

PhilInBioMed

THE MAGAZINE

- June 2019 -

News, stories, articles

Dear PhilInBioMed members,

This month brings to you an exceptionally rich edition of the PhilInBioMed magazine. With news about conferences, stories on collaborations, and true PhilInBioMed articles.

We hope you will enjoy the read and for questions, comments or submissions please write to contact@philinbiomed.org.

Cordially, your
PhilInBioMed Magazine team



The Cathedral of Learning, which houses the Department of History and Philosophy at the University of Pittsburgh (© Crazypaco)

The PhilInBioMed network keeps growing



We are happy to announce that the Department of [History and Philosophy of Science at the University of Pittsburgh](#) has joined the PhilInBioMed network as an institutional member. The Pittsburgh Philosophy Department was founded in 1971 by Larry Laudan and Ted McGuire. Today it is consistently ranked among the top of its field, both in research and in teaching.

The Department of History and Philosophy of Science supports both a graduate and undergraduate program of study of science, its nature and fundamentals, its origins, and its place in modern politics, culture, and society. At all levels interdisciplinarity is actively encouraged.

Undergraduate students are invited to take up a double major in philosophy and an additional discipline. About 90% of the philosophy majors make use of this option, and common second majors include neurosciences, physics, chemistry or biology. Graduate students have the possibility to pursue a master's degree in science, while pursuing their PhD in history and philosophy of science.

Among the major research topics of the departmental faculty are the philosophy of neuroscience, the history and philosophy of molecular biology, as well as scientific change and progress. Current faculty members include Collin Allen, Mazviita Chirumuuta, Michael Dietrich, Jonathan Fuller, Eduoard Machery, Sandra Mitchell, and Jim Woodward. To them and all the other faculty members: Welcome to the PhilInBioMed network !

"Animal Research Unbound" Conference at Egenis



On July 15th-16th an international conference on animal research will take place at Egenis in Exeter. The event entitled "[Animal Research Unbound](#)" will investigate new starting points for a debate that will shape the future of scientific research.

The workshops explore how animal research is and might be unbound, by analyzing the consequences for issues around: knowledge production and its relation to regulatory institutions; ethics and welfare; care and the relation between human and non-human; the nature of epistemic cultures and silos in communities around research organisms; and the conceptualization of animal behavior and sentience.

The aim is to trace the extensive experimental spaces in which animal research takes place and the diverse communities which animal research now actively encounters. New insights are sought from the unexpected species, outside of traditional organism communities, increasingly featuring in animal research. Furthermore, the conference takes a look at both the lives of animals within research, and the attitudes and perceptions linked to the use of animals across many different domains.

Report from the PBCS 9 in San Sebastian

The Ninth Philosophy of Biology and Cognitive Sciences Research Workshop (PBCS 9) was held at the University of the Basque Country and hosted by the IAS-Research for Life, Mind and Society in San Sebastián (Spain) on the 9th and 10th of May 2019. Since its founding in 2011, the PBCS is an annual Spanish meeting that aims to bring together young scholars (master and PhD students as well as post-docs) working on issues at the intersection between philosophy, biology and cognitive sciences.

The PBCS 9, organized by two PhD students of the University of the Basque Country (Enara García and Guglielmo Militello), had Dr Manuel Heras Escribano (UPV/IAS) and Dr Gaëlle Pontarotti (Université Paris Diderot (IHPST) as invited speakers. The former, who gave a talk entitled "The evolutionary role of affordances", explored the relationship between niche construction theory and Gibson's ecological psychology by focusing on the evolutionary role played by the affordances of an environment. The latter gave a talk entitled "Metaphor or theory? About the epistemological status of «biological heredity»" that examined the notion of 'genetic inheritance' in light of the history of genetics.



All the other talks were given both on philosophy of biology (notably evolutionary-developmental models, biological functions, etc.) and on philosophy of cognitive sciences (in particular enactivist and embodied models of cognition). During the two days, lively discussions between the members of the IAS group and all the participants came up, blowing fresh air into the classical issues of autopoiesis, biological autonomy, and 4E cognition.

