



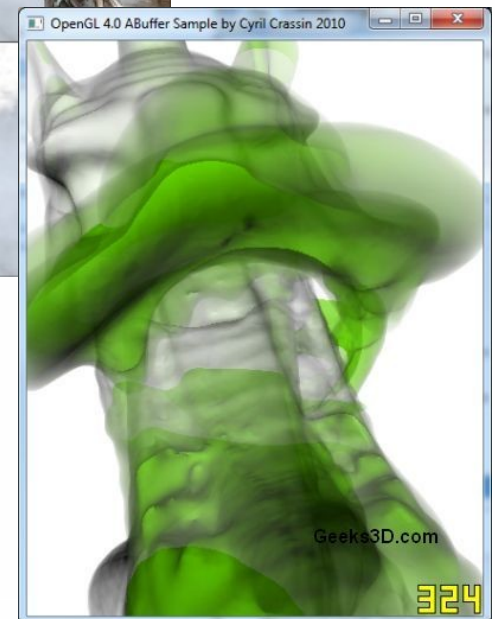
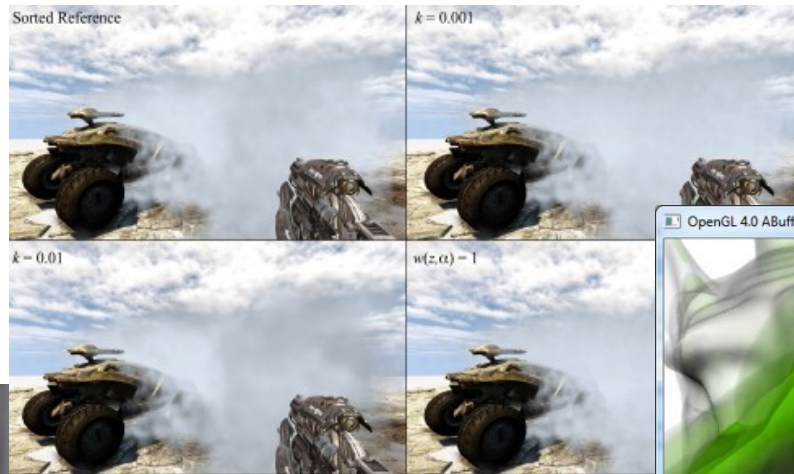
**PV160 course: Human-Computer  
Interaction Laboratory  
2014/2015**

# Transparency

## Order independent transparency (A-Buffer)

### Weighted blending function

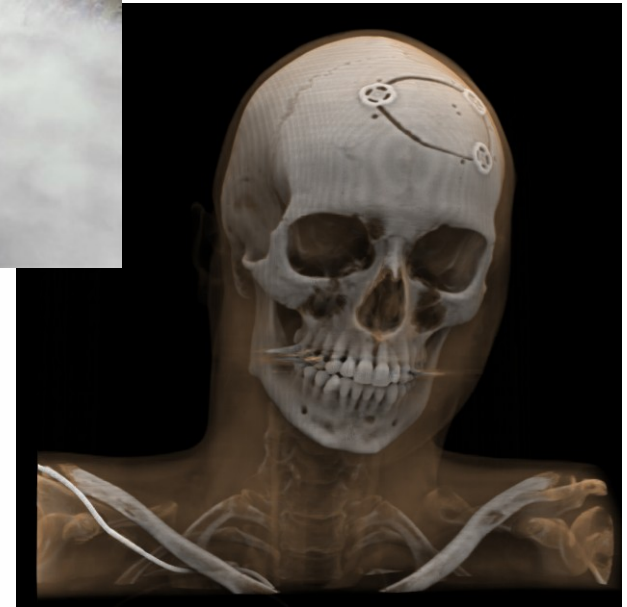
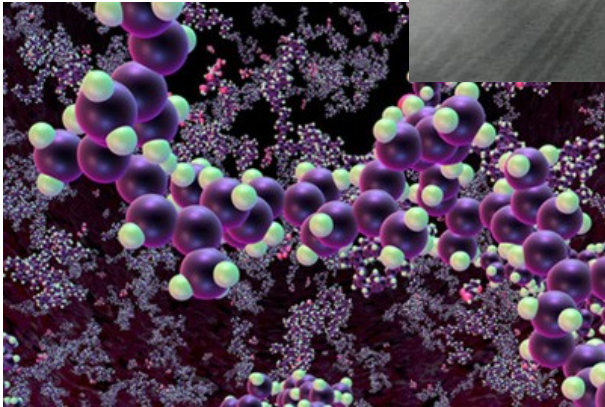
- Java, C++
- OpenGL, GLSL



