

Welcome to the first newsletter of
PersonalizeAF project!

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PersonalizeAF first Newsletter



Welcome to our first newsletter! 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. Here, we will sum up all the interesting results about secondments, training, scientific results, vision, events, dissemination activities.

This newsletter will be published semesterly, and it is addressed to all publics, starting from the consortium and ending in the wider population

Do not miss it and stay tuned for all this information!

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

3) combining 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

First appearances: Our ESRs and their research projects

One of the aims of PersonalizeAF project is to hire and training 15 students to pursue their PhD. For recruiting our ESRs, we decided to follow a centralized call, but the beneficiaries have also advertised the spots within their official procedures . We had more than 90

applications, and finally each organization selected the perfect candidates that fit the best with the objectives, expertise and knowledge for their own projects.

Right now, we are very happy to announce we have 14 out of this 15 ESRs, of our ESRs hired and collaborating together, who will perform their research in different countries and sectors, but will work together with a common cause, to tackle the problem of #AFib in Europe.

We don't want to lose this opportunity to present our young researchers and the projects they will be working in in different countries, together with some of the opinions of PersonalizeAF's ESRs, who are thrilled to start their research careers in this international and intersectorial environment:

- **ESR1: Mariú Casini**, Instituto de Investigación Sanitaria la Fe (Spain): *"Scientific research and science communication have always been one of my principal aims regarding my future. For this reason, the possibility to work in an innovative multinational, multi-sectorial, and multidisciplinary research project trills me"*
- **ESR2: Carmen Martínez Antón**: Karlsruhe Institute of Technology (Germany) *"During my PhD project I expect not only to gain more confidence about working in a multidisciplinary environment, but also to acquire a deeper knowledge to achieve a successful research career"*
- **ESR3: Eric Invers Rubio** -Institut d'Investigacions Biomèdiques August Pi I Sunyer(Spain) *"Being a member of the Personalize AF network is stimulating in the sense of being able to work along recognized researchers and learning from them in superb environment and conditions"*
- **ESR4: Sachal Hussain**- Università di Bologna (Italy): *"It is a great honor and pleasure to be a part of the European Marie Skłodowska-Curie International Training Network PersonalizeAF. It gives me an opportunity to work and collaborate with young researchers at the best labs and industries in Europe"*
- **ESR5: Ozan Ozgul**, - Maastricht University (The Netherlands) *"It is a great privilege to be a member of the PersonalizeAF community which brings scientists from distinct*

but complementary domains together for a better understanding of atrial fibrillation and improving treatment strategies"

- **ESR6, Teresa Schiatti** at Universitaets-Klinikum Freiburg (Germany): *"I am thrilled to be part of Personalize AF network as it gives me the opportunity to collaborate with other researchers towards the same goal of improving the treatment for atrial fibrillation"*
- **ESR7: Cristian Barrios Espinosa** - Karlsruhe Institute of Technology (Germany): *"I am particularly excited about working in a multidisciplinary environment in the consortium of Personalize AF. At the same time, I am very lucky to be surrounded by experts in the field at KIT"*
- **ESR8: Tomas Hutschalik**- NCARDIA, The Netherlands: *"I look forward to working collaboratively, combining diverse fields like computer modelling, engineering and biomedicine to better our understanding and treatment of atrial fibrillation (AF)"*
- **ESR9: Albert Dasì i Martínez**- University of Oxford (United Kingdom): *"Not only will I be trained by a pioneering research team, but also, I will collaborate with other ESRs and colleagues in what, in my view, is a fascinating way of sharing knowledge around the globe"*
- **ESR10: Narimane Gassa**- University of Bordeaux (France) *"I'm looking forward to taking part of the european project PerosnalizeAF with great excitement as I will be able to work and collaborate with distinguished researchers, clinicians and professionals".*
- **ESR11: Carlos Fambuena Santos** Universitat Politècnica de València (Spain)*"This project provides the opportunity to work collaboratively in a very enriching community of scientist coming from different fields and countries and pushing all together to get better diagnosis techniques and treatments for atrial fibrillation"*

