3rd ESHO School on Clinical hyperthermia

Hands-on: The Netherlands, June 29-30, 2022

PROGRAMME

Organisation

- Location of the housing is in Utrecht, Bunk hotel close to the Central station, i.e. a city with a good rail connection to all four institutes.
- At the day of teaching the participants will travel by public transportation to their Institute.
- Proposed teaching time each day will be from 10.00 hours till 17.00 hours, with exception of a HIFU session taking place 9.00-12.00.
- Informal get together meet up June 28th, 20.00 at Bunk hotel lobby (for participants who are already in Utrecht)
- All together Dinner June 29th at Sarban Afghaans restaurant (Oudegracht aan de Werf 161, Utrecht)
- All together Dinner June 30th at Seven (Mariaplaats 7, Utrecht)
- For OV travel info in NL, we advise this website 9292 your travel partner - 9292.nl If you download the app, you can also buy e-tickets for your trip(s).
- Be aware that Schiphol is very busy nowadays and you need to be at Schiphol well in advance (always 3 hours!)

The concept plan for the ESHO hands-on school is as follows:

- The school will be in two parts:
  - Part 1 is a two-day hands-on training in The Netherlands organized by the various HT-groups: Amsterdam UMC, Erasmus MC, Utrecht UMC, Technical University Eindhoven.
  - Home assignments: each training topic includes assignments that should be completed and submitted before Part 2. This part is obligatory only for participants who aim for 4 ECTS.
  - Part 2 is a two-day training consisting of a short feed-back discussion of hands-on training (will include feedback to home assignments) and theoretical education on hyperthermia (broad refreshers course)

Part 1 – Hands-On: the topics, participating institutes and coordinators

Wednesday June 29th

- Amsterdam UMC: Biology
  - coordinator program Arlene Oei
- Amsterdam UMC: Clinic/physics RF-heating
  - coordinator program Akke Bakker, Petra Kok
- TU Eindhoven: Physics modelling, thermometry
  - coordinator Maarten Paulides

Thursday June 30th

- Erasmus MC: Biology
  - coordinator program Timo ten Hage
- Erasmus MC: Clinical/physics RF-heating
  - coordinator Sergio Curto

Friday July 1st

- Utrecht MC: Clinic/Physics HIFU heating
  - coordinator Roel Decker

Date: Wednesday June 29th 2022

Subject: Biology: Molecular interactions
Location: Amsterdam UMC, location AMC, Department of Radiation Oncology (route 75)

Program
10:00-10:30 Welcome and drinks

10:30-11:00 General Radiobiology and Hyperthermia (Arlene)
11:00-11:30 Importance of time interval between Radiotherapy and Hyperthermia (Mei)
11:30-12:00 HIPEC (Roxan)

12:00-12:30 Video instructions on how to work in the lab
Demonstration of clonogenic assay, yH2AX, animal experiments

12:00-12:45 Lunch break

12:45-13:00 Tour on lab.
Divide in two groups of 4 students.

13:00-14:15 Hands on training part I

Group 1:
Roxan demonstrates how to trypsinize cells in (G2-115), count and plate them for clonogenic assay (make 2 plates: 1x control, 1x 4Gy).
Afterwards, had 2 plates ready to stain with crystal violet (prepare 10 days in advance).

Have plates ready to be counted 0-2-4-6-8 Gy.
The group count the colonies and make graphs.

Group 2:
Mei demonstrates how to trypsinize cells (G2-114), count and plate cells on slides.
Afterwards you could have a yH2AX slide ready (prepare it a few days in advance) without DAPI and you can demonstrate the staining with DAPI.
and show them under the fluo mic what the cells look like.
Count foci of e.g., 5-10 cells per treatment: 0-1-2Gy (if we have pictures).
And they can calculate what the effect is of the dose of radiation and the amount if DNA breaks.

14:15-14:30 coffee/tea break

14:30-16:00 Hands on training part II

Swap groups.

