4th Newsletter- September 2022

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PersonalizeAF Fourth Newsletter
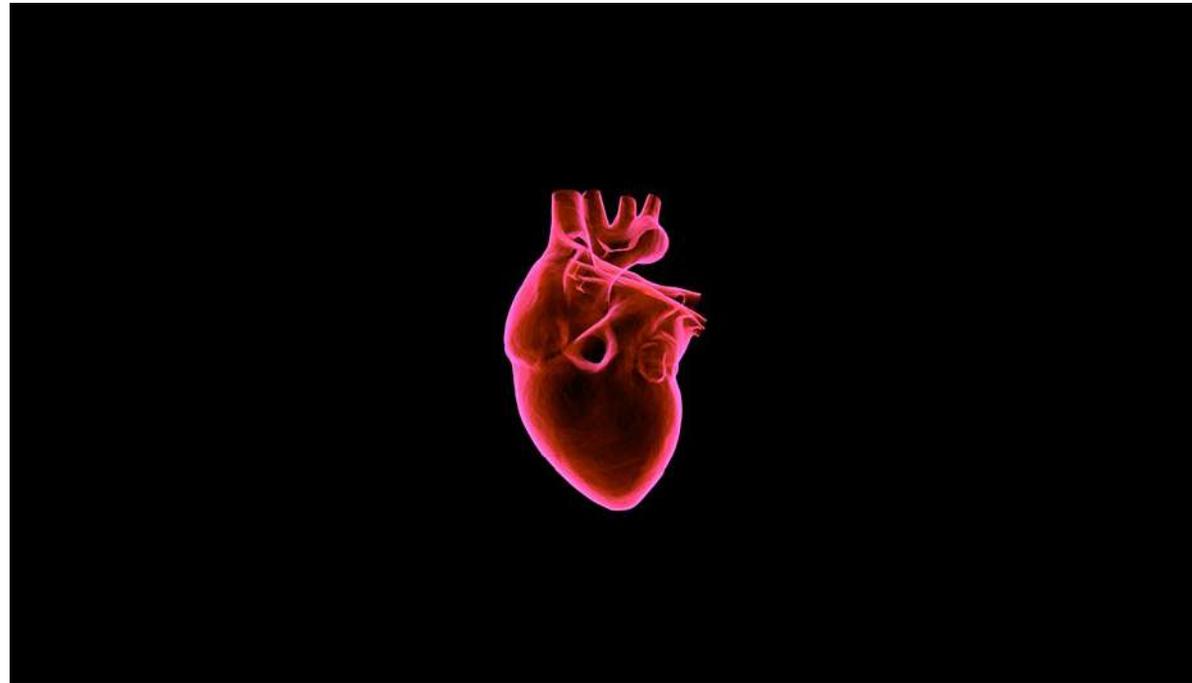
Welcome to the fourth newsletter of the PersonalizeAF! The objective of this bianual publication is to keep all our public updated with all information and main ongoing activities while our project is under way.

Do not miss it and stay tuned for all the updates of the Early Stage Researchers' work, new conferences, papers, and other news!

And don't forget to suscribe to our social media.

PersonalizeAF, the project bringing universities, hospitals and companies from all over Europe together to tackle Atrial Fibrillation

What is Atrial Fibrillation?

Atrial fibrillation (AF) is a condition that causes an irregular and often abnormally fast heart rate. With different manifestations in each patient, it causes a worsening quality of life and a drastic reduction in life expectancy. Today, it is the most common cardiac arrhythmia, affecting more than 6 million Europeans and its prevalence is expected to double in the next

forty years. Moreover, its cost exceeds 1% of European healthcare budgets (13.5 billion per year).

To reverse these figures - or at least reduce them - experts agree on the need to promote individualised patient management by personalising cardiovascular therapies.

What does PersonalizeAF network do?

PersonalizeAF addresses this challenge by delivering an innovative multinational, multi-sectorial, and multidisciplinary research and training programme in new technologies and novel strategies for individualized characterization of AF substrate to and increase treatments' efficiency.

This initiative involves European universities, hospitals and companies researching atrial fibrillation from different fields. Using artificial intelligence, signal processing and stem cell research, PersonalizeAF brings together engineers, clinicians and biologists to improve treatments, develop new diagnostic methods and optimise patient management.

From the research point of view, PersonalizeAF will integrate data and knowledge from in-vitro, in silico, ex vivo and in vivo animal and human models to:

 1) generate an individual description of the state of the atrial muscle identifying the disease mechanisms and characteristics;

2) understand the potential effect that different therapies have on different atrial substrates; and

3) combine this information to generate a specific profile of the patient and the best therapy for each patient.

