Advanced Fragment Library

Fragment-based screening (FBS) has gained recognition in the pharmaceutical industry as an attractive approach for the hit identification in drug discovery programs, in addition to classical strategies such as high-throughput screening (HTS). Fragment-based drug discovery (FBDD) allows creating more concise screening libraries, while covering larger chemical spaces, especially those unexplored and underrepresented. It provides more straightforward starting points for subsequent chemical optimization of initial fragment hits.

The process of fragment synthesis obeys a heuristic rule called the Rule of Three (molecular weight < 300, ClogP < 3, the number of hydrogen bond donors and acceptors each < 3, rotatable bond number < 3). This innovative approach of tuning to the Rule of Three parameters helps to generate small-molecule compounds with improved ADME profile for efficient lead identification by FBDD and high-throughput screening (HTS).

Our **Advanced Fragment Library** of around **8,000** drug-like fragments has been designed by applying the fundamentally improved fragment picking approach to the Life Chemicals HTS Compound Collection and General Fragment Library. These novel fragment-like molecules synthesized in-house are suitable for different fragment screening assays (ligand-based NMR, SPR, fluorescence polarization anisotropy, thermal shift etc.).

Key features

- Ideal for fragment-based lead generation
- Rigorously filtered for drug-likeness and optimal molecular properties, including Ro3 compliance
- Solubility filtering: ClogS ≥ -3
- TPSA ≤ 80 Å^2 cut-off
- Over 90 % purity confirmed by LCMS and/or NMR data
- Guaranteed hit re-supply, product scale-up

The compound selection can be customized based on your requirements, cherry-picking is available.

Please, contact us at orders@lifechemicals.com for any additional information and price quotations.

Explore our Pre-plated Fragment Screening Sets.

Compound selection

Taking into consideration that over 80 % of drugs on the market have an estimated logS_w value greater than -4, the design of this Fragment Screening Subset has been refined by adding solubility filtering.

All reactive and unstable molecules were filtered out. Additionally, PAINS and in-house developed MedChem filters, such as toxicophore and undesired functionalities, were applied to further brush up the resulting fragment-like molecule collection, finally including around **8,000** drug-like fragments.

Physicochemical parameters are summarized in the table below:

Parameter	MW	ClogP	Fsp^3	TPSA	RotB	HBD	HBA	Benzene rings
Selection range	150 - 300	-2 - 3	> 0.4	< 80 Å^2	≤ 3	≤ 3	≤ 3	≤ 1
Average value	222	1.08	0.6	46	2.3	1.3	2.3	≤ 1

Parameter	ClogS	Rings	Halogens (except F)	S atoms
Selection range	≥ -3	1 - 3	≤ 1	≤ 1
Average value	- 1.9	2.2	≤ 1	≤ 1

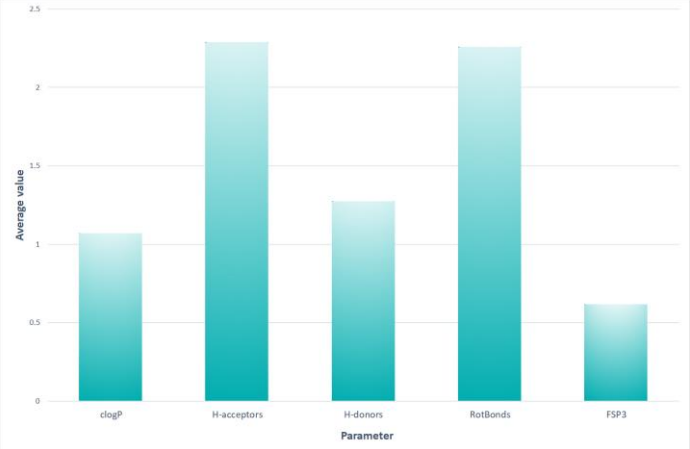
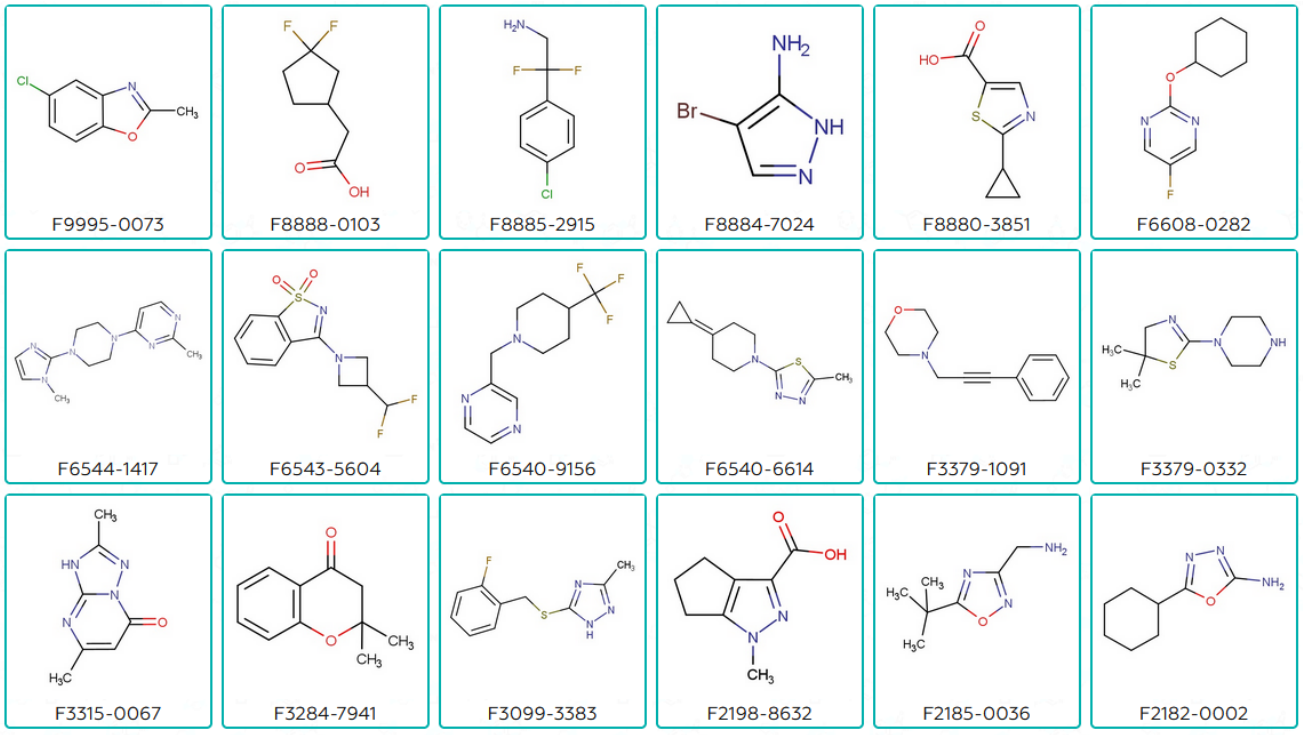


Figure 1. Average values for the main physicochemical parameters of the compounds from the Advanced Fragment Library

Representative compounds from Ultimate Fragment Library



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