Supporting Information

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SI Methods

Data Collection. NMEs approved by the Center for Drug Evaluation and Research (CDER) at the FDA from 2010–2016 were identified from FDA reports (1). Biosimilars, vaccines, diagnostic, and imaging agents were excluded from this analysis. For combination therapies, we considered only molecular entities that were not previously approved either as a stand-alone therapeutic or in other combinations. NMEs were characterized as "biologic" or "small molecule," as well as "first in class" or "follow-on" based on assignments by the FDA (2).

The method of drug discovery was classified as "phenotypic" or "targeted" using the criteria described by Swinney et al. (3, 4). Briefly, NMEs were classified as phenotypic if discovery occurred independent of knowledge of the target, involved screens based on biological activities rather than on targets, or involved modification of pharmacophores based on biological activity. NMEs were classified as targeted when discovery involved screens against specific targets, assays of target activity, or modification of a natural substrate based on target affinity or activity. All biologics were classified as targeted as in Swinney et al. (3, 4).

Known molecular targets for each NME were determined from FDA labels (5), DrugBank (6), Therapeutic Target Database (7), or Pharmaprojects (8). For NMEs discovered using targeted methods, the molecular target is considered the target used in drug screening. For biological products comprising a naturally occurring protein, the target is considered the normal counterpart of the biological product.

Approved clinical indications were determined from FDA labels, and therapeutic areas were assigned according to a modification of DiMasi et al. (9).

PubMed searches were performed for each of the 210 drugs (drug search) using an ontology of drug name synonyms provided in ChEMBL (10), which includes brand names, generic names, and precommercial corporate designations, as well as the NCBI Query Translation, which incorporates related MeSH Terms. PubMed searches were performed for each of the 151 molecular targets using Boolean search terms and NCBI Query Translation (target search). The results were screened to confirm the relevance of the publications identified from searches, and search terms were optimized as necessary. Search terms for both drug and target searches are given in Table S1. The PMID was recorded for publications appearing in the search results. At the time of this analysis, PubMed entries for 2016 were not yet complete, so trends were examined only through 2015.

Data Analysis. Information on projects funded by the NIH and other agencies within the US Department of Health and Human Services was obtained from the RePORTER/ExPORTER format files catalog (11). The Project and Link Tables were imported to a PostgreSQL database after standardizing for inconsistent formats. The RePORTER database includes data on publications that acknowledge federal support from 1980–present, information on projects funded from 1985–present, and fiscal year costs for projects funded by NIH, Centers for Disease Control and Prevention, Administration for Children and Families, or FDA from 2000–present. As of April 2017, the RePORTER database lists 1,380,121 research publications in PubMed that cite federal research support and 129,728 projects.

The Link Table in RePORTER associates the PMID for each publication with one or more projects that provided funding for the work and the year of publication. The Project Data Table provides data on the fiscal year cost for each project (2000–present only). The activity code associated with each core project number indicates the grant type.

PMIDs identified in drug or target searches were associated with specific projects via the Link Table. Each PMID was associated with a funding year corresponding to the project number and year given in the Link Table. Costs were assigned for funding year corresponding to the program cost for that year given in the Project Data Table.

Limitations in the scope and control of the RePORTER database have been addressed by previous authors (12). These include inconsistent formatting and data nomenclature, incomplete reporting of projects and costs by different agencies, and limited data curation. These limitations were evident in PMIDs that sometimes preceded the first year of the associated project as well as by PMIDs published long after the last year of the project (12). For this analysis, no costs were associated with funding years preceding the fiscal year of the project or following more than 4 y after the end of the project. Recognizing that research performed in the final years of a project could continue to produce publications for several years, we included the cost associated with the final year of the project for PMIDs published within the following 4 y. This is consistent with the observation of Boyack and Jordan (12), who identified a 3-y lag between funding and publication.

There was considerable redundancy in the initial data associations. PMIDs could be identified more than once in different drug or target searches, and each PMID could be associated with multiple projects in the Link Table. Funding years could be identified more than once if the project was associated with more than one PMID. Consequently, each analysis required two steps, first identifying all PMIDs or project years with the characteristic being ascertained and then eliminating duplicates resulting from redundant ascertainment.

