

Marc SANTOLINI

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<https://interactiondatalab.com/>



Research Trajectory

I am a scientist working at the interface of **network science**, **machine learning**, and **relational data analysis**, exploring how groups coordinate, adapt, and evolve. Trained in *statistical physics* and *epistemology* at the École Normale Supérieure and in *network science* at the BarabásiLab of Northeastern University, I began my research career applying machine learning to **high-dimensional data** in *network medicine*, modeling regulatory dynamics across systems and developmental biology. This inquiry was shaped by an enduring interest in the conditions under which collective patterns emerge and propagate in distributed systems. Over time, my focus shifted from biological to social networks, and from structural inference to the study of relational dynamics in **collaborative** and **participatory** contexts.

I now lead the **Interaction Data Lab** at the Learning Planet Institute in Paris, where we ask how groups come together to learn, create, and adapt. We develop computational tools to analyze *collective attention*, *relational patterns*, and *collaborative dynamics* across **open innovation communities**, **citizen science platforms**, and **participatory learning ecosystems**—bringing together *AI*, *semantic modeling*, and *network science* to better understand how participation quality and relational well-being shape collective intelligence and enable more coherent and responsive forms of collaboration.

Alongside this analytical work, I engage in experimental contexts that explore the **relational fabric of collaboration**—working with social artists, somatic practitioners, and psychosocial researchers. These engagements inform not only my practice but also my scholarship, with a particular focus on designing and evaluating methods that help groups navigate tension and polarization. Drawing on *relational frameworks*, *social somatics*, and *narrative analysis*, I study how **collective inquiry** and **embodied presence** can support transformation and open conditions for group flourishing and long-term thriving.

I currently co-lead the **Global South Learning Ecosystem project** (Templeton) and the **Open Futures project** (ANR), and have secured over **€1.7M in competitive funding** from ANR, Horizon Europe, Botnar, Porticus, Templeton, and NESTA. My aim is to advance research approaches that are both analytically rigorous and attuned to the subtle dynamics that allow human collectives to learn, align, and flourish.

Research positions

2025–	Senior Researcher INSERM, U1338, Sorbonne Université, Paris, France
2023–	Research Associate Research Unit Learning Transitions, Learning Planet Institute, United Nation University (UNU) Hub, Paris, France
2022–	Affiliate Researcher at the School of Public Policy at Georgia Tech. Atlanta, GA.
2018–	Director. Team leader of the <i>Interaction Data Lab</i> at the Learning Planet Institute

2018–2023	Research Fellow. Center for Research and Interdisciplinarity (CRI, now Learning Planet Institute LPI), INSERM U1284, Université Paris Cité, France
2018–2021	Affiliate Research Associate Professor at the Center for Complex Network Research (CCNR). Network Science Institute, Northeastern University, Boston MA.
2017–2023	Co-founder and Director of Research, Just One Giant Lab. Just One Giant Lab (JOGL) is a distributed mobilisation platform for collaborative open innovation. ¹
2015–2018	Research collaborator at the Channing Division of Network Medicine, Harvard Medical School. Brigham and Women's Hospital.
2014–2018	Postdoctoral associate, Northeastern University, Boston MA. Center for Complex Network Research (CCNR) and Center for Interdisciplinary Research on Complex Systems (CIRCS). <i>Advisors: Alain Karma, Albert-László Barabási</i>
2009–2013	Ph.D. in Theoretical Physics. Laboratoire de Physique Statistique (LPS) at École Normale Supérieure (ENS), Paris, France. <i>Advisor: V. Hakim.</i>
Feb-Jul 2007	Visiting Student Research Collaborator, Princeton University. Department of Astrophysical Sciences. <i>Advisor: David Spergel</i>

Education

2008–2009	Master's degree in Complex Systems Physics. Université Pierre et Marie Curie (Paris VI).
2007–2008	Master's degree in History and Philosophy of Science. Master LOPHISS jointly at ENS Paris, Paris 1, Paris 4 and Paris 7. <i>Thesis "Le Principe Anthropique : la place de l'homme dans l'univers"</i> supervised by M. Lachi`ze-Rey.
2007	Visiting Student at the Graduate school of Astrophysics. Princeton University, NJ, USA.
2005–2009	Ecole Normale Supérieure (ENS), Paris. <i>Ranked 9th. Major: Physics. Minor: Philosophy of Science.</i>