With this purpose, PersonalizeAF partnership aggregates relevant scientific staff from the academic and clinical world with highly specialised biomedical companies which will be

involved in a high-level personalised training programme that will train a new generation of highly skilled professionals and guarantee ESRs and future PhD students outstanding Career Opportunities in the biomedical engineering, cardiology services and medical devices sectors.

PersonalizeAF project updates

Our 15 ESRs and their research projects

The 15 Early Stage Rresearfcherss are working full-time in their projects around all Europe for more than a year, and they are involved in different sectors: academia, clinics and

industry. Each of them is working in his/her individual PhD, but work also collaboratively with the same purpose, improving the paradigma of Atrial Fibrillation patients in Europe from a translational perspective.

Since they have some experience now as Early Stage Researchers, in #PersonalizeAF project, they will explain how these first 2 years of the project have been, and where their projects are taking them to:

- **ESR1**: **Mariú Casini,** Instituto de Investigación Sanitaria la Fe (Spain):

"Hi all! It's Marilù here, ESR1 of this amazing consortium called PersonalizeAF network. Today I would like to talk to you about my experience during my secondment in Freiburg's lab. In that amazing lab I had the opportunity to learn about electrophysiology and mechanics of the cells.

In these months I learnt many different techniques such as patch clamp and sharp electrode, thanks to these two instruments I was able to get recordings of my cells and understand their phenotype. It has been a great experience! Now I have the whole characterization completed and I can proceed with the most interesting part of my project: modelling atrial fibrillation invitro! Looking forward to explaining more about it in the next newsletter. "

- **ESR2: Carmen Martínez Antón:** Karlsruhe Institute of Technology (Germany)

"Since May and until the end of August, I am doing my secondment in Boston Scientific R&D facilities in Cambridge (MA, USA). Under the supervision of Sarah Gutbrod and as part of the Concepts Team in the company, I am exploring the possibilities of impedance mapping in a multielectrode catheter device performing bench experiments in cardiac phantom and beef cardiac tissue."

- **ESR3**: **Eric Invers Rubio -**Institut d'Investigacions Biomèdiques August Pi I Sunyer(Spain)

"Since the last newsletter update, I finished my secondment in Universitäts-Klinikum Freiburg. I had never worked in a translational research lab before, and in Freiburg I was capable of seeing, learning, trying and carrying out several experiments, including some of them on my own! Since it was my first time working with living tissue samples, it is obvious that I failed in some of the experiments. But that's science, right? However, I could also obtain some results and learn from them.

In addition to this, in Barcelona we continued to acquire ECGi, MRI and EAM data. We are preparing some abstracts and a paper with regards to that.

Last but not least, I started a secondment in Maastricht University. I have been able to transform the data that we obtain in Barcelona to the format that the Maastricht University team uses to acquire results from that data. Hopefully we will have results showing differences between enhanced and non-enhanced tissue defined with MRI using the Maastricht University algorithms. "

- **ESR4: Sachal Hussain-** Università di Bologna (Italy):

"During this period, I tested our atrial regional segmentation approach on 50 subjects including normal persons and AF patients. By doing this, we confirmed that our approach can cover anatomical variation in left atrium as well as can be applied on left atrium anatomies having number of pulmonary veins from 04 to 06.

To quantify regions of left atrium, we have proposed and calculated different parameters to understand the behavior of different regions of left atrium. We are computing these parameters for both normal subjects and AF patients and comparing their results.

Apart from LA, we have proposed a method to compute centerline of LAA. This centerline follows the morphology of LAA and can help to assess the change in shape, contraction, and motion in LAA throughout the cardiac cycle. Our next step will be to define and compute contraction parameters for LAA.

In May 2022, I was in Oslo at SIMULA for two weeks where I attended fluid dynamics and Communication in Scientific Research (CSR). In June, for one week I also attended online workshop on Cardiac simulation and later, I traveled to Bordeaux to attend in person workshop on Cardiac Electrophysiology.".

- **ESR5: Ozan Ozgul, -** Maastricht Univerity (The Netherlands)

" I have been working on both simulated and clinical datasets to extract and visualize repetitive atrial activation patterns (RAAPs). In the experiments with simulations, we focused on reentries with different complexities: stable, meandering and multiple-colliding. In each case, we generated preferential conduction direction maps of RAAPs and analyzed these with vector operators to localize sources. Our approach did better than the widely-used approaches for rotor detection.

Our work on the clinical data was centered in the detection of regions with high repetitive activity. With the help of an algorithm I developed, we detected regions with high recurrence rate and visualized the dominant patterns around these regions. This process produced a composite map and was embedded into a 3D mapping software we have been developing".

