

Project Acronym:

SOUNDPET(INTEGRATED/0918/0008)

MRI-guided Focused ultraSOUND system for cancer in PETs (dogs and cats).

Deliverable number: 1.3

Title: Minutes of all meetings.

Prepared by:

Christakis Damianou (CUT)
Nikolas Evripidou (CUT)

Date: 02/01/2023



Ευρωπαϊκή Ένωση
Ευρωπαϊκά Διαρθρωτικά
και Επενδυτικά Ταμεία



Κυπριακή Δημοκρατία



Διαρθρωτικά Ταμεία
της Ευρωπαϊκής Ένωσης στην Κύπρο

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Executive summary

In this deliverable (1.3), information about the minutes of all meetings is presented. The information presented in this deliverable includes the agenda, minutes, the number of people that have participated in each meeting, as well as photos and screenshots captured during the meetings.

Appendix I – MEETING 1



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 1 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	20/10/2020	Time:	1:30-2:30 PM
Minutes Prepared By:	Theocharis Drakos Christakis Damianou	Location:	Cyprus University of Technology- Therapeutic Ultrasound Laboratory

1. Meeting Objective

SOUNDPET first meeting to discuss project goals, work-packages and assign tasks, activities, and deliverables.

2. Attendance at Meeting

Name	Department/Division
Nikolas Evripidou (NE)	Cyprus University of Technology
Antria Philippou (AP)	Cyprus University of Technology
Theocharis Drakos (TD)	MEDSONIC LTD

George Evripidou (GE)	Cyprus University of Technology
Marinos Yiannakou (MY)	Cyprus University of Technology
Christakis Damianou (CD)- Project Coordinator	Cyprus University of Technology
3. Agenda	
Discussion on the general project activities and tasks.	
CD informed the researchers from Cyprus University of Technology and MEDSONIC LTD about the project.	
CD provided an overview of project proposal, aims and objectives and went through an extensive description of project work-packages and deliverables.	
CD asked the participants to pay attention to the deliverable's deadlines and set a procedure for reporting of deliverables.	
The project coordinator (CD) shared the template of the deliverables to the researchers.	
CD assigned the project work-packages and tasks in which each researcher will work.	
4. Minutes	
CD explained and assigned the work-packages to the researchers.	
The interim report (D1.1) will be prepared by AP and CD by the 18 th month.	
The minutes of all group meetings (D1.3) have been assigned to TD.	
TD explained that the meeting minutes will be up to date.	
CD and TD will be responsible for the communication and outreach plan of the project (D1.4).	

<p>Social media (Facebook, LinkedIn, Twitter) accounts and the first newsletter will be created.</p> <p>A project brochure will be also prepared at a later stage of the project.</p>
<p>The website (D2.1) design and development has been assigned to C. Yiallouras (CY).</p>
<p>A virtual opening event (D2.2) has already been organized by CD (September 30th, 2020). All the involved organizations were present, and CD has presented the project.</p>
<p>CD informed the participants that publications in scientific journals (D2.3, D2.6, D2.8) will be submitted during the project. Presentations at scientific conferences (D2.4, D2.5, D2.7) will be also given.</p>
<p>A closing event (D2.9) will be organized after the completion of the project.</p>
<p>A patent application (D2.10) will be prepared by A. Antoniou (AA) and MY.</p>
<p>A four DOF robotic system (D3.1) will be CAD designed and developed by MY.</p> <p>A below for the robotic system will be developed by GE.</p>
<p>The transducer frequency will be selected by performing simulations (AA) and conducting experiments to measure the power field of the selected transducer (AA, TD, NE). The ultrasonic transducer (D3.2) will be then designed and constructed by MY.</p>
<p>The electronic driving system (D3.3) will be developed by NE and the design of the medical cart (D3.4) will be designed by NE and GE.</p>
<p>A tissue-mimicking phantom (D4.1) will be developed by TD.</p> <p>A tumor phantom model will be also developed by AP.</p>
<p>MR thermometry results (D4.2) will be obtained using the MRI provided by the German Oncology Center (GOC).</p>

A software (D5.1) that will control the robotic system and set the ultrasonic parameters will be developed by CY.