- **ESR12: Patricia Martínez Díaz-** Karlsruhe Institute of Technology (Germany): *"I strongly believe that personalised models and computer simulations will provide useful insights for planning atrial fibrillation ablation, help reduce procedure times and decrease re-intervention rates"*
- **ESR13: To be confirmed soon-** SIMULA (Norway)
- **ESR14: Victor Gonzalves Marqués** - Maastricht University (Netherlands): *"I am very excited to be a part of the PersonalizeAF project, which joins the efforts of some of the most relevant researchers and institutes in the field towards a common goal to improve the treatment of atrial fibrillation"*
- **ESR15: Alexander Lacki** - Universitat Politècnica de València (Spain) *"With my participation in the PersonalizeAF project I hope to further develop my skills in artificial intelligence, the application of black-box systems in high stake environments, as well as decision support systems, while working in a culturally enriching environment"*

If you want to know better Early stage Researchers of the project, and want to hear about their stories and experiences, click [here](#)

Events and training courses

First Consortium Meeting of the Network held Online: 28th and 29th October 2020

Due to COVID outbreak, the procedures were been slowed in the past months, as it is known. However, the fact that we cannot meet in person is not a problem for the consortium plan, since we have already celebrated our first Supervisory Board of the Network, being hold on July 7 2020, and our first Consortium meeting (28-29th of October 2020). In these meeting, that was the first contact between all the persons integrating PersonalizeAF project: representatives of the Beneficiary institutions, Partner Organizations, ESRs and the

Advisory Board met, and discussed the current status of the project and future outcomes. These were the most important topics addressed:

- Early Stage Researchers met the network and share about their objectives in their research paths
- The different leaders of the Work Packages gave an update on the stage of the research
- The different Committees such as Communication, Dissemination and Exploitation committee met, and discussed about the communication strategy and data management.
- Stanley Nattel, from Montreal Heart Institute, and member of the Advisory Board gave an invited lecture about "Recent insights into pathophysiological and clinical relevance of inflammatory signaling in AF". 40 people attended!
- Our Early Stage Researchers met with the Ethics Misconduct Delegate and the Equal Opportunity Champion of the project.

Thanks to everyone for attending!



The image is a screenshot of a Zoom meeting. The main content is a presentation slide with a dark blue background and yellow text. The slide title is "Recent insights into pathophysiological and clinical relevance of inflammatory signaling in AF". The speaker is identified as Stanley Nattel, MD, from the Montreal Heart Institute and the University of Montreal. Logos for the Paul-David Chair in Cardiovascular Electrophysiology, linc, ICM, McGill University, and the University of Montreal are visible. The Zoom interface at the bottom shows a grid of participants, including María Salud Guillem Sánchez and stan nattel (Guest).

"Improvement treatments for Atrial Fibrillation, a

challenge for the welfare system" Online webinar- 29th October 2020

The first citizen outreach event about Atrial Fibrillation was organized by Universitat Politècnica de Valencia. This webinar event was presented as a round table, bringing together investigators, policy makers, industry and patients associations to discuss about the AF, where speakers from leading organizations related to AF were be involved. María Guillem, coordinator of PersonalizeAF project, moderated the round table, and included an overview about PersonalizeAF network and objectives.

Objectives of the webinar

- Discuss the relevance of stratifying patients to obtain a better diagnosis of AF.
- Present to the audience the different projects and their aims.
- Establish future collaboration channels between the participants.

More than 40 persons attended and learnt different perspectives for those who live AFib in different stages: research, clinics, patients,... This event show the different role of the specific stakeholders in order to identify the opportunities of improvement in the diagnosis and treatment of Atrial Fibrillation. Additionally, special attention was be given to patients and general public since engaging them and mobilizing communities can help bring better results in the efficiency treatment.

We were thrilled to part in such an event, and we will keep you updated in more events like this.

This online webinar is now available online and we invite everyone to check it.

IMPROVING TREATMENTS FOR ATRIAL FIBRILLATION, A CHALLENGE FOR THE WELFARE SYSTEM

PersonalizeAF MSCA-ITN
Speaker: María S Guillem
Universitat Politècnica de València

AFFINE
Speaker: Felipe Atienza
Hospital Gregorio Marañón, Madrid

Atrial Fibrillation Association
Speaker: Trudie Lobban
Heart Rhythm Alliance

AFFECT-EU
Speaker: Daniel Engler
Universitat Politècnica de València

Zoom Meeting Bar: +22, OO, GC, IT, BC, AF, TL (Trudie Lobban), DE (Daniel Engler), UR (Ursula Ravens), María Salud Guillem Sánchez

Improving
treatments for
Atrial
Fibrillation
Online Webinar
is online now!

