



# **Terciární struktura proteinů**

RTG krystalografie – exkurze

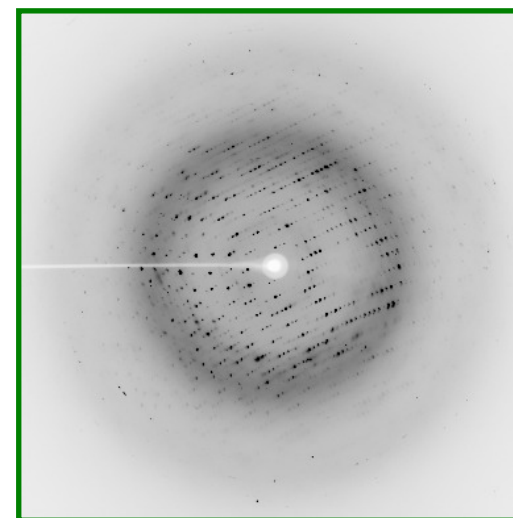
**Aplikovaná bioinformatika, Jaro 2013**



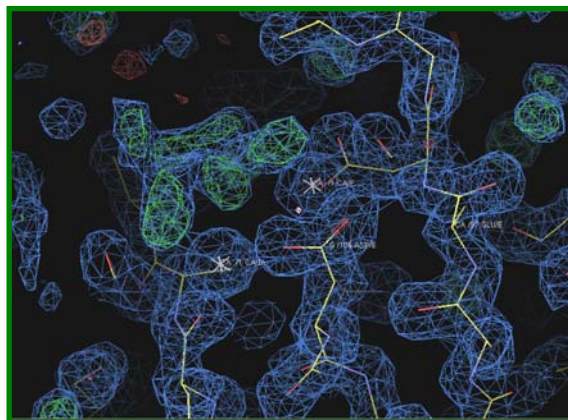
Krystaly



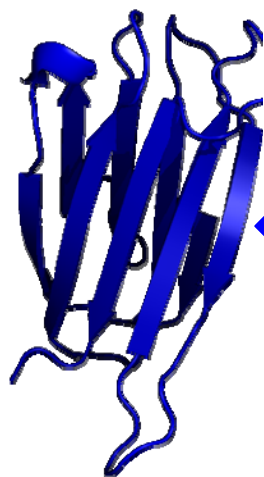
Difrakční experiment



Difrakce



Elektronová hustota



Struktura

Jak se získávají proteinové krystaly?



