FEBS PLC2014 Ligand-binding course

June 29- July 6, 2014 Nové Hrady

	Morning: FEBS Lectures[a]	Afternoon: FEBS Lab Exercises[b]	Evening
Sunday, June 29	14:00-18:00 Arrival, Registration 20:00 Refreshments	**18:00** Welcome reception and welcome party	Group 1: Dialysis samples for ITC tomorrow (10 min)
Monday, June 30 7.30-8.30 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch 19:00-20.00 Dinner	**8:30-8:45** Welcome and announcement of poster talks [Rüdiger Ettrich and Jannette Carrey] **8:45-10:30** Ligand-binding theory: lecture and computation exercises [Jannette Carey and Wei-Feng Xue] **11:00-12:30** Ligand-binding theory: lecture and computation exercises [Jannette Carey and Wei-Feng Xue]	**14:00-19:00** Group 1: ITC [B. Turnbull] Group 2: SPR [W.-F. Xue] Group 3: UV [A. Gorecki] Group 4: Fluorescence [C. Royer] Group 5: Gel filtration [J. Carey]	**21:00** Lab tutors' roundtable. Social hour and poster viewing Group 5: Dialysis samples for ITC tomorrow (10 min)
Tuesday, July 1 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch 19:00-20.00 Dinner	**9:00-9:45** Entropic mechanisms of allostery [David Dryden] **9:45-10:30** Hemoglobin Allostery [Andrea Bellelli] **11:00-11:45** The use of molecular simulation to predict and interpret ligand binding data: methodological issues, structural and thermodynamic aspects [Wilfred F. van Gunsteren] **11:45-12:30** Three student speakers chosen from posters	**14:00-19:00** Group 1: SPR [W.-F. Xue] Group 2: UV [A. Gorecki] Group 3: Fluorescence [C. Royer] Group 4: Gel filtration [J. Carey] Group 5: ITC [B. Turnbull]	**21:00** Speakers' roundtable. Social hour and poster viewing Group 4: Dialysis samples for ITC tomorrow (10 min)
Wednesday July 2 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch 19:00-20.00 Dinner	**9:00-9:45** Studying biomolecular interactions using isothermal titration calorimetry (ITC) [Bruce Turnbull] **9:45-10:30** Analysis of protein-protein and protein-ligand interactions by mass-spectrometry methods [Rita Grandori] **11:00-11:45** Some like it hot: Biomolecular Analytics using Microscale Thermophoresis [David Witte] **11:45-12:30** Three student speakers chosen from posters	**14:00-19:00** Group 1: UV [A. Gorecki] Group 2: Fluorescence [C. Royer] Group 3: Gel filtration [J. Carey] Group 4: ITC [B. Turnbull] Group 5: SPR [W.-F. Xue]	**21:00** Speakers' roundtable. Social hour and poster viewing

	Morning: FEBS Lectures	Afternoon: FEBS Lab Exercises	Evening
Thursday, July 3 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch	**9:00-9:45** Fluorescence-based biomolecular interaction measurements [Catherine Royer] **9:45-10:30** General principles of using electronic spectroscopies for ligand-binding studies [Andrzej Gorecki] **11:00-11:45** Ligand binding studied by infrared spectroscopy [Andreas Barth] **11:45-12:30** Three student speakers chosen from posters	**13:30-22:00** Visit to Český Krumlov	Group 3: Dialysis samples for ITC tomorrow (10 min)
Friday, July 4 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch 19:00-20.00 Dinner	**9:00-9:45** Unravelling sequence-specific protein-DNA interactions [Danny Charlier] **9:45-10:30** The multiple applications of EMSA to study protein-DNA interactions [Danny Charlier] **11:00-11:45** NMR methods [Jannette Carey]	**14:00-19:00** Group 1: Fluorescence [C. Royer] Group 2: Gel filtration [J. Carey] Group 3: ITC [B. Turnbull] Group 4: SPR [W.-F. Xue] Group 5: UV [A. Gorecki]	**21:00** Speakers' round-table. Social hour and poster viewing Group 2: Dialysis samples for ITC tomorrow (10 min)
Saturday, July 5 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time 12:30-13.30 Lunch 19:00-20.00 Dinner	**9:00-10:30** Seminar: global computational analysis of students' own data [Wei-Feng Xue] **11:00-12:30** Seminar: global computational analysis of students' own data [Wei-Feng Xue]	**14:00-19:00** Group 1: Gel filtration [J. Carey] Group 2: ITC [B. Turnbull] Group 3: SPR [W.-F. Xue] Group 4: UV [A. Gorecki] Group 5: Fluorescence [C. Royer]	**19:00** Farewell party Organizers/tutors choose student talks for tomorrow
Sunday, July 6 8.00-9.00 Breakfast 10:30-11.00 Coffee and tee time	**9:00-10:30** Student oral presentations of ligand-binding data acquired in the course (10 minutes each) **11:00-12:30** Student oral presentations of ligand-binding data acquired in the course (10 minutes each)	Departure	