- **ESR6**, **Teresa Schiatti** at Universitaets-Klinikum Freiburg (Germany):

"The last few months I have been busy with collaborations and analysis of experiments. We areworking towards the establishment of a model for studying fibrosis in vitro. It is known that fibrosisis associated with multiple cardiac diseases, such as in the case of atrial fibrillation. The creation of amodel mimicking a vulnerable substrate would allow to study more in detail the mechanism of AF onset and progression."

- **ESR7: Cristian Barrios Espinosa -** Karlsruhe Institute of Technology (Germany):

"Last months I have been working on the publications about my eikonal model. In September, I will be presenting my work in two conferences. First, I will attend at the Computing in Cardiology conference in Tempere Finland. Then, I will go to Innsbruck/ Austria

to present my work at the conference of biomedical engineering BMT. On the other hand, I completed in May my secondment in Maastricht where I was working on incorporating transmural breakthroughs in atrial walls. In October, I will be leaving 4 months for his secondments in ADAS3D and IDIBAPS where he will apply his model in clinical data."

- **ESR8**: **Tomas Hutschalik-** NCARDIA, The Netherlands:

"It has been a busy few months since the last newsletter. The first part of the project is coming to an end and I am working hard on my publications. Besides that we are starting to thing about new hypothesis for next part of the project and how to best utilize and refine the inflammation-based atrial fibrillation disease model I have established."

- **ESR9: Albert Dasì i Martìnez-** University of Oxford (United Kingdom):

"Heterogeneity" is the word that better characterizes the human population.

We all are different, and that is also reflected at the cellular level. Every person presents a unique genetic signature, which is translated into a unique protein expression, and ultimately, into a unique ionic channel density in the cell membrane. The latter is usually called "inter-subject variability in ionic current densities". While barely investigated, inter-subject variability in ionic current densities is expected to play a key role on pharmacological therapies. It is rational to think that, since antiarrhythmic drugs target specific ionic currents, if two or many patients present a different ionic current substrate, they will respond differently to the same drug. The mechanisms behind this phenomenon are however unclear.

During the last months, I have been investigating how different atrial ionic current profiles interact with different atrial fibrillation (AF)-predisposing conditions and ultimately modulate the pharmacological management of AF. For this purpose, I have combined imaging techniques with human modeling and simulation to generate populations of virtual patient models that reproduce the huge heterogeneity observed in the real human population. Moreover, since we use computational modeling and simulation, we can provide strong

evidence under high spatio-temporal resolution and perfect control over the parameters of interest, overcoming experimental limitations."

- **ESR10**: **Narimane Gassa-** University of Bordeaux (France)

"Over the past few months we have been working on electrocardiographic imaging (ecgi) as a non-invasive tool to treat and diagnose cardiac arrhythmias. Various methods of discretization of the ECGI problem have been studied numerically. Using available datasets, both in silico and clinical, we evaluated the performance of these methods in terms of inversely reconstructed activation maps and stimulation site localization error. In addition, different parameters that would affect the ecgi results and their interpretability were studied, including: calculation of activation maps, regularization parameter.. . Moreover, we studied the effect of inter-operator segmentation variability on the ecgi solution. A total of 262 heartshape models of the heart ventricles were generated from fifteen segmentations of the same patient. Preliminary results show that there is no significant effect of segmentation on source localization. A new, more accurate and fully automatic method for locating early activationsites from activation maps based on Eikonal simulations has been introduced."

- **ESR11: Carlos Fambuena Santos** Universitat Politècnica de València (Spain)

" Since the last update, I have moved the results of my last work to a journal paper that is currently under reviewing process. Specifically, we observed some correspondence between the clinical outcome of AF patients treated with pulmonary vein isolation, and the prevalence of reentrant activity detected non-invasively by ECGI.

Currently, I am working on a new approach to characterizes AF non-invasively: Dominant Frequency. This parameter can be estimated from ECGI signals and it can be seen as a subrogate of the activation frequency of the atria. This information is relevant to understand specific mechanisms driving an arrhythmia, as those. In this stage of my PhD I am putting all

my efforts on trying to estimate dominant frequencies in a robust an reliable way from ECGI signals. This may allow in the future to include dominant frequencies as relevant electrophysiological parameter to characterize AF. In this direction, I have completed a secondment in Bordeaux where I had the chance to try a new probabilistic approach to estimate dominant frequencies in animal models."

- **ESR12**: **Patricia Martínez Díaz-** Karlsruhe Institute of Technology (Germany):

" This time I will talk about how multimodality approaches can be used to personalize atrial activation times and P-waves.