*Komerční kity na krystalizaci proteinů*

**Těžko. A pomalu...**

## Komerční kity na krystalizaci proteinů

### **Classics L Suite**

Nextal-Qiagen  
Aliquot: 16/12/2009

### **Classics L Suite**

Nextal-Qiagen  
Aliquot: 15/07/2011

### **PACT Suite**

Nextal-Qiagen  
Aliquot: 04/01/2010

### **Classics Suite**

Nextal-Qiagen  
Aliquot: 21/09/2010

### **Classics L Suite**

Nextal-Qiagen  
Aliquot: 15/07/2011

### **Classics Suite**

Nextal-Qiagen  
Aliquot: 30/11/2009

### **Classics II Suite**

Nextal-Qiagen  
Aliquot: 15/07/2011

### **ComPAS Suite**

Nextal-Qiagen  
Aliquot: 22/12/2008

### **Classics Suite**

Nextal-Qiagen  
Aliquot: 15/07/2011

### **Classics Suite**

Nextal-Qiagen  
Aliquot: 21/09/2010

### **Classics II Suite**

Nextal-Qiagen  
Aliquot: 16/12/2009

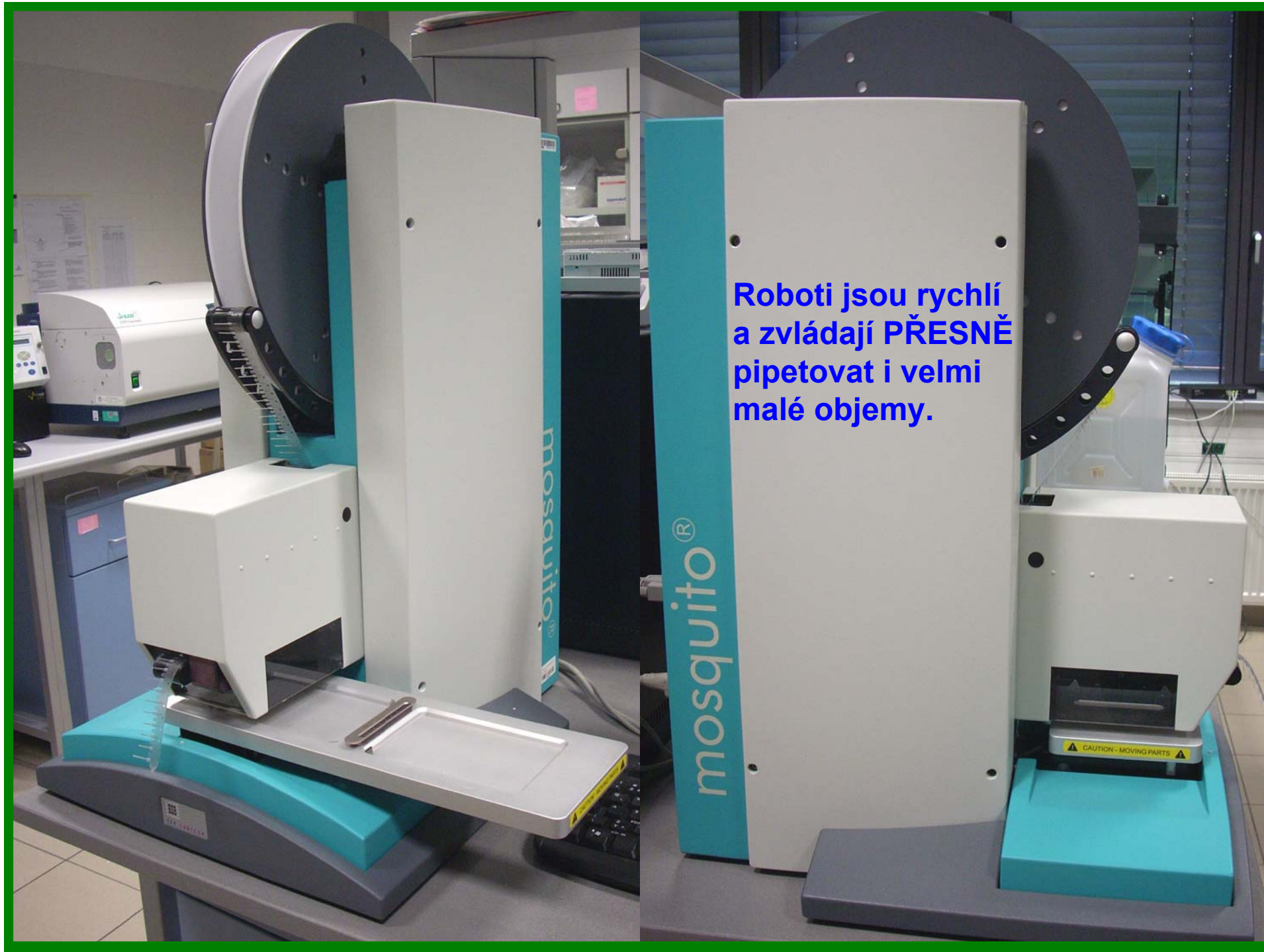
**STRUCTURE I-II**  
Molecular Dimensions  
Aliquot: 12/10/2014



...nebo použijete pipetovací roboty...

The image shows the interior of a laboratory workstation, likely a pipetting robot. In the center, there is a white multi-well plate. To the left, a rack holds several clear plastic tubes, one with a red cap. A yellow diagonal line crosses the lower part of the image. The background is dark with a grid of small circular holes. The TECAN logo is in the bottom right corner.

