everolimus	2009	Semi-synthetic derivative of rapamycin	Streptomyces hygroscopicus (Streptomycetaceae)	Anticacer	mTOR inhibitor	Existing drug-productive family with drugs approved before 1960 against bacterial infections

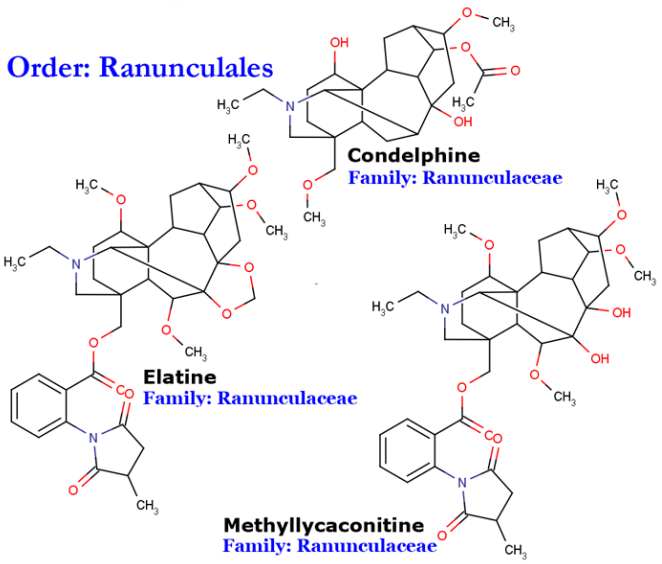
SI Appendix Table S2 Drug productive scaffolds from the actinomycetales order

Scaffold	**Nature-Derived Drugs with the Scaffold**	**Scaffold Producing Species-Families in Actinomycetales Order**	**Scaffold Producing Species-Families outside Actinomycetales Order**
Actinomycins	Dactinomycin	Streptomycetaceae	.
Angucyclines	Landomycin, Oviedomycin, Simocyclinone, Urdamycin, Jadomycin	Streptomycetaceae	.
Aminocoumarin	Novobiocin	Streptomycetaceae	.
Aminocyclitols	Spectinomycin	Streptomycetaceae	.
Aminoglycosides	Arbekacin, Capreomycin, Gentamicin, Kanamycin, Neomycin, Netilmicin, Paromomycin, Streptomycin, Streptozocin, Tobramycin, Amikacin	Streptomycetaceae	.
Amlodipine	Atorvastatin	Pseudonocardiaceae	.
Ansamycins	Rifabutin, Rifamixin, Rifamycin B, Rifapentine, Rifaximin	Micromonosporaceae, Nocardiaceae, Pseudonocardiaceae	Celastraceae, Rhamnaceae
Anthracyclines	Aclacinomycin, Aranciamycin, Amrubicin, Chartreusin, Chlortetracycline, Clomocycline, Daunorubicin, Demeclocycline, Doxorubicin, Doxycycline, Epirubicin, Idarubicin, Lymecycline, Methacycline, Minocycline, Pirarubicin, Tetracycline, Tigecycline, Valrubicin	Streptomycetaceae	.
Aryl-C-glycosides	Gilvocarcin, Hedamycin, Medermycin	Streptomycetaceae	.
Aureolic acids	plicamycin, chromomycins, olivomycins, chromocyclomycin, UCH9, durhamycin A, Mitoxantrone, Mithramycin	Actinoplanaceae, Streptomycetaceae	.
Bleomycins	Bleomycin, Tallysomycin, Zorbamycin	Pseudonocardiaceae, Streptomycetaceae	.
Carbapenems	Biapenem, Doripenem, Ertapenem, Imipenem, Meropenem, Panipenem	Streptomycetaceae	.
Cephalosporins	Cefacetrile, Cefadroxil, Cephalexin, Cefaloglycin, Cefalonium, Cefaloridine, Cefalotin, Cefapirin, Cefatrizine, Cefazaflur, Cefazedone, Cefazolin, Cefradine, Cefroxadine, Ceftezole, Cefaclor, Cefonicid, Cefprozil, Cefuroxime, Cefuzonam, Cefmetazole, Cefotetan, Cefoxitin, Cefcapene, Cefdaloxime, Cefdinir, Cefditoren, Cefetamet, Cefixime, Cefmenoxime, Cefodizime, Cefotaxime, Cefovecin, Cefpimizole, Cefpodoxime, Cefteram, Ceftibuten, Ceftiofur, Ceftiolene, Ceftizoxime, Ceftriaxone, Cefoperazone, Ceftazidime, Cefclidine, Cefepime, Cefluprenam, Cefoselis, Cefozopran, Cefpirome, Cefquinome, Ceftobiprole, Ceftaroline, Flomoxef, latamoxef	Pseudonocardiaceae, Streptomycetaceae	Hypocreaceae

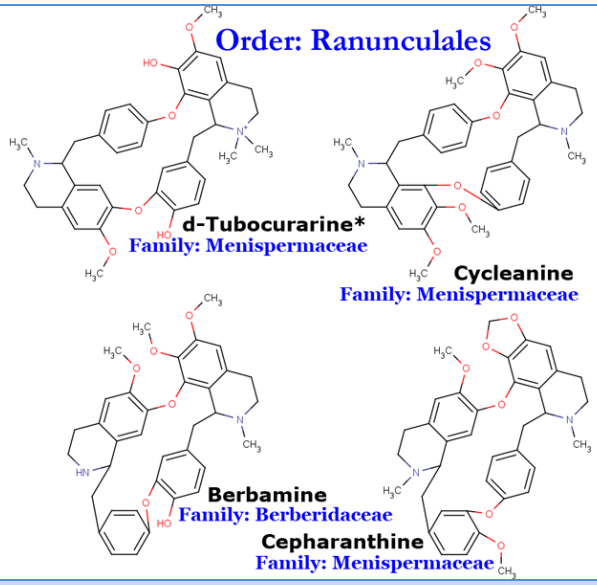
Enediynes	C-1027, Calicheamicin, Dynemicin, Maduropeptin, Neocarzinostatin	Streptomycetaceae, Micromonosporaceae, Thermomonosporaceae	.
Indolocarbazoles	AT2433, K-252a, Rebeccamycin, Staurosporine	Thermomonosporaceae, Streptosporangiaceae, Actinosynnemataceae, Streptomycetaceae	Arcyriaceae, Nostocaceae, Microchaetaceae, Fischerellaceae
Lincosamides	Clarithromycin, Clindamycin, Lincomycin	Pseudonocardiaceae, Streptomycetaceae	.
Macrolactams	Ansamitocin, Geldanamycin, Leinamycin, Rapamycin, Vicenistatin, Pimecrolimus,Tacrolimus	Actinosynnemataceae, Pseudonocardiaceae, Streptomycetaceae	.
Macrolides	Azithromycin, Borrelidin, Chalcomycin, Concanamycin, Dirithromycin, Flurithromycin, Josamycin, Natamycin, Pristinamycin, Dirithromycin, Erythromycin, Everolimus, Ivermectin, Rokitamycin, Roxithromycin, Sirolimus, Telithromycin, Temsirolimus,Troleandomycin	Pseudonocardiaceae, Streptomycetaceae	Thorectidae, Nudibranch, Aplysiidae, Phymatellidae
Pentangular polyphenols	Benastatin, Fredericamycin, Griseorhodin	Streptomycetaceae	.
polyenes	Nystatin, Amphotericin, Candicidin	Streptomycetaceae	Asteraceae
Polyenones	Neocarzilin A, Monensin, Nigericin, Nonactin	Streptomycetaceae	.
Polyketide-Isoprenoid hybrid	Furanonaphtoquinone I, Furaquinocin A	Streptomycetaceae	.
Spirotetronates	Chlorothricin, Kijanimicin, Tetrocarcin A	Streptomycetaceae, Thermomonosporaceae, Micromonosporaceae	Phyllidiidae
Streptogramins	Griseoviridin, Madumycin, Pristinamycin, Quinupristin, Virginiamycin	Micromonosporaceae, Nocardiaceae, Streptomycetaceae	.
Tetracenomycins	Elloramycin, Lactonamycin, Tetracenomycin C	Streptomycetaceae	.
Tetracyclines	Tetracycline, Oxytetracycline, doxycycline, minocycline	Streptomycetaceae	.

SI Appendix Table S3 The scaffold groups of 52 nAChR ligands and the species-family of their species origins

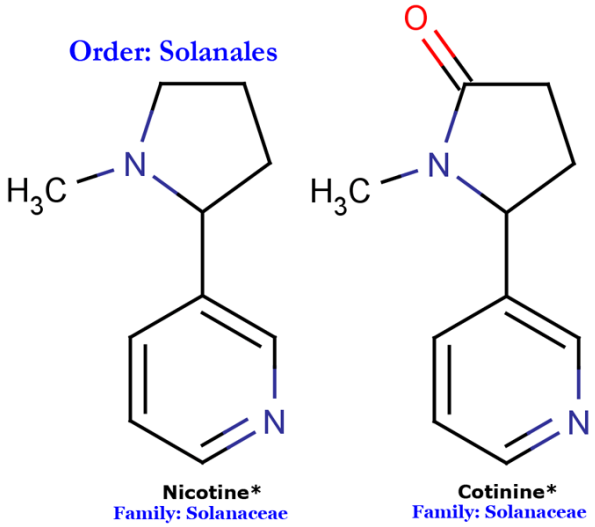
	
Cluster 1	**Cluster 2**
	
Cluster 3	**Cluster 4**



Cluster 5



Cluster 6



Cluster 7

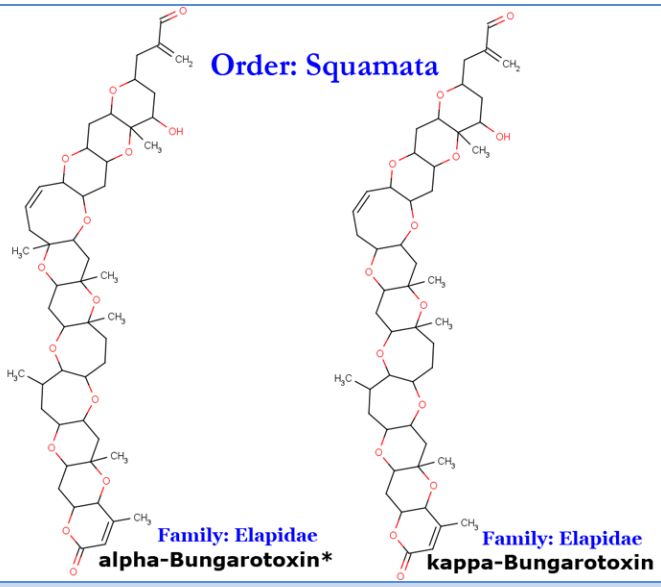
Order: Sorbeoconcha

Conotoxin GI: 13 AA Peptide ECCNPACGRHYSC
Family: Conidae

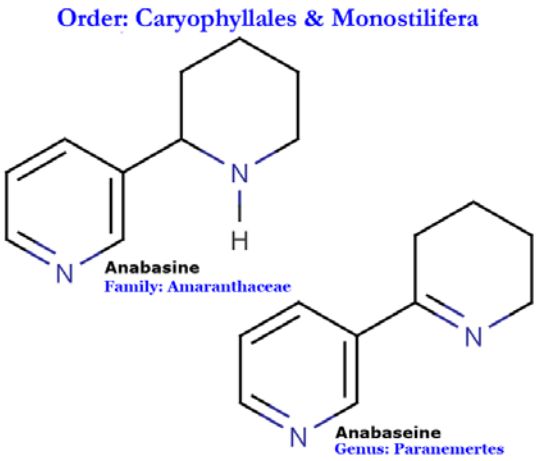
alpha-Conotoxin MI: 14 AA Peptide GRCCHPACGKNYSC
Family: Conidae

alpha-Conotoxin SI: 13 AA Peptide ICCNPACGPKYSC
Family: Conidae

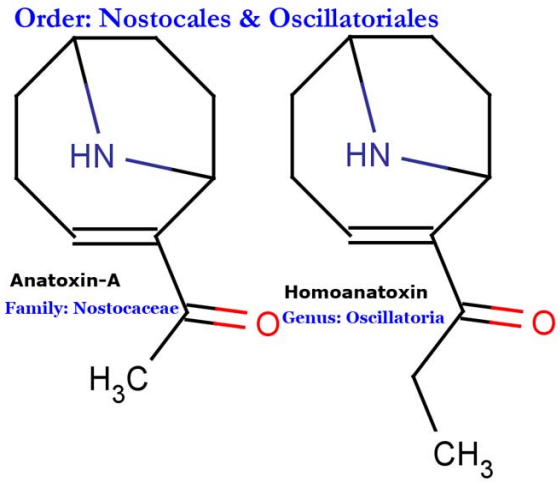
Cluster 8



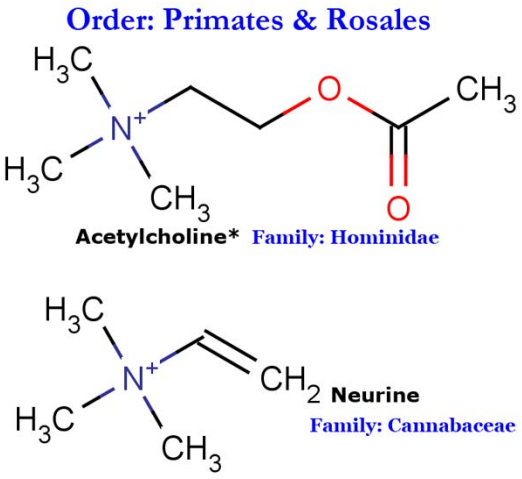
Cluster 9



Cluster 10



Cluster 11



Cluster 12

Order: Araneae

Agelenin: **35 AA Peptide**

Family: Agelenidae

GGCLPHNRFCNALSGPRCCSGLKCKELSIWDSRCL-NH2

Disulfide bonds Cys3- Cys19, Cys10- Cys24,

and Cys18- Cys34

Cluster 13

Order: Squamata

alpha-Cobrotoxin: **62 AA Peptide**

Family: Elapidae

LECHNQQSSQTPTTTGC

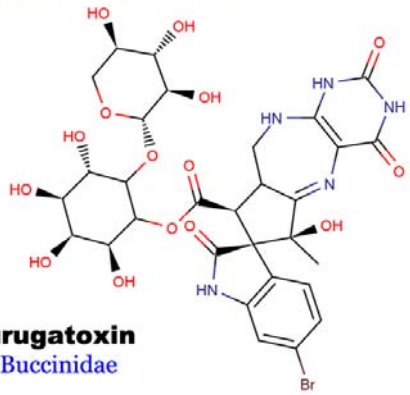
SGGETNCYKKRWRDHRG

YRTERGCGCPSVKNGIE

INCCTTDRCNN

Cluster 14

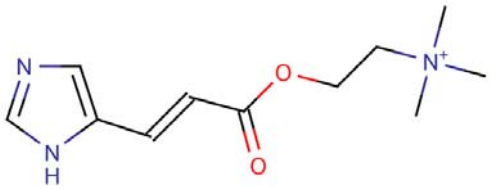
Order: Sorbeoconcha



Neosurugatoxin
Family: Buccinidae

Cluster 15

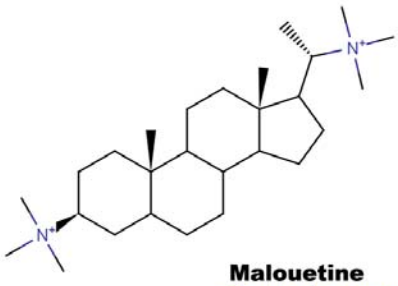
Order: Sorbeoconcha



Murexine
Family: Muricidae

Cluster 16

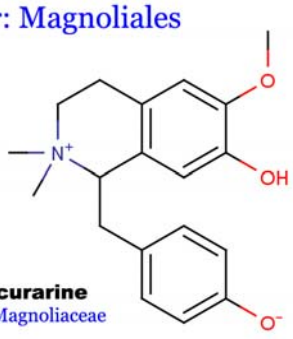
Order: Gentianales



Malouetine
Family: Apocynaceae

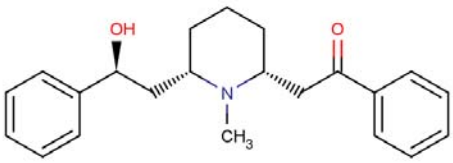
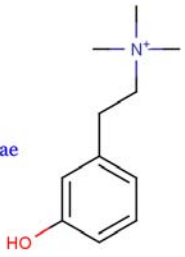
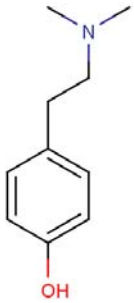
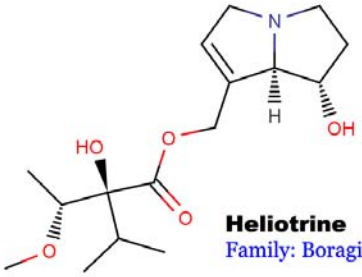
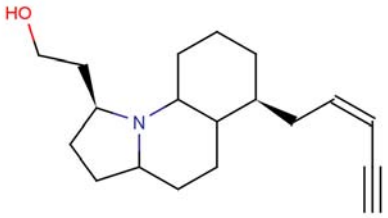
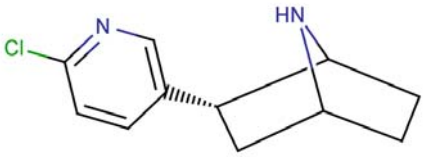
Cluster 17

Order: Magnoliales

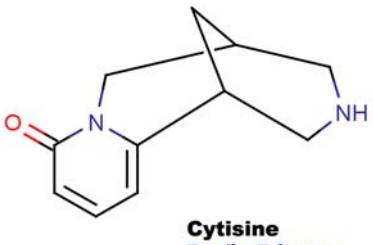


Magnocurarine
Family: Magnoliaceae

Cluster 18

Order: Asterales  **Lobeline** Family: Campanulaceae	Order: Anura **Leptodactyline** Family: Leptodactylidae 
Cluster 19	**Cluster 20**
Order: Caryophyllales **Hordenine** Family: Cactaceae 	Subclass: Asterids  **Heliotrine** Family: Boraginaceae
Cluster 21	**Cluster 22**
Order: Anura  **Gephyrotoxin** Family: Dendrobatidae	Order: Anura  **Epibatidine** Family: Dendrobatidae
Cluster 23	**Cluster 24**

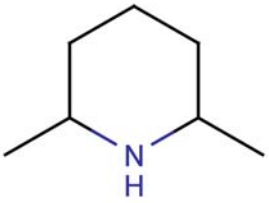
Order: Fabales



Cytisine
Family: Fabaceae

Cluster 25

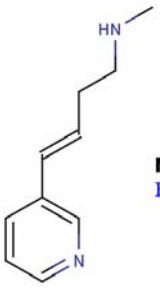
Order: Caryophyllales



2,6-Dimethylpiperidine
Family: Amaranthaceae

Cluster 26

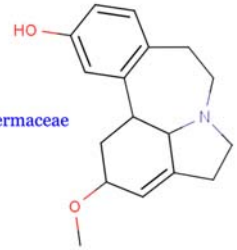
Order: Solanales



Metanicotine
Family: Solanaceae

Cluster 27

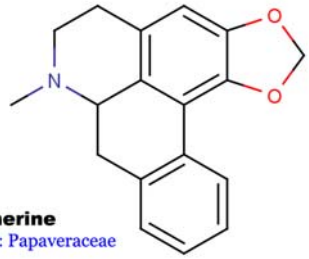
Order: Ranunculales



Cocculine
Family: Menispermaceae

Cluster 28

Order: Ranunculales



Roemerine
Family: Papaveraceae

Cluster 29

SI Appendix Table S4 FDA approved anticancer kinase inhibitors derived or mimicked from natural products. The exploration status of species family of natural product leads is represented by one of the labels ED existing drug-productive family, NDin non-drug-productive families inside existing drug-productive clusters, and NDout non-drug-productive families outside existing drug-productive cluster, which is followed by the year of earliest prevous drug approval and the previous drug's therapeutic class.

Kinase Inhibitor (target)	**Relationship to Natural Product Lead**	**Year of FDA Approval**	**Species Origin of Natural Product (species family and its exploration status at time of drug approval)**	**Scaffold**	**Scaffold Producing Species-Families in Actinomycetales Order**	**Scaffold Producing Species-Families in Other Orders**
Sirolimus (mTOR)	An actinomycetes metabolite	1999	Streptomyces hygroscopicus (Streptomycetaceae, ED, before 1960, anti-infections)	Macrolactams	Actinosynnemataceae, Pseudonocardiaceae, Streptomycetaceae	
Imatinib mesilate (Abl)	A molecule chemically modified from staurosporin	2001	Lentzea albida (Actinosynnemataceae, ED, 1971, anti-infections)	Indolocarbazoles	Thermomonosporaceae, Streptosporangiaceae, Actinosynnemataceae, Streptomycetaceae	Arcyriaceae, Nostocaceae, Microchaetaceae, Fischerellaceae
Gefitinib (EGFR)	ATP-binding site mimic of Zeatin and Olomoucine, a semi-synthetic derivative of Zeatin	2002	Maize (Poaceae 1984, cardiovascular), Cocos nucifera (Arecaceae, ED, 1978, anthelmintic), Spinacia oleracea (Amaranthaceae, NDout), Pisum sativum (Fabaceae, ED, before 1960, cardiovascular)	Adenine-type Cytokinins	.	Poaceae, Arecaceae, Amaranthaceae, Fabaceae
Erlotinib hydrochloride (EGFR)	ATP-binding site mimic of Zeatin and Olomoucine, a semi-synthetic derivative of Zeatin	2004	Maize (Poaceae 1984, cardiovascular), Cocos nucifera (Arecaceae, ED, 1978, anthelmintic), Spinacia oleracea (Amaranthaceae, ED, 2002, anticancer), Pisum sativum (Fabaceae, ED, before 1960, cardiovascular)	Adenine-type Cytokinins	.	Poaceae, Arecaceae, Amaranthaceae, Fabaceae
Sunitinib malate (VEGFR)	ATP-binding site mimic of Zeatin and Olomoucine, a semi-synthetic derivative of Zeatin	2006	Maize (Poaceae 1984, cardiovascular), Cocos nucifera (Arecaceae, ED, 1978, anthelmintic), Spinacia oleracea (Amaranthaceae, ED, 2002, anticancer), Pisum sativum (Fabaceae, ED, before 1960, cardiovascular)	Adenine-type Cytokinins	.	Poaceae, Arecaceae, Amaranthaceae, Fabaceae

Temsirolimus (mTOR)	A semi-synthetic derivative of Rapamycin (sirolimus)	2007	Streptomyces hygroscopicus (Streptomycetaceae, ED, before 1960, anti-infections)	Macrolactams	Actinosynnemataceae, Pseudonocardiaceae, Streptomycetaceae	
Nilotinib (Abl)	A molecule chemically modified from staurosporin	2007	Lentzea albida (Actinosynnemataceae, ED, 1971, anti-infections)	Indolocarbazoles	Thermomonosporaceae, Streptosporangiaceae, Actinosynnemataceae, Streptomycetaceae	Arcyriaceae, Nostocaceae, Microchaetaceae, Fischerellaceae
Lapatinib (EGFR / HER2)	ATP-binding site mimic of Zeatin and Olomoucine, a semi-synthetic derivative of Zeatin	2007	Maize (Poaceae 1984, cardiovascular), Cocos nucifera (Arecaceae, ED, 1978, anthelmintic), Spinacia oleracea (Amaranthaceae, ED, 2002, anticancer), Pisum sativum (Fabaceae, ED, before 1960, cardiovascular)	Adenine-type Cytokinins	.	Poaceae, Arecaceae, Amaranthaceae, Fabaceae
Pazopanib (VEGFR)	ATP-binding site mimic of Zeatin and Olomoucine, a semi-synthetic derivative of Zeatin	2009	Maize (Poaceae 1984, cardiovascular), Cocos nucifera (Arecaceae, ED, 1978, anthelmintic), Spinacia oleracea (Amaranthaceae, ED, 2002, anticancer), Pisum sativum (Fabaceae, ED, before 1960, cardiovascular)	Adenine-type Cytokinins	.	Poaceae, Arecaceae, Amaranthaceae, Fabaceae
Everolimus (mTOR)	A semi-synthetic derivative of Rapamycin (sirolimus)	2009	Streptomyces hygroscopicus (Streptomycetaceae, ED, before 1960, anti-infections)	Macrolactams	Actinosynnemataceae, Pseudonocardiaceae, Streptomycetaceae	

SI Appendix Table S5 List of FDA approved nature-derived drugs and their species origins. Following the seminal works of Newman and Cragg (J Nat Prod. 2007 Mar;70(3):461-77), the drug types are defined as follows: "B" Biological, a peptide or protein either isolated from an organism/cell line or produced by biotechnological means in a surrogate host; "N" Natural product; "ND" Derived from a natural product and is usually a semisynthetic modification; "NM" Natural product mimic; "S*" Made by total synthesis based on the pharmacophore from a natural product; and "V" Vaccine.

Drug name	Drug type	Species origin (family)	Therapeutic class or targeted disease
Aablaquin	S*	Cinchona officinalis (Rubiaceae)	Antiparasitic
Abraxane	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Acarbose	N	Actinoplanes (Micromonosporaceae)	Cardiovascular disease
Acetylcholine chloride	N	Homo sapiens (Hominidae)	Neurological disease
Acetyldigitoxin	ND	Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Acheflan	N	Cordia verbenacea (Boraginaceae)	Immunological, inflammatory and related disease
Acitretin	ND	Daucus carota (Apiaceae)	Antipsoriatic
Aclarubicin	N	Streptomyces galilaeus (Streptomycetaceae)	Oncological disease
Actimmune Interferon gamma-1b	B	Homo sapiens (Hominidae)	Immunostimulant
Activated protein C concn	B	Homo sapiens (Hominidae)	Deep venous thrombosis
Acyclovir	S*	Streptomyces antibioticus (Streptomycetaceae); Streptomyces griseus (Streptomycetaceae); Tethya (Tethyidae)	Antiviral
Adalimumab	B	Homo sapiens (Hominidae)	Antiarthritic
Adefovir dipivoxil	S*	Simplexvirus (Herpesviridae); Hepatitis B virus (Hepadnaviridae); Homo sapiens (Hominidae)	Antiviral
Adenosine	N	Homo sapiens (Hominidae)	Antiarrhythmic
Adoniside	N	Adonis vernalis (Ranunculaceae)	Cardiovascular disease
Advate Rec-antihemophilic factor	B	Homo sapiens (Hominidae)	Antihemophilia
Aescin	N	Aesculus hippocastanum (Hippocastanaceae)	Inflammatory disease
Agalsidase alfa	B	Homo sapiens (Hominidae)	Fabry disease
Agalsidase beta	B	Homo sapiens (Hominidae)	Fabry disease
Agrimophol	N	Agrimonia eupatoria (Rosaceae)	Anthelmintic Chemotherapy
Aimmugen Hepatitis a vaccine	V	Hepatitis A virus (Picornaviridae)	Hepatitis
Ajmalicine	N	Catharanthus roseus (Apocynaceae); Rauvolfia serpentina (Apocynaceae)	Circulatory disorders
Alacepril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease

Alclometasone dipropionate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Aldesleukin	B	Homo sapiens (Hominidae)	Anticancer
Alefacept	B	Homo sapiens (Hominidae)	Antipsoriatic
Alemtuzumab	B	Mus musculus (Muridae)	Anticancer
Alfaferone Interferon alfa	B	Homo sapiens (Hominidae)	Antiviral
Alferon N Interferon alfa-n3	B	Homo sapiens (Hominidae)	Antiviral
Alglucerase	B	Homo sapiens (Hominidae)	Type 1 Gaucher's disease
Alitretinoin	ND	Daucus carota (Apiaceae)	Anticancer
Allantoin	N	Symphytum officinale (Nitrariaceae)	Vulnerary
Allyl isothiocyanate	N	Brassica nigra (Brassicaceae)	Rubefacient
Alpha-1 antitrypsin	B	Homo sapiens (Hominidae)	Antiemphysemic
Alpha-acetyldigoxin	ND	Digitalis lanata (Plantaginaceae); Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
AlphaNine Factor IX	B	Homo sapiens (Hominidae)	Hemophilia
Alprostadil	N	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Erectile dysfunction
Alteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Ambirix Hepatitis vaccine	V	Hepatitis A virus (Picornaviridae); Hepatitis B virus (Hepadnaviridae)	Antiviral
Amikacin	ND	Streptomyces kanamyceticus (Streptomycetaceae)	Antibacterial
Amodiaquine	ND	Cinchona (Rubiaceae); Cinchona officinalis (Rubiaceae)	Antiparasitic
Amoxicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Amphetamine	N	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Neurological disease
Amphotericin	N	Streptomyces nodosus (Streptomycetaceae)	Antibacterial
Ampicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Amprenavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Amrubicin HCL	ND	Streptomyces peucetius (Streptomycetaceae)	Anticancer
Anakinra	B	Homo sapiens (Hominidae)	Antiarthritic
Andrographolide	N	Andrographis paniculata (Acanthaceae)	Antibacterial
Anecortave acetate	ND	Homo sapiens (Hominidae)	Macular degeneration
Angeliq	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Angiotensin II	N	Homo sapiens (Hominidae)	Anticancer
Anidulafungin	ND	Aspergillus (Trichocomaceae); Emericella rugulosa (Trichocomaceae)	Antifungal
Anisodamine	N	Anisodus tanguticus (Solanaceae)	Anticholinergic

Anisodine	N	Anisodus tanguticus (Solanaceae)	Anticholinergic
Anistreolase	B	Homo sapiens (Hominidae); Streptococcus (Streptococcaceae)	Antithrombotic
Antebate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Antithrombin III	B	Homo sapiens (Hominidae)	Anticoagulant
Aotal	S*	Homo sapiens (Hominidae)	Alcohol deterrent
Apalcillin sodium	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Apidra Insulin glulisine	B	Homo sapiens (Hominidae)	Antidiabetic
Apomorphine hydrochloride	ND	Papaver somniferum (Papaveraceae)	Neurological disease
Aprotinin	N	Bos taurus (Bovidae)	Ischemia
Aralast	B	Homo sapiens (Hominidae)	Antiemphysemic
Arbekacin	ND	Streptomyces kanamyceticus (Streptomycetaceae)	Antibacterial
Arecoline	N	Areca catechu (Arecaceae)	Anthelmintic Chemotherapy
Argatroban	S*/NM	Homo sapiens (Hominidae)	Antithrombotic
Arglabin	N	Artemisia (Asteraceae)	Oncological disease
Aromasin	ND	Homo sapiens (Hominidae)	Anticancer
Arteether	ND	Artemisia annua (Asteraceae)	Antiparasitic
Arteflene	ND	Artabotrys (Annonaceae)	Antiparasitic
Artemether	ND	Artemisia annua (Asteraceae)	Antiparasitic
Artemisinin	N	Artemisia annua (Asteraceae)	Antiparasitic
Artesunate	ND	Artemisia annua (Asteraceae)	Antiparasitic
Asiaticoside	N	Centella asiatica (Apiaceae)	Vulnerary
Asparaginase	N	Escherichia coli (Enterobacteriaceae)	Oncological disease
Aspirin	ND	Salix alba (Salicaceae)	Inflammatory disease
Aspoxicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Atazanavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Atenolol	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Cardiovascular disease
Atorvastatin calcium	S*/NM	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Atosiban	ND	Homo sapiens (Hominidae)	Premature birth
Atovaquone	S*	Homo sapiens (Hominidae)	Antiparasitic
Atropine	N	Atropa belladonna (Solanaceae); Datura stramonium (Solanaceae); Mandragora officinarum (Solanaceae)	Anticholinergic
Augmentin	ND	Streptomyces clavuligerus (Streptomycetaceae); Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial

Avaxim hepatitis a vaccine	V	Hepatitis A virus (Picornaviridae)	Hepatitis
Avonex Interferon beta-1a	B	Homo sapiens (Hominidae)	Multiple sclerosis
Azacytidine	S*	Homo sapiens (Hominidae)	Anticancer
Azithromycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Azlocillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Aztreonam	ND	Chromobacterium violaceum (Neisseriaceae)	Antibacterial
Bacampicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Bacitracin	N	Bacillus licheniformis (Bacillaceae); Bacillus subtilis (Bacillaceae)	Antibacterial
Basiliximab	B	Homo sapiens (Hominidae)	Immunosuppressant
Becaplermin	B	Homo sapiens (Hominidae)	Diabetic foot ulcers
Befunolol HCL	S*	Homo sapiens (Hominidae)	Antiglaucoma
Belotecan HCL	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Bemiparin sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Benazepril hydrochloride	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Benefix Factor IX	B	Homo sapiens (Hominidae)	Hemophilia
Beraprost sodium	ND	Homo sapiens (Hominidae)	Platelet aggreg. inhib.
Berberine	N	Berberis vulgaris (Berberidaceae); Thalictrum (Ranunculaceae)	Antibacterial
Beromun	B	Homo sapiens (Hominidae)	Anticancer
Beta-acetyldigoxin	ND	Digitalis lanata (Plantaginaceae); Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Betain anhydrous	N	Triticum (Poaceae)	Homocystinuria
Betamethasone dipropionate	N	Homo sapiens (Hominidae)	Anti-inflammatory
Betamethasone sodium phosphate	N	Homo sapiens (Hominidae)	Anti-inflammatory
Betaseron Interferon b-1b	B	Homo sapiens (Hominidae)	Multiple sclerosis
Betaxolol HCI	S*/NM	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Cardiovascular disease
Bevacizumab	B	Mus musculus (Muridae)	Anticancer
Biapenem	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Biken-HB Hepatitis b vaccine	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis
Bilive	V	Hepatitis A virus (Picornaviridae); Hepatitis B virus (Hepadnaviridae)	Antiviral
Bimatoprost	ND	Allium sativum (Amaryllidaceae); Artemisia dracunculus (Asteraceae); Manduca sexta (Sphingidae)	Antiglaucoma
Biogamma Interferon gamma-1a	B	Homo sapiens (Hominidae)	Anticancer

Bio-Hep B Hepatitis b vaccine	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis
Bivalirudin	ND	Haementeria officinalis (Glossiphoniidae); Hirudo medicinalis (Hirudinidae)	Cardiovascular disease
Bleomycin	N	Streptomyces verticillus (Streptomycetaceae)	Oncological disease
Bortezomib	S/NM	Homo sapiens (Hominidae)	Anticancer
Brovincamine fumarate	ND	Vinca minor (Apocynaceae)	Vasodilator, cerebral
Bucillamine	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Immunomodulator
Bucladesine sodium	S*/NM	Homo sapiens (Hominidae)	Cardiotonic
Budesonide	ND	Homo sapiens (Hominidae)	Antiasthmatic
Buprenorphine	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Buserelin acetate	ND	Homo sapiens (Hominidae)	Oncological disease
Byetta	ND	Heloderma suspectum (Helodermatidae)	Cardiovascular disease
Cabazitaxel	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae); Corylus avellana (Betulaceae); Seimatoantlerium tepuiense (Amphisphaeriaceae)	Anticacer
Cabergoline	ND	Claviceps (Clavicipitaceae)	Antihyperprolactinemia
Calcipotriol	ND	Salmonidae (Salmonidae); Agaricus bisporus (Agaricaceae)	Antipsoriatic
Calfactant	B	Bos primigenius (Bovidae)	RDS
Calsed	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Calusterone	ND	Homo sapiens (Hominidae)	Oncological disease
Camphor	N	Cinnamomum camphora (Lauraceae)	Rubefacient
Camptobell	ND	Camptotheca acuminata (Cornaceae)	Anticancer
Camptothecin	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Candesartan cilexetil	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Candicidin	N	Streptomyces griseus (Streptomycetaceae)	Antifungal
Capecitabine	S*	Homo sapiens (Hominidae)	Anticancer
Capreomycin	N	Saccharothrix mutabilis subsp. Capreolus (Actinosynnemataceae)	Antibacterial
Capsaicin	N	Capsicum annuum (Solanaceae); Capsicum frutescens (Solanaceae); Zingiber officinale (Zingiberaceae)	Neurological disease
Captopril	ND	Bothrops jararaca (Viperidae)	Cardiovascular disease
Carbenicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Carbenin	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Carbenoxolone	ND	Glycyrrhiza glabra (Fabaceae)	Immunological, inflammatory and related disease
Carindacillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial

Carmofur	S*	Homo sapiens (Hominidae)	Anticancer
Carperitide	N	Homo sapiens (Hominidae)	Congestive heart failure
Carumonam	ND	Chromobacterium violaceum (Neisseriaceae)	Antibacterial
Carzinophilin	N	Streptomyces sahachiroi (Streptomycetaceae)	Oncological disease
Cefacetrile	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefaclor	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefadroxil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefalexin	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefaloglycin	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefalotin sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefamandole nafate	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefapirin	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefazolin	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefbuperazone sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefcapene pivoxil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefdinir	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial

Cefditoren pivoxil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefepime	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefetamet pivoxil HCl	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefixime	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefmenoxime HCl	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefmetazole sodium	ND	Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces cattleya (Streptomycetaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefminox sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefodizime sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefonicid sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefoperazone sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceforanide	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefoselis	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefotaxime sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefotetan sodium	ND	Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces cattleya (Streptomycetaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial

Cefotiam hexetil HCL	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefoxitin sodium	ND	Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces cattleya (Streptomycetaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefozopran HCL	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefpimizole	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefpiramide sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefpirome sulfate	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefpodoxime proxetil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefprozil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefradine	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefroxadine	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefsulodin	ND	Acremonium chrysogenum (Acremonium)	Antibiotic
Ceftaroline fosamil	ND	Acremonium (Acremonium)	Antibiotic
Ceftazidime pentahydrate	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefteram pivoxil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftezole	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial

Ceftibuten	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftiofur	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftizoxime sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftobiprole medocaril	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftriaxone sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefuroxime axetil	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cefuzonam sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Celeuk	B	Homo sapiens (Hominidae)	Anticancer
Celiprolol HCl	S*	Homo sapiens (Hominidae)	Antihypertensive
Celmoleukin	B	Homo sapiens (Hominidae)	Anticancer
Centoxin	B	Homo sapiens (Hominidae)	Antisepsis
Ceprotin Protein C	B	Homo sapiens (Hominidae)	Purpura fulminans
Certoparin sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Cerubidine	N	Streptomyces coeruleorubidus (Streptomycetaceae); Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Cetrorelix	ND	Homo sapiens (Hominidae)	Fertility enhancer
Cetuximab	B	Homo sapiens (Hominidae)	Anticancer
Chenodiol	N	Homo sapiens (Hominidae)	Anticholelithogenic
Chloramphenicol	N	Streptomyces venezuelae (Streptomycetaceae)	Antibacterial
Chloroquine	ND	Cinchona officinalis (Rubiaceae)	Antiparasitic
Chlorotrianisene	S	Homo sapiens (Hominidae)	Anticancer
Chlortetracycline	N	Streptomyces aureofaciens (Streptomycetaceae)	Antibacterial
Choline alfoscerate	N	Homo sapiens (Hominidae)	Nootropic
Choriogonadotropin alfa	B	Homo sapiens (Hominidae)	Hormone
Chromomycin A3	N	Streptomyces griseus (Streptomycetaceae)	Oncological disease
Ciclesonide	ND	Homo sapiens (Hominidae)	Antiasthmatic
Cidofovir	S*	Cytomegalovirus (Herpesviridae); Homo sapiens	Antiviral