Data mining and statistics summer school, from 26th October to 13th November 2020 in Valencia, Spain

We are pleased to present the first PersonalizeAF training course that took place online, organized by ITACA Institute from Universitat Politècnica de Valencia. PersonalizeAF courses aim to provide with high quality scientific and soft skills targeted to resesarchers, in different subjects from an international and intersectorial perspective. This first training activity was held during 26 october and 13 of November.

This course had the objective of providing the big picture of mining of the data, aiming to contribute to build competences in scientific leadership and to prepare the attendants for their working future. This course was organized in practical and theoretical workshops. This course had a hybrid character, giving the opportunity to the attendees to join in face to face or online, favouring the maximum participation in a safe environment. ESRs attended, but this was also open for researchers who wanted to improve their skills in research.

SCIENTIFIC TRAINING MODULES

S11_Electrophysiology and atrial fibrillation.

Speaker: Lluís Mont, Eduard Guasch

- Introduction to cardiac electrophysiology
- Basic electrocardiography
- Pathophysiology of atrial fibrillation
- Atrial fibrillation mechanisms
- Atrial fibrillation diagnosis
- Atrial fibrillation treatment

S12_Medical registration and standards:

Speaker: David Moner

- Semantic interoperability
- ISO 13606 and openEHR
- HL7 CDA and HL7 FHIR
- SNOMED CT

S13_Basic signal and image processing

Speaker: Maria Guillem, Ismael Hernández

- Signal representation
- Sampling theory
- Basic Matlab programming
- Spectral estimation
- Digital filtering

- Signal conditioning for biomedical signals
- Feature extraction in ECG signals
- Image representation and binarization
- Image enhancement
- Morphological operations on binary images
- Image feature extraction

S14_Data Mining and Big Data

Speaker: Andreu Climent, Salvador Tortajada

- Introduction to classification, clustering and data analysis
- Introduction to python
- Supervised and non-supervised machine learning
- Neural Networks and deep learning
- Data quality
- Graph theory
- Data mining in AF
- Bayesian statistics

S15_Outcome prediction models and statistics

Speaker: José Manuel Soler

- Basic data description
- Experiment design
- Statistical tests
- Regression

TRANSFERABLE SKILLS TRAINING MODULES

T11_Information search

Speaker: Inmaculada Aleixos

- Documenting Searches and generating search terms
- Academic search engines
- Reference management tools
- Academic Search strategies
- Evaluating Sources
- Ethical use of sources
- How to cite sources

T13_Digital tools and Open science

Speaker: Pilar Rico, Inmaculada Aleixos

- Good practices in Open Science
- Open Data
- Data management and data repositories
- Code sharing



To know more about the course please write to personalizeAF@itaca.upv.es before 26 th of October.
More information in www.personalizeaf.net

Partner organizations



Beneficiaries



"This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 863974"