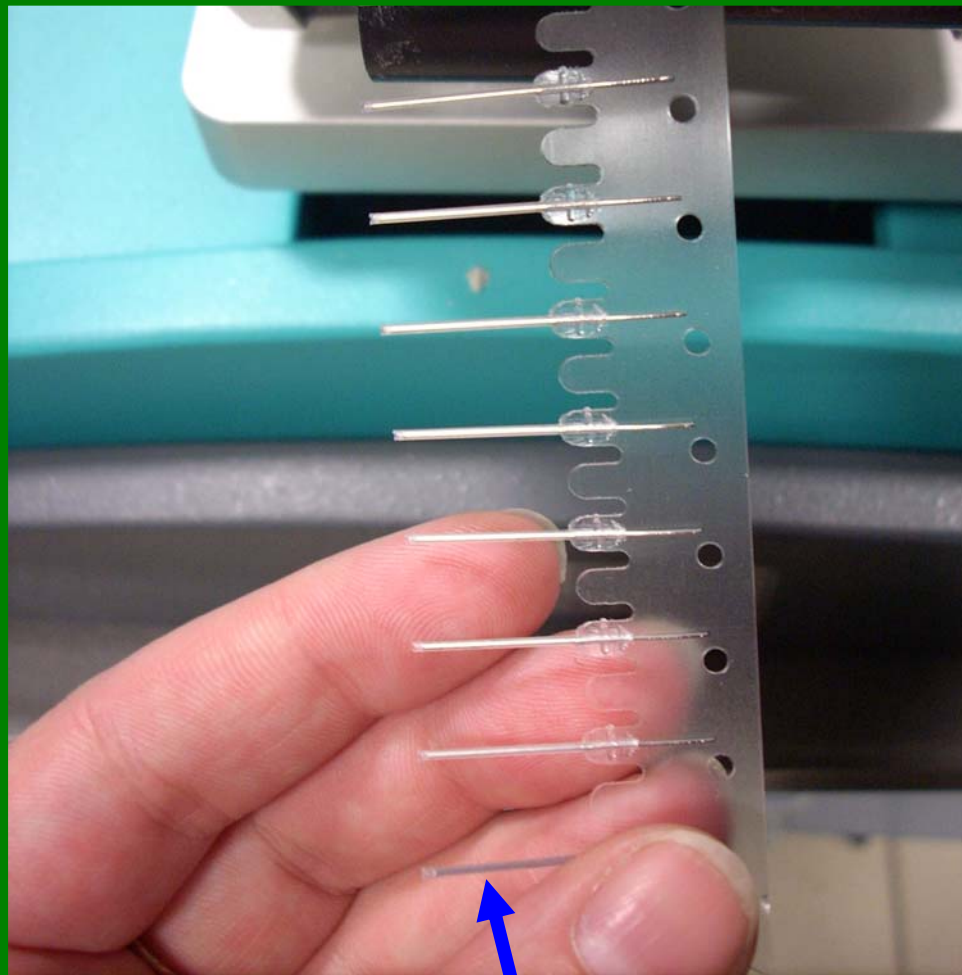
 **TECAN.**



Roboti jsou rychlí  
a zvládají **PŘESNĚ**  
pipetovat i velmi  
malé objemy.