One of the first questions when creating personalized computer models is what clinical data to incorporate into the model. An additional question may be how to ensure that the virtual model behaves similarly to the patient's heart. To begin to answer these questions, we use biatrial activation maps derived from two different types of clinical data: invasive data from the electroanatomical mapping system and non-invasive data from body surface potentials and electrocardiographic imaging (ECGI). We know that with invasive and non-invasive activation maps it is possible to have an estimate of how electricity propagates in the heart. Therefore, we use these maps as input data to tune the virtual heart. In general, the idea is to map the activation data onto a more detailed MRI geometry of the patient. We then simulate a single heartbeat and use a representation of the patient's torso to obtain the body surface potentials and finally calculate the corresponding P-wave. The main goal of this project is to compare the similarity of the simulated P waves with respect to the measured P waves, and to identify which data set leads to a better estimate of the actual atrial activation. An additional contribution of this project is that we can evaluate our modelling assumptions and determine whether our model is sufficiently detailed or whether we need to consider additional information. The results will be presented at the upcoming Computing in Cardiology 2022 conference in Tampere, Finland."

- **ESR13**: **Sergio Nabil Gadur-** SIMULA (Norway)

"Sergio has been performing atrial blood flow simulations on 5 left atrium realistic geometries from atrial fibrillation patients. His study covers a span from 108 ml up to 279 ml of the left atrium in order to compare changes in viscosity when he varies volume and shape of the left atrium. He split the anatomy into the left atrium appendage and left atrium body (left atrium without the appendage) and compared the flow behavior for two rheology models: Newtonian (considering constant viscosity) and non-Newtonian (considering viscosity changes). After post-processing his results, he computed the hemodynamic index called time averaged wall shear stress which reflects the tangential forces exerted on a piece of tissue when blood is flowing. Additionally, he computed the mean normalized viscosity at the left atrium body and appendage for each geometry.

In conclusion, his study demonstrated the impact of blood viscosity changes on the hemodynamic index. He found that mean time averaged wall shear stress for non-Newtonian models are lower than the Newtonian ones. Also, a direct correlation was found between the normalized mean viscosity and the volume of the left atrium body, showing a linear behavior, where bigger left atrium geometries present a higher normalized viscosity and high values of mean normalized viscosity can be translated as a sign of a possible thrombus formation. In the left atrium appendage, it will be necessary to add more geometries to the analysis to investigate whether a correlation exists."

- **ESR14: Victor Gonzalves Marqués** - Maastricht University (Netherlands):

"In the lasts months of the project, my work has been focused on putting together an fast and precise technique for locating possible atrial fibrillation drivers using electrogram data. This builds up on work I was doing in the previous year, including using information about repetitiveness to locate rotational patterns. This work also overlaps with what Ozan (ESR 5) has been doing with composite maps, and we have been working together more often."

- **ESR15: Alexander Lacki** - Universitat Politècnica de València (Spain)

" Progress is slow. I was been hoping to obtain a data from a participating medical center, but was late with the data request. Sadly, the objectives of my work had to be adjusted to allow me to begin work on an alternative dataset. Instead of focussing on AF in the general population, I will now be identifying patient sub-phenotypes and predicting the best treatment option for AF patients in the intensive care unit."

If you want to get to know the Early Stage Researchers way better and their pathway, stories and experiences, click here

Some Photos of our ESRs during last months

Conferences and journal papers

We are sharing here some of the participation in conferences the ESRs will participate or will be participating. The information of all the publications made by the ESRs will be available in PersonalizeAF website.

ESR1, Marilu Casini had the opportunity to present two posters, Posters at: Frontiers in Cardiovascular Biomedicine 46th ESC Working Group in Cardiac Cellular Electrophysiology.

ESR2, Carmen, will be attending to Computing in Cardiology (CinC) 2022 Conference in Tampere. This year she especially excited as it's my first onsite presentation since my Master Thesis in 2019 and I was selected as part of the semi-finalists of the Rosanna Deganni Young Investigator Award (YIA).She also presented a poster in the EHRA 2022.

ESR3, Eric Invers will be sending his work to EHRA 2023 and HRS 2023

In September 2022, **ESR4** Sachal Hussain will attend CinC 2022 in Tampere, Finland and will present my research on atrial regional segmentation. Then in October 2022, he will give a poster presentation in iHeart MCF Italy

ESR5's work in goat recordings was chosen for oral presentation in EHRA 2021. Unfortunately, he could not attend the conference, however, his colleague Ben Hermans kindly took over this presentation. He also made two submissions to CinC 2022- one discussing spatiotemporal stability of the RAAPs in goats and another about the aforementioned reentry detection in simulated electrogram. He presented one poster and one oral talk in Tampere.