Funding years were categorized as "drug" if one or more of the PMIDs associated with that project were identified in a drug search. Funding years were categorized as "target only" if each PMID associated with that project was identified through target searches. Funding years associated with PMIDs identified through both drug searches and target searches are designated as "drug." For each analysis, unique funding years were identified by eliminating duplicate funding years resulting from projects associated with more than one PMID. The process is illustrated in a schematic (Fig. S1), and an illustrative example (venetoclax) is shown in Fig. S2.

Data analysis and visualization were performed in PostgreSQL, Excel, and Tableau. All costs are given in constant dollars inflation-adjusted to 2016 using the US Bureau of Labor Statistics' CPI (13). All analysis is based on PubMed and RePORTER data accessed in April 2017. The data used for this analysis, including the 610,702 PMIDs identified in a drug or target search as well as RePORTER, project numbers, and year, are provided in Dataset S1.

1. US Food & Drug Administration (2017) New molecular entity (NME) drug and new biologic approvals. Available at https://www.fda.gov/Drugs/DevelopmentApprovalProcess/HowDrugsareDevelopedandApproved/DrugandBiologicApprovalReports/NDAandBLAApprovalReports/ucm373420.htm. Accessed April 12, 2017.

2. U.S. Food & Drug Administration (2017) New drugs at FDA: CDER's new molecular entities and new therapeutic biological products. Available at https://www.fda.gov/Drugs/DevelopmentApprovalProcess/DrugInnovation/default.htm. Accessed April 12, 2017.

3. Swinney DC (2013) Phenotypic vs. target-based drug discovery for first-in-class medicines. *Clin Pharmacol Ther* 93:299–301.
4. Swinney DC, Anthony J (2011) How were new medicines discovered? *Nat Rev Drug Discov* 10:507–519.
5. US Food & Drug Administration (2017) FDA online label repository. Available at https://labels.fda.gov/. Accessed April 12, 2017.
6. Law V, et al. (2014) DrugBank 4.0: Shedding new light on drug metabolism. *Nucleic Acids Res* 42:D1091–D1097.
7. Yang H, et al. (2016) Therapeutic target database update 2016: Enriched resource for bench to clinical drug target and targeted pathway information. *Nucleic Acids Res* 44:D1069–D1074.
8. Informa (2017) Pharmaprojects: Track pharma R&D. Available at https://pharmaintelligence.informa.com/products-and-services/data-and-analysis/pharmaprojects. Accessed April 12, 2017.
9. DiMasi JA, Grabowski HG, Vernon J (2004) R&D costs and returns by therapeutic category. *Drug Inf J* 38:211–223.
10. EMBL-EBI (2017) ChEMBL. Available at https://www.ebi.ac.uk/chembl/. Accessed April 12, 2017.
11. National Institutes of Health (2017) Research portfolio online reporting tools (RePORTER), ExPORTER data catalog. Available at https://exporter.nih.gov/ExPORTER_Catalog.aspx. Accessed April 12, 2017.
12. Boyack KW, Jordan P (2011) Metrics associated with NIH funding: A high-level view. *J Am Med Inform Assoc* 18:423–431.
13. United States Department of Labor (2017) Bureau of labor statistics: CPI-All urban consumers (current series). Available at https://data.bls.gov/timeseries/CUUR0000SA0. Accessed April 12, 2017.