		(Hominidae)	
Cilazapril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Cimetropium bromide	ND	Datura metel (Solanaceae)	Antispasmodic
Cisatracurium besilate	S*	Leontice leontopetalum (Berberidaceae)	Muscle relaxant
Cissampeline	N	Cissampelos pareira (Menispermaceae)	Skeletal muscle relaxant
Cladribine	ND	Homo sapiens (Hominidae)	Anticancer
Clarithromycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Climara Pro	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Clindamycin	ND	Streptomyces lincolnensis (Streptomycetaceae)	Antibacterial
Clofarabine	S*	Homo sapiens (Hominidae); Homo sapiens (Hominidae)	Anticancer
Clomocycline	ND	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
Cloxacillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Coarsucam	ND	Artemisia annua (Asteraceae); Cinchona officinalis (Rubiaceae)	Antiparasitic
Co-artemether	ND	Artemisia annua (Asteraceae)	Antiparasitic
Cocaine	N	Erythroxylum coca (Erythroxylaceae)	Neurological disease
Colchiceine amide	N	Colchicum autumnale (Colchicaceae)	Oncological disease
Colchicine	N	Colchicum autumnale (Colchicaceae)	Oncological disease
Colforsin daropate HCI	ND	Plectranthus barbatus (Lamiaceae)	Cardiovascular disease
Colistimethate sodium	ND	Paenibacillus polymyxa (Paenibacillaceae)	Pulmonary infections
Colistin	N	Paenibacillus polymyxa (Paenibacillaceae)	Antibiotic
Collagenase	B	Homo sapiens (Hominidae)	Enzyme
Conjugated estrogens a	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Conjugated estrogens b	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Convallatoxin	N	Convallaria majalis (Asparagaceae)	Cardiovascular disease
Cotinine	N	Nicotiana spp. (Solanaceae)	Insecticide
Crotalidae fab	B	Ovis aries (Bovidae); Crotalus atrox (Viperidae); Crotalus adamanteus (Viperidae); Crotalus scutulatus (Viperidae); Agkistrodon piscivorus (Viperidae)	Rattlesnake antivenom
Cyclacillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibiotic
Cycloserine	N	Streptomyces garyphalus (Streptomycetaceae)	Antibacterial
Cyclosporine	N	Claviceps purpurea (Clavicipitaceae); Tolypocladium inflatum (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae)	Neurological disease
Cynarin	N	Cynara scolymus (Asteraceae)	Choleretic
Cytarabine ocfosfate	S*	Streptomyces antibioticus (Streptomycetaceae); Streptomyces griseus (Streptomycetaceae); Tethya	Oncological disease

		(Tethyidae)	
Cytosine arabinoside	S*	Tethya (Tethyidae)	Oncological disease
Dabigatran	S*/NM	Homo sapiens (Hominidae)	Antithrombotic
Daclizumab	B	Mus musculus (Muridae)	Immunosuppressant
Dactinomycin	N	Streptomyces parvulus (Streptomycetaceae); Streptomyces sindenensis (Streptomycetaceae)	Oncological disease
Dalteparin sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Danaparoid sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Danthron	N	Cassia (Fabaceae)	Laxative
Daptomycin	N	Streptomyces filamentosus (Streptomycetaceae)	Antibacterial
Darbepoietin alfa	B	Homo sapiens (Hominidae)	Erythropoiesis
Darunavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Dasatinib	S/NM	Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae)	Anticancer
Daunorubicin HCL	N	Streptomyces peucetius (Streptomycetaceae)	Antibiotic
Decapeptyl	ND	Homo sapiens (Hominidae)	Oncological disease
Decitabine	S*	Homo sapiens (Hominidae)	Anticancer
Defibrotide	B	Bos primigenius (Bovidae); Sus scrofa (Suidae)	Antithrombotic
Deflazacort	ND	Homo sapiens (Hominidae)	Inflammatory disease
Delapril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Delta-9-tetrahydrocannabinol	N	Cannabis sativa (Cannabaceae)	Neurological disease
Demeclocycline	N	Streptomyces aureofaciens (Streptomycetaceae)	Antibacterial
Demecolcine	N	Colchicum autumnale (Colchicaceae)	Oncological disease
Denileukin diftitox	B	Corynebacterium diphtheriae (Corynebacteriaceae)	Anticancer
Denopamine	S*/NM	Homo sapiens (Hominidae)	Cardiotonic
Dermatan sulfate	B	Homo sapiens (Hominidae)	DVT; anticoagulant
Deserpidine	N	Rauwolfia (Apocynaceae)	Cardiovascular disease
Desirudin	ND	Haementeria officinalis (Glossiphoniidae); Hirudo medicinalis (Hirudinidae)	Deep vein thrombosis
Deslanoside	N	Digitalis lanata (Plantaginaceae)	Cardiovascular disease
Deslorelin	ND	Homo sapiens (Hominidae)	Oncological disease
Dexamethasone	ND	Homo sapiens (Hominidae)	Oncological disease
Dextroamphetamine sulfate	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	ADHD; narcolepsy
Dextromethorphan	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Diacetylmorphine	ND	Papaver somniferum (Papaveraceae)	Neurological disease
Dicloxacillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum	Antibacterial

		(Trichocomaceae)	
Didanosine	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Diethylstilbestrol	S	Homo sapiens (Hominidae)	Anticancer
DigiFab	B	Digitalis purpurea (Plantaginaceae)	Digoxin toxicity
Digitalin	N	Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Digitoxin	N	Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Digoxin	N	Digitalis lanata (Plantaginaceae); Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Dihydroartemisinin	ND	Artemisia annua (Asteraceae)	Antiparasitic
Dipeptiven	ND	Homo sapiens (Hominidae)	Mucositis
Dirithromycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Docarpamine	ND	Homo sapiens (Hominidae)	Cardiotonic
Docetaxel	ND	Taxus wallichiana (Taxaceae); Taxus baccata (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Dopamine hydrochloride	N	Homo sapiens (Hominidae)	Neurological disease
Dopexamine	S*/NM	Homo sapiens (Hominidae)	Cardiotonic
Doripenem	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Dornase alfa	B	Homo sapiens (Hominidae)	Cyctic fibrosis
Dosmalfate	ND	Homo sapiens (Hominidae)	Gastroprotectant
Doxacurium chloride	S*	Leontice leontopetalum (Berberidaceae)	Muscle relaxant
Doxercalciferol	ND	Agaricus bisporus (Agaricaceae)	Calcium metabolism
Doxifluridine	S*	Homo sapiens (Hominidae)	Anticancer
Doxofylline	ND	Theobroma cacao (Malvaceae); Theobroma bicolor (Malvaceae); Theobroma angustifolium (Malvaceae); Paullinia cupana (Sapindaceae); Camellia sinensis (Theaceae); Coffea arabica (Rubiaceae)	Bronchodilator
Doxorubicin	N	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Doxycycline	ND	Streptomyces rimosus (Streptomycetaceae)	Antibacterial
Dpt vaccines	V	Corynebacterium diphtheriae (Corynebacteriaceae)	DTaP
Dromostanolone	ND	Homo sapiens (Hominidae)	Oncological disease
Dronabinol	N	Cannabis (Cannabaceae)	Antinauseant
Drospirenone	ND	Homo sapiens (Hominidae)	Contraception
Drotrecogin alfa	B	Homo sapiens (Hominidae)	Antisepsis
Droxidopa	S*/NM	Homo sapiens (Hominidae)	AntiParkinsonian
Dutaseride	ND	Homo sapiens (Hominidae)	BPH
Duteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Ecteinascidin	ND	Ecteinascidia turbinata (Perophoridae)	Oncological disease
Efalizumab	B	Mus musculus (Muridae)	Antipsoriatic
Elcatonin	ND	Anguilla japonica (Anguillidae)	Calcium metabolism
Elliptinium acetate	ND	Aspidosperma (Apocynaceae); Apocynaceae (Apocynaceae); Ochrosia elliptica (Apocynaceae); Tabernaemontana (Apocynaceae); Strychnos (Loganiaceae)	Oncological disease

Emtricitabine	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Enalapril maleate	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Enalaprilat	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Enfuvirtide	ND	Human immunodeficiency virus 1 (Retroviridae)	Antiviral
Engerix B Hepatitis b vaccine	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis
Enocitabine	S*	Homo sapiens (Hominidae)	Anticancer
Enoxaparin	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Enprostil	ND	Larix sibirica (Pinaceae); Prunus tomentosa (Rosaceae); Populus balsamifera (Salicaceae); Manduca sexta (Sphingidae)	Antiulcer
Entecavir	S*	Hepatitis B virus (Hepadnaviridae); Homo sapiens (Hominidae)	Antiviral
Epervudine	S*	Varicellovirus (Herpesviridae); Simplexvirus (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Ephedrine	N	Ephedra sinica (Ephedraceae)	Inflammatory disease
Epicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Epinephrine bitartrate	ND	Ephedra sinica (Ephedraceae)	Inflammatory disease
Epipodophyllotoxin	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Epirubicin HCI	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Epoietin delta	B	Homo sapiens (Hominidae)	Hematopoiesis
Epoprostenol sodium	N	Homo sapiens (Hominidae)	Platelet aggreg
Eprosartan	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Eptazocine HBr	S*	Papaver somniferum (Papaveraceae)	Analgesic
Ergotamine	N	Claviceps purpurea (Clavicipitaceae)	Neurological disease
Eribulin mesylate	ND	Halichondria okadai (Halichondriidae)	Oncological disease
Erlotinib hydrochloride	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Ertapenem sodium	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Erythromycin	N	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Erythromycin acistrate	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Erythropoietin alfa	B	Homo sapiens (Hominidae)	Erythropoiesis
Erythropoietin beta	B	Homo sapiens (Hominidae)	Erythropoiesis
Estramustine	ND	Homo sapiens (Hominidae)	Antineoplastic
Etanercept	B	Homo sapiens (Hominidae)	Antiarthritic
Ethanolamine oleate	S*	Homo sapiens (Hominidae)	Sclerosant
Ethinyl estradiol	ND	Homo sapiens (Hominidae)	Antineoplastic
Ethyl icosapentate	ND	Shewanella pneumatophori (Shewanellaceae); Listonella pelagia (Vibrionaceae)	Antithrombotic

Etoposide phosphate	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Eupatilin	N	Artemisia argyi (Asteraceae)	Immunological, inflammatory and related disease
Everolimus	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Anticancer
Exemestane	ND	Homo sapiens (Hominidae)	Anticancer
Exenatide	ND	Heloderma suspectum (Helodermatidae)	Antidiabetic
Exubera Pulmonary insulin	B	Homo sapiens (Hominidae)	Antidiabetic
Falecalcitrol	ND	Salmonidae (Salmonidae); Agaricus bisporus (Agaricaceae)	Sec. hyperthryoidism
Famciclovir	S*	Varicellovirus (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Farom	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Faropenem	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Femodene	ND	Homo sapiens (Hominidae)	Contraception
Fendrix Hepatitis B vaccine	V	Hepatitis B virus (Hepadnaviridae)	Antiviral
Fibrinogen	N	Homo sapiens (Hominidae)	Deep vein thrombosis
Filgrastim	B	Homo sapiens (Hominidae)	Immunostimulant
Finasteride	ND	Homo sapiens (Hominidae)	5 alpha-reductase inhibitor
Fingolimod	ND	Isaria (Cordycipitaceae)	Multiple sclerosis
Flomoxef sodium	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Floxuridine	S*	Streptomyces antibioticus (Streptomycetaceae); Streptomyces griseus (Streptomycetaceae); Tethya (Tethyidae)	Oncological disease
Flucloxacillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Fludarabine phosphate	S*	Homo sapiens (Hominidae)	Anticancer
FluMist Influenza virus	V	Hepatitis A virus (Picornaviridae)	Antiviral
Fluorouracil	S*	Streptomyces antibioticus (Streptomycetaceae); Streptomyces griseus (Streptomycetaceae); Tethya (Tethyidae)	Oncological disease
Fluoxymesterone	ND	Homo sapiens (Hominidae)	Oncological disease
Flurithromycin ethylsuccinate	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Flutamide	ND	Homo sapiens (Hominidae)	Oncological disease
Fluticasone propionate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Flutropium bromide	ND	Atropa belladonna (Solanaceae); Datura stramonium (Solanaceae); Mandragora officinarum (Solanaceae)	Antitussive
Fluvastatin sodium	S*/NM	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium	Cardiovascular disease

		citrinum (Trichocomaceae)	
Follitropin alfa	B	Homo sapiens (Hominidae)	Hormone
Follitropin beta	B	Homo sapiens (Hominidae)	Hormone
Fomivirsen sodium	S*/NM	Cytomegalovirus (Herpesviridae)	Antiviral
Fondaparinux sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Formestane	ND	Homo sapiens (Hominidae)	Anticancer
Forteo	ND	Homo sapiens (Hominidae)	Osteoporosis
Fosamprenavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Fosfestrol	ND	Homo sapiens (Hominidae)	Anticancer
Fosfomycin trometamol	N	Streptomyces fradiae (Streptomycetaceae)	Antibacterial
Fosfosal	S*	Salix (Salicaceae)	Analgesic
Fosinopril sodium	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Framycetin	ND	Streptomyces fradiae (Streptomycetaceae)	Antibacterial
Frone Interferon beta	B	Homo sapiens (Hominidae)	Antiviral
Fulvestrant	ND	Homo sapiens (Hominidae)	Anticancer
Fumagillin	N	Aspergillus fumigatus (Trichocomaceae)	Antiparasitic
Fusafungine	N	Fusarium lateritium (Fusarium)	Antibiotic
Fusidic acid	N	Fusidium griseum (Nectriaceae)	Antibacterial
Gabapentin	S*	Homo sapiens (Hominidae)	Antiepileptic
Galantamine hydrobromide	N	Galanthus elwesii (Amaryllidaceae); Galanthus nivalis (Amaryllidaceae); Galanthus woronowii (Amaryllidaceae); Leucojum aestivum (Amaryllidaceae); Lycoris radiata (Amaryllidaceae); Lycoris squamigera (Amaryllidaceae); Narcissus pseudonarcissus (Amaryllidaceae)	Neurological disease
Galsulfase	B	Homo sapiens (Hominidae)	Mucopolysaccharidosis
Gammagard	B	Homo sapiens (Hominidae)	Antiviral
Gamolenic acid	N	Homo sapiens (Hominidae)	Antiallergic
Gamunex Iv human immunoglobulin	B	Homo sapiens (Hominidae)	Immunomodulator
Ganciclovir	S*	Cytomegalovirus (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Ganglioside GM1	N	Homo sapiens (Hominidae)	Antithrombotic
Ganirelix acetate	ND	Homo sapiens (Hominidae)	Ovulationi
Gardasil Hpv vaccine	V	Human papillomavirus (Papillomaviridae)	Antiviral
Gefitinib	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Gemcitabine HCl	S*	Homo sapiens (Hominidae)	Anticancer
Gemeprost	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Abortifacient

Gemtuzumab ozogamicin	ND	Micromonospora echinospora (Micromonosporaceae)	Oncological disease
Gentamicin	N	Micromonospora echinospora (Micromonosporaceae)	Antibacterial
Gentel	B	Homo sapiens (Hominidae)	Vulnerary
Gestrinone	ND	Homo sapiens (Hominidae)	Antiprogestogenic
Gitalin	N	Digitalis purpurea (Plantaginaceae)	Cardiovascular disease
Glatiramer acetate	S*	Homo sapiens (Hominidae)	Multiple sclerosis
Glaucine	N	Glaucium flavum (Papaveraceae)	Antitussive
Glaziovine	N	Ocotea cf. glaziovii FS402 (Lauraceae)	Antidepressant
GlucaGen	B	Homo sapiens (Hominidae)	Hormone
Glycyrrhizin	N	Glycyrrhiza glabra (Fabaceae)	Sweetener, Addison's disease
Goserelin	ND	Homo sapiens (Hominidae)	Oncological disease
Gramicidin S	ND	Bacillus brevis (Paenibacillaceae)	Antibiotic
Griseofulvin	N	Aspergillus lanosus (Trichocomaceae); Penicillium persicinum (Trichocomaceae); Penicillium jamesonlandense (Trichocomaceae); Penicillium aethiopicum (Trichocomaceae); Penicillium canescens (Trichocomaceae); Penicillium coprophilum (Trichocomaceae); Penicillium griseofulvum (Trichocomaceae); Penicillium dipodomyicola (Trichocomaceae); Penicillium janczewskii (Trichocomaceae); Penicillium janczewskii (Trichocomaceae); Penicillium lanosum (Trichocomaceae); Penicillium soppii (Trichocomaceae); Penicillium (Trichocomaceae); Penicillium (Trichocomaceae); Penicillium (Trichocomaceae); Penicillium raistrickii (Trichocomaceae); Penicillium sclerotigenum (Trichocomaceae)	Antifungal
Guglipid	N	Commiphora wightii (Burseraceae)	Lipoprotein disorders
Gusperimus trihydrochloride	ND	Brevibacillus laterosporus (Paenibacillaceae)	Immunological, inflammatory and related disease
H-101	B	Human adenovirus 5 (Adenoviridae)	Anticancer
Haemate HS insulin zinc suspension	B	Homo sapiens (Hominidae)	Antidiabetic
Halobetasol propionate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Halometasone	ND	Homo sapiens (Hominidae)	Inflammatory disease
Halopredone acetate	ND	Homo sapiens (Hominidae)	Antiarthritic
Havrix Hepatitis a vaccine	V	Hepatitis A virus (Picornaviridae)	Hepatitis
Hemoglobin glutamer	B	Homo sapiens (Hominidae)	Anemia
Hemsleyadin	N	Hemsleya (Cucurbitaceae)	Antibacterial
Hepacure Hepatitis b vaccine	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis
HepaGam B	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis B
Heparin sodium	N	Homo sapiens (Hominidae)	Anticoagulant

Hesperetin	N	Citrus bergamia (Rutaceae); Citrus limon (Rutaceae)	Cardiovascular disease
Hesperidin	N	Citrus (Rutaceae)	Capillary fragility
Hexavac Hexavalent vaccine	V	Corynebacterium diphtheriae (Corynebacteriaceae); Hepatitis B virus (Hepadnaviridae); Haemophilus influenzae (Pasteurellaceae); Enterovirus (Picornaviridae)	Dpt and others
Hexyl aminolevulinate	ND	Homo sapiens (Hominidae)	Anticancer
Hibtitek H influenzae b vaccine	V	Haemophilus influenzae (Pasteurellaceae)	Antibacterial
Hidrosmin	ND	Melilotus albus (Fabaceae); Melilotus officinalis (Fabaceae); Penicillium janczewskii (Trichocomaceae); Penicillium jensenii (Trichocomaceae)	Cardiovascular disease
Hirulog	ND	Haementeria officinalis (Glossiphoniidae); Hirudo medicinalis (Hirudinidae)	Anticoagulation
Histrelin	ND	Homo sapiens (Hominidae)	Central precocious puberty
Humalog Insulin lispro	B	Homo sapiens (Hominidae)	Antidiabetic
Human factor VIII	B	Homo sapiens (Hominidae)	Hemophilia
Humatrope Somatropin	B	Homo sapiens (Hominidae)	Hormone
Huperzine	N	Huperzia serrata (Lycopodiaceae)	Neurological disease
Hyaluronate sodium	B	Homo sapiens (Hominidae)	Joint lubricant
Hydrastine	N	Hydrastis canadensis (Ranunculaceae)	Haemostatic, Astringent
Hydrocortisone aceponate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Hydrocortisone butyrate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Hydroxyprogesterone	ND	Homo sapiens (Hominidae)	Oncological disease
Hylenex	B	Homo sapiens (Hominidae)	Reproduction
Hyoscyamine	N	Hyoscyamus niger (Solanaceae)	Anticholinergic
Ibopamine HCI	ND	Homo sapiens (Hominidae)	Cardiotonic
Ibritumomab	B	Homo sapiens (Hominidae)	Anticancer
Idarubicin hydrochloride	ND	Streptomyces coeruleorubidus (Streptomycetaceae); Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Iloprost	ND	Homo sapiens (Hominidae)	Platelet aggreg. inhib.
Imatinib mesilate	ND	Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae)	Anticancer
Imidapril HCL	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Imiglucerase	B	Homo sapiens (Hominidae)	Gaucher's disease
Imipenem	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Indinavir sulfate	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Indoramin HCL	S*	Glycine max (Fabaceae)	Antihypertensive
Infantrix HeXa	V	Corynebacterium diphtheriae (Corynebacteriaceae);	Dpt and others

Hexavalent vaccine		Hepatitis B virus (Hepadnaviridae); Haemophilus influenzae (Pasteurellaceae); Enterovirus (Picornaviridae)	
Infergen Interferon alfacon-1	B	Homo sapiens (Hominidae)	Antiviral
Infliximab	B	Homo sapiens (Hominidae)	Crohn's disease
Inosine pranobex	S*	Morbillivirus (Paramyxoviridae); Homo sapiens (Hominidae)	Antiviral
Insulin aspart	B	Homo sapiens (Hominidae)	Antidiabetic
Interleukin-2	B	Homo sapiens (Hominidae)	Anticancer
Intron-A Interferon alfa2b	B	Homo sapiens (Hominidae)	Anticancer
Invivac Influenza vaccine	V	Hepatitis A virus (Picornaviridae); Hepatitis B virus (Hepadnaviridae)	Antiviral
Ipratropium	ND	Atropa belladonna (Solanaceae); Datura stramonium (Solanaceae); Mandragora officinarum (Solanaceae)	Anticholinergic
Ipriflavone	ND	Fabaceae (Fabaceae)	Calcium metabolism
Irbesartan	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Irinotecan hydrochloride	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Isepamicin	ND	Micromonospora echinospora (Micromonosporaceae)	Antibacterial
Isophane insulin	B	Homo sapiens (Hominidae)	Antidiabetic
Isoprenaline	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Cardiovascular disease
Isotretinoin	ND	Daucus carota (Apiaceae)	Antiacne
Ivermectin	N	Streptomyces avermitilis (Streptomycetaceae)	Antiparasitic
Ixabepilone	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
Josamycin	N	Streptomyces narbonensis (Streptomycetaceae)	Antibacterial
Kanamycin	N	Streptomyces kanamyceticus (Streptomycetaceae)	Antibacterial
Kawain	N	Piper methysticum (Piperaceae)	Cardiovascular disease
Khellin	N	Ammi (Apiaceae)	Bronchodilator
Kinetin	S*	Nicotiana tabacum (Solanaceae)	Skin photodamage
Kogenate Recombinant factor VIII	B	Homo sapiens (Hominidae)	Hemophilia
Kunecatechins	NB	Camellia sinensis (Theaceae)	Anticancer
Lamivudine	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Lanatoside A	N	Digitalis lanata (Plantaginaceae)	Cardiovascular disease
Lanatoside B	N	Digitalis lanata (Plantaginaceae)	Cardiovascular disease
Lanatoside C	N	Digitalis lanata (Plantaginaceae)	Cardiovascular disease
Lanreotide acetate	ND	Homo sapiens (Hominidae)	Growth hormone deficiency
Lantus Insulin glargine	B	Homo sapiens (Hominidae)	Antidiabetic
Lapatinib	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer

Laronidase	B	Homo sapiens (Hominidae)	Mucopolysaccharidosis
Latanoprost	ND	Allium sativum (Amaryllidaceae); Artemisia dracunculus (Asteraceae); Manduca sexta (Sphingidae)	Antiglaucoma
L-Dopa	N	Mucuna pruriens var. utilis (Fabaceae)	Neurological disease
Lenampicillin HCL	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Lenogastrim	B	Homo sapiens (Hominidae)	Hematopoiesis
Lentinan	N	Lentinula edodes (Marasmiaceae)	Oncological disease
Lepirudin	ND	Haementeria officinalis (Glossiphoniidae); Hirudo medicinalis (Hirudinidae)	Antithrombotic
Leuprolide acetate	ND	Homo sapiens (Hominidae)	Oncological disease
Levacecarnine HCL	ND	Homo sapiens (Hominidae)	Nootropic
Levalbuterol HCL	S*/NM	Ephedra sinica (Ephedraceae)	Inflammatory disease
Levemir Insulin determir	B	Homo sapiens (Hominidae)	Antidiabetic
Levodopa	N	Mucuna pruriens (Fabaceae)	Dietary supplement
Levo-THP	N	Corydalis ambigua (Papaveraceae); Stephania rotunda (Menispermaceae)	Immunological, inflammatory and related disease
Levulan	N	Homo sapiens (Hominidae)	Actinic keratoses
Limaprost	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Antithrombotic
Lincomycin	N	Streptomyces lincolnensis (Streptomycetaceae)	Antibacterial
Liraglutide	ND	Homo sapiens (Hominidae)	Anti-diabetes
Lisdexamfetamine dimesylate	N	Ephedra sinica (Ephedraceae); Senegalia berlandieri (Fabaceae)	ADHD
Lisinopril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Lisuride maleate	ND	Claviceps (Clavicipitaceae)	Antihyperprolactinemia
Logiparin Lmw heparin	ND	Homo sapiens (Hominidae)	Anticoagulant
Lomustine	S	Streptomyces achromogenes (Streptomycetaceae)	Anticancer
Lopinavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Loracarbef	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Losartan potassium	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Loteprednol etabonate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Lovastatin	N	Aspergillus terreus (Trichocomaceae)	Cardiovascular disease
Lubiprostone	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Chronic idiopathic constipation
Lunelle	ND	Homo sapiens (Hominidae)	Contraception

Lutropin alfa	B	Homo sapiens (Hominidae)	Hormone
Lymecycline	ND	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
Maraviroc	S/NM	Homo sapiens (Hominidae)	Antiviral
Marvelon	ND	Homo sapiens (Hominidae)	Contraception
Masoprocol	N	Larrea tridentata (Zygophyllaceae)	Oncological disease
Mearubik	V	Morbillivirus (Paramyxoviridae); Rubella virus (Togaviridae)	Antiviral
Mecasermin	B	Homo sapiens (Hominidae)	Pituitary disorders
Mecillinam	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Medroxyprogesterone acetate	ND	Homo sapiens (Hominidae)	Oncological disease
Mefloquine HCI	ND	Cinchona officinalis (Rubiaceae)	Antiparasitic
Megesterol acetate	ND	Homo sapiens (Hominidae)	Anticancer
Megestrol acetate	ND	Homo sapiens (Hominidae)	Oncological disease
Meinyu Hepatitis b vaccine	V	Hepatitis B virus (Hepadnaviridae)	Hepatitis
Melanoma theraccine	V	Homo sapiens (Hominidae)	Anticancer
Melevodopa	ND	Mucuna pruriens (Fabaceae)	Neurological disease
Menactra	V	Neisseria meningitidis (Neisseriaceae); Haemophilus influenzae (Pasteurellaceae); Streptococcus pneumoniae (Streptococcaceae); Mumps virus (Paramyxoviridae)	Antibacterial
Mencevax	V	Neisseria meningitidis (Neisseriaceae)	Antibacterial
Menigetec Meningococcal vaccine	V	Neisseria meningitidis (Neisseriaceae)	Antibacterial
Meningitis b vaccine	V	Haemophilus influenzae (Pasteurellaceae)	Antibacterial
Menjugate Meningococcal vaccine	V	Neisseria meningitidis (Neisseriaceae)	Antibacterial
Menotropins	N	Homo sapiens (Hominidae)	Growth hormone deficiency
Menthol	N	Mentha spicata (Lamiaceae)	Rubefacient
Mercaptopurine	S*	Homo sapiens (Hominidae)	Oncological disease
Merieux Varicella Vaccine	V	Human herpesvirus 3 (Herpesviridae)	Antiviral
Meropenem	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Metergolin	ND	Turbina corymbosa (Convolvulaceae); Ipomoea violacea (Convolvulaceae)	Antihyperprolactinemia
Methacycline	ND	Streptomyces rimosus (Streptomycetaceae)	Antibacterial
Methamphetamine	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Neurological disease
Methotrexate	S*	Homo sapiens (Hominidae)	Oncological disease
Methylmorphine	N	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease

Methylprednisolone	ND	Homo sapiens (Hominidae)	Oncological disease
Methyltestosterone	ND	Homo sapiens (Hominidae)	Oncological disease
Meticillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Metoprolol tartrate	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Cardiovascular disease
Metvix	ND	Homo sapiens (Hominidae)	Actinic keratoses
Mezlocillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Micafungin sodium	ND	Coleophoma empetri (Coleophoma)	Antifungal
Micronomicin sulfate	N	Micromonospora sagamiensis (Micromonosporaceae)	Antibacterial
Midecamycin	N	Streptomyces mycarofaciens (Streptomycetaceae)	Antibiotic
Mifepristone	ND	Homo sapiens (Hominidae)	Abortifacient
Miglitol	ND	Morus alba (Moraceae); Streptomyces (Streptomycetaceae); Streptomyces lavendulae (Streptomycetaceae); Lendenfeldia chondrodes (Thorectidae)	Cardiovascular disease
Miglustat	ND	Morus alba (Moraceae); Streptomyces lavendulae (Streptomycetaceae); Lendenfeldia chondrodes (Thorectidae)	Cardiovascular disease
Minocycline HCL	ND	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
Miokamycin	ND	Streptomyces mycarofaciens (Streptomycetaceae)	Antibacterial
Mirimostim	B	Homo sapiens (Hominidae)	Hematopoiesis
Misoprostol	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Antiulcer
Mithramycin	N	Streptomyces argillaceus (Streptomycetaceae)	Anticancer
Mitomycin C	N	Streptomyces caespitosus (Streptomycetaceae); Streptomyces lavendulae (Streptomycetaceae)	Oncological disease
Mitoxantrone HCL	S*	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Mivacurium chloride	S*	Leontice leontopetalum (Berberidaceae)	Muscle relaxant
Mizoribine	N	Eupenicillium brefeldianum (Trichocomaceae)	Immunological, inflammatory and related disease
Mobenakin	B	Homo sapiens (Hominidae)	Anticancer
Moexipril HCL	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Molgramostim	B	Homo sapiens (Hominidae)	Hematopoiesis
Mometasone furoate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Monoclate-P Factor VIII	B	Homo sapiens (Hominidae)	Hemophilia
Monoclonal antibody 131 I-chTNT	B	Homo sapiens (Hominidae)	Anticancer
Monocrotaline	N	Crotalaria (Fabaceae)	Oncological disease

Monteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Moroctocog alfa	B	Homo sapiens (Hominidae)	Hemophilia
Morphine sulfate	ND	Papaver somniferum (Papaveraceae); Poaceae (Poaceae); Asteraceae (Asteraceae)	Neurological disease
Moxalactam disodium	ND	Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces cattleya (Streptomycetaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Mupirocin	N	Pseudomonas fluorescens (Pseudomonadaceae)	Antibacterial
Muromonab-CD3	B	Homo sapiens (Hominidae)	Immunosuppressant
Mycophenolate mofetil	ND	Aspergillus unilateralis (Trichocomaceae); Byssochlamys nivea (Trichocomaceae); Penicillium bialowiezense (Trichocomaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium carneum (Trichocomaceae); Penicillium fagi (Trichocomaceae); Penicillium roqueforti (Trichocomaceae)	Immunological, inflammatory and related disease
Mycophenolic acid	N	Aspergillus unilateralis (Trichocomaceae); Byssochlamys nivea (Trichocomaceae); Penicillium bialowiezense (Trichocomaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium carneum (Trichocomaceae); Penicillium fagi (Trichocomaceae); Penicillium roqueforti (Trichocomaceae)	Immunological, inflammatory and related disease
Nabilone	ND	Cannabis sativa (Cannabaceae)	Neurological disease
Nadrolone phenylpropionate	N	Homo sapiens (Hominidae)	Anticancer
Nadroparin calcium	ND	Homo sapiens (Hominidae)	Anticoagulant
Naemis	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Nafarelin acetate	ND	Homo sapiens (Hominidae)	Precocious puberty and endometriosis
Nafcillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Nalbuphine	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Nalmefene HCL	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Naloxone	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Naltrexone HCI	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Nandrolone phenpropionate	ND	Homo sapiens (Hominidae)	Oncological disease
Nartograstim	B	Homo sapiens (Hominidae)	Hematopoiesis
Natalizumab	B	Mus musculus (Muridae)	Multiple sclerosis
Natamycin	N	Streptomyces natalensis (Streptomycetaceae)	Antifungal
Nateglinide	S*	Homo sapiens (Hominidae)	Antidiabetic
Nateplase	B	Homo sapiens (Hominidae)	Antithrombotic
Nedocromil sodium	ND	Marsdenieae (Apocynaceae)	Antiallergic
Neflinavir mesylate	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus	Antiviral

		(Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	
NeisVac-C Meningococcal vaccine	V	Neisseria meningitidis (Neisseriaceae)	Antibacterial
Nelarabine	S*	Homo sapiens (Hominidae)	Anticancer
Neoandrographolide	N	Andrographis paniculata (Acanthaceae)	Antibacterial
Neocarzinostatin	N	Streptomyces carzinostaticus (Streptomycetaceae)	Oncological disease
Neomycin	N	Streptomyces fradiae (Streptomycetaceae)	Antibacterial
Nesiritide	ND	Homo sapiens (Hominidae)	Congestive heart failure
Netilmicin sulfate	ND	Micromonospora inyonensis (Micromonosporaceae)	Antibacterial
Nicorandil	ND	Oryza sativa (Poaceae)	Vasodilator, coronary
Nicotine	N	Nicotiana tabacum (Solanaceae); Asclepias syriaca (Apocynaceae); Lycopodium spp. (Lycopodiaceae)	Insecticide
Nilotinib	ND	Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae); Lentzea albida (Actinosynnemataceae)	Anticancer
Nimotuzumab	B	Mus musculus (Muridae)	Anticancer
Nitisinone	ND	Callistemon citrinus (Myrtaceae); Leptospermum (Myrtaceae)	Antityrosinaemia
Nomegestrol acetate	ND	Homo sapiens (Hominidae)	Progestogen
Nordihydroguaiaretic acid	N	Larrea divaricata (Zygophyllaceae)	Antioxidant
Norditropin Somatropin	B	Homo sapiens (Hominidae)	Hormone
Norethindrone acetate	ND	Homo sapiens (Hominidae)	Oncological disease
Norgestimate	ND	Homo sapiens (Hominidae)	Progestogen
Nor-pseudoephedrine	N	Ephedra sinica (Ephedraceae)	Immunological, inflammatory and related disease
Noscapine	N	Papaver somniferum (Papaveraceae)	Antitussive
Novact M Factor IX	B	Homo sapiens (Hominidae)	Hemophilia
Novobiocin	N	Streptomyces caeruleus (Streptomycetaceae)	Antibacterial
Novolin R neutral insulin	B	Homo sapiens (Hominidae)	Antidiabetic
NovoMix 30	B	Homo sapiens (Hominidae)	Antidiabetic
NovoSeven Factor VIIa	B	Homo sapiens (Hominidae)	Hemophilia
NuvaRing	ND	Homo sapiens (Hominidae)	Contraception
Nystatin	N	Streptomyces noursei (Streptomycetaceae)	Antifungal
Octin	B	Homo sapiens (Hominidae)	Anticancer
Octreotide	ND	Homo sapiens (Hominidae)	Antisecretory
OGamma100 Interferon gamma-n1	B	Homo sapiens (Hominidae)	Antifungal
Olmesartan	S/NM	Rattus norvegicus (Muridae)	Antihypertensive

medoxil			
Omalizumab	B	Mus musculus (Muridae)	Antiasthmatic
Omega-conotoxin MVIIA	N	Conus geographus (Conidae); Conus magus (Conidae)	Neurological disease
Oncaspar	B	Escherichia coli (Enterobacteriaceae); Erwinia chrysanthemi (Enterobacteriaceae)	Anticancer
Ontak	B	Homo sapiens (Hominidae)	Anticancer
Oprelvekin	B	Homo sapiens (Hominidae)	Thrombocytopenia
Oral cholera vaccine	V	Vibrio cholerae (Vibrionaceae)	Antibacterial
Oral-lyn Oral insulin	B	Homo sapiens (Hominidae)	Antidiabetic
Orencia	B	Homo sapiens (Hominidae)	Antiarthritic
Orlistat	ND	Streptomyces toxytricini (Streptomycetaceae)	Cardiovascular disease
Ornoprostil	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Populus balsamifera (Salicaceae)	Antiulcer
Ortho evra	ND	Homo sapiens (Hominidae)	Contraception
Orthokine	B	Homo sapiens (Hominidae)	Antiarthritic
Osteotonina Salmon calcitonin	B	Salmonidae (Salmonidae)	Osteoporosis
Ouabain	N	Acokanthera oblongifolia (Apocynaceae); Acokanthera oppositifolia (Apocynaceae); Strophanthus gratus (Apocynaceae)	Cardiovascular disease
Oxacillin sodium	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Oxitropium bromide	ND	Datura metel (Solanaceae)	Bronchodilator
Oxycodone HCl	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Oxymorphone	ND	Papaver bracteatum (Papaveraceae); Papaver somniferum (Papaveraceae)	Neurological disease
Oxytetracycline	N	Streptomyces rimosus (Streptomycetaceae)	Antibacterial
Pachycarpine	N	Sophora pachycarpa (Fabaceae)	Oxytocic
Paclitaxel	N	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae); Corylus avellana (Betulaceae); Seimatoantlerium tepuiense (Amphisphaeriaceae)	Oncological disease
Palifermin	B	Homo sapiens (Hominidae)	Mucositis
Palivizumab	B	Mus musculus (Muridae)	Antiviral
Palmatine	N	Coptis japonica (Ranunculaceae)	Antipyretic, Detoxicant
Pamiteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Panitumumab	B	Homo sapiens (Hominidae)	Anticancer
Panorex	B	Mus musculus (Muridae)	Adjuvant/colorectal cancer
Pansporin	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial

Papaverine	N	Papaver somniferum (Papaveraceae)	Neurological disease
Paricalcitol	ND	Salmonidae (Salmonidae); Agaricus bisporus (Agaricaceae)	Calcium metabolism
Parnaparin sodium	ND	Homo sapiens (Hominidae)	DVT; anticoagulant
Paromomycin sulfate	N	Streptomyces rimosus subsp. Paromomycinus (Streptomycetaceae); Streptomyces rimosus (Streptomycetaceae)	Antibacterial
Pazopanib	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Pegademase bovine	B	Bos taurus (Bovidae)	Immunostimulant
Pegaspargase	B	Escherichia coli (Enterobacteriaceae)	Anticancer
Pegfilgastrim	B	Homo sapiens (Hominidae)	Hematopoiesis
Peginterferon alfa-2a	B	Homo sapiens (Hominidae)	Antiviral
Peginterferon alfa-2b	B	Homo sapiens (Hominidae)	Antiviral
Pegvisomant	B	Homo sapiens (Hominidae)	Acromelagy
Penciclovir	S*	Human herpesvirus 1 (Herpesviridae); Human herpesvirus 2 (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Penicillamine	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibiotic
Penicillin G	N	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Pentazocine	ND	Papaver somniferum (Papaveraceae)	Neurological disease
Pentostatin	N	Streptomyces antibioticus (Streptomycetaceae)	Oncological disease
Peplomycin	ND	Streptomyces verticillus (Streptomycetaceae)	Oncological disease
Pergolide mesylate	ND	Turbina corymbosa (Convolvulaceae); Ipomoea violacea (Convolvulaceae)	AntiParkinsonian
Perindopril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Permixon	N	Serenoa repens (Arecaceae)	Benign prostatic hypertrophy
Phenoxymethylpenicillin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Physostigmine	N	Physostigma venenosum (Fabaceae)	Neurological disease
Picrotoxin	N	Anamirta cocculus (Menispermaceae)	Analeptic
Pilocarpine	N	Pilocarpus (Rutaceae)	Glaucoma
Pimecrolimus	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Immunological, inflammatory and related disease
Pinitol	N	Vachellia farnesiana (Fabaceae); Cedrus deodara (Pinaceae); Ceratonia siliqua (Fabaceae); Glycine max (Fabaceae); Medicago sativa (Fabaceae); Pinus sylvestris (Pinaceae); Pisum sativum (Fabaceae); Thuja occidentalis (Cupressaceae); Trifolium pratense (Fabaceae); Tsuga canadensis (Pinaceae)	Expectorant

Pirarubicin	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Pitavastatin	S*/NM	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Plaunotol	N	Croton stellatopilosus (Euphorbiaceae); Croton sublyratus (Euphorbiaceae)	Antiulcer
Plenaxis	S*/NM	Homo sapiens (Hominidae)	Oncological disease
Plicamycin	N	Streptomyces plicatus (Streptomycetaceae)	Anticancer
Pneumococcal vaccine	V	Streptococcus pneumoniae (Streptococcaceae)	Antibacterial
Podophyllotoxin	N	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Antiviral
Polaprezinc	ND	Homo sapiens (Hominidae)	Antiulcer
Polyferon Interferon gamma	B	Homo sapiens (Hominidae)	Inflammatory disease
Polymyxin B Sulfate	N	Paenibacillus polymyxa (Paenibacillaceae)	Antibacterial
Polyphenon 100	N	Acacia catechu (Fabaceae); Potentilla fragarioides (Rosaceae)	Haemostatic
Polyphenon E	N	Camellia sinensis (Theaceae)	Antiviral
Porcine isophane insulin	B	Sus scrofa (Suidae)	Antidiabetic
Porcine lung surfactant	B	Sus scrofa (Suidae)	RDS
Porcine neutral insulin	B	Sus scrofa (Suidae)	Antidiabetic
Pralmorelin	ND	Homo sapiens (Hominidae)	Treatment of GH deficiency
Pravastatin	ND	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Prednicarbate	ND	Homo sapiens (Hominidae)	Inflammatory disease
Prednisolone	ND	Homo sapiens (Hominidae)	Oncological disease
Prednisone	ND	Homo sapiens (Hominidae)	Oncological disease
Pregabalin	ND	Homo sapiens (Hominidae)	Antiepileptic
Premphase	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Preos	B	Homo sapiens (Hominidae)	Osteoporosis
Preven	ND	Homo sapiens (Hominidae)	Contraception
Prezatide copper acetate	N	Homo sapiens (Hominidae)	Vulnerary
Pristinamycin	N	Streptomyces pristinaespiralis (Streptomycetaceae)	Antibacterial
Progabide	S*	Homo sapiens (Hominidae)	Anticonvulsant
Prohibit H influenzae b vaccine	V	Haemophilus influenzae (Pasteurellaceae)	Antibacterial
Proleukin	B	Homo sapiens (Hominidae)	Anticancer
Promegestone	ND	Homo sapiens (Hominidae)	Progestogen
Propentofylline	ND	Homo sapiens (Hominidae)	Vasodilator; cerebral

propionate			
Propranolol	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Cardiovascular disease
Proquad	V	Human herpesvirus 3 (Herpesviridae)	Chickenpox
Pro-urokinase	B	Homo sapiens (Hominidae)	Antithrombotic
Pseudoephedrine	N	Ephedra sinica (Ephedraceae)	Immunological, inflammatory and related disease
Quinapril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Quinidine	N	Cinchona (Rubiaceae)	Antiarrhythmic
Quinine	N	Cinchona (Rubiaceae); Cinchona officinalis (Rubiaceae)	Antiparasitic
Quinupristin	ND	Streptomyces pristinaespiralis (Streptomycetaceae)	Antibacterial
Ramipril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Ramosetron	S*/NM	Homo sapiens (Hominidae)	Antiemetic
Ranibizumab	B	Mus musculus (Muridae)	Macular degeneration
Rasburicase	B	Homo sapiens (Hominidae)	Antihyperuricemia
RecDNA somatotropin	B	Homo sapiens (Hominidae)	Hormone
Recombinate Factor Vlll	B	Homo sapiens (Hominidae)	Hemophilia
Remoxipride hydrochloride	S*/NM	Homo sapiens (Hominidae)	Antipsychotic
ReoPro	B	Homo sapiens (Hominidae)	Antithrombotic
Rescinnamine	N	Rauvolfia serpentina (Apocynaceae)	Cardiovascular disease
Reserpine	N	Rauvolfia serpentina (Apocynaceae); Rauvolfia vomitoria (Apocynaceae)	Cardiovascular disease
Resp syncytial virus IG	B	Human respiratory syncytial virus (Paramyxoviridae)	Antiviral
Restandol	ND	Homo sapiens (Hominidae)	Hypogonadism
Retapamulin	ND	Clitopilus scyphoides (Entolomataceae); Pleurotus (Pleurotaceae)	Antibacterial
Reteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Reviparin sodium	ND	Homo sapiens (Hominidae)	Anticoagulant
Rexin-g	B	Homo sapiens (Hominidae)	Anticancer
Rh-alphaglucosidase	B	Homo sapiens (Hominidae)	Pompe's disease
Ribavirin	ND	Streptomyces candidus (Streptomycetaceae); Streptomyces showdoensis (Streptomycetaceae)	Antiviral
Rifabutin	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Rifamixin	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Rifampicin	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Rifamycin B	N	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Rifapentine	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Rifaximin	ND	Amycolatopsis mediterranei (Pseudonocardiaceae);	Antibacterial

		Amycolatopsis rifamycinica (Pseudonocardiaceae)	
Rimexolone	ND	Homo sapiens (Hominidae)	Inflammatory disease
Ritonavir	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp. toyonakensis (Streptomycetaceae)	Antiviral
Rituximab	B	Homo sapiens (Hominidae)	Anticancer
Rizatriptan benzoate	S*/NM	Homo sapiens (Hominidae)	Antimigraine
Rocuronium bromide	ND	Homo sapiens (Hominidae)	Muscle relaxant
Roferon-A Interferon alfa2a	B	Homo sapiens (Hominidae)	Anticancer
Rokitamycin	ND	Streptomyces mycarofaciens (Streptomycetaceae)	Antibacterial
Romidepsin	N	Chromobacterium violaceum (Neisseriaceae)	Anticacer
Ropinirole HCl	S*/NM	Homo sapiens (Hominidae)	AntiParkinsonian
Rorifone	N	Rorippa indica (Brassicaceae)	Antitussive
Rosaprostol	ND	Allium cepa (Amaryllidaceae); Allium sativum (Amaryllidaceae); Larix sibirica (Pinaceae); Prunus tomentosa (Rosaceae); Populus balsamifera (Salicaceae); Manduca sexta (Sphingidae)	Antiulcer
Rosuvastatin calcium	S*/NM	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Rotarix Rotavirus vaccine	V	Rotavirus (Reoviridae)	Antiviral
Rota-Shield Rotavirus vaccine	V	Rotavirus (Reoviridae)	Antiviral
Rotateq Rotavirus vaccine	V	Rotavirus (Reoviridae)	Antiviral
Rotenone	N	Lonchocarpus (Fabaceae)	Piscicide
Rotigotine	S/NM	Homo sapiens (Hominidae)	AntiParkinsonian
Roxithromycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Rubella vaccine	V	Rubella virus (Togaviridae)	Antiviral
Rutin	N	Citrus (Rutaceae)	Capillary fragility
Salbutamol	ND	Ephedra sinica (Ephedraceae)	Inflammatory disease
Salicin	N	Salix alba (Salicaceae)	Immunological, inflammatory and related disease
Salmeterol	ND	Ephedra sinica (Ephedraceae)	Inflammatory disease
Sandimmune	N	Claviceps purpurea (Clavicipitaceae); Tolypocladium inflatum (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae)	Immunological, inflammatory and related disease
Sandoparin Lmw heparin	ND	Homo sapiens (Hominidae)	Anticoagulant
Sanguinarine	N	Sanguinaria canadensis (Papaveraceae)	Dental plaque inhibitor
Santonin	N	Artemisia (Asteraceae)	Anthelmintic Chemotherapy
Sapropterin hydrochloride	ND	Homo sapiens (Hominidae)	Hyperphenylalaninemia
Saquinavir mesylate	S*/NM	Actinomyces (Actinomycetaceae); Streptomyces testaceus (Streptomycetaceae); Streptomyces argenteolus subsp.	Antiviral

		toyonakensis (Streptomycetaceae)	
Sargramostim	B	Homo sapiens (Hominidae)	Immunostimulant
Sarkomycin	N	Streptomyces erythrochromogenes (Streptomycetaceae)	Anticancer
Sativex	N	Cannabis sativa (Cannabaceae)	Neuropathic pain
Schizophyllan	N	Schizophyllum commune (Schizophyllaceae)	Immunological, inflammatory and related disease
Scopolamine	N	Datura metel (Solanaceae)	Immunological, inflammatory and related disease
Sennoside A	N	Cassia senna (Fabaceae)	Cardiovascular disease
Sennoside B	N	Cassia senna (Fabaceae)	Cardiovascular disease
Serevent	S*/NM	Ephedra sinica (Ephedraceae)	Inflammatory disease
Sermorelin acetate	ND	Homo sapiens (Hominidae)	Growth hormone deficiency
Sertindole	S*/NM	Homo sapiens (Hominidae)	Neuroleptic
Sildenafil citrate	S*/NM	Homo sapiens (Hominidae)	Male sexual dysfunction
Silteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Silymarin	N	Silybum marianum (Asteraceae)	Antihepatotoxic
Simvastatin	ND	Pseudonocardia autotrophica (Pseudonocardiaceae); Aspergillus terreus (Trichocomaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Sinecatechins	NB	Camellia sinensis (Theaceae)	Anticancer
Sirolimus	N	Streptomyces hygroscopicus (Streptomycetaceae)	Immunosuppresive
Sodium oxybate	ND	Homo sapiens (Hominidae)	Narcolepsy
Sofalcone	ND	Sophora flavescens (Fabaceae); Sophora alopecuroides (Fabaceae); Sophora prostrata (Fabaceae)	Antiulcer
Solamargine	N	Solanum aculeatissimum (Solanaceae); Solanum incanum (Solanaceae); Solanum americanum (Solanaceae)	Oncological disease
Somatomedin-1	B	Homo sapiens (Hominidae)	Hormone
Somatotropin	B	Homo sapiens (Hominidae)	Hormone
Somatrem	B	Homo sapiens (Hominidae)	Hormone
Somatropin	N	Homo sapiens (Hominidae)	Growth hormone deficiency
Somazon	B	Homo sapiens (Hominidae)	Antidiabetic
Sorafenib	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Sorivudine	S*	Human herpesvirus 1 (Herpesviridae); Human herpesvirus 3 (Herpesviridae); Human herpesvirus 4 (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Spectinomycin hydrochloride	N	Streptomyces spectabilis (Streptomycetaceae)	Antibiotic

Spectracef	ND	Acremonium chrysogenum (Acremonium); Emericellopsis minima (Emericellopsis); Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Sphingosomal topotecan	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Spiramycin	N	Streptomyces ambofaciens (Streptomycetaceae)	Antibiotic
Spirapril HCI	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Stavudine	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Stevioside	N	Stevia rebaudiana (Asteraceae)	Sweetener
Streptomycin sulfate	N	Streptomyces griseus (Streptomycetaceae)	Antibacterial
Streptozocin	N	Streptomyces achromogenes (Streptomycetaceae)	Oncological disease
Strychnine	N	Strychnos nux-vomica (Loganiaceae)	Neurological disease
Suberoylanilide hydroxamic acid	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease
Sulbactam sodium	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Beta-lactamase inhibitor
Sulprostone	ND	Larix sibirica (Pinaceae); Prunus tomentosa (Rosaceae); Populus balsamifera (Salicaceae); Manduca sexta (Sphingidae)	Abortifacient
Sultamicillin tosilate	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Sumatriptan succinate	S*/NM	Homo sapiens (Hominidae)	Antimigraine
Sunitinib malate	S/NM	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae); Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Synercid	ND	Streptomyces pristinaespiralis (Streptomycetaceae)	Antibacterial
Tacalcitol	ND	Agaricus bisporus (Agaricaceae)	Antipsoriatic
Tacrolimus	N	Streptomyces tsukubaensis (Streptomycetaceae)	Immunological, inflammatory and related disease
Tadalafil	S*/NM	Homo sapiens (Hominidae)	Male sexual dysfunction
Taltirelin	ND	Homo sapiens (Hominidae)	CNS Stimulant
Tandospirone	S/NM	Homo sapiens (Hominidae)	Anxiolytic
Tasonermin	B	Escherichia coli (Enterobacteriaceae)	Anticancer
Tazobactam sodium	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Teceleukin	B	Homo sapiens (Hominidae); Escherichia coli	Anticancer

		(Enterobacteriaceae)	
Tegaserod maleate	S*/NM	Homo sapiens (Hominidae)	IBS
Teicoplanin	N	Actinoplanes teichomyceticus (Micromonosporaceae)	Antibacterial
Telavancin	ND	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibiotic
Telithromycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Telmisartan	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Temocapril hydrochloride	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Temocillin disodium	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Temoporfin	S/NM	Homo sapiens (Hominidae)	Anticancer
Temsirolimus	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Anticancer
Tenecteplase	B	Homo sapiens (Hominidae)	Antithrombotic
Teniposide	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Tenofovir disoproxil fumarate	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Teprenone	ND	Homo sapiens (Hominidae)	Antiulcer
Terbutyline	ND	Homo sapiens (Hominidae)	Antihypertensive
Teriparatide acetate	ND	Homo sapiens (Hominidae)	Osteoporosis
Tesamorelin	N	Homo sapiens (Hominidae)	HIV lipodystrophy
Teslac	ND	Homo sapiens (Hominidae)	Oncological disease
Testosterone	N	Homo sapiens (Hominidae)	Antineoplastic
Tetracycline	N	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
THC-CBD	N	Cannabis sativa (Cannabaceae)	Neurological disease
Theobromine	N	Theobroma cacao (Malvaceae)	Vasodilator, Diuretic
Theophylline	N	Theobroma cacao (Malvaceae); Theobroma bicolor (Malvaceae); Theobroma angustifolium (Malvaceae); Paullinia cupana (Sapindaceae); Camellia sinensis (Theaceae); Coffea arabica (Rubiaceae)	Bronchodilator, Diuretic
TheraCys	V	Mycobacterium bovis BCG (Mycobacteriaceae)	Anticancer
Thiamphenicol	ND	Streptomyces venezuelae (Streptomycetaceae)	Antibiotic
Thioguanine	S*	Homo sapiens (Hominidae)	Oncological disease
Thymalfasin	B	Homo sapiens (Hominidae)	Hepatitis
Thymoglobuline	B	Homo sapiens (Hominidae)	Immunosuppressant
Thymol	N	Thymus vulgaris (Lamiaceae)	Antifungal
Thymopentin	ND	Homo sapiens (Hominidae)	Immunomodulator
Tibolone	N	Homo sapiens (Hominidae)	Anabolic metabolism
Tigecycline	ND	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
Timentin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial

Tiopronin	ND	Homo sapiens (Hominidae)	Urolithiasis
Tiotropium bromide	S*/NM	Atropa belladonna (Solanaceae); Datura stramonium (Solanaceae); Mandragora officinarum (Solanaceae)	Anticholinergic
Tobramycin sulfate	N	Streptomyces tenebrarius (Pseudonocardiaceae)	Antibacterial
Tocilizumab	B	Mus musculus (Muridae)	Inflammatory bowel disease
Toposar	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Topotecan HCl	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Tositumomab	B	Homo sapiens (Hominidae)	Anticancer
Trandolapril	S*/NM	Bothrops jararaca (Viperidae)	Cardiovascular disease
Tranylcypromine sulfate	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Major depressive
Trastuzumab	B	Mus musculus (Muridae)	Oncological disease
Travoprost	ND	Allium sativum (Amaryllidaceae); Artemisia dracunculus (Asteraceae); Manduca sexta (Sphingidae)	Antiglaucoma
Treprostinil sodium	ND	Homo sapiens (Hominidae)	Antihypertensive; pulmonary
Tretinoin tocoferil	ND	Daucus carota (Apiaceae)	Antiulcer
Triamcinolone	ND	Homo sapiens (Hominidae)	Oncological disease
Trimegestone	ND	Homo sapiens (Hominidae)	Hormone replacement therapy
Triptolide	N	Tripterygium wilfordii (Celastraceae)	Immunological, inflammatory and related disease
Triptorelin	ND	Homo sapiens (Hominidae)	Oncological disease
Trobicin	N	Streptomyces spectabilis (Streptomycetaceae)	Antibiotic
Troleandomycin	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Tubocurarine	N	Strychnos (Loganiaceae); Strychnos (Loganiaceae); Chondrodendron tomentosum (Menispermaceae); Curarea (Menispermaceae)	Skeletal muscle relaxant
Ubenimex	N	Streptomyces olivoreticuli (Streptomycetaceae)	Immunological, inflammatory and related disease
Ulinastatin	B	Homo sapiens (Hominidae)	Pancreatic disorders
Unoprostone isopropyl ester	ND	Larix sibirica (Pinaceae); Prunus tomentosa (Rosaceae); Populus balsamifera (Salicaceae); Manduca sexta (Sphingidae)	Antiglaucoma
Urofollitrophin	B	Homo sapiens (Hominidae)	Infertility; female
Valaciclovir HCl	S*	Human herpesvirus 1 (Herpesviridae); Human herpesvirus 2 (Herpesviridae); Human herpesvirus 3 (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Valganciclovir	S*	Cytomegalovirus (Herpesviridae); Homo sapiens (Hominidae)	Antiviral
Valrubicin	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Valsartan	S/NM	Rattus norvegicus (Muridae)	Antihypertensive
Vancomycin	N	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial
Vapreotide acetate	ND	Homo sapiens (Hominidae)	Anticancer
Vaqta Hepatitis a vaccine	V	Hepatitis A virus (Picornaviridae)	Hepatitis
Vardenafil	S*/NM	Homo sapiens (Hominidae)	Male sexual dysfunction

Varivax Varicella virus vaccine	V	Human herpesvirus 3 (Herpesviridae)	Antiviral
VariZIG	V	Human herpesvirus 3 (Herpesviridae)	Antiviral
Vasicine	N	Acanthaceae (Acanthaceae)	Oxytocic
Vecuronium bromide	ND	Homo sapiens (Hominidae)	Muscle relaxant
Velaglucerase alfa	N	Homo sapiens (Hominidae)	Gaucher disease
Velosulin BR insulin	B	Homo sapiens (Hominidae)	Antidiabetic
Verteporfin	S*	Homo sapiens (Hominidae)	Photosensitizer
Vi polysaccharide typhoid vacc	V	Salmonella enterica subsp. enterica serovar Typhi (Enterobacteriaceae)	Antibacterial
Vidarabine	S*	Streptomyces antibioticus (Streptomycetaceae); Streptomyces griseus (Streptomycetaceae); Tethya (Tethyidae)	Antiviral
Vigabatrin	ND	Homo sapiens (Hominidae)	Antiepileptic
VIGIV Vaccinia immune globulin	V	Homo sapiens (Hominidae)	Vaccinia complications
Vinblastine	N	Catharanthus roseus (Apocynaceae)	Oncological disease
Vincamine	N	Vinca minor (Apocynaceae)	Cerebral stimulant
Vincristine	N	Catharanthus roseus (Apocynaceae)	Oncological disease
Vindesine	ND	Catharanthus roseus (Apocynaceae)	Oncological disease
Vinorelbine	N	Catharanthus roseus (Apocynaceae)	Oncological disease
Viomycin sulfate	N	Streptomyces puniceus (Streptomycetaceae)	Antibacterial
Viraferon	B	Homo sapiens (Hominidae)	Antiviral
Virginiamycin	ND	Streptomyces pristinaespiralis (Streptomycetaceae)	Antibiotic
Voglibose	N	Streptomyces hygroscopicus (Streptomycetaceae)	Cardiovascular disease
Vyvanse	ND	Ephedra sinica (Ephedraceae); Acacia rigidula (Fabaceae); Senegalia berlandieri (Fabaceae)	Neurological disease
Warfarin	N	Melilotus officinalis (Fabaceae)	Cardiovascular disease
Wellferon	B	Homo sapiens (Hominidae)	Antiviral
Wilate	B	Homo sapiens (Hominidae)	Hemophilia
Wilfactin	B	Homo sapiens (Hominidae)	Hemostatic
Xanthotoxin	N	Ammi majus (Apiaceae)	Leukoderma, Vitiligo
Ximelagatran	S/NM	Homo sapiens (Hominidae)	DVT; anticoagulant
Xostavax	V	Human herpesvirus 3 (Herpesviridae)	Antiviral
Yamatetan	ND	Amycolatopsis lactamdurans (Pseudonocardiaceae); Streptomyces cattleya (Streptomycetaceae); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Yohimbine	N	Pausinystalia (Rubiaceae)	Aphrodisiac
Zalcitabine	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Zalig RV-11	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Ziagen	S*	Human immunodeficiency virus 1 (Retroviridae); Homo sapiens (Hominidae)	Antiviral
Zidovudine	S*	Human immunodeficiency virus 1 (Retroviridae); Tethya (Tethyidae)	Antiviral

Zienam	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Zinc hyaluronate	ND	Homo sapiens (Hominidae)	Vulnerary
Zinostatin stimalamer	ND	Streptomyces carzinostaticus (Streptomycetaceae)	Oncological disease
Zobactin	ND	Aspergillus flavus (Trichocomaceae); Emericella nidulans (Trichocomaceae); Penicillium chrysogenum (Trichocomaceae)	Antibacterial
Zomacton	B	Homo sapiens (Hominidae)	Hormone
Zotarolimus	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease

SI Appendix Table S6 List of nature-derived current and past clinical trial drugs and their species origins. Following the seminal works of Newman and Cragg (J Nat Prod. 2007 Mar;70(3):461-77), the drug types are defined as follows: "B" Biological, a peptide or protein either isolated from an organism/cell line or produced by biotechnological means in a surrogate host; "N" Natural product; "ND" Derived from a natural product and is usually a semisynthetic modification; "NM" Natural product mimic; "S*" Made by total synthesis based on the pharmacophore from a natural product; and "V" Vaccine.

Drug name	Clinical trial status	Drug type	Species origin (family)	Therapeutic class or targeted disease
1,5-DCQA	Phase I	N	Cynara cardunculus (Asteraceae); Inula britannica (Asteraceae)	Antiviral
10-Hydroxycamptothecin	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
9-aminocamptothecin	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
A366833	Phase I	ND	Epipedobates tricolor (Dendrobatidae)	Analgesic
ABJ-879	Phase I	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
ABT-518	Phase I	S/NM	Homo sapiens (Hominidae)	Solid tumours
ABT-594	Phase II	ND	Epipedobates tricolor (Dendrobatidae)	Neurological disease
ABT-869	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
ACV1	Phase II	N	Conus catus (Conidae)	Pain
AE-941	Phase III	ND	Squalus acanthias (Squalidae)	Oncological disease
AEE-788	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Oncological disease
AG3340	Phase III	S*/NM	Homo sapiens (Hominidae)	Cancer
AG7088	Phase II	S*/NM	Human rhinovirus sp. (Picornaviridae)	Common cold
Alpha-Conotoxin Vc1.1	Phase II	N	Conus victoriae (Conidae)	Neurological disease
Alvespimycin	Phase II	ND	Streptomyces hygroscopicus subsp. geldanus (Streptomycetaceae)	Oncological disease
ALX 111	Phase III	N	Homo sapiens (Hominidae)	Osteoporosis
AMG706	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Aminocandin	Phase I	ND	Aspergillus sydowii (Trichocomaceae)	Antifungal
Anabaseine	Phase I	N	Paranemertes peregrina (Paranemertes); Amphiporus angulatus (Amphiporidae)	Neurological disease
Ancrod	Phase III	N	Calloselasma rhodostoma (Viperidae)	Immunological, inflammatory and related disease

Anhydrovinblastine	Phase I	ND	Catharanthus roseus (Apocynaceae)	Oncological disease
Aplaviroc	Phase II	S/NM	Homo sapiens (Hominidae)	Antiviral
AraC/Bryostatin 1	Phase I	N	Bugula neritina (Bugulidae); Tethya (Tethyidae)	Oncological disease
Arenastatin A	Phase I	N	Dysidea (Dysideidae)	Oncological disease
Artemisone	Phase II	ND	Artemisia annua (Asteraceae)	Antiparasitic
Arterolane	Phase II	ND	Artemisia annua (Asteraceae)	Antiparasitic
AVE-8062	Phase III	ND	Combretum (Combretaceae)	Oncological disease
AVE-8063	Phase I	ND	Combretum (Combretaceae)	Oncological disease
AVE-8064	Phase I	ND	Combretum (Combretaceae)	Oncological disease
AVE9633	Phase I	ND	Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae)	Oncological disease
Axitinib	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Azamulin	Phase I	ND	Pleurotus (Pleurotaceae)	Antibiotic
AZD-0530	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
AZD-3409	Phase I	S/NM	Homo sapiens (Hominidae)	Anticancer
BAL-19403	Phase I	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Batimastat	Phase III	S/NM	Homo sapiens (Hominidae)	Anticancer
BAY-57-9352	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
BBI concentrate	Phase II	N	Glycine max (Fabaceae)	Cancer
BC-3205	Phase I	ND	Clitopilus scyphoides (Entolomataceae); Pleurotus (Pleurotaceae)	Antibacterial
BC-3781	Phase II	ND	Pleurotus (Pleurotaceae)	Antibiotic
BC-7013	Phase I	ND	Clitopilus scyphoides (Entolomataceae)	Antibacterial
Becatecarin	Phase II	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Bengamide A	Phase I	ND	Ancorinidae (Ancorinidae); Myxococcus virescens (Myxococcaceae)	Oncological disease
Benzoxazinorifamycin	Phase II	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Berubicin	Phase II	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Beta-lapachone	Phase II	ND	Tabebuia (Bignoniaceae)	Oncological disease
Betulinic acid	Phase I	N	Syzygium claviflorum (Myrtaceae)	Oncological disease
Bevirimat	Phase II	ND	Syzygium claviflorum (Myrtaceae)	Antiviral
Bizelesin	Phase I	ND	Streptomyces (Streptomycetaceae)	Oncological disease
BMS-182248	Phase II	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
BMS-184476	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
BMS-188797	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
BMS-214662	Phase I	S/NM	Homo sapiens (Hominidae)	Anticancer
BMS-247550	Phase III	ND	Sorangium cellulosum (Polyangiaceae)	Anticancer

BMS-250749	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
BMS-275183	Phase I	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
BMS-275291	Phase III	S*/NM	Homo sapiens (Hominidae)	Cancer
BMS-310705	Phase I	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
BMS-582664	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
BMS-599626	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
BNP-1350	Phase III	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Bosutinib	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Brostallicin	Phase II	ND	Streptomyces netropsis (Streptomycetaceae)	Oncological disease
Bruceantin	Phase II	N	Brucea antidysenterica (Simaroubaceae)	Oncological disease
Bryostatin 1	Phase II	ND	Bugula neritina (Bugulidae)	Oncological disease
Cabazitaxel	Phase III	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Calanolide A	In Clinical Trial	N	Calophyllum (Calophyllaceae)	Antiviral
Camptothecin	In Clinical Trial	N	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Canertinib	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Cannabidiol	Phase II	N	Cannabis sativa (Cannabaceae)	Anxiety and psychosis
Capsaicin	Phase II	N	Capsicum annuum (Solanaceae); Capsicum frutescens (Solanaceae); Zingiber officinale (Zingiberaceae); Capsicum annuum (Solanaceae); Capsicum frutescens (Solanaceae); Zingiber officinale (Zingiberaceae)	Neurological disease
Carfilzomib	Phase III	S/NM	Actinomyces (Actinomycetaceae)	Multiple myeloma
Castor oil	In Clinical Trial	N	Ricinus communis (Euphorbiaceae)	Constipation
CBR-2092	Phase I	ND	Amycolatopsis mediterranei (Pseudonocardiaceae); Amycolatopsis rifamycinica (Pseudonocardiaceae)	Antibacterial
Cediranib	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Ceftaroline acetate	Phase II	ND	Acremonium chrysogenum (Acremonium); Amycolatopsis lactamdurans (Pseudonocardiaceae); Emericellopsis minima (Emericellopsis); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Ceftizoxime alapivoxil	In Clinical Trial	ND	Acremonium chrysogenum (Acremonium); Amycolatopsis lactamdurans (Pseudonocardiaceae); Emericellopsis minima (Emericellopsis); Streptomyces	Antibacterial

			clavuligerus (Streptomycetaceae)	
Ceftobiprole	Phase III	ND	Acremonium chrysogenum (Acremonium); Amycolatopsis lactamdurans (Pseudonocardiaceae); Emericellopsis minima (Emericellopsis); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Cematodin	Phase II	ND	Dolabella auricularia (Aplysiidae); Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca)	Oncological disease
CEP-1347	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Neurological disease
CEP-7055	Phase I	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Cerivastatin	In Clinical Trial	S*/NM	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Cethromycin	Phase III	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
CGS-27023A	Phase II	S*/NM	Homo sapiens (Hominidae)	Cancer
CGX-1160	Phase II	N	Conus geographus (Conidae)	Neurological disease
Civamide	Phase III	ND	Capsicum annuum (Solanaceae); Capsicum frutescens (Solanaceae); Zingiber officinale (Zingiberaceae)	Neurological disease
CKD-732	In Clinical Trial	ND	Aspergillus fumigatus (Trichocomaceae)	Oncological disease
CM101/ZDO101	Phase II	N	Streptococcus (Streptococcaceae)	Anticancer
CMB 401	Phase II	ND	Micromonospora echinospora (Micromonosporaceae)	Oncological disease
CNF-1010	In Clinical Trial	ND	Streptomyces hygroscopicus subsp. geldanus (Streptomycetaceae)	Oncological disease
COL-3	Phase II	S*/NM	Homo sapiens (Hominidae)	Cancer
Combretastatin A-4 phosphate	Phase III	ND	Combretum (Combretaceae)	Oncological disease
Conantokin-G	Phase II	N	Conus geographus (Conidae)	Neurological disease
Conantokin-T	Phase II	N	Conus tulipa (Conidae)	Neurological disease
CP 7075	Phase II	ND	Cannabis sativa (Cannabaceae)	Neurological disease
CP-724714	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
CP-751,871	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Crofelemer	Phase III	N	Croton lechleri (Euphorbiaceae)	Antiviral
Cryptophycin-52	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae); Corylus avellana (Betulaceae); Seimatoantlerium tepuiense (Amphisphaeriaceae)	Anticancer
Curcumin	Phase II	ND	Curcuma longa (Zingiberaceae)	Oncological disease
DA-5018	Phase II	ND	Capsicum annuum (Solanaceae); Capsicum frutescens (Solanaceae); Zingiber officinale (Zingiberaceae)	Neurological disease
DA-6034	Phase II	ND	Artemisia argyi (Asteraceae)	Immunological, inflammatory and related disease
Daidzein	Phase I	N	Glycine max (Fabaceae); Cicer arietinum (Fabaceae); Cullen corylifolium (Fabaceae); Genista tinctoria	Oncological disease

			(Fabaceae); Lens culinaris (Fabaceae); Medicago sativa (Fabaceae); Phaseolus coccineus (Fabaceae); Phaseolus lunatus (Fabaceae); Pisum sativum (Fabaceae); Pueraria (Fabaceae); Sophora prostrata (Fabaceae); Trifolium pratense (Fabaceae); Vicia faba (Fabaceae); Vigna angularis (Fabaceae); Vigna radiata (Fabaceae); Vigna unguiculata ssp. unguiculata (Fabaceae)	
Dalbavancin	Phase III	ND	Nonomuraea sp. ATCC 39727 (Streptosporangiaceae)	Antibacterial
Dapagliflozin	Phase III	ND	Malus x domestica (Rosaceae)	Neurological disease
Datelliptium acetate	Phase II	ND	Aspidosperma (Apocynaceae); Apocynaceae (Apocynaceae); Ochrosia elliptica (Apocynaceae); Strychnos (Loganiaceae); Tabernaemontana (Apocynaceae)	Oncological disease
Debio 9902	Phase II	ND	Huperzia serrata (Lycopodiaceae)	Neurological disease
Debio-025	Phase II	ND	Claviceps purpurea (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae); Tolypocladium inflatum (Clavicipitaceae)	Antiviral
Deforolimus	Phase III	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease
Dehydelone	Phase I	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
Dehydrodidemnin B	Phase II	N	Aplidium (Polyclinidae); Tridemnum (Didemnidae)	Oncological disease
Devacade	In Clinical Trial	ND	Aspergillus alliaceus (Trichocomaceae)	Neurological disease
DHA-paclitaxel	Phase III	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Diascorbate salt	Phase II	ND	Streptomyces aureofaciens (Streptomycetaceae)	Antifungal
Didemnin B	In Clinical Trial	N	Tridemnum (Didemnidae)	Oncological disease
Diflomotecan	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Dimethyl succinyl betulinic acid	Phase II	N	Syzygium cumini (Myrtaceae)	Antiviral
Dirithromycin	In Clinical Trial	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Discodermolide	In Clinical Trial	ND	Discodermia dissoluta (Theonellidae)	Oncological disease
Ditalin	In Clinical Trial	N	Digitalis purpurea (Plantaginaceae)	Cancer
DMBX-anabaseine	Phase II	ND	Amphiporus angulatus (Amphiporidae); Amphiporus lactifloreus (Amphiporidae); Paranemertes peregrina (Paranemertes)	Neurological disease
Dolastatin 10	In Clinical Trial	ND	Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca); Symploca hydnoides (Symploca); Dolabella auricularia (Aplysiidae)	Oncological disease
Dolastatin 15	In Clinical Trial	N	Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca); Dolabella auricularia (Aplysiidae)	Oncological disease

DRF-1042	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
E7107	Phase I	ND	Streptomyces platensis (Streptomycetaceae)	Oncological disease
E7974	Phase I	ND	Cymbastela (Axinellidae); Hemiasterella (Hemiasterellidae); Hemiasterella (Hemiasterellidae)	Oncological disease
EC145	Phase I	ND	Catharanthus roseus (Apocynaceae)	Oncological disease
ECO-4601	Phase II	ND	Micromonospora aurantiaca (Micromonosporaceae)	Oncological disease
Edotecarin	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Elomotecan	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Elsamitrucin	Phase II	ND	Streptomyces chartreusis (Streptomycetaceae)	Oncological disease
EndoTAG-1	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Enzastaurin	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
EP-420	Phase II	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Epigallocatechin gallate	Phase II	N	Camellia sinensis (Theaceae)	Oncological disease
Epothilone D	Phase II	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
Eritoran	Phase III	ND	Rhodobacter sphaeroides (Rhodobacteraceae)	Antibacterial
Everolimus	Phase III	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease
Exatecan	Phase III	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Exendin	Phase II	ND	Homo sapiens (Hominidae)	Diabetes
Fara/Bryostatin 1	Phase I	N	Bugula neritina (Bugulidae)	Oncological disease
Faropenem daloxate	Phase III	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Flavopiridol	Phase III	ND	Meliaceae (Meliaceae); Dysoxylum (Meliaceae)	Oncological disease
Fostriecin	Phase I	N	Streptomyces pulveraceus (Streptomycetaceae)	Oncological disease
Friulimicin B	Phase I	N	Actinoplanes friuliensis (Micromonosporaceae)	Antibacterial
Galarubicin	In Clinical Trial	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Gantacurium chloride	In Clinical Trial	ND	Strychnos (Loganiaceae); Anomospermum grandifolium (Menispermaceae); Chondrodendron tomentosum (Menispermaceae)	Neurological disease
Genistein	Phase II	ND	Glycine max (Fabaceae)	Oncological disease
Gimatecan	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Girolline	In Clinical Trial	N	Cymbastela (Axinellidae)	Oncological disease
GL-331	Phase II	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
GPI-0100	In Clinical Trial	ND	Quillaja saponaria (Quillajaceae)	Immunological, inflammatory and related disease
GSK 565154	In Clinical	ND	Clitopilus scyphoides (Entolomataceae)	Antibacterial

