

Acelot and ChemAxon

How Acelot tools can leverage Marvin for advanced result visualization

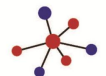
Christian A. Lang, CTO
Acelot, Inc.



ACELOT

Acelot, Inc.

- **Cheminformatics company**
- Located in Santa Barbara, CA
- Offering **products and consultation services for pharmaceutical industry**
 - Covering **lead generation/optimization** phases
 - Chemical search and discovery tools
 - ADME/Tox prediction tools
 - Pharmacophore analysis tools



Acelot's Solution

- **Never leave the chemical space**
Easy to understand by chemists
- **Novel search results**
Higher potential for new compounds
- **Statistics-based significance measures**
Better predictions
Fewer downstream failures



Current Collaborations

Alzheimer's
Institute



CSUCI Alzheimer's Institute

identification of novel drug leads for Alzheimer's disease



Cognition Therapeutics Inc.

identification of novel drug leads for Alzheimer's disease



Harvard NeuroDiscovery Center

discovery of novel CDK-5 inhibitors for neurodegenerative diseases



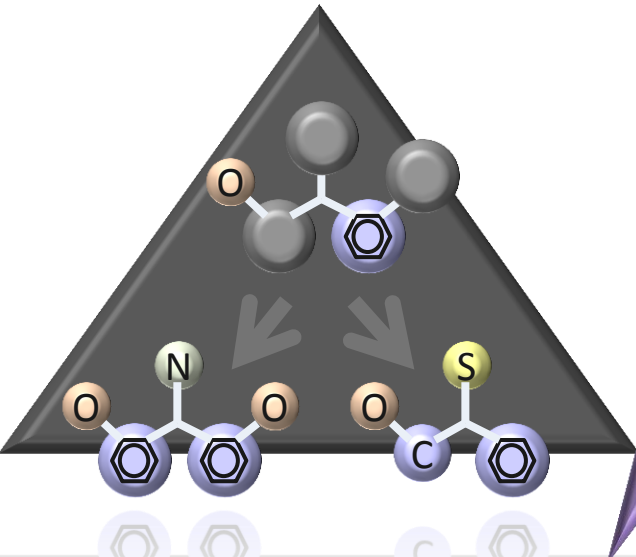
University of California, Santa Barbara

development of novel graph querying and mining methods

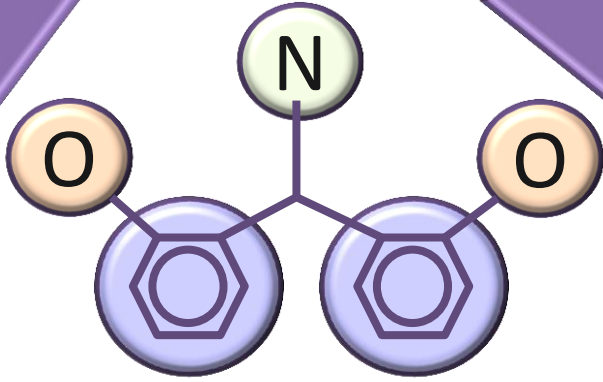


ACELOT

Core Technology: Structure Searching & Mining



Scalable structure matching

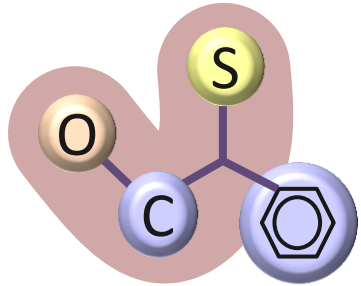
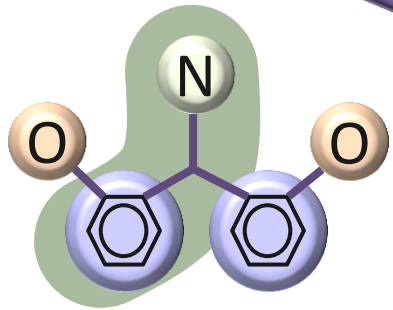