16:00-16:30 Discussing results, have drinks, closure of the day

Date: Wednesday June 29th 2022

Subject: Clinical/physics training (Alba 4D, Alba 4000, wIRA)
Location: Amsterdam UMC, location AMC, Department of Radiation Oncology (route 75)

Program

09:45 - 10:00	Welcome with coffee	
10:00 - 10:05	Introduction (Hans Crezee)	B0-133
10:05 - 10:20	Hyperthermia treatment planning (Petra Kok)	
10:20 - 10:30	Invasive thermometry (Akke Bakker)	
10:30 - 12:00	Hands-on training in two groups, 45 minutes per rotation	
	1. Hyperthermia treatment planning (Petra Kok)	B0-215
	2. Invasive catheter placement (Akke Bakker)	B0-123
12:00 - 13:00	Lunch	
13:00 - 13:20	Clinical results - Alba 4D, Alba 4000, wIRA (Willemijn Kolff)	B0-133
13:20 - 13:40	Physics - Alba 4D, Alba 4000, wIRA (Hans Crezee)	
13:40 - 14:00	Quality Assurance - Alba 4D, Alba 4000, wIRA (Remko Zweije)	
14:00 - 16:00	Hands-on training in two groups, 60 minutes per rotation	
	3. Alba 4D (Remko Zweije)	B0-215
	4. wIRA/ Alba 4000 (Akke Bakker)	B0-123
16:00 - 16:15	Q&A and closing remarks (Hans Crezee)	B0-133
16:15	Drinks	

Date: Wednesday June 29th 2022

Subject: Physics modelling, thermometry
Location: TU Eindhoven, Center for Care & Cure

Program

9.00 am:	Welcome & coffee
9.30 am:	Presentation on Center for Care and Cure Introduction to hyperthermia physics and device design
10.30 am:	Introduction on EM modelling
11.30 am:	Hands on: EM modelling
12.30 pm:	Lunch
1.30 pm:	Continuation of hands on EM modelling
2.30 pm:	Introduction on thermal modelling
3 pm:	Hands on: thermal modelling
3.30 pm:	Comparison between the hands on designs
4 pm:	Presentation: MRT and thermal modelling in treatment
5 pm:	Drinks

Date: Thursday June 30th 2022

Subject: Biology: Tumor microenvironment
Location: Erasmus MC, location XX,

09:30 – 09:45 Welcome and introduction

09:45 – 10:15 Hyperthermia-combination therapy of cancer focused on nanomedicine and tumor pathophysiology (Timo, Ann).

10:15 – 10:45 Thermosensitive liposomes (Loes, Reza)

10:45 – 11:00 Coffee / Tea

11:00 – 11:15 Infrastructure of the lab related to that (Timo)

11:15 – 11:45 Intravital microscopy, live cell imaging and super resolution confocal (Ann, Timo, Wenqiu)

11:45 – 12:00 Questions and preparation for afternoon

12:00 – 13:00 Lunch

13:00 – 16:00 Start practical in three groups; 60 minutes per practical including rotation (Timo)

1) Making liposomes (TSLs) followed by quality control (size, pdi) (Loes)
2) Testing TSLs for real time triggered kinetics (Reza)

3) Confocal imaging of cell – nano-system interaction (Wenqiu)

16:00 – 16:30 Finalization: discussion and evaluation, questions.

16:30 Drinks

Date: Thursday June 30th 2022

Subject: Clinical / physics of RF-heating: BSD-2000 Sigma60/Eye, BSD-2000-MR Arch, Lucite Cone Applicator, Hypercollar 3D, Intact beast

Location: Erasmus MC, location XX,

Program

	Activity		Location	
10:00-10:30	Coffee + Intro Sergio		NG-502k	
	Group A		Group B	
	Activity	Location	Activity	Location
10:30-11:15	Treatment planning *Anton, Julian*	NG-s18k	Intact breast *Jannis, Kemal, Ali*	NG-502k / Superficial HT treatment room
11:15-12:00	Intact breast *Jannis, Kemal, Ali*	NG-502k / Superficial treatment room	Treatment planning *Anton, Julian*	NG-s18k
12:00 – 13:00	Lunch		NG-532	
	Group A	Location	Group B	Location
13:00 – 14:20	Superficial + HN *Anderson, Marieke, Julian*	Superficial HT treatment room	Deep non-MR, MR *Ali, Inge, Kemal, Jannis*	Superficial HT treatment room

14:20-14:40	Coffee and tea		Coffee corner	
14:40- 16:00	Deep non-MR, MR *Ali, Anton, Inge, Kemal*	Deep HT/MR-guided HT room	Superficial +HN, *Anderson, Marieke, Julian*	Deep HT/MR-guided HT room
16:00-16:30	Q&A		NT-557	
16:30-17:00	Drinks		NT-557	

Date: Friday July 1st 2022

Subject: Clinical / physics of HIFU heating
Location: Utrecht MC, location XX,

Program

9. 00 – 12.00 Detailed program will follow later; The program is