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GSK 742510	In Clinical Trial	ND	Clitopilus scyphoides (Entolomataceae)	Antibacterial
GSK-189075/KGT-1681	Phase II	ND	Malus x domestica (Rosaceae)	Neurological disease
GW640385	Phase II	S/NM	Human immunodeficiency virus 1 (Retroviridae)	Antiviral
GW823093C	Phase II	S*/NM	Homo sapiens (Hominidae)	Diabetes mellitus
Halichondrin B	In Clinical Trial	N	Lissodendoryx (Coelosphaeridae); Halichondria okadai (Halichondriidae)	Oncological disease
Heparvit	Phase II	ND	Apium graveolens var. dulce (Apiaceae); Fraxinus ornus (Oleaceae); Galium odoratum (Rubiaceae); Matricaria recutita (Asteraceae); Petroselinum crispum (Apiaceae)	Antiviral
HKI-272	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Homocamptothecin	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Homoharringtonine	Phase III	ND	Cephalotaxus fortunei (Cephalotaxaceae); Cephalotaxus harringtonia (Cephalotaxaceae)	Oncological disease
HTI-286	Phase II	ND	Cymbastela (Axinellidae); Hemiasterella (Hemiasterellidae)	Oncological disease
IdB 1016	Phase II	ND	Silybum marianum (Asteraceae)	Oncological disease
IDEC-132	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
IDN-6556	Phase II	S*/NM	Hepatitis C virus (Flaviviridae)	Hepatitis C
Ilepatril	Phase III	ND	Bothrops jararaca (Viperidae)	Cardiovascular and metabolic disease
ILX651	Phase I	ND	Dolabella auricularia (Aplysiidae)	Anticancer
IM862	Phase III	N	Bos taurus (Bovidae)	Anticancer
IMGN-242	Phase II	ND	Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae)	Oncological disease
IMGN-901	Phase I	ND	Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae); Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae)	Oncological disease
Incyclinide	In Clinical Trial	ND	Streptomyces aureofaciens (Streptomycetaceae); Streptomyces viridifaciens (Streptomycetaceae)	Antibacterial
Indirubin	Phase II	N	Indigofera tinctoria (Fabaceae); Isatis tinctoria (Brassicaceae)	Oncological disease
Indole-3-carbinol	Phase I	N	Brassica oleracea var. acephala (Brassicaceae); Brassica oleracea var. botrytis (Brassicaceae); Brassica oleracea var. capitata (Brassicaceae); Brassica oleracea var. gemmifera (Brassicaceae); Brassica oleracea var. italica (Brassicaceae); Brassica rapa subsp. Rapa (Brassicaceae)	Oncological disease
Ingenol 3-angelate	Phase II	ND	Euphorbia esula (Euphorbiaceae); Euphorbia peplus (Euphorbiaceae); Euphorbia serrata (Euphorbiaceae)	Oncological disease
Inotuzumab ozogamicin	Phase III	ND	Micromonospora echinospora (Micromonosporaceae)	Oncological disease

IPL-512,602	Phase II	ND	Petrosia (Petrosiidae)	Inflammatory disease
IPL512602	Phase II	ND	Petrosia (Petrosiidae)	Asthma
IPL-550,260	Phase I	ND	Petrosia (Petrosiidae)	Inflammatory disease
IPL-576,092	Phase II	ND	Petrosia (Petrosiidae)	Inflammatory disease
Irofulven	Phase III	ND	Omphalotus japonicus (Omphalotaceae); Omphalotus illudens (Omphalotaceae); Omphalotus nidiformis (Omphalotaceae); Omphalotus olivascens var. indigo (Omphalotaceae)	Oncological disease
ISA247	Phase II	ND	Tolypocladium inflatum (Clavicipitaceae)	Transplantation
ISA-247	Phase II	ND	Claviceps purpurea (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae); Tolypocladium inflatum (Clavicipitaceae); Claviceps purpurea (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae); Tolypocladium inflatum (Clavicipitaceae)	Immunological, inflammatory and related disease
Isochlorogenic acid	Phase I	N	Inula britannica (Asteraceae)	Antiviral
Isofagomine	Phase II	ND	Lendenfeldia chondrodes (Thorectidae); Morus alba (Moraceae); Streptomyces lavendulae (Streptomycetaceae)	Cardiovascular and metabolic disease
Isothiocynate allyl	In Clinical Trial	N	Brassica nigra (Brassicaceae)	Flavoring agents
JC-9	Phase II	ND	Curcuma longa (Zingiberaceae)	Anticancer
Kahalalide F	Phase II	ND	Bryopsis pennata (Bryopsidaceae); Elysia rufescens (Placobranchidae)	Oncological disease
KRN-5500	Phase II	ND	Streptomyces alanosinicus (Streptomycetaceae)	Neurological disease
KRN633	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
KRN-7000	In Clinical Trial	ND	Agelas mauritiana (Agelasidae)	Oncological disease
KRX-0601	Phase II	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
KW-2189	Phase II	ND	Streptomyces sp. (Streptomycetaceae)	Oncological disease
L-744832	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
L-778123	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
LAF-389	Phase I	ND	Ancorinidae (Ancorinidae); Myxococcus virescens (Myxococcaceae)	Oncological disease
L-annamycin	Phase II	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Larotaxel dehydrate	Phase III	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
LBM415	Phase III	ND	Streptomyces (Streptomycetaceae)	Antibacterial
Lestaurtinib	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Lobeline	Phase II	N	Lobelia inflata (Campanulaceae)	Neurological disease
Lonafarnib	In Clinical	S/NM	Homo sapiens (Hominidae)	Anticancer

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LU-103793	In Clinical Trial	ND	Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca); Dolabella auricularia (Aplysiidae)	Oncological disease
Lurtotecan	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Lyostaphin	Phase II	N	Staphylococcus simulans (Staphylococcaceae)	Antibiotic
MAG-CPT	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Manoalide	Phase II	N	Luffariella (Thorectidae)	Inflammatory disease
Marimastat	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
Maytansine	Phase II	N	Maytenus (Celastraceae)	Oncological disease
MBI-3253	Phase II	ND	Castanospermum australe (Fabaceae)	Antiviral
MC-1	Phase III	ND	Zea mays (Poaceae)	Cardiovascular and metabolic disease
ME-1036	Phase I	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Metastat	Phase II	S/NM	Streptomyces (Streptomycetaceae)	Anticancer
Methopterosin	Phase II	N	Pseudopterogorgia elisabethae (Gorgoniidae)	Inflammatory disease
Methylnaltrexone	Phase III	ND	Papaver somniferum (Papaveraceae)	Neurological disease
Mevastatin	In Clinical Trial	N	Pseudonocardia autotrophica (Pseudonocardiaceae); Penicillium brevicompactum (Trichocomaceae); Penicillium citrinum (Trichocomaceae)	Cardiovascular disease
Midostaurin	Phase II	ND	Lentzea albida (Actinosynnemataceae)	Oncological disease
Migalastat	Phase II	ND	Streptomyces lydicus (Streptomycetaceae)	Cardiovascular and metabolic disease
Milataxel	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Mitemcinal	Phase II	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Cardiovascular and metabolic disease
Mithramycin	In Clinical Trial	N	Streptomyces (Streptomycetaceae)	Oncological disease
MK-0431	Phase II	S*/NM	Homo sapiens (Hominidae)	Diabetes mellitus
MK-944a	Phase I	ND	Actinomyces (Actinomycetaceae)	Anti-HIV
MLN2704	Phase II	ND	Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae)	Oncological disease
MMI270	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
Moli1901	Phase II	N	Streptomyces cinnamoneus (Streptomycetaceae)	Antibacterial
Moranoline	Phase I	ND	Lendenfeldia chondrodes (Thorectidae); Morus alba (Moraceae); Streptomyces lavendulae (Streptomycetaceae)	Cardiovascular and metabolic disease
Morphine-6-glucuronide	Phase III	ND	Papaver somniferum (Papaveraceae)	Neurological disease
NB-506	Phase II	ND	Streptomyces sp. (Streptomycetaceae)	Oncological disease
Nemorubicin	Phase II	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease

NIM 811	Phase I	ND	Claviceps purpurea (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae); Tolypocladium inflatum (Clavicipitaceae)	Antiviral
NK-105	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
NK-611	Phase II	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Noscapine	Phase I	ND	Papaver somniferum (Papaveraceae)	Oncological disease
NPI-0052	Phase I	ND	Salinispora tropica (Micromonosporaceae)	Oncological disease
NPI-2358	Phase I	ND	Aspergillus ustus (Trichocomaceae)	Oncological disease
NSC 630176	Phase II	N	Chromobacterium violaceum (Neisseriaceae)	Oncological disease
NSC 650426	In Clinical Trial	ND	Streptomyces alanosinicus (Streptomycetaceae)	Oncological disease
NV-52	Phase II	N	Glycine max (Fabaceae)	Immunological, inflammatory and related disease
NVP-AUY922	Phase I	ND	Streptomyces hygroscopicus subsp. geldanus (Streptomycetaceae)	Anticancer
NVP-DPP728	Phase II	S*/NM	Homo sapiens (Hominidae)	Diabetes mellitus
NVP-LAF237	Phase II	S*/NM	Homo sapiens (Hominidae)	Diabetes mellitus
NVP-LAQ824	Phase I	ND	Helicoma ambiens (Tubeufiaceae); Pseudoceratinidae (Pseudoceratinidae); Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease
NXL-103	Phase II	ND	Streptomyces pristinaespiralis (Streptomycetaceae); Streptomyces virginiae (Streptomycetaceae)	Antibacterial
Obatoclax	Phase II	ND	Serratia marcescens (Enterobacteriaceae)	Oncological disease
Omacetaxine mepesuccinate	Phase III	ND	Cephalotaxus fortunei (Cephalotaxaceae)	Anticancer
Omapatrilat	Phase II	S*/NM	Bothrops jararaca (Viperidae)	Hypertension
Omega-conotoxin CVID	Phase II	N	Conus catus (Conidae)	Neurological disease
Omtriptolide	In Clinical Trial	ND	Tripterygium wilfordii (Celastraceae)	Oncological disease
Oritavancin	Phase II	ND	Amycolatopsis orientalis (Pseudonocardiaceae); Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial
Ortataxel	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
OSI-930	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
OXi4503	Phase I	ND	Combretum (Combretaceae)	Oncological disease
Oxocalanolide	Phase I	ND	Calophyllum (Calophyllaceae)	Antiviral
P57A3	Phase II	N	Hoodia gordonii (Apocynaceae)	Cardiovascular disease
PA-1050040	Phase I	ND	Syzygium claviflorum (Myrtaceae)	Anti-HIV
Paclitaxel poliglumex	Phase III	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Paclitaxel/Bryostatin	Phase II	N	Bugula neritina (Bugulidae); Taxus wallichiana	Oncological disease

1			(Taxaceae); Taxus brevifolia (Taxaceae)	
Panobinostat	Phase III	ND	Aplysinella rhax (Aplysinellidae)	Oncological disease
Patupilone	Phase III	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
PD-332991	Phase I	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
PDX101	Phase I	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Oncological disease
PEG-CPT	Phase II	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Perillyl alcohol	Phase II	N	Carum carvi (Apiaceae); Matricaria chamomilla var. recutita (Asteraceae); Cymbopogon martinii (Poaceae); Juniperus sabina (Cupressaceae); Laurus nobilis (Lauraceae); Lavandula (Lamiaceae); Mentha spicata (Lamiaceae); Monarda didyma (Lamiaceae); Perilla frutescens (Lamiaceae); Salvia (Lamiaceae)	Oncological disease
PF-3709270	Phase I	N	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
PF4548043	Phase I	ND	Saccharopolyspora erythraea (Pseudonocardiaceae)	Cardiovascular and metabolic disease
Phenethyl isothiocyanate	Phase I	N	Sinapis alba (Brassicaceae)	Oncological disease
Phenoxodiol	Phase III	ND	Glycine max (Fabaceae); Cicer arietinum (Fabaceae); Cullen corylifolium (Fabaceae); Genista tinctoria (Fabaceae); Lens culinaris (Fabaceae); Medicago sativa (Fabaceae); Phaseolus coccineus (Fabaceae); Phaseolus lunatus (Fabaceae); Pisum sativum (Fabaceae); Pueraria (Fabaceae); Sophora prostrata (Fabaceae); Trifolium pratense (Fabaceae); Vicia faba (Fabaceae); Vigna angularis (Fabaceae); Vigna radiata (Fabaceae); Vigna unguiculata ssp. unguiculata (Fabaceae)	Oncological disease
Phenserine tartrate	In Clinical Trial	ND	Hippomane mancinella (Euphorbiaceae); Physostigma venenosum (Fabaceae)	Neurological disease
PLD-118	Phase II	ND	Bacillus cereus (Bacillaceae)	Antifungal
Plitidepsin	Phase II	ND	Aplidium (Polyclinidae)	Oncological disease
PM00104/50	Phase I	ND	Jorunna (Kentrodorididae)	Oncological disease
PM02734	Phase I	ND	Bryopsis pennata (Bryopsidaceae); Elysia rufescens (Placobranchidae)	Oncological disease
Podophyllotoxin	Phase I	N	Podophyllum peltatum (Berberidaceae)	Anticancer
PPI-2458	In Clinical Trial	ND	Aspergillus fumigatus (Trichocomaceae)	Oncological disease
PPL-100	Phase I	S/NM	Human immunodeficiency virus 1 (Retroviridae)	Antiviral
Prinomastat	Phase II	S/NM	Homo sapiens (Hominidae)	Early-stage cancer
Prostratin	Phase I	N	Thymelaeaceae (Thymelaeaceae); Homalanthus nutans (Euphorbiaceae); Pimelea (Thymelaeaceae)	Antiviral
Protopanaxadiol	In Clinical Trial	ND	Panax ginseng (Araliaceae)	Oncological disease
Protoveratine A	In Clinical	N	Veratrum album (Melanthiaceae)	Hypertension

	Trial			
Protoveratine B	In Clinical Trial	N	Veratrum album (Melanthiaceae)	Hypertension
PS-519	Phase I	ND	Streptomyces (Streptomycetaceae)	acute stroke
PSN9301	Phase II	S*/NM	Homo sapiens (Hominidae)	Diabetes mellitus
PTK-0796	Phase II	ND	Streptomyces aureofaciens (Streptomycetaceae)	Antibacterial
Pyridoxamine	Phase II	ND	Zea mays (Poaceae)	Cardiovascular and metabolic disease
PZ-601	Phase II	N	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
QS-21A	Phase II	N	Quillaja saponaria (Quillajaceae)	Immunological disease
QS-21B	Phase III	N	Quillaja saponaria (Quillajaceae)	Immunological disease
Ramoplanin	Phase III	ND	Actinoplanes (Micromonosporaceae)	Antibacterial
Rebimastat	Phase III	S/NM	Homo sapiens (Hominidae)	Anticancer
Retaspimycin	Phase II	ND	Streptomyces hygroscopicus subsp. geldanus (Streptomycetaceae)	Oncological disease
RO033-4649	Phase I	S/NM	Human immunodeficiency virus 1 (Retroviridae)	Antiviral
Romidepsin	Phase III	ND	Chromobacterium violaceum (Neisseriaceae)	Oncological disease
Rostafuroxin	Phase II	ND	Acokanthera oblongifolia (Apocynaceae); Acokanthera oppositifolia (Apocynaceae); Acokanthera (Apocynaceae); Strophanthus gratus (Apocynaceae)	Cardiovascular and metabolic disease
Rubitecan	Phase III	ND	Mappia foetida (Icacinaceae); Camptotheca acuminata (Cornaceae); Ophiorrhiza pumila (Rubiaceae)	Anticancer
Ruboxistaurin	Phase III	ND	Lentzea albida (Actinosynnemataceae)	Cardiovascular and metabolic disease
RWJ-442831	Phase I	ND	Acremonium chrysogenum (Acremonium); Amycolatopsis lactamdurans (Pseudonocardiaceae); Emericellopsis minima (Emericellopsis); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
S23906-1	Phase I	ND	Sarcomelicope (Rutaceae)	Oncological disease
S-3304	Phase II	S/NM	Homo sapiens (Hominidae)	Solid tumours
Sabarubicin	Phase II	ND	Streptomyces peucetius (Streptomycetaceae)	Oncological disease
Sagopilone	Phase II	ND	Sorangium cellulosum (Polyangiaceae)	Oncological disease
SCH 503034	Phase II	S*/NM	Hepatitis C virus (Flaviviridae)	Hepatitis C
SCH 530348	Phase III	ND	Galbulimima (Himantandraceae)	Cardiovascular and metabolic disease
SCH 6	Phase I	S*/NM	Hepatitis C virus (Flaviviridae)	Hepatitis C
Scillaren A	In Clinical Trial	N	Charybdis maritima (Asparagaceae)	Cancer
Seliciclib	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Oncological disease
Sergliflozin etabonate	In Clinical Trial	ND	Malus x domestica (Rosaceae)	Neurological disease
SGN-35	Phase I	ND	Dolabella auricularia (Aplysiidae); Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca)	Oncological disease

Silatecan	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Simotaxel	In Clinical Trial	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
SN2310	Phase I	ND	Camptotheca acuminata (Cornaceae); Mappia foetida (Icacinaceae); Ophiorrhiza pumila (Rubiaceae)	Oncological disease
Soblidotin	Phase II	ND	Dolabella auricularia (Aplysiidae); Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca); Symploca hydnoides (Symploca)	Oncological disease
Spectinomycin hydrochloride	In Clinical Trial	N	Streptomyces spectabilis (Streptomycetaceae)	Antibacterial
Spisulosine	In Clinical Trial	ND	Mactromeris polynyma (Mactridae)	Oncological disease
SPP100	Phase III	S*/NM	Homo sapiens (Hominidae)	Hypertension
Squalamine	Phase III	ND	Squalus acanthias (Squalidae)	Oncological disease
SU-14813	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
SU-6668	Phase II	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Sulopenem	Phase I	N	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
TAFA-93	Phase I	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Immunological, inflammatory and related disease
Tafluposide	Phase I	ND	Dysosma pleiantha (Berberidaceae); Podophyllum peltatum (Berberidaceae); Sinopodophyllum hexandrum (Berberidaceae)	Oncological disease
Tanespimycin	Phase III	ND	Streptomyces hygroscopicus subsp. geldanus (Streptomycetaceae)	Oncological disease
Tanomastat	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
Taribavirin	Phase II	ND	Streptomyces candidus (Streptomycetaceae); Streptomyces showdoensis (Streptomycetaceae)	Antiviral
Tasidotin	Phase II	ND	Dolabella auricularia (Aplysiidae); Symploca sp. VP642a (Symploca); Symploca sp. VP642b (Symploca); Symploca sp. VP642c (Symploca)	Oncological disease
TD-1792	Phase II	ND	Acremonium chrysogenum (Acremonium); Amycolatopsis lactamdurans (Pseudonocardiaceae); Amycolatopsis orientalis (Pseudonocardiaceae); Emericellopsis minima (Emericellopsis); Streptomyces clavuligerus (Streptomycetaceae)	Antibacterial
Tebipenem pivoxil	Phase III	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
Tecogalan	Phase II	N	Arthrobacter sp. (Micrococcaceae)	Oncological disease
Teduglutide	Phase III	ND	Homo sapiens (Hominidae)	Short Bowel Syndrome
Telavancin	Phase III	ND	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial

Terameprocol	Phase II	ND	Larrea tridentata (Zygophyllaceae)	Oncological disease
Tesetaxel	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Tetrodin	Phase I	N	Atelopus (Bufonidae); Atelopus peruensis (Bufonidae); Colostethus inguinalis (Dendrobatidae); Hapalochlaena maculosa (Octopodidae); Takifugu chrysops (Tetraodontidae); Takifugu niphobles (Tetraodontidae); Takifugu oblongus (Tetraodontidae); Takifugu pardalis (Tetraodontidae); Taricha torosa (Salamandridae); Vibrio alginolyticus (Vibrionaceae)	Neurological disease
Tetrodotoxin	Phase III	N	Atelopus (Bufonidae); Atelopus peruensis (Bufonidae); Colostethus inguinalis (Dendrobatidae); Hapalochlaena maculosa (Octopodidae); Takifugu chrysops (Tetraodontidae); Takifugu niphobles (Tetraodontidae); Takifugu oblongus (Tetraodontidae); Takifugu pardalis (Tetraodontidae); Taricha torosa (Salamandridae); Vibrio alginolyticus (Vibrionaceae)	Neurological disease
Tiacumicin B	Phase III	ND	Dactylosporangium aurantiacum (Micromonosporaceae)	Antibacterial
Tipifarnib	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Anticancer
TL-310	In Clinical Trial	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
TMC-114	Phase III	S/NM	Human immunodeficiency virus 1 (Retroviridae)	Antiviral
TNP-470	Phase III	ND	Aspergillus fumigatus (Trichocomaceae)	Oncological disease
Tomopenem	Phase II	ND	Streptomyces cattleya (Streptomycetaceae)	Antibacterial
TPI-287	Phase II	ND	Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae)	Oncological disease
Trastuzumab-DM1	Phase II	ND	Anomodon attenuatus (Anomodontaceae); Claopodium crispifolium (Leskeaceae)	Oncological disease
Triphendiol	Phase I	ND	Glycine max (Fabaceae)	Oncological disease
Trodusquemine	Phase I	N	Squalus acanthias (Squalidae)	Cardiovascular and metabolic disease
TS-033	Phase II	ND	Malus x domestica (Rosaceae)	Neurological disease
Vandetanib	Phase III	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Vatalanib	Phase III	ND	Zea mays (Poaceae); Cocos nucifera (Arecaceae); Spinacia oleracea (Amaranthaceae); Pisum sativum (Fabaceae)	Anticancer
Vicriviroc	In Clinical Trial	S/NM	Homo sapiens (Hominidae)	Antiviral
Vincristine/Bryostatin 1	Phase I	N	Bugula neritina (Bugulidae); Catharanthus roseus (Apocynaceae)	Oncological disease
Vinflunine	Phase III	ND	Catharanthus roseus (Apocynaceae)	Oncological disease
Voclosporin	Phase III	ND	Claviceps purpurea (Clavicipitaceae); Cylindrocarpon lucidum (Nectriaceae); Tolypocladium inflatum (Clavicipitaceae)	Immunological, inflammatory and related disease
Vorinostat	Phase II	ND	Streptomyces hygroscopicus (Streptomycetaceae)	Anticancer

VX-740	Phase II	S*/NM	Homo sapiens (Hominidae)	Rheumatoid arthritis
VX-950	Phase II	S*/NM	Hepatitis C virus (Flaviviridae)	Hepatitis C
WAP-8294A2	In Clinical Trial	N	Lysobacter sp. (Xanthomonadaceae)	Antibacterial
WX-UK1	Phase I	S*/NM	Homo sapiens (Hominidae)	Cancer
Xen-2174	Phase II	N	Conus marmoreus (Conidae)	Neurological disease
XR-9051	Phase I	ND	Streptomyces sp. (Streptomycetaceae)	Oncological disease
YM-543	Phase II	ND	Malus x domestica (Rosaceae)	Neurological disease
ZD6126	In Clinical Trial	ND	Colchicum autumnale (Colchicaceae)	Oncological disease
Ziconotide	Phase III	N	Conus (Conidae)	Chronic pain
ZP10	Phase III	ND	Homo sapiens (Hominidae)	Anti-diabetes

SI Appendix Table S7 List of nature-derived preclinical drugs and their species origins.

Drug name	Relationship to natural product	Species origin (family)	Therapeutic class or targeted disease
A54556 A/B	Depsipeptide	Streptomyces hawaiiensis (Streptomycetaceae)	Antibacterial
AB-5	Semi-synthetic derivative of Diazonamide	Phlebobranchia (Phlebobranchia)	Anticancer
Abyssomicin	Natural product	Verrucosispora (Micromonosporaceae)	Antibacterial
AC98-6446	Semi-synthetic derivative of Mannopeptimycin	Streptomyces hygroscopicus (Streptomycetaceae)	Antibacterial
ACV1	Natural product	Conus victoriae (Conidae)	Pain
ADEP 2	Semi-synthetic derivative of acyldepsipeptidolactones	Streptomyces hawaiiensis (Streptomycetaceae)	Antibacterial
Alpha-Conotoxin Vc1.1	Natural product	Conus victoriae (Conidae)	Neuropathic Pain
Alpha-TOS	Natural product	Homo sapiens (Hominidae)	Cancer
AMM336	Natural product	Conus catus (Conidae)	Pain
Anti-hepcidin antibody	Antibody	Homo sapiens (Hominidae)	Anti-inflammatory
Aplyronine A	A potent antitumor substance isolated from the sea hare, natural product	Aplysia kurodai (Aplysiidae)	Oncological disease
Artelinic acid	Semi-synthetic derivative of artemisinin	Artemisia annua (Asteraceae)	Antimalarial
Arylomycin	Natural product	Streptomyces (Streptomycetaceae)	Antibacterial
Asciddemin	An aromatic alkaloid, natural product	Didemnum sp. (Didemnidae); Cystodytes dellechiajei (Polycitoridae)	Oncological disease
Asciddemnin	A marine alkaloid	Cystodytes dellechiajei (Polycitoridae)	Oncological disease
Asperlicin	Natural product	Aspergillus alliaceus (Trichocomaceae)	Anticancer
Avarol	Natural product	Dysidea avara (Dysideidae)	Anti-HIV
Beta-4-amino etoposide analog	Semi-synthetic derivative of podophyllotoxin	Podophyllum peltatum (Berberidaceae)	Anticancer
Betulinic acid	Natural product	Betula pubescens (Betulaceae)	Cancer
BMS-185660	Semi-synthetic derivative of Taxol	Seimatoantlerium tepuiense (Amphisphaeriaceae); Corylus avellana (Betulaceae); Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae)	Anticancer
BMS-249524	Natural product	Nocardia (Nocardiaceae)	Antibacterial
BMS-411886	Semi-synthetic derivative of nocathiacin I	Nocardia (Nocardiaceae)	Antibacterial
BMS-461996	Semi-synthetic derivative of nocathiacin I	Nocardia (Nocardiaceae)	Antibacterial
Calanolide B	A natural product	Calophyllum (Calophyllaceae)	Antiviral
Calcitonin gene-related peptide	Peptide	Homo sapiens (Hominidae)	Anti-mirraine
Cethromycin	Semi-synthetic derivative of Erythromycin A	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial

CGX-1007	Natural product	Conus geographus (Conidae)	Epilepsy
CGX-1063	A modified toxin	Conus geographus (Conidae)	Neurological disease
CGX-1160	Natural product	Conus geographus (Conidae)	Pain
CHAP31	Peptidomimetic of trapoxin peptide	Helicoma ambiens (Tubeufiaceae)	Anticancer
Chi-conopeptides	Natural product	Conus marmoreus (Conidae)	Neuropathic Pain
Chi-conotoxin	A molecule isolated from Conus sp.	Conus marmoreus (Conidae)	Neurological disease
Clindamycin	Semi-synthetic derivative of lincomycin	Streptomyces lincolnensis (Streptomycetaceae)	Antibacterial
Combretastatin A4	Natural product	Combretum caffrum (Combretaceae)	Anticancer
Conantokin-G	A nurotoxin from Conus geographus	Conus geographus (Conidae)	epilepsy
Contignasterol	Natural product	Petrosia (Petrosiidae)	anti-asthma
Coversin	Peptide	Ixodoidea (Ixodoidea)	Asthma
Cryptophycin-249	Semi-synthetic derivative of Taxol	Seimatoantlerium tepuiense (Amphisphaeriaceae); Corylus avellana (Betulaceae); Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae)	Oncological disease
Cryptophycin-309	Semi-synthetic derivative of Taxol	Seimatoantlerium tepuiense (Amphisphaeriaceae); Corylus avellana (Betulaceae); Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae)	Oncological disease
Curacin A	A thiazole lipid, natural product	Lyngbya majuscula (Lyngbya)	Oncological disease
Cyanidin-3-Glucoside	Natural product	Allium cepa (Amaryllidaceae); Brassica oleracea (Brassicaceae); Vaccinium vitis-idaea (Ericaceae); Malus x domestica (Rosaceae); Prunus (Rosaceae)	Anti-obesity
Cyanovirin N	Protein	Nostoc ellipsosporum (Nostocaceae)	Antiviral
Cyclostreptin	Natural product	Streptomyces (Streptomycetaceae)	Oncological disease
Dalbavancin	Peptidomimetic	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial
DCK	Semi-synthetic derivative of suksdorfin	Lomatium (Apiaceae)	Antiviral
DCQA	Natural product	Xanthium strumarium (Asteraceae); Chrysanthemum (Asteraceae); Doellingeria scabra (Asteraceae); Dittrichia viscosa (Asteraceae); Pyrus (Rosaceae)	Antiviral
Diazonamide	A cyclic peptide, natural product	Phlebobranchia (Phlebobranchia)	Oncological disease
Dictyodendrins	A pyrrolocarbazole derivatives, natural product	Dictyodendrillidae (Dictyodendrillidae)	Oncological disease
Dictyostatin-1	Natural product	Spongia (Spongiidae)	Anticancer
DMMC	Cyclic peptide	Lyngbya majuscula (Lyngbya)	Anticancer
Dolastatin 15	Natural product	Dolabella auricularia (Aplysiidae)	Cancer
ECO-0501	Natural product	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial
Eleutherobin	A diterpene glycoside, natural	Eleutherobia (Alcyoniidae); Eleutherobia	Oncological disease

	product	(Alcyoniidae); Erythropodium caribaeorum (Anthothelidae)	
EP-013420	Semi-synthetic derivative of Erythromycin A	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
ER-076349	Semi-synthetic derivative of halichondrin B	Axinella (Axinellidae); Phakellia (Axinellidae); Lissodendoryx (Coelosphaeridae); Halichondria okadai (Halichondriidae)	Oncological disease
ER-086527	Semi-synthetic derivative of halichondrin B	Axinella (Axinellidae); Phakellia (Axinellidae); Lissodendoryx (Coelosphaeridae); Halichondria okadai (Halichondriidae)	Oncological disease
ES-285	Natural product	Mactromeris polynyma (Mactridae)	Cancer
FR182876	Natural product	Streptomyces (Streptomycetaceae)	Oncological disease
FR290581	Semi-synthetic derivative of Zofimarin	Zopfiella marina (Chaetomiaceae); Zopfiella marina (Chaetomiaceae)	Antifungal
GE23077	Cyclic peptide	Actinomadura (Thermomonosporaceae)	Antibacterial
GE81112	Peptide	Streptomyces (Streptomycetaceae)	Antibacterial
GM237354	Semi-synthetic derivative of sordarin	Sordaria araneosa (Sordariaceae)	Antifungal
GR-71251	Peptidomimetic of substance P	Homo sapiens (Hominidae)	Antidepressant
GS-8374	Semi-synthetic derivative of pepstatin	Actinomyces (Actinomycetaceae)	Anti-HIV
Halichondrin B	Natural product	Halichondria okadai (Halichondriidae)	Anticancer
Halimide	Natural product	Aspergillus (Trichocomaceae)	Anticancer
HMDCK	Molecule modified from suksdorfin	Lomatium (Apiaceae)	Antiviral
IC9564	Semi-synthetic derivative of betulinic acid	Syzygium claviflorum (Myrtaceae)	Antiviral
IDN 5390	Semi-synthetic derivative of Paclitaxel	Seimatoantlerium tepuiense (Amphisphaeriaceae); Corylus avellana (Betulaceae); Taxus wallichiana (Taxaceae); Taxus brevifolia (Taxaceae); Taxus baccata (Taxaceae)	Oncological disease
IPL512602	Semi-synthetic derivative of steroid contignasterol	Petrosia (Petrosiidae)	Antiinflammatory
Jatrophane 1	Natural product	Euphorbia (Euphorbiaceae)	Anticancer
JE-2147	Semi-synthetic derivative of pepstatin, Peptidomimetic of Phe-Pro sequence	Actinomyces (Actinomycetaceae)	Anti-HIV
KB141	Mimetics of thyroid hormone	Homo sapiens (Hominidae)	Atherosclerosis
KF58333	Semi-synthetic derivative of radicicol	Scedosporium (Microascaceae)	Anticancer
L-783,281	Natural product	Pseudomassaria (Hyponectriaceae)	Anti-diabetes
L868276	Semi-synthetic derivative of rohitukine	Meliaceae (Meliaceae); Dysoxylum (Meliaceae)	Oncological disease
Lamellarin D	A pyrrole alkaloid, natural product	Lamellaria (Lamellariidae)	Oncological disease
Laulimalide	A macrocyclic lactone, a macrolide, natural product	Cacospongia (Thorectidae)	Oncological disease
LY294002	Semi-synthetic derivative of	Cuscuta australis (Convolvulaceae);	Oncological disease

	quercetin	Cuscuta chinensis (Convolvulaceae); Camellia sinensis (Theaceae)	
LY-333328	Peptidomimetic	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial
MrIA/B	A nurotoxin from Conus marmoreus	Conus marmoreus (Conidae)	neuropathic pain
Muraymycin	Natural product	Streptomyces (Streptomycetaceae)	Antibacterial
NAI-107	Natural product	Microbispora (Streptosporangiaceae)	Antibacterial
Neoamphimedine	A pyridoacridine alkaloid from Xestospongia sp.	Xestospongia (Petrosiidae)	Oncological disease
NPI-3114	Natural product	Actinomyces (Actinomycetaceae)	Antibiotic
NPI-3304	Natural product	Actinomyces (Actinomycetaceae)	Antibiotic
NVB302	Semi-synthetic derivative of deoxyactagardine	Actinoplanes liguriensis (Micromonosporaceae)	Antibacterial
Peloruside A	A macrocyclic lactone, natural product	Mycale (Mycalidae)	Oncological disease
Pervilleine A	Natural product	Erythroxylum (Erythroxylaceae)	Cancer
Pirlimycin	Semi-synthetic derivative of lincomycin	Streptomyces lincolnensis (Streptomycetaceae)	Antibacterial
Platensimycin	Natural product	Streptomyces platensis (Streptomycetaceae)	Antibacterial
PM01218	Natural product	Hymedesmiidae (Hymedesmiidae)	Anticancer
Protoapigenone analog	Semi-synthetic derivative of Protoapigenone	Thelypteris torresiana (Thelypteridaceae)	Anticancer
R-135853	Semi-synthetic derivative of Zofimarin	Zopfiella marina (Chaetomiaceae); Zopfiella marina (Chaetomiaceae)	Antifungal
Rho-Conotoxin TIA	A reversible noncompetitive inhibitor of α-1 adrenergic receptors	Conus tulipa (Conidae)	Neurological disease
Robotnikinin	Semi-synthetic derivative of macrolactones	Nocardiopsis (Nocardiopsaceae)	Anticancer
RPR103611	Semi-synthetic derivative of Betulinic acid	Syzygium claviflorum (Myrtaceae)	Antiviral
RU-64004	Semi-synthetic derivative of Erythromycin A	Saccharopolyspora erythraea (Pseudonocardiaceae)	Antibacterial
Sagopilone	Semi-synthetic derivative of epothilone B	Sorangium cellulosum (Polyangiaceae)	Anticancer
Salicylihalimide A	A salicylate macrolide and a polyketide, natural product	Haliclona sp. (Chalinidae)	Oncological disease
Salicylihalimide B	A salicylate macrolide and a polyketide, natural product	Haliclona sp. (Chalinidae)	Oncological disease
Salinosporamide A	Natural product	Salinispora (Micromonosporaceae)	Cancer
Sarcodictyin A	A diterpene, natural product	Clavulariidae (Clavulariidae)	Oncological disease
Sarcodictyin B	A diterpene, natural product	Clavulariidae (Clavulariidae)	Oncological disease
SCH-725424	Natural product	Kitasatospora (Streptomycetaceae)	Antibacterial
Silvestrol	A natural product	Aglaia silvestris (Meliaceae)	Oncological disease
SNX-325	Natural product	Segestria florentina (Segestriidae)	Pain
TAN-1057A/B	Natural product	Flexibacter (Cytophagaceae)	Antibacterial
Telavancin	Peptidomimetic	Amycolatopsis orientalis (Pseudonocardiaceae)	Antibacterial

Thiocoraline	A depsipeptide, natural product	Micromonospora marina (Micromonosporaceae)	Oncological disease
TI-356	Semi-synthetic derivative of RA-VII	Rubia (Rubiaceae); Rubia cordifolia (Rubiaceae)	Oncological disease
TM-701	Peptide	Leiurus quinquestriatus (Buthidae)	Anticancer
TMC-95-A	Cyclic peptide	Apiospora montagnei (Apiosporaceae)	Anticancer
Variolin B	A heterocyclic alkaloid, natural product	Hymedesmiidae (Hymedesmiidae)	Oncological disease
VIC-105555	Semi-synthetic derivative of lincomycin	Streptomyces lincolnensis (Streptomycetaceae)	Antibacterial
VIC-5555	Semi-synthetic derivative of lincomycin	Streptomyces lincolnensis (Streptomycetaceae)	Antibiotic
Vitilevuamide	A cyclic peptide, natural product	Didemnum (Didemnidae); Polysyncraton (Didemnidae)	Oncological disease
XEP-018	Peptide	Conus (Conidae)	Neurological disease
YM753	Cyclic-peptide	Pseudomonas (Pseudomonadaceae)	Oncological disease

SI Appendix Table S8 List of databases and literatures used in this work for finding the species origins of the approved, clinical trial and preclinical drugs, and those of natural products

Databases:	
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3	Jim Duke. Phytochemical and Ethnobotanical Database (2008) (http://www.ars-grin.gov/duke/)
4	MarinLit Database (http://www.chem.canterbury.ac.nz/marinlit/marinlit.shtml)
5	TCM-ID Database (2005) (http://bidd.nus.edu.sg/group/tcm-id/tcmid.asp)
6	TCM-ID Database (2009) (http://bidd.nus.edu.sg/group/TCMsite/)
7	HIT Database (2011) (http://lifecenter.sgst.cn/hit/)
8	Traditional Chinese Medicine Database@Taiwan (2011) (http://tcm.cmu.edu.tw/)
Books:	
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SI Appendix Table S9 Species family of nature-derived drugs of targets successfully explored since 1990. The profiles of kinase inhibitors and drugs approved in 2009-2010 are separately provided in **SI Appendix Table S1** and **SI Appendix Table S4**

Target (Year of First Successful Exploration)	**Drug (Year of Approval)**	**Species Family as Existing Drug-Productive Family (Year of First Drug Approval)**	**Species Family as New Drug-Productive Family inside Existing Drug-Productive Cluster (Year of Cluster Appereance)**	**Species Family as New Drug-Productive Family outside Existing Drug-Productive Cluster**
Thrombin (1990)	Argatroban (1990)	Hominidae (1953)		
	Ximelagatran (2004)	Hominidae (1953)		
	Lepirudin (1997)			Glossiphoniidae, Hirudinidae
	Bivalirudin (2000)	Glossiphoniidae (1997), Hirudinidae (1997)		
	Desirudin (2003)	Glossiphoniidae (1997), Hirudinidae (1997)		
	Hirulog (2000)	Glossiphoniidae (1997), Hirudinidae (1997)		
Maltase-glucoamylase (1990)	Acarbose (1990)	Micromonosporaceae (1979)		
	Voglibose (1994)	Streptomycetaceae (1946)		
	Miglitol (1998)	Streptomycetaceae (1946)	Moraceae (before 1960)	Thorectidae
4-hydroxyphenylpyruvate dioxygenase (1991)	Nitisinone (1991)		Myrtaceae (1980)	
5-alpha-reductase (1992)	Finasteride (1992)	Hominidae (1953)		
	Dutaseride (2001)	Hominidae (1953)		
Arachidonate 5-lipoxygenase (1992)	Masoprocol (1992)	Zygophyllaceae (1978)		
Plasminogen (1992)	Duteplase (1992)	Hominidae (1953)		
Angiotensin receptor (1994)	Losartan (1994)			Muridae
	Valsartan (1996)	Muridae (1994)		
	Candesartan cilexetil (1997)	Muridae (1994)		
	Eprosartan (1997)	Muridae (1994)		
	Irbesartan (1997)	Muridae (1994)		
	Olmesartan (2002)	Muridae (1994)		
	Telmisartan (1999)	Muridae (1994)		

