Activity on kinases

- Abl kinase is a Src tyrosine kinase. Src tyrosine kinases were molecule of the month on the PDB website in Jul 2003 and more information about their general properties can be found here: http://pdb101.rcsb.org/motm/43. Answer the following questions based on this text:
  - What is the function of Src tyrosine kinases?
  - Is there only one Src tyrosine kinase? What are some others?
  - What is special about v-Src? How does it differ from c-Src?
  - What is the purpose of most drug design studies against Src?
- Go to the Abl kinase entry in the PDB by clicking on 1opl link in the molecule of the month page or search for the PDB ID 1OPL in PDB.
- Clicking on "search on pubmed" will take you to the primary citation link for Abl kinase structure in PUBMED.
  - What is the name of the article?

- Now let's examine Src kinase family of proteins
- Abl kinase is a Src kinase.
- Search for reviewed, human Src kinases with Src as the protein family filter.
- How many proteins are there?
  - How many human Src kinases?
  - How many Uniref100, Uniref90? What are these?
- Select all and align.
- Can you identify any residues/regions that are highly conserved? (hint: motif) (hint: symbols underneath the alignment) (hint: look for a triplet)
- How conserved is the active site residue (how can you find it)? What is it?
- Are there any variants around the active site residue? Use Feature Viewer to examine the sequence.
- The protein structure can also be visualized with Uniprot. Pick a Src kinase. For a Uniprot entry, there may be several PDB structures associated with it. Look under the column Positions. Pick the PDB ID with the maximum coverage (coverage refers to fraction of residues for which there is structural data with respect to the whole sequence length). What is the PDB ID for this structure? Visualize the structure within UniProt to obtain a view similar to that in the Abl kinase paper. Are there any red dots? What are they?