

MATER – MONITORING MENTAL HEALTH IN BREAST CANCER

MSCA matchmaking webinars

5 & 6 June 2023

Dr. Mégane Pizzimenti
Digital Health Scientific Manager
Deep Digital Phenotyping Research Unit
Luxembourg Institute of Health
Luxembourg

LUXEMBOURG INSTITUTE OF HEALTH



- Public biomedical translational research organisation (\approx 500 staff members)
- Aiming to develop **new diagnostics, preventive strategies, innovative therapies** and **clinical applications** to improve the healthcare of European citizens
- 3 research departments:
 - Infection and Immunity
 - Cancer research
 - **Precision Health**





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DEPARTMENT OF
PRECISION HEALTH
DOPH



The Department of Precision Health (DOPH) is an interdisciplinary research centre focusing on clinical, epidemiological and public health research across a wide range of areas including digital health, lifestyle, nutrition, biomarkers, socioeconomic inequalities and human biomonitoring.

By the evidence we generate, **we aim at tackling the major causes of morbidity and mortality, improving quality of life and informing clinical and public health guidelines.**

Digital Health As A Systemic, Transversal Research Axis



11 research units on real-world evidence, epidemiology, public health & prevention

**Use of digital technologies to develop
digital biomarkers & digital endpoints**



Cancer

Immune-related
Diseases

Cardiometabolic
Health

Neurodegenerative
disorders

Mental Health

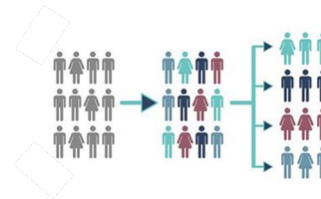
COVID-19 & Long
COVID

Orthopaedic
Conditions



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OUR TEAM



Guy FAGHERAZZI
**Head of the Department
of Precision Health**
Principal Investigator



Aurélie FISCHER
Scientific Coordinator
Digital health & clinical
research



Mégane PIZZIMENTI
**Digital Health Scientific
Manager**
Project Management,
Collaborations



Gloria AGUAYO
Epidemiology
Questionnaires, Patient-
reported Outcomes



Abir ELBEJI
PhD student
Data Science, Algorithms



Franchesca AGUIRRE
Psychologist
Qualitative studies, Co-
design with patients



Lu ZHANG
Research Engineer
Data Science &
Bioinformatics



Petr NAZAROV
Bioinformatician
Audio signal processing
& data science



Vladimir DESPOTOVIC
Data Scientist
Audio signal processing &
data science



Aurore DOBOSZ
Community Manager
Digital marketing
and communication



Jérémie LANGLET
**Head of Business
Development Office**



Kevser FUNFGELD
**Digital Health Project
Manager**



Michaël SCHNELL
Head of IT for Health
Developer



Philippe KAYSER
IT
Developer



Luigi DE GIOVANNI
IT
Dashboarding & Data Viz

A complementary team (epidemiology, digital health, AI, audio signal processing, communication, business development)

RECENT PUBLICATIONS

Methodological framework & pipeline to discover and validate vocal biomarkers

Vocal biomarker for monitoring symptoms in patients with COVID-19

Voice and cough-based screening tool for COVID-19

Digital Biomarkers

Tools and Devices - Review Article

Digit Biomark 2021;78-88
DOI: 10.1159/000515346

Received: January 5, 2021
Accepted: February 18, 2021
Published online: April 16, 2021

Voice for Health: The Use of Vocal Biomarkers from Research to Clinical Practice

Guy Fagherazzi^a, Aurélie Fischer^a, Muhannad Ismael^b, Vladimir Despotovic^c

^aDeep Digital Phenotyping Research Unit, Department of Population Health, Luxembourg Institute of Health, Strassen, Luxembourg; ^bITI for Innovation in Services Department (ITIS), Luxembourg Institute of Science and Technology (LIST), Esch-sur-Alzette, Luxembourg; ^cDepartment of Computer Science, Faculty of Science,

INTERACTIVE JOURNAL OF MEDICAL RESEARCH

Fischer et al

[Viewpoint](#)

Recommendations for Successful Implementation of the Use of Vocal Biomarkers for Remote Monitoring of COVID-19 and Long COVID in Clinical Practice and Research

Aurélie Fischer, MSc; Abir Elbeji, MSc; Gloria Aguayo, MD, PhD; Guy Fagherazzi, PhD
Deep Digital Phenotyping Research Unit, Department of Precision Health, Luxembourg Institute of Health, Strassen, Luxembourg

PLOS DIGITAL HEALTH

RESEARCH ARTICLE

A voice-based biomarker for monitoring symptom resolution in adults with COVID-19: Findings from the prospective Predi-COVID cohort study

Guy Fagherazzi^{1*}, Lu Zhang², Abir Elbeji³, Eduardo Higa¹, Vladimir Despotovic², Markus Ollert^{4,5}, Gloria A. Aguayo¹, Petr V. Nazarov², Aurélie Fischer¹