Upcoming

June 2019

20th-21st 8th [Philosophy of Medicine Roundtable](#), Paris, France

20th-21st Workshop [Science & Values](#), Exeter, UK

24th-28th Summer school: [Data & Health](#), Angers, France

July 2019

1th-5th Summer school: [Microbiota, Symbiosis and Individuality](#) Biarritz, France

15th-16th "[Animal Research Unbound](#)" Conference, Exeter, UK

October 2019

14th-15th **2nd** [meeting of the PhilInBioMed international network](#), Bordeaux, France



In less than three weeks, on July 7th, the [2019 ISHPSSB Conference](#) will begin in Oslo, Norway. This biannual event organized by the International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB), brings together researchers from various fields with a common interest in Biology as a subject of study.

This year three PhilInBioMed sessions will be held during the week long conference:

1. **Philosophy in Biology and Medicine: The Microbiota and Biological Individuality**
2. **Philosophy in Biology and Medicine: Selected Effects and Dysfunction**
3. **Philosophy of Biomedicine: Biological Individuality and Fetal Parthood**

Monday morning starts out with the session organized by Thomas Pradeu's ERC IDEM project on **Microbiota and Biological Individuality**. It takes a look at the “microbiota”, and the many components of the microbiota that participate in crucial host activities, such as nutrition, metabolism, development, immunity, and behavior. The interdisciplinary session will see philosophers and biologists, all experts on microbiota, use different approaches to better understand the dialogue between host and microbiota.

Organized by Peter Takacs from the University of Sydney the session on **Selected Effects and Dysfunction** will take place on Tuesday. Diagnosed medical disorders and pathologies—physiological, morphological, behavioral, or psychological—presume contextual impropriety or systematic dysfunction. Any such disorder accordingly implies an account of proper functioning.

For etiological-historical accounts informed by evolutionary considerations or “selected effects accounts,” dysfunction occurs when a trait fails to perform the function whose effect on fitness was selected for in [N]ormal conditions. This session will explore the adequacy of recent selected effects accounts of biomedical dysfunction and subsequent prescriptions for intervention, clinical and otherwise.

A third session investigates **Biological Individuality and Fetal Parthood**. Elselijn Kingma from the University of Southampton is in charge of this session. This session takes a philosophical look at the actual biological process of pregnancy: what is the relationship between fetus and maternal organism? How do pregnant organisms and/or persons relate to their potential future offspring and to their pre- and post-pregnant selves?

We are hoping that the interdisciplinary approach presented in all three sessions will inspire others to move into that direction with their research as well.

More sessions at ISHPSSB connected to PhilInBioMed

Two connected sessions at ISHPSSB 2019 are backed by a PhilInBioMed institutional members - the History and Philosophy of Science Project (McDonnell initiative) at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts. The two sessions entitled “**Tracing Regeneration**”(11:00am to 12:30 on Thursday, July 11) and “**Regeneration across the Scales of Complex Living Systems**” (14:30-16:00 on Thursday, July 11) explore regeneration, how it works and what we can learn from studying regeneration in various contexts.

Regeneration, or the process of renewal or restoration in the face of events that cause disturbances or damage to a system, is traditionally thought of as a phenomenon occurring within organisms. However, recent research shows that the phenomenon extends from microbial communities, to the genomic and cellular content of organisms, to ecosystems. These sessions take an interdisciplinary approach, combining history, philosophy, and the life sciences, to look at different aspects of regeneration across living systems.

Focus on famous PhilInBioMed articles



This series reviews articles that are examples of applied PhilInBioMed. If you would like to publish a review, please write to contact@philinbiomed.org

An example of PhilInBioMed: David Hull, “Individuality and Selection” (1980)

(by Thomas Pradeu)

In 1980, David Hull (1980) published one of his most famous papers, “Individuality and Selection”, in the *Annual Review of Ecology and Systematics*. This paper is exemplar of how philosophers can intervene in ongoing scientific debates. To clarify the discussions over “units of selection”, Hull proposes the adoption of a generic and empirically neutral vocabulary: “replicators” (“an entity that passes on its structure directly in replication”), and “interactors” (“an entity that directly interacts as a cohesive whole with its environment in such a way that replication is differential”).

