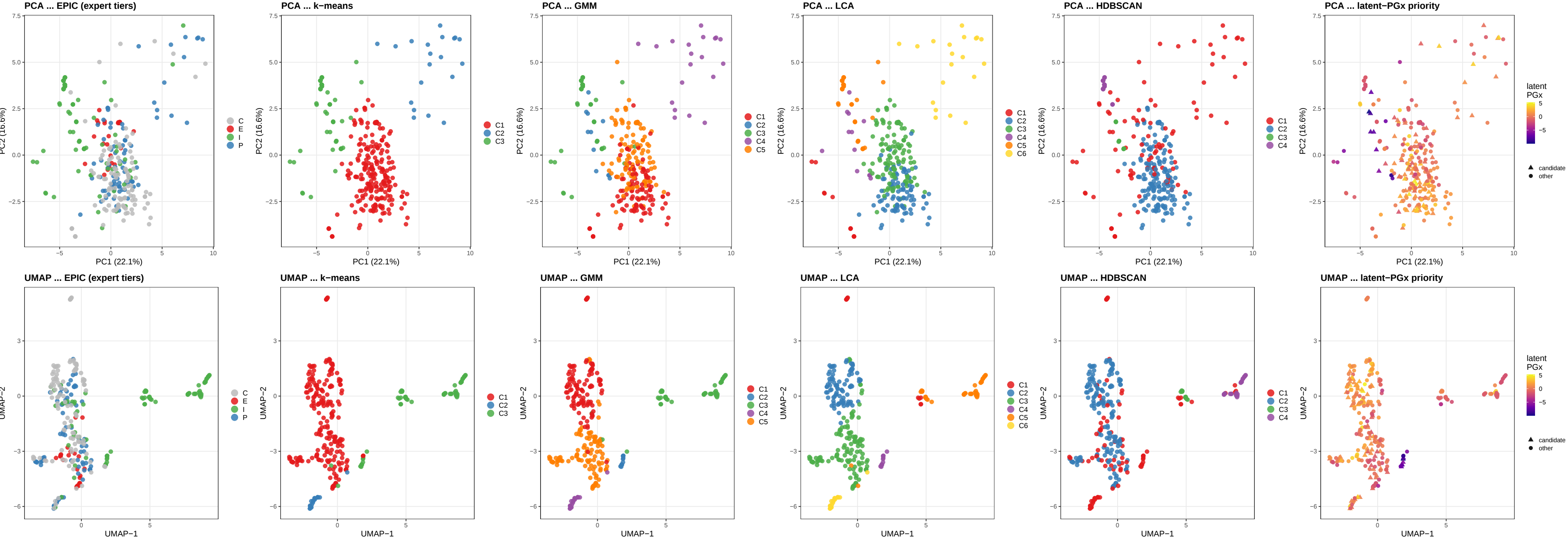


ABM Atlas ... PCA & UMAP projections of 300 ADR associations (36-feature model)

Top: PCA. Bottom: UMAP. Columns: expert EPIC tiers, four unsupervised classifiers, and the continuous latent-PGx prioritisation score (triangles = gated candidates).



ABM Atlas ... cluster names, EPIC overlap and description (v20, 34-feature model)

EPIC: E=Effect P=Predisposition I=Indication C=inConclusive. Overlap = % of each cluster's members falling in each expert EPIC tier.

Method	CI	n	Cluster name	EPIC	EPIC overlap % (E/P/I/C)	Description
KMEANS	C1	222	Heterogeneous / mixed	P	E 12 / P 30 / I 11 / C 48	Mixed tiers
KMEANS	C2	20	Rare-variant predisposition	P	E 0 / P 65 / I 10 / C 25	Drug-amplified, often rare-variant; partial mechanism
KMEANS	C3	58	Canonical indication	I	E 0 / P 0 / I 95 / C 5	On-label drug-disease pair (confounding by indication)
GMM	C1	111	Inconclusive / weak-evidence	P	E 1 / P 23 / I 12 / C 64	Low signal across all evidence layers
GMM	C2	11	Indication (pleiotropic)	I	E 0 / P 9 / I 73 / C 18	On-label or pleiotropic common-variant indication
GMM	C3	50	Canonical indication	I	E 0 / P 0 / I 100 / C 0	On-label drug-disease pair (confounding by indication)
GMM	C4	20	Rare-variant predisposition	P	E 0 / P 65 / I 10 / C 25	Drug-amplified, often rare-variant; partial mechanism
GMM	C5	108	Heterogeneous / mixed	P	E 23 / P 36 / I 7 / C 33	Mixed tiers
LCA	C1	12	Inconclusive / weak-evidence	I	E 0 / P 0 / I 42 / C 58	Low signal across all evidence layers
LCA	C2	89	Inconclusive / weak-evidence	P	E 0 / P 29 / I 11 / C 60	Low signal across all evidence layers
LCA	C3	123	Heterogeneous / mixed	P	E 21 / P 32 / I 10 / C 37	Mixed tiers
LCA	C4	12	Indication (pleiotropic)	I	E 0 / P 8 / I 75 / C 17	On-label or pleiotropic common-variant indication
LCA	C5	44	Canonical indication	I	E 0 / P 0 / I 98 / C 2	On-label drug-disease pair (confounding by indication)
LCA	C6	20	Rare-variant predisposition	P	E 0 / P 65 / I 10 / C 25	Drug-amplified, often rare-variant; partial mechanism
HDBSCAN	C1	93	Heterogeneous / mixed	I	E 6 / P 27 / I 31 / C 36	Mixed tiers
HDBSCAN	C2	170	Heterogeneous / mixed	P	E 12 / P 32 / I 9 / C 48	Mixed tiers
HDBSCAN	C3	12	Canonical indication	I	E 0 / P 0 / I 100 / C 0	On-label drug-disease pair (confounding by indication)
HDBSCAN	C4	25	Canonical indication	I	E 0 / P 0 / I 100 / C 0	On-label drug-disease pair (confounding by indication)