Our **ESR6**, Teresa Schiatti, she had the great opportunity to attend two renowned conferences in the cardiac field – the Heart Rhythm Society (HRS) conference in San

Francisco and the Deutsche Gesellschaft für Kardiologie (DGK) in Mannheim. Not only it has been a thrilling opportunity to present my project, but also an exciting circumstance to network and learn more about our research world. The talks and posters went from basic research to clinical settings and even industries and practical applications were available for the public to see.

In September, **ESR7** will be presenting his work in two conferences. First, he attended the Computing in Cardiology conference in Tempere Finland. Then, he will go to Innsbruck/ Austria to present his work at the conference of biomedical engineering BMT.

ESR8: Thomas Hutschalik had the opportunity to present a poster at ISHR in Berlin, poster that actually won a poster award. A great surprise and definitely a big honor!

ESR9: Albert Dasí, if you want to hear more about human modeling and simulation and how we apply it to study the pharmacological management of AF, keep tuned the following months: he will be presenting an ePoster at the 2022 edition of the European Society of Cardiology (ESC2022 Congress) and two oral talks at Computing in Cardiology 2022.

ESR10 attended the EDMI (Ecole doctorale Mathématiques et informatique) day, and presented a poster in the Poster session, moreover she attended CINC congress as well.

Carlos, **ESR11**, plans attended the Conference Computing in Cardiology in September 2022, where he was recognized with the Best Poster Award , and to the Congreso de Salud Vascular from the Spanish Cardiology Society on October 2022. In both congresses he has communications accepted, the first one in poster format and the second one will be a presentation.

ESR12: Patricia results presented the results explained above at the upcoming Computing in Cardiology 2022 conference in Tampere, Finland.

ESR13, Sergio Nabil is writing his first paper about non-Newtonian effects of blood in the left atrium which essentially accounts for changes in blood viscosity depending on the velocity gradient.

ESR14 has attended the Heart Rhythm 2022 conference in San Francisco with Teresa (ESR 6), which was a great experience. There he had the opportunity of seeing the clinical and industrial perspectives of atrial fibrillation treatment, as well as learning about controversies and challenges in the cardiac field in general. He also managed to present my work to a very different audience. Additionally, he presented his work at Computing in Cardiology 2022.

ESR15 presented his work at Computing in Cardiology 2022.

We are glad to announce that we some of the ESRs and supervisors have also submitted journal papers related to the PersonalizeAF network. and you can find the journal papers submitted in our Open Access repository, ZENODO, as well.

We are presenting the list of the publications here:

-"Local Electrical Impedance Mapping of the Atria: Conclusions on Substrate Properties and Confounding Factors", by Laura Anna Unger; Leonie Schicketanz; Tobias Oesterlein; Carmen Martínez Antón; Kerstin Schmidt; Olaf Doessel; Armin Luik;

-"An evaluation on the clinical outcome prediction of rotor detection in noninvasive phase maps". by "C. Fambuena-Santos; I. Hernández-Romero; R. Molero; A.M. Climent; M.S. Guillem;

-"ECGI Periodicity Unraveled: A Deep Learning Approach for the Visualization of Periodic Spatiotemporal Patterns in Atrial Fibrillation Patients" by Alexander Lacki; Ismael Hernández-Romero; María S Guillem; Andreu M Climent;

- "Spatial Relationship Between Atrial Fibrillation Drivers and the Presence of Repetitive Conduction Patterns Using Recurrence Analysis on In-Silico Models" by Victor G Marques; Ali Gharaviri; Simone Pezzuto; Pietro Bonizzi; Stef Zeemering; Ulrich Schotten;

-"Benchmark of deep learning algorithms for the automatic screening in electrocardiograms transmitted by implantable cardiac devices" by Narimane Gassa; Benjamin Sacristan; Nejib Zemzemi; Maxime Laborde; Juan Garrido Oliver; Clara Matencio Perabla; Guillermo Jimenez-Perez; Oscar Camara; Sylvain Ploux; Marc Strik; Pierre Bordachar; Remi Dubois;

-"High Coverage and High-Resolution Mapping of Repetitive Patterns During Atrial Fibrillation" by Ozan Özgül; Ben Hermans; Arne van Hunnik; Sander Verheule; Ulrich Schotten; Pietro Bonizzi; Stef Zeemering;

-"Clinical and electrophysiological predictors of device-detected new-onset atrial fibrillation during 3 years after cardiac surgery" by: Elham Bidar; Stef Zeemering; Martijn Gilbers; Aaron Isaacs; Sander Verheule; Matthias D. Zink; Bart Maesen; Sander Bramer; Michal Kawczynski; Isabelle C. Van Gelder; Harry J.G.M. Crijns; Jos G. Maessen; Ulrich Schotten;