# Volumetric Rendering

## Raytracing vs. Grid approach

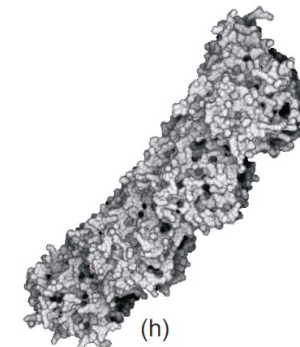
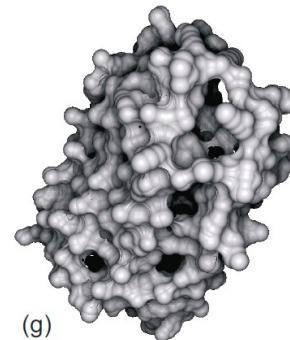
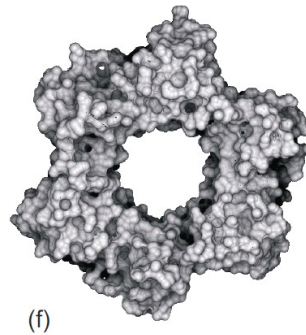
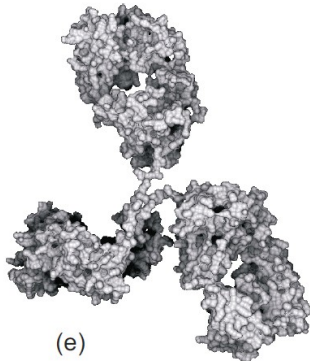
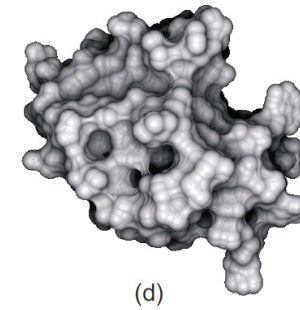
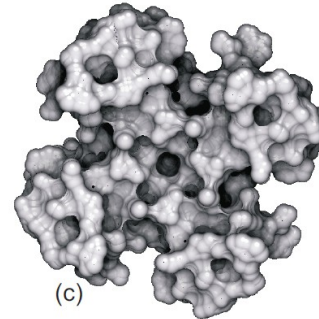
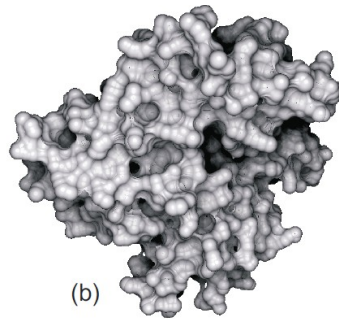
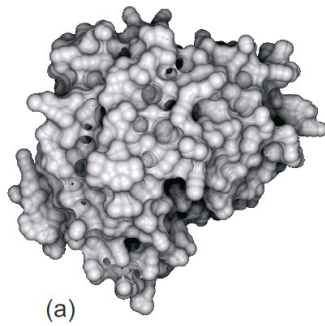
- Java, OpenGL, GLSL