¹<http://jogl.io>

Funding

2025-2027	ANR RESO (270k euros) Project OPEN FUTURES: Open science and the future researcher: multi-level analysis of the iGEM community-based open science ecosystem. (co-PI).
2024-2025	Porticus (80k euros) and Templeton Foundation (35k euros) Exploring learning ecosystems in the Global South – Pathways to thriving for every child (research co-lead).
2022-2024	ANR "Young Researcher" JCJC (270k euros) Project CORES: Quantitative assessment of open collaborations in science and engineering. Principal Investigator (PI).
2022-2024	Botnar Foundation (110k euros) Youth Agency Marketplace (YOMA): analysing the impact of open innovation and AI teaming algorithms on relational well-being in African youth. PI
2021-2022	Google Open-Source Ecosystems and Networks (OCEAN) research award (6k euros) iGEM team interaction study (TIES): collaboration and performance of student teams in the iGEM competition. PI
2020-2023	DIM Ile de France (240k euros) Project RADICOM: Radicalisation of Digital Communities. PI
2020-2023	EU H2020 (300k euros) CROWD4SDG: collaboration dynamics of citizen science projects. PI, 6 partners.
2020-2021	NESTA Collective Intelligence Award (40k euros) Enhancing collective intelligence with recommender systems. Co-PI
2018-2021	CRI research fellowship (430k euros) Computational studies of collaborative processes in open science and innovation, PI

Working papers

- Feldman, B., **Santolini, M.**. “Mapping emotional journeys in groups: a mixed-methods study of social somatic practice”
- Kokshagina, O., Masselot, C., Riedl, C., **Santolini, M.**. “The architecture of attention: latent coordination capacity and team success in crisis collaboration”
- **Santolini, M.**, DeVita, J., Dutra, R., Peltureau-Villeneuve, A., Sødahl, N., “Navigating polarities through embodiment: social arts as research practice”

Selected recent publications

[†] corresponding author.

1. Georgara, A., Santolini, M.[†], Kokshagina, O., Jacinta Haux, C. J., Jacobs, D., Biwott, G., Correa, M., Sierra, C., Fernandez-Marquez, J. L., & Rodriguez-Aguilar, J. A (2025). "Optimising Team Dynamics: The **Role of AI** in Enhancing Challenge-Based Learning **Participation Experience** and Outcomes". *Computers & Education: Artificial Intelligence*, 8, 100388. <https://doi.org/10.1016/j.caeai.2025.100388>
2. Feldman, B. B., & Santolini, M.[†] (2025). "Beyond Individualism: A Multi-level Approach to the **Inner Development Goals**". In *Inner Development Goals—Stories of Collective Leadership in action* (pp. 213–234). De Gruyter. <https://doi.org/10.1515/9783111337913-015>.
3. Jeyaram, R., Ward, R. N., & Santolini, M.[†] (2024). **Large Language Models** recover scientific collaboration networks from text. *Applied Network Science*, 9, 64. <https://doi.org/10.1007/s41109-024-00658-8>
4. Singh, C. K., Tupikina, L., Lécuyer, F., Starnini, M., Santolini, M.[†] (2024). "Charting mobility patterns in the **scientific knowledge landscape**". *EPJ Data Science*. <https://doi.org/10.1140/epjds/s13688-024-00451-8>
5. Poquet, O., Trenholm, S., Santolini, M. (2023). "**Forum posts, communication patterns, and relational structures**: A multi-level view of discussions in online courses". *Educational Technology Research and Development*. <https://doi.org/10.1007/s11423-023-10262-9>
6. Masselot, C., Jeyaram, R., Tackx, R., Fernandez-Marquez, J. L., Grey, F., Santolini M.[†] (2023). "**Collaboration and Performance of Citizen Science Projects** Addressing the Sustainable Development Goals". *Citizen Science: Theory and Practice*, 8(1), Article 1. <https://doi.org/10.5334/cstp.565>

Publications².

[†] corresponding author.

45. Fan, C.-H., Zhou, H., Sun, Y., Palomino Roldan, G., Kokshagina, O., **Santolini, M.**, & Wang, L. (2025). KEGNN: Knowledge-Enhanced Graph Neural Networks for User Engagement Prediction. *Proceedings of the 2025 International Conference on Multimedia Retrieval*, 275–283. <https://doi.org/10.1145/3731715.3733368>
44. Georgara, A., **Santolini, M.**[†], Kokshagina, O., Jacinta Haux, C. J., Jacobs, D., Biwott, G., Correa, M., Sierra, C., Fernandez-Marquez, J. L., & Rodriguez-Aguilar, J. A (2025). "Optimising Team Dynamics: The Role of AI in Enhancing Challenge-Based Learning Participation Experience and Outcomes". *Computers & Education: Artificial Intelligence*, 8, 100388. <https://doi.org/10.1016/j.caeai.2025.100388>
43. Feldman, B. B., & **Santolini, M.**[†] (2024). "Beyond Individualism: A Multi-level Approach to the Inner Development Goals". In *Inner Development Goals—Stories of Collective Leadership in action* (pp. 213–234). De Gruyter. <https://doi.org/10.1515/9783111337913-015>.