The MRI compatibility of the transducer (D6.1) will be checked in the MRI environment by TD. When the 4-DOF robotic device, electronic system and medical cart will be designed and developed, the MRI compatibility of the robotic system will be also checked by TD. This task will be performed at the GOC.

The evaluation of the accuracy of the robotic system (D6.2) for all degrees of freedom will be performed by TD and MY.

The evaluation of the thermal heating of the transducer (D6.3) will be carried out by AA, AP, and TD. The MRI evaluation will be performed at the GOC.

The evaluation of navigation algorithms for reducing the near-field heating and the treatment time (D6.4) of the selected transducer will be performed by TD and AP.

A veterinarian (K. Spanoudes) along with AP, AA, and TD will evaluate the system in performing ablations in rabbits (D6.5).

At the last stage of the project, the system will be evaluated in performing treatment in cats and dogs with mammary tumors (D6.6) by K. Spanoudes, AP, AA, and TD.

5. Next Meeting

The next meeting will take place roughly in 3-4 months from this meeting.

Appendix II– MEETING 2



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 2 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	11/05/2021	Time:	11:00-12:00 AM
Minutes Prepared By:	Theocharis Drakos Christakis Damianou	Location:	Virtual meeting (Zoom)

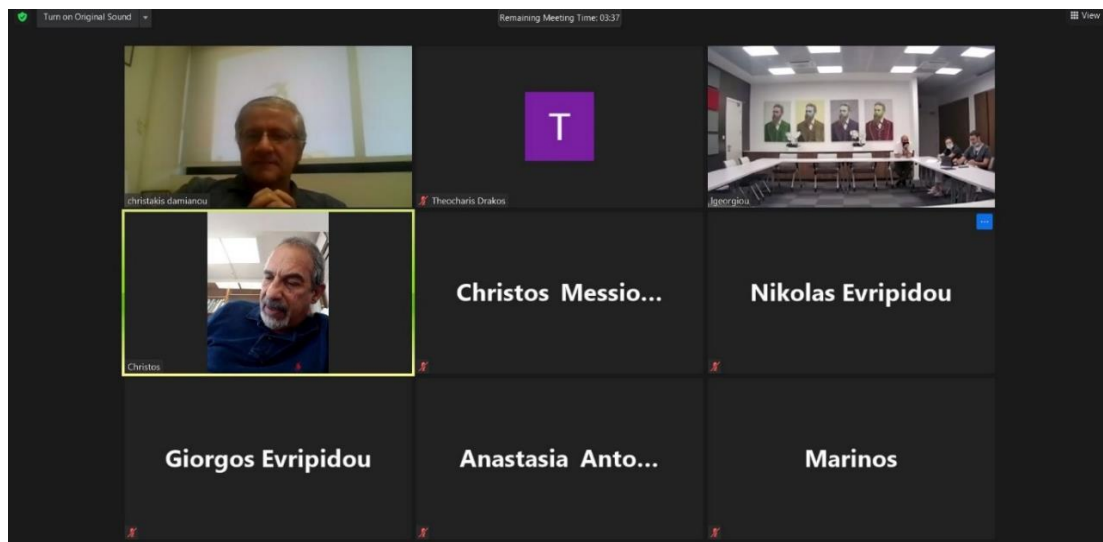
1. Meeting Objective

SOUNDPET second meeting to discuss the progress of each project task and mention the work that has been finalized during the first year. New tasks/activities have been assigned. Participants from all partners (CUT, MEDSONIC, GOC, DEMS) have been attended in this meeting.

2. Attendance at Meeting

Name	Department/Division
Nikolas Evripidou (NE)	Cyprus University of Technology
Anastasia Antoniou (AA)	Cyprus University of Technology
George Evripidou (GE)	Cyprus University of Technology

Christakis Damianou- Project Coordinator (PC)	Cyprus University of Technology
Marinos Yiannakou (MY)	MEDSONIC LTD
Theocharis Drakos (TD)	MEDSONIC LTD
Leonidas Georgiou (LG)	GOC
Kristis Vevis (KV)	GOC
Christos Messios (CM)	DEMS
Christos Efthivoulou (CE)	DEMS



Screenshot from the virtual meeting during the discussion of the project.