HIV-1 protease (1995)	Saquinavir (1995)	Streptomycetaceae (1946)	Actinomycetaceae (before 1960)	
	Ritonavir (1996)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Indinavir (1996)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Neflinavir (1997)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Amprenavir (1999)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Atazanavir (2003)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Lopinavir (2000)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Fosamprenavir (2003)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
	Darunavir (2006)	Actinomycetaceae (1995), Streptomycetaceae (1946)		
PGF receptor (1996)	Latanoprost (1996)	Amaryllidaceae (1983), Asteraceae (1975), Sphingidae (1981)		
	Bimatoprost (2001)	Amaryllidaceae (1983), Asteraceae (1975), Sphingidae (1981)		
	Travoprost (2001)	Amaryllidaceae (1983), Asteraceae (1975), Sphingidae (1981)		
Histamine N-methyltransferase (1996)	Amodiaquine (1996)	Rubiaceae (1940)		
Lipase (1998)	Orlistat (1998)	Streptomycetaceae (1946)		
Growth hormone-releasing hormone receptor (1998)	Sermorelin acetate (1998)	Hominidae (1953)		
ATP-sensitive potassium channel (1999)	Nateglinide (1999)	Hominidae (1953)		
Myeloid cell surface antigen CD33 (2000)	Gemtuzumab ozogamicin (2000)	Micromonosporaceae (1979)		
Atrial natriuretic peptide receptor (2001)	Nesiritide (2001)	Hominidae (1953)		
Parathyroid hormone receptor (2002)	Teriparatide (2002)	Hominidae (1953)		
Acetylcholinesterase (2002)	Galantamine hydrobromide (2002)	Amaryllidaceae (1983)		

Proteasome (2003)	Bortezomib (2003)	Hominidae (1953)		
Ceramide glucosyltransferase (2003)	Miglustat (2003)	Moraceae (1998), Streptomycetaceae (1946), Thorectidae (1998)		
DNA methyltransferase (2004)	Azacitidine (2004)	Hominidae (1953)		
	Decitabine (2004)	Hominidae (1953)		
Substance-P receptor (2004)	Vapreotide acetate (2004)	Hominidae (1953)		
Voltage-dependent calcium channel (2004)	Pregabalin (2004)	Hominidae (1953)		Conidae
	Omega-conotoxin MVIIA (2005)	Hominidae (1953)		Conidae
Glucagon-like peptide 1 receptor (2005)	Exenatide (2005)			Helodermatidae
HDAC (2006)	Vorinostat (2006)	Neisseriaceae (1981), Streptomycetaceae (1946)		
	Romidepsin (2009)	Neisseriaceae (1981), Streptomycetaceae (1946)		
ClC-2 chloride channel (2006)	Lubiprostone (2006)	Amaryllidaceae (1983), Pinaceae (1955), Salicaceae (1898)		
CCR5 (2007)	Maraviroc (2007)	Hominidae (1953)		

SI Appendix Table S10 Distribution of natural products identified from marine phyla in MarinLit and other review papers, together with the derived approved and clinical trial drugs

Phylum	Number of species	Number of identified natural products in MarinLit (Ref 1 below) and other review papers (Ref 2-8 below)	Number of approved and clinical trial drugs derived from phylum	Number of species with approved and clinical trial drugs
Phyla that have yielded approved drug				
Sponges	836	6668	19	14
Molluscs	8708	1179	15	9
Tunicates	36091	977	152	19
Annelida	1929	49	2	2
Ascomycota	28831	48+89+141+38=316	107	40
Arthropoda	59987	23	6	1
Proteobacteria	66740	3+22+21+70+25=141	18	11
Phyla outside drug-productive cluster and without yielding an approved or a clinical trial drug				
Red algae	2681	1548	0	0
Brown algae	748	1473	0	0
Echinoderms	808	1074	0	0
Euglenozoa	950	36	0	0
Nematoda	3271	2	0	0
Bacteroidetes	6465	4+29=33	0	0
Labyrinthulomycota	252	3	0	0
Hemichordata	32	26	0	0

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SI Appendix Table S11 Literature sources, statistics of collected data, and list of Species-families outside drug-productive clusters with multiple medicinal plants of well-studied bioactive compounds

Literature sources of medicinal plants with well-studied bioactive ingredients

Source 1: Review papers

1. Medicinal plants and cancer chemoprevention. Desai AG, Qazi GN, Ganju RK, El-Tamer M, Singh J, Saxena AK, Bedi YS, Taneja SC, Bhat HK. Curr Drug Metab. 2008 Sep;9(7):581-91.
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6. Antiviral activity of phytochemicals: a comprehensive review. Naithani R, Huma LC, Holland LE, Shukla D, McCormick DL, Mehta RG, Moriarty RM. Mini Rev Med Chem. 2008 Oct;8(11):1106-33
7. Botanical immunodrugs: scope and opportunities. Patwardhan B, Gautam M. Drug Discov Today. 2005 Apr 1;10(7):495-502
8. Naturally occurring antinociceptive substances from plants. Calixto JB, Beirith A, Ferreira J, Santos AR, Filh VC, Yunes RA. Phytother Res. 2000 Sep;14(6):401-18

Source 2: Databases

1. Traditional Chinese Medicine Information DataBase http://bidd.nus.edu.sg/group/TCMsite/Default.aspx
   (TCM-ID: Traditional Chinese Medicine information database. J. F. Wang, H. Zhou, L. Y. Han, Z.W. Cao , X Chen and Y. Z. Chen,Clin. Pharmacol. Ther.. 78(1):92-93 (2005))
2. HIT database (HIT: linking herbal active ingredients to targets. H. Ye, L. Ye, H. Kang, D.F. Zhang, L. Tao, K Tang, X.P. Liu X, R.X. Zhu, Q. Liu, Y.Z. Chen, Y.X. Li and Z.W. Cao. Nucleic Acids Res. 39 (suppl_1): D1(D1059 (2011))

Source 3: Books

1. Handbook of composition and pharmacological action of commonly-used traditional Chinese medicine, Volu 1, Ed Huang Tai Kang, China Medical Science Press 1994, ISBN 7-5067-0769-1 R-0684
2. Handbook of composition and pharmacological action of commonly-used traditional Chinese medicine, Volu 2, Ed Huang Tai Kang, China Medical Science Press 1994, ISBN 7-5067-0769-1 R-0684

Statistics of collected data:

767 species of medicinal plants with more than one well-studied bioactive ingredient and from more than one sou These medicinal plants are from 172 families in 79 orders

Species-families outside drug-productive clusters with multiple medicinal plants

Family	Order	Number of species	Number of species with well-studied bioactive compounds
Polygonaceae	Caryophyllales	434	27
Araceae	Alismatales	639	10
Caryophyllaceae	Caryophyllales	638	10
Schisandraceae	Austrobaileyales	49	10

Amaranthaceae	Caryophyllales	804	10
Liliaceae	Liliales	393	9
Primulaceae	Ericales	642	8
Xanthorrhoeaceae	Asparagales	226	7
Vitaceae	Vitales	212	7
Santalaceae	Santalales	263	6
Dioscoreaceae	Dioscoreales	132	6
Orchidaceae	Asparagales	4846	6
Paeoniaceae	Saxifragales	47	5
Chloranthaceae	Chloranthales	35	5
Polypodiaceae	Polypodiales	410	5
Smilacaceae	Liliales	24	4
Ericaceae	Ericales	1059	4
Iridaceae	Asparagales	463	3
Hamamelidaceae	Saxifragales	62	3
Dryopteridaceae	Polypodiales	506	3
Acoraceae	Acorales	8	3
Actinidiaceae	Ericales	49	3

SI Appendix Table S12 Distribution of natural products and nature-derived drugs in species-families. The number of searchable bioactive compounds is based on the information we were able to collect from natural product databases and literatures, which also include natural product leads of approved, clinical trial and preclinical drugs

Species Family	Number of Species	Number of Approved and Clinical Trial Drugs	Number of Approved Drugs	Number of Clinical Trial Drugs	Number of Searchable Known Bioactive Compounds	Earliest Year of Reported Studies
Drug-productive family that have yielded approved drugs						
Hominidae	16	369	343	26	270	-
Streptomycetaceae	7556	193	147	46	340	1943
Pseudonocardiaceae	747	89	76	13	24	1979
Acremonium	57	54	49	5	9	1948
Emericellopsis	16	52	47	5	3	-
Trichocomaceae	1900	48	45	3	402	1939
Fabaceae	5882	44	36	8	968	1532
Rubiaceae	2524	32	15	17	218	1696
Brassicaceae	1999	27	2	25	181	1577
Asteraceae	7229	25	17	8	1016	1532
Papaveraceae	215	22	19	3	96	1687
Cornaceae	104	22	6	16	60	1926
Viperidae	288	21	18	3	7	1965
Icacinaceae	27	21	5	16	2	1977
Apocynaceae	1401	20	14	6	260	1928
Ephedraceae	72	19	19	0	51	1923
Muridae	532	19	19	0	14	-
Solanaceae	1223	18	15	3	130	1959
Taxaceae	26	17	4	13	12	1971
Herpesviridae	480	15	15	0	12	-
Drug-productive family that have yielded only clinical trial drugs						
Aplysiidae	33	5	0	5	106	2001
Combretaceae	106	5	0	5	94	1941
Bugulidae	12	5	0	5	25	1982

Anomodontaceae	15	5	0	5	1	-
Leskeaceae	38	5	0	5	1	-
Petrosiidae	17	4	0	4	154	1979
Symploca	14	4	0	4	19	2001
Dendrobatidae	168	4	0	4	5	1974
Flaviviridae	645	4	0	4	4	-
Quillajaceae	1	3	0	3	8	1979
Squalidae	20	3	0	3	2	1979
Axinellidae	50	2	0	2	149	1992
Ancorinidae	6	2	0	2	121	2001
None drug-productive family inside drug-productive clusters						
Araliaceae	486	0	0	0	315	1957
Caprifoliaceae	366	0	0	0	291	1543
Saururaceae	6	0	0	0	192	1999
Plakinidae	13	0	0	0	144	1995
Orchidaceae	4846	0	0	0	129	1543
Aristolochiaceae	200	0	0	0	122	1577
Spongiidae	8	0	0	0	109	1979
Irciniidae	5	0	0	0	105	1972
Phyllanthaceae	373	0	0	0	101	1937
Chalinidae	31	0	0	0	93	1982
None drug-productive family outside drug-productive clusters						
Alcyoniidae	175	0	0	0	368	1994
Rhodomelaceae	253	0	0	0	294	1961
Nephtheidae	42	0	0	0	207	1987
Polygonaceae	434	0	0	0	177	1577
Schisandraceae	49	0	0	0	161	1979
Briareidae	1	0	0	0	155	2001
Clavulariidae	16	0	0	0	150	1987
Sargassaceae	129	0	0	0	131	1998
Xeniidae	17	0	0	0	126	2002
Caryophyllaceae	638	0	0	0	124	1560
Stemonaceae	20	0	0	0	115	1991
Primulaceae	642	0	0	0	102	1962
Plexauridae	91	0	0	0	99	1999

Crassulaceae	501	0	0	0	96	1857
Coriolaceae	427	0	0	0	91	1577
Ellisellidae	10	0	0	0	89	2000
Lymnaeidae	221	0	0	0	86	-
Ganodermataceae	181	0	0	0	85	1985
Santalaceae	263	0	0	0	85	1958
Amaranthaceae	804	6	6	0	83	1888

SI Appendix Table S13 List of literatures used in this work for finding the species origins of the novel secondary metabolites published in 2001-2011

1	A gene cluster containing two fungal polyketide synthases encodes the biosynthetic pathway for a polyketide, asperfuranone, in Aspergillus nidulans. J Am Chem Soc. 2009 Mar 4;131(8):2965-70.
2	A Highly Conjugated Dihydroxylated C(28) Steroid from a Myxobacterium. J Nat Prod. 2011 Apr 22.
3	A new bianthracene C-arabinopyranoside from Senna septemtrionalis. Nat Prod Commun. 2010 May;5(5):747-50.
4	A new type of tripropeptin with anteiso-branched chain fatty acid from Lysobacter sp. BMK333-48F3. J Antibiot (Tokyo). 2008 Sep;61(9):577-82.
5	A novel adriamycin analogue derived from marine microbes induces apoptosis by blocking Akt activation in human breast cancer cells. Mol Med Report. 2011 Mar;4(2):261-5.
6	A novel polyamine acyltransferase responsible for the accumulation of spermidine conjugates in Arabidopsis seed. Plant Cell. 2009 Jan;21(1):318-33.
7	A peptidomic approach for monitoring and characterising peptide cyanotoxins produced in Italian lakes by matrix-assisted laser desorption/ionisation and quadrupole time-of-flight mass spectrometry. Rapid Commun Mass Spectrom. 2011 May 15;25(9):1173-83.
8	A polyhedral approach for understanding flavonoid biosynthesis in Arabidopsis. N Biotechnol. 2010 Dec 31;27(6):829-36.
9	Activation of Dormant Secondary Metabolism Neotrehalosadiamine Synthesis by an RNA Polymerase Mutation in Bacillus subtilis. Biosci Biotechnol Biochem. 2011 Apr 22.
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11	Antiesophageal cancer activity from Southern African marine organisms. Ann N Y Acad Sci. 2005 Nov;1056:405-12.
12	Antifungal and cytotoxic activities of the secondary metabolites from endophytic fungus Massrison sp. Phytomedicine. 2011 Mar 4.
13	Anti-leukemic activities of Dictyostelium secondary metabolites: a novel aromatic metabolite, 4-methyl-5-n-pentylbenzene-1,3-diol, isolated from Dictyostelium mucoroides suppresses cell growth in human leukemia K562 and HL-60 cells. Life Sci. 2006 Dec 14;80(2):160-5.
14	Antisense-guided isolation and structure elucidation of pannomycin, a substituted cis-decalin from Geomyces pannorum. J Nat Prod. 2009 Jan;72(1):59-62.
15	Aqabamycins A-G: novel nitro maleimides from a marine Vibrio species. I. Taxonomy, fermentation, isolation and biological activities. J Antibiot (Tokyo). 2010 Jun;63(6):297-301.
16	Ascomycones A-C, Heptaketide Metabolites from an Unidentified Ascomycete. J Nat Prod. 2008 Nov 7.
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18	Bioactive compounds from Bauhinia purpurea possessing antimalarial, antimycobacterial, antifungal, anti-inflammatory, and cytotoxic activities. J Nat Prod. 2007 May;70(5):795-801.
19	Bioactive lipopeptides of ice-nucleating snow bacterium Pseudomonas syringae strain 31R1. FEMS Microbiol Lett. 2008 Sep;286(2):158-65.
20	Bioactive xanthones from the roots of Hypericum perforatum (common St John's wort). J Sci Food Agric. 2011 Feb;91(3):428-34.
21	Bioactivity, Chemical Profiling, and 16S rRNA-Based Phylogeny of Pseudoalteromonas Strains Collected on a Global Research Cruise. Mar Biotechnol (NY). 2011 Feb 9.
22	Biochemical characterization of a novel indole prenyltransferase from Streptomyces sp. SN-593. J Bacteriol. 2010 Jun;192(11):2839-51.
23	Biological activity of secondary metabolites from Peltostigma guatemalense. Nat Prod Res.

	2009;23(4):370-4.
24	Biosynthesis of tripyrrole and beta-lactam secondary metabolites in Serratia: integration of quorum sensing with multiple new regulatory components in the control of prodigiosin and carbapenem antibiotic production. Mol Microbiol. 2005 Jun;56(6):1495-517.
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27	Chemical analyses of wasp-associated streptomyces bacteria reveal a prolific potential for natural products discovery. PLoS One. 2011 Feb 22;6(2):e16763.
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35	Discovery of novel metabolites from marine actinomycetes. Curr Opin Microbiol. 2006 Jun;9(3):245-51.
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37	Distribution of the 3-hydroxyl-3-methylglutaryl coenzyme A reductase gene and isoprenoid production in marine-derived Actinobacteria. FEMS Microbiol Lett. 2010 Mar;304(1):89-96.
38	Ecological leads for natural product discovery: Novel sesquiterpene hydroquinones from the red macroalga Peyssonnelia sp. Tetrahedron. 2010 Jan 9;66(2):455-461.
39	Enhanced secondary metabolite (tanshinone) production of Salvia miltiorrhiza hairy roots in a novel root-bacteria coculture process. Appl Microbiol Biotechnol. 2007 Dec;77(3):543-50.
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54	Identification of major and minor constituents of Harpagophytum procumbens (Devil's claw) using HPLC-SPE-NMR and HPLC-ESIMS/APCIMS. J Nat Prod. 2006 Sep;69(9):1280-8.
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106	Small-molecule elicitation of microbial secondary metabolites. Microb Biotechnol. 2010 Jul 26.
107	Spectroscopic detection of pharmaceutical compounds from an aflatoxigenic strain of Aspergillus parasiticus. Microbiol Res. 2010 Aug 20;165(6):516-22.
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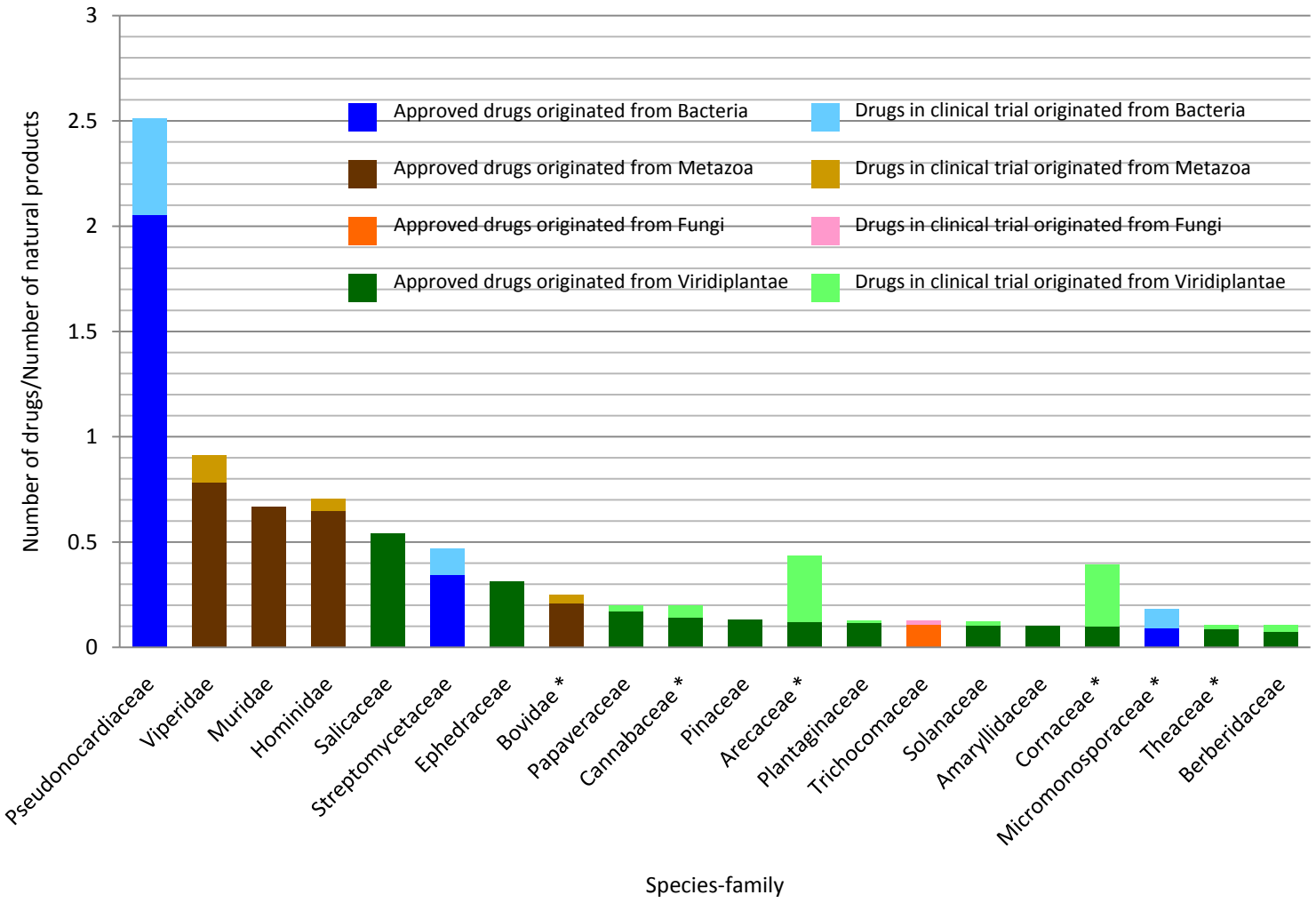
SI Appendix Table S14 List of drug-productive species-families and their corresponding labels used in **SI Appendix Figure 17**.

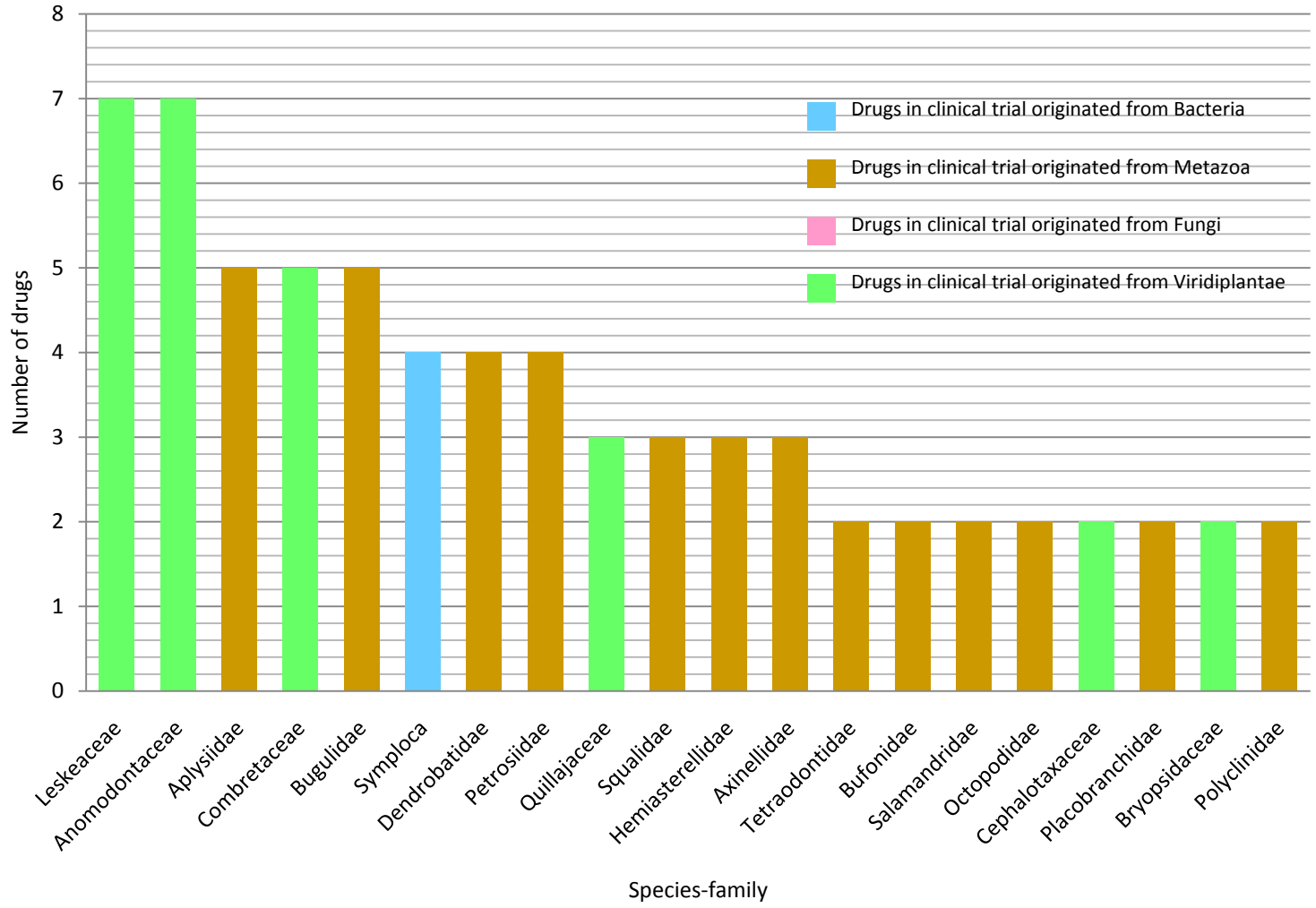
Label	Drug-productive species-family	Superkingdom/kingdom
F1	Micromonosporaceae	Bacteria
F2	Streptomycetaceae	Bacteria
F3	Pseudonocardiaceae	Bacteria
F4	Actinosynnemataceae	Bacteria
F5	Actinomycetaceae	Bacteria
F6	Paenibacillaceae	Bacteria
F7	Neisseriaceae	Bacteria
F8	Polyangiaceae	Bacteria
F9	Amphisphaeriaceae	Fungi
F10	Clavicipitaceae	Fungi
F11	Nectriaceae	Fungi
F12	Acremonium	Fungi
F13	Emericellopsis	Fungi
F14	Trichocomaceae	Fungi
F15	Pleurotaceae	Fungi
F16	Entolomataceae	Fungi
F17	Ephedraceae	Viridiplantae
F18	Papaveraceae	Viridiplantae
F19	Menispermaceae	Viridiplantae
F20	Berberidaceae	Viridiplantae
F21	Amaranthaceae	Viridiplantae
F22	Fabaceae	Viridiplantae
F23	Betulaceae	Viridiplantae
F24	Moraceae	Viridiplantae
F25	Salicaceae	Viridiplantae
F26	Rutaceae	Viridiplantae
F27	Sapindaceae	Viridiplantae
F28	Malvaceae	Viridiplantae
F29	Asteraceae	Viridiplantae
F30	Theaceae	Viridiplantae
F31	Plantaginaceae	Viridiplantae
F32	Loganiaceae	Viridiplantae
F33	Apocynaceae	Viridiplantae
F34	Rubiaceae	Viridiplantae
F35	Icacinaceae	Viridiplantae

F36	Solanaceae	Viridiplantae
F37	Cornaceae	Viridiplantae
F38	Colchicaceae	Viridiplantae
F39	Poaceae	Viridiplantae
F40	Arecaceae	Viridiplantae
F41	Amaryllidaceae	Viridiplantae
F42	Pinaceae	Viridiplantae
F43	Taxaceae	Viridiplantae
F44	Thorectidae	Metazoa
F45	Halichondriidae	Metazoa
F46	Tethyidae	Metazoa
F47	Perophoridae	Metazoa
F48	Hominidae	Metazoa
F49	Muridae	Metazoa
F50	Viperidae	Metazoa
F51	Glossiphoniidae	Metazoa
F52	Hirudinidae	Metazoa
F53	Sphingidae	Metazoa

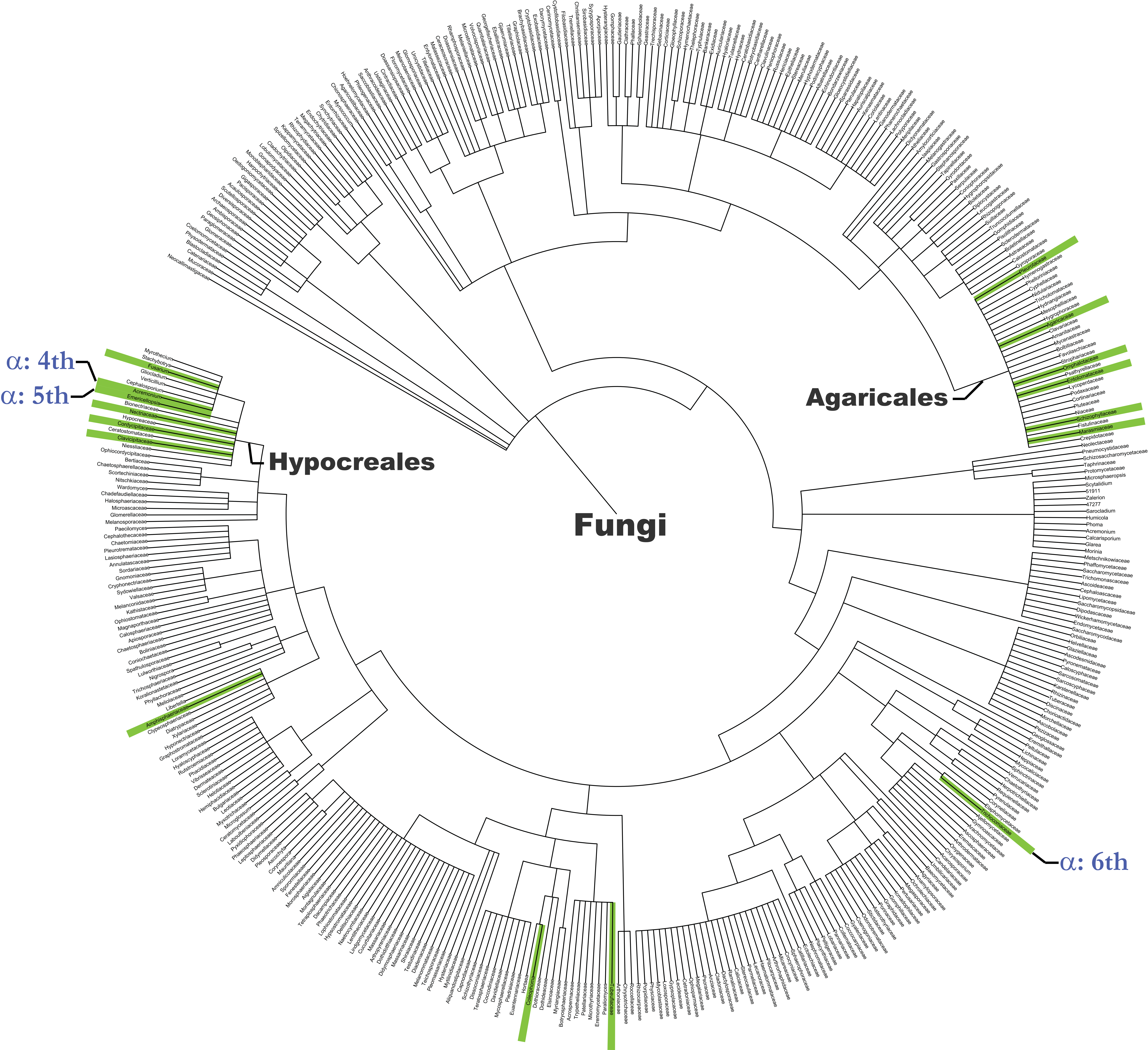
SI Appendix Figure S1 Top-ranked drug-prolific species families that produced high percentage of approved drugs with respect to the known bioactive natural products from each family. Only those families with >20 known natural products (including natural product leads of approved and clinical trial drugs) are included in this analysis.


Number of drugs/Number of natural products
3
2.5
2
1.5
1
0.5
0
Approved drugs originated from Bacteria
Approved drugs originated from Metazoa
Approved drugs originated from Fungi
Approved drugs originated from Viridiplantae
Drugs in clinical trial originated from Bacteria
Drugs in clinical trial originated from Metazoa
Drugs in clinical trial originated from Fungi
Drugs in clinical trial originated from Viridiplantae
Pseudonocardiaceae
Viperidae
Muridae
Hominidae
Salicaceae
Streptomycetaceae
Ephedraceae
Bovidae *
Papaveraceae
Cannabaceae *
Pinaceae
Arecaceae *
Plantaginaceae
Trichocomaceae
Solanaceae
Amaryllidaceae
Cornaceae *
Micromonosporaceae *
Theaceae *
Berberidaceae
Species-family

SI Appendix Figure S2 Top-ranked clinical-trial families that delivered higher number of clinical-trial drugs but no approved drug.


Number of drugs
0
1
2
3
4
5
6
7
8
Drugs in clinical trial originated from Bacteria
Drugs in clinical trial originated from Metazoa
Drugs in clinical trial originated from Fungi
Drugs in clinical trial originated from Viridiplantae
Leskeaceae
Anomodontaceae
Aplysiidae
Combretaceae
Bugulidae
Symploca
Dendrobatidae
Petrosiidae
Quillajaceae
Squalidae
Hemiasterellidae
Axinellidae
Tetraodontidae
Bufonidae
Salamandridae
Octopodidae
Cephalotaxaceae
Placobranchidae
Bryopsidaceae
Polyclinidae
Species-family

SI Appendix Figure S3 Distribution of drug-productive families in the phylogenetic tree of fungi kingdom. The coloring and labeling schemes are the same as Figure 2.


Fungi
Hypocreales
Agaricales
α: 4th
α: 5th
α: 6th
Neocallimastigaceae
Mucoraceae
Catenariaceae
Blastocladiaceae
Physodermataceae
Coelomomycetaceae
Glomeraceae
Paraglomeraceae
Geosiphonaceae
Ambisporaceae
Archaeosporaceae
Diversisporaceae
Scutellosporaceae
Acaulosporaceae
Pacisporaceae
Gigasporaceae
Oedogoniomycetaceae
Harpochytriaceae
Monoblepharidaceae
Gonapodyaceae
Lobulomycetaceae
Cladochytriaceae
Olpidiaceae
Spizellomycetaceae
Kappamycetaceae
Rhizophydiaceae
Terramycetaceae
Megachytriaceae
Endochytriaceae
Chytridiaceae
Synchytriaceae
Entorrhizaceae
Myriococcum
Chionosphaeraceae
Agaricostilbaceae
Hoehnelomycetaceae
Phleogenaceae
Saccoblastiaceae
Anthracoideaceae
Ustilaginaceae
Cintractiaceae
Doassansiopsaceae
Floromycetaceae
Melanotaeniaceae
Glomosporiaceae
Urocystidaceae
Tilletiaceae
Entylomataceae
Malasseziaceae
Ceraceosoraceae
Doassansiaceae
Rhamphosporaceae
Melaniellaceae
Microstromataceae
Volvocisporiaceae
Quambalariaceae
Georgefischeriaceae
Eballistraceae
Gjaerumiaceae
Tilletiariaceae
Graphiolaceae
Brachybasidiaceae
Cryptobasidiaceae
Exobasidiaceae
Dacrymycetaceae
Cerinomycetaceae
Cystofilobasidiaceae
Filobasidiaceae
Tremellaceae
Christianseniaceae
Sirobasidiaceae
Syzygosporaceae
Aporpiaceae
Hysterangiaceae
Gomphaceae
Gautieriaceae
Clathraceae
Phallaceae
Sphaerobolaceae
Geastraceae
Trechisporaceae
Sebacinaceae
Corticiaceae
Gloeophyllaceae
Schizoporaceae
Hymenochaetaceae
Thelephoraceae
Typhulaceae
Bankeraceae
Exidiaceae
Auriculariaceae
Hyaloriaceae
Tulasnellaceae
Hydnaceae
Ceratobasidiaceae
Botryobasidiaceae
Cantharellaceae
Clavulinaceae
Peniophoraceae
Russulaceae
Hericiaceae
Epitheliaceae
Stereaceae
Meruliaceae
Hyphodermataceae
Podoscyphaceae
Albatrellaceae
Echinodontiaceae
Bondarzewiaceae
Gloeocystidiellaceae
Sparassidaceae
Pterulaceae
Hapalopilaceae
Auriscalpiaceae
Xenasmataceae
Coriolaceae
Lentinaceae
Ganodermataceae
Phanerochaetaceae
Lachnocladiaceae
Polyporaceae
Meripilaceae
Dictyonemataceae
Atheliaceae
Amylocorticiaceae
Jaapiaceae
Melanogastraceae
Gastrosporiaceae
Stephanosporaceae
Tapinellaceae
Gyrodontaceae
Paxillaceae
Serpulaceae
Coniophoraceae
Hygrophoropsidaceae
Boletaceae
Diplocystaceae
Leucogastraceae
Rhizopogonaceae
Suillaceae
Truncocolumellaceae
Gomphidiaceae
Pisolithaceae
Sclerodermataceae
Boletinellaceae
Astraeaceae
Calostomataceae
Gyroporaceae
Pleurotaceae
Hymenogastraceae
Phelloriniaceae
Cyphellaceae
Nidulariaceae
Tricholomataceae
Hydnangiaceae
Mesophelliaceae
Hygrophoraceae
Agaricaceae
Clavariaceae
Amanitaceae
Mycenastraceae
Bolbitiaceae
Favolaschiaceae
Strophariaceae
Omphalotaceae
Psathyrellaceae
Entolomataceae
Lycoperdaceae
Podaxaceae
Cortinariaceae
Pluteaceae
Niaceae
Schizophyllaceae
Fistulinaceae
Marasmiaceae
Crepidotaceae
Neolectaceae
Pneumocystidaceae
Schizosaccharomycetaceae
Taphrinaceae
Protomycetaceae
Microsphaeropsis
Scytalidium
51911
Zalerion
47277
Sarocladium
Humicola
Phoma
Acremonium
Calcarisporium
Glarea
Morinia
Metschnikowiaceae
Phaffomycetaceae
Saccharomycetaceae
Trichomonascaceae
Ascoideaceae
Cephaloascaceae
Lipomycetaceae
Saccharomycopsidaceae
Dipodascaceae
Wickerhamomycetaceae
Endomycetaceae
Saccharomycodaceae
Orbiliaceae
Helvellaceae
Glaziellaceae
Ascodesmidaceae
Pyronemataceae
Caloscyphaceae
Sarcosomataceae
Sarcoscyphaceae
Karstenellaceae
Rhizinaceae
Tuberaceae
Discinaceae
Chorioactidaceae
Morchellaceae
Ascobolaceae
Pezizaceae
Geoglossaceae
Eremithallaceae
Peltulaceae
Lichinaceae
Heppiaceae
Mycocaliciaceae
Sphinctrinaceae
Verrucariaceae
Chaetothyriaceae
Herpotrichiellaceae
Requienellaceae
Pyrenulaceae
Coryneliaceae
Elaphomycetaceae
Trichocomaceae
Ajellomycetaceae
Gymnoascaceae
Arachnomycetaceae
Ascosphaeraceae
Eremascaceae
Arthrodermataceae
Onygenaceae
Chrysosporium
Acarosporaceae
Candelariaceae
Umbilicariaceae
Baeomycetaceae
Agyriaceae
Anamylopsoraceae
Ochrolechiaceae
Megasporaceae
Pertusariaceae
Icmadophilaceae
Gomphillaceae
Graphidaceae
Porinaceae
Asterothyriaceae
Stictidaceae
Odontotremataceae
Coenogoniaceae
Gyalectaceae
Coccocarpiaceae
Collemataceae
Pannariaceae
Lobariaceae
Peltigeraceae
Placynthiaceae
Nephromataceae
Ectolechiaceae
Catillariaceae
Sphaerophoraceae
Crocyniaceae
Micareaceae
Arthrorhaphidaceae
Pilocarpaceae
Haematommataceae
Lecanoraceae
Parmeliaceae
Stereocaulaceae
Caliciaceae
Ramalinaceae
Dactylosporaceae
Cladoniaceae
Anziaceae
Psoraceae
Megalariaceae
Ophioparmaceae
Cetradoniaceae
Lecideaceae
Gypsoplacaceae
Loxosporaceae
Mycoblastaceae
Physciaceae
Porpidiaceae
Rhizocarpaceae
Roccellaceae
Chrysotrichaceae
Arthoniaceae
Tubeufiaceae
Parallomyces
Eremomycetaceae
Microthyriaceae
Patellariaceae
Trypetheliaceae
Acrospermaceae
Botryosphaeriaceae
Myriangiaceae
Elsinoaceae
Dothideaceae
Dothioraceae
Coleophoma
Hortaea
Euantennariaceae
Piedraiaceae
Mycosphaerellaceae
Davidiellaceae
Coccodiniaceae
Teratosphaeriaceae
Dissoconiaceae
Schizothyriaceae
Capnodiaceae
Aliquandostipitaceae
Mytilinidiaceae
Hysteriaceae
Pleomassariaceae
Teichosporaceae
Melanommataceae
Diademaceae
Testudinaceae
Shiraiaceae
Massarinaceae
Didymosphaeriaceae
Dothidotthiaceae
Arthopyreniaceae
Massariaceae
Cucurbitariaceae
Lindgomycetaceae
Lentitheciaceae
Naetrocymbaceae
Delitschiaceae
Hypsostromataceae
Lophiostomataceae
Phaeotrichaceae
Dacampiaceae
Tetraplosphaeriaceae
Montagnulaceae
Aigialaceae
Morosphaeriaceae
Fenestellaceae
Sporormiaceae
Amniculicolaceae
Mauritiana
Corynespora
Ascochyta
Pleosporaceae
Didymellaceae
Leptosphaeriaceae
Phaeosphaeriaceae
Pyxidiophoraceae
Laboulbeniaceae
Ceratomycetaceae
Microglossum
Myxotrichaceae
Leotiaceae
Bulgariaceae
Hemiphacidiaceae
Helotiaceae
Sclerotiniaceae
Dermateaceae
Vibrisseaceae
Phacidiaceae
Rutstroemiaceae
Hyaloscyphaceae
Loramycetaceae
Graphostromataceae
Hyponectriaceae
Xylariaceae
Diatrypaceae
Clypeosphaeriaceae
Amphisphaeriaceae
Libertella
Meliolaceae
Phyllachoraceae
Koralionastetaceae
Trichosphaeriaceae
Nigrospora
Lulworthiaceae
Spathulosporaceae
Coniochaetaceae
Boliniaceae
Chaetosphaeriaceae
Apiosporaceae
Calosphaeriaceae
Magnaporthaceae
Ophiostomataceae
Kathistaceae
Melanconidaceae
Valsaceae
Sydowiellaceae
Cryphonectriaceae
Gnomoniaceae
Sordariaceae
Annulatascaceae
Lasiosphaeriaceae
Pleurotremataceae
Chaetomiaceae
Cephalothecaceae
Paecilomyces
Melanosporaceae
Glomerellaceae
Microascaceae
Halosphaeriaceae
Chadefaudiellaceae
Wardomyces
Nitschkiaceae
Scortechiniaceae
Chaetosphaerellaceae
Bertiaceae
Ophiocordycipitaceae
Niessliaceae
Clavicipitaceae
Ceratostomataceae
Cordycipitaceae
Hypocreaceae
Nectriaceae
Bionectriaceae
Emericellopsis
Acremonium
Cephalosporium
Verticillium
Gliocladium
Fusarium
Stachybotrys
Myrothecium

SI Appendix Figure S4 Distribution of drug-productive families in the phylogenetic tree of metazoa kingdom. The coloring and labeling schemes are the same as Figure 2.

