



## WG4 - IMIA Working Group on Exposome Informatics

**2018 Report - July 2017 to June 2018  
presented in Colombo, Sri Lanka for:**

- **IMIA Board Meeting, October 8, 2018,**
- **IMIA General Assembly Meeting, October 9, 2018**

### **Chair (2017-2020)**

Prof Fernando Martin-Sanchez, PhD, FACHI, FACMI, CHIA, FIAHSI  
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### **Co-Chairs (2017-2020)**

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**Websites for WG:** <http://imia-medinfo.org/wp/exposome-informatics/> (official)  
<https://exposomeinformatics.wordpress.com/> (working)

## Other social media and contact information:

- Facebook: <https://www.facebook.com/groups/153308108588844/>
- LinkedIn group: <https://www.linkedin.com/groups/10353025>
- Twitter: @exosome\_imia
- Email: [exosomeinformatics@gmail.com](mailto:exosomeinformatics@gmail.com)

The IMIA WG on Exposome Informatics was created during MedInfo 2017 (August).

## Brief Background

Most diseases result from the complex interplay between genetic and environmental factors. The exposome is a new concept that seeks to define biotechnical approaches to systematically measure comprehensively a large subset of environmental exposures of an individual from conception to end of life and associate it with health and disease status. In its broadest sense, the exposome encompasses not only exposures to environmental stressors, but also the physical environment, the built environment, socio-economic factors, access to health care and life habits or behaviors.

While the environment and exposome has impact on health, health informaticians have a limited awareness about the contribution of environmental factors to individual health (environmental epidemiology has focused on the impact of the environment, but at aggregated, population level). There is a need for new digital methods and resources that select, annotate, organize and present reliable and updated information about environmental factors affecting our health on both a population and individual/patient scale. The exposome demands a systematic research effort equivalent to what has been done to characterize the human genome (and also the human phenome).

To address these problems, IMIA has created this Working Group on informatics aspects related to the exposome. Its main aim is to support investigators, clinicians and consumers navigate throughout the entire “data to knowledge” lifecycle: data collection, knowledge representation, annotation, integration with genomic and phenomic data, analytics, and visualization.

## Main Objectives

- To provide a forum to enhance collaboration, share experiences, and promote research in this field.
- To liaise with other working groups at IMIA, AMIA, EFMI and other organizations relevant to exposome informatics, including groups with an emphasis on environmental health and informatics from the biomedical community, computing research and bioinformatics as relevant.
- To establish itself as a scientific reference on issues related to informatics projects in exposome sciences.

## Work Plan

- To provide a directory of existing large exposomics initiatives at the national and international level
- To organization and support tutorials and master classes on all topics related to exposome data processing, at national and international medical informatics meetings (e.g.: <http://www.chirajpgroup.org/exposome-analytics-course/>)

- To contribute to the IMIA Yearbook of Medical Informatics and seek opportunities to contribute review articles and perspectives to special issues and conferences about its topics of research interest.
- To organize at least one yearly business meeting. We will try to schedule this in major health and biomedical informatics conferences (MEDINFO, AMIA, EFMI, APAMI). If this were not possible, we will organize online meetings.

### **Achievements – Publications**

- Martin-Sanchez, F. Book chapter: “Big Data Challenges from an Integrated Exposome/Exposure perspective”, in “Big Data Big Challenges: A Healthcare Perspective“. Househ, Borycki, Kushniruk (Eds). Springer. (in press)

### **Participation - Engagement and participation in IMIA and health informatics events, and activities**

- 30-31 Oct 2017 – Fernando Martin-Sanchez, Presentation: “Contributions from Health Informatics to Exposome Research“. Helix Scientific Symposium. Barcelona.
- 25 April 2018. Fernando Martin-Sanchez, Riccardo Bellazzi, Mary Boland, Guillermo Lopez-Campos. Panel: “*Contributions from Informatics and Data science to Environmental Health and Exposome Research*” Medical Informatics Europe (MIE) 2018. Gothenburg. Sweden.
- Opening Conference. Integration of Genome, Phenome and Exposome Data for Precision Medicine. Summer Course (Research in eHealth) of the International University Menendez Pelayo (UIMP), Santander, Spain. 5 July 2018.

### **Outreach - Recruitment and engagement of new members and target communities, publicity and representation at major events and/or on social media**

- The Web site of the working group is accessible at:  
<https://exposomeinformatics.wordpress.com/>



This site contains a section (Data resources) where we track progress in new Databases, ontologies and analytics methods related to Exposome Information. There is also a collection of relevant published papers classified by topic (informatics, partial exposomes, biomarkers and omics, sensors, education, precision medicine, epidemiology).