3. Agenda

The PC presented results from the tasks that have been already completed.

He explained some unexpected issues regarding the license for the rabbit experiments and that the issue has been resolved by expediting the rabbit experiments.

Results including the hardware and software design of the robotic system, medical cart, development of tissue-mimicking materials and evaluation of the MR compatibility and motion accuracy of the robotic device have been presented.

PC reported the finalization of the rabbit experiments, the progress on the companion animal experiments and some of the MRI experiments. He also emphasized that a significant progress needs to be done in the MR thermometry and software of the robotic system.

The PC shared the template of the deliverables to the participants and went through every task explaining what has been completed and what has to be done for the second year.

PC assigned the remaining project work-packages and tasks in which each researcher has to work for the second year.

At the end of the presentation, a discussion between the participants has been followed to better organized the next steps of the project.

4. Minutes

PC presented results from the completed deliverables of the first year.

The minutes of all group meetings (D1.3) is up to date (2 meetings so far).

PC and TD explained that the communication and outreach plan of the project (D1.4) is up to date. An account in social media (Facebook) and the first newsletter have been created.

A website (D2.1) for the project has been created.

A virtual opening event (D2.2) has been organized by the PC (September 30th, 2020).

PC informed the participants that a publication in a scientific journal (D2.3) has been published. Presentation at a scientific virtual conference (D2.4) has been also submitted (virtual event).

A patent application (D2.10) has been prepared (1 st version).

The commercialization plan (D2.11) is under preparation.

A four DOF robotic system (D3.1) was designed and developed.

A below for the robotic system was developed by CUT. The next task of the robotic device is to cover the acoustic window by a thin membrane.

The ultrasonic transducer (D3.2) has been developed.

The electronic driving system (D3.3) has been completed by CUT and the design of the medical cart (D3.4) was recently finalized.

A tissue-mimicking phantom (D4.1) was developed and characterized for its acoustical, thermal and magnetic properties. A tumor phantom model was also developed.

The MR thermometry software (D4.2) is under preparation. It will be combined to the software that controls the robotic system and ultrasound protocols. The MR thermometry software will be developed to be available for multi-channel MR coils as well.

A software (D5.1) that will control the robotic system and set the ultrasonic parameters is under preparation.

The MRI compatibility of the transducer (D6.1) was prepared by GOC and CUT.

The evaluation of the accuracy of the robotic system (D6.2) for all degrees of freedom has been completed by GOC and CUT.

The evaluation of the thermal heating of the transducer (D6.3) is under preparation by CUT and GOC. The MRI evaluation is also under preparation and is performed at the GOC.

The evaluation of navigation algorithms for reducing the near-field heating and the treatment time (D6.4) of the selected transducer is under preparation.

The evaluation of the robotic system in performing ablation in rabbits (D6.5) was finalized.

The evaluation of the system in performing treatment in cats and dogs with mammary tumors (D6.6) is at the first stage and is under preparation by CUT.

5. Next Meeting

The next meeting will take place roughly in 6 months from this meeting.

Appendix III – MEETING 3



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 3 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	20/12/2021	Time:	14:00-14:45 PM
Minutes Prepared By:	Nikolas Evripidou Christakis Damianou	Location:	Virtual meeting (Zoom)