γ: 6th

α: 1st

β: 3rd

Enterogona

Batrachia

Euarchontoglires

Cetartiodactyla

Scleroglossa

γ: 6th

Demospongiae

Metazoa

Monostilifera

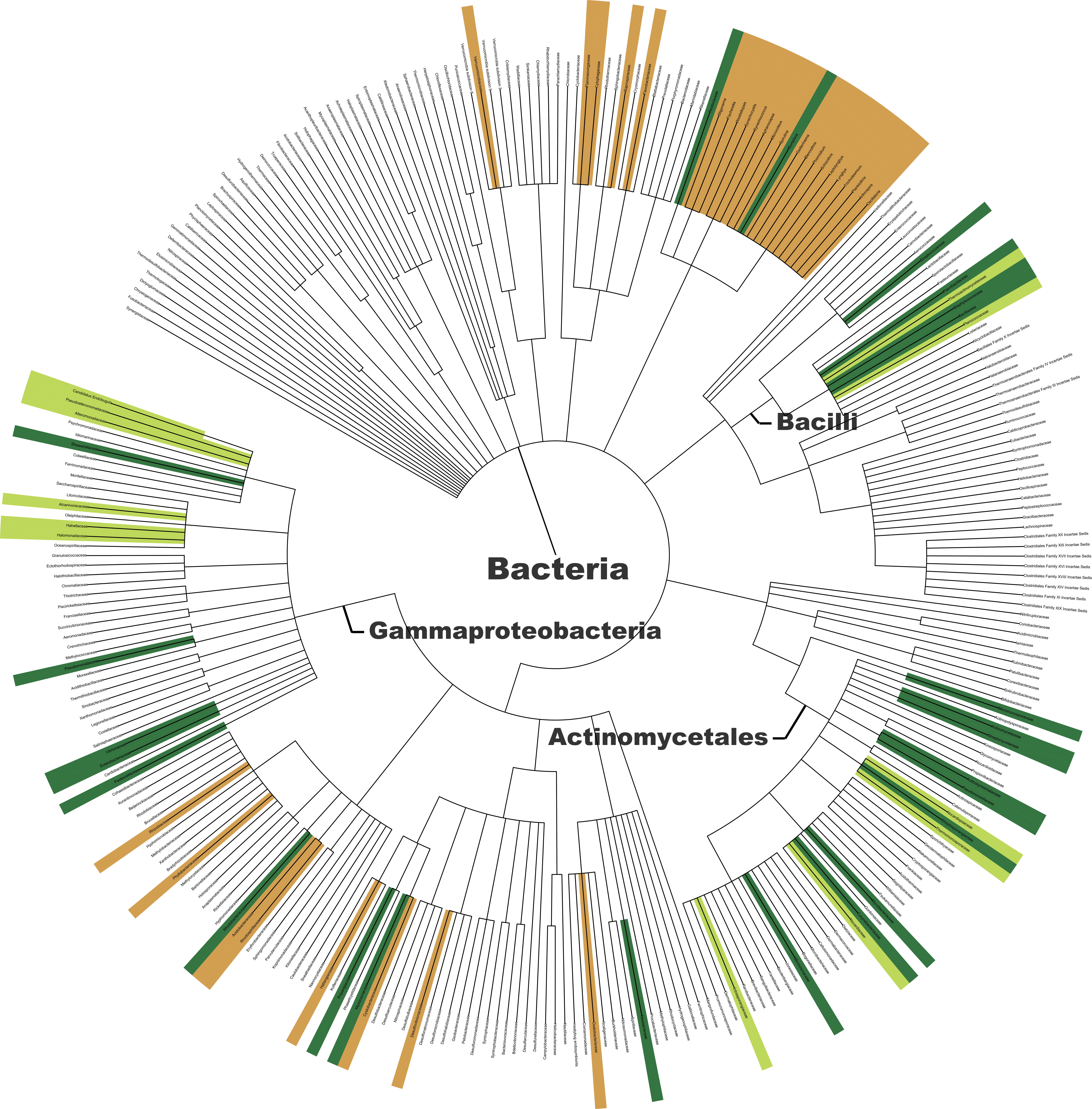
γ: 3rd

Hirudinea

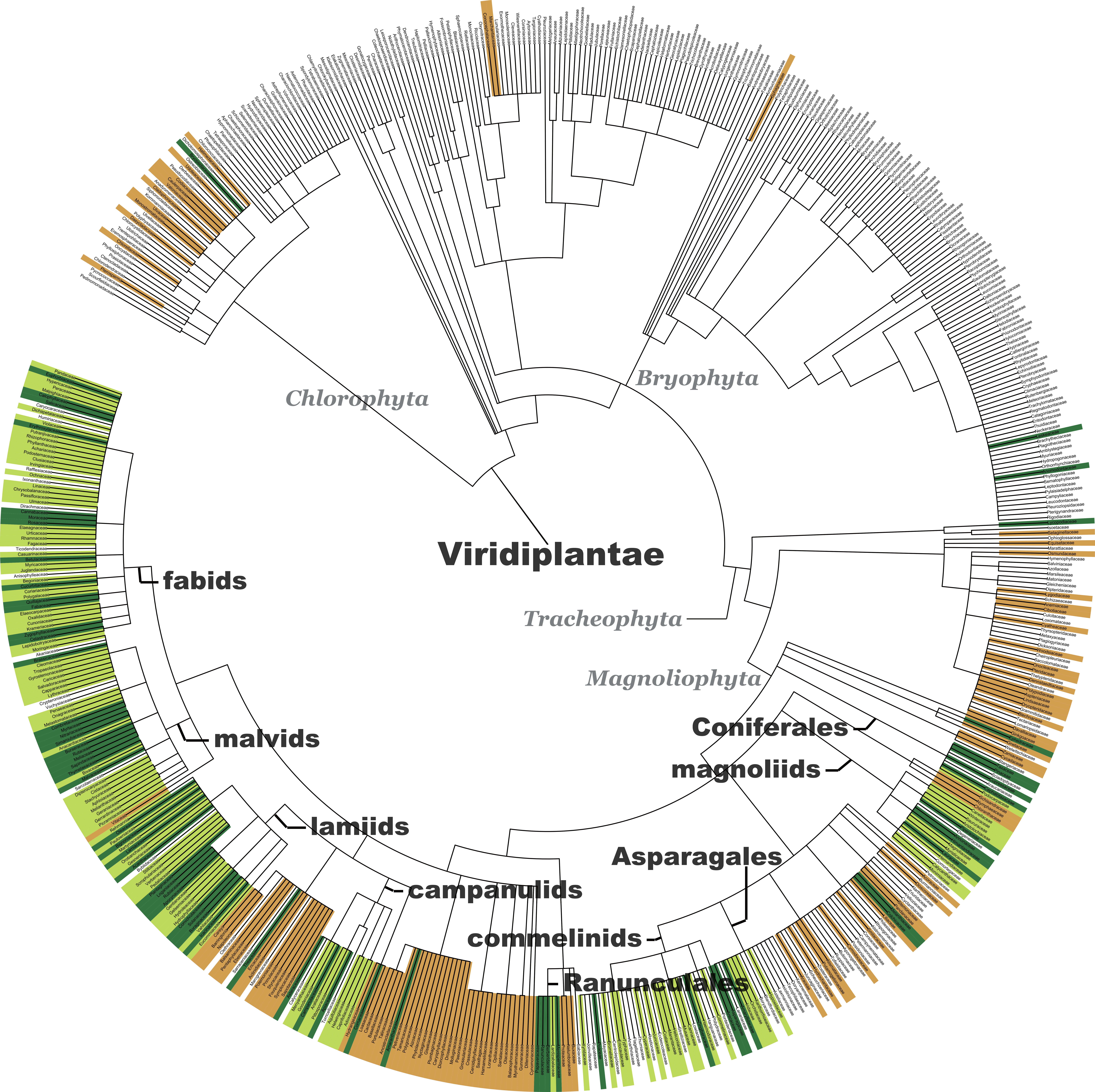
Gastropoda

γ: 3rd

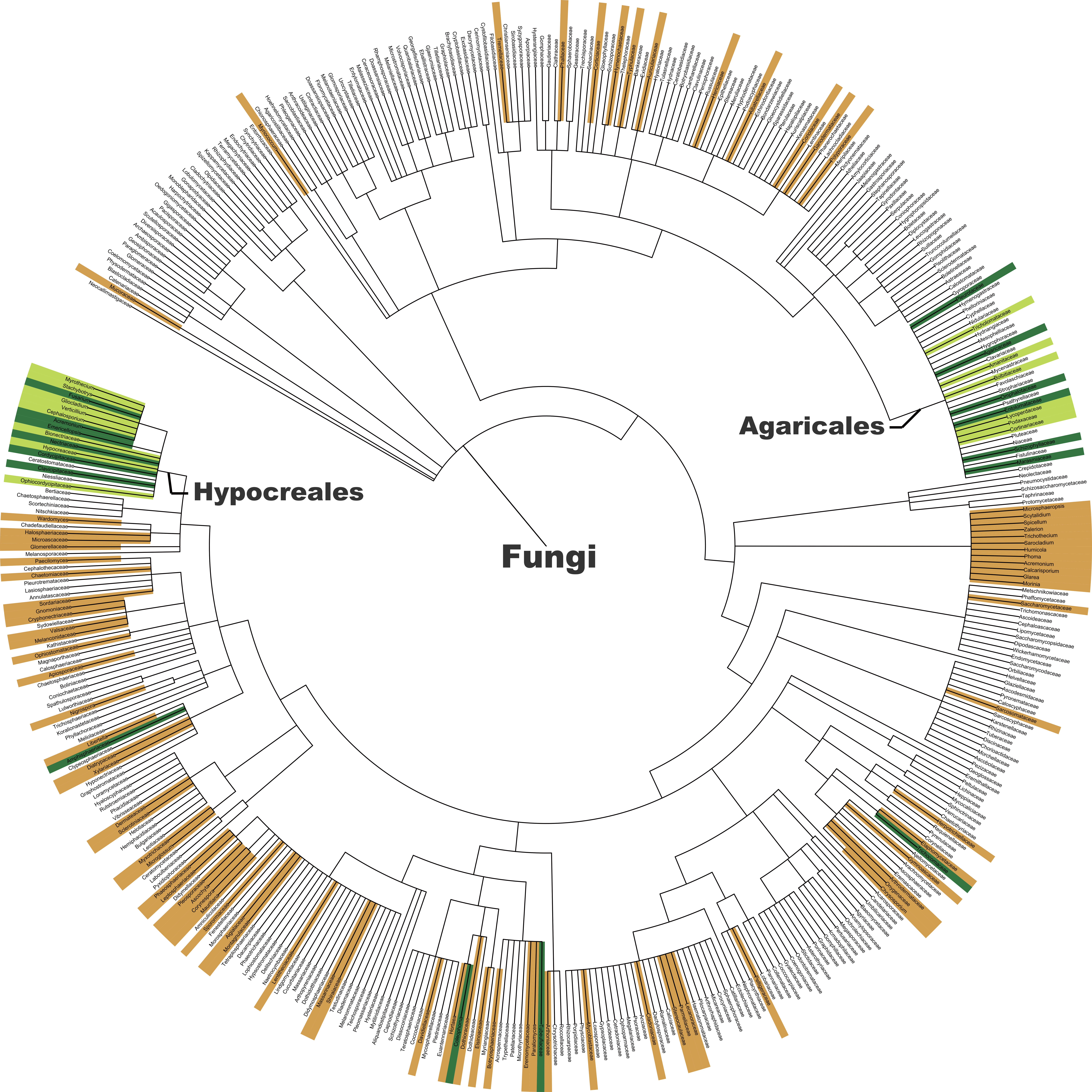
SI Appendix Figure S5 Distribution patterns of the known bioactive natural products (including the natural product leads of approved and clinical-trial drugs) in the species-families of Bacterial super-kingdom. The drug-productive families, the non-drug-productive families in drug-productive clusters, and the non-drug-productive families outside drug-productive clusters are in green, light-green, and brown background color respectively. The drug-productive clusters are labeled by the respective species-group name in black color. Potential drug-productive clusters are not labeled.


Bacteria
Bacilli
Gammaproteobacteria
Actinomycetales
Synergistaceae
Fusobacteriaceae
Chrysiogenaceae
Dictyoglomaceae
Thermotogaceae
Thermodesulfobacteriaceae
Elusimicrobiaceae
Nitrospiraceae
Deferribacteraceae
Gemmatimonadaceae
Caldisericaceae
Phycisphaeraceae
Planctomycetaceae
Leptospiraceae
Spirochaetaceae
Brachyspiraceae
Desulfurobacteriaceae
Aquificaceae
Hydrogenothermaceae
Thermaceae
Deinococcaceae
Trueperaceae
Fibrobacteraceae
Acidobacteriaceae
Solibacteraceae
Holophagaceae
Acanthopleuribacteraceae
Mycoplasmataceae
Anaeroplasmataceae
Acholeplasmataceae
Haloplasmataceae
Spiroplasmataceae
Entomoplasmataceae
Caldilineaceae
Ktedonobacteraceae
Anaerolineaceae
Sphaerobacteraceae
Thermomicrobiaceae
Herpetosiphonaceae
Chloroflexaceae
Oscillochloridaceae
Puniceicoccaceae
Verrucomicrobia subdivision 6
Verrucomicrobiaceae
Verrucomicrobia subdivision 5
Verrucomicrobia subdivision 3
Criblamydiaceae
Waddliaceae
Simkaniaceae
Chlamydiaceae
Rhabdochlamydiaceae
Parachlamydiaceae
Chlorobiaceae
Cyclobacteriaceae
Flammeovirgaceae
Cytophagaceae
Rhodothermaceae
Sphingobacteriaceae
Saprospiraceae
Cryomorphaceae
Flavobacteriaceae
Blattabacteriaceae
Prevotellaceae
Porphyromonadaceae
Bacteroidaceae
Marinilabiaceae
Rikenellaceae
Nostocaceae
Stigonema
Fischerella
Westiellopsis
Synechocystis
Synechococcus
Aphanocapsa
Microcoleus
Spirulina
Symploca
Geitlerinema
Blennothrix
Phormidium
Schizothrix
Leptolyngbya
Lyngbya
Trichodesmium
Planktothrix
Arthrospira
Oscillatoria
Veillonellaceae
Thermolithobacteraceae
Erysipelotrichaceae
Enterococcaceae
Leuconostocaceae
Carnobacteriaceae
Aerococcaceae
Streptococcaceae
Lactobacillaceae
Sporolactobacillaceae
Pasteuriaceae
Paenibacillaceae
Thermoactinomycetaceae
Staphylococcaceae
Bacillaceae
Planococcaceae
Listeriaceae
Alicyclobacillaceae
Bacillales Family X Incertae Sedis
Natranaerobiaceae
Halobacteroidaceae
Halanaerobiaceae
Thermoanaerobacterales Family IV Incertae Sedis
Thermoanaerobacteraceae
Thermoanaerobacterales Family III Incertae Sedis
Thermodesulfobiaceae
Ruminococcaceae
Caldicoprobacteraceae
Eubacteriaceae
Syntrophomonadaceae
Clostridiaceae
Peptococcaceae
Heliobacteriaceae
Oscillospiraceae
Catabacteriaceae
Peptostreptococcaceae
Graciibacteraceae
Lachnospiraceae
Clostridiales Family XII Incertae Sedis
Clostridiales Family XIII Incertae Sedis
Clostridiales Family XVII Incertae Sedis
Clostridiales Family XVI Incertae Sedis
Clostridiales Family XVIII Incertae Sedis
Clostridiales Family XIV Incertae Sedis
Clostridiales Family XI Incertae Sedis
Clostridiales Family XIX Incertae Sedis
Nitriliruptoraceae
Coriobacteriaceae
Acidimicrobiaceae
Iamiaceae
Thermoleophilaceae
Rubrobacteraceae
Patulibacteraceae
Conexibacteraceae
Solirubrobacteraceae
Bifidobacteriaceae
Micromonosporaceae
Actinopolysporaceae
Actinomycetaceae
Streptomycetaceae
Kineosporiaceae
Glycomycetaceae
Nocardioidaceae
Propionibacteriaceae
Actinosynnemataceae
Pseudonocardiaceae
Actinospicaceae
Catenulisporaceae
Nocardiopsaceae
Streptosporangiaceae
Thermomonosporaceae
Sporichthyaceae
Geodermatophilaceae
Nakamurellaceae
Cryptosporangiaceae
Frankiaceae
Acidothermaceae
Segniliparaceae
Williamsiaceae
Tsukamurellaceae
Mycobacteriaceae
Gordoniaceae
Corynebacteriaceae
Nocardiaceae
Dietziaceae
Dermacoccaceae
Dermabacteraceae
Cellulomonadaceae
Microbacteriaceae
Bogoriellaceae
Micrococcaceae
Jonesiaceae
Beutenbergiaceae
Yaniellaceae
Sanguibacteraceae
Brevibacteriaceae
Rarobacteraceae
Intrasporangiaceae
Dermatophilaceae
Promicromonosporaceae
Mariprofundaceae
Ferritrophicaceae
Gallionellaceae
Hydrogenophilaceae
Rhodocyclaceae
Methylophilaceae
Procabacteriaceae
Neisseriaceae
Spirillaceae
Nitrosomonadaceae
Burkholderiaceae
Alcaligenaceae
Oxalobacteraceae
Comamonadaceae
mealybug endosymbionts
Nautiliaceae
Helicobacteraceae
Campylobacteraceae
Desulfurellaceae
Desulfarculaceae
Bdellovibrionaceae
Bacteriovoracaceae
Syntrophobacteraceae
Syntrophaceae
Desulfuromonadaceae
Pelobacteraceae
Geobacteraceae
Desulfohalobiaceae
Desulfomicrobiaceae
Desulfonatronumaceae
Desulfovibrionaceae
Desulfobulbaceae
Nitrospinaceae
Desulfoarculaceae
Desulfobacteraceae
Cystobacteraceae
Myxococcaceae
Phaselicystidaceae
Polyangiaceae
Kofleriaceae
Haliangiaceae
Nannocystaceae
Sneathiellaceae
Caulobacteraceae
Kiloniellaceae
Kopriimonadaceae
Parvularculaceae
Sphingomonadaceae
Erythrobacteraceae
Rhodospirillaceae
Acetobacteraceae
Rhodobacteraceae
Hyphomonadaceae
Rickettsiaceae
Anaplasmataceae
Holosporaceae
Bartonellaceae
Methylocystaceae
Phyllobacteriaceae
Bradyrhizobiaceae
Xanthobacteraceae
Methylobacteriaceae
Hyphomicrobiaceae
Rhizobiaceae
Brucellaceae
Rhodobiaceae
Beijerinckiaceae
Aurantimonadaceae
Cohaesibacteraceae
Pasteurellaceae
Cardiobacteriaceae
Enterobacteriaceae
Vibrionaceae
Salinisphaeraceae
Coxiellaceae
Legionellaceae
Xanthomonadaceae
Sinobacteraceae
Thermithiobacillaceae
Acidithiobacillaceae
Moraxellaceae
Pseudomonadaceae
Methylococcaceae
Crenotrichaceae
Aeromonadaceae
Succinivibrionaceae
Francisellaceae
Piscirickettsiaceae
Thiotrichaceae
Chromatiaceae
Halothiobacillaceae
Ectothiorhodospiraceae
Granulosicoccaceae
Oceanospirillaceae
Halomonadaceae
Hahellaceae
Oleiphilaceae
Alcanivoracaceae
Litoricolaceae
Saccharospirillaceae
Moritellaceae
Ferrimonadaceae
Colwelliaceae
Shewanellaceae
Idiomarinaceae
Psychromonadaceae
Alteromonadaceae
Pseudoalteromonadaceae
Candidatus Endobugula

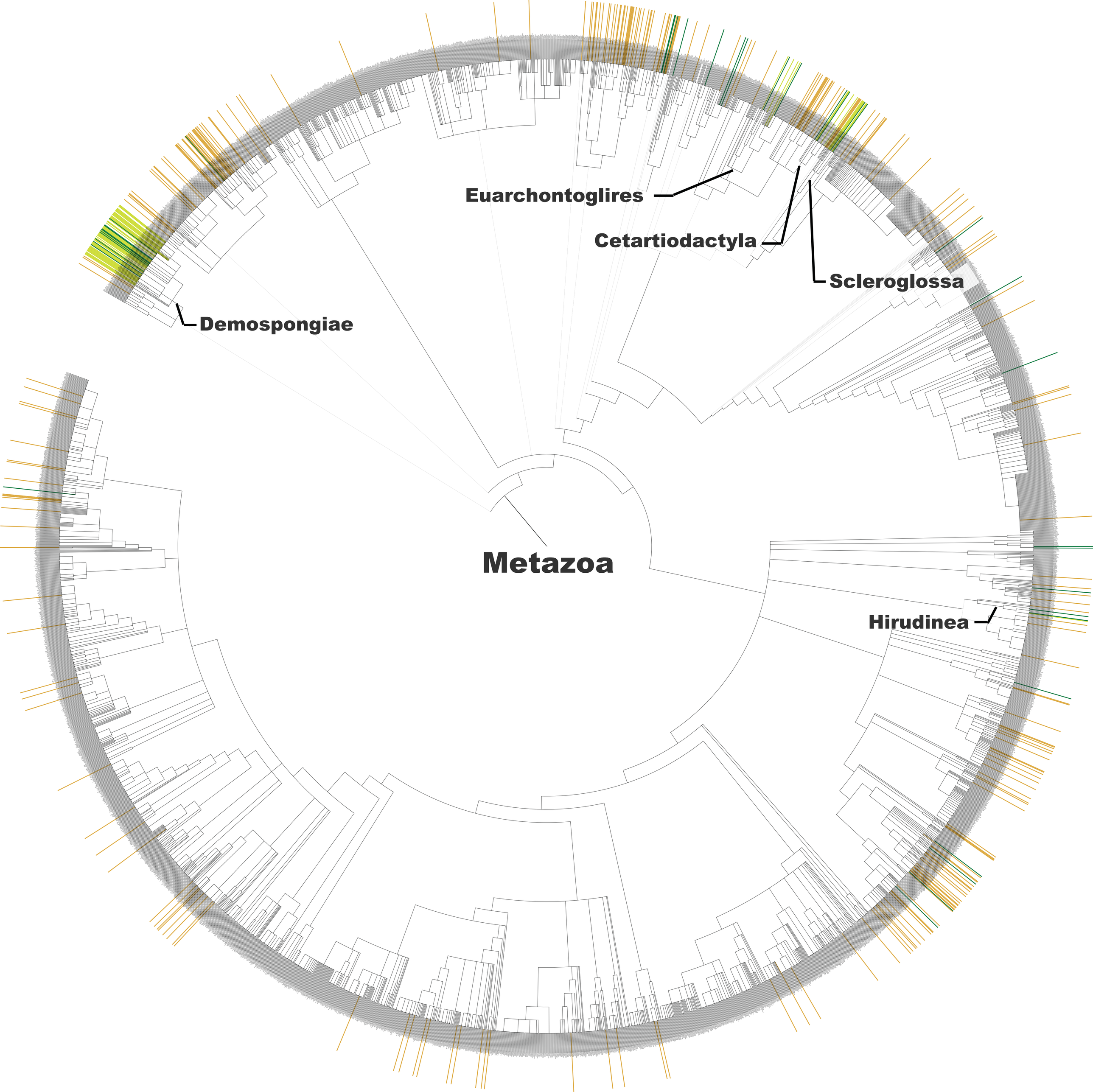
SI Appendix Figure S6 Distribution patterns of the known bioactive natural products (including the natural product leads of approved and clinical-trial drugs) in the species-families of viridiplantae kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Viridiplantae
Chlorophyta
Bryophyta
Tracheophyta
Magnoliophyta
Coniferales
magnoliids
Asparagales
commelinids
Ranunculales
campanulids
lamiids
malvids
fabids
Pedinomonadaceae
Scourfieldiaceae
Pycnococcaceae
Pterosperma
Chlorodendraceae
Ctenocladaceae
Prasiolaceae
Phyllosiphonaceae
Oocystaceae
Chlorellaceae
Eremosphaeraceae
Trentepohliaceae
Ulotrichaceae
Chlorocystidaceae
Dasycladaceae
Polyphysaceae
Ulvellaceae
Ulvaceae
Monostromataceae
Kornmanniaceae
Siphonocladaceae
Cladophoraceae
Anadyomenaceae
Valoniaceae
Caulerpaceae
Codiaceae
Pseudocodiaceae
Udoteaceae
Derbesiaceae
Ostreobiaceae
Bryopsidaceae
Dichotomosiphonaceae
Halimedaceae
Chlorococcaceae
Phaeophilaceae
Chaetopeltidaceae
Tetrasporaceae
Palmellaceae
Hypnomonadaceae
Aphanochaetaceae
Chaetophoraceae
Schizomeridaceae
Selenastraceae
Scenedesmaceae
Hydrodictyaceae
Neochloridaceae
Sphaeropleaceae
Characiosiphonaceae
Dunaliellaceae
Golenkiniaceae
Astrephomenaceae
Volvocaceae
Characiochloridaceae
Haematococcaceae
Asteromonadaceae
Chlamydomonadaceae
Spondylomoraceae
Tetrabaenaceae
Phacotaceae
Chlorokybaceae
Mesostigmataceae
Klebsormidiaceae
Elakatotrichaceae
Zygnemataceae
Mesotaeniaceae
Closteriaceae
Desmidiaceae
Gonatozygaceae
Peniaceae
Characeae
Coleochaetaceae
Chaetosphaeridiaceae
Leiosporocerotaceae
Notothyladaceae
Anthocerotaceae
Phymatocerotaceae
Dendrocerotaceae
Treubiaceae
Haplomitriaceae
Pelliaceae
Pallaviciniaceae
Hymenophytaceae
Allisoniaceae
Fossombroniaceae
Petalophyllaceae
Blasiaceae
Sphaerocarpaceae
Riellaceae
Monocleaceae
Ricciaceae
Oxymitraceae
Conocephalaceae
Marchantiaceae
Lunulariaceae
Exormothecaceae
Monosoleniaceae
Cleveaceae
Wiesnerellaceae
Corsiniaceae
Aytoniaceae
Targioniaceae
Cyathodiaceae
Pleuroziaceae
Metzgeriaceae
Aneuraceae
Mizutaniaceae
Lepidolaenaceae
Ptilidiaceae
Mastigophoraceae
Neotrichocoleaceae
Goebeliellaceae
Radulaceae
Jubulaceae
Porellaceae
Lejeuneaceae
Frullaniaceae
Schistochilaceae
Jamesoniellaceae
Chaetophyllopsidaceae
Scapaniaceae
Cephaloziellaceae
Adelanthaceae
Jackiellaceae
Cephaloziaceae
Lepicoleaceae
Vetaformataceae
Herbertaceae
Geocalycaceae
Lepidoziaceae
Plagiochilaceae
Pseudolepicoleaceae
Trichocoleaceae
Brevianthaceae
Gyrothyraceae
Arnelliaceae
Acrobolbaceae
Delavayellaceae
Calypogeiaceae
Jungermanniaceae
Antheliaceae
Gymnomitriaceae
Mesoptychiaceae
Trichotemnomataceae
Balantiopsidaceae
Andreaeobryaceae
Andreaeaceae
Takakiaceae
Ambuchananiaceae
Sphagnaceae
Polytrichaceae
Tetraphidaceae
Oedipodiaceae
Buxbaumiaceae
Diphysciaceae
Timmiaceae
Encalyptaceae
Funariaceae
Disceliaceae
Gigaspermaceae
Orthotrichaceae
Meesiaceae
Splachnaceae
Rhacocarpaceae
Hedwigiaceae
Helicophyllaceae
Phyllodrepaniaceae
Catoscopiaceae
Leptostomataceae
Mniaceae
Bryaceae
Bartramiaceae
Archidiaceae
Bryoxiphiaceae
Drummondiaceae
Scouleriaceae
Grimmiaceae
Ptychomitriaceae
Seligeriaceae
Serpotortellaceae
Pottiaceae
Pleurophascaceae
Cinclidotaceae
Rhachitheciaceae
Schistostegaceae
Eustichiaceae
Nanobryaceae
Mitteniaceae
Erpodiaceae
Leucobryaceae
Rhabdoweisiaceae
Calymperaceae
Fissidentaceae
Ditrichaceae
Bruchiaceae
Dicranaceae
Rhizogoniaceae
Aulacomniaceae
Orthodontiaceae
Hypnodendraceae
Pterobryellaceae
Racopilaceae
Ptychomniaceae
Saulomataceae
Hypopterygiaceae
Pilotrichaceae
Leucomiaceae
Daltoniaceae
Schimperobryaceae
Hookeriaceae
Lembophyllaceae
Myriniaceae
Stereophyllaceae
Helodiaceae
Fabroniaceae
Prionodontaceae
Hylocomiaceae
Theliaceae
Hypnaceae
Calliergonaceae
Fontinalaceae
Rhytidiaceae
Lepyrodontaceae
Echinodiaceae
Pterobryaceae
Symphyodontaceae
Cryphaeaceae
Climaciaceae
Rutenbergiaceae
Meteoriaceae
Trachylomataceae
Regmatodontaceae
Catagoniaceae
Entodontaceae
Thuidiaceae
Neckeraceae
Leskeaceae
Brachytheciaceae
Plagiotheciaceae
Amblystegiaceae
Myuriaceae
Hydropogonaceae
Orthorrhynchiaceae
Anomodontaceae
Phyllogoniaceae
Sematophyllaceae
Leptodontaceae
Pylaisiadelphaceae
Campyliaceae
Leucodontaceae
Pleuroziopsidaceae
Pterigynandraceae
Rigodiaceae
Lycopodiaceae
Isoetaceae
Selaginellaceae
Ophioglossaceae
Equisetaceae
Marattiaceae
Osmundaceae
Hymenophyllaceae
Salviniaceae
Azollaceae
Marsileaceae
Matoniaceae
Gleicheniaceae
Dipteridaceae
Lygodiaceae
Schizaeaceae
Anemiaceae
Cibotiaceae
Culcitaceae
Loxomataceae
Cyatheaceae
Thyrsopteridaceae
Metaxyaceae
Plagiogyriaceae
Dicksoniaceae
Woodsiaceae
Cheiropleuriaceae
Saccolomataceae
Onocleaceae
Pteridaceae
Thelypteridaceae
Dennstaedtiaceae
Oleandraceae
Polypodiaceae
Aspleniaceae
Lindsaeaceae
Dryopteridaceae
Grammitidaceae
Blechnaceae
Tectariaceae
Lomariopsidaceae
Davalliaceae
Ginkgoaceae
Ephedraceae
Gnetaceae
Welwitschiaceae
Zamiaceae
Cycadaceae
Stangeriaceae
Taxaceae
Pinaceae
Sciadopityaceae
Cupressaceae
Araucariaceae
Cephalotaxaceae
Podocarpaceae
Schisandraceae
Nymphaeaceae
Chloranthaceae
Canellaceae
Winteraceae
Saururaceae
Aristolochiaceae
Piperaceae
Degeneriaceae
Annonaceae
Himantandraceae
Magnoliaceae
Myristicaceae
Lauraceae
Hernandiaceae
Gomortegaceae
Calycanthaceae
Monimiaceae
Petrosaviaceae
Acoraceae
Burmanniaceae
Dioscoreaceae
Nartheciaceae
Triuridaceae
Velloziaceae
Cyclanthaceae
Stemonaceae
Pandanaceae
Melanthiaceae
Colchicaceae
Liliaceae
Philesiaceae
Rhipogonaceae
Alstroemeriaceae
Smilacaceae
Corsiaceae
Campynemataceae
Petermanniaceae
Cymodoceaceae
Posidoniaceae
Aponogetonaceae
Butomaceae
Ruppiaceae
Tofieldiaceae
Alismataceae
Potamogetonaceae
Zosteraceae
Hydrocharitaceae
Scheuchzeriaceae
Juncaginaceae
Araceae
Xeronemataceae
Doryanthaceae
Tecophilaeaceae
Ixioliriaceae
Laxmanniaceae
Asteliaceae
Hypoxidaceae
Blandfordiaceae
Boryaceae
Xanthorrhoeaceae
Orchidaceae
Iridaceae
Amaryllidaceae
Lanariaceae
Asparagaceae
Arecaceae
Pontederiaceae
Commelinaceae
Philydraceae
Hanguanaceae
Haemodoraceae
Zingiberaceae
Lowiaceae
Cannaceae
Musaceae
Strelitziaceae
Heliconiaceae
Marantaceae
Costaceae
Ecdeiocoleaceae
Juncaceae
Restionaceae
Cyperaceae
Thurniaceae
Flagellariaceae
Anarthriaceae
Typhaceae
Eriocaulaceae
Centrolepidaceae
Bromeliaceae
Mayacaceae
Poaceae
Rapateaceae
Joinvilleaceae
Xyridaceae
Sabiaceae
Buxaceae
Nelumbonaceae
Proteaceae
Menispermaceae
Lardizabalaceae
Berberidaceae
Ranunculaceae
Papaveraceae
Cynomoriaceae
Dilleniaceae
Gunneraceae
Myrothamnaceae
Balanophoraceae
Olacaceae
Santalaceae
Opiliaceae
Loranthaceae
Hamamelidaceae
Saxifragaceae
Cercidiphyllaceae
Crassulaceae
Grossulariaceae
Paeoniaceae
Molluginaceae
Droseraceae
Dioncophyllaceae
Caryophyllaceae
Plumbaginaceae
Gisekiaceae
Nyctaginaceae
Phytolaccaceae
Aizoaceae
Polygonaceae
Tamaricaceae
Petiveriaceae
Amaranthaceae
Ancistrocladaceae
Talinaceae
Portulacaceae
Basellaceae
Cactaceae
Loasaceae
Cornaceae
Hydrangeaceae
Adoxaceae
Caprifoliaceae
Helwingiaceae
Aquifoliaceae
Torricelliaceae
Apiaceae
Pittosporaceae
Araliaceae
Campanulaceae
Goodeniaceae
Menyanthaceae
Calyceraceae
Asteraceae
Sapotaceae
Symplocaceae
Fouquieriaceae
Styracaceae
Primulaceae
Polemoniaceae
Marcgraviaceae
Actinidiaceae
Ericaceae
Theaceae
Sarraceniaceae
Ebenaceae
Pentaphylacaceae
Balsaminaceae
Clethraceae
Napoleona
Barringtonia
Careya
Eucommiaceae
Icacinaceae
Vahliaceae
Boraginaceae
Solanaceae
Convolvulaceae
Hydrophyllaceae
Hydroleaceae
Gelsemiaceae
Gentianaceae
Apocynaceae
Rubiaceae
Loganiaceae
Plantaginaceae
Pedaliaceae
Verbenaceae
Scrophulariaceae
Stilbaceae
Byblidaceae
Acanthaceae
Gesneriaceae
Orobanchaceae
Lamiaceae
Martyniaceae
Bignoniaceae
Paulowniaceae
Oleaceae
Rehmannia
Vitaceae
Picramniaceae
Gerrardinaceae
Geraniaceae
Melianthaceae
Aphloiaceae
Stachyuraceae
Cistaceae
Dipterocarpaceae
Sarcolaenaceae
Malvaceae
Bixaceae
Thymelaeaceae
Sapindaceae
Meliaceae
Rutaceae
Burseraceae
Anacardiaceae
Simaroubaceae
Nitrariaceae
Myrtaceae
Combretaceae
Melastomataceae
Onagraceae
Penaeaceae
Vochysiaceae
Crypteroniaceae
Lythraceae
Capparaceae
Salvadoraceae
Caricaceae
Gyrostemonaceae
Tropaeolaceae
Cleomaceae
Brassicaceae
Akaniaceae
Moringaceae
Lepidobotryaceae
Celastraceae
Zygophyllaceae
Krameriaceae
Cunoniaceae
Oxalidaceae
Elaeocarpaceae
Fabaceae
Quillajaceae
Polygalaceae
Coriariaceae
Cucurbitaceae
Begoniaceae
Anisophylleaceae
Juglandaceae
Myricaceae
Betulaceae
Casuarinaceae
Ticodendraceae
Fagaceae
Rhamnaceae
Urticaceae
Elaeagnaceae
Rosaceae
Moraceae
Cannabaceae
Dirachmaceae
Ulmaceae
Passifloraceae
Chrysobalanaceae
Linaceae
Ixonanthaceae
Ochnaceae
Rafflesiaceae
Irvingiaceae
Clusiaceae
Podostemaceae
Achariaceae
Phyllanthaceae
Rhizophoraceae
Putranjivaceae
Erythroxylaceae
Violaceae
Humiriaceae
Dichapetalaceae
Caryocaraceae
Salicaceae
Calophyllaceae
Malpighiaceae
Peraceae
Hypericaceae
Euphorbiaceae
Pandaceae