Flexible/visual representation



Model-based significant substructure discovery

Substructure-based activity prediction



ACELOT

Product Suite

Release Date

Features



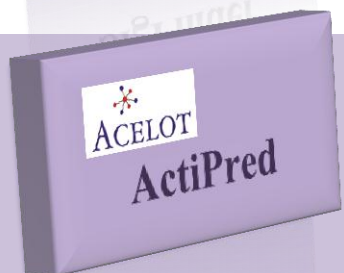
Mar 2011

Chemical searching
Lead generation



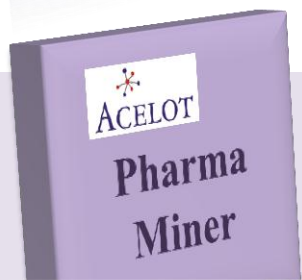
Mar 2011

Fragment mining
Lead optimization



Mar 2011

Activity prediction
Lead optimization &
pre-clinical



2H 2011

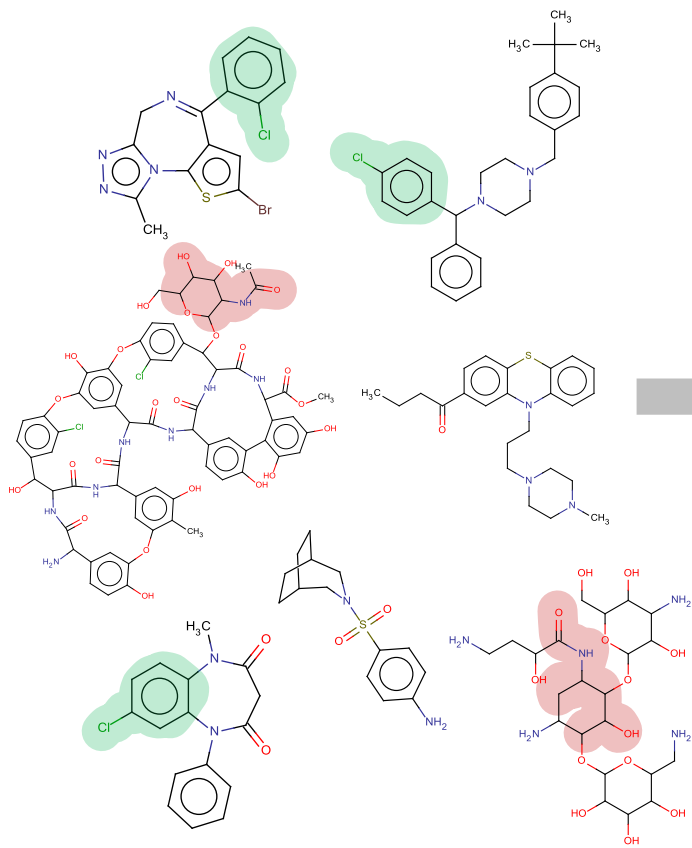
3D & binding
Lead gen & opt



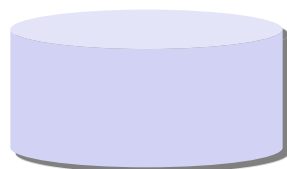
ACELOT

SigFinder: Significant Substructure Discovery

Compound Database



Background database



Model



Significant Substructures

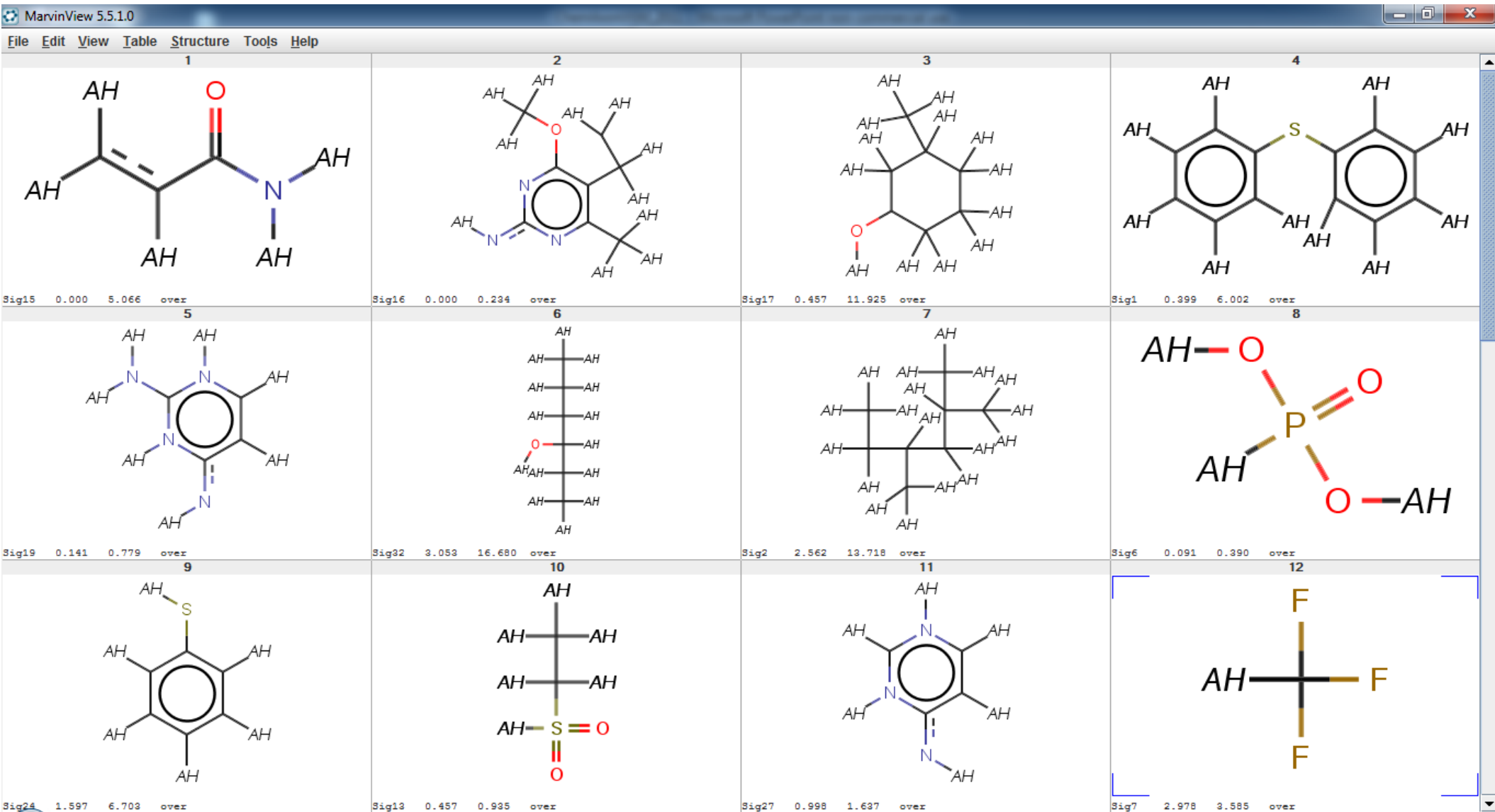
structurally over- or under-represented relative to a given background database of molecules

De-novo drug design /
Substructure searching