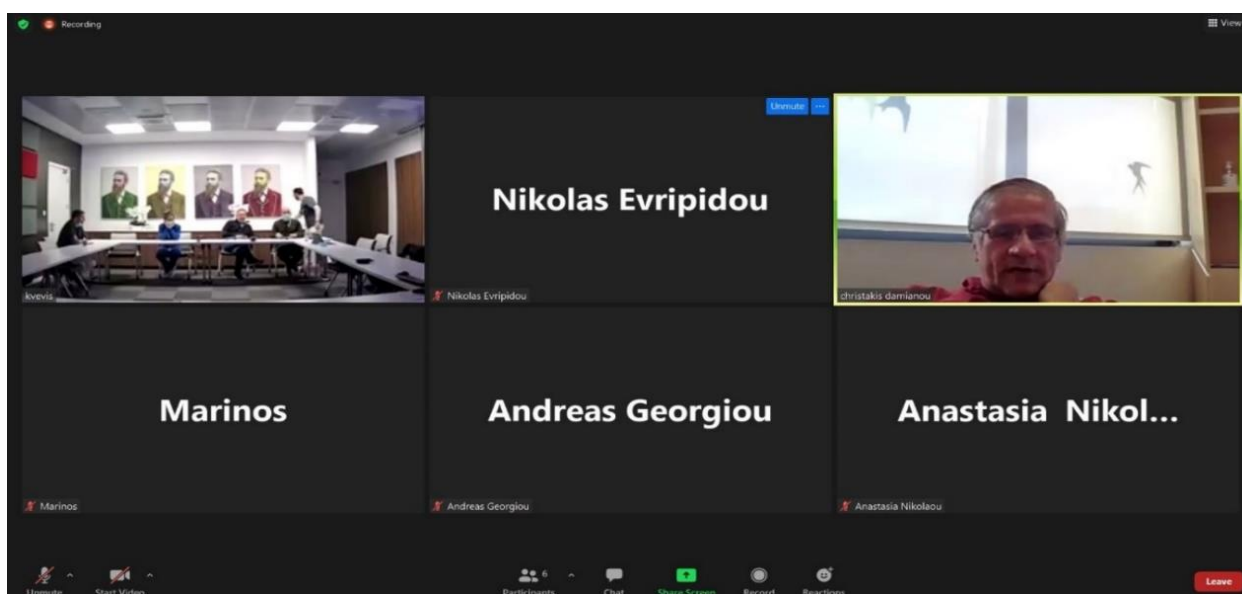
1. Meeting Objective

SOUNDPET second meeting to discuss the progress of each project task and mention the work that has been finalized during the first year. New tasks/activities have been assigned. Participants from partners (CUT, MEDSONIC, GOC) have been attended in this meeting.

2. Attendance at Meeting

Name	Department/Division
Nikolas Evripidou (NE)	Cyprus University of Technology
Andreas Georgiou (AG)	Cyprus University of Technology
Anastasia Nikolaou (AN)	Cyprus University of Technology

Christakis Damianou- Project Coordinator (PC)	Cyprus University of Technology
Marinos Yiannakou (MY)	MEDSONIC LTD
Theodora Christodoulou (TC)	GOC
Leonidas Georgiou (LG)	GOC
Kristis Vevis (KV)	GOC
Cleanthis Ioannides (CI)	GOC
Yiannis Rousakis	GOC



Screenshot from the virtual meeting during the discussion of the project.

3. Agenda

The PC reviewed the role of each participant in the project.

The PC reviewed the progress of the project for the first 18 months.

PC present the presentation for the Interim report
Results, including the hardware and software design of the robotic system, medical cart, development of tissue-mimicking materials, and evaluation of the MR compatibility and motion accuracy of the robotic device, have been presented.
PC reported the progress on the companion animal experiments and some of the MRI experiments. He also emphasized that significant progress needs to be made in the MR thermometry and software of the robotic system.
At the end of the presentation, a discussion between the participants has been followed to better organize the next steps of the project.
4. Minutes
The minutes of all group meetings (D1.3) are up to date (3 meetings so far).
PC informed the participants that publications in scientific journals (D2.3) had been published. Presentations at a scientific virtual conference and at a scientific conference (D2.4) were performed.
PC present the four version of the robotic devices and reviewed the improvements that it was made in each version of the robotic devices that were designed and developed.
In the next 18 months, improvements have to be made to the ultrasonic transducer to improve its efficiency.
The electronic driving system (D3.3) and the medical cart (D3.4) have been completed by CUT.
A tissue-mimicking phantom (D4.1) was developed, and MR thermometry experiments were performed in that phantom.

PC reviewed the process of the ongoing software development and mentioned the improvements that it was made to the software.

PC has mentioned the MRI imaging problems that have been resolved. The first problem was the size of the phantom as it was small, and during the sonication, it moved. The second problem was the stabilization of the MRI coil.

PC review the results of the robotic device accuracy evaluation that was performed using MRI and using a plastic film.

PC reviewed the evaluation of navigation algorithms for reducing the near-field heating and the treatment time (D6.4) of the selected transducer.

PC evaluates the progress of the animal's experiments and their results.

