

What Can Be Learned from Recent New Drug and Biologic License Applications? A Systematic Review of Drug Interaction Data for Drugs Approved by the U.S. FDA in 2015

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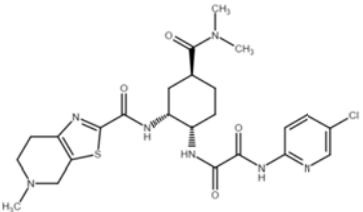
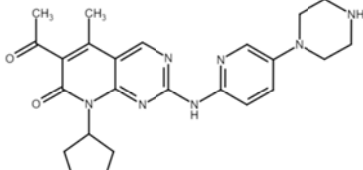
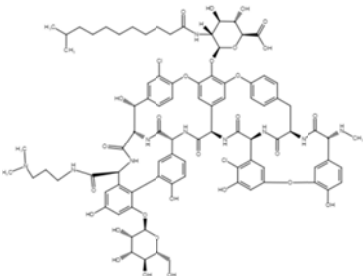
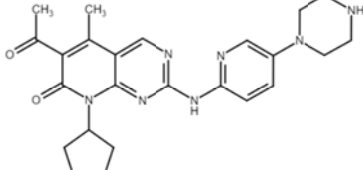
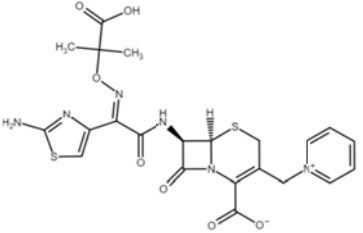
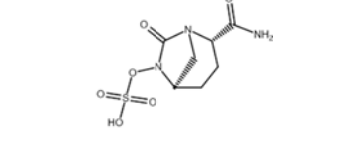
Drug Metabolism and Disposition

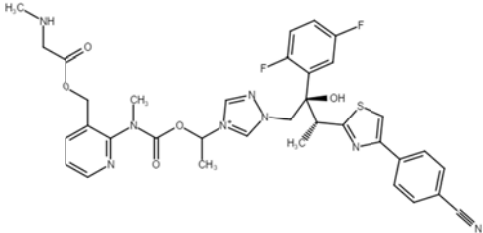
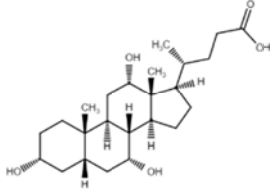
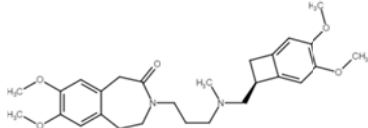
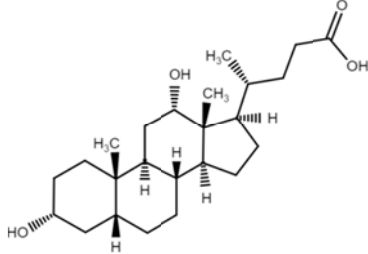
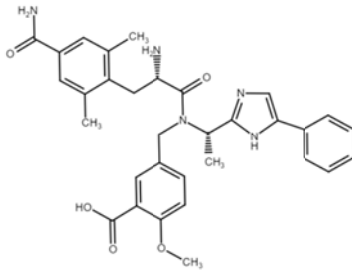
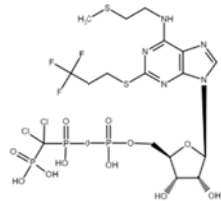
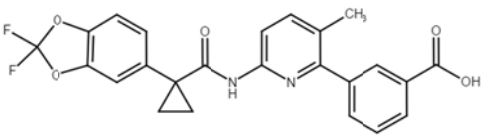
Supplemental Data