²Google scholar profile: https://scholar.google.com/citations?hl=en&user=UaVGS9kAAAAJ&view_op=list_works&sortby=pubdate

42. Feldman, B. B., Tupikina, L., & **Santolini, M.**[†] (2024). From Self to Group to Community: Integrating Developmental and Multi-Level Approaches in Somatic Therapy. *Group*, 48(4), 31–49. <https://doi.org/10.1353/grp.2024.a962318>
41. Farook, Z., Tupikina, L., Haklay, M., **Santolini, M.**, Perello, J., Soacha, K., & Grey, F. (2024). Leveraging data science for change: Navigating perspectives in a world of rapid transformation. *ARPHA Proceedings*, 6, 191–194. <https://doi.org/10.3897/ap.e126772>
40. Jeyaram, R., Ward, R. N., & **Santolini, M.**[†] (2024). Large Language Models recover scientific collaboration networks from text. *Applied Network Science*, 9, 64. <https://doi.org/10.1007/s41109-024-00658-8>
39. Singh, C. K., Tupikina, L., Lécuyer, F., Starnini, M., **Santolini, M.**[†] (2024). “Charting mobility patterns in the scientific knowledge landscape”. *EPJ Data Science*. <https://doi.org/10.1140/epjds/s13688-024-00451-8>
38. Nowak P, **Santolini M**[†], Siudem, G. & Tupikina, L. (2024). “Beyond Zipf’s Law: Exploring the Discrete Generalized Beta Distribution in Open-Source Repositories”, *Physica A: Statistical Mechanics and its Applications* 649, 129927, <https://www.sciencedirect.com/science/article/pii/S0378437124004369>
37. **Santolini, M.**[†], Blondel, L., Palmer, M. J., Ward, R. N., Jeyaram, R., Krishna, A., & Barabási, A.-L.. (2023) “iGEM: A model system for team science and innovation”. *arXiv*. <http://arxiv.org/abs/2310.19858>
36. Poquet, O., Trenholm, S., **Santolini, M.** (2023). “Forum posts, communication patterns, and relational structures: A multi-level view of discussions in online courses”. *Educational Technology Research and Development*. <https://doi.org/10.1007/s11423-023-10262-9>
35. Misevic, D. et al. (2023). “Harnessing collective intelligence for the future of learning – a co-constructed research and development agenda”. *Human Computation*, 10(1):1–30. <https://doi.org/10.15346/hc.v10i1.141>
34. Masselot, C., Jeyaram, R., Tackx, R., Fernandez-Marquez, J. L., Grey, F., **Santolini M.**[†] (2023). “Collaboration and Performance of Citizen Science Projects Addressing the Sustainable Development Goals”. *Citizen Science: Theory and Practice*, 8(1), Article 1. <https://doi.org/10.5334/cstp.565>
33. Jaeger, J., Masselot, C., Tzovaras, B.G., Hidalgo, E.S., Haklay, M., **Santolini, M.** (2023). “An Epistemology for Democratic Citizen Science”. *Royal Society Open Science*, 10(11), 231100. <https://doi.org/10.1098/rsos.231100>
32. De Filippi, P., **Santolini, M.**[†] (2023). “Extitutional theory: Modelling structured social dynamics beyond institutions”. *Ephemera : Theory and Politics in Organization*, 23(2). <https://ephemerajournal.org/contribution/extitutional-theory-modelling-structured-social-dynamics-beyond-institutions-0>
31. Graham, C. L. B., Akligoh, H., Ori, J. K., Adzaho, G., Salekwa, L., Campbell, P., Saba, C. K. S., Landrain, T. E., **Santolini, M.** (2023). “Education-based grant programmes for bottom-up distance learning and project catalysis: Antimicrobial resistance in Sub-Saharan Africa”. *Access Microbiology*, 5(3), 000472.v3. <https://doi.org/10.1099/acmi.0.000472.v3>
30. Bergmark, R. W., Jin, G., Semco, R. S., **Santolini M.**, Olsen, M. A., Dhand, A. (2023). “Association of hospital centrality in inter-hospital patient-sharing networks with patient mortality and length of stay”. *PLOS ONE*, 18(3), e0281871. <https://doi.org/10.1371/journal.pone.0281871>