# Implicit surfaces

## Volumetric data

- Java (C#), OpenGL

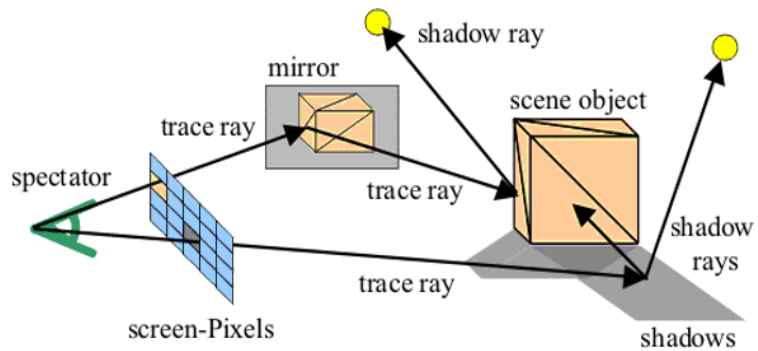




# Raytracing

## Realtime vs. Offscreen

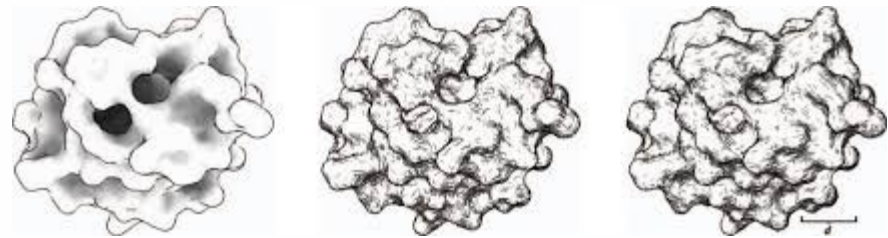
- Java, OpenGL, GLSL