ACELOT

Example: Significant Substructures of Blood-Brain Barrier Permeables



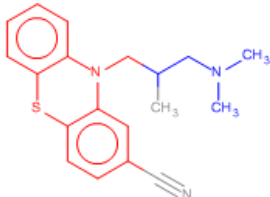
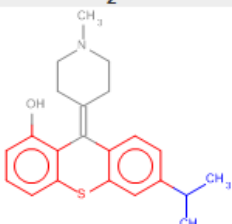
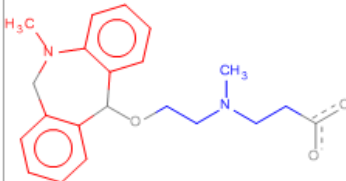
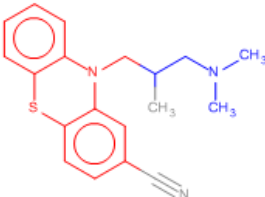
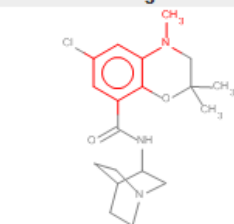
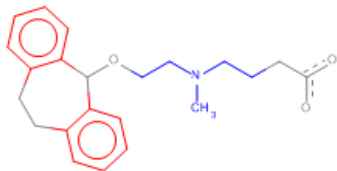
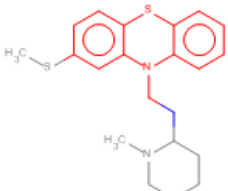
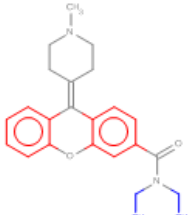
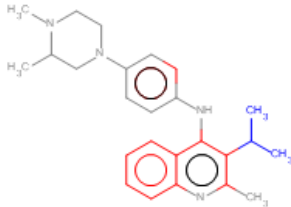
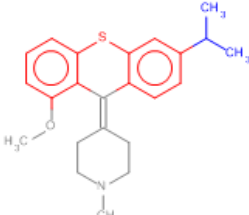
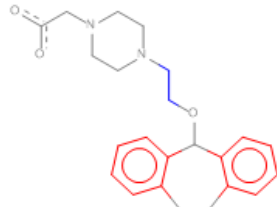
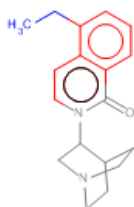
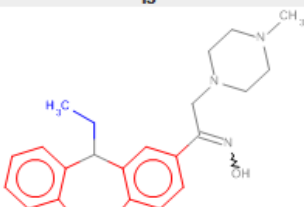
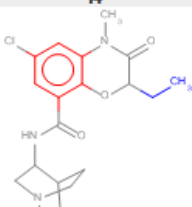
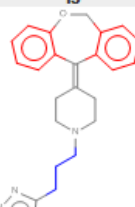
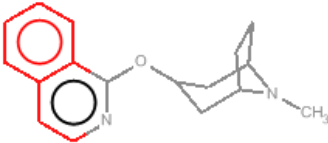
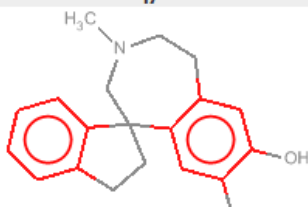
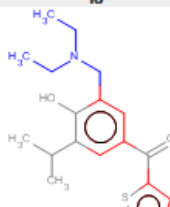
SimFinder: Fuzzy Substructure Searching