-"Consecutive-Day Ventricular and Atrial Cardiomyocyte Isolations from the Same Heart: Shifting the Cost–Benefit Balance of Cardiac Primary Cell Research" by Joachim Greiner; Teresa Schiatti; Marica Dente; Alina Semenjakin; Thomas Kok; Dominik J. Fiegle; Thomas Seidel; Ursula Ravens; Peter Kohl; Rémi Peyronnet; Eva A. Rog-Zielinska;

-"Spiral Waves Generation Using an Eikonal-Reaction Cardiac Electrophysiology Model" by Narimane Gassa; Nejib Zemzemi; Cesare Corrado; Yves Coudière;

Events and training courses

Fifth Meeting of the PersonalizeAF Network in Bordeaux, July 2022

During 4th and 5th of July, the PersonalizeAF consortium celebrated its first on-site meeting in Bordeaux, France. Here, the 15 ESRs participating in the network had the opportunity to share their progress during the last months, and they could enjoy very fruitful discussions with our supervisors and colleagues.

Finally, where able to share their presentations to an on-site and virtual audience, and we were all very pleased to meet the consortium in person. Two full days of work and science to meet the people of the consortium (including junior and senior researchers) and share our experiences during the project lifetime.

The ESRs shared that the different courses, specifically the communication skills training they received before, were very helpful to prepare this meeting. The entire consortium was able to see this once they created their engaging and amazing presentations they showed during these days!

Moreover, the PersonalizeAF network was able to enjoy different activities during these two days:

-A keynote lecture given by Meleze Hocini, Deputy Director of Liryc (Electrophysiology and Heart Modeling Institute)

-Joint dinner with MICROCARD project, a high-level project that has started few months ago.

-Updates on all Work Packages involved in the project, including Communication updates, ethic and Data management issues.

-Really inspiring interdisciplinary focus collaborative project about different topics such as standardization of atrial regions, computer models, biology in AF and Signal processing, with renowned chairs such as Lluis Mont, Axel Loewe, Ursula Ravens and María Guillem

-Students committee and Research and Training committee meetings.

-Supervisory Board of the PersonalizeAF Network meeting

Thanks to everyone for attending!

Fifth PersonalizeAF meeting in Bordeaux, 4th and 5th of July

Communication skills training course organized by SIMULA

On November 1-5th 2021, the ESRs attended the first part of T51_Communication skills training course, fully online. The second part will be taught on May 9-13th 2022 in Oslo.

After that, they had the opportunity to meet in person, together with other students, during the second part of this training. This training lasted a week and was organized by SIMULA in Oslo during 9-13th of May. In this course ESRs learned about presenting, writing and communicating scientific projects. This course was a complete guide of how to transmit your scientific results in an efficient way using different formats and taking into account different audiences.

"*The most interesting part about it was the feedback we got, both from colleagues and from the tutors of the course. I learned what to improve in my writing and in my presentations, so I will use this feedback in the future*." Eric Invers, ESR3

"*I found specially interesting how this course provides a wide perspective about scientific communication, going from a complete framework to write scientific papers for the academic community, to divulgative and short videos for a non-scientific audience.*"- Carlos Fambuena, ESR11

Clinical management training module, organised by Hospital Universitario La Fe held online in September 2022.

The Clinical management training module will continue during september, giving the ESRs the opportunity of attending a live ablation case including and some lectures given by clinicians from Hospital Universitario la Fe de Valencia

Transcriptomic and proteomic analysis and Next Generation Sequencing Technologies trainings will be taught in the near future in Leiden.

Cardiac electrophisiology training course in Bordeaux

Last July Cardiac Electrophysiology Summer School at LYRIC in Bordeaux with the attendance of the PersonalizeAF researchers. They learned about cardiac electrophysiology from different points of view: anatomical landmarks crucial for electrophysiological disorders, clinical perspectives on treating both atrial and ventricular arrhythmias, the usage of modelling in the future of electrophysiology and even more basic research approaches to the identification of new targets to treat arrhythmias.

"*We created a virtual heart from scratch: from segmenting the geometry of the atrial resonance, to simulating P-waves and inducing arrhythmias. The following week we had a very interesting lecture on cardiac anatomy. I must admit that I was very impressed by the intrinsic mix of structure and function within the heart. It also made me aware of some anatomical implications when modelling the heart. The visit to the Lyric Institute lab was very interesting because we met researchers doing experiments in real time. For example, we saw the patch clamp technique, an assay that researchers use to analyse the action potential of a cardiomyocyte in vitro. Most impressive, however, was seeing a real heart beating in a Langendorff system.*" Lourdes Patricia Martínez, ESR12

Some of the ESRs at the Cardiac Electrophisiology training Summer School at Bordeaux, July 2022

More news!