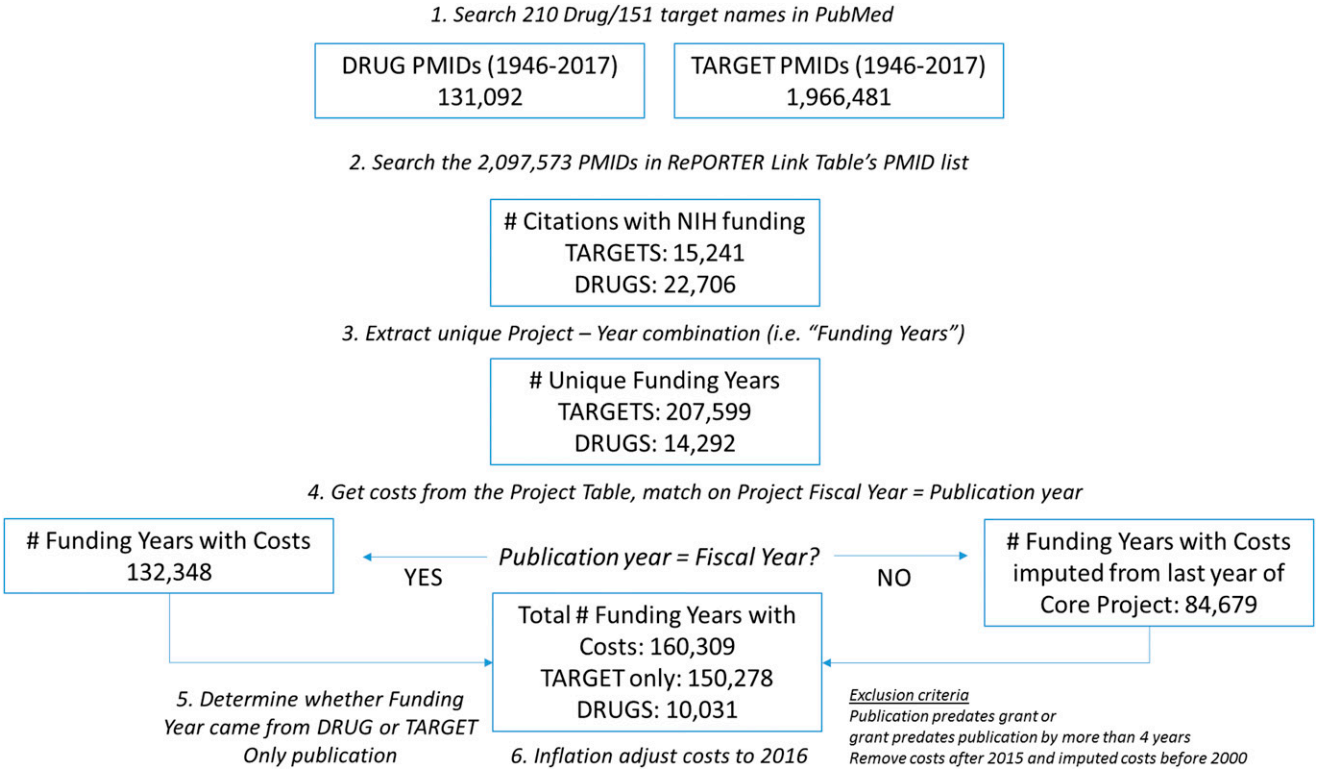

Fig. S1. Step-by-step procedure for linking PMIDs associated with drug and target searches to NIH-funded projects and costs in RePORTER.

1. Venetoclax and its target, Bcl-2, in PubMed

DRUG PMIDs (1946-2017)	TARGET PMIDs (1946-2017)
286	57,362

2. Search the 57,648 *PMIDs in RePORTER Link Table's PMID list*

Citations with NIH funding
Bcl-2: 15,241
Venetoclax: 164

3. Extract unique Project – Year combination (i.e. "Funding Years")

Unique Funding Years
Bcl-2: 11,664
Venetoclax: 130

4. Get costs from the Project Table, match on Project Fiscal Year = Publication year

Total # Funding Years with Costs: 9574
Bcl-2: 9452
Venetoclax: 122

Exclusion criteria
Publication predates grant or grant predates publication by more than 4 years
Remove costs after 2015, imputed costs before 2000

Fig. S2. An illustrative example of how NIH funding was assigned to the research associated with the drug venetoclax and its molecular target, Bcl-2.