29. Wurmser, M., Madani, R., Chaverot, N., Backer, S., Borok, M., Santos, M. D., Comai, G., Tajbakhsh, S., Relaix, F., **Santolini, M.**, Sambasivan, R., Jiang, R., & Maire, P. (2023). "Overlapping functions of SIX homeoproteins during embryonic myogenesis". *PLOS Genetics*, 19(6), e1010781. <https://doi.org/10.1371/journal.pgen.1010781>
28. Graham, C.L.B., Landrain, T.E., Vjestica, A., Tzovoras, B.G., Masselot, C., Lawton, E., Blondel, L., Haenel, L., **Santolini, M.**[†] (2022). "Community review: a robust and scalable selection system for resource allocation within open science and innovation communities". *F1000 Research* <https://doi.org/10.1101/2022.04.25.489391>
27. Singh, C., Barme, E., Ward, R., Tupikina, L., & **Santolini, M.**[†] (2022). "Quantifying the rise and fall of scientific fields". *PLOS ONE* 17, e0270131. <https://doi.org/10.1371/journal.pone.0270131>
26. Masselot, C. M., Greshake Tzovaras, B., Graham, C. L. B., Jeyaram, R., Finnegan, G., Vitali, I., Landrain, T. E., & **Santolini, M.**[†] (2022) "Implementing the Co-Immune Open Innovation Program to Address Vaccination Hesitancy and Access to Vaccines: Retrospective Study". *Journal of Participatory Medicine* 14, e32125. <https://doi.org/10.2196/32125>
25. Tackx R., Blondel L., **Santolini M.**[†] (2021). "Quantified us: a group-in-the-loop approach to team network reconstruction", *Proceedings of the 2021 ACM International Joint Conference on Pervasive and Ubiquitous Computing Proceedings*, 502:507. <https://doi.org/10.1145/3460418.3479363>
24. **Santolini, M.**[†], Ellinas, C., & Nicolaides, C. (2021). "Uncovering the fragility of large-scale engineering projects". *EPJ Data Science*, 10(1), 36. <https://doi.org/10.1140/epjds/s13688-021-00291-w>
23. De Ridder, D., et al. (2021). "Detection of Spatiotemporal Clusters of COVID-19-Associated Symptoms and Prevention using A Participatory Surveillance App: The @choum Study Protocol". *JMIR Research Protocols*. <https://doi.org/10.2196/30444>
22. Meignié, A., Combredet, C., **Santolini, M.**, Kovács, I.A., et al. (2021) "Proteomic Analysis Uncovers Measles Virus Protein C Interaction with p65/iASPP Protein Complex". *Molecular & Cellular Proteomics*, 20, 100049. <https://doi.org/10.1016/j.mcpro.2021.100049>
21. Ghiassian, S. D., Withers, J. B., **Santolini, M.**, Saleh, A., & Akmaev, V. R. (2021). "Network-based response module comprised of gene expression biomarkers predicts response to infliximab at treatment initiation in ulcerative colitis". *Translational Research* <https://doi.org/10.1016/j.trsl.2021.04.010>
20. Poquet, O., Tupikina, L., and **Santolini, M.**[†] (2020). "Are Forum Networks Social Networks? A Methodological Perspective". In *Proceedings of the 10th International Conference on Learning Analytics and Knowledge (LAK 20)*, 366–375. <https://doi.org/10.1145/3375462.3375531>
19. Mellors, T., et al. (2020). "Clinical Validation of a Blood-Based Predictive Test for Stratification of Response to Tumor Necrosis Factor Inhibitor Therapies in Rheumatoid Arthritis Patients". *Network and Systems Medicine*, 3(1), 91–104. <https://doi.org/10.1089/nsm.2020.0007>
18. Auffray, C., et al.. (2020). "COVID-19 and beyond: A call for action and audacious solidarity to all the citizens and nations, it is humanity's fight". *F1000 Research*, 9, 1130. <https://doi.org/10.12688/f1000research.26098.1>
17. KiliÅs, A., Ameli, A., Park, J.-A., Kho, A. T., Tantisira, K., **Santolini, M.**, Cheng, F., Mitchel, J. A., McGill, M., O Sullivan, M. J., De Marzio, M., Sharma, A., Randell, S. H., Drazen, J. M., Fredberg, J. J., & Weiss, S. T. (2020). "Mechanical forces induce an asthma gene signature in healthy airway epithelial cells". *Scientific Reports*, 10(1), 966. <https://doi.org/10.1038/s41598-020-57755-8>

