



**POLITECNICO**  
MILANO 1863

## Supervisor Expression of Interest MSCA-IF Marie Sklodowska Curie Action-Individual Fellowship 2019

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Department Name: Research topic: ( <a href="https://www.polimi.it/en/scientific-research/research-structures/departments/">https://www.polimi.it/en/scientific-research/research-structures/departments/</a> )	Department of Mathematics Francesco Brioschi (DMAT) <b>Data and Evidence in Contemporary Biomedicine</b>  • SH4_11 Epistemology, logic, philosophy of science
MSCA-IF Research Area Panels	<input type="checkbox"/> CHE_Chemistry <input type="checkbox"/> ECO_Economic Sciences <input type="checkbox"/> ENG_Information Science and Engineering <input type="checkbox"/> ENV_Environmental and Geosciences <input type="checkbox"/> LIF_Life Sciences <input type="checkbox"/> MAT_Mathematics <input type="checkbox"/> PHY_Physics <input checked="" type="checkbox"/> <b>SOC_Social Sciences and Humanities</b>
Politecnico di Milano Areas:	<input type="checkbox"/> Cultural Heritage <input type="checkbox"/> Smart Cities <input type="checkbox"/> Territorial Fragilities <input checked="" type="checkbox"/> <b>Health</b> <input type="checkbox"/> Industry 4.0
Brief description of the Department and Research Group (including URL if applicable):	The project will be carried out in the Department of Mathematics, which hosts a growing number of research activities in the philosophy and foundations of science. In particular, the successful candidate will also have the opportunity to interact with practicing statisticians, dealing with the treatment of data in biomedicine. Furthermore, she\he will join the inter-departmental unit of study META ( <a href="http://www.meta.polimi.it/?lang=en">http://www.meta.polimi.it/?lang=en</a> ) comprising experts on philosophy and sociology of science and technology, so as to work in close connection with its international partners, such as the Irvine-London-Munich-PoliMi-Salzburg Network and the IDEA League Ethics Working Group.



<p><b>Brief project description:</b> (max 1 page)</p>	<p>The word “data” is increasingly present in the public sphere, from discussions in the media to governments’ policy reports and all the way to academic controversies. While such a concept has always been regarded as a cornerstone of scientific method, the amount of data that scientists can nowadays collect, analyze and use is unprecedented. This has prompted an outstanding interdisciplinary debate, in which science scholars together with philosophers and sociologists study the effects of large datasets in the sciences. In fact, there arise methodological issues concerning the ways in which scientists work with data; epistemological issues concerning the relation between data and other components of scientific practice, including causal reasoning, theoretical assumptions and experimentation; and ethical issues concerning the use of data, especially in connection with the role of responsibility, accountability and epistemic and non-epistemic values.</p> <p>In this respect, the life and health sciences represent a particularly challenging case, which requires thorough analysis. Indeed, the fragmentation of this area of research into subfields and communities with different commitments implies that relevant data are collected from a variety of diverse sources, including clinical trials, hospitals, lab research, public health, social media, etc. This elicits questions about the epistemic, material and social conditions under which such data sources can be interpreted, analysed and used in such a way to constitute a single body of evidence. Likewise, similar promises about revolutionizing biomedical research often hinge on data and evidence, especially in the context of data-intensive approaches. For example, personalised medicine, i.e. the attempt to take into account individual variables into the study and prevention of diseases, is largely built on the assumption that many factors affecting health can be explained through large datasets, which are employed to stratify populations in subgroups according to various characteristics. Similarly, molecular approaches in medicine, aimed at treating disease from a molecular point of view, and postgenomics, namely the attempt of going beyond gene- and genome-centric approaches, are based on the use and integration of new sources of evidence, at different levels of abstraction and at increasing volumes. This calls for a scientifically-informed philosophical analysis of the nature of evidence and data employed in evidence-based medicine.</p> <p>By bringing together the analytical methods of contemporary philosophy of science and the relevant work of active statisticians, the present project proposes to investigate the practices involved in the production, management and dissemination of data in biomedicine, as well as to classify the different ways in which the terms “data” and “evidence” are discussed in the scientific and public discourse.</p>
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