FEBS PLC2014 Lab Exercises

Days	Group 1	Group 2	Group 3	Group 4	Group 5
Monday, June 30	ITC [B. Turnbull]	SPR [W.-F. Xue]	UV [A. Gorecki]	Fluorescence [C. Royer]	*Gel filtration [J. Carey]*
Tuesday, July 1	SPR [W.-F. Xue]	UV [A. Gorecki]	Fluorescence [C. Royer]	*Gel filtration [J. Carey]*	ITC [B. Turnbull]
Wednesday, July 2	UV [A. Gorecki]	Fluorescence [C. Royer]	*Gel filtration [J. Carey]*	ITC [B. Turnbull]	SPR [W.-F. Xue]
Friday, July 4	Fluorescence [C. Royer]	*Gel filtration [J. Carey]*	ITC [B. Turnbull]	SPR [W.-F. Xue]	UV [A. Gorecki]
Saturday, July 5	*Gel filtration [J. Carey]*	ITC [B. Turnbull]	SPR [W.-F. Xue]	UV [A. Gorecki]	Fluorescence [C. Royer]

Table footnotes:

[a] *Lecture titles (omitted from table for brevity):*

Tuesday July 1

09.00 – 09.45

David Dryden: Entropic mechanisms of allostery

09.45 – 10.30

Andrea Bellelli: Hemoglobin allostery

11.00 – 11.45

Wilfred van Gunsteren: The use of molecular simulation to predict and interpret ligand binding data: methodological issues, structural and thermodynamic aspects

Wednesday July 2

09.00 – 09.45

Bruce Turnbull: Studying biomolecular interactions using isothermal titration calorimetry (ITC)

09.45 – 10.30

Rita Grandori: Analysis of protein-protein and protein-ligand interactions by mass-spectrometry methods

11.00 – 11.45

David Witte: Some like it hot: Biomolecular Analytics using Microscale Thermophoresis

Thursday July 3

09.00 – 09.45

Catherine Royer: Fluorescence-based biomolecular interaction measurements

09.45 – 10.30

Andrzej Gorecki: General principles of using electronic spectroscopies for ligand-binding studies 11.00 – 11.45 Andreas Barth: Ligand binding studied by infrared spectroscopy

Friday July 4

09.00 – 09.45

Danny Charlier: Unravelling sequence-specific protein-DNA interactions

09.45 – 10.30

Danny Charlier: The multiple applications of EMSA to study protein-DNA interactions 11.00 – 11.45 Jannette Carey: NMR methods

[b] *Practical exercises within the course will feature five methods: SPR, ITC, fluorescence, UV-vis, and gel filtration. One experimental station will be dedicated to each method and all stations will remain set up during the entire course. The physical setup of each station will accommodate groups of up to seven students at once; thus all five experimental methods will run concurrently on each afternoon as indicated in the table, although it is not expected that all students will have systems suitable for all five methods. All students will be able to run several of the five experiments on their own system if they bring sufficient material as advised by the organizers during pre-screening. Student projects will be carefully screened in advance by the organizers in order to prioritize the most appropriate experimental approaches for each student's system, and to ensure adequate throughput of experiments in the allotted times. Commercial proteins will also be available that are appropriate for each ligand-binding experimental method to ensure demonstration of the methods in the case suitable student proteins do not fill the available capacity of a method.*

All invited speakers will have 45-minute time-slots, and will be instructed that their talks shall be designed to promote questions and discussion during the final 5-10 minutes of their allotted time. The final 45-minute lecture period on Tuesday, Wednesday, and Thursday mornings will consist of three 15-minute talks by students chosen from among the poster presentations on Sunday night. Students will be instructed to allow approximately 3-5 minutes for questions and discussion. The organizers and invited speakers will be instructed to pose questions and offer discussion points after all talks, including student talks, so as to encourage maximum engagement of participants in all the talks.

Each evening, the day's speakers will participate in an informal evening roundtable to encourage discussion among all participants. Monday's roundtable will feature all the tutors for the laboratory practicals, so students will have the chance to clarify their understanding of the approaches and procedures, and any logistical problems that arise during the first lab sessions can be addressed with appropriate minor modifications. On all evenings, informal discussions will continue during the following social hour.