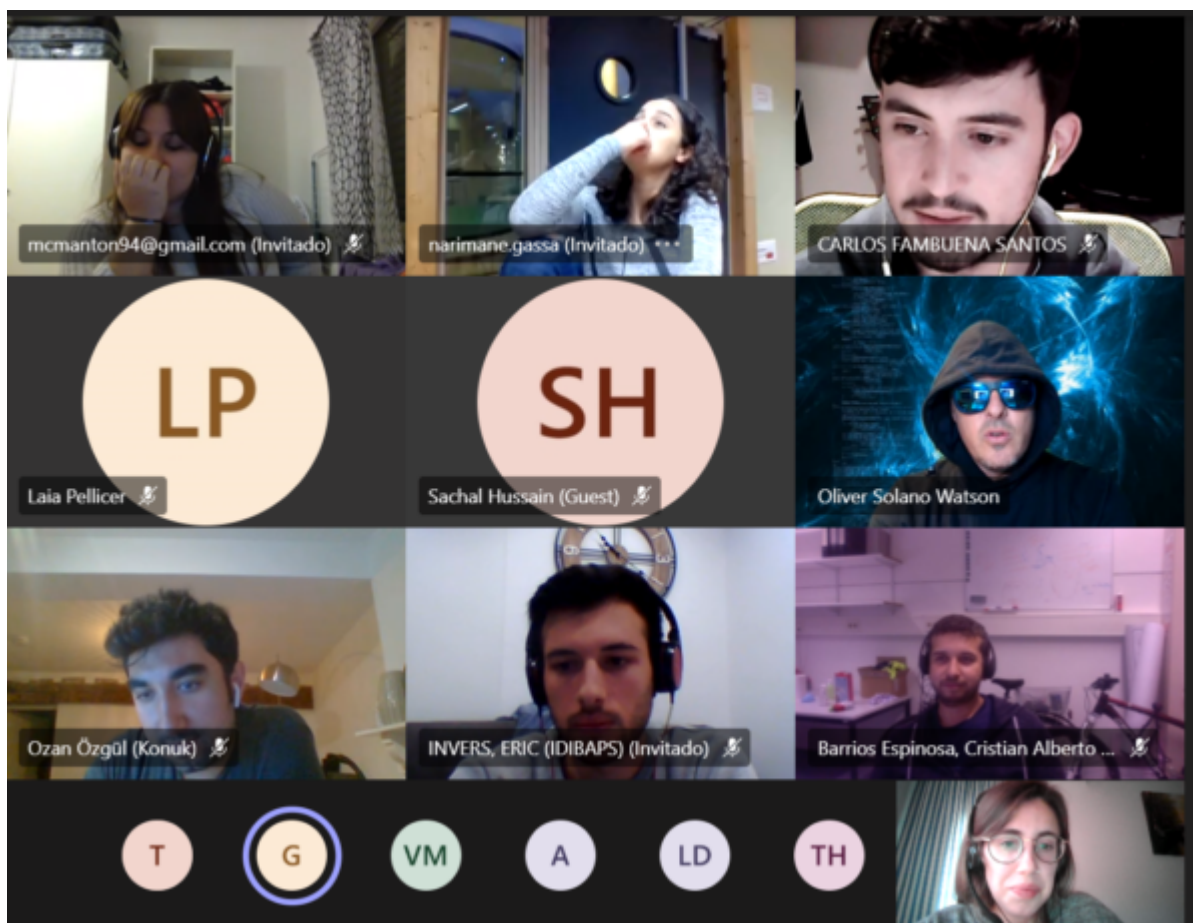


As it can be seen in the previous image, these trainings were divided among scientific

training modules and transversal skills modules. Within the scientific modules, topics such as electrophysiology in cardiology, starting from the general features and applied to Atrial Fibrillation in particular were be addressed by IDIBAPS, going through diagnosis, mechanisms and treatments. On the other hand, the Veratech partners provided an overview of registering and reusing meaningful clinical data, and introducing basic aspects of the most common EHR standards in a real environment. In more detail, the UPV coordinators provided the keys and techniques to study cardiac diseases, tackling signal conditioning for biomedical signals, basic Matlab, image representation, or image features extraction. On the other hand, the study of data mining was approached using machine learning and Python, and statistics sciences applied to research, learning about experiment designs, tests, and much more.

About transferable skills workshop, information search module aimed to provide appropriate strategies to search for relevant, concrete and reliable information inside and outside the research field, making more efficient the selection of our search sources, as well as their reliability and interpret them in a critical and objective way. With the objective of bringing science closer to the public and to make it accessible to everyone we had a module aiming to promote Open science and Open access, furthering the knowledge of tools such as Open AIRE, Zenodo, or creative commons. This training provided the tools to master Data Management and GDP regulations in research, which will be really useful for the first approach of data and research.

Last but not least, networking is always a must, talking about research but also in daily life. Therefore, this course will include different team building activities for the participants to promote collaboration and partnership.



Computing in Cardiology Conferences- September 2020

As every September, Computing in Cardiology has brought together scientists and professionals from all over the world from different fields pertaining to cardiology. This year the event has had an hybrid format where assistants could attend remotely and in person in Rimini, Italy, the host city that has had a huge and successful effort to carry on the conference despite of the difficulties to the current pandemic situation.

The conference had multiple sessions relative to different cardiac pathologies and research areas. Atrial fibrillation has been one of the most discussed pathologies with dedicated sessions in signal processing, machine learning, atrial mapping, simulation, and therapies. In these panel sessions interesting results related to this pathology have been presented and showed the current state of the art and the future research lines to improve the health and quality of life of atrial fibrillation patients.

PersonalizeAF project partners have been presenting many articles and posters in this conference and presenting several of the panel discussions of each talk. PersonalizeAF project partners have been presenting many articles and posters in this conference and

presenting several of the panel discussions of each talk. Cristiana Corsi and Stefano Severi from the University of Bologna have been part of the Local Organizing Committee and they have been chairs of some of the most relevant panels. Other members of PersonalizeAF like Axel Loewe, Olaf Dössel, Blanca Rodriguez, Stef Zeemering and Pietro Bonizzi have been chairs of some of the panels too.

