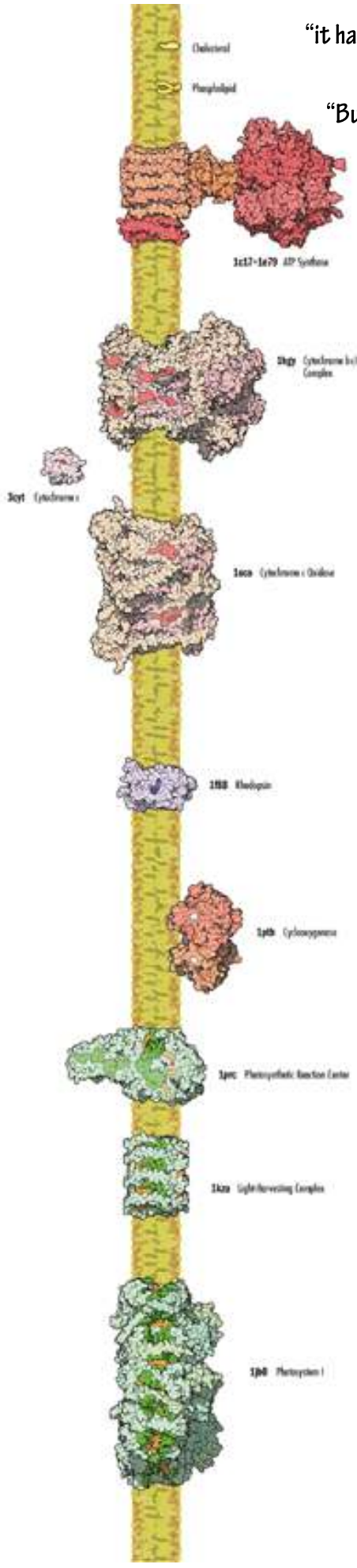
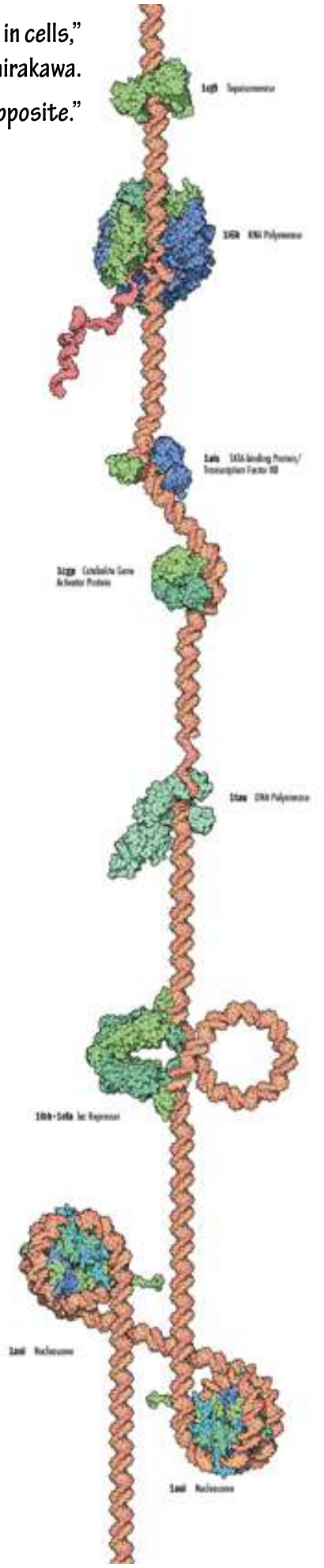




"it has been a general belief that proteins are stabilized in cells,"
says Shirakawa.
"But our results indicate that for ubiquitin it is the opposite."