16. B Wang, K Glass, A R  hl, **M Santolini**, D.C. Croteau-Chonka, S. T. Weiss, B. A. Raby, A. Sharma (2019). "The periphery and the core properties explain the omnigenic model in the human interactome". *bioRxiv* 749358; doi: <https://doi.org/10.1101/749358>
15. C. Rees, JH Yang, **M. Santolini**, JN Weiss and A. Karma (2018). "The Ca²⁺ transient as a feedback sensor controlling cardiomyocyte ionic conductances in mouse populations". *eLife*, 7, e36717. <https://doi.org/10.7554/eLife.36717>
14. Sharma, A., et al. (2018). "Controllability in Human islets regulatory network identify the dysregulated pathways associated with Type 2 Diabetes". *npj Systems Biology and Applications*, 4 (1), 25. <https://doi.org/10.1038/s41540-018-0057-0>
13. A. Sharma, M. Kitsak, M. Cho, A. Ameli, X. Zhou, Z. Jiang, J D Crapo, T beaty, J. Menche, P S Bakke, **M. Santolini**, E. K. Silverman. "Integration of Molecular Interactome and Targeted Interaction Analysis to Identify a COPD Disease module", *Scientific Reports*, 8(1). <https://doi.org/10.1038/s41598-018-32173-z>
12. **Santolini, M.**, Barabasi, A-L. (2018) "Predicting perturbation patterns from the topology of biological networks". *Proceedings of the National Academy of Sciences*, 115(27), <https://doi.org/10.1073/pnas.1720589115>
11. Kili  s, A., **Santolini, M.**, Nakano, T., Schiller, M., Teranishi, M., Gellert, P., Ponomareva, Y., Braun, T., Uchida, S., Weiss, S. T., Sharma, A., & Renz, H. (2018). "A systems immunology approach identifies the collective impact of 5 miRs in Th2 inflammation". *JCI Insight*, 3(11). <https://doi.org/10.1172/jci.insight.97503>
10. **Santolini, M.**, Romy, M. C., Yukhtman, C. L., Rau, C. D., Ren, S., Saucerman, J. J., Wang, J. J., Weiss, J. N., Wang, Y., Lusis, A. J., & Karma, A. (2018). "A personalized, multiomics approach identifies genes involved in cardiac hypertrophy and heart failure". *Npj Systems Biology and Applications*, 4(1). <https://doi.org/10.1038/s41540-018-0046-3>
9. Rau, C. D., Romy, M. C., Tuteryan, M., Wang, J. J.-C., **Santolini, M.**, Ren, S., Karma, A., Weiss, J. N., Wang, Y., & Lusis, A. J. (2017). "Systems Genetics Approach Identifies Gene Pathways and Adamts2 as Drivers of Isoproterenol-Induced Cardiac Hypertrophy and Cardiomyopathy in Mice". *Cell Systems*, 4(1), 121-128.e4. <https://doi.org/10.1016/j.cels.2016.10.016>
8. Mirzakhani, H., et al., (2016) "Early pregnancy vitamin D status and risk of preeclampsia". *Journal of Clinical Investigation*, 126(12), 4702-4715. <https://doi.org/10.1172/JCI89031>
7. Sakakibara, I., Wurmser, M., Dos Santos, M., **Santolini, M.**, Ducommun, S., Davaze, R., Guernec, A., Sakamoto, K., & Maire, P. (2016). Six1 homeoprotein drives myofiber type IIA specialization in soleus muscle. *Skeletal Muscle*, 6(1), 30. <https://doi.org/10.1186/s13395-016-0102-x>
6. **Santolini, M.**, Sakakibara, I., Gauthier, M., Ribas-Aulinas, F., Takahashi, H., Sawasaki, T., Mouly, V., Concordet, J.-P., Defossez, P.-A., Hakim, V., & Maire, P. (2016). "MyoD reprogramming requires Six1 and Six4 homeoproteins: Genome-wide cis-regulatory module analysis". *Nucleic Acids Research*, 44(18), 8621-8640. <https://doi.org/10.1093/nar/gkw512>
5. **Santolini, M.**, Mora, T., & Hakim, V. (2014). "A General Pairwise Interaction Model Provides an Accurate Description of In Vivo Transcription Factor Binding Sites". *PLOS ONE*, 9(6), e99015. <https://doi.org/10.1371/journal.pone.0099015>