5. Next Meeting

The next meeting will take place roughly in 6 months from this meeting.

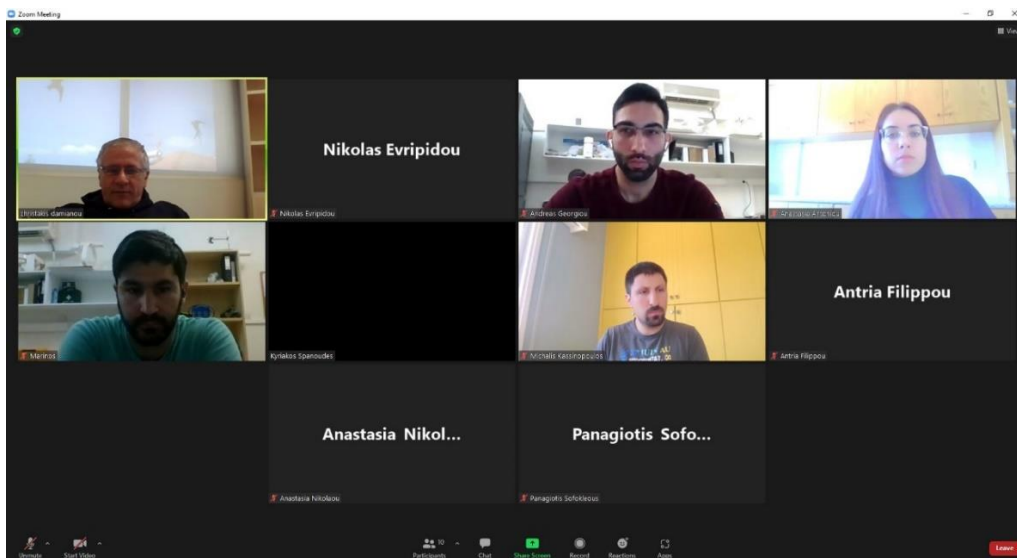
Appendix IV– MEETING 4



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 4 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	21/4/2022	Time:	10:00-10:45 AM
Minutes Prepared By:	Nikolas Evripidou Christakis Damianou	Location:	Virtual meeting (Zoom)
1. Meeting Objective			
SOUNDPET second meeting to discuss the progress of each project task. New tasks/activities have been assigned. Participants from partners (CUT) have been attended in this meeting.			
2. Attendance at Meeting			
Name	Department/Division		
Nikolas Evripidou (NE)	Cyprus University of Technology		
Andreas Georgiou (AG)	Cyprus University of Technology		
Anastasia Nikolaou (AN)	Cyprus University of Technology		
Anastasia Antoniou (AA)	Cyprus University of Technology		
Michalis Kassinopoulos (MK)	Cyprus University of Technology		

Panagiotis Sofokleous (PS)	Cyprus University of Technology
Antria Filippou (AF)	Cyprus University of Technology
Kyriakos Spanoudes (KS)	Cyprus University of Technology
Christakis Damianou- Project Coordinator (PC)	Cyprus University of Technology
Marinos Yiannakou (MY)	MEDSONIC LTD



Screenshot from the virtual meeting during the discussion of the project.

3. Agenda

The PC reviewed the progress of the project.

PC presented the evaluation results of the Interim report.

PC reported the progress of the MRI experiments. He also emphasized the progress that was made in the MR thermometry and software of the robotic system.

At the end of the presentation, a discussion between the participants was followed to better organize the next steps of the project.

4. Minutes

The minutes of all group meetings (D1.3) are up to date (4 meetings so far).

PC informed the participants that Presentations at a scientific conference (D2.5) were performed.

PC evaluated the progress of the commercialization plan that was written by AF (D2.11).

PC informed the participants the D4.2 will be written by MK in collaboration with NE and AG.

PC reviewed the progress of the software development that was made by AG and mentioned the improvements made to the software.

PC informed the participants about the BBB opening experiments.

PC presented the midterm evaluation results and analyzed them.

PC informed the participants about the comments that were made regarding the deliverables.

PC inform the participanta about the evaluator suggestions.