Remarkably, 89% of the paper constitutes a direct discussion of scientific claims, while 90% of the references are to scientific publications. The tools used by Hull to address these puzzles, though, are unquestionably philosophical: Hulls proposes a conceptual clarification, itself based on metaphysical distinctions (about “individuals” and “classes”).

According to Web of Science, “Individuality and Selection” has been cited 423 times (as of June 3, 2019). This is below the average number of citations to the papers published in the same issue of this journal, namely 729, but it is high for a paper written by a philosopher.

This paper has been cited 183 times in biology journals (primarily in evolutionary biology and ecology). Some of these citations prove beyond doubt that at least some biologists took Hull’s suggestions very seriously and engaged with them (e.g., Vrba and Eldredge 1984; Tuomi and Vuorisalo 1989; Szathmáry and Maynard Smith 1997; Gould and Lloyd 1999; Jablonski 2007)).

Hull’s conceptual framework has not, of course, remained unchallenged (Mayr 1997; Godfrey-Smith 2009). In retrospect, though, what is striking is that Hull’s paper has had an extraordinary impact on both biology and philosophy of biology.

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Great interest for the 2nd PhilInBioMed meeting

We are happy to announce that the [2nd PhilInBioMed meeting](#) is receiving broad attention. The organizing committee received 63 applications for giving a talk. The abstracts are in the process of being reviewed and applicants will be informed by June 21st the latest.

The 2nd meeting of the PhilInBioMed international network will be held on October 14th–15th in Bordeaux, France. Like the first edition it will gather senior and junior researchers working on conceptual issues located at the interface between philosophy, biology, and medicine. Pleary speakers are Elliott Sober and Eugene Koonin.

Attendance at the meeting is free but mandatory: please register under: <https://framaforms.org/2nd-meeting-of-the-philinbiomed-network-1554100807>.



In this first edition of the Cooperation Chronicle [Lucie Laplane](#) and [Eric Solary](#) have accepted to testify on their collaboration. Lucie Laplane is a CNRS junior researcher in Philosophy of Biology and Medicine, at IHPST Paris and Gustave Roussy, Paris, France.

Eric Solary is the director of research at Gustave Roussy, the leading cancer-research institute in Europe. Since 2015, they have published six articles together.



1-Could you explain in a few words the topic of your collaboration?

We are mainly working on stem cells and clonal evolution in oncology, with a focus on chronic myeloid malignancies. Regarding stem cells, we are interested in defining whether and how genetic and epigenetic alterations that are detected in various myeloid malignancies could change stemness properties. This leads us to explore two philosophical and biological questions. The first assesses the stability versus context sensitivity of stemness ontology. The second questions the role of stemness ontology in cancer initiation and/or progression.

As far as clonal evolution is concerned, Eric's team characterized clonal architecture in a myeloid malignancy whose name is chronic myelomonocytic leukemia (CMML) by analyzing genetic abnormalities at the single cell level, then observed that clinical response to epidrugs currently used to treat this disease (hypomethylating drugs such as azacytidine) can induce a medical improvement without decreasing genetic mutation burden in hematopoietic cells nor precluding genetic clonal evolution.

Together, we have established an induced pluripotent stem cell model of CMML that confirmed the dissociation between the genetic background of each subclone and their phenotypic properties, in particular with regard to the central feature of CMML—excessive production of monocytes (see page 7 of this Magazine). These results questioned the general assumption that clonal evolution is mainly genetic and suggested that other types of clones can also drive disease pathogenesis and progression, which may include epigenetic and possibly other determinants that increase tumor heterogeneity and diversify clonal evolution.

These conclusions suggest new philosophical and scientific questions about what may count as a clone, what is the respective role of different types of clones in cancer initiation, progression and resistance to treatments, how these clones emerge and differ from normal hematopoietic cells in young and ageing healthy people.

2-How did you meet?