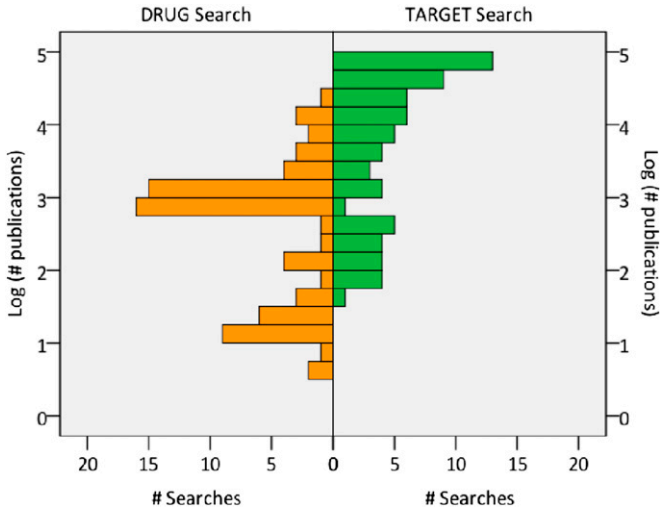

Fig. S3. Publications in PubMed identified through searches for 210 NMEs approved by the FDA between 2010–2016 (drug search, *Left*) or the 151 known molecular targets for these NMEs (target search, *Right*). The number of publications retrieved from each search is shown on a log scale.

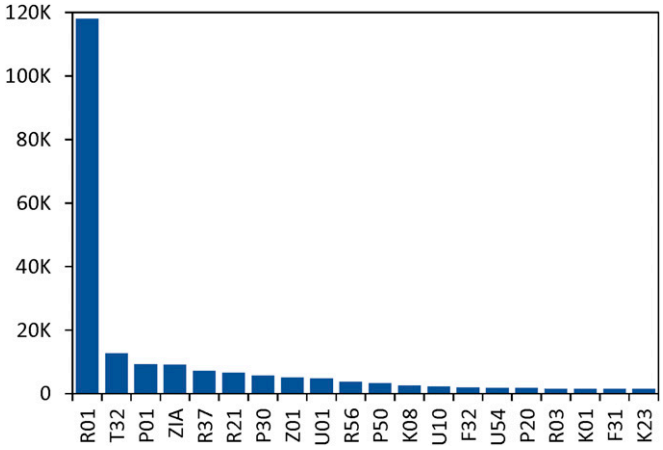

Fig. S4. Leading grant activity codes for projects associated with 210 NMEs approved 2010–2016 or their molecular targets. Activity codes are defined in Table S3.

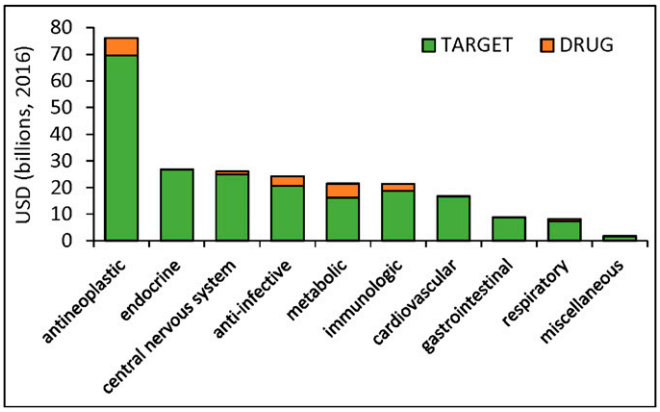

Fig. S5. Distribution of costs associated with published research for NMEs approved 2010–2016 by therapeutic area.

Table S1. Drug search statistics

Drug	Publications in PubMed	Publications in RePORTER	No. funding years
Abiraterone	601	159	129
Aclidinium bromide	138		
Ado-trastuzumab emtansine	344	52	49
Afatinib	709	223	182
Aflibercept	1,262	261	245
Albiglutide	127	4	4
Alcaftadine	18		
Alectinib	195	28	20
Alglucosidase alfa	315	101	86
Alirocumab	252	4	4
Alogliptin	383	35	33
Apixaban	2,009	44	40
Apremilast	242	13	13
Aripiprazole lauroxil	15		
Asfotase alfa	66	19	17
Asparaginase *Erwinia chrysanthemi*	89	20	19
Atezolizumab	546	279	253
Avanafil	80	3	3
Avibactam*	274	72	42
Axitinib	642	102	85
Azilsartan	72	5	5
Bazedoxifene acetate*	312	60	58
Bedaquiline	376	87	85
Belatacept	3,178	858	699
Belimumab	422	70	55
Belinostat	190	101	95
Bezlotoxumab	27	6	6
Blinatumomab	189	39	28
Boceprevir	1,020	152	132
Bosutinib	349	158	122
Brentuximab vedotin	508	135	105
Brexpiprazole	78		
Brivaracetam	145	5	5
Cabazitaxel	576	83	70
Cabozantinib	394	187	154
Canagliflozin	462	16	16
Cangrelor	453	68	61
Carfilzomib	547	269	223
Carglumic acid	28	14	14
Cariprazine	87	3	3
Ceftaroline fosamil	187	10	10
Ceftolozane*	164	14	12
Ceritinib	225	40	26
Cholic acid	5,834	713	640
Cobimetinib	98	21	21
Collagenase clostridium histolyticum	5,720	199	175
Crisaborole	20		
Crizotinib	1,389	504	373
Crofelemer	68	24	19
Dabigatran	3,620	169	144
Dabrafenib	578	216	172
Daclatasvir	618	95	75
Dalbavancin	414	19	18
Dalfampridine	6,440	933	868
Dapagliflozin	514	28	27
Daratumumab	150	18	9
Defibrotide sodium	432	25	25
Denosumab	1,853	144	124
Deoxycholic acid	14,747	1,477	1,295
Dienogest	429	1	1
Dimethyl fumarate	816	132	127
Dinutuximab	128	46	44

