Subject: Drug Likeness vs Drug Score
Posted by ELFritzen on Mon, 01 Feb 2021 16:25:53 GMT
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Is there a difference between Drug Likeness, calculated from a compound's structure and a Drug Score? The users manual uses both terms, and is not very clear.

Thanks,
Ed

Subject: Re: Drug Likeness vs Drug Score
Posted by nbehrnd on Mon, 01 Feb 2021 17:37:35 GMT
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The manual's page

http://www.openmolecules.org/properties/properties.html

reads like a druglikeness is computed in first place, subsequently used to compute a drug score.

Lipinski's rule of five properties is one, but not the sole approach to define druglikeness. An implementation other than DataWarrior computing the later and others may be SwissADME (https://doi.org/10.1038/srep42717, open access).

Subject: Re: Drug Likeness vs Drug Score
Posted by ELFritzen on Tue, 02 Feb 2021 15:57:10 GMT
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Thanks for the reply. I'm trying to figure out exactly how Datawarrior calculates the Druglikeness and what factors are considered. The calculated value obtained is just a number to me. I'm not sure what the number means and how I might use it to determine the probability of finding a good drug lead. Are bigger numbers better? I can't figure that out. The article you provided is very informative, and it does point to a Web-based calculator which assesses the druglikeness of any molecule submitted, but I can't fine an overall druglikeness number like I see calculated in Datawarrior.

Ed

Subject: Re: Drug Likeness vs Drug Score
Posted by thomas on Tue, 02 Feb 2021 22:27:52 GMT
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The druglikeness is based on a long list of (>5000) substructures of which every one is associated

with a numerical value. These substructures basically list all more or less frequent substructures to be found in drug and/or commercially available building blocks. If a fragment is a frequent substructure in building blocks, but rarely found within drugs, then it get a negative value that quantifies this ratio. Fragments that are predominantly found in drug structures have positive values. For calculating the druglikeness, DataWarrior goes through the list of substructures. When a substructure is part of the query molecules, then its value is added to the sum. Finally, the sum is normalized by deviding it by SQRT(fragmentCount).
Building block like molecules get values below zero, while drug like molecules get positive sum. A bar chart in the DataWarrior manual (above link) shows that.

If you are interested to look at the fragments with contributions, you may download the data file from the DataWarrior source code:

https://github.com/Actelion/openchemlib/blob/master/src/main
/resources/resources/druglikenessNoIndex.txt

Open it in a text editor, add a first line 'idcode value' (without quotes; make sure that the white space after 'idcode' is a TAB), and save the file. Then you can open it in DataWarrior, where you should see the structures and associated contribution values.

Thomas

Subject: Re: Drug Likeness vs Drug Score
Posted by ELFritzen on Fri, 05 Feb 2021 15:42:35 GMT
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Thanks for the explanation, Thomas. It is very helpful. Do you know why this post never showed up in the Cheminformatics Forum? In order to find my original post and the replies, I needed to show all of my posts.

Thanks,
Ed

Subject: Re: Drug Likeness vs Drug Score
Posted by ELFritzen on Tue, 09 Feb 2021 15:26:32 GMT
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Today the posts showed up.
Thanks,
Ed
