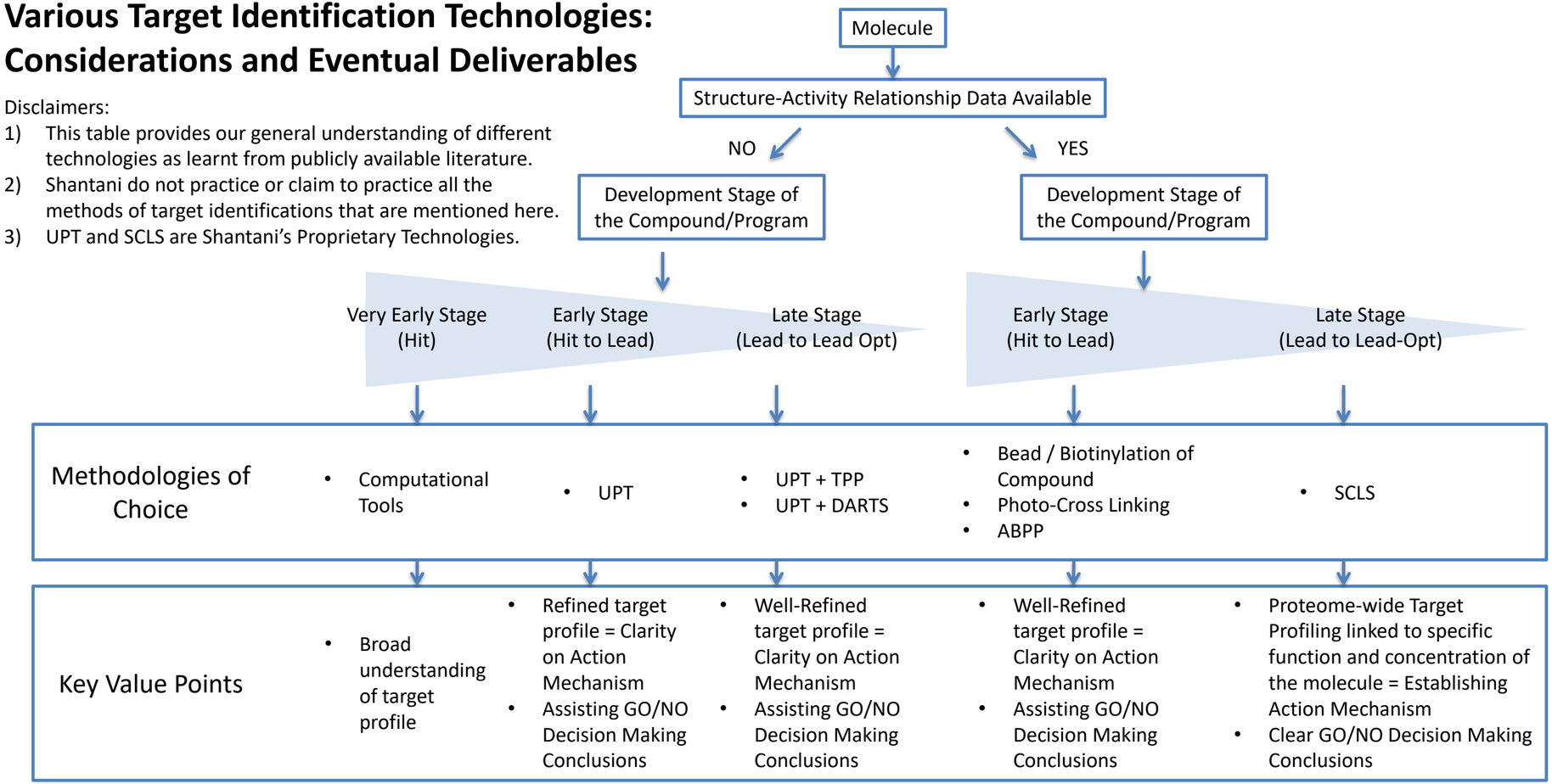
Various Target Identification Technologies: Considerations and Eventual Deliverables

Disclaimers:

1) This table provides our general understanding of different technologies as learnt from publicly available literature.
2) Shantani do not practice or claim to practice all the methods of target identifications that are mentioned here.
3) UPT and SCLS are Shantani's Proprietary Technologies.



Abbreviation

UPT = Unique Polymer Technology (Shantani's Proprietary Technology)

TPP = Thermal Proteome Profiling *Savitski et al.*, Science (2014) 346 (6205):1225784)

DARTS = Drug Affinity Responsive Target Stability (*Lomenick et al.* PNAS (2009) 106:21984–9)

ABPP = Activity Based Protein Profiling (*Evans et al.* Nat Biotechnol (2005) 23:1303-7)

SCLS = Subcellular Location Specific Target Capture & Identification Technology (Shantani's Proprietary Technology)

For Other Available Target Identification Methodologies:

Saxena et al. Expert Opin. Drug Discov. (2009) 4:701-714

Saxena C. Expert Opin. Drug Discov. (2016) 11:1017-1025

Target Identification: Comparison of Chemical-Proteomics Based Mass-Spectrometry Based Methodologies

	Resources	Molecule Derivatization Not Needed / Structure-Activity Relationship not Available				Molecule Needs to be Derivatized / Structure-Activity Relationship Available			
Criteria		**Computational Tools**	**UPT**	**TPP**	**DARTS**	**Bead / Biotinylation**	**Photo-Cross Linking**	**ABPP**	**SCLS**
Resources	**Chemistry**	-	-	-	-	++	+++	+++	++
	Computational and/OR Statistical	+++++	++	++++	++++	++	+++	+++	++
	Biochemistry	-	+	+	+	+	+	+	++
	Cell-Biology	-	+	+	+	+	+	+	++
	Mass-Spectrometry	-	++	+++	+++	+++	+++	+++	++
Time		+	++	++	++	++++	++++	++++	+++++
Cost		+	+++	++++	++++	+++	++++	++++	+++++
False Positive Identification		~ 80 %	~40%	~60%	~60%	~40%	~40%	~30%	~20%
Key Advantage(s)		Quick & Cost Effective	• Underivatized bait-molecule • Target Identification through affinity based target enrichment	Underivatized bait-molecule	Underivatized bait-molecule	Targets of varied affinity (high and low) are captured	Covalent capture of target	Activity based target capture	Capture of target from live cell in sub-cellular location specific manner
Disadvantages		Very High False Positive Rate	Certain highly water Soluble Compounds can not used	• Limited to Soluble Proteins only • Complex data-analysis	• Limited to Highly Abundant Proteins only	• Bait-molecule derivatization is needed for immobilization • Limited success in capturing membrane targets	• Bait-molecule derivatization is needed for immobilization • Primary bait-molecule may loose activity because relatively larger size of probes	• Bait-molecule derivatization is needed for immobilization • Very Specific probes needs to be synthesized –target class specific capture	• Bait-molecule derivatization is needed for immobilization • Particular Function / phenotype linked target are captured