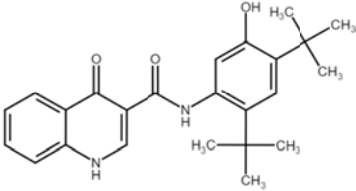
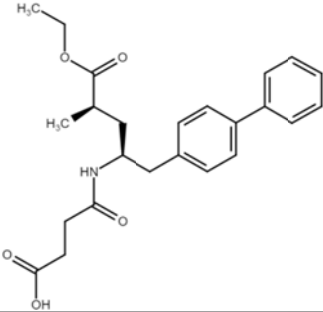
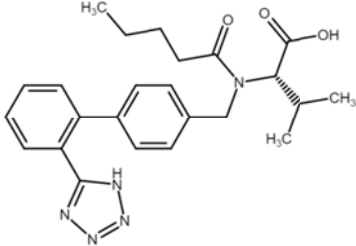
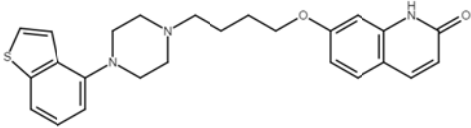
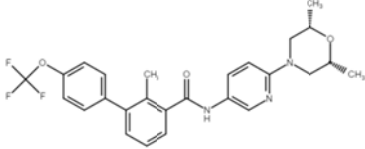
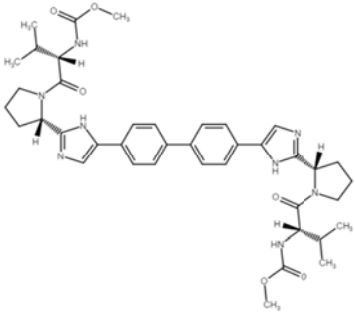
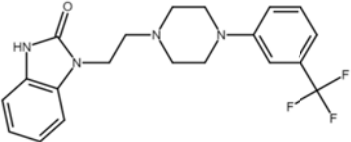
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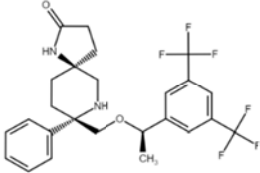
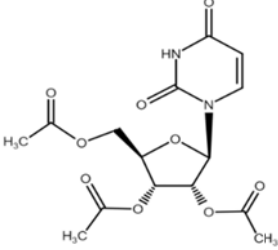
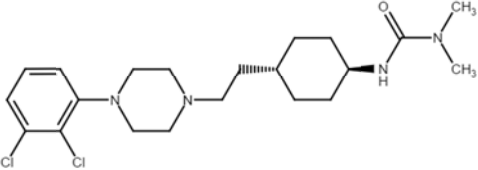
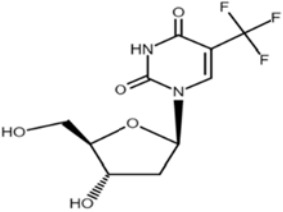
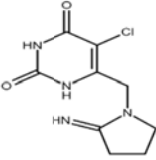
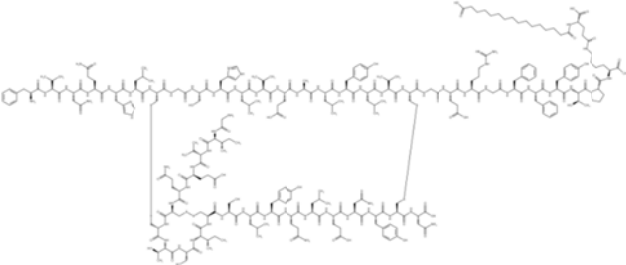
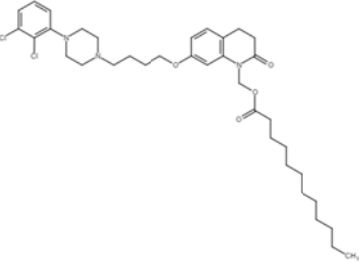
- Supplemental Table 1