mosquito®

CAUTION - MOVING PARTS



**Jednorázové „nanopipety“  
na nanolitry...**



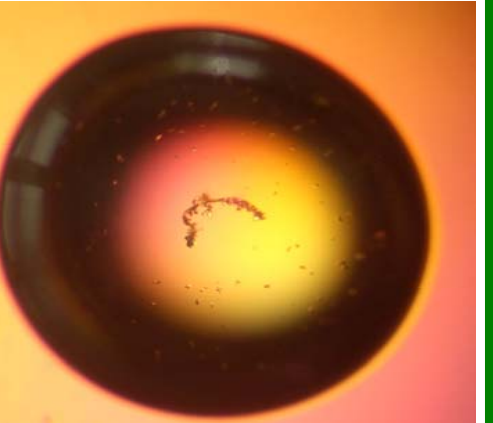
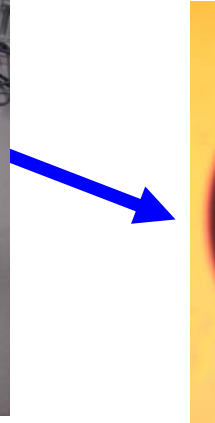
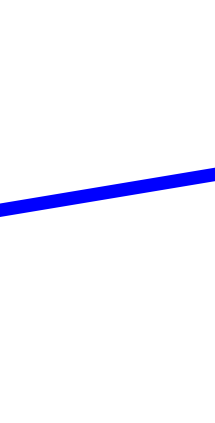
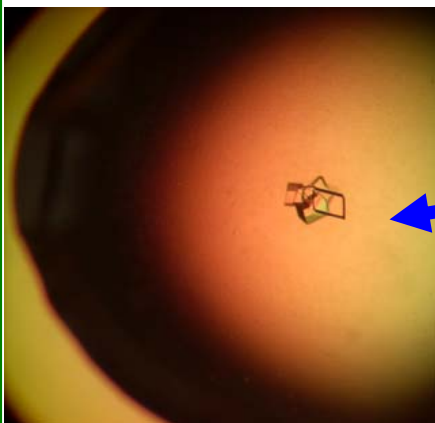
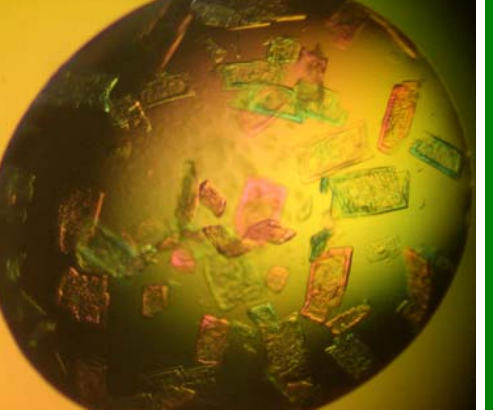
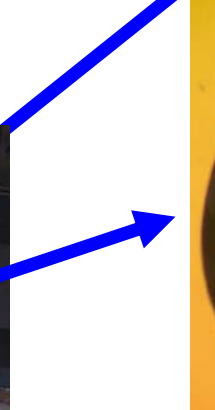
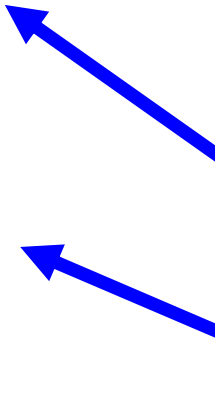
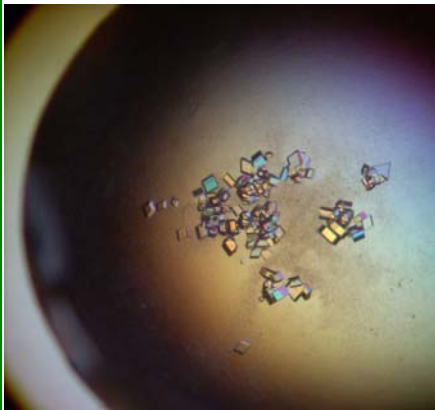
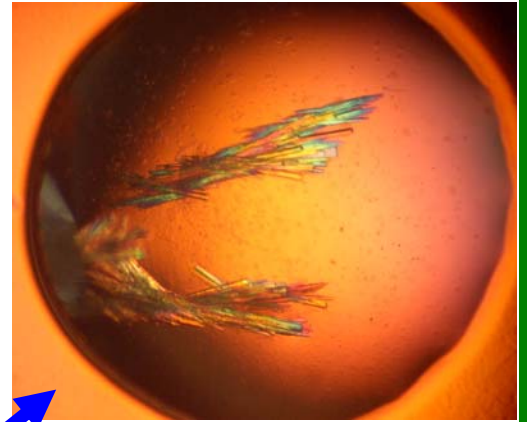
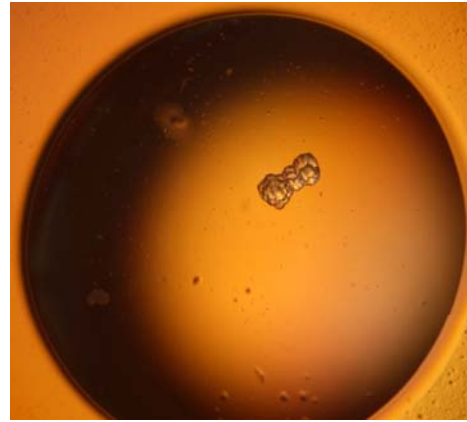
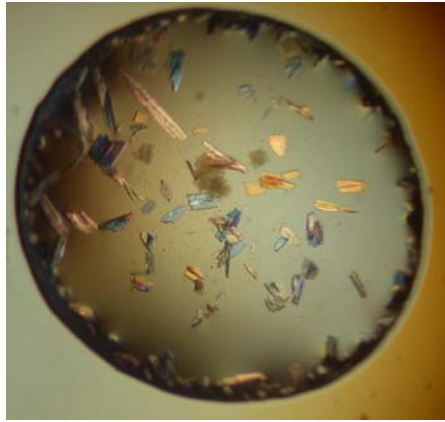
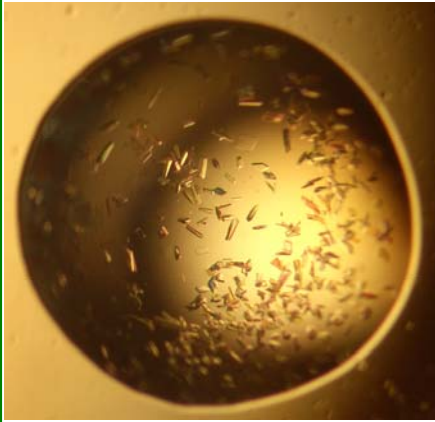
## Examine The Drop