4. Sakakibara, I., **Santolini, M.**, Ferry, A., Hakim, V., & Maire, P. (2014). "Six Homeoproteins and a lincRNA at the Fast MYH Locus Lock Fast Myofiber Terminal Phenotype". *PLOS Genetics*, 10(5), e1004386. <https://doi.org/10.1371/journal.pgen.1004386>
3. **Santolini, M.**, Rouault, H., Schweisguth, F., & Hakim, V. (2014). "Imogene: Identification of motifs and cis-regulatory modules underlying gene co-regulation". *Nucleic Acids Research*, 42(10), 6128–6145. <https://doi.org/10.1093/nar/gku209>
2. **Santolini, M.**, Menoret, D., Fernandes, I., Spokony, R., Zanet, J., Gonzalez, I., Latapie, Y., Ferrer, P., Rouault, H., White, K. P., Besse, P., Hakim, V., Aerts, S., Payre, F., & Plaza, S. (2013). "Genome-wide analyses of Shavenbaby target genes reveals distinct features of enhancer organization". *Genome Biology*, 14(8), R86. <https://doi.org/10.1186/gb-2013-14-8-r86>
1. Relaix, F., Demignon, J., Laclef, C., Pujol, J., **Santolini, M.**, Niro, C., Lagha, M., Rocancourt, D., Buckingham, M., & Maire, P. (2013). "Six Homeoproteins Directly Activate Myod Expression in the Gene Regulatory Networks That Control Early Myogenesis". *PLOS Genetics*, 9(4), e1003425. <https://doi.org/10.1371/journal.pgen.1003425>

Reports

7. Blondel, L., El Haouari, N., Fraiberger, S. P., Jardin, A., Micheron, H., & **Santolini, M.** (2024). Radicalisation des communautés digitales: Le cas du djihadisme. *DIM Ile de France*. <https://hal.science/hal-04687611>
6. **Santolini, M.**, Masselot, C. (2023). Interface for visualization of team analytics with the CoSo platform. *European Union's Horizon 2020 research and innovation programme, Crowd4SDG*. <https://hal.science/hal-04167293>
5. **Santolini, M.**, Masselot, C., & Jeyaram, R. (2023). Statistical model of the association between collaboration dynamics and project performance during the Crowd4SDG program. *European Union's Horizon 2020 research and innovation programme*. <https://hal.science/hal-04167300>
4. **Santolini, M.**, Masselot, C., & Jeyaram, R. (2021, 2022, 2023). In-situ assessment report of citizen local interactions and self-reporting during the Crowd4SDG program. *European Union's Horizon 2020 research and innovation programme*. <https://hal.science/hal-04167274>
3. Masselot, C., Tupikina, L., & **Santolini, M.** (2022). Best Practices of Interdisciplinary Communication in Complex Systems Research. *German Ministry for Science and Education, project "Krisenkomplex"*. <https://hal.science/hal-04166081>
2. Greshake Tzovaras, B., & **Santolini, M.** (2021). Impact of technology-supported collective intelligence on patient-led research. *NESTA Collective Intelligence Grants*. <https://hal.science/hal-04167308>
1. Jaeger, J., Masselot, C., Greshake Tzovaras, B., Hidalgo, E. S., & **Santolini, M.** (2021). Report on an epistemological analysis of metrics/descriptors for citizen science. *European Union's Horizon 2020 research and innovation programme*.

Teaching Experience

2020–2025	Teacher: Data Science. LPI Paris. <i>Created and taught the class "Data Science for experts" for the Digital Master (M1) of LPI Paris (Université de Paris). 30 hours.</i>
2020–2024	Mentor: Open Science course. LPI Paris. <i>Taught and mentored students for the "Open Science" course for the Master's programs of LPI Paris (Université de Paris). 10 hours.</i>
2023	Teacher: Systems Thinking Course LPI Paris. <i>Created and taught a class on "Systems Thinking" for the Master's Degree of LPI Paris (Université de Paris). 3 hours.</i>
2019	Teacher: Big Data course. LPI Paris. <i>Created and taught the class "Big Data" for the Digital Master (M1) of LPI Paris (Université de Paris). 30 hours.</i>
2016	Teaching assistant: Modeling gene regulatory networks. Northeastern University, Boston, MA. <i>Taught a class for Physics graduate student on the dynamics of gene regulatory networks</i>
2012	Teaching assistant: Modeling gene regulatory networks. ICS summer school "Scientific Trends at the Interfaces Biomathematics - Bioinformatics", Roscoff, France. <i>Exercises on dynamical systems using Scilab programming language</i>
2010–2012	Teaching assistant: Modeling gene regulatory networks. Biology Department, ENS, Paris. <i>Exercises on dynamical systems treated both analytically and using Python programming language (Master's level, prof. Vincent Hakim)</i>
2010–2012	Teaching assistant: Computational Physics. Université Paris 7 Denis Diderot, Paris. <i>Supervised students in using Python programming to achieve physics projects (M1 level, prof. Samuel Bottani)</i>
2010	Teaching assistant: Mathematics for Physicists. Université Paris 7 Denis Diderot, Paris. <i>(L3 level, prof. Ken Sekimoto)</i>

Reviewing and Editorial Experience

I have reviewed for the following journals:

- **General Science and Interdisciplinary:** Nature Human Behavior, Science Advances, Scientific Reports, PLoS One.
- **Network Science and Complex Systems:** Applied Network Science, Advances in Complex Systems, Transactions on Network Science and Engineering, EPJ Data Science, Fractals, Entropy.