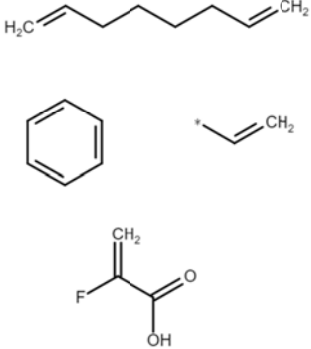
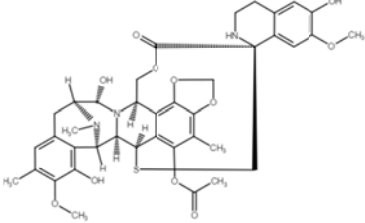
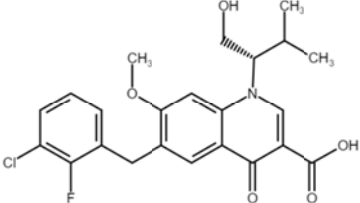
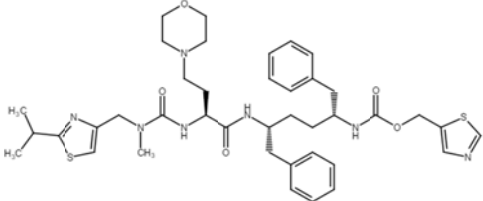
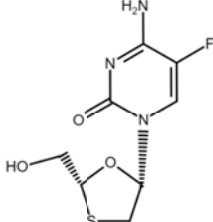
Supplemental Table 1. Chemical structures of compounds within the NDA approved in 2015 (ordered by approval date)

NDA (Approval Date)	Compound (CAS Registry Number)	Structure [#]
206316 (01/08)	Edoxaban (480449-70-5)	 <p>The structure of Edoxaban is a complex molecule featuring a central piperidine ring. It is substituted with a dimethylamino group (-N(CH₃)₂), a methyl group (-CH₃), and a side chain containing a thiazole ring, a carbonyl group, and a chlorine atom on a pyridine ring.</p>
207103 (02/03)	Palbociclib (571190-30-2)	 <p>The structure of Palbociclib consists of a central pyrimidopyrimidine bicyclic core. It is substituted with a methyl group, a cyclopentyl ring, and a side chain that includes a piperidine ring and a chlorine atom on a pyridine ring.</p>
206947 (02/13)	Lenvatinib (417716-92-8)	 <p>The structure of Lenvatinib is a highly complex, multi-ring molecule. It features a central benzimidazole core with numerous substituents, including multiple hydroxyl groups, a long aliphatic chain, and various heterocyclic rings.</p>
205353 (02/23)	Panobinostat (404950-80-7)	 <p>The structure of Panobinostat is a complex molecule with a central pyrimidopyrimidine bicyclic core. It is substituted with a methyl group, a cyclopentyl ring, and a side chain that includes a piperidine ring and a chlorine atom on a pyridine ring.</p>
206494 (02/25)	Ceftazidime* (72558-82-8)	 <p>The structure of Ceftazidime is a beta-lactam antibiotic. It features a central beta-lactam ring fused to a six-membered ring containing a sulfur atom. It is substituted with a thiazolidine ring, a phenyl ring, and a side chain containing a thiazole ring and a carboxylic acid group.</p>
	Avibactam (1192500-31-4)	 <p>The structure of Avibactam is a beta-lactamase inhibitor. It features a central beta-lactam ring fused to a six-membered ring containing a sulfur atom. It is substituted with a thiazolidine ring, a phenyl ring, and a side chain containing a thiazole ring and a carboxylic acid group.</p>

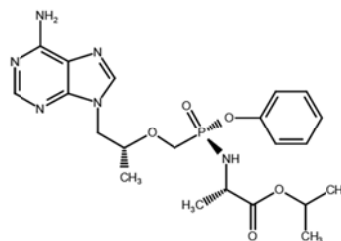
207500 (03/06)	Isavuconazonium sulfate (946075-13-4)	
205750 (03/17)	Cholic acid (81-25-4)	
206143 (04/15)	Ivabradine (155974-00-8)	
206333 (04/29)	Deoxycholic acid (83-44-3)	
206940 (05/27)	Eluxadoline (864821-90-9)	
204958 (06/22)	Cangrelor (163706-06-7)	
206038 (07/02)	Lumacaftor (936727-05-8)	

