Chelator Focused Library

Over the past 10 years, four scientific strategies have emerged in traditional chelation therapy which include altering metal biodistribution, inhibiting specific metalloenzymes associated with disease, enhancing the reactivity of a metal complex to promote cytotoxicity, and conversely, passivating the reactivity of metals by site-activated chelation to prevent cytotoxicity [1-2].

Life Chemicals offers its new Chelator Library (**5,729** compounds) that is based on all these strategies. Selected chelator types demonstrate binding metal ions and affinities to metalloproteins providing a diverse range of molecular platforms which can be used for design, synthesis and screening lead compounds [3].

The Life Chemicals Chelator Library compounds contain at least one chelating group and could be used to generate libraries (including libraries of fragments) targeting important metalloproteins by inhibiting their activity. The Life Chemicals Chelator Library have passed a number of substructure, similarity and physico-chemical property filters and was narrowed down according to an expanded Lipinski's Rule of Five (see the table below). In addition, compounds with toxic, bad and reactive groups have been filtered out from the library.

Parameter	**Value**	**Average**
MW	100 - 400	263.46
ClogP	- 0.3 to 5	1.38
Number of Rotatable Bonds	≤ 10	3.82
Number of H Donors	≤ 5	1.78
Number of H Acceptors	≤ 10	3.51
TPSA	< 180	83.12
logS	> - 7	- 2.57

References:

1. Franz K.J. Clawing back: broadening the notion of metal chelators in medicine // Curr Opin Chem Biol. 2013 Apr;17(2):143-9.
2. Agrawal A., Johnson S.L., Jacobsen J.A., Miller M.T., Chen L.H., Pellecchia M., Cohen S.M. Chelator fragment libraries for targeting metalloproteinases // ChemMedChem. 2010 Feb 1;5(2):195-9.
3. Hatcher H.C., Singh R.N., Torti F.M., Torti S.V. Synthetic and natural iron chelators: therapeutic potential and clinical use // Future Med Chem. 2009 Dec;1(9):1643-70.