Two of our ESRs, Marilù Casini and Thomas Hutschalik attended the #MSCA Satellite Event at #ESOF2022 in Leiden. Here, fellows, supervisors, coordinators, alumni and policymakers gather to debate and contribute to priority topics for the research ecosystem, and networking! But there's more...

Thomas Hutschalik won the #FallingWallsLab MSCA 2021 competition by with his pitch breaking the wall of inflammation-caused arrhythmia. He will be joining the Lab Finale in Berlin! Check the video here!

Marilú Casini was invited to the 20th edition "For Women in Science" Award. She had the opportunity to talk about research and girls' empowerment to pursue STEM careers. Check the video here!

Next Events

6th Consortium meeting and Regulatory workshop

2023 will be staring with the whole consortium meeting in person again. The venue will be the beautiful Bologna, Italy. The sixth meeting will be taking place during 16th and 17th of January 2023 and will be organized by Università di Bologna.

The Early Stage Researchers will also be attending the next training of the PersonalizeAF project, namely Regulatory workshop, where they will have the opportunity to follow this transferable skills training courses:

T61_Gender issues in research

T62_People management and leadership

T63_Female leadership

T64_Medical instrumentation regulation

T65_Medicament products regulation

Spanish Society of Cardiology Congress 2022

SEC22, that will be happening 20-22th October 2022 in Mallorca, addresses, from a comprehensive approach to the patient and with a multidisciplinary vision, a complete programme of prevention, diagnosis and treatment of cardiovascular diseases.

Cardiologists, family and primary care physicians, internists, nurses, technicians, researchers, etc. can participate in the latest advances in cardiology, in an event in which innovation and technology coexist with the projection of cardiovascular health in society.

You can check the agenda [here](#).

Computing in Cardiology 2022

Computing in Cardiology 2022 is happening during 4-7th September at Tampere, Finland. Computing in Cardiology is an international scientific conference that has been held annually since 1974. CinC provides a forum for scientists and professionals from the fields of medicine, physics, engineering, and computer science to discuss their current research in topics pertaining to computing in clinical cardiology and cardiovascular physiology.

A lot of our ESRs and supervisors are attending and presenting their work there. You can check the program [here](#).

Heart Rhythm Society Conference 2023

HRS 2023 will be happening during Friday, May 19 to Sunday, May 21, 2023 in New Orleans. Heart Rhythm 2022 is a Heart Rhythm Society educational program.

Heart Rhythm Society (HRS) is a international nonprofit organization with a mission to improve the care of patients by promoting research, education, and optimal healthcare policies and standards.

Registration and housing will open in early December 2022 for HRS members and mid-January for nonmembers.

We recommend: Papers addressing Atrial Fibrillation

In this section, the consortium wants to share some of the Papers addressing Atrial Fibrillation and other arrythmias with were considered of interest and inspiring for our work. Check them out in order to learn more about Atrial Fibrillation, stem cells, image processing, cardiac modelling, etc!

"All-optical control of cardiac excitation: combined high-resolution optogenetic actuation and optical mapping" by Entcheva, E.

"Reduction of Conduction Velocity in Patients with Atrial Fibrillation" by Heida, A. et al

"Information Theory and Atrial Fibrillation (AF): A Review" by Dharmaprani, D.

"Strategy for repeat procedures in patients with persistent atrial fibrillation: Systematic linear ablation with adjunctive ethanol infusion into the vein of Marshall versus electrophysiology-guided ablation" by Nakashima, T. et. al.

"Secretome of atrial epicardial adipose tissue facilitates reentrant arrhythmias by myocardial remodeling" by Ernault, A.C et. al.

"Identification of nexus points within the cardiac neuraxis: a sine qua non of neuromodulation therapies" by Farhat, K et. al.

"Long-Term Cultivation of Human Atrial Myocardium" by Klumm, M. J. et al

"Renewal Theory as a Universal Quantitative Framework to Characterize Phase Singularity Regeneration in Mammalian Cardiac Fibrillation" by Dharmaprani, D. et al

"Association of of Atrial Fibrillation Clinical Phenotypes With Treatment Patterns and Outcomes: A Multicenter Registry Study" by Inohara, T. et.al.

PersonalizeAF Youtube Channel

Videoblogs in YouTube

In PersonalizeAF project we are committed to bring closer science to society, which is related to the H2020 objective of contributing to Open Science and research.