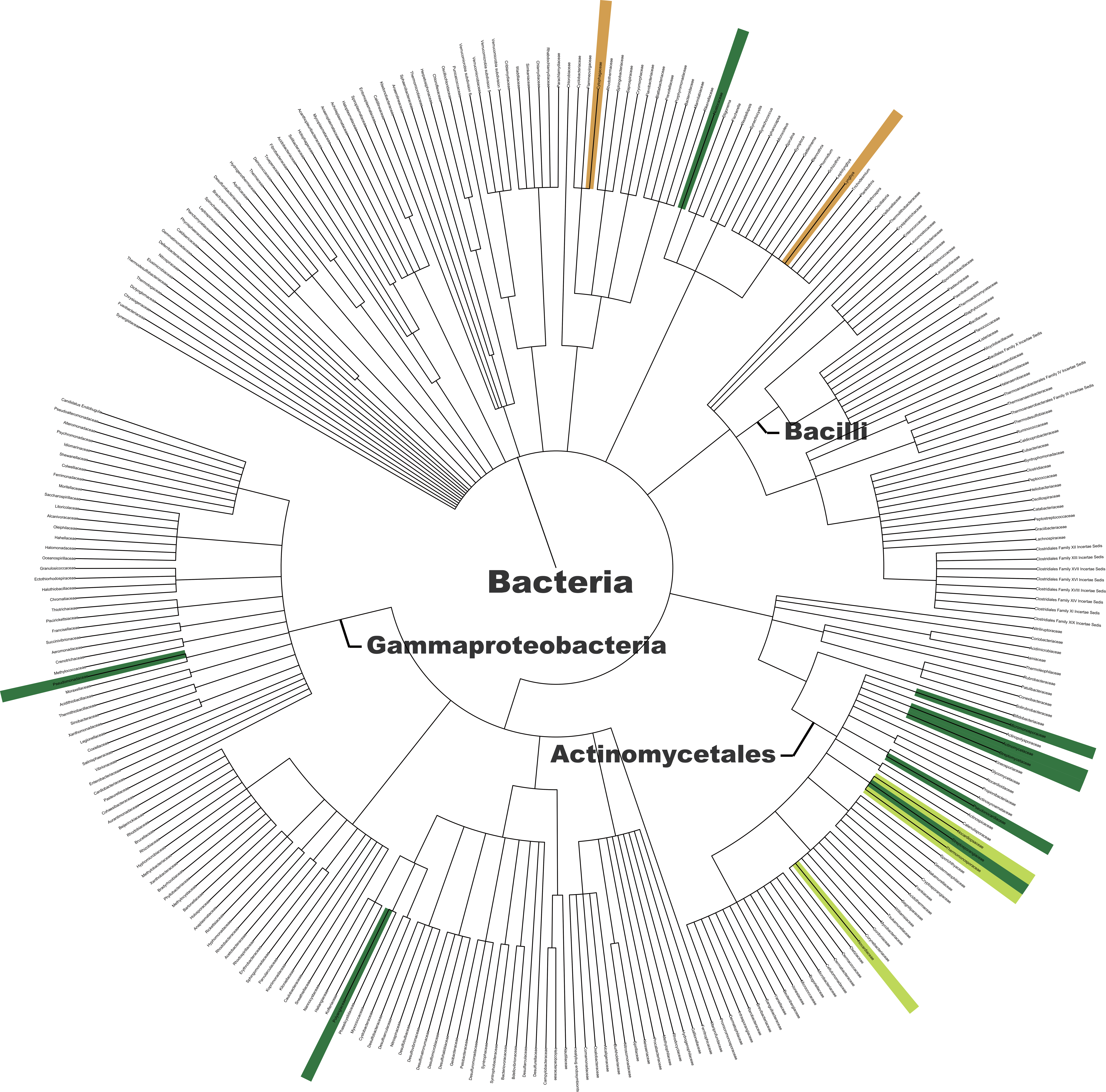
SI Appendix Figure S7 Distribution patterns of the known bioactive natural products (including the natural product leads of approved and clinical-trial drugs) in the species-families of fungi kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Fungi
Agaricales
Hypocreales
Neocallimastigaceae
Mucoraceae
Catenariaceae
Blastocladiaceae
Physodermataceae
Coelomomycetaceae
Glomeraceae
Paraglomeraceae
Geosiphonaceae
Ambisporaceae
Archaeosporaceae
Diversisporaceae
Scutellosporaceae
Acaulosporaceae
Pacisporaceae
Gigasporaceae
Oedogoniomycetaceae
Harpochytriaceae
Monoblepharidaceae
Gonapodyaceae
Lobulomycetaceae
Cladochytriaceae
Olpidiaceae
Spizellomycetaceae
Kappamycetaceae
Rhizophydiaceae
Terramycetaceae
Megachytriaceae
Endochytriaceae
Chytridiaceae
Synchytriaceae
Entorrhizaceae
Myriococcum
Chionosphaeraceae
Agaricostilbaceae
Hoehnelomycetaceae
Phleogenaceae
Saccoblastiaceae
Anthracoideaceae
Ustilaginaceae
Cintractiaceae
Doassansiopsaceae
Floromycetaceae
Melanotaeniaceae
Glomosporiaceae
Urocystaceae
Tilletiaceae
Entylomataceae
Malasseziaceae
Ceraceosoraceae
Doassansiaceae
Rhamphosporaceae
Melaniellaceae
Microstromataceae
Volvocisporiaceae
Quambalariaceae
Georgefischeriaceae
Eballistraceae
Gjaerumiaceae
Tilletiariaceae
Graphiolaceae
Brachybasidiaceae
Cryptobasidiaceae
Exobasidiaceae
Dacrymycetaceae
Cerinomycetaceae
Cystofilobasidiaceae
Filobasidiaceae
Tremellaceae
Christianseniaceae
Sirobasidiaceae
Syzygosporaceae
Aporpiaceae
Hysterangiaceae
Gomphaceae
Gautieriaceae
Clathraceae
Phallaceae
Sphaerobolaceae
Geastraceae
Trechisporaceae
Sebacinaceae
Corticiaceae
Gloeophyllaceae
Schizoporaceae
Hymenochaetaceae
Thelephoraceae
Typhulaceae
Bankeraceae
Exidiaceae
Auriculariaceae
Hyaloriaceae
Tulasnellaceae
Hydnaceae
Ceratobasidiaceae
Botryobasidiaceae
Cantharellaceae
Clavulinaceae
Peniophoraceae
Russulaceae
Hericiaceae
Epitheliaceae
Stereaceae
Meruliaceae
Hyphodermataceae
Podoscyphaceae
Albatrellaceae
Echinodontiaceae
Bondarzewiaceae
Gloeocystidiellaceae
Sparassidaceae
Pterulaceae
Hapalopilaceae
Auriscalpiaceae
Xenasmataceae
Coriolaceae
Lentinaceae
Ganodermataceae
Phanerochaetaceae
Lachnocladiaceae
Polyporaceae
Meripilaceae
Dictyonemataceae
Atheliaceae
Amylocorticiaceae
Jaapiaceae
Melanogastraceae
Gastrosporiaceae
Stephanosporaceae
Tapinellaceae
Gyrodontaceae
Paxillaceae
Serpulaceae
Coniophoraceae
Hygrophoropsidaceae
Boletaceae
Diplocystaceae
Leucogastraceae
Rhizopogonaceae
Suillaceae
Truncocolumellaceae
Gomphidiaceae
Pisolithaceae
Sclerodermataceae
Boletinellaceae
Astraeaceae
Calostomataceae
Gyroporaceae
Pleurotaceae
Hymenogastraceae
Phelloriniaceae
Cyphellaceae
Nidulariaceae
Tricholomataceae
Hydnangiaceae
Mesophelliaceae
Hygrophoraceae
Agaricaceae
Clavariaceae
Amanitaceae
Mycenastraceae
Bolbitiaceae
Favolaschiaceae
Strophariaceae
Omphalotaceae
Psathyrellaceae
Entolomataceae
Lycoperdaceae
Podaxaceae
Cortinariaceae
Pluteaceae
Niaceae
Schizophyllaceae
Fistulinaceae
Marasmiaceae
Crepidotaceae
Neolectaceae
Pneumocystidaceae
Schizosaccharomycetaceae
Taphrinaceae
Protomycetaceae
Microsphaeropsis
Scytalidium
Spicellum
Zalerion
Trichothecium
Sarocladium
Humicola
Phoma
Acremonium
Calcarisporium
Glarea
Morinia
Metschnikowiaceae
Phaffomycetaceae
Saccharomycetaceae
Trichomonascaceae
Ascoideaceae
Cephaloascaceae
Lipomycetaceae
Saccharomycopsidaceae
Dipodascaceae
Wickerhamomycetaceae
Endomycetaceae
Saccharomycodaceae
Orbiliaceae
Helvellaceae
Glaziellaceae
Ascodesmidaceae
Pyronemataceae
Caloscyphaceae
Sarcosomataceae
Sarcoscyphaceae
Karstenellaceae
Rhizinaceae
Tuberaceae
Discinaceae
Chorioactidaceae
Morchellaceae
Ascobolaceae
Pezizaceae
Geoglossaceae
Eremithallaceae
Peltulaceae
Lichinaceae
Heppiaceae
Mycocaliciaceae
Sphinctrinaceae
Verrucariaceae
Chaetothyriaceae
Herpotrichiellaceae
Requienellaceae
Pyrenulaceae
Coryneliaceae
Elaphomycetaceae
Trichocomaceae
Ajellomycetaceae
Gymnoascaceae
Arachnomycetaceae
Ascosphaeraceae
Eremascaceae
Arthrodermataceae
Onygenaceae
Chrysosporium
Acarosporaceae
Candelariaceae
Umbilicariaceae
Baeomycetaceae
Agyriaceae
Anamylopsoraceae
Ochrolechiaceae
Megasporaceae
Pertusariaceae
Icmadophilaceae
Gomphillaceae
Graphidaceae
Porinaceae
Asterothyriaceae
Stictidaceae
Odontotremataceae
Coenogoniaceae
Gyalectaceae
Coccocarpiaceae
Collemataceae
Pannariaceae
Lobariaceae
Peltigeraceae
Placynthiaceae
Nephromataceae
Ectolechiaceae
Catillariaceae
Sphaerophoraceae
Crocyniaceae
Micareaceae
Arthrorhaphidaceae
Pilocarpaceae
Haematommataceae
Lecanoraceae
Parmeliaceae
Stereocaulaceae
Caliciaceae
Ramalinaceae
Dactylosporaceae
Cladoniaceae
Anziaceae
Psoraceae
Megalariaceae
Ophioparmaceae
Cetradoniaceae
Lecideaceae
Gypsoplacaceae
Loxosporaceae
Mycoblastaceae
Physciaceae
Porpidiaceae
Rhizocarpaceae
Roccellaceae
Chrysotrichaceae
Arthoniaceae
Tubeufiaceae
Paraliomyces
Eremomycetaceae
Microthyriaceae
Patellariaceae
Trypetheliaceae
Acrospermaceae
Botryosphaeriaceae
Myriangiaceae
Elsinoaceae
Dothideaceae
Dothioraceae
Coleophoma
Hortaea
Euantennariaceae
Piedraiaceae
Mycosphaerellaceae
Davidiellaceae
Coccodiniaceae
Teratosphaeriaceae
Dissoconiaceae
Schizothyriaceae
Capnodiaceae
Aliquandostipitaceae
Mytilinidiaceae
Hysteriaceae
Pleomassariaceae
Teichosporaceae
Melanommataceae
Diademaceae
Testudinaceae
Shiraiaceae
Massarinaceae
Didymosphaeriaceae
Dothidotthiaceae
Arthopyreniaceae
Massariaceae
Cucurbitariaceae
Lindgomycetaceae
Lentitheciaceae
Naetrocymbaceae
Delitschiaceae
Hypsostromataceae
Lophiostomataceae
Phaeotrichaceae
Dacampiaceae
Tetraplosphaeriaceae
Montagnulaceae
Aigialaceae
Morosphaeriaceae
Fenestellaceae
Sporormiaceae
Amniculicolaceae
Mauritiana
Corynespora
Ascochyta
Pleosporaceae
Didymellaceae
Leptosphaeriaceae
Phaeosphaeriaceae
Pyxidiophoraceae
Laboulbeniaceae
Ceratomycetaceae
Microglossum
Myxotrichaceae
Leotiaceae
Bulgariaceae
Hemiphacidiaceae
Helotiaceae
Sclerotiniaceae
Dermateaceae
Vibrisseaceae
Phacidiaceae
Rutstroemiaceae
Hyaloscyphaceae
Loramycetaceae
Graphostromataceae
Hyponectriaceae
Xylariaceae
Diatrypaceae
Clypeosphaeriaceae
Amphisphaeriaceae
Libertella
Meliolaceae
Phyllachoraceae
Koralionastetaceae
Trichosphaeriaceae
Nigrospora
Lulworthiaceae
Spathulosporaceae
Coniochaetaceae
Boliniaceae
Chaetosphaeriaceae
Apiosporaceae
Calosphaeriaceae
Magnaporthaceae
Ophiostomataceae
Kathistaceae
Melanconidaceae
Valsaceae
Sydowiellaceae
Cryphonectriaceae
Gnomoniaceae
Sordariaceae
Annulatascaceae
Lasiosphaeriaceae
Pleurotremataceae
Chaetomiaceae
Cephalothecaceae
Paecilomyces
Melanosporaceae
Glomerellaceae
Microascaceae
Halosphaeriaceae
Chadefaudiellaceae
Wardomyces
Nitschkiaceae
Scortechiniaceae
Chaetosphaerellaceae
Bertiaceae
Ophiocordycipitaceae
Niessliaceae
Clavicipitaceae
Ceratostomataceae
Cordycipitaceae
Hypocreaceae
Nectriaceae
Bionectriaceae
Emericellopsis
Acremonium
Cephalosporium
Verticillium
Gliocladium
Fusarium
Stachybotrys
Myrothecium

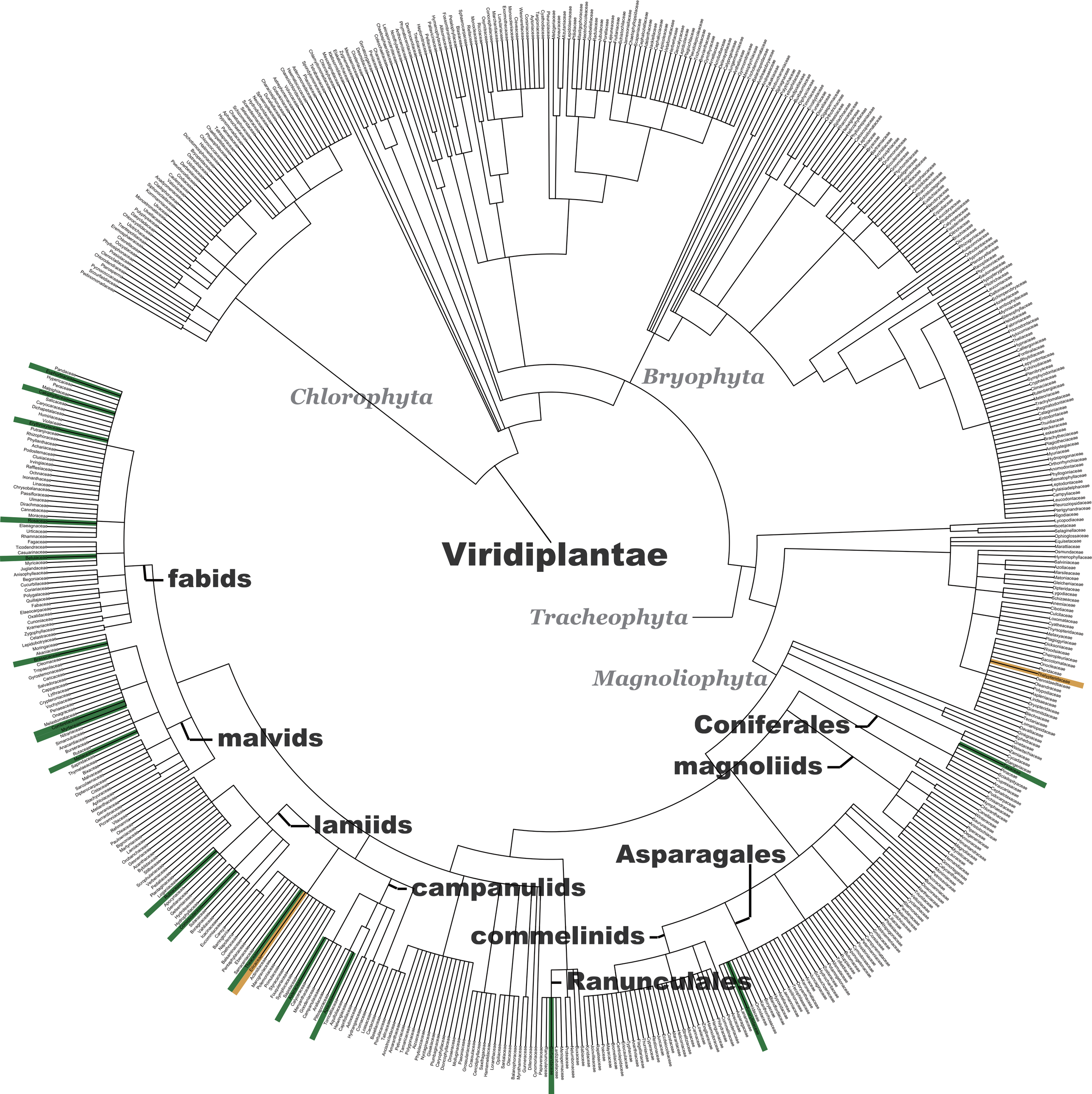
SI Appendix Figure S8 Distribution patterns of the known bioactive natural products (including the natural product leads of approved and clinical-trial drugs) in the species-families of metazoa kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Demospongiae
Euarchontoglires
Cetartiodactyla
Scleroglossa
Metazoa
Hirudinea

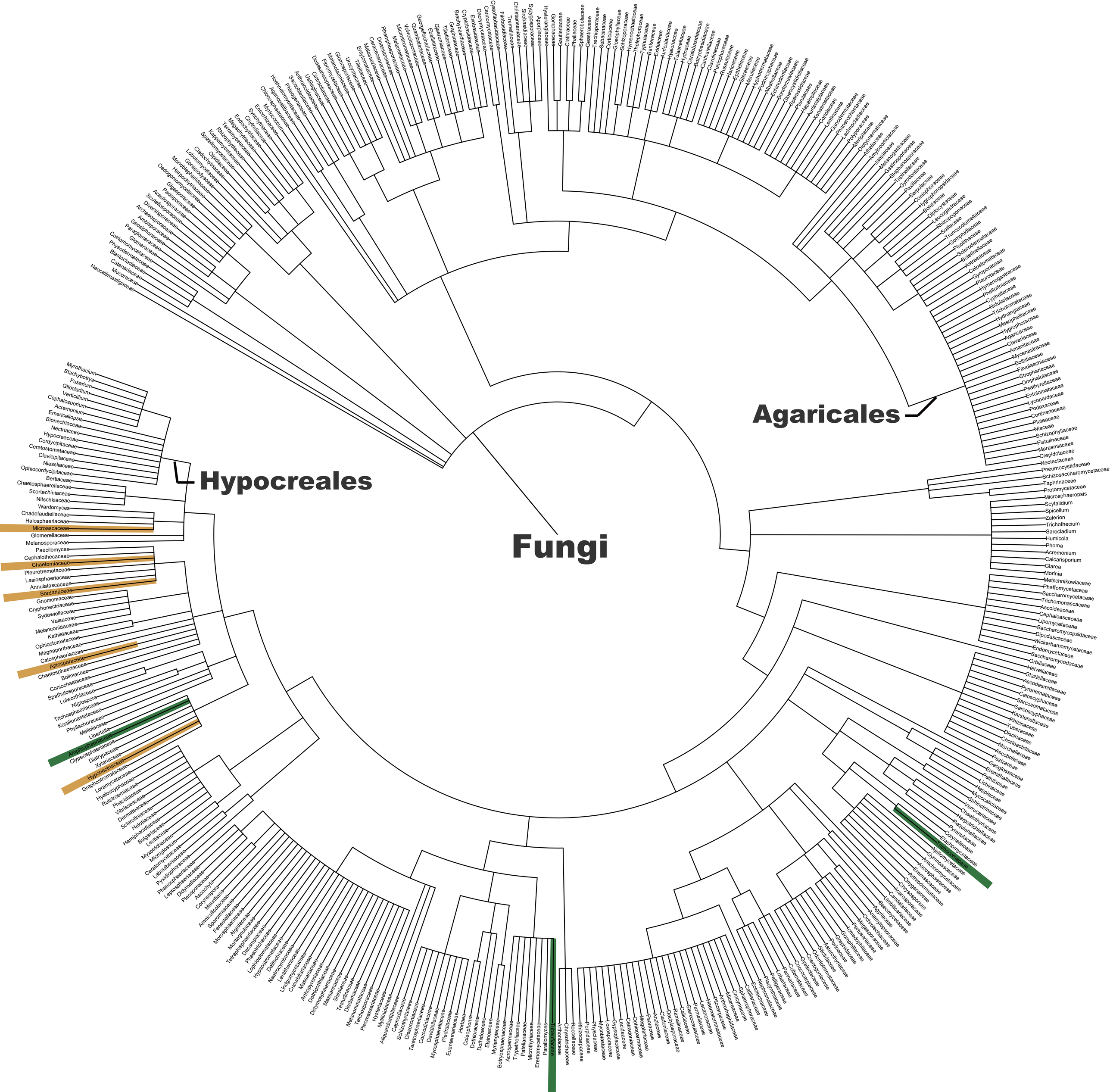
SI Appendix Figure S9 Distribution patterns of the advanced-stage preclinical-trial drugs (natural products or natural product leads) in the species-families of Bacterial super-kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Bacteria
Bacilli
Gammaproteobacteria
Actinomycetales
Synergistaceae
Fusobacteriaceae
Chrysiogenaceae
Dictyoglomaceae
Thermotogaceae
Thermodesulfobacteriaceae
Elusimicrobiaceae
Nitrospiraceae
Deferribacteraceae
Gemmatimonadaceae
Caldisericaceae
Phycisphaeraceae
Planctomycetaceae
Leptospiraceae
Spirochaetaceae
Brachyspiraceae
Desulfurobacteriaceae
Aquificaceae
Hydrogenothermaceae
Thermaceae
Deinococcaceae
Trueperaceae
Fibrobacteraceae
Acidobacteriaceae
Solibacteraceae
Holophagaceae
Acanthopleuribacteraceae
Mycoplasmataceae
Anaeroplasmataceae
Acholeplasmataceae
Haloplasmataceae
Spiroplasmataceae
Entomoplasmataceae
Caldilineaceae
Ktedonobacteraceae
Anaerolineaceae
Sphaerobacteraceae
Thermomicrobiaceae
Herpetosiphonaceae
Chloroflexaceae
Oscillochloridaceae
Puniceicoccaceae
Verrucomicrobia subdivision 6
Verrucomicrobiaceae
Verrucomicrobia subdivision 5
Verrucomicrobia subdivision 3
Criblamydiaceae
Waddliaceae
Simkaniaceae
Chlamydiaceae
Rhabdochlamydiaceae
Parachlamydiaceae
Chlorobiaceae
Cyclobacteriaceae
Flammeovirgaceae
Cytophagaceae
Rhodothermaceae
Sphingobacteriaceae
Saprospiraceae
Cryomorphaceae
Flavobacteriaceae
Blattabacteriaceae
Prevotellaceae
Porphyromonadaceae
Bacteroidaceae
Marinilabiaceae
Rikenellaceae
Nostocaceae
Stigonema
Fischerella
Westiellopsis
Synechocystis
Synechococcus
Aphanocapsa
Microcoleus
Spirulina
Symploca
Geitlerinema
Blennothrix
Phormidium
Schizothrix
Leptolyngbya
Lyngbya
Trichodesmium
Planktothrix
Arthrospira
Oscillatoria
Veillonellaceae
Thermolithobacteraceae
Erysipelotrichaceae
Enterococcaceae
Leuconostocaceae
Carnobacteriaceae
Aerococcaceae
Streptococcaceae
Lactobacillaceae
Sporolactobacillaceae
Pasteuriaceae
Paenibacillaceae
Thermoactinomycetaceae
Staphylococcaceae
Bacillaceae
Planococcaceae
Listeriaceae
Alicyclobacillaceae
Bacillales Family X Incertae Sedis
Natranaerobiaceae
Halobacteroidaceae
Halanaerobiaceae
Thermoanaerobacterales Family IV Incertae Sedis
Thermoanaerobacteraceae
Thermoanaerobacterales Family III Incertae Sedis
Thermodesulfobiaceae
Ruminococcaceae
Caldicoprobacteraceae
Eubacteriaceae
Syntrophomonadaceae
Clostridiaceae
Peptococcaceae
Heliobacteriaceae
Oscillospiraceae
Catabacteriaceae
Peptostreptococcaceae
Graciibacteraceae
Lachnospiraceae
Clostridiales Family XII Incertae Sedis
Clostridiales Family XIII Incertae Sedis
Clostridiales Family XVII Incertae Sedis
Clostridiales Family XVI Incertae Sedis
Clostridiales Family XVIII Incertae Sedis
Clostridiales Family XIV Incertae Sedis
Clostridiales Family XI Incertae Sedis
Clostridiales Family XIX Incertae Sedis
Nitriliruptoraceae
Coriobacteriaceae
Acidimicrobiaceae
Iamiaceae
Thermoleophilaceae
Rubrobacteraceae
Patulibacteraceae
Conexibacteraceae
Solirubrobacteraceae
Bifidobacteriaceae
Micromonosporaceae
Actinopolysporaceae
Actinomycetaceae
Streptomycetaceae
Kineosporiaceae
Glycomycetaceae
Nocardioidaceae
Propionibacteriaceae
Actinosynnemataceae
Pseudonocardiaceae
Actinospicaceae
Catenulisporaceae
Nocardiopsaceae
Streptosporangiaceae
Thermomonosporaceae
Sporichthyaceae
Geodermatophilaceae
Nakamurellaceae
Cryptosporangiaceae
Frankiaceae
Acidothermaceae
Segniliparaceae
Williamsiaceae
Tsukamurellaceae
Mycobacteriaceae
Gordoniaceae
Corynebacteriaceae
Nocardiaceae
Dietziaceae
Dermacoccaceae
Dermabacteraceae
Cellulomonadaceae
Microbacteriaceae
Bogoriellaceae
Micrococcaceae
Jonesiaceae
Beutenbergiaceae
Yaniellaceae
Sanguibacteraceae
Brevibacteriaceae
Rarobacteraceae
Intrasporangiaceae
Dermatophilaceae
Promicromonosporaceae
Mariprofundaceae
Ferritrophicaceae
Gallionellaceae
Hydrogenophilaceae
Rhodocyclaceae
Methylophilaceae
Procabacteriaceae
Neisseriaceae
Spirillaceae
Nitrosomonadaceae
Burkholderiaceae
Alcaligenaceae
Oxalobacteraceae
Comamonadaceae
mealybug endosymbionts
Nautiliaceae
Helicobacteraceae
Campylobacteraceae
Desulfurellaceae
Desulfarculaceae
Bdellovibrionaceae
Bacteriovoracaceae
Syntrophobacteraceae
Syntrophaceae
Desulfuromonadaceae
Pelobacteraceae
Geobacteraceae
Desulfohalobiaceae
Desulfomicrobiaceae
Desulfonatronumaceae
Desulfovibrionaceae
Desulfobulbaceae
Nitrospinaceae
Desulfoarculaceae
Desulfobacteraceae
Cystobacteraceae
Myxococcaceae
Phaselicystidaceae
Polyangiaceae
Kofleriaceae
Haliangiaceae
Nannocystaceae
Sneathiellaceae
Caulobacteraceae
Kiloniellaceae
Kopriimonadaceae
Parvularculaceae
Sphingomonadaceae
Erythrobacteraceae
Rhodospirillaceae
Acetobacteraceae
Rhodobacteraceae
Hyphomonadaceae
Rickettsiaceae
Anaplasmataceae
Holosporaceae
Bartonellaceae
Methylocystaceae
Phyllobacteriaceae
Bradyrhizobiaceae
Xanthobacteraceae
Methylobacteriaceae
Hyphomicrobiaceae
Rhizobiaceae
Brucellaceae
Rhodobiaceae
Beijerinckiaceae
Aurantimonadaceae
Cohaesibacteraceae
Pasteurellaceae
Cardiobacteriaceae
Enterobacteriaceae
Vibrionaceae
Salinisphaeraceae
Coxiellaceae
Legionellaceae
Xanthomonadaceae
Sinobacteraceae
Thermithiobacillaceae
Acidithiobacillaceae
Moraxellaceae
Pseudomonadaceae
Methylococcaceae
Crenotrichaceae
Aeromonadaceae
Succinivibrionaceae
Francisellaceae
Piscirickettsiaceae
Thiotrichaceae
Chromatiaceae
Halothiobacillaceae
Ectothiorhodospiraceae
Granulosicoccaceae
Oceanospirillaceae
Halomonadaceae
Hahellaceae
Oleiphilaceae
Alcanivoracaceae
Litoricolaceae
Saccharospirillaceae
Moritellaceae
Ferrimonadaceae
Colwelliaceae
Shewanellaceae
Idiomarinaceae
Psychromonadaceae
Alteromonadaceae
Pseudoalteromonadaceae
Candidatus Endobugula

