



newsletter

The Newsletter of the **P**atient **E**mpowerment through **P**redictive **P**ersonalised
Decision Support (PEPPER) Project

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OXFORD
BROOKES
UNIVERSITY

Imperial College
London

Universitat
de Girona

IdIB
Gi Institut
d'Investigació
Biomèdica
de Girona
Dr. Josep Trueta

cellnovo RomSoft



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Editorial



Welcome to the third issue of the PEPPER Project newsletter. We have had an exciting few months since the last issue. You will find news here about the clinical feasibility studies, now in progress in both centres: Imperial College Healthcare NHS Trust, London, UK and Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta, Spain. Participants have been enrolled to both the PEPPER platforms: the smartphone platform to guide those who use multiple daily injections, and the next generation Cellnovo System, which features a Bluetooth and Android-enabled micro-pump. You can watch a video about the project (<http://bit.ly/2BNwU2j>). If you would like to offer us any feedback please contact [contact *pepper@googlegroups.com*](mailto:contact_pepper@googlegroups.com)

II. Mid Term report

Within the H2020 framework, it is stipulated that a European Commission team, formed by a Project Officer and three experts, review the progress of each project every 18 months.

Imperial College London hosted the PEPPER Mid-Term Review on the 19th-20th September 2017 at St. Mary's Hospital. Interestingly enough, not far from St Mary's Hospital, Alexander Fleming discovered penicillin in 1929. The PEPPER consortium arrived one day earlier to coordinate the agenda and present a joint front with all the accomplished work.

The designated Project Officer had an economics background and the experts backgrounds were in electronics engineering, human-computer interactions and clinical medicine. This set of expertise allowed them to deeply



grasp into PEPPER inner algorithms, architectures and documentation.

During the review, the EC team was very active throughout all work packages, asking questions and promoting new actuations to further improve the project outcomes.

In December, the EC provided their report and gave PEPPER a positive review.

All partners will continue with their efforts in order to keep empowering the patient in their diabetes decisions.



III. Pepper News

A. Imperial College London at AstraZeneca

Imperial College London members, Pau Herrero Vinas and Innovation Manager Georgiou Pantelis were invited to present at the AstraZeneca event at the Real Academia de Bellas Artes in Madrid on the 23rd of September 2017.

AstraZeneca Foundation is a global and innovative biopharmaceutical company, focused on the discovery, development of medicines. With this aspiration as the engine of change and the approach aimed at its three major therapeutic areas (cardiometabolism, respiratory and oncology), three main lines of work have been identified, called to become its great foundational goals. In this way, since 2015 all the activity developed by the AstraZeneca Foundation will be limited to the following areas of work: Promotion of young researchers, Corporate Social Responsibility (CSR) and Health Policy.

Pau Herrero and Georgiou Pantelis presented PEPPER, the bio-inspired Artificial Pancreas, and the future of Internet of Things (IoT) devices for diabetes management. The latest results on adaptive and intelligent insulin bolus calculation were also discussed.



B. Curiosity Carnival

Friday, 29 September 2017, Oxford joined hundreds of other European cities simultaneously in celebrating European Researchers' Night.

The initiative was a Europe-wide event dedicated to explaining research through fun, interactive learning, and "Curiosity Carnival" was the first one ever to be held in Oxford.

Led by the University of Oxford working together with Oxford Brookes and MRC Harwell the Curiosity Carnival featured a huge variety of free activities and events for all ages.

Lecturers Arantza Aldea from the School of Engineering, Computing and Mathematics and Marion Waite from the Department of Nursing, both from Oxford Brookes University, discussed PEPPER at in the Museum of Natural History and Pitt Rivers Museum.



C. Launching the PEPPER Clinical Study.

An important milestone has been reached in the PEPPER project: Clinical trials have started in November 2017. The 4-month clinical study included 15 patients in centres in London (UK) and Girona (Spain). The recently CE-marked next-generation Cellnovo System, the industry's first Bluetooth® and Android™-enabled micro-pump for insulin delivery, will serve as the central platform of the PEPPER solution. The system will collect data from multiple connected devices, send them in real time to secure servers to inform the decision support, and display a personal insulin dose recommendation based on the analysis of the individual's data.

Cellnovo published a press release in order to disseminate the launch of the trial. Some of the media platforms where this has been advertised are:

- Business Wire [<http://bit.ly/2ENyBv6>]
- Market Insider [<http://read.bi/2C5AobT>]
- Bloomberg [<https://bloom.bg/2FWca6j>]
- Wallstreet Online [<http://bit.ly/2EPAJCO>]
- Les Echos [<https://t.co/blvAbIGiVM>]



D. EU Research & Innovation Video Competition

PEPPER joined a competition launched by the European Union Research & Innovation Department to showcase all EU-funded and R&I projects. The aim is to build up a new portfolio of project videos that clearly showcase the impact of EU funded research and innovation on our daily lives. The video can also be shown at events by the European Commission and can give PEPPER even more exposure.

The video that gains the most likes before March 30, 2018 receives special recognition from the EU commission. The PEPPER Video has been added to the YouTube Playlist of the EU-funded research and innovation project videos.

Help us win the competition by liking and sharing the video!

<http://bit.ly/2BNwU2j>



The screenshot shows a YouTube video player interface. At the top, there is a search bar and the YouTube logo. The video content features a woman, Dr. Monika Reddy, MD, in the foreground. In the background, there is a mannequin wearing a white t-shirt with the PEPPER logo and text: "pepper patient empowerment through predictive personalised decision support" and "Artificial Intelligence for Diabetes Management". The video title is "PEPPER – A personalised decision support system for diabetes management". Below the video, it shows 2,190 views, 325 likes, 0 comments, and a share button. The channel name is "Cellnovo" and it was published on 19 Dec 2017. A red "SUBSCRIBE 808" button is visible in the bottom right corner.