# Cartoon Rendering

## Non-photorealistic rendering (QuteMol)

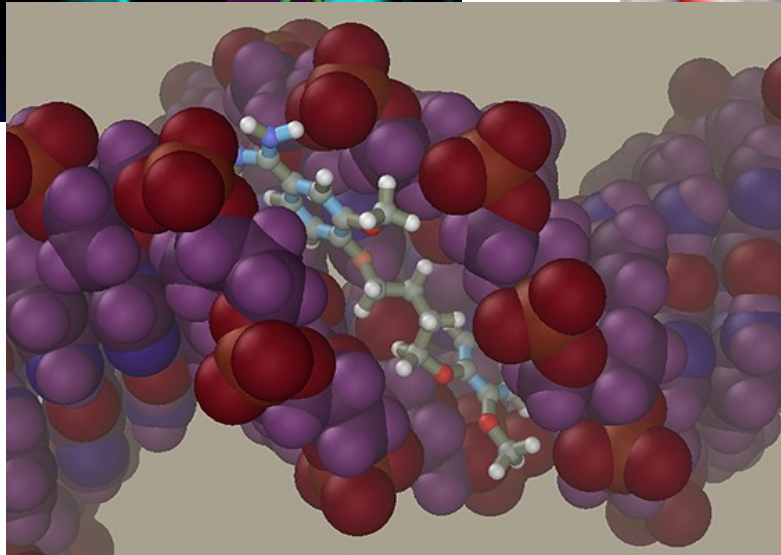
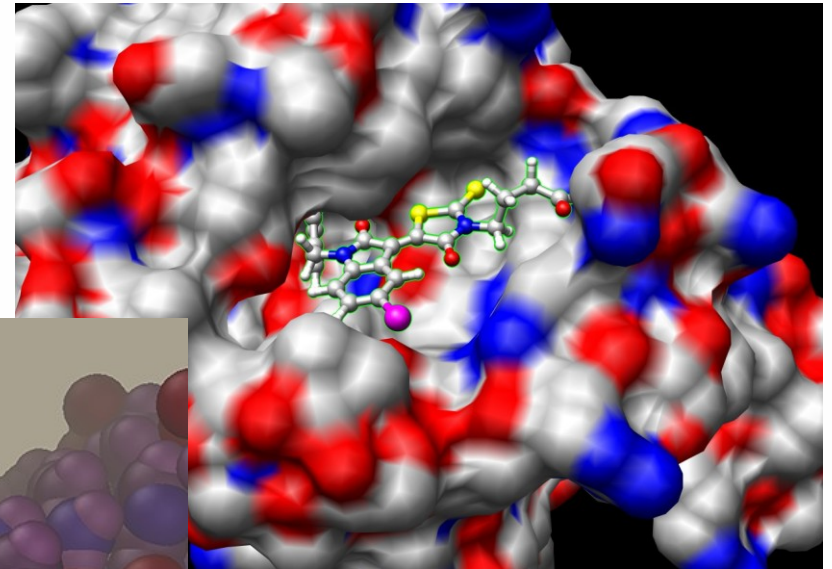
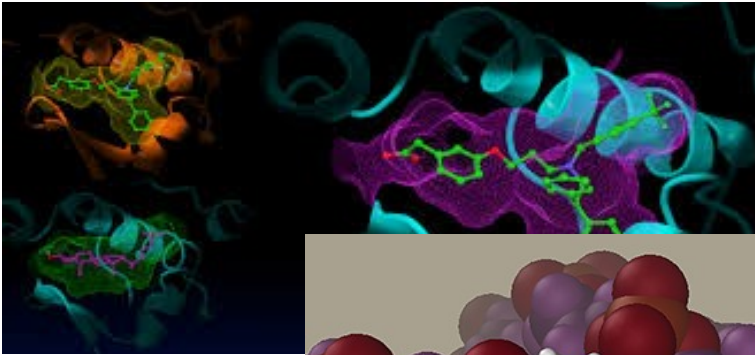
- Java, C++, OpenGL, GLSL