JMIR Med Inform. 2022 Nov; 10(11): e35622.
Published online 2022 Nov 8.
doi: 10.2196/35622

PMCID: PMC9645416
PMID: 36265042

Discovery and Analytical Validation of a Vocal Biomarker to Monitor Anosmia and Ageusia in Patients With COVID-19: Cross-sectional Study

Monit
Review
Eduar
PhD,^{1*}

Open access Original research

BMJ Open Vocal biomarker predicts fatigue in people with COVID-19: results from the prospective Predi-COVID cohort study

Abir Elbeji¹, Lu Zhang¹, Eduardo Higa¹, Aurélie Fischer¹, Vladimir Despotovic², Petr V Nazarov², Gloria Aguayo¹, Guy Fagherazzi¹



Computers in Biology and Medicine

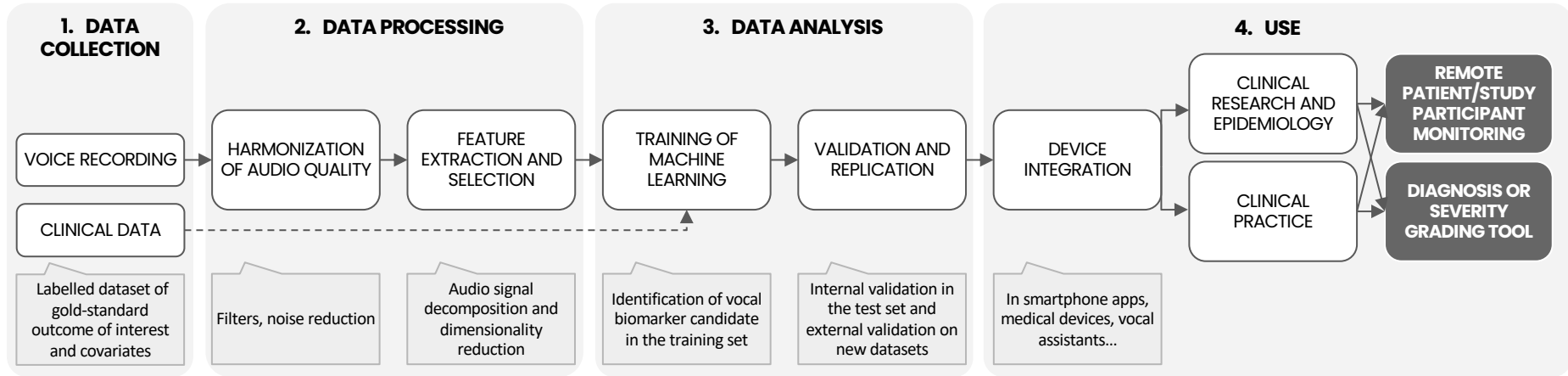
Volume 138, November 2021, 104944



Detection of COVID-19 from voice, cough and breathing patterns: Dataset and preliminary results

Vladimir Despotovic^a, Muhannad Ismael^b, Maël Cornil^b, Roderick Mc Call^b, Guy Fagherazzi^c

RECENT PUBLICATIONS



Fagherazzi et al. "Voice for health: the use of vocal biomarkers from research to clinical practice." *Digital biomarkers* (2021)





MATER

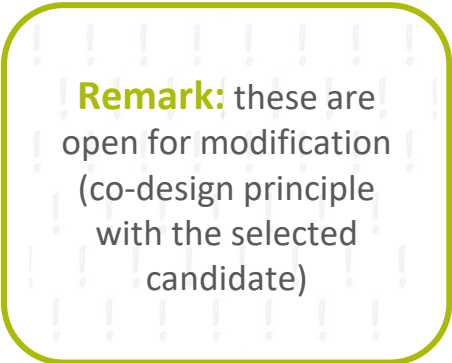
Main aim: improve the detection and monitoring of mental health in women with breast cancer using vocal biomarkers

Objectives:

- Identify the most important symptoms in the deterioration of the mental health of these women
- Automatically estimating these symptoms using voice descriptors extracted from real-life recordings and machine learning pipelines will make it easier to monitor them in the patients' homes

What are we looking for?

- Skills in one of the following fields: **health data science, AI, biostatistics, audio signal processing, epidemiology**



Remark: these are open for modification (co-design principle with the selected candidate)



RESOURCES



A worldwide, multi-lingual,
screening platform for vocal
biomarker with annotated
clinical and health data
**Diabetes, Cancer,
Cardiovascular Disease, COVID-
19, Mental Health...**

www.colivevoice.org



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ROBERT
SCHUMAN



CHL
Centre Hospitalier
de Luxembourg



les
sentinelles
contre le cancer, tous volontaires



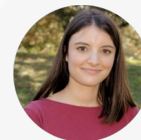
Diabète LAB



Société
Francophone
du
diabète

THANK YOU

*More about
us here*



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 CONTACT