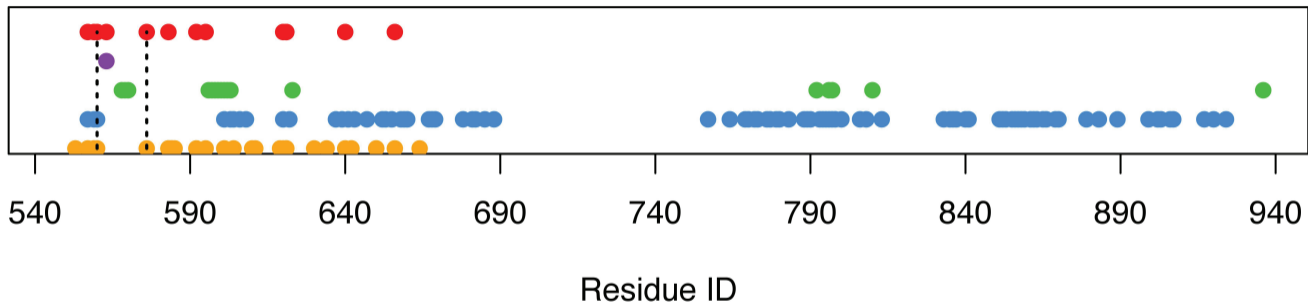


*“There are methods existing in order to evaluate potential effects of low-allele-frequency variants in unbiased ways (SIFT, PolyPhen2, MutationTaster, and many others). I would like to see how exactly your method adds up to this ... One could for example create a small set of variants and analyse these with one or two of the "common" tools to predict the deleteriousness of SNVs (e.g. PolyPhen2 and MutationTaster2, since these are generally considered the most accurate ones) and then check if there are disease variants predicted as "harmless" by these tools (i.e. false negative) which are then correctly seen as locally maximal frustrated by your method...”*

**→ Find HGMD SNVs not captured by PolyPhen  
(yet are captured through frustration)**

<u>single chain PDBs</u>		<u>Multi- chain PDBs</u>	
<u>PDB</u>	<u># HGMD SNVs</u>	<u>PDB</u>	<u># HGMD SNVs</u>
1T45	2	2VGB	2
1V4S	15	3GXP	7
1KQ6	1	1A4I	1
3PXA	1	1IIL	1
1AD6	1	2O4H	1
2AMY	1	3HN3	1
1OG5	1		
2X6U	1		

# C-KIT TYROSINE KINASE (pdb 1T45)



● UniProt Annotations (PTM, PPI, etc)

● Buried residues

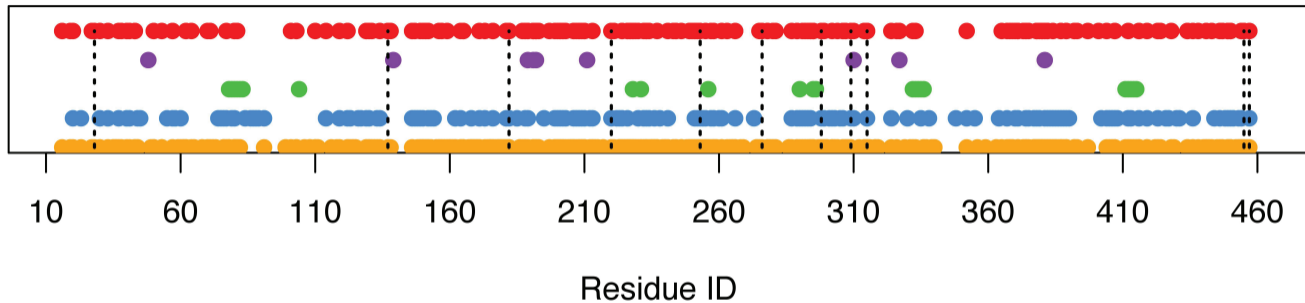
● HGMD sites

● Deleterious SNV ( $\Delta F < -0.4$ )

● ExAC (benign)

⋮ HGMD SNV uniquely captured by  $\Delta F$

# Glucokinase (pdb 1V4S)



● UniProt Annotations (PTM, PPI, etc)

● Buried residues

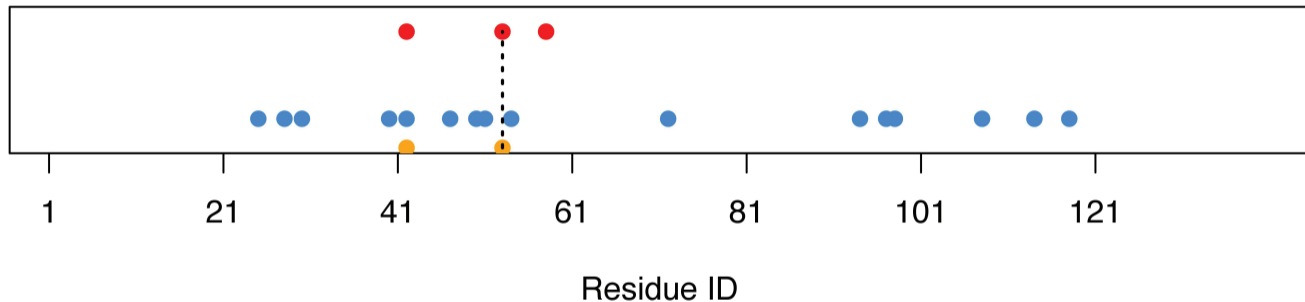
● HGMD sites

● Deleterious SNV ( $\Delta F < -0.4$ )

● ExAC (benign)

⋮ HGMD SNV uniquely captured by  $\Delta F$

# Neutrophil cytosol factor 1 (pdb 1KQ6)



● UniProt Annotations (PTM, PPI, etc)

● Buried residues

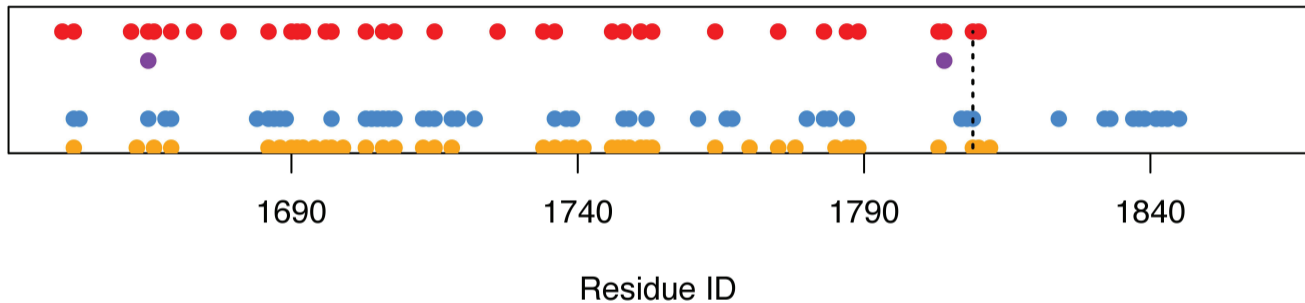
● HGMD sites

● Deleterious SNV ( $\Delta F < -0.4$ )

● ExAC (benign)

⋮ HGMD SNV uniquely captured by  $\Delta F$

# Breast cancer type 1 (pdb 3PXA)



● UniProt Annotations (PTM, PPI, etc)

● Buried residues

● HGMD sites

● Deleterious SNV ( $\Delta F < -0.4$ )

● ExAC (benign)

⋮ HGMD SNV uniquely captured by  $\Delta F$