

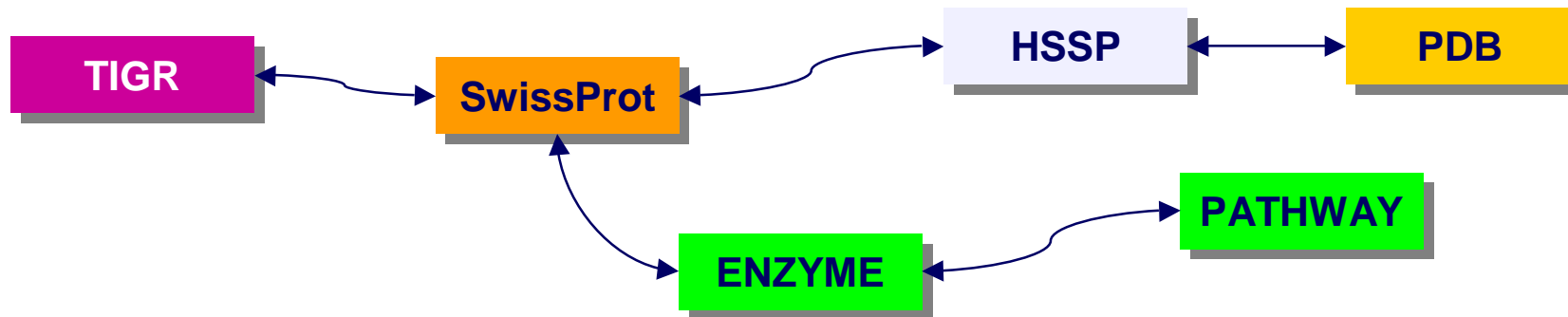


Proposal for a Federation of SRS Servers

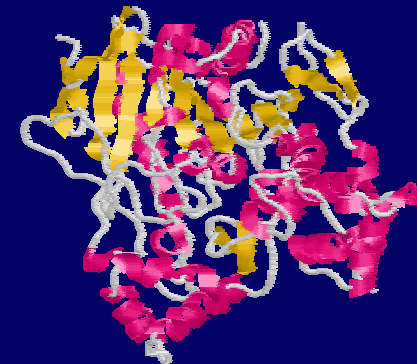
Thure Etzold
The Node
July 1, 2003



Integration Supports Enquiry

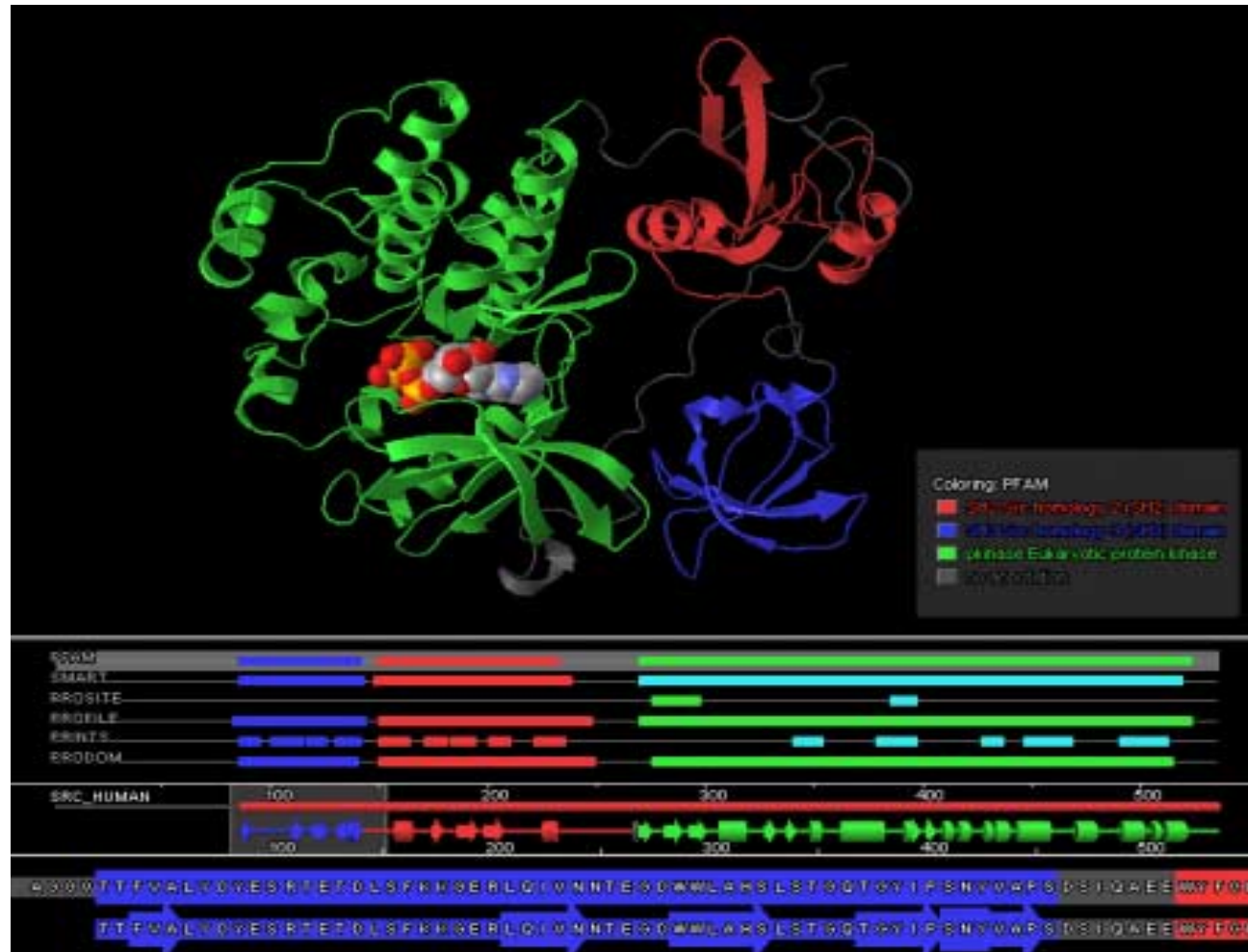


All *H. pylori* genes encoding membrane bound proteins involved in glucose metabolism and with a homologue of known 3D structure with resolution better 2Å

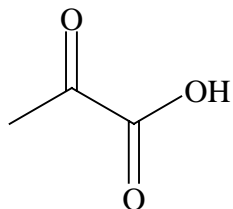




Mapping Protein Domains onto 3D Structure (SRS3D)



