

The background is a solid red color. On the left, there are three overlapping circles: a teal one on top, a red one in the middle, and a blue one at the bottom. To the right of these circles, a series of thin, light-colored lines radiate from a central point, each ending in a small oval, resembling a stylized sunburst or a molecular structure. The text is centered over the circles and radiating lines.

The Foundation of the European Molecular Biology Conference (EMBC), 1963–1969

Abridged version

Francesco Cassata, University of Genoa (Italy) and
Bruno J. Strasser, University of Geneva (Switzerland)

50 **EMBC**
years

1. The difficult road to EMBC

Molecular biology has become an integral part of almost all research enterprises in the life sciences and in biomedicine. Sixty years ago, it was a new and ill-defined discipline, with a growing number of scientific achievements, but with little political recognition or support. The history of the European Molecular Biology Conference (EMBC) illustrates how molecular biologists succeeded in bringing their discipline to national and international political agendas and gained broad intergovernmental backing.

The European Molecular Biology Organization (EMBO) was formally established on 2 February 1964 with headquarters in Geneva and a Council headed by the Austrian-born British crystallographer Max F. Perutz. The initial aims of EMBO were to promote and encourage the development of molecular biology in Europe and in neighbouring countries. Through the creation of two specific institutions: a European foundation for molecular biology that would make grants available to existing research centres and facilitate the exchanges of scientists between them, and a central European laboratory of molecular biology. The realization of these plans required significant funding and political advocacy. EMBO had neither, being at the time little more than a self-appointed club of elite European molecular biologists. Just a few days after the first EMBO Council meeting, the Swiss biophysicist Eduard Kellenberger wrote to Perutz, listing concrete steps required to realise EMBO's plans: lobbying European governments in favour of EMBO, inviting governments to nominate a delegate in charge of European cooperation in the field of molecular biology, and organizing a meeting including these governmental delegates and the EMBO Council members. The last point was followed by a remark: "This meeting will decide EMBO's future".

The quest for intergovernmental backing was thus constitutive to EMBO's founding. The initial members of EMBO were perfectly aware that without formal endorsement at the intergovernmental level, there was little chance they could implement their ambitious projects. But transitioning from a club to an intergovernmental organization was no simple task. In fact it took five years for intergovernmental support to be realized. Finally, in February 1969, a "permanent" European Molecular Biology Conference (EMBC) was created, representing all governments of its member states.

By the early 1960s, CERN was "a 'model' for any joint European scientific effort, a precedent to be emulated, and a resource to be exploited" (Krige, 2002). It is not surprising then that EMBO tried from the very beginning to use CERN as an institutional model and a political resource for promoting its own projects. This association was facilitated by the fact that quite a few of the first generation of molecular biologists were physicists or had close links to the community of physicists. The organization envisioned by Kellenberger, a physicist himself, clearly echoed the institutional structure of the CERN Council, formed by national delegations that included a scientist and an administrator (or a diplomat). Importantly, the physicist Victor F. Weisskopf, CERN's Director General, strongly endorsed the idea of an international laboratory of molecular biology modelled on CERN and located in Geneva.

But the social, political and institutional configuration of the field of molecular biology in the European context was incomparably more fragile than that of nuclear physics a decade earlier. In the early 1960s, molecular biology was a "borderline" discipline, poorly integrated in the university system and

* All quotes in this paper come from documents held in the following archives: EMBO archives, Heidelberg; Schweizerisches Bundesarchiv, Bern; John C. Kendrew Papers, Oxford; CERN archive, Geneva. Full references can be found here: www.embo.org/documents/science_policy/The_foundation_of_EMBC_full.pdf

still struggling among traditional biological disciplines for consolidation at the national level. From the point of view of many European governments, the new discipline lacked the political urgency, the military resonance, and the commercial and industrial returns of high-energy physics or space research (Krige, 2002; Strasser, 2002; Strasser, 2003). Furthermore, unlike these fields, molecular biology research did not seem to require investments greater than a single nation could provide.

These elements of context allow us to broaden the spectrum of historical motivations that led to the creation of the EMBC. According to John Tooze, EMBO's former Executive Secretary (Tooze, 1989), it was the necessity to find resources for a laboratory of molecular biology that justified the creation of an