	Ivacaftor* (873054-44-5)	
207620 (07/07)	Sacubitril (149709-62-6)	
	Valsartan* (137862-53-4)	
205422 (07/10)	Brexpiprazole (913611-97-9)	
205266 (07/24)	Sonidegib (956697-53-3)	
206843 (07/24)	Daclatasvir (1009119-64-5)	
022526 (08/18)	Flibanserin (167933-07-5)	

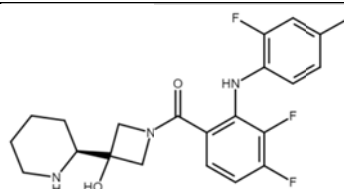
206500 (09/01)	Rolapitant (552292-08-7)	
208169 (09/04)	Uridine triacetate (4105-38-8)	
204370 (09/17)	Cariprazine (839712-12-8)	
207981 (09/22)	Trifluridine* (70-00-8)	
	Tipiracil (183204-74-2)	
203314 (09/25)	Insulin degludec (844439-96-9)	
207533 (10/05)	Aripiprazole lauroxil (1259305-29-7)	

205739 (10/21)	Patiromer (1260643-52-4)	
207953 (10/23)	Trabectedin (114899-77-3)	
207561 (11/05)	Elvitegravir* (697761-98-1)	
207561 (11/05)	Cobicistat* (1004316-88-4)	
	Emtricitabine* (143491-57-0)	

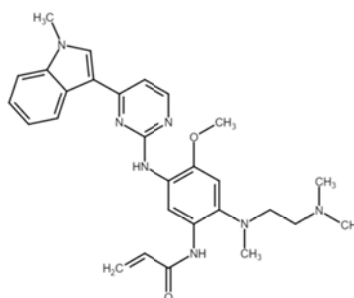
Tenofovir alafenamide
fumarate (sulfate)
(1392275-56-7)



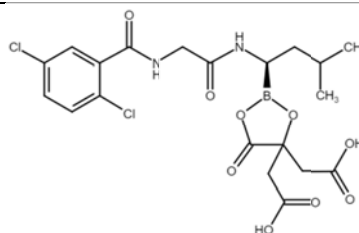
206192 Cobimetinib
(11/10) (934660-93-2)



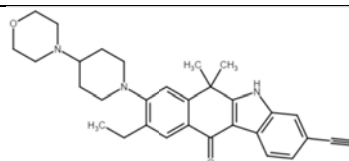
208065 Osimertinib
(11/13) (1421373-65-0)



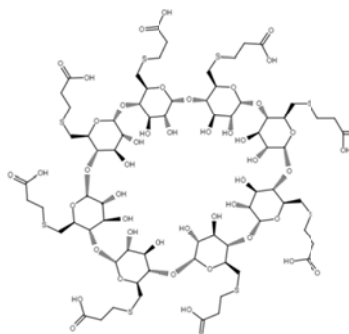
208462 Ixazomib citrate
(11/20) (1239908-20-3)

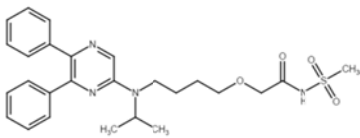
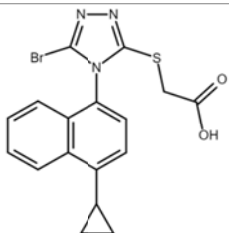


208434 Alectinib
(12/11) (1256580-46-7)



022225 Sugammadex
(12/15) (343306-71-8)



207947	Selexipag	
(12/21)	(475086-01-2)	
207988	Lesinurad	
(12/22)	(878672-00-5)	

Chemical structure was obtained from <https://chem.sis.nlm.nih.gov/chemidplus/>, accessed August 2016.

* Drugs approved prior to 2015