Table S1. Cont.

Drug	Publications in PubMed	Publications in RePORTER	No. funding years
Dolutegravir	428	85	73
Droxidopa	667	116	103
Dulaglutide	147	8	7
Edoxaban	791	21	20
Efinaconazole	109	1	1
Elbasvir grazoprevir*	134	9	9
Eliglustat	54	26	22
Elosulfase alfa	112	21	18
Elotuzumab	134	60	48
Eluxadoline	44	1	1
Elvitegravir cobicistat*	543	193	177
Empagliflozin	462	35	25
Enzalutamide	987	438	330
Eribulin	377	100	94
Eslicarbazepine acetate	172	2	2
Eteplirsen	40	3	3
Ethyl eicosapentaenoic acid	252	27	27
Evolocumab	251	5	4
Ezogabine	458	121	115
Fidaxomicin	364	40	38
Finafloxacin	19		
Fingolimod	2,394	859	727
Flibanserin	139	8	8
Gabapentin enacarbil	90	2	2
Glucarpidase	618	135	127
Ibrutinib	850	492	281
Icatibant	1,716	214	182
Idarucizumab	199	3	3
Idelalisib	365	157	105
IncobotulinumtoxinA	255	13	12
Indacaterol	356	8	8
Ingenol mebutate	218	13	13
Insulin degludec	291	5	5
Ipilimumab	6,539	2,396	1,940
Isavuconazonium	200	9	8
Ivabradine	1,017	49	47
Ivacaftor*	345	219	179
Ixazomib citrate	146	57	46
Ixekizumab	147	6	6
Ledipasvir*	498	48	36
Lenvatinib	178	22	14
Lesinurad	47	5	5
Levomilnacipran	673	17	16
Lifitegrast	22	4	4
Linaclotide	199	38	32
Linagliptin	474	26	21
Liraglutide	1,668	181	162
Lixisenatide	229	6	6
Lomitapide	145	14	13
Lorcaserin	259	64	60
Lucinactant	116	20	18
Luliconazole	61		
Lumacaftor	154	121	100
Lurasidone	281	4	4
Macitentan	167	15	15
Mepolizumab	282	57	55
Metreleptin	150	187	113
Miltefosine	1,157	63	58
Mipomersen	193	17	17
Mirabegron	309	16	13
Naloxegol	65	1	1

Table S1. Cont.