- **Computational and Social Data:** Online Social Networks and Media, Computational Social Networks, Big Data and Cognitive Computing, PeerJ Computer Science, Heliyon.
- **Biology and Physiology:** Frontiers in Physiology, BMC Bioinformatics.

I have also served as a guest editor for *Applied Network Science*.

Talks

June 2025	Learning Mornings (LPI) Paris, France <i>Invited talk: "Rendre visible l'invisible : la science des relations"</i>
Mar 2025	R&D Unplugged (LPI) Paris, France <i>Invited talk: "Reinventing wisdom: mapping pathways to collective flourishing"</i>
Apr 2024	European Citizen Science Association (ECSA) conference 2024 Vienna, Austria <i>Invited talk: "Data-driven approaches for the Science of Crowd Science"</i>
Dec 2023	Cultural Data Analytics Conference CUDAN23. Tallinn, Estonia. <i>Contributed talk: "Tracing the Trajectories of Knowledge: A Systematic Analysis of Knowledge Mobility Patterns in Scientific and Cultural Texts"</i>
Nov 2023	iGEM 2023 Jamboree. Paris, France <i>Contributed talk: "iGEM: a model system of team science and innovation"</i>
May 2023	Région Ile de France. Paris, France <i>Invited talk: "Analyse de la propagande djihadiste sur les réseaux sociaux"</i>
Oct 2022	Advanced Computational Research for Sustainability Science, IRD. Hanoi Vietnam <i>Invited talk: "Network science approaches to study and model large-scale collaborations"</i>
Jun 2022	French Regional Conference on Complex Systems FRCCS 2022. ISC-PIF, Paris. <i>Contributed talk: "Approches réseaux pour l'analyse d'écosystèmes d'innovation ouverts"</i>
May 2022	International Congress of Mathematics 2022. Saint-Petersburg, Russia. <i>Invited talk: "Critical and collective effects in graphs and networks" (cancelled due to international events)</i>
Jun 2021	Data and Network Science Department, CEU. Vienna, Austria. <i>Invited talk: "Collective knowledge production to address wicked problems"</i>
Oct 2020	LIP6 Paris, France <i>Invited talk: "The networks underlying collaborative learning and solving."</i>

Sep 2020	European Citizen Science Association (ECSA) conference online <i>Keynote talk: "The OpenCovid19 Initiative: lessons for citizen science and beyond."</i>
Sep 2020	Science Po MediaLab Paris, France <i>Invited talk: "The networks underlying collaborative learning and solving."</i>
June 2020	Open-source communities and networks (OCEAN) workshop University of Vermont, USA <i>Invited talk: "The networks behind collaborative learning and solving."</i>
Feb 2020	Laboratory for Information, Networking and Communication Sciences, Bell Labs. Paris, France <i>Invited talk: "The networks behind collaborative learning and solving" .</i>
Jan 2020	Network Science conference NetSciX 2020 Tokyo, Japan <i>Contributed talk: "Collaboration and innovation in an international science and engineering competition."</i>
Apr 2019	Computer Applications and Quantitative Methods in Archaeology (CAA) conference. Karkow, Poland <i>Invited talk: "A field theory of science"</i>
Feb 2019	Santa Fe Institute Santa Fe, NM, USA <i>Invited talk: "Science of Open Science: a large-scale analysis of team performance in the iGEM scientific competition"</i>
July 2018	International Conference on Computational Social Science IC2S2 Evanston, IL, USA <i>Contributed talk "Team success in the iGEM scientific competition"</i>
June 2018	Sunbelt conference Utrecht, NL <i>Contributed talk "Team success in the iGEM scientific competition"</i>
June 2018	Network Science conference NetSci18 "Quantifying success" satellite Paris, France <i>Contributed talk "Team success in the iGEM scientific competition"</i>
May 2018	CompleNet18 Boston, MA <i>Contributed talk "Team success in the iGEM scientific competition"</i>
Apr 2018	Stanford University CA, USA <i>Invited talk "Predicting success in an international scientific competition"</i>
Apr 2018	MIT Medialab Boston, MA <i>Invited talk "Team success in the iGEM scientific competition"</i>
Nov 2017	Complex Networks 2017 Lyon, France <i>Contributed talk "Team success in the iGEM scientific competition"</i>