# Ligands

## Ligand path planning

- Java, OpenGL



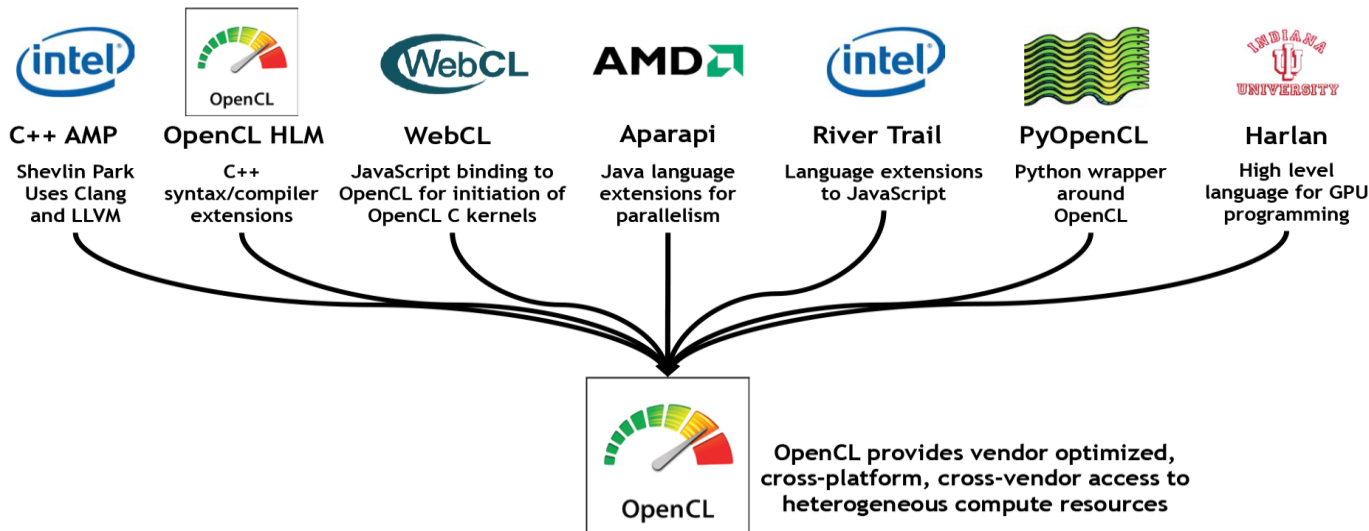
# CUDA & OpenCL

## JCUDA, JOCL

- Java, OpenGL, (CUDA nebo OpenCL)



## OpenCL as Parallel Compute Foundation

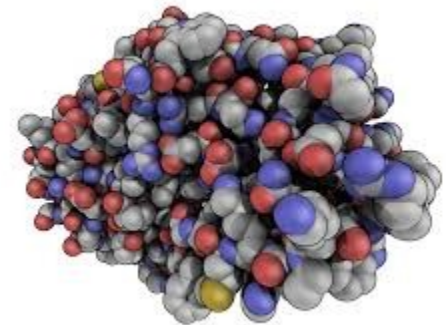




## Molecular data loaders

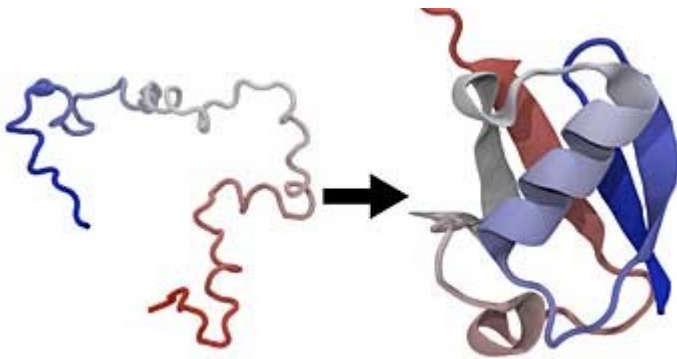
- Java

```
ATOM      1  N   GLY  A   1       44.842  51.034 101.284  0.01 27.20
ATOM      2  CA  GLY  A   1       45.640  50.230 100.389  0.01 26.99
ATOM      3  C   GLY  A   1       46.692  49.648 101.308  0.01 26.80
ATOM      4  O   GLY  A   1       46.895  50.222 102.381  0.01 26.91
ATOM      5  N   SER  A   2       47.283  48.516 100.951  1.00 26.26
ATOM      6  CA  SER  A   2       48.277  47.866 101.761  1.00 26.17
ATOM      7  C   SER  A   2       49.212  47.031 100.845  1.00 24.21
ATOM      8  O   SER  A   2       49.060  47.195  99.630  1.00 19.77
ATOM      9  CB  SER  A   2       47.438  47.091 102.800  1.00 26.31
ATOM     10  OG  SER  A   2       46.276  46.356 102.404  1.00 27.99
ATOM     11  N   HIS  A   3       50.147  46.186 101.370  1.00 23.93
ATOM     12  CA  HIS  A   3       51.129  45.389 100.609  1.00 21.44
ATOM     13  C   HIS  A   3       50.953  43.905 100.849  1.00 20.32
ATOM     14  O   HIS  A   3       50.530  43.595 101.950  1.00 22.00
ATOM     15  CB  HIS  A   3       52.555  45.674 100.990  1.00 19.69
ATOM     16  CG  HIS  A   3       52.940  47.090 100.611  1.00 21.44
ATOM     17  ND1 HIS  A   3       53.371  47.470  99.422  1.00 20.87
ATOM     18  CD2 HIS  A   3       52.956  48.175 101.433  1.00 21.69
ATOM     19  CE1 HIS  A   3       53.676  48.730  99.476  1.00 20.57
```



# Protein Folding

## Biology



### Chaperone-assisted protein folding

