

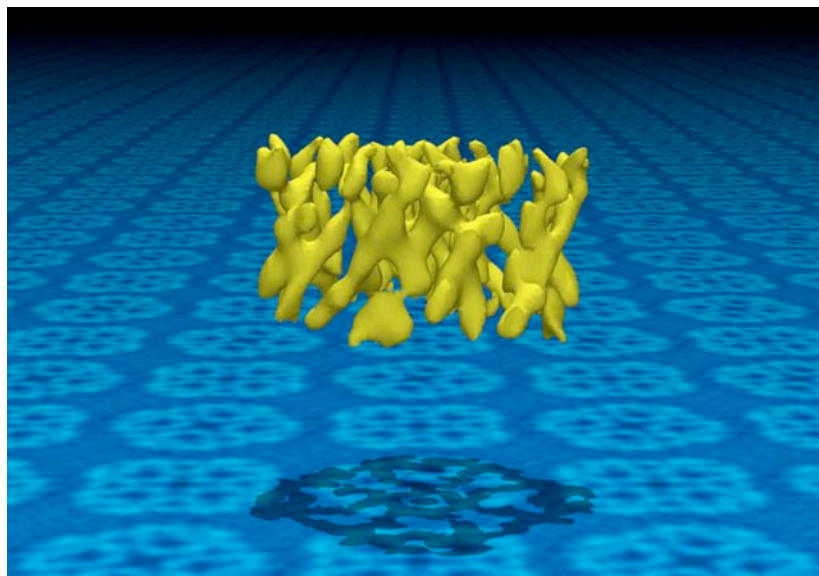


Henning Stahlberg, PhD.
Molecular & Cellular Biology, CBS

Tel.: +1 (530) 752-82 82
Email: HStahlberg@ucdavis.edu

Digital Image Processing in Scientific and Medical Applications

Course WebSite: <http://stahlberglab.ucdavis.edu/teaching/dip>



This course will introduce digital image processing in natural sciences and medicine. It is designed for students who want to understand more about images, image processing possibilities and who need to be able to handle and interpret images. We will cover:

- Image Fundamentals: Definition of images (2D/3D/4D), color representation, computer storage.
- Image Acquisition: Cameras, different types of microscopes, digitizers, medical instruments like MRI, EBT, CT, and the human eye.
- Fundamental classes of image processing: Image enhancement, contrast enhancement, noise reduction, edge enhancement, image restoration and filtering.
- Image Analysis: Fourier theory, image segmentation, feature extraction, object classification, pattern recognition.
- Image Compression: Different image file formats, compression algorithms.
- Image Reconstruction: Signal filtering, noise reduction, resolution assessment, 3D reconstruction.