Sept 2017	Conference on Complex Systems CCS17 Cancun, Mexico <i>Contributed talk "Predicting perturbation patterns from the topology of biological networks "</i>
Jun 2016	Network Science conference NetSci'16 Seoul, South Korea <i>Contributed talk "IDEAL: Impact of Differential Expression Across Layers in multiple omics networks"</i>
Jun 2015	Channing Network Science Seminar Channing Division of Network Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston MA. Invited talk <i>"Towards a personalized approach to Heart Failure"</i>
Jun 2015	Network Medicine conference NetMed'15 Zaragoza, Spain. Invited talk <i>"A personalized approach to Heart Failure"</i>
Jul 2014	RegGenSig satellite at International Society for Computational Biology (ISMB) conference Boston, MA. <i>Contributed talk "Deciphering gene regulatory networks using DNA sequence"</i>
Jun 2013	AFM Young Researchers Colloquium (award for best oral presentation). Parc Floral de Paris. <i>Contributed talk "Transcriptional synergy between Six and MyoD in myogenesis."</i>
Jan 2013	PhD and Postdoc seminar. ENS, Paris. Invited talk <i>"What can we learn from DNA? From regulatory motifs to tissue specific expression."</i>
Dec 2012	Workshop "Statistical Physics and Information Processing in Biology" Institut Henri Poincaré, Paris. <i>Invited talk: "From cis-regulatory DNA motifs to tissue specific expression"</i>

Conferences and workshops organized

2018–2024	Network seminar in Paris. 40+ talks organized. Talks showcase the use of network science in a wide range of disciplines, from physics to mathematics, biology, social sciences or neurosciences, and are intended for a broad, interdisciplinary audience. See past events at https://interactiondatalab.com/network-seminar .
Jul 2024	Climate-respectful engagement – somatic and relational practices for holding difficult conversations. Caux IDG Forum, Switzerland.
Feb 2024	Cultivating meaningful collaboration: a workshop to enhance our relational practices. IDG hub, Lausanne, Switzerland.

Feb-Aug 2023	Residencies at the Life Itself Praxis Hub Organization of interdisciplinary residencies on collective intelligence, somatic practices, contemplative science and cultural transformation, Bergerac, France.
Oct 2022	Paris Workshop on the Organization of Science. Paris, France.
Jun 2021	NetOpen21: modeling open innovation communities with network science. Washington, USA. <i>A satellite to the Networks 2021 conference</i>
Apr 2021	Extitutional Theory and Practice. Fey, Burgundy.
July 2018	International Conference on Complex Systems (ICCS18) Cambridge, USA.
Sep 2017	Algorithmic design for Hybrid Collective Intelligence. Cancun, Mexico. <i>A satellite to the Complex Systems Society 2017 conference</i>
May 2016	NetMed16 - Multiscale characterization of the human diseases by multinetworks Seoul, South Korea. <i>A satellite to the Network Science NetSci 2016 conference</i>

Public Engagement and Practice-Based Inquiry

2025	Pedagogies of Togetherness residency (Paris edition) Studio Atelierista / Chateau de Millemont, France <i>Embodied co-design of collective learning methods with educators, artists, and researchers</i>
2024–2025	Participation in Life Itself gatherings and research on relational transformation Bergerac, France <i>Facilitation and inquiry into psychosocial dynamics and regenerative systems change.</i>
2024	Forum on Mindfulness and Education in Bhutan Paro, Bhutan <i>Public dialogue and cross-cultural engagement on inner development and systems transformation</i>
2019–2023	Community facilitation and project monitoring in the open science platform Just One Giant Lab (JOGL) Online <i>Support and analysis of citizen science and open innovation communities during the COVID-19 pandemic and beyond</i>
2020–2021	Presentation at ARTEX: Journée Arts et Sciences des Systèmes Complexes ISC-PIF, Paris <i>Workshop on art-based approaches to navigate complex systems.</i>
2020	General audience article on participatory science and collective intelligence Santolini, M. “Covid-19: the rise of a global collective intelligence?”, <i>The Conversation</i> <i>Outreach piece on open science collaboration during the COVID-19 crisis, widely circulated online.</i>

- 2019 **Participation to “Databeers” outreach event** Paris, France *Public talk introducing network science and citizen innovation in an informal setting.*
- 2018–2019 **Participation to “Pint of Science” outreach events** Paris, France *Talks on science and society to general audiences in casual pub settings.*