As a philosopher of biology, Lucie was looking for a post-doctoral position embedded within a biological laboratory and Eric, who was interested in exploring such interaction, proposed to Lucie to participate in a thesis project that was just about to start. The plan was to generate induced pluripotent stem cells from leukemia patient hematopoietic stem and progenitor cells in order to explore how the properties of the reprogrammed cells could explain clonal evolution, thus dealing with stemness properties and leukemic clone organization that Lucie wanted to explore.

3-Could you each describe what your collaborator brings to this joint work?

Eric: We are a biological team working in a medical environment, in close connection with patients and their diseases, coping with therapeutic dead routes and foreseeable outcomes. Medical doctors in the team question the immediate usefulness and enforceability of our work, pushing towards potential solutions that could be rapidly tested and applied. To the opposite, the presence of a philosopher questions the significance and limitations of the proposed solutions by extending the reflection beyond the most obvious and sometimes oversimplistic answers we provide. Indifferent to technological issues and limits (Lucie was somewhat frustrated when performing or driving some experimental work by herself), she refocuses the addressed issues and systematically explores alternative ways of thinking. This challenge is exactly what we need to stimulate our imagination and become more innovative.

Lucie: Eric's team provides me with a rich scientific environment, and the freedom and support to get involved with science in multiple ways, which has included a variety of activities ranging from theoretical aspects to experimental work. This, in turn, provides me opportunities to explore different ways of doing philosophy in biology and medicine. Eric brings in his expertise, both as a scientist and as an oncologist. Scientifically, Eric is a broad thinker, he explores all the biological aspects of the disease he can. This favors the integration between philosophy and biology and widens his expertise. Also, experiencing the clinical diversity in CMML, and treatment challenges, brings a very different light on the disease. It brings new perspectives and, I think, opens the mind (both his and mine) towards exploring other hypotheses than the most traditional views, or at least it challenges them.

4-What are the obstacles that you have met during your collaborative work?

On a daily basis, the collaboration grew quite smoothly. Apart from a lack of time, which is always a major limiting factor for everybody, there was no insurmountable obstacle. Difficulties sometimes came from outside, when submitting our work for publication or applying for grants. In some biological and medical journals, the recursive process of reviewing and rewriting results in end-products where the philosophy becomes almost invisible. Globally, we have to struggle to find a middle ground between contenting the editors and reviewers without compromising philosophical rigor of the argument and concepts. In biological and medical meetings in which everything is strictly categorized, such an interdisciplinary approach still hardly finds a place. Nevertheless, we notice an increasing interest of funding agencies for interdisciplinary projects, and even though we still meet some incomprehension, our global feeling is that such an approach is increasingly recognized and appreciated.

5-Do you have suggestions as to how to improve collaborations between scientists and philosophers?

We believe it is key that philosophers in biology face biological questions with full knowledge and understanding of the evolving concepts, the most innovative experimental approaches, and the limits of these methods. Philosophers fruitfully challenge their analyses through interacting with biologists and vice versa. In our mind, daily interactions with common regular brainstormings on the questions to address and how to answer them is the best way to foster these collaborations and make them contributive. Then, common projects can be either philosophy oriented (e.g. our publications in *eLife* and *Medecine/Science*) or biology-oriented (e.g. the *iPS* article in *Haematologica*) with common enrichment. We also believe that expending the collaboration by including experimental parts may be worth the effort.

6- What are the most exciting questions that you would like to address in your future collaborations?

See response to question 1

When the boundary between philosophy and biology disappears



This [article](#) is the output of 5 years of daily collaboration between a team of biologists and a philosopher hosted in the lab (Laplane, co-first author - see Collaboration Chronicle page 4). It characterizes a new *in vitro* model of chronic myelomonocytic leukemia (CMML) through the generation of induced pluripotent stem cell clones (iPSCs) and explores several layers of intraclonal heterogeneity (genetic, epigenetic, transcriptomic, and functional). It shows that functional heterogeneity exceeds genetic heterogeneity and opens new avenues for the interpretation and exploration of the disease.

To me, this is the most complete form of PhilInBioMed contribution that I have produced. It has involved participation in many aspects, from theoretical to experimental. It is difficult to draw any firm line between the contribution of each discipline and researcher. However, the final version of the paper significantly departs from the original goal of the study, which was to characterize the impact of mutations on hematopoietic differentiation.