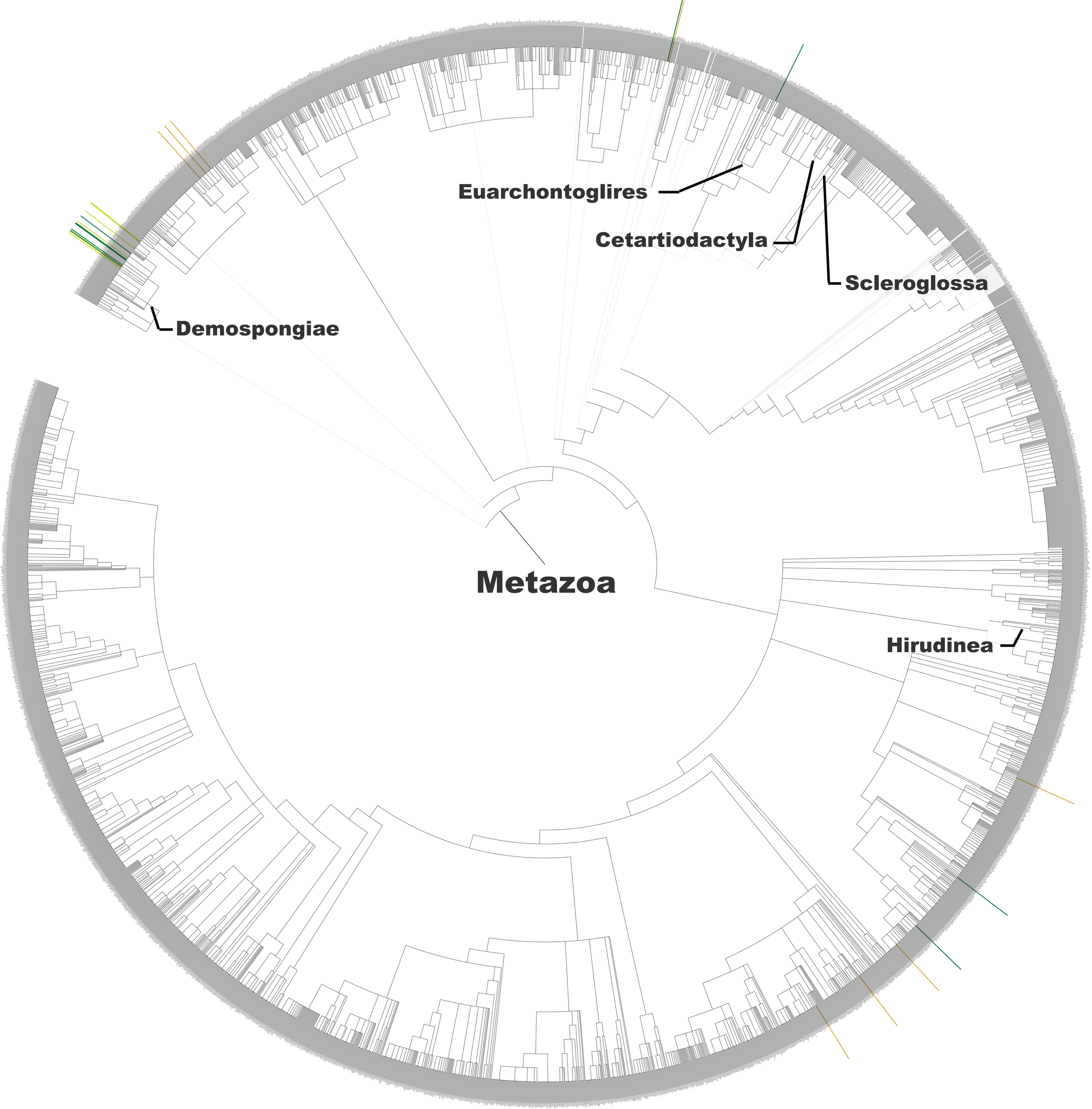
SI Appendix Figure S10 Distribution patterns of the advanced-stage preclinical-trial drugs (natural products or natural product leads) in the species-families of viridiplantae kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Viridiplantae
Chlorophyta
Bryophyta
Tracheophyta
Magnoliophyta
fabids
malvids
lamiids
campanulids
commelinids
Ranunculales
Asparagales
Coniferales
magnoliids
Pandaceae
Euphorbiaceae
Hypericaceae
Putranjivaceae
Rhizophoraceae
Phyllanthaceae
Achariaceae
Podostemaceae
Clusiaceae
Irvingiaceae
Rafflesiaceae
Ochnaceae
Ixonanthaceae
Linaceae
Chrysobalanaceae
Passifloraceae
Ulmaceae
Dirachmaceae
Cannabaceae
Moraceae
Rosaceae
Elaeagnaceae
Urticaceae
Rhamnaceae
Fagaceae
Ticodendraceae
Casuarinaceae
Betulaceae
Myricaceae
Juglandaceae
Anisophylleaceae
Begoniaceae
Cucurbitaceae
Coriariaceae
Polygalaceae
Quillajaceae
Fabaceae
Elaeocarpaceae
Oxalidaceae
Cunoniaceae
Krameriaceae
Zygophyllaceae
Celastraceae
Lepidobotryaceae
Moringaceae
Akaniaceae
Brassicaceae
Cleomaceae
Tropaeolaceae
Gyrostemonaceae
Caricaceae
Salvadoraceae
Capparaceae
Lythraceae
Crypteroniaceae
Vochysiaceae
Penaeaceae
Onagraceae
Melastomataceae
Combretaceae
Myrtaceae
Nitrariaceae
Simaroubaceae
Anacardiaceae
Burseraceae
Rutaceae
Meliaceae
Sapindaceae
Thymelaeaceae
Bixaceae
Malvaceae
Sarcolaenaceae
Dipterocarpaceae
Cistaceae
Stachyuraceae
Aphloiaceae
Melianthaceae
Geraniaceae
Gerrardinaceae
Picramniaceae
Vitaceae
Rehmanniaceae
Oleaceae
Paulowniaceae
Bignoniaceae
Martyniaceae
Lamiaceae
Orobanchaceae
Gesneriaceae
Acanthaceae
Byblidaceae
Stilbaceae
Scrophulariaceae
Verbenaceae
Plantaginaceae
Pedaliaceae
Loganiaceae
Retziaceae
Apocynaceae
Gentianaceae
Hydrostachyaceae
Hydrophyllaceae
Boraginaceae
Solanaceae
Icacinaceae
Vahliaceae
Eucommiaceae
Carlemanniaceae
Garryales
Bruniaceae
Columelliaceae
Paracryphiaceae
Escalloniaceae
Pittosporaceae
Tetracarpaeaceae
Aquifoliaceae
Helwingiaceae
Cardiopteridaceae
Stemonuraceae
Icacinaceae
Metteniusaceae
Oncothecaceae
Apiales
Araliaceae
Myodocarpaceae
Torricelliaceae
Pennantiaceae
Griseliniaceae
Hydrangeaceae
Adoxaceae
Caprifoliaceae
Diapensiaceae
Ericaceae
Styracaceae
Sphenocleaceae
Cornales
Loasaceae
Cactaceae
Basellaceae
Portulacaceae
Talinaceae
Ancistrocladaceae
Amaranthaceae
Petiveriaceae
Tamaricaceae
Polygonaceae
Ataccaceae
Phytolaccaceae
Nyctaginaceae
Gisekiaceae
Plumbaginaceae
Caryophyllaceae
Dioncophyllaceae
Drosera
Nepenthaceae
Molluginaceae
Paeoniaceae
Grossulariaceae
Crassulaceae
Cercidiphyllaceae
Saxifragaceae
Haloragaceae
Hamamelidaceae
Loropetalaceae
Cercidiphyllaceae
Daphniphyllaceae
Santalaceae
Olacaceae
Balanophoraceae
Myrothamnaceae
Gunneraceae
Dilleniaceae
Cynomoriaceae
Papaveraceae
Ranunculaceae
Lardizabalaceae
Menispermaceae
Proteaceae
Nelumbonaceae
Buxaceae
Sabiaceae
Trochodendraceae
Tetracentraceae
Ceratophyllaceae
Chloranthaceae
Piperaceae
Saururaceae
Aristolochiaceae
Canellaceae
Winteraceae
Degeneriaceae
Himantandraceae
Eupomatiaceae
Austrobaileyaceae
Magnoliaceae
Annonaceae
Myristicaceae
Calycanthaceae
Hernandiaceae
Lauraceae
Monimiaceae
Petrosaviaceae
Acoraceae
Araceae
Dioscoreaceae
Nartheciaceae
Burmanniaceae
Thismiaceae
Corsiaceae
Tecophilaeaceae
Cyanastraceae
Cyclanthaceae
Stemonaceae
Pandanaceae
Melanthiaceae
Colchicaceae
Petermanniaceae
Alstroemeriaceae
Philesiaceae
Luzuriagaceae
Ripogonaceae
Smilacaceae
Campynemataceae
Pontederiaceae
Hydrocharitaceae
Aponogetonaceae
Juncaginaceae
Scheuchzeriaceae
Potamogetonaceae
Ruppiaceae
Zannichelliaceae
Posidoniaceae
Cymodoceaceae
Hydrocharitaceae
Tofieldiaceae
Alismataceae
Limnocharitaceae
Butomaceae
Hydatellaceae
Triuridaceae
Petrosaviaceae
Araceae
Dioscoreaceae
Nartheciaceae
Burmanniaceae
Thismiaceae
Corsiaceae
Tecophilaeaceae
Cyanastraceae
Cyclanthaceae
Stemonaceae
Pandanaceae
Melanthiaceae
Colchicaceae
Petermanniaceae
Alstroemeriaceae
Philesiaceae
Luzuriagaceae
Ripogonaceae
Smilacaceae
Campynemataceae
Pontederiaceae
Hydrocharitaceae
Aponogetonaceae
Juncaginaceae
Scheuchzeriaceae
Potamogetonaceae
Ruppiaceae
Zannichelliaceae
Posidoniaceae
Cymodoceaceae
Hydrocharitaceae
Tofieldiaceae
Alismataceae
Limnocharitaceae
Butomaceae
Hydatellaceae
Triuridaceae
Asparagaceae
Orchidaceae
Xanthorrhoeaceae
Blandfordiaceae
Boryaceae
Hypoxidaceae
Iridaceae
Asteliaceae
Doryanthaceae
Ixioliriaceae
Lanariaceae
Xeronemataceae
Velloziaceae
Dasypogonaceae
Arecaceae
Commelinaceae
Haemodoraceae
Philydraceae
Pontederiaceae
Hanguanaceae
Typhaceae
Bromeliaceae
Mayacaceae
Rapateaceae
Xyridaceae
Eriocaulaceae
Poaceae
Cyperaceae
Thurniaceae
Juncaceae
Flagellariaceae
Anarthriaceae
Centrolepidaceae
Restionaceae
Ecdeiocoleaceae
Joinvilleaceae
Strelitziaceae
Heliconiaceae
Musaceae
Lowiaceae
Cannaceae
Marantaceae
Costaceae
Zingiberaceae
Gnetales
Ephedraceae
Welwitschiaceae
Gnetaceae
Zamiaceae
Cycadaceae
Stangeriaceae
Pinaceae
Sciadopityaceae
Cupressaceae
Araucariaceae
Cephalotaxaceae
Podocarpaceae
Taxaceae
Schisandraceae
Nymphaeaceae
Amborellaceae
Chloranthaceae
Canellaceae
Winteraceae
Saururaceae
Aristolochiaceae
Piperaceae
Degeneriaceae
Himantandraceae
Eupomatiaceae
Austrobaileyaceae
Magnoliaceae
Annonaceae
Myristicaceae
Calycanthaceae
Hernandiaceae
Lauraceae
Monimiaceae
Ceratophyllaceae
Trochodendraceae
Tetracentraceae
Sabiaceae
Nelumbonaceae
Proteaceae
Menispermaceae
Lardizabalaceae
Ranunculaceae
Papaveraceae
Cynomoriaceae
Gunneraceae
Dilleniaceae
Myrothamnaceae
Balanophoraceae
Santalaceae
Olacaceae
Loranthaceae
Cervantesiaceae
Ximeniaceae
Erythropalaceae
Schoepfiaceae
Strombosiaceae
Olacaceae
Aptandraceae
Octoknemataceae
Medusandraceae
Peridiscaceae
Dipentodontaceae
Huaceae
Pentaphylacaceae
Bonnetiaceae
Ochnaceae
Quiinaceae
Sladeniaceae
Caryocaraceae
Lecythidaceae
Marcgraviaceae
Tetrameristaceae
Pellicieraceae
Actinidiaceae
Roridulaceae
Sarraceniaceae
Ericaceae
Diapensiaceae
Styracaceae
Sphenocleaceae
Primulaceae
Myrsinaceae
Theaceae
Symplocaceae
Ebenaceae
Sapotaceae
Balsaminaceae
Pentaphylacaceae
Clethraceae
Cyrillaceae
Actinidiaceae
Roridulaceae
Sarraceniaceae
Ericaceae
Diapensiaceae
Styracaceae
Sphenocleaceae
Primulaceae
Myrsinaceae
Theaceae
Symplocaceae
Ebenaceae
Sapotaceae
Balsaminaceae
Pentaphylacaceae
Clethraceae
Cyrillaceae
Bartramiaceae
Rhizogoniaceae
Aulacomniaceae
Orthodontiaceae
Hypnodendraceae
Pterobryellaceae
Racopilaceae
Pylaisiaceae
Sauloniaceae
Hypopterygiaceae
Hypnaceae
Leucomiaceae
Daltoniaceae
Sorapillaceae
Hookeriaceae
Lembophyllaceae
Myriniaceae
Stereophyllaceae
Helodiaceae
Fabroniaceae
Prionodontaceae
Hylocomiaceae
Thelenellaceae
Thelaceae
Hymenophyllaceae
Callicostaceae
Fontinalaceae
Rhytidiaceae
Lepyrodontaceae
Echinodiaceae
Pterobryaceae
Symphyodontaceae
Cryphaeaceae
Climaciaceae
Rutenbergiaceae
Meteoriaceae
Trachylomataceae
Regmatodontaceae
Catagoniaceae
Entodontaceae
Thuidiaceae
Neckeraceae
Leskeaceae
Brachytheciaceae
Plagiotheciaceae
Amblystegiaceae
Myuriaceae
Hydropogonaceae
Orthorrhynchiaceae
Anomodontaceae
Phyllogoniaceae
Sematophyllaceae
Leptodontaceae
Pylaisiadelphaceae
Campyliaceae
Leucodontaceae
Pleurozopsidaceae
Pterigynandraceae
Rigodiaceae
Lycopodiaceae
Isoetaceae
Selaginellaceae
Ophioglossaceae
Equisetaceae
Marattiaceae
Osmundaceae
Hymenophyllaceae
Salviniaceae
Azollaceae
Marsileaceae
Matoniaceae
Gleicheniaceae
Dipteridaceae
Lygodiaceae
Schizaeaceae
Anemiaceae
Cibotiaceae
Culcitaceae
Loxomataceae
Cyatheaceae
Thyrsopteridaceae
Metaxyaceae
Plagiogyriaceae
Dicksoniaceae
Woodsiaceae
Cheiropleuriaceae
Saccolomataceae
Onocleaceae
Pteridaceae
Thelypteridaceae
Dennstaedtiaceae
Oleandraceae
Polypodiaceae
Aspleniaceae
Lindsaeaceae
Dryopteridaceae
Grammitidaceae
Blechnaceae
Tectariaceae
Lomariopsidaceae
Davalliaceae
Ginkgoaceae
Ephedraceae
Gnetaceae
Welwitschiaceae
Zamiaceae
Cycadaceae
Stangeriaceae
Pinaceae
Sciadopityaceae
Cupressaceae
Araucariaceae
Cephalotaxaceae
Podocarpaceae
Taxaceae

SI Appendix Figure S11 Distribution patterns of the advanced-stage preclinical-trial drugs (natural products or natural product leads) in the species-families of fungi kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Fungi
Agaricales
Hypocreales
Myrothecium
Stachybotrys
Fusarium
Gliocladium
Verticillium
Cephalosporium
Acremonium
Emericellopsis
Bionectriaceae
Nectriaceae
Hypocreaceae
Cordycipitaceae
Ceratostomataceae
Clavicipitaceae
Niessliaceae
Ophiocordycipitaceae
Bertiaceae
Chaetosphaerellaceae
Scortechiniaceae
Nitschkiaceae
Wardomyces
Chadefaudiellaceae
Halosphaeriaceae
Microascaceae
Glomerellaceae
Melanosporaceae
Paecilomyces
Cephalothecaceae
Chaetomiaceae
Pleurotremataceae
Lasiosphaeriaceae
Annulatascaceae
Sordariaceae
Gnomoniaceae
Cryphonectriaceae
Sydowiellaceae
Valsaceae
Melanconidaceae
Kathistaceae
Ophiostomataceae
Magnaporthaceae
Calosphaeriaceae
Aplosporaceae
Chaetosphaeriaceae
Boliniaceae
Coniochaetaceae
Spathulosporaceae
Lulworthiaceae
Nigrospora
Trichosphaeriaceae
Koralionastetaceae
Phyllachoraceae
Meliolaceae
Libertella
Amphisphaeriaceae
Clypeosphaeriaceae
Diatrypaceae
Xylariaceae
Hyponectriaceae
Graphostromataceae
Loramycetaceae
Hyaloscyphaceae
Rutstroemiaceae
Phacidiaceae
Vibrisseaceae
Dermateaceae
Sclerotiniaceae
Helotiaceae
Hemiphacidiaceae
Bulgariaceae
Leotiaceae
Myxotrichaceae
Microglossum
Ceratomycetaceae
Laboulbeniaceae
Pyxidiophoraceae
Phaeosphaeriaceae
Leptosphaeriaceae
Didymellaceae
Pleosporaceae
Ascochyta
Corynespora
Mauritiana
Amniculicolaceae
Sporormiaceae
Fenestellaceae
Morosphaeriaceae
Aigialaceae
Montagnulaceae
Tetraplosphaeriaceae
Dacampiaceae
Phaeotrichaceae
Lophiostomataceae
Hypsostomataceae
Dothideaceae
Naetrocymbaceae
Lentheciaceae
Lindgomycetaceae
Cucurbitariaceae
Massariaceae
Arthopyreniaceae
Dothidotthiaceae
Didymosphaeriaceae
Massarinaceae
Shiraiaceae
Testudinaceae
Diademataceae
Melanommataceae
Teichosporaceae
Pleomassariaceae
Hysteriaceae
Mytilinidiaceae
Aliquandostipitaceae
Capnodiaceae
Schizothyriaceae
Dissoconiaceae
Teratosphaeriaceae
Coccodiniaceae
Davidiellaceae
Mycosphaerellaceae
Piedraiaceae
Euantennariaceae
Hortaea
Coleophoma
Dothioraceae
Dothideaceae
Elsinoaceae
Myrtangiaceae
Botryosphaeriaceae
Acrospermaceae
Trypetheliaceae
Patellariaceae
Microthyriaceae
Eremomycetaceae
Paraliomyces
Tubeufiaceae
Arthoniaceae
Chrysothrichaceae
Roccellaceae
Rhizocarpaceae
Porpidiaceae
Physciaceae
Mycoblastaceae
Loxosporaceae
Gypsoplacaceae
Lecideaceae
Cetradoniaceae
Ophioparmaceae
Megalariaceae
Psoraceae
Anziaceae
Cladoniaceae
Ramalinaceae
Dactylosporaceae
Caliciaceae
Stereocaulaceae
Parmeliaceae
Lecanoraceae
Haematommataceae
Pilocrapaceae
Arthrorhaphidaceae
Micareaceae
Crocyniaceae
Sphaerophoraceae
Caliciaceae
Ectolechiaceae
Nephromataceae
Placynthiaceae
Peltigeraceae
Lobariaceae
Pannariaceae
Collemataceae
Coccocarpiaceae
Gyalectaceae
Coenogoniaceae
Odontotremataceae
Stictidaceae
Asterothyriaceae
Porinaceae
Graphidaceae
Gomphillaceae
Icmadophilaceae
Pertusariaceae
Megasporaceae
Ochrolechiaceae
Agyriaceae
Anamylopsoraceae
Baeomycetaceae
Umbilicariaceae
Candelariaceae
Acarosporaceae
Chrysothrix
Onygenaceae
Arthrodermataceae
Ascosphaeraceae
Eremascaceae
Arachnomycetaceae
Gymnoascaceae
Ajellomycetaceae
Trichocomaceae
Elaphomycetaceae
Corynelia
Pyrenulaceae
Requienellaceae
Herpotrichiellaceae
Chaetothyriaceae
Verrucariaceae
Sphinctrinaceae
Mycocaliciaceae
Herpiaceae
Lichinaceae
Peltulaceae
Eremithallaceae
Geoglossaceae
Pezizaceae
Ascobolaceae
Morchellaceae
Chorioactidaceae
Discinaceae
Tuberaceae
Rhizinaceae
Karstenellaceae
Sarcosomataceae
Sarcosyphaceae
Caloscyphaceae
Pyronemataceae
Ascodesmidaceae
Glaziellaceae
Helvellaceae
Orbiliaceae
Saccharomycodaceae
Endomycetaceae
Wickerhamomycetaceae
Dipodascaceae
Saccharomycopsidaceae
Lipomycetaceae
Cephaloascaceae
Ascoideaceae
Trichomonascaceae
Saccharomycetaceae
Phaffomycetaceae
Metschnikowiaceae
Trichothecium
Sarocladium
Humicola
Phoma
Acremonium
Calcarisporium
Glarea
Morinia
Microsphaeropsis
Scytalidium
Spicellum
Zalerion
Taphrinaceae
Protomycetaceae
Pneumocystidaceae
Schizosaccharomycetaceae
Neolectaceae
Crepidotaceae
Marasmiaceae
Fistulinaceae
Schizophyllaceae
Pluteaceae
Niaceae
Cortinariaceae
Podaxaceae
Lycoperdaceae
Entolomataceae
Psathyrellaceae
Omphalotaceae
Strophariaceae
Favolaschiaceae
Bolbitiaceae
Mycenastraceae
Amanitaceae
Clavariaceae
Agaricaceae
Hygrophoraceae
Mesophelliaceae
Hydnangiaceae
Tricholomataceae
Alidulariaceae
Cyphellaceae
Phellorinaceae
Hymenogastraceae
Pleurotaceae
Gyroporaceae
Calostomataceae
Astraeaceae
Boletinellaceae
Sclerodermataceae
Pisolithaceae
Gomphidiaceae
Truncocolumellaceae
Suillaceae
Rhizopogonaceae
Leucogastraceae
Diplocystaceae
Boletaceae
Hygrophoropsidaceae
Coniophoraceae
Serpulaceae
Paxillaceae
Gyrodontaceae
Tapinellaceae
Stephanosporaceae
Gastrosporaceae
Melanogastraceae
Amylocorticiaceae
Jaapiaceae
Athheliaceae
Dictyonemataceae
Meripilaceae
Polyporaceae
Lachnocladiaceae
Phanerochaetaceae
Ganodermataceae
Lentinaceae
Corticiaceae
Xenasmataceae
Auriscalpiaceae
Hapalopilaceae
Pterulaceae
Sparassidaceae
Gloeocystidiellaceae
Bondarzewiaceae
Echinodontiaceae
Albatrellaceae
Podoscyphaceae
Hyphodermataceae
Meruliaceae
Stereaceae
Hericiaceae
Epitheliaceae
Russulaceae
Peniophoraceae
Clavulinaceae
Cantharellaceae
Botryobasidiaceae
Ceratobasidiaceae
Hydnaceae
Tulasnellaceae
Hyaloriaceae
Auriculariaceae
Exidiaceae
Bankeraceae
Typhulaceae
Thelephoraceae
Hymenochaetaceae
Schizoporaceae
Gloeophyllaceae
Sistotremataceae
Christianseniaceae
Tremellaceae
Filobasidiaceae
Cystofiliobasidiaceae
Cerinomycetaceae
Dacrymycetaceae
Exobasidiaceae
Cryptobasidiaceae
Brachybasidiaceae
Graphiolaceae
Tilletiariaceae
Ceraceosoraceae
Georgefischeriaceae
Ebellistraceae
Gjaerumiaceae
Quambalariaceae
Volvocisporiaceae
Microstromataceae
Melaniellaceae
Rhamphosporaceae
Doassansiaceae
Cintractiaceae
Doassansiopsidaceae
Floromycetaceae
Melanotaeniaceae
Glomosporiaceae
Urocystaceae
Tilletiaceae
Entylomataceae
Melaniellaceae
Cercosporaceae
Phaeogenitaceae
Sacobliaceae
Anthracodeaceae
Ustilaginaceae
Hoehnelomycetaceae
Agaricostilbaceae
Chionophaeraceae
Myrtococcum
Entorrhizaceae
Synchytriaceae
Chytridiaceae
Endochytriaceae
Megachytriaceae
Terramycetaceae
Rhizophydiaceae
Kappamycetaceae
Spizellomycetaceae
Olpidiaceae
Cladochytriaceae
Lobulomycetaceae
Gonapodyaceae
Monoblepharidaceae
Harpochytriaceae
Oedogoniomycetaceae
Gigasporaceae
Pacisporaceae
Acaulosporaceae
Scutellosporaceae
Diversisporaceae
Archaeosporaceae
Ambisporaceae
Geosiphonaceae
Paraglomeraceae
Glomeraceae
Coelomomycetaceae
Physodermataceae
Blastocladiaceae
Catenariaceae
Mucoraceae
Neocallimastigaceae

SI Appendix Figure S12 Distribution patterns of the advanced-stage preclinical-trial drugs (natural products or natural product leads) in the species-families of metazoa kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S4**.


Euarchontoglires
Cetartiodactyla
Scleroglossa
Demospongiae
Metazoa
Hirudinea

SI Appendix Figure S13 Time-dependent distribution patterns of historically emerged drug-productive families in the phylogenetic trees of bacterial super-kingdom. The pre-1981 families are in grey color, and the new families emerged in 1981-1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005, and 2006-2010 periods are in dark blue, violet, light blue, orange, green and red color respectively. The drug-productive clusters are labeled in black color by the respective species-group name and the year of their emergence (the pre-1981 clusters are labeled as 1981, the post-1981 clusters are labeled by the last year of the 5-year period in which they emerged).

Bacteria

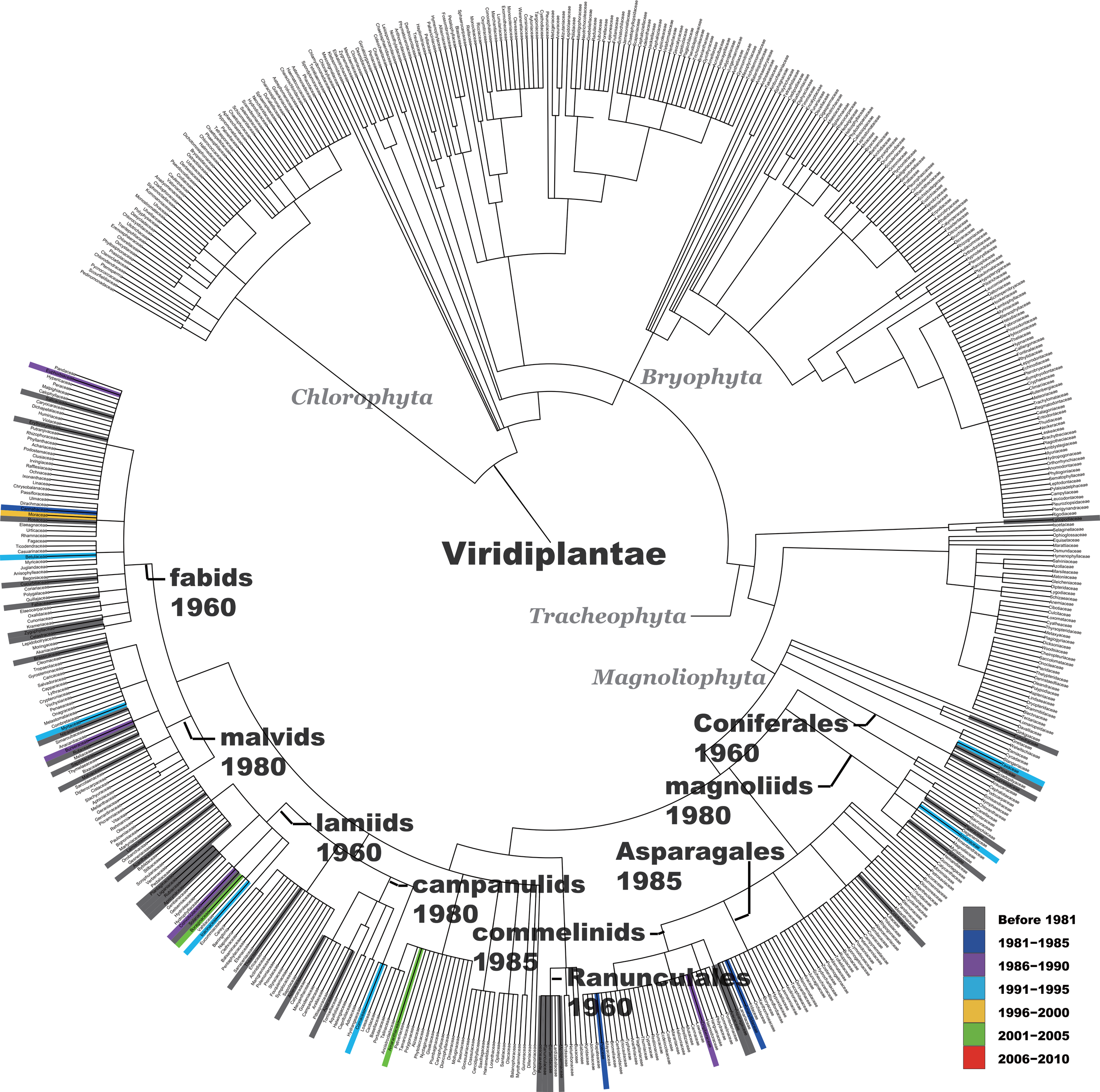
Bacilli
1960

Gammaproteobacteria
1990

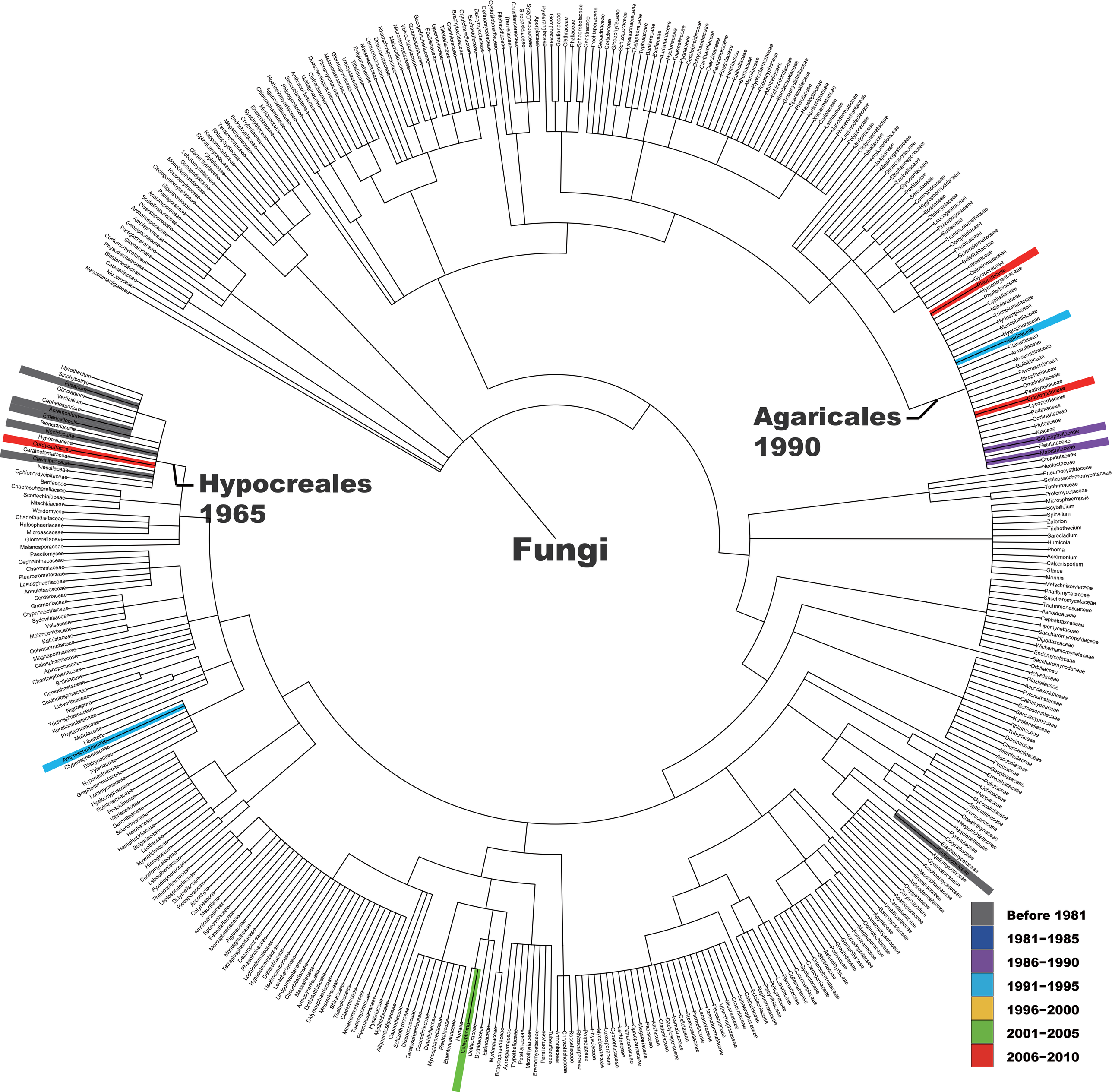
Actinomycetales
1960

Before 1981
1981–1985
1986–1990
1991–1995
1996–2000
2001–2005
2006–2010

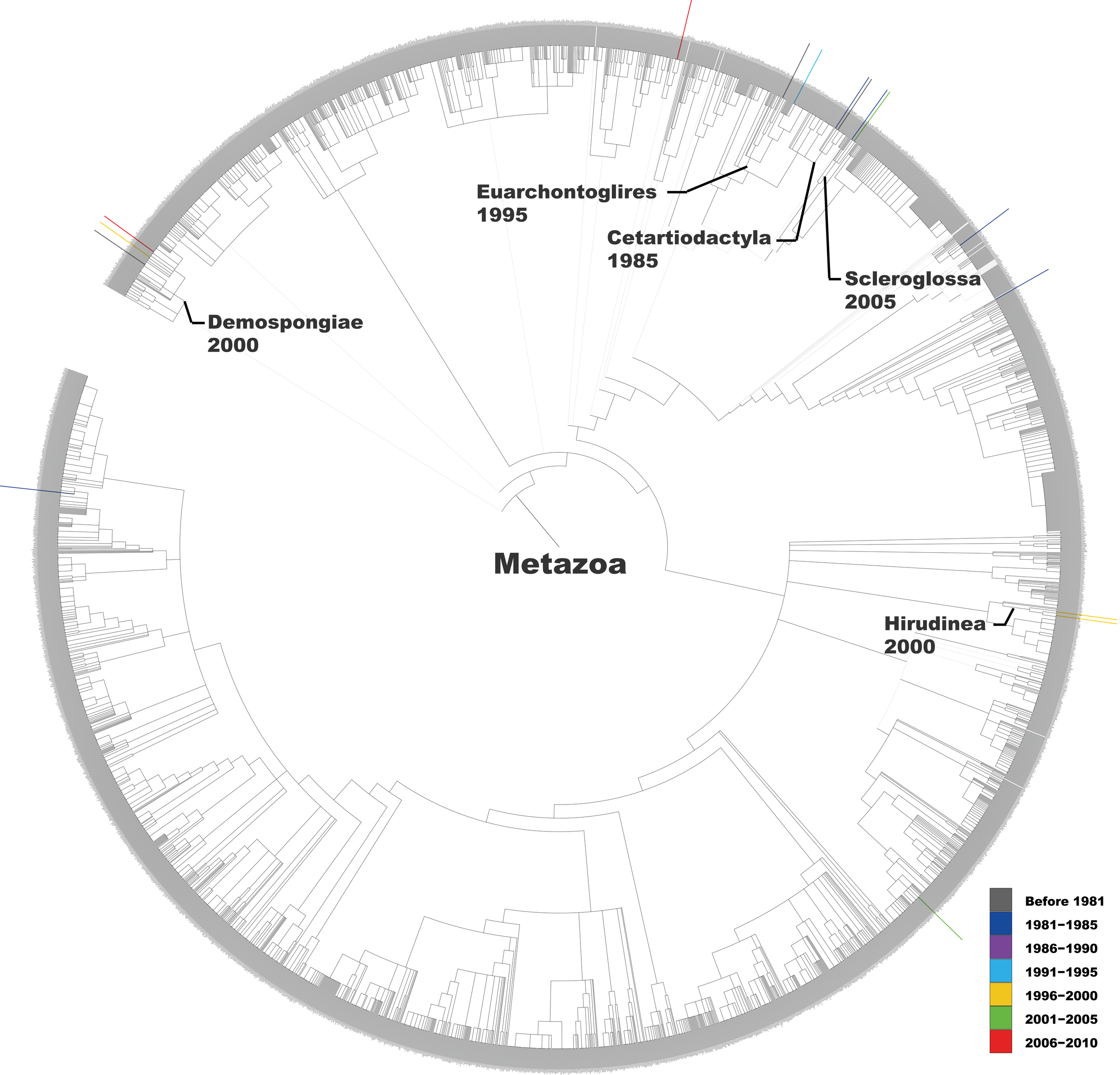
SI Appendix Figure S14 Time-dependent distribution patterns of historically emerged drug-productive families in the phylogenetic trees of viridiplantae kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S12**.


Chlorophyta
Bryophyta
Viridiplantae
Tracheophyta
Magnoliophyta
fabids
1960
malvids
1980
lamiids
1960
campanulids
1980
commelinids
1985
Ranunculales
1960
Coniferales
1960
magnoliids
1980
Asparagales
1985
Before 1981
1981–1985
1986–1990
1991–1995
1996–2000
2001–2005
2006–2010

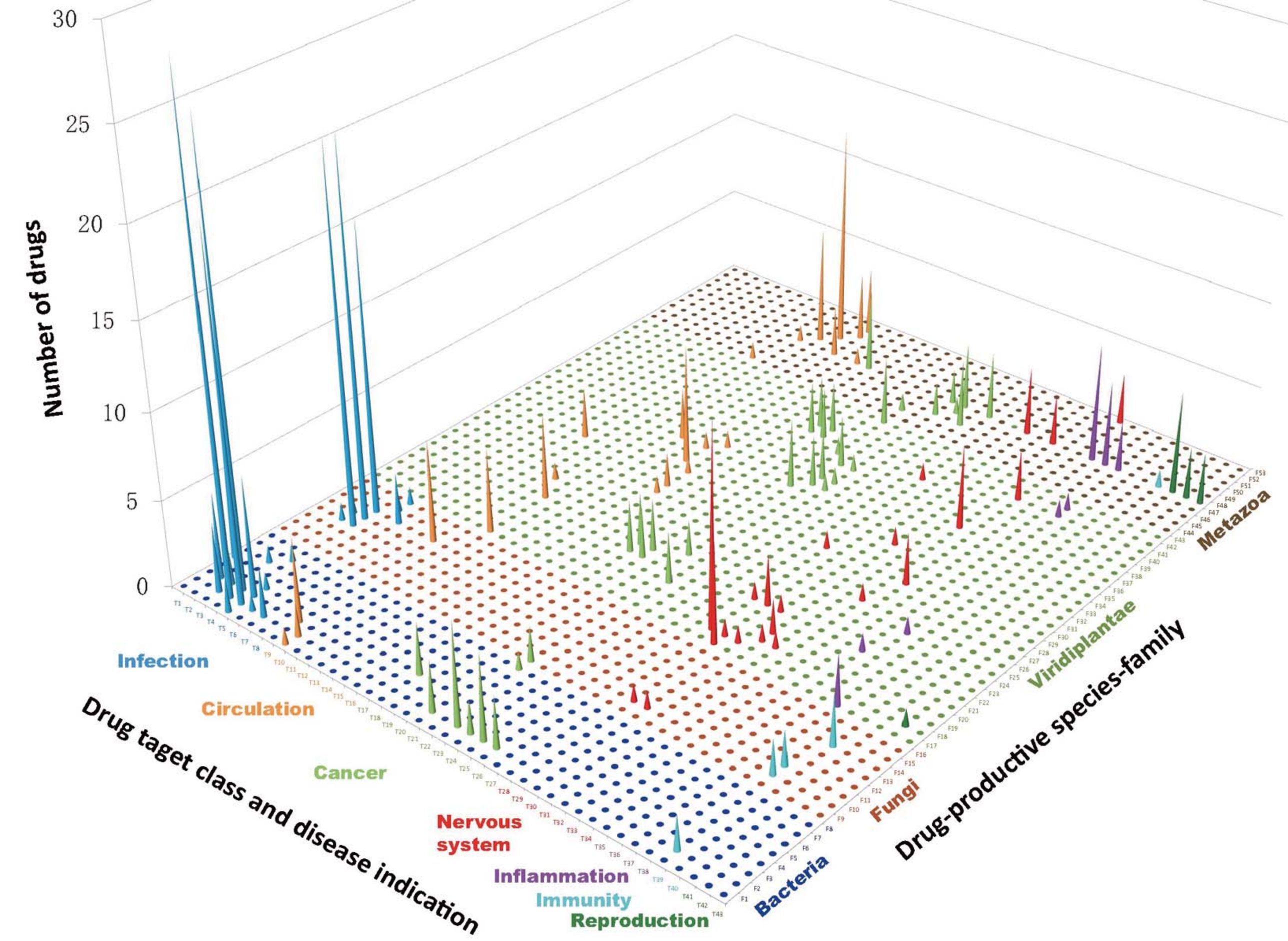
SI Appendix Figure S15 Time-dependent distribution patterns of historically emerged drug-productive families in the phylogenetic trees of fungi kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S12**.


Agaricales
1990
Hypocreales
1965
Fungi
Before 1981
1981–1985
1986–1990
1991–1995
1996–2000
2001–2005
2006–2010

SI Appendix Figure S16 Time-dependent distribution patterns of historically emerged drug-productive families in the phylogenetic trees of metazoa kingdom. The coloring and labeling schemes are the same as in **SI Appendix Figure S12**.


Demospongiae
2000
Euarchontoglires
1995
Cetartiodactyla
1985
Scleroglossa
2005
Metazoa
Hirudinea
2000
Before 1981
1981–1985
1986–1990
1991–1995
1996–2000
2001–2005
2006–2010

SI Appendix Figure S17 Ful version of the distribution of approved drugs, grouped into drugs against the same target with ≥3 drugs (drug target class) in the drug-productive families. Drug target classes are labeled as T1-T8 for infectious diseases (T1 HIV-1 protease, T2 RNA polymerase, T3 Bacterial outer membrane, T4 Penicillin binding protein, T5 Ribosome, T6 Beta-lactamase, T7 Fungal outer membrane, T8 SR Ca(2+)-ATPase), T9-T16 for circulation diseases (T9 HMG-CoA reductase, T10 Maltase-glucoamylase, T11 Beta adrenergic receptor, T12 Angiotensin receptor, T13 ACE, T14 Thrombin, T15 Na(+)/K(+) ATPase, T16 Adenosine receptor), T17-T27 for cancers (T17 Androgen receptor, T18 ABL, T19 EGFR, T20 VEGFR, T21 mTOR, T22 Tubulin, T23 DNA topoisomerase, T24 Thymidylate synthase, T25 DNA, T26 DNA polymerase, T27 GNRHR), T28-T34 for nervous systems diseases (T28 Opioid receptor, T29 Alpha adrenergic receptor, T30 Dopamine receptor, T31 Neuronal acetylcholine receptor, T32 GABA receptor, T33 mAChR, T34 PGF receptor), T35-T38 for inflammation (T35 Glucocorticoid receptor, T36 Corticosteroid-binding globulin, T37 5-HT receptor, T38 Beta adrenergic receptor), T39-T40 for immune diseases (T39 Calcineurin, T40 IMPDH), and T41-T43 for reproduction disorders (T41 Progesterone receptor, T42 cGMP-specific 3',5'-cyclic phosphodiesterase, T43 Estrogen receptor). The drug-productive families are labeled as F1-F8 bacterial, F9-F16 Fungi, F17-F43 Viridiplantae and F44-F54 Metazoa. For detailed species-family name, please refer to **SI Appendix Table S14**.


Number of drugs
30
25
20
15
10
5
0
Infection
Circulation
Cancer
Nervous system
Inflammation
Immunity
Reproduction
Drug taget class and disease indication
Bacteria
Fungi
Viridiplantae
Metazoa
Drug-productive species-family