Introduction to (bio(medical)) NMR

Sponsored by

FP7 East-NMR
Tallinn University of Technology,
National Institute of Chemical Physics and Biophysics,
Tartu University
University of Warwick
Oct 9–11 2009

Tallinn–Laulasmaa
Estonia

Functioning of a cell is determined by content of DNA and how it is activated. Latter information comes from environment through the cell membrane. NMR has evolved to a method of choice for study of the molecular interactions of the cell, membrane processes in particular. We also explain NMR, outline current b(m) applications and draft local and global perspectives.

Registration
by Oct 1 at
nmri.ttu.ee
On-site registration limited to seat and (complementary) meal availability.

Accommodation
sponsored at
www.academichostel.com/eng/
indicate booking nr 3181

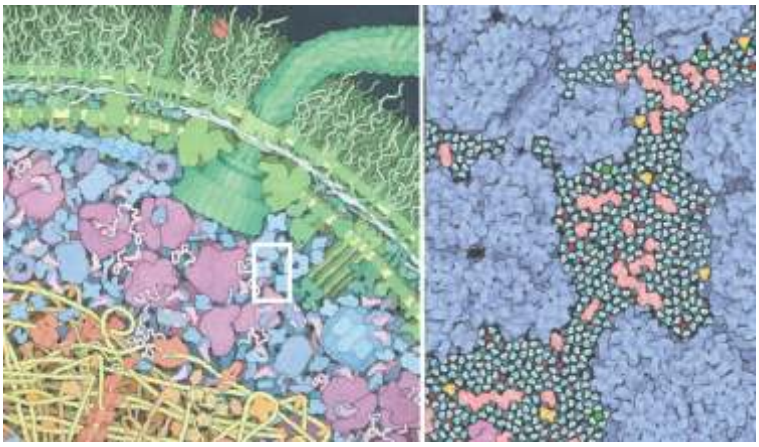
Credit points
for "40 hr course"
after written report.

PROGRAM

Day 1. Oct 9 2009 13.00

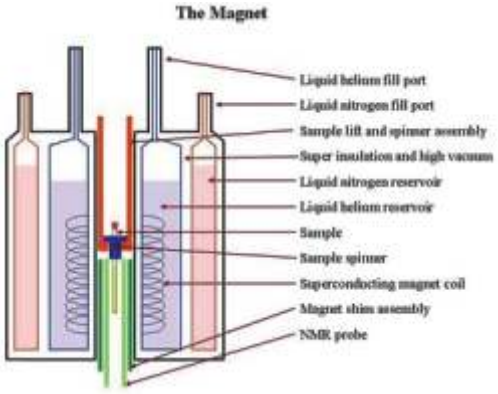
Akadeemia tee 15, 59.397452,24.662026

<u>VIP session.</u> Executive summary of bio(medical) NMR *anno* 2009 and beyond 1 hr



NMR in (semi)solids and liquids – common features and differences 0.5 hr
Protein expression strategies 1 hr
Introduction to solid state NMR of biomembranes and lipids 1 hr
Solution NMR of peptides and proteins: structure determination of peptides and proteins; what can be learned from NMR 1 hr

The 900 MHz Ultra-Wide Bore Magnet



Excursion to NMR laboratories
Dinner

Day 2. Oct 10 http://www.laulasmaa.ee, 59.375131,24.237807

Transportation from Akadeemia 15 9.00

9.30

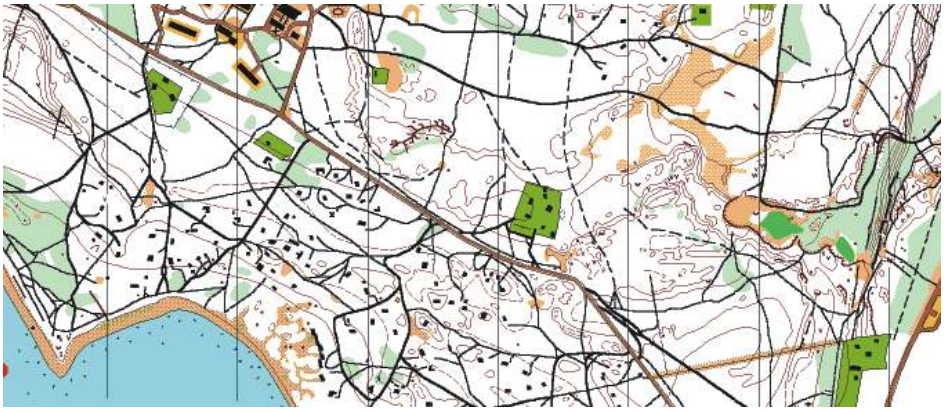
Data analyses and processing techniques: metabolite profiling 1.5hr