Other related news

The DIACARE project starts the design phase of solutions to improve self-management of type 2 diabetes mellitus.

<http://bit.ly/2BOdni0>



Fitbit has invested \$6 million in a glucose-monitoring startup called Sano, in what appears to be part of Fitbit's larger plans to make its fitness devices more valuable for overall health.

<http://bit.ly/2nMYAM5>



Dexcom Announces Development Agreement with Lilly to Integrate Dexcom CGM into Connected Diabetes Ecosystem. Two leaders combine tools aimed at reducing complexity and burden while improving outcomes in diabetes management.

<http://bit.ly/2BOjiUg>



IEEE and UL to Develop a Standard for Wireless Diabetes Device Security. The Standard for Wireless Diabetes Device Security (DTSec) has been provided by the Diabetes Technology Society (DTS) for use in this effort.

<http://prn.to/2EaFt4O>



Professionals team met for type 1 exercise and education conference. More than 300 healthcare professionals came together in 13th of October 2017 for a training event so they can help support people with type 1 diabetes to exercise.

<http://bit.ly/2kOpwbl>



IBM and JDRF, the leading global organization funding type 1 diabetes (T1D) research, announced a new collaboration to develop and apply machine learning methods to analyze years of global T1D research data and identify factors leading to the onset of T1D in children.

<http://prn.to/2FVZLj0>



III. Profile

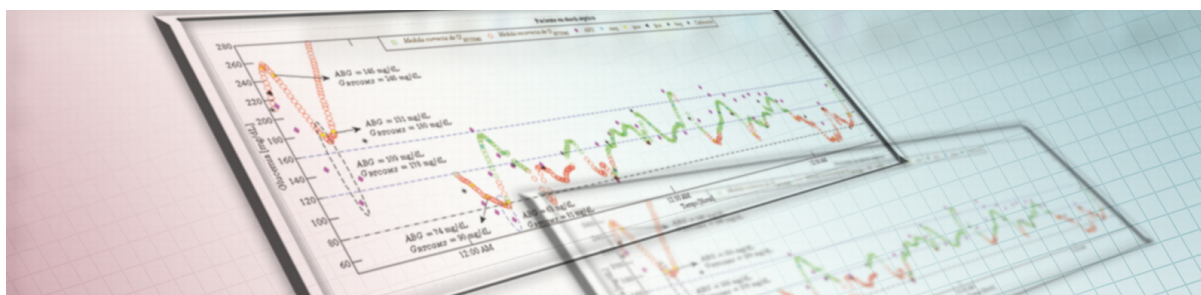
Yenny Leal is involved in the clinical validation of the PEPPER system at Institut d'Investigacio Biomedica de Girona Doctor Josep Trueta.



She holds a Ph.D. degree on Technology by the University of Girona (Spain). After receiving her Ph.D., Yenny did a short postdoctoral stay at Universidade Tecnológica Federal do Paraná (Brazil). She was then awarded with a “Beatriu de Pinós” Post-doctoral Fellowship,

which permitted her to spend two years at University of Padova working with the team led by Professor Claudio Cobelli on diabetes technology projects and clinical trials in artificial pancreas.

She is currently a Research Fellow and Project Manager at Institut d'Investigacio Biomedica de Girona Doctor Josep Trueta. Her main research interest is focus in data mining models based on signal processing techniques, supervised learning and pattern recognition techniques, as well as in technologies for the treatment of type 1 diabetes and glucose control in critically ill patients. In particular, she has an extensive experience in following, training and providing technical support on multidisciplinary international clinical trials focuses in diabetes technology and artificial pancreas.



IV. Dissemination

August 2017 <> January 2018

- 1. Cloud Based Acquisition System for Diabetic Data**
Lucian Nita, Ferran Torrent-Fontbona
22nd IMEKO TC4 International Symposium
<http://hdl.handle.net/10256/14869>
- 2. Single Nucleotide Polymorphism relevance learning with Random Forests for Type 2 diabetes risk prediction**
Beatriz López, Ferran Torrent-Fontbona, Ramón Viñas, José Manuel Fernández-Real
Journal Special Issue: Artificial Intelligence In Medicine
<http://hdl.handle.net/10256/14506>
- 3. Temporal Case-based Reasoning for Type 1 Diabetes Mellitus Bolus Insulin Decision Support**
Daniel Brown, Arantza Aldea, Rachel Harrison, Clare Martin, Ian Bayley
Journal Special Issue: Artificial Intelligence In Medicine
<https://doi.org/10.1016/j.artmed.2017.09.007>
- 4. Cloud system for diabetic data analysis**
Lucian Nita
11th International Conference on Electromechanical and Power Systems
<https://zenodo.org/record/1136014>
- 5. Prediction of Glucose Level Conditions from Sequential Data**
Natalia Mordanyuk, Ferran Torrent-Fontbona, Beatriz López
20th International Conference of the Catalan Association for Artificial Intelligence
<http://hdl.handle.net/10256/14860>

V. Future Events

14th - 17th February 2018 <> Vienna, Austria

The 11th International Conference on Advanced Technologies and Treatments for Diabetes.

<http://www.attd.kenes.com/2018/Pages/default.aspx>



16th February <> Girona, Spain

Jornada de Portes Obertes University of Girona.

<http://bit.ly/2nLppAc>

The University of Girona will participate in an Open Day session where students will be able to see part of the PEPPER system and interact with the PEPPER mannequin demonstrator..



26th February- 1st March <> Barcelona, Spain

Mobile World Congress 2018

<https://www.mobileworldcongress.com/>

Beatriz López, from the University of Girona, will be attending the MWC.



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