Carefully examine the drops under a stereo microscope (10 to 100x magnification) immediately after setting up the screen. Record all observations and be particularly careful to scan the focal plane for small crystals. Observe the drops once each day for the first week, then once a week there after. Records should indicate whether the drop is clear, contains precipitate, and or crystals. It is helpful to describe the drop contents using descriptive terms.



Retain and observe plates until the drops are dried out. Crystal growth can occur within 15 minutes or one year.

**Úryvky z manuálu ke krystalizačnímu kitu.**





# European Synchrotron Radiation Facility Grenoble, France

<http://www.esrf.eu/>





844 m



NEUTRONS  
FOR SCIENCE®

Institut Laue-Langevin

## Institut Laue-Langevin

The Institut Laue-Langevin (ILL) is the world's leading facility in neutron science and technology. It operates the most intense neutron source on earth in Grenoble in the south-east of France.

*Neutrons získávají štěpením uranu. Jinými slovy, mají tam jaderný reaktor (reaktorek). Skoro nikdo o tom neví (vedle synchrotronu to vypadá nenápadně) a nikdo tam neprotestuje...*

Celý synchrotron je jeden velký přístroj.

Krystaly si přinesete zamrazené v tekutém dusíku.





**Vlastní měření se řídí a kontroluje dálkově.**

**HZB** Helmholtz  
Zentrum Berlin

**BESSY II**  
Berliner Elektronenspeicherring-  
Gesellschaft für Synchrotronstrahlung

<http://www.helmholtz-berlin.de/>







Po osmnácti hodinách  
měření...



Měření na synchrotronu probíhá nepřetržitě. Zájemců je MNOHO a den má bohužel jen 24 hodin.

Nepustí tam každého, musíte být proškoleni a schváleni.