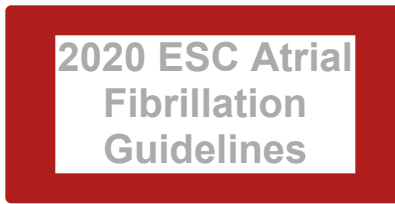
We recommend: Atrial Fibrillation ESC guidelines

About Atrial Fibrillation lectures and publications, the European Society of Cardiology's new guidelines for atrial fibrillation were presented in August 2020: “2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS): The Task Force for the diagnosis and management of atrial fibrillation of the European Society of Cardiology (ESC) Developed with the special contribution of the European Heart Rhythm Association (EHRA) of the ESC” This document is updated every 4 years by the ESC. We recommend that all interested parties read it, in order to fully understand what Atrial Fibrillation involves. These guidelines are a must for any #AF researcher, healthcare provider, or stakeholder and will give us all the keys to understanding and treating AF:

- Diagnosis
- Epidemiology
- Clinical features
- Subtypes, burden and progression
- Screening
- Integrated management
- Prevention
- Sex-related differences
- Clinical implications
- “What to do” and “what not to do” messages

...And more!

To read more about it, click below, and let us know what you think about these guidelines:



Upcoming events and training courses

"Advanced signal and Image processing" Workshop

In March 2021, the second PersonalizeAF Workshop targeted to researchers will be organized by Maastricht University, and this will be held fully online. The topics included here will be the following:

- Systems biology and Atrial Fibrillation
- Advanced biomedical signal processing
- Advanced image processing
- Diversity in research
- Best teaching practices
- Time management

Are you interested in the course? We will share more information soon, but if you want to be informed about this course, you can reach us in personalizeaf@itaca.upv.es.

10th and 11th March 2021- Second Consortium meeting

PersonalizeAF Consortium will perform meetings every 6 months. Next one is planned for 10th and 11th March 2021. Early Stage Researchers will share their progress in their work for the first time, and share their first outcomes to the rest of the Consortium. They will also have the opportunity to meet with some members of the Advisory Board, who will contribute to them with their experience and knowledge in their respective fields.

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!

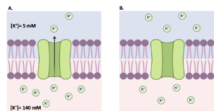


February 5, 2021

A look into our heart

A look into our heart How can we actually see the results we get from computer models? I am a bit late to say this, but since this is my...

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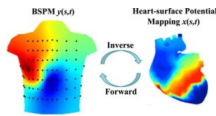
February 3, 2021

Using Computer Models to Study the heart_II

Using Computer Models to Study the Heart II. The Electrical Analogue Patricia Martínez Díaz 1. February.2021 Welcome

back! In our last post we explained that modeling is the process of using...

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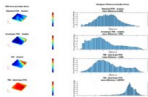
February 2, 2021

Rethinking the Inverse Problem of Electrocardiology

Rethinking the Inverse Problem of Electrocardiology

Previously I have talked mostly about decision support systems, and sub-phenotypes of patients- groups of patients defined by their biomarkers, and how the identification...

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February 1, 2021

New year New challenges

New year new challenges... Fresh start after holidays.. The first month of the year has finished. I was in holidays before so there is not too much to update. Unfortunately...

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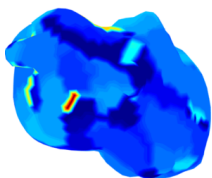


January 29, 2021

What being a researcher means

What being a researcher means Hello everyone! My name is Marilù Casini and I am officially part of this huge family around the world called PersonalizeAF. Every months me and...

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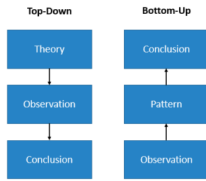


January 18, 2021

Dominant Frequency

Dominant Frequency The electrical activity from another perspective. Hello everyone. First of all I would like to wish you all a happy new year! Things haven't changed much regarding the...

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January 7, 2021

Explaining Blackboxes

Explaining Blackboxes By the time this post is published, it will probably already be 2021, so I would like to start by wishing everyone a happy, healthy, and successful year!...

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Partner organizations



Beneficiaries



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No.860974.



Co-funded by the Horizon 2020 programme of the European Union

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