Example: Find results in the MDDR drug database that contain

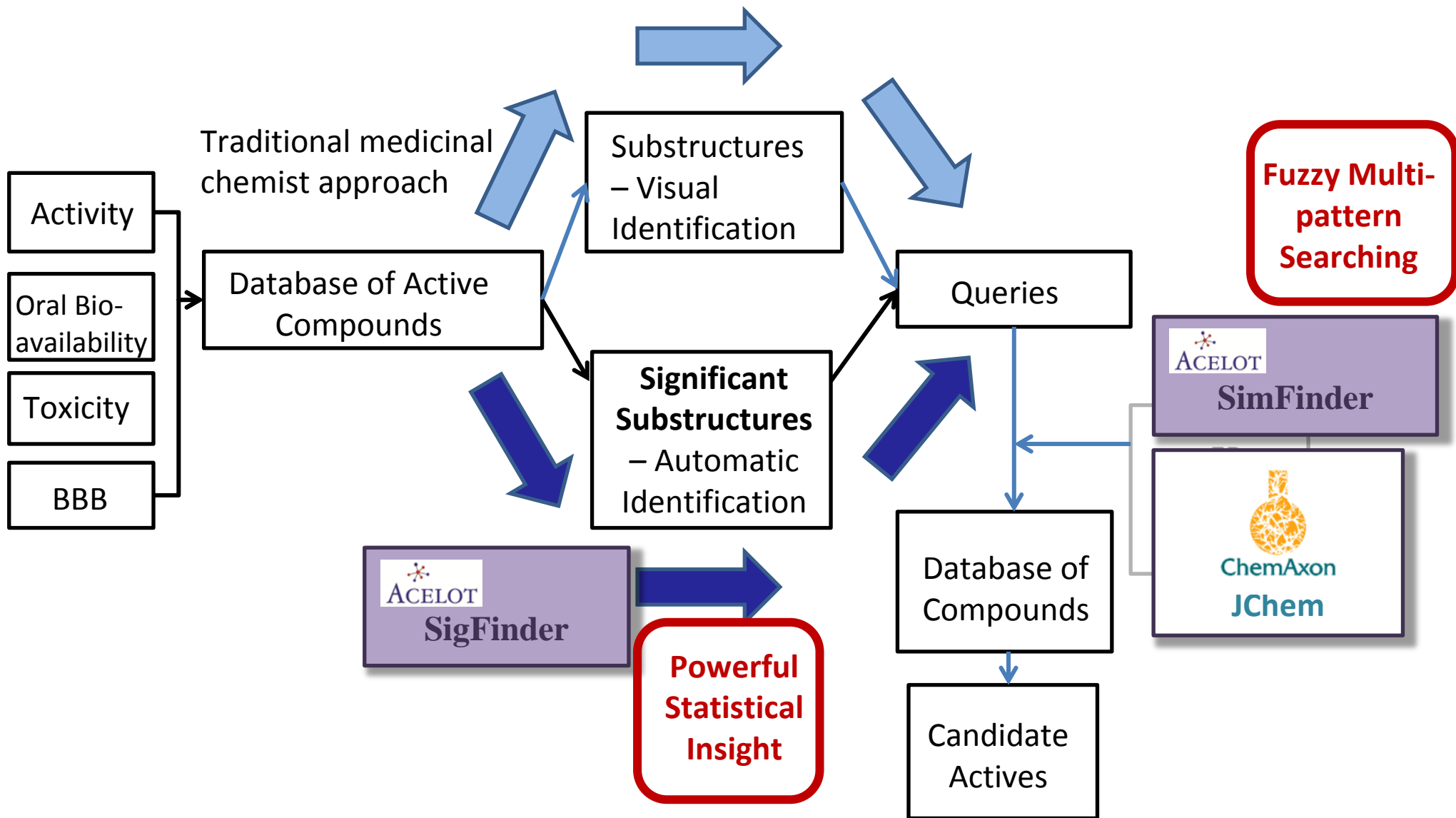


BBB_sigs_query.sdf - MarvinView .NET 5.3.7

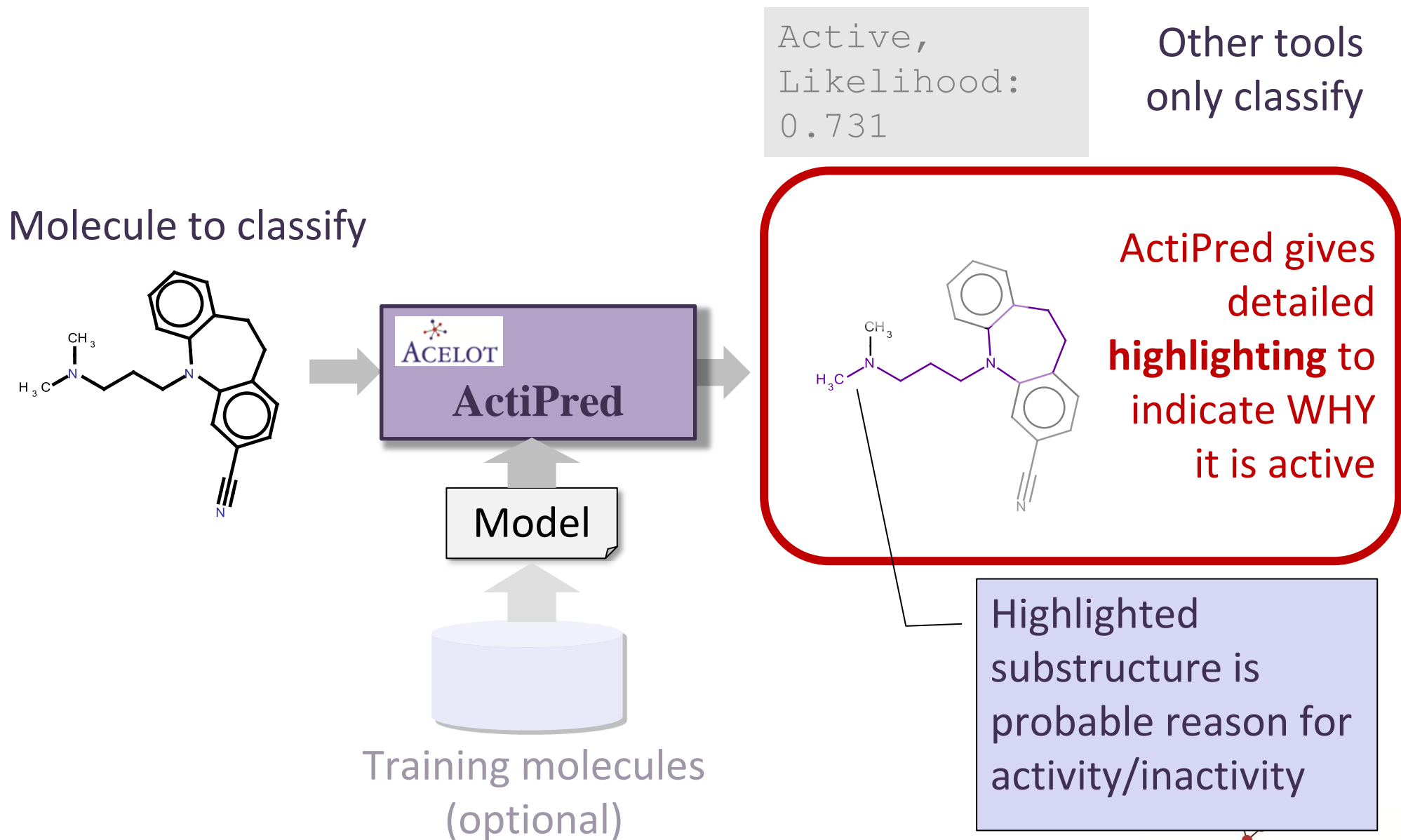
File Edit View Table Tools Help

 p285365 0.942370056751644	 p339803 0.9148950544995946	 p243688 0.8961805242770922	 p285365 0.8297000270245923	 p171535 0.82249346905668417	 p244189 0.8015719304567156