That's why the 15 Early Stage Researchers part of this multidisciplinar and international network are contributing to this challenge staring their own videoblogs' project.

Sharing a common YouTube channel and social networks, they have started a project of Videoblogs, in which we will be able to know periodically the results of their research in #Afib, their activities, but we will also learn about clinical perspective, stem cells, artificial intelligence, signal processing, echocardiography, etc.

Don't miss their videos, that will be launched every 6 months, and subscribe to their channel to stay tunned!

Last blog entries and News

Once a month, our researchers are sharing their latest updates about their research pathway. Do you want to learn more about Atrial Fibrillation? About how researchers life is? Check their articles and follow them on Social media!

September 5, 2022

Updates from a very busy year

Updates from a very busy year Now that we can safely travel again, there's some catching up due for PersonalizeAF members! Okay, let's take this…
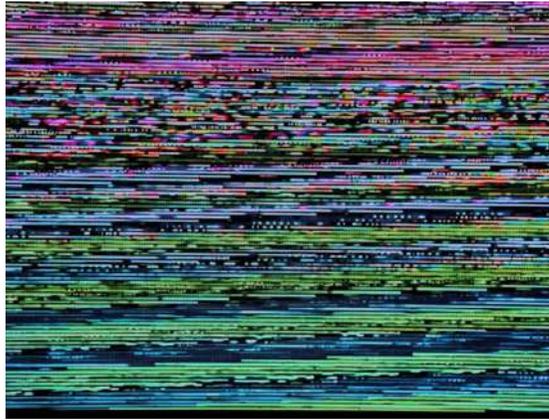
Read more…

June 21, 2022

5th PersonalizeAF meeting in Bordeaux, France

5th PersonalizeAF meeting in Bordeaux, France
The University of Bordeaux will host the next
PersonalizeAF, during 4th and 5th of July 2022
Next 4 and…

Read more…

March 3, 2022

Research = exchange

Research = exchange From the EP-lab to a basic
research lab Hallo! Wie geht's? It's been a while
since I last posted. So long, that…

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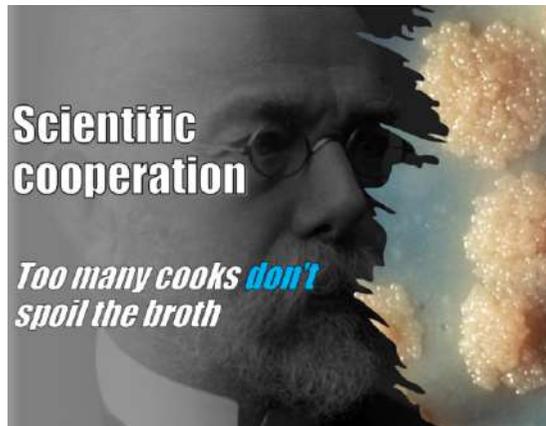
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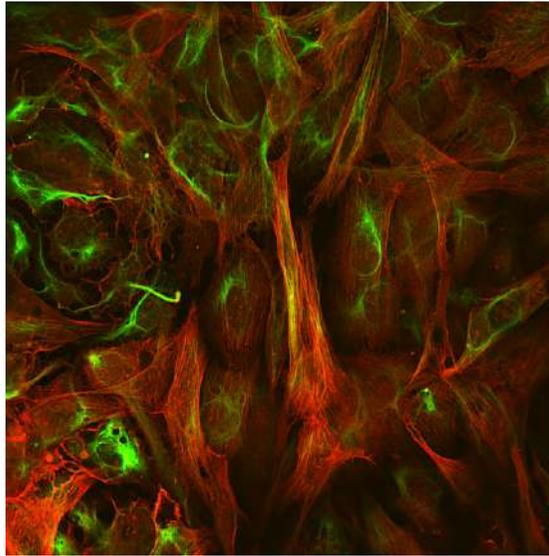
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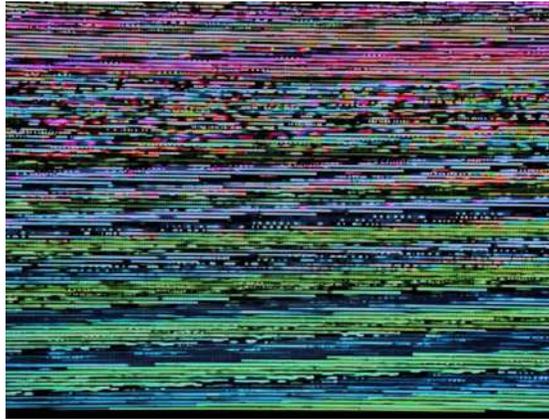
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