

- **1. How many dehydrogenases are stored in BRENDA?**
  - 1.1 Explore via Quick Search
  - 1.2 Explore via the EC Explorer
  - 1.3 Try to explain the different results
- **2. Explore the enzyme fructokinase**
  - 2.1 Display the image of the catalysed reaction
  - 2.2 Display the flat file with all the data on this enzyme
- **3. Can enzymes be active below pH 2.0?**
- **4. On how many enzymes does aspirin have an inhibitory effect?**
- **5. Enzyme kinetics of human glutamate dehydrogenase [NAD(P)+], EC 1.4.1.3**
  - 5.1 display all KM values for the substrate 2-oxoglutarate
  - 5.2 look for values for mutant enzymes only

- **6. Genome Explorer: Search the *Rattus norvegicus* genes for alanine transaminase**
- **7. Ontology Explorer: Look up information for the HEK-293 cell**
  - 7.1 origin organism
  - 7.2 origin tissue
  - 7.3 information on enzymes of this cell line stored in BRENDA
- **8. Tax Tree Explorer: How many different enzymes are stored in BRENDA for:**
  - 8.1 *Homo sapiens*
  - 8.2 bacteria
- **9. How many inhibitors are listed for human acetylcholinesterase?**
- **10. Ferredoxin-NADP<sup>+</sup> reductase (EC 1.18.1.2) uses FAD and NADP<sup>+</sup> as cofactors.**
  - Display their binding sites in the structures**
  - 10.1 of the plant (*Spinacia oleracea*) enzyme
  - 10.2. of the mammalian (*Bos taurus*) enzyme

- **11. Enzyme-disease relationships**
  - 11.1 display all data on phenylketonuria in BRENDA
  - 11.2 Which enzymes can be applied for diagnosis and monitoring of phenylketonuria?
  - 11.3 Display the mutant enzymes associated with this illness
- **12. Search for enzymes that hydrolyze glycosidic bonds combining all these properties:**  
stable above 60°C; has been crystallized and cloned