Drug	Publications in PubMed	Publications in RePORTER	No. funding years
Necitumumab	75	4	4
Netupitant*	75	6	6
Nintedanib	370	52	48
Nivolumab	1,081	227	187
Nusinersen	13	1	1
Obeticholic acid	184	64	58
Obiltoxaximab	11	5	5
Obinutuzumab	351	62	48
Ocriplasmin	268	11	10
Olaparib	573	343	303
Olaratumab	24	13	13
Olodaterol	111		
Omacetaxine mepesuccinate	459	83	72
Ombitasvir paritaprevir dasabuvir*	309	15	15
Oritavancin	320	17	16
Osimertinib	178	68	53
Ospemifene	135	19	18
Palbociclib	300	193	184
Panobinostat	593	352	299
Parathyroid hormone	35	4	3
Pasireotide	418	49	43
Patiromer	58	3	3
Peginesatide	58	9	9
Peginterferon beta-1A	48	1	1
Pegloticase	111	6	6
Pembrolizumab	735	175	140
Peramivir	331	38	34
Perampanel	235	12	9
Pertuzumab	632	114	100
Picosulfate	886	142	142
Pimavanserin	85	9	9
Pirfenidone	703	88	86
Polidocanol	1,167	46	44
Pomalidomide	730	154	125
Ponatinib	363	177	127
Ramucirumab	331	33	28
Raxibacumab	23	3	3
Reslizumab	445	75	60
Reslizumab	85	27	27
Rilpivirine	455	169	139
Riociguat	202	10	10
Rivaroxaban	3,218	101	85
Roflumilast	468	55	54
Rolapitant	44		
Rucaparib	113	71	70
Ruxolitinib	671	333	236
Sacubitril*	247	14	14
Sebelipase alfa	21	5	5
Secukinumab	293	12	12
Selexipag	56	11	11
Siltuximab	105	59	56
Simeprevir	630	72	63
Sofosbuvir*	1,358	159	113
Sonidegib	88	52	52
Spinosad	667	10	9
Sugammadex	764	4	4
Suvorexant	116	10	10
Tafluprost	164	7	7
Taliglucerase alfa	36	2	2
Tasimelteon	57	3	3
Tavaborole	76	3	3

Table S1. Cont.

Drug	Publications in PubMed	Publications in RePORTER	No. funding years
Tedizolid	100	2	2
Teduglutide	109	7	7
Telaprevir	1,450	221	188
Teriflunomide	301	21	18
Tesamorelin	66	53	39
Ticagrelor	1,550	58	57
Tipiracil*	485	38	37
Tocilizumab	1,843	219	200
Tofacitinib	598	117	111
Trabectedin	694	95	85
Trametinib	519	299	254
Ulipristal	1,145	117	111
Umeclidinium*	134		
Uridine triacetate	13		
Vandetanib	748	235	202
Vedolizumab	329	33	30
Velaglucerase alfa	2,048	533	383
Velpatasvir	66	1	1
Vemurafenib	1,529	735	555
Venetoclax	286	164	130
Vilanterol*	227		
Vilazodone	138	1	1
Vismodegib	442	214	198
Vorapaxar	253	28	28
Vortioxetine	213	2	2
Ziv-aflibercept	1,127	205	193

Drug search terms were generated from drug names using ChEMBL synonyms as described in Methods.
*Approved in combination.