NMR structure analysis of membrane-active peptides 1.5 hr

Geopolitical session: B(M) NMR in Tartu, Riga, Stockholm, Helsinki, Göteborg, Trondheim, Oslo.

14.00

Lunch and recreation (spa, biking, orienteering, sauna) 3 hr



17.00

Dynamical aspects of membrane-bound peptides 1 hr

Cell free expression 1 hr

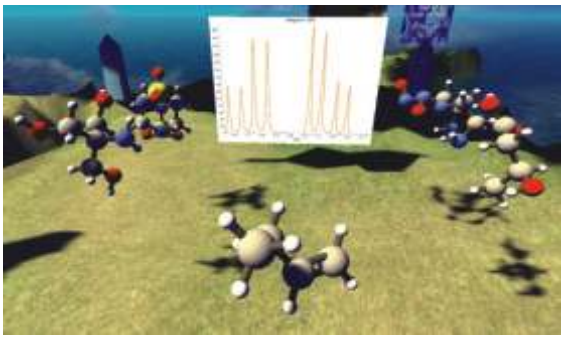
Dinner

Day 3. Oct 11 9.00 Vana-Mustamäe 48, 59.387841,24.653963

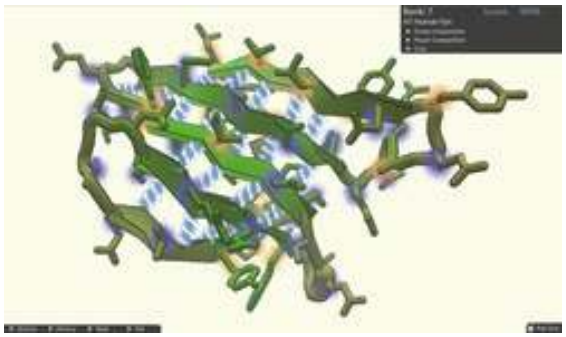
Towards the NMR structures of complex transmembrane proteins 1.5 hr

Brunch

From NMR structure to vaccine design. HIV and the V3 region – from earlier structural studies to ongoing research of vaccine design . 1.5 hr



http://lxsrv7.oru.edu/~alang/



http://fold.it/portal/info/science#rah

Speakers

Prof. Anne Ulrich, University of Karlsruhe, (biological interfaces)
Dr. Osnat Rosen, Weizmann Institute of Science (structures, biochemical techniques, antibodies)
Dr. Peter Damberg, TTU (metabolomics, data processing)
Dr. Anders Pedersen , University of Gothenburg, Swedish NMR center (protein expression)
Prof. Ago Samoson TTU-NICPB, UoW (method and hardware develo pment)

Illustrations D. Goodsell

1 credit point questions:
1. what determines frequency of nuclear mr signal?
2. what determines amplitude of the line?
3. what are basic differences between liquid and solid state nmr?
4. what are advantages and disadvantages of nmr as structural and analytical method compared to x-ray, optical, LC, MS, ...
5.what are the specific advantages of cell-free protein expression over in vivo production

2 credit point questions:
1. in what way do you think nmr may be helpful in your research?
2. what would you suggest as improvement of the method or where should it be applied?
3. How is expression specificity ensured withcell-free protein synthesis setups?

4,5, ... TBA after lectures