What was first seen as a disappointing results (clones with the same coding mutations can act very differently) became the strength of the study. This result attracted my attention because I was working in parallel on a philosophical paper on clonal evolution (Laplane, Biology and Philosophy 2018). The study of CMML-iPSCs reciprocally opened new avenues for my philosophical perspective on clones. I am thus now developing a new project on clones, which includes both philosophical analysis and new kinds of biological experimentations. I expect this new project to be an even better integration between philosophy and biology, as the main aim is now both fully philosophical and biological.

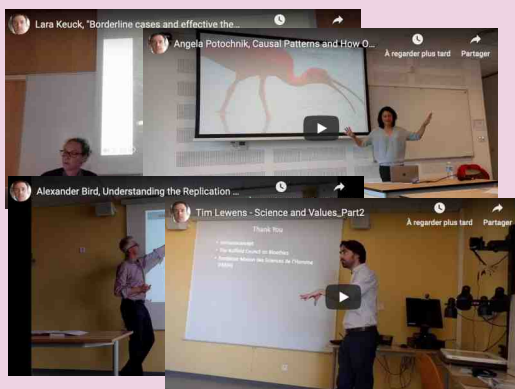
Lucie Laplane

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Unhinged



PhilinBioMed seminars on video



About once a months the group around Thomas Pradeu organizes a PhilInBioMed seminar, with speakers coming both from the humanities and the natural sciences.

Whenever possible these seminars are being filmed and over the last two years an interesting collection of videos has been accumulated. The topics and speakers are diverse, making sure that there is something of interest for everyone.

The videos can be viewed on the [PhilInBiomed website](#).

#scicomm



If you are a Philosopher interested in scientific communication, be it as a research target or as a job possibility, you might want to join [@philofscicomm](#).

This twitter community wants to build a collaborative network of philosophers, practitioners and [#scicomm](#) professionals, in order to discuss what philosophy can bring to scientific communication.

The account is co-led by Lynn Chiu ([@driynnchiu](#)), Sophie Juliane Veigl ([@sophiejveigl](#)), and Rebecca Hardesty ([@likesmice](#)).

PhilInBioMed member Paul Griffiths honored

Paul Griffiths, who heads the Theory and Methods in Bioscience group at the Charles Perkins Centre, University of Sydney, one of the groups that makes up the PhilInBioMed network, has been awarded the History and Philosophy of Science Medal of the Royal Society of New South Wales.

The Royal Society of NSW awards recognise excellence in science and are among the oldest and most prestigious awards in Australia. The Royal Society of NSW is the oldest learned society in Australia.

The medal is awarded each year to recognise outstanding achievement in the History and Philosophy of Science, with preference being given to the study of ideas, institutions, and individuals of significance to the practice of the natural sciences in Australia.

The previous year's winner, also from University of Sydney, was Peter Godfrey-Smith.



3 questions for Ford Doolittle

Ford Doolittle is a Professor Emeritus at the [Department of Biochemistry & Molecular Biology](#) of the Dalhousie University, Halifax, Canada. He is a member of the [US National Academy of Sciences](#) and a Fellow of the [Royal Society of Canada](#) and the [Norwegian Academy of Science and Letters](#). He is also the winner of the [2013 Herzberg Medal](#) of the Natural Sciences and Engineering Research Council of Canada and the [2017 Killam Prize](#). His work centers around concepts in genomics, molecular biology and microbial ecology, most often as these reflect understandings of evolution by natural selection.

1. What sparked your interest for philosophy of science?

I have always been more interested in theory than facts, and have a penchant for coming up with evolutionary scenarios, generally involving genes, genomes and natural selection.

2. What is your main research focus?

"Verbal theory" (I don't do math), related to :

1.) the notion of "junk" DNA

2.) the meaning of

"function" in genomics

3.) multi-level selection,

4.) biological individuality vis-a-vis microbial communities and "holobionts"

5.) processes (vs things) as units of selection, and

6.) the "Gaia hypothesis.

3. What are the topics you want to explore in the future?

All of the above.



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