Table S2. Target search statistics

Target	Publications in PubMed	Publications in RePORTER	No. of funding years
5-Ht1a receptors or serotonin reuptake	21,717	4,093	3,521
5-HT2C receptor	2,129	682	585
Adrenergic receptor	73,220	12,916	10,059
Adrenoreceptor beta 2, surface	988	412	384
Alpha glucosidase	9,880	624	508
Alpha4beta7 integrin	724	487	442
AMPA 1	8,732	3,801	3,327
Anaplastic lymphoma kinase	3,216	843	609
Androgen receptor	24,601	8,133	6,001
Angiotensin ii type 1 receptor	14,165	3,634	2,794
Anthrax toxin receptor	181	192	173
APOB or apolipoprotein B	16,865	3,677	2,800
Asparaginase	4,046	391	286
Bacterial RNA polymerase	22,559	4,432	3,784
Bcl-2	57,362	15,241	11,781
Bcr-abl	20,458	3,550	2,348
Beta 3 and adrenergic receptor	2,189	436	413
Beta glucocerebrosidase	2,240	590	423
Beta lactamases	21,668	1,597	961
Beta-2-adrenergic receptor	8,415	2,641	2,147
Beta-glucosidase or beta-glucosidase	7,051	290	238
Botulinum toxin A	8,177	637	520
Bradykinin receptor B2	3,064	584	495
Braf	9,744	5,080	3,093
Bruton's tyrosine kinase	1,528	838	666
c-Met or hepatocyte growth factor	16,054	5,968	5,077
Carbamoyl-phosphate synthase	1,528	259	224
Carboxypeptidase g	619	139	131
CD3	39,975	8,427	7,166
CD20	12,202	2,188	1,830
CD30	4,411	493	423
CD38	6,262	2,586	2,092
Cdk4 or cdk6	6,495	2,328	2,079
Cell wall synthesis	45,739	10,540	9,120
Ceramide glucosyltransferase or glucosylceramide synthase	691	291	255
CFTR	9,268	4,357	2,890
Chloride channels	33,895	11,477	8,146
Cholic acid	1,829	285	272
Clostridium difficile toxin b	1,178	312	246
Coagulation factor X	9,535	2,296	1,940
CYP17A1	3,089	1,007	844
Cytotoxic T lymphocyte-associated protein 4 or CTLA-4	6,679	2,662	2,217
Dabigatran	3,615	169	144
Dihydroorotate dehydrogenase	564	188	152
Dipeptidyl-peptidase 4	5,272	815	695
DNA gyrase	4,337	500	432
Dopamine receptor	58,112	17,116	12,361
Dopamine receptor or serotonin receptor	97,784	24,694	17,685
Dystrophin	7,426	2,127	1,633
EGFR	42,721	17,682	12,278
Endothelin receptor	14,195	3,017	2,548
Erbb1 or erbb2	25,069	8,429	6,155
Erythropoietin	29,377	3,339	2,751
Escherichia coli ATP synthase	1,253	336	258
Estrogen receptor	73,892	22,871	14,987
Factor Xa	9,544	1,276	979
Farnesoid x receptor	1,764	1,186	909
Fluorouracil or capecitabine	41,809	4,107	2,807
Gag pol HIV	2,062	1,469	1,229
Gag pol HIV or cytochrome p450 3a	11,296	3,947	3,099
Glucagon-like peptide 1	10,095	2,783	2,222
Glucagon-like peptide 2 or glp2 or glp-2	900	199	176

Table S2. Cont.

Target	Publications in PubMed	Publications in RePORTER	No. of funding years
Glycolipid gd2 or disialoganglioside gd2	730	287	231
Growth hormone-releasing hormone	4,901	488	362
Guanylyl cyclase c	492	223	128
H1 histamine receptor	2,124	197	172
HCV NS3	2,696	589	493
HCV ns3 or hcv ns4a	2,722	608	506
HCV ns5a	1,691	504	426
HCV ns5a or hcv NS3 or HCV NS5B	4,880	1,099	870
HCV NS5B	1,761	326	278
Hedgehog signaling or hedgehog AND *Drosophila*	8,633	5,714	4,655
HER2 or eErb2 or p185	18,605	6,315	4,496
Histone deacetylases	14,199	10,255	8,290
Hyperpolarization-activated cyclic nucleotide-gated channels	1,294	814	686
Insulin receptor	56,159	22,054	16,250
IFN beta 1	10,668	2,967	2,589
Interleukin 5	6,444	1,365	1,178
Interleukin 6 receptor	12,779	4,606	4,317
Interleukin 17	9,015	5,802	4,754
Janus kinases	8,912	3,954	3,258
Leptin	31,553	12,164	8,690
Leucyl-tRNA synthetase	503	77	61
Lfa-1	6,179	1,556	1,270
Lysosomal acid lipase	2,498	462	417
M3 muscarinic receptor	3,275	811	719
Melatonin receptor	4,538	702	605
Microbial collagenase	5,441	166	149
Microsomal triglyceride transfer protein	1,030	520	390
Microtubule assembly	31,444	10,392	8,129
Mitogen-activated protein kinase kinases	11,326	5,583	5,014
N-acetylgalactosamine 6 sulfatase	429	83	73
Neutral endopeptidase	6,180	1,141	929
NF-κb	55,920	23,669	18,791
Nrf2 or NFE2l2	8,719	4,753	3,505
Orexin receptors 1 and 2	788	326	293
Oxazolidinones	7,943	510	474
p2y receptor	4,190	1,210	965
Parathyroid hormone receptor	5,126	1,786	1,426
PARP	13,372	4,595	3,838
Penicillin-binding proteins	4,200	553	443
Phosphodiesterase 4	2,577	816	761
Phosphodiesterase 5	4,343	1,131	964
Phosphoinositide 3-kinase	9,056	5,014	4,399
Plasmin	14,591	1,700	1,487
Poly ADP ribose polymerase	15,605	5,198	4,283
Potassium channel	65,278	19,950	14,853
Potassium voltage-gated channel	8,613	3,428	2,856
Progesterone receptor	17,100	4,019	3,114
Programmed cell death 1	2,941	2,378	1,950
Programmed cell death-ligand 1	1,228	805	705
Proprotein convertase subtilisin kexin type 9	958	222	198
Prostaglandin F receptor	2,251	351	333
Protease activated receptor	2,677	1,585	1,253
Proteasome endopeptidase complex	16,300	8,313	7,033
Protective antigen anthrax	1,265	800	570
Protein kinase c-delta	2,229	1,329	1,185
Receptor tyrosine kinase	146,941	56,895	39,494
Receptors, cholinergic	38,692	10,452	7,066
Receptors, epoprostenol	394	109	92
Receptors, lysosphingolipid	1,453	1,337	1,028
Receptors, opioid	23,751	8,961	5,578
Receptors, opioid, mu	8,158	4,616	3,204