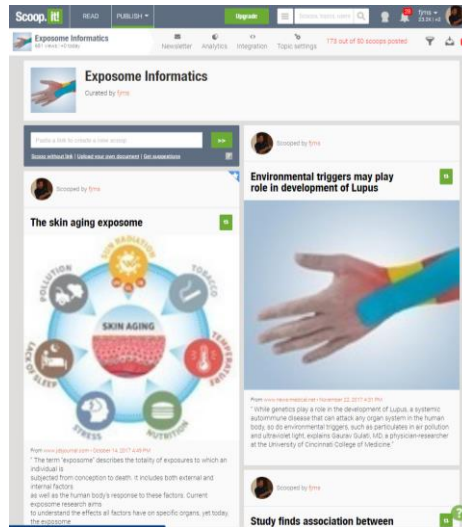
- The Working Group maintains a LinkedIn group at: (<https://www.linkedin.com/groups/10353025>) which currently has 15 members.
- There is also a closed Facebook group: (<https://www.facebook.com/groups/153308108588844/>).
- The WG has a twitter account: @exposome\_imia, currently with 15 followers.



- The working group also maintains a number of freely accessible online channels on Exposome Informatics where relevant news and research developments in this field are

curated, filtered, posted and regularly circulated through social media channels (Facebook, Twitter and LinkedIn WG page):

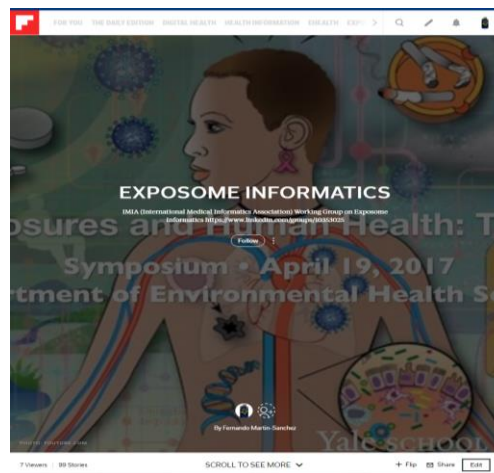
- Scoop-it: <https://www.scoop.it/t/exposome-informatics>, which includes more than 170 posts and around 700 views.



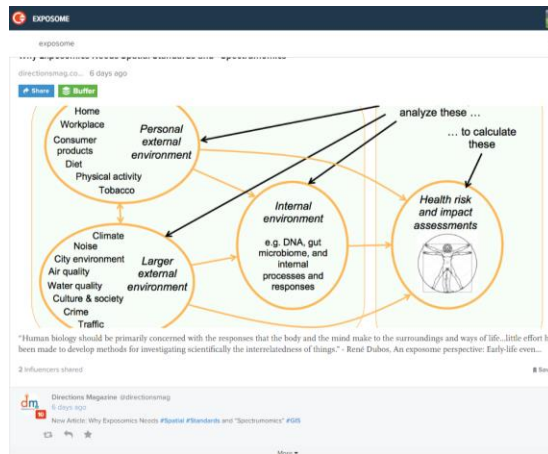
- Flipboard:

<https://flipboard.com/section/exposome-informatics-mf5o7vbrohbjofiv>

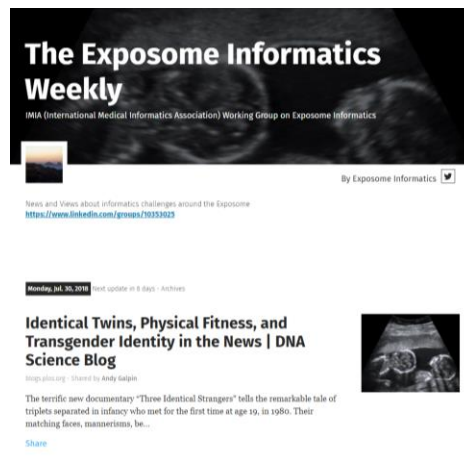
(99 stories)



- Right Relevance: <https://www.rightrelevance.com/search/articles?query=exposome>



- Paper.ly: [https://paper.li/exposome\\_imia/1505122927#/](https://paper.li/exposome_imia/1505122927#/)



## Collaboration - Working with other IMIA WG/SIGs or external organisations or institutions

- The working group will continue seeking collaborations with the American Medical Informatics Association and EFMI WGs, although they still don't have a similar WG on these matters.
- Prof Fernando Martin-Sanchez has been invited to join the new IMIA Task Force on Education, and he will try to raise awareness about the need to increase the training of specialists and users in Exposome Informatics.
- We are also participating in the SPC of the 2019 EFMI STC conference (Hannover, DE), where we will be including exposome data processing in the Call for papers.
- We have suggested a keynote speaker to the SPC for MEDINFO 2019, Lyon. Dr. Christopher Wild, who coined the term Exposome. He is the Director of the IARC.