



# 3<sup>rd</sup> 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. The stay covers three nights (i.e., 28/6 – 1/7).
- 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 28<sup>th</sup>, 20.00 at Bunk hotel lobby (for participants who are already in Utrecht)
- All together Dinner June 29<sup>th</sup>, 7pm at Sarban Afghaans restaurant (Oudegracht aan de Werf 161, Utrecht)
- All together Dinner June 30<sup>th</sup>, 7pm at Seven (Mariaplaats 7, Utrecht)
- For OV travel info in NL, we advise this website [9292](https://9292.nl) your travel partner – [9292.nl](https://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 plans for the ESHO hands-on school are as following:

- 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.
  - Part 2 is a two day training consisting of a short feed-back discussion of hands-on training (will include "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: Clinic/physics RF-heating
  - coordinator Sergio Curto

#### Friday July 1st

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

Date: Wednesday June 29<sup>th</sup> 2022

Subject: Biology: Molecular interactions

Location: Amsterdam UMC, location AMC, Department of Radiation Oncology (route 75)

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**Program**

9:45–10:10	Welcome with coffee and tea	Coffee room
Radiotherapy		
10:30–11:00	General Radiobiology and Hyperthermia (Arlene)	C1-214
11:00–11:30	Importance of time interval between Radiotherapy and Hyperthermia (Mei)	C1-214
11:30–12:00	HIPEC (Roxan)	C1-214
12:00–13:00	Lunch	
12:45–13:00	Tour on lab	G2
13:00–14:15	Hands on training part I (Mei and Roxan)	G2-114
14:15–14:30	Coffee/Tea break	G2
14:30–16:00	Hands on training part II (Mei and Roxan)	G2-115
16:00–16:15	Q&A and closing remarks (Arlene)	G2
16:15	Drinks	Coffee room
Radiotherapy		

Date: Wednesday June 29<sup>th</sup> 2022

Subject: Clinical/physics training (Alba 4D, Alba 4000, wIRA)

Location: Amsterdam UMC, location AMC, Department of Radiation Oncology (route 75)

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### 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 – 14:15 Coffee

14:15 – 16:15 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

16:15 – 16:30 Coffee

16:30 – 16:45 Homework assignments

B0-133

16:45 – 17:00 Q&A and closing remarks (Hans Crezee)

B0-133

Date: Wednesday June 29<sup>th</sup> 2022

Subject: Physics modelling, thermometry

Location: TU Eindhoven:, location: de Groene Loper 19, 5612AP Eindhoven, Flux room number 0.116

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### 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 developed on designs
- 4 pm: Presentation: MRT and thermal modelling in treatment
- 5 pm: Drinks

Date: Thursday June 30<sup>th</sup> 2022

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

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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 30<sup>th</sup> 2022

Subject: Clinical / physics of RF-heating: BSD-2000 Sigma60/Eye, BSD-2000-MR Arch, Lucite Cone Applicator, Hypercollar 3D, Intact breast  
Location: Erasmus MC, location XX,

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### Program

10:00-10:30	Activity Coffee + Intro Sergio	Location NG-502k		
	Group A	Group B		
	Activity	Location	Activity	Location
10:30-11:15	Treatment planning <i>Anton, Julian</i>	NG-s18k	Intact breast <i>Jannis, Kemal, Ali</i>	NG-502k / Superficial HT treatment room
11:15-12:00	Intact breast <i>Jannis, Kemal, Ali</i>	NG-502k / Superficial treatment room	Treatment planning <i>Anton, Julian</i>	NG-s18k
12:00 - 13:00	Lunch	NG-532		
	Group A	Location	Group B	Location
13:00 - 14:20	Superficial + HN <i>Anderson, Marieke, Julian</i>	Superficial HT treatment room	Deep non-MR, MR <i>Ali, Inge, Kemal, Jannis</i>	Superficial HT treatment room
14:20-14:40	Coffee and tea		Coffee corner	
14:40- 16:00	Deep non-MR, MR <i>Ali, Anton, Inge, Kemal</i>	Deep HT/MR- guided HT room	Superficial +HN, <i>Anderson, Marieke, Julian</i>	Deep HT/MR- guided HT room
16:00-16:30	Q&A	NT-557		
16:30-17:00	Drinks	NT-557		

Date: Friday July 1<sup>st</sup> 2022

Subject: Clinical / physics of HIFU heating

Location: Utrecht MC, Main entrance of the hospital (Bus 28 or Tramway 22 from Utrecht Central station)

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### Program

9:00 - 12:00 Introduction of MR-guided HIFU for thermal therapies

HIFU ablation demonstration

HIFU hyperthermia and MR thermometry in the lab