



ΠΑΝΕΠΙΣΤΗΜΙΟ
ΠΑΤΡΩΝ
UNIVERSITY OF PATRAS



The "ESPERANCE" project

PRACTICAL COURSE:

*Light Scattering, Imaging,
Microcalorimetry in biomolecular assemblies & interactions
&
NMR data analysis through deep learning and cloud computing*



20-23 February & 06-07 March 2024



era-esperance.eu



Tuesday 20 th February 2024		
Workshop: Cell Imaging		Workshop: How to Measure binding affinities & protein stability and size
Physical event: Medical School, Basic Medical Sciences Building, ROOM A, 1 st Floor, UPAT		Physical event: Department of Pharmacy, ROOM B-Pharm, Main Floor, UPAT
13:00 – 18:00 (CET +1)		Theoretical Part
13:00	15:00	Methods for achieving Nano-scale Imaging
15:15	15:45	Light Lunch
16:00	18:00	Imaging Analysis basics and useful algorithms for microscopy
Nikolaos Nikiforos Giakoumakis, PhD <i>Advanced Digital Microscopy Facility, Institute for Research in Biomedicine - IRB Barcelona, Spain</i>		
10:00 – 11:10 (CET +1)		Theoretical Part
10:00	10:40	When interactions matter – how to measure binding affinities with MST and Spectral Shift?"
10:40	11:10	Golden standard in protein structure characterization
11:10	11:30	Coffee Break
11:30 – 16:40 (CET +1)		Practical Part
Practical 1		Interaction between Lysozyme & Sugar
Practical 2		Interaction between AMP & Aptamer
14:30	15:30	Light Lunch
Practical 3 15.30-19.30		Learn the principles of operation of nanoDSF, back reflection optics and DLS using the example of BSA
Measurements of participants' samples		
Natalia Kubisa, PhD <i>Technical Sales Specialist CEE @ NanoTemper Technologies</i> Mohanraj Gopalswamy <i>Application Scientist @ NanoTemper Technologies</i>		



Wednesday 21st February 202413:00 – 15:00
(CET +1)**Seminar**Physical event: Medical School, Basic Medical Sciences Building, ROOM A, 1st Floor, UPAT

13:00

15:00

Autotaxin and lysolipid signaling: from bench to clinic and back again

A. Perrakis, "ESPERANCE" ERA Chair*NKI, Amsterdam, The Netherlands & UPAT, Greece*9:30 – 19:00
(CET +1)**Workshop: Microscopy – Day I**Physical event: Medical School, Basic Medical Sciences Building, ROOM A, 1st Floor, UPAT**SP8 optical pathway setup, Autofocus, Multidimensional scanning (Z stacks, high content/ multiple position, tile scanning)**

9:30

11:30

Group A

11:30

11:45

Coffee Break

12:00

14:00

Group B

14:00

14:30

Light Lunch

14:30

16:30

Group C

17:00

19:00

Group D

Nikolaos Nikiforos Giakoumakis, PhD*Advanced Digital Microscopy Facility,
Institute for Research in Biomedicine - IRB Barcelona, Spain*

Thursday 22nd February 2024

Workshop: Microscopy – Day II

Physical event: Medical School, Basic Medical Sciences Building, ROOM A, 1st Floor, UPAT

09:30 – 19:00 (CET +1)		SP5 Live imaging, Timelapse, FRAP, FRETAB practicals & easyFRAP
9:30	11:30	Group A
11:30	11:45	Coffee Break
12:00	14:00	Group B
14:00	14:30	Light Lunch
14:30	16:30	Group C
17:00	19:00	Group D

Nikolaos Nikiforos Giakoumakis, PhD

*Advanced Digital Microscopy Facility,
Institute for Research in Biomedicine - IRB Barcelona, Spain*

Workshop: Light Scattering & Isothermal Titration Calorimetry

Physical event: Department of Pharmacy, ROOM B-Pharm, Main Floor, UPAT

10:00 – 12:00 (CET +1)		Theoretical Part
10:00	11:00	Introduction to SEC – MALS
11:00	11:15	Coffee Break
11:15	13:00	Introduction to ITC
13:00 – 17:30 (CET +1)		Practical Part
13:00	15:00	Size Exclusion Chromatography with Multi-Angle Light Scattering (SEC-MALS) Experimental Part
15:00	15:30	Light Lunch
15:30	17:30	Isothermal Titration Calorimetry (ITC) Experimental part

Malvern Panalytical

Friday 23rd February 2024**Workshop: Microscopy – Day III**Physical event: Medical School, Basic Medical Sciences Building, ROOM A, 1st Floor, UPAT

12:30 – 19:00 (CET +1)		Olympus training in a widefield optical pathway setup, Autofocus, Multidimensional scanning (Z Stacks, timelapse, high content/multiple position, tile scanning-stitching)
12:30	14:30	Group A
14:30	16:30	Group B
17:00	19:00	Group C

Nikolaos Nikiforos Giakoumakis, PhDAdvanced Digital Microscopy Facility,
Institute for Research in Biomedicine - IRB Barcelona, Spain**Seminars**

Physical event: Department of Pharmacy, ROOM B-Pharm, Main Floor, UPAT

11:15 – 14:00 (CET +1)		Seminars
11:15	12:30	Quantifying macromolecular interactions with fluorescence methods
12:30	12:45	Coffee Break
12:45	14:00	Mathematical analysis of equilibrium and transient kinetics from biophysical experiment
14:00	14:30	Light Lunch

A. Perrakis, "ESPERANCE" ERA Chair

NKI, Amsterdam, The Netherlands & UPAT, Greece



Thursday 7 th March 2024		
11:00 – 17:00 (CET +1)		
Workshop: The NMRtist Platform (I)		
Physical event: Department of Pharmacy, ROOM B-Pharm, Main Floor, UPAT		
11:00	12:00	NMRtist Theory I
12:00	12:15	Coffee Break
12:15	14:00	NMRtist Theory II
14:00	15:30	Light Lunch
15:30	19:00	NMRtist Theory III
Prof. Peter Gunter & Piotr Klukowski, PhD Staff of Professorship for Physical Chemistry, ETH Zürich		

Friday 8 th March 2024		
10:00 – 19:00 (CET +1)		
Workshop: The NMRtist Platform (II)		
Physical event: Department of Pharmacy, ROOM B-Pharm, Main Floor, UPAT		
10:00	12:00	NMRtist Exercise I
12:00	12:15	Coffee Break
12:15	14:00	NMRtist Exercise II
14:00	14:30	Light Lunch
14:30	17:00	NMRtist Exercise III.A
17:15	19:00	NMRtist Exercise III.B
Prof. Peter Gunter & Piotr Klukowski, PhD Staff of Professorship for Physical Chemistry, ETH Zürich		