- Include the news letter to the project website
- Include a section in the website that will inform veterinarians about the project.
- Add more stateholders at the events.
- Make a report about robot maintenance.
- Include in the deliverable the problems that were found in the electronic system.
- The software must be evaluated by veterinarians.
- Check the accuracy of the robot.

5. Next Meeting

The next meeting will take place roughly in 6 months from this meeting.

Appendix V – MEETING 5



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 5 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	1/8/2022	Time:	9:00-10:00 AM
Minutes Prepared By:	Christakis Damianou	Location:	Physical meeting

1. Meeting Objective

SOUNDPET second meeting to discuss the progress of each project task. New tasks/activities have been assigned. Participants from partners (CUT) have been attended in this meeting.

2. Attendance at Meeting

Name	Department/Division
Christakis Damianou- Project Coordinator (PC)	Cyprus University of Technology
Marinos Yiannakou (MY)	MEDSONIC LTD
Kristis Vevis	LINAC

Screenshot from the virtual meeting during the discussion of the project.

3. Agenda

The PC reviewed the progress of the project.

4. Minutes

The coordinator presented the progress with the execution of the Deliverables. The coordinator requested from LINAC to perform 2 experiments with MRI sometimes since there are a lot unresolved issues.

The coordinator asked MEDSONIC to solve the problem with the accuracy of the motion in the y-axis. A new below needs to be designed.

The coordinator informed about the difficulty in finding cats for experiments.

There was a discussion about the software that need to be done in the software. There is a need to automatically load images from the Siemens scanner. LINAC was asked to push the distributor of Siemens to install Access-i

Regarding the financial report there is a need to justify all payments that were rejected from LINAC and CUT. MEDSONIC has no rejected payments.

5. Next Meeting

The next meeting will take place in December 2022.

Appendix VI – MEETING 6



MEETING MINUTES

Meeting/Grant Project Name:	Meeting 6 / SOUNDPET (INTEGRATED/0918/0008)		
Date of Meeting: (DD/MM/YYYY)	30/12/2022	Time:	10:00-10:45 AM
Minutes Prepared By:	Nikolas Evripidou Christakis Damianou	Location:	Therapeutic ultrasound laboratory

1. Meeting Objective

SOUNDPET sixth meeting to discuss the progress of each project task. Participants from partners (CUT) and MEDSONIC have been attended in this meeting.

2. Attendance at Meeting

Name	Department/Division
Nikolas Evripidou (NE)	Cyprus University of Technology
Anastasia Nikolaou (AN)	Cyprus University of Technology
Anastasia Antoniou (AA)	Cyprus University of Technology

Antria Filippou (AF)	Cyprus University of Technology
Vasiliki Zenonos (VZ)	Cyprus University of Technology
Georgios Lazarou (GZ)	Cyprus University of Technology
Christakis Damianou- Project Coordinator (PC)	Cyprus University of Technology
Marinos Giannakou (MG)	MEDSONIC



Photo from the meeting during the discussion of the project.

3. Agenda

The PC reviewed the progress of the project.

PC reported the progress of the MRI experiments.

4. Minutes

PC informed the participants that the D1.2 will be written by Andria Phlipou and Anastasia Antoniou.

The minutes of all group meetings (D1.3) are up to date (5 meetings so far).

PC informed the participants that the D1.4 will be written by Anastasia Antoniou and Project coordinator.

PC informed the participants that the D2.7 and D2.8 will be written by Anastasia Antoniou..

PC informed the participants that the D3.1 had been finished and some improvements will be made by Vasiliki Zinonos.

PC informed the participants that the D5.1 is almost finished.

PC informed the participants that the D6.3 will be written by Andria Philippou is at an advanced stage.

PC informed the participants that the D6.5 was written by Spanoudis Kyriakos and was completed before he left the project.

PC informed the participants that the D6.6 is written by Anastasia Antoniou.

PC informed the participants about the BBB opening experiments that were performed at The Cyprus Institute of Neurology & Genetics with two groups, the first group of Dr.Kleopa for protocol calibration for BBB opening by FUS and the delivery of AAV vectors and the second group of Dr.Kouparis for Alzheimer treatment using FUS. The D6.7 will be written by Marios Stavrou, Elena Georgiou, and Anastasia Antoniou..