

Supplementary information

The evolving landscape of drug targets

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Supplementary Table 5 | Distribution of drugs and targets according to ATC level 1 codes

Level 1 code	Level 1 name	Targets	Drugs
A	ALIMENTARY TRACT AND METABOLISM	95	163
B	BLOOD AND BLOOD FORMING ORGANS	58	66
C	CARDIOVASCULAR SYSTEM	105	187
D	DERMATOLOGICALS	69	101
G	GENITO URINARY SYSTEM AND SEX HORMONES	51	83
H	SYSTEMIC HORMONAL PREPARATIONS, EXCL. SEX HORMONES AND INSULINS	31	57
J	ANTIINFECTIVES FOR SYSTEMIC USE	67	158
L	ANTINEOPLASTIC AND IMMUNOMODULATING AGENTS	210	322
M	MUSCULO-SKELETAL SYSTEM	45	67
N	NERVOUS SYSTEM	122	260
P	ANTIPARASITIC PRODUCTS, INSECTICIDES AND REPELLENTS	15	15
R	RESPIRATORY SYSTEM	48	95
S	SENSORY ORGANS	51	88
V	VARIOUS	51	36

Supplementary Table 6 | Distribution of drugs and targets according to protein groups

	Total^a		Mapped ATC^b		
Protein group	Drugs	Targets	Drugs^c	Targets^d	ATC level 1s
GPCRs	423	101	390(92.3%)	98(97.0%)	13
Enzymes	361	209	317(87.8%)	194(92.3%)	14
Other proteins	303	127	282(93.1%)	120(94.5%)	14
Ion channels	169	92	158(93.5%)	90(97.8%)	9
Nuclear hormone receptors	164	19	125(76.2%)	19(100%)	10
Catalytic receptors	158	73	141(89.2%)	72(98.6%)	11
Transporters	114	23	107(93.9%)	22(95.7%)	10
Endogenous peptides	65	42	60(92.3%)	42(100%)	9

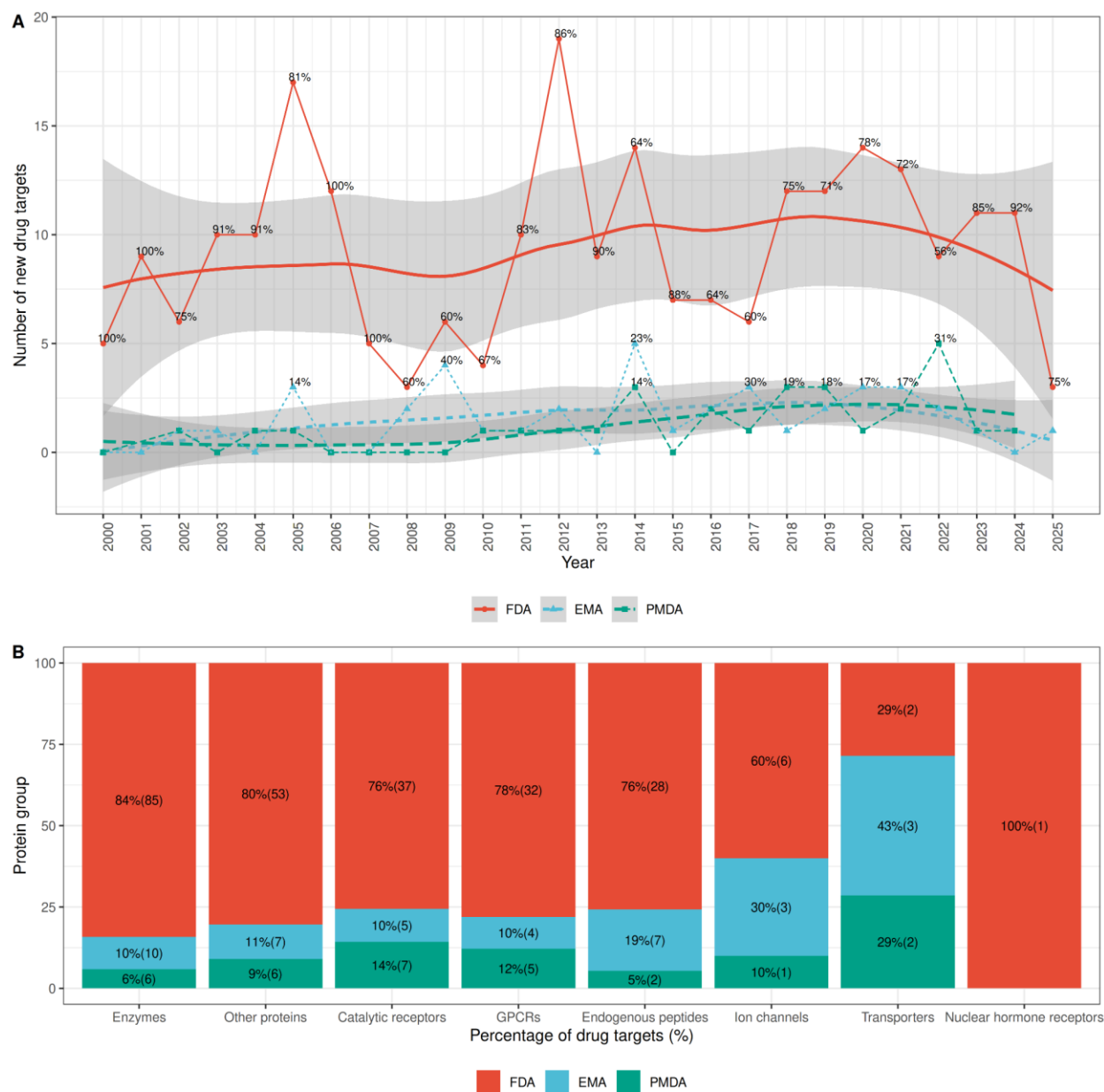
^aDrugs approved up to June 2025 and their modulated mechanism of action (MoA) targets.

^bDrugs mapped to ATC classification systems and their corresponding MoA targets.

^cPercentage computed against the total number of drugs. ^dPercentage computed against the total number of targets.



Supplementary Figure 1 | Distribution of novel targets according to drug CAS registration year.



Supplementary Figure 2 | Target innovation for drugs approved by three major regulatory agencies between 2000 and June 2025. A, Annual distribution of new molecular targets for drugs approved by the FDA, EMA and PMDA, expressed as both counts and percentages of total targets approved each year. Drugs approved by the FDA consistently led global target innovation, contributing between 50% and 100% of the annual total. **B,** Cumulative distribution of newly launched targets across major protein families by agency, with counts shown in parentheses.