The Problem with Nomenclature

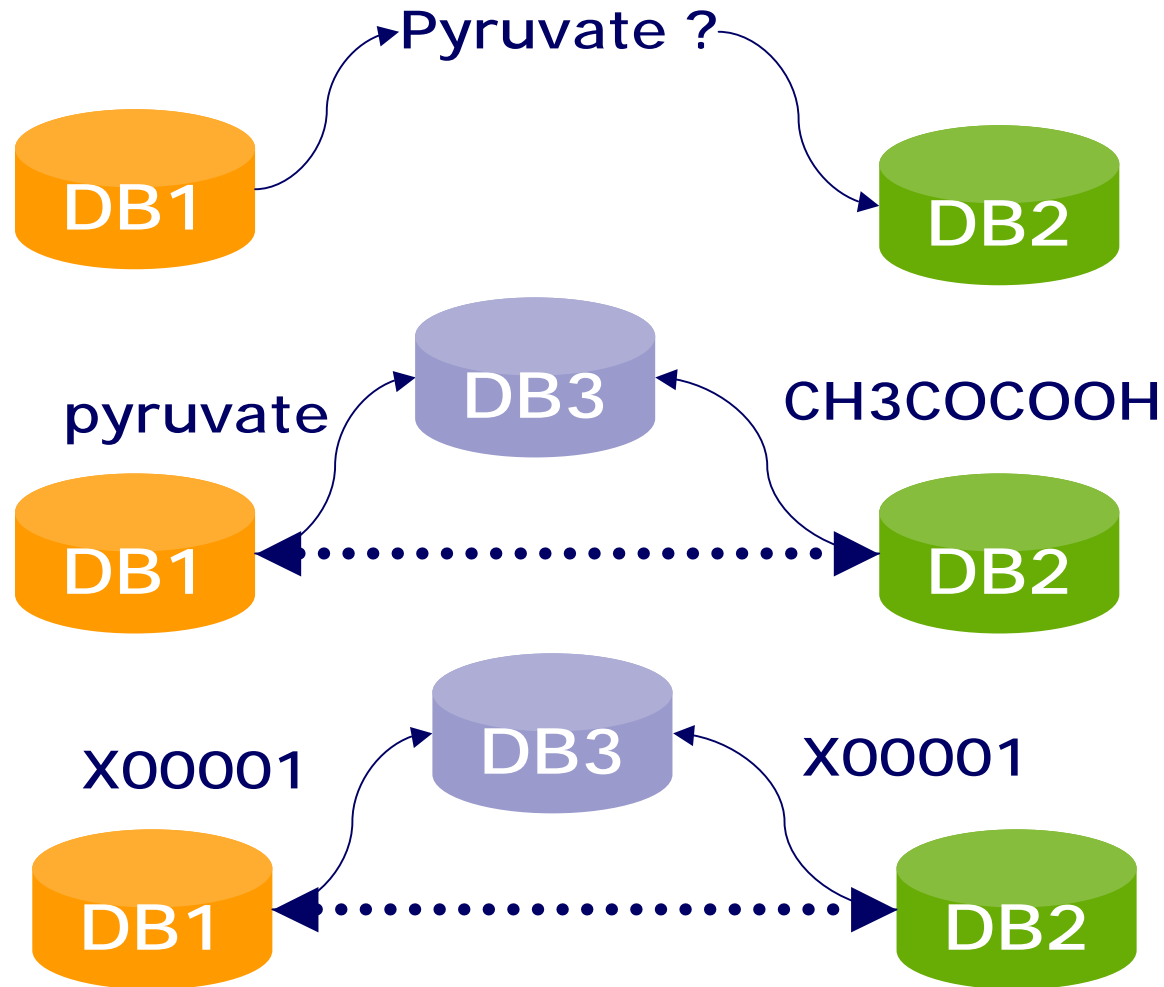


is referred in BRENDA as the following:

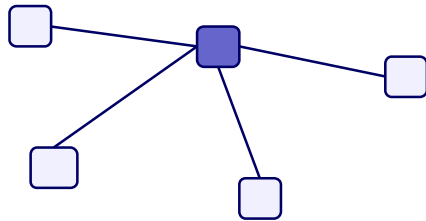
- | | |
|-----------------------------|---|
| • Pyruvic acid | common or trivial name |
| • Pyruvate | common name for the anionic species |
| • 2-Oxopropanoic acid | IUPAC name |
| • 2-Oxopropionic acid | systematic name |
| • 2-Oxopropionate | systematic name for the anionic species |
| • alpha-Keto-propanoic acid | systematic name |
| • CH ₃ COCOOH | line diagram notation |
| • CH ₃ COCOO- | line diagram notation for anionic species |

Other names (or descriptors) for this parent structure include Acetylformic acid, BTS, Pyroracemic acid, alpha-Oxo-propanoic acid and 2-Keto-propionate; there are plenty more possibilities

Achieving Semantic Integration

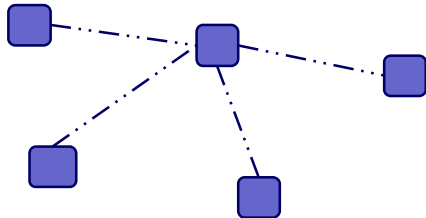
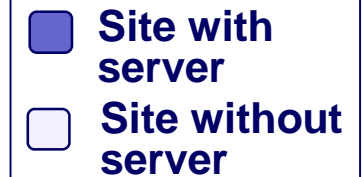


Configuration of SRS Servers



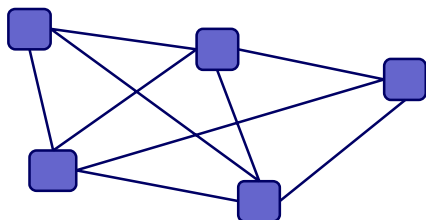
Central Server

- low maintenance
- no independence
- no fault tolerance



Cooperative Servers

- maximum independence
- data exchange necessary
- high maintenance



Federated Servers

- max. resource sharing
- max. cooperation
- technologically more difficult

Federation of SRS servers

- Multiple SRS servers can behave as if they are one, sharing all resources

- Motivation
 - Multi site research organizations can have separate and specialized servers
 - Integrating LHS (ASP) services with customer infrastructure
 - B2B: Integrating content of data providers with customer infrastructure without data duplication

Web Services to SRS

- Searching single or multiple databanks
- Searching across databanks
- Launching analysis tools (e.g., BLAST, EMBOSS)
- Exchange of meta information (e.g., description of databanks, fields, links)
- Obtaining meta information (e.g., description of databanks, fields, links to build query forms)
- Building and requesting dynamic object structures that can span several databanks.

All tasks particularly suitable for SOAP/Web Services
(coarse grained, XML document exchange)

Synchronization of Servers

- Exchange of meta information
- Exchange of indices
- Exchange of Data (flatfiles, relational tables)

Choosing the Right Level for Data Federation