Table S2. Cont.

Target	Publications in PubMed	Publications in RePORTER	No. of funding years
Receptors, platelet-derived growth factor	5,954	2,356	2,099
Receptors, vascular endothelial growth factor	12,434	5,004	4,250
Rocuronium or vecuronium	5,748	53	49
Serotonin receptor	49,278	9,366	7,486
Serotonin receptor 2a	3,251	1,023	845
Serotonin reuptake transporter or bace1	4,800	2,105	1,773
Slamf7	103	45	43
Smoothened	1,663	1,265	1,105
Sodium glucose transporter	3,093	693	611
Soluble guanylate cyclase	2,787	778	678
Somatostatin	31,307	4,008	3,173
Src kinase	23,471	12,043	9,950
Sterol 14-demethylase	564	128	106
Substance P receptor or tachykinin receptor 1	4,117	1,106	897
Surfactant protein B	994	465	400
Survival motor neuron protein or smn or smn1 smn2 or survival of motor neuron 2 protein	5,874	2,588	2,209
Thrombin	25,101	3,913	2,909
Thymidine phosphorylase	2,084	160	146
Tissue nonspecific alkaline phosphatase	618	232	148
TNFSF11	2,988	1,101	974
TNFSF13B	908	553	518
Urate oxidase	1,467	108	98
Urate transporter or SLC22A12 or URAT1	450	153	145
Urea and kinase inhibitor	2,644	1,219	1,102
Vascular endothelial growth factor receptor-2	5,447	2,492	2,269
Viral neuraminidase	6,462	1,058	809
Voltage-gated calcium channel	9,057	3,892	3,440
Voltage-gated sodium channel	8,602	3,788	3,038

Table S3. Leading grant activity codes for projects associated with 210 NMEs approved 2010–2016 or their molecular targets

Grant activity code	Total	Drug	Target only
R01	117,949	5,749	112,200
T3, 2	12,757	87, 8	11,879
P01	9,241	824	8,417
ZIA	9,165	655	8,510
R37	7,206	385	6,821
R21	6,568	321	6,247
P30	5,691	985	4,706
Z01	5,068	226	4,842
U01	4,844	434	4,410
R56	3,764	156	3,608
P50	3,266	441	2,825
K08	2,556	199	2,357
U10	2,172	293	1,879
F32	1,878		1,794
U54	1,821	176	1,645
P20	1,754	141	1,613
R03	1,592		1,521
K01	1,567		1,486
F31	1,484		1,446
K23	1,446	184	1,262
K12		116	
K24		119	
M01		110	
UL1		366	

F31 and F32, fellowship programs; K01, K08, K12, K23, and K24, research career programs; M01, general clinical research centers program; P01, P20, P30, and P50, research program projects and centers; R01, R03, R21, R37, and R56, research projects; T32, training program; U01, U10, U54, and UL1, cooperative agreements; Z01 and ZIA, intramural research programs.

Other Supporting Information Files

Dataset S1 (XLSX)
Dataset S2 (XLSX)