 p091404 0.7942752905143681	 p393871 0.7926538149716241	 p378109 0.7847941626880461	 p339802 0.768804612121970994	 p244214 0.7264660841365643	 p235149 0.697054319430682
 p151599 0.6925502207008377	 p152375 0.6695793171786325	 p221399 0.6558418160526078	 p151368 0.6472615079722548	 p221022 0.6364291505269796	 p170446 0.6184127556076029

SigFinder + SimFinder Workflow



ActiPred: ADME/Tox Prediction with Graphical Reasoning



ADMET “Reasoning Classifiers” Included

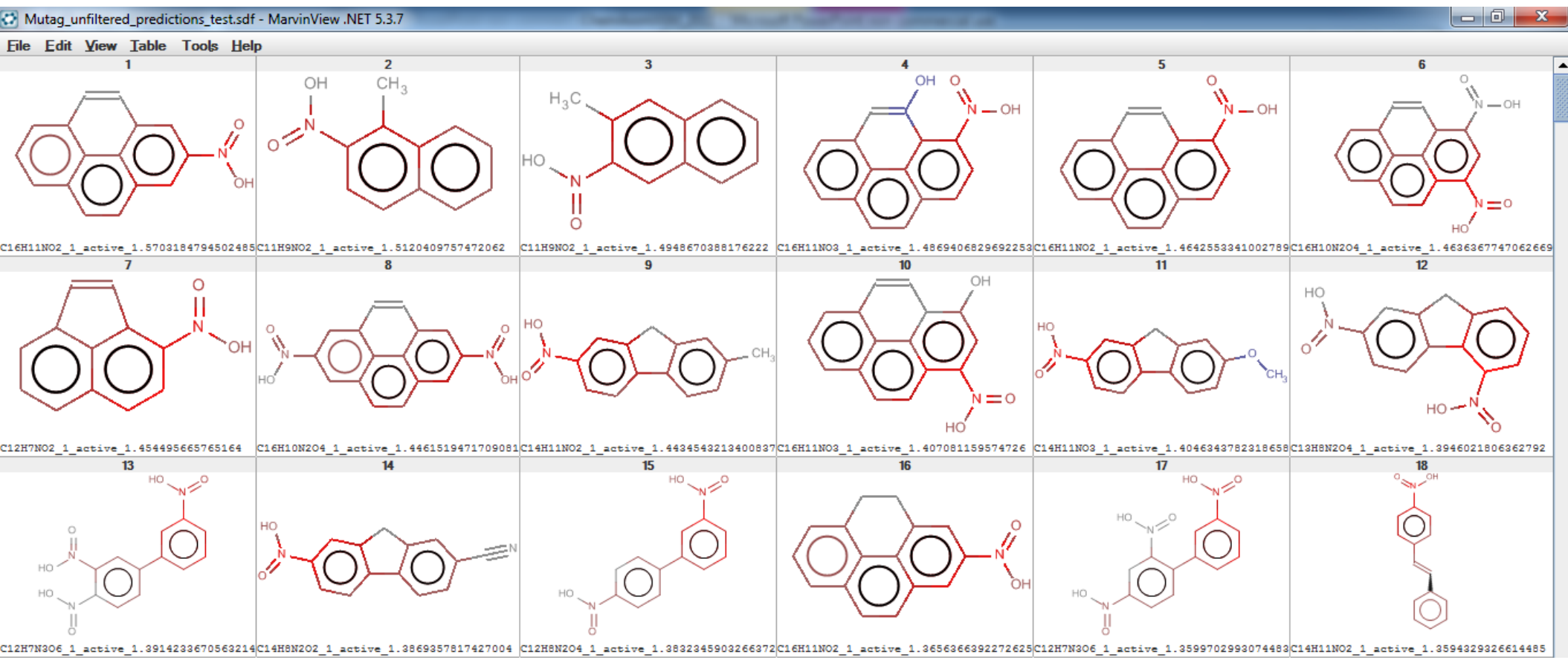
Model	Description
MUTA	Mutagenicity in Salmonella typhimurium
BBB	Blood-brain-barrier permeability
PGP	P-glycoprotein inhibition
ESTRO	Estrogen receptor binding
HERG	hERG channel inhibition
P4503A4I	CYP450 enzyme (isoform 3A4) inhibition

And more...



Example: Prediction of Mutagenicity

Molecules classified as **mutagenic** by ActiPred
(highlighting indicates fragments likely contributing to property):



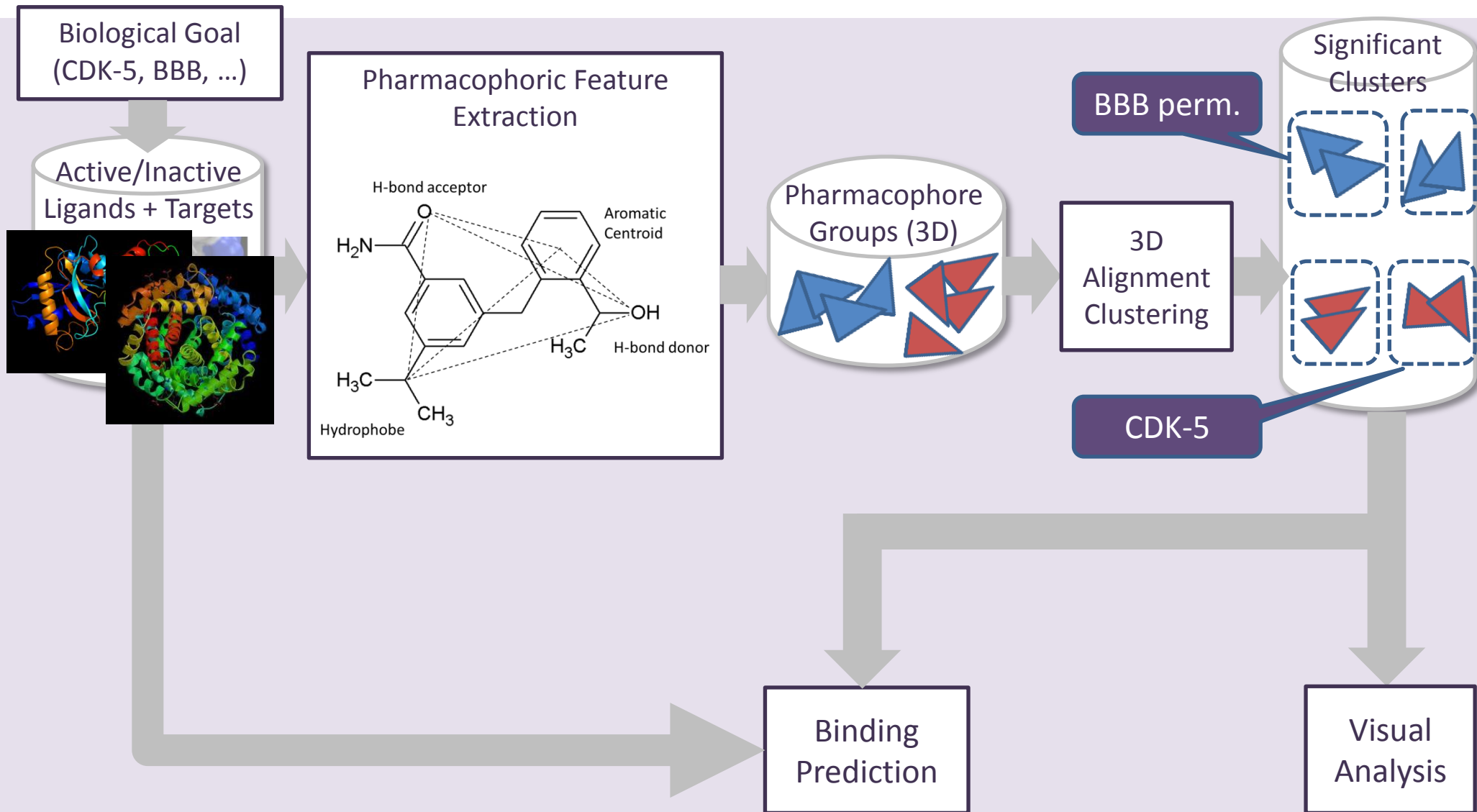
PharmaMiner:

3D Pharmacophore Analysis

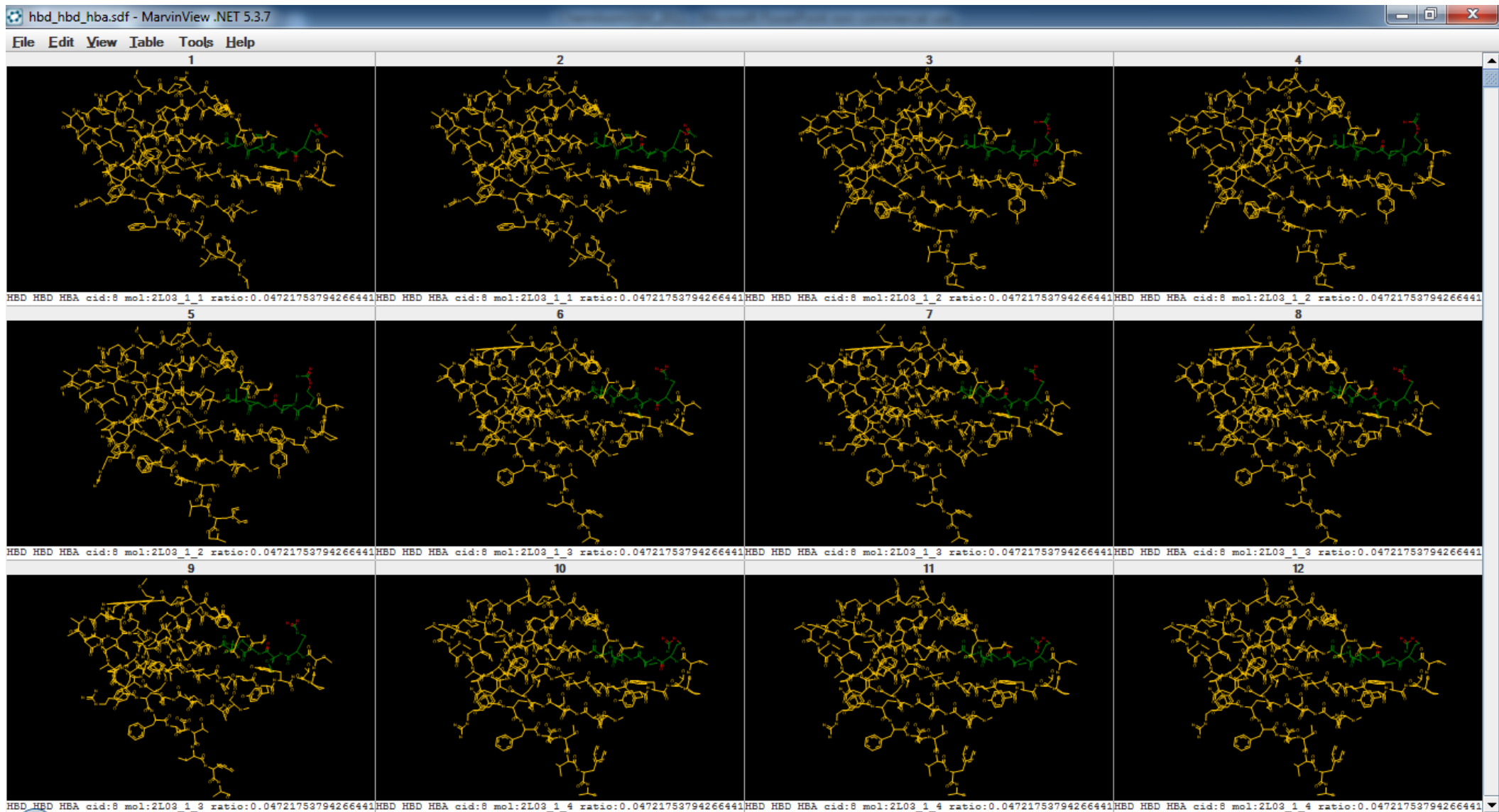
- Employs *Joint Pharmacophore Space (JPS)* using **3D descriptors** from diverse libraries/targets
- Analysis of pharmacophores in the JPS
 - **Classification and clustering** for understanding of biological activity
 - **Screening** for compounds based on presence and/or absence of activity
 - **Diversity analysis** in 3D space
- Fragment-based **discovery and scaffold hopping**

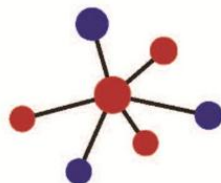


PharmaMiner Technology



Discovered Pharmacophores Rendered in MarvinView





ACELOT

5385 Hollister Ave
Suite 111
Santa Barbara, CA 93111
Phone: (805) 680-1244
Email: info@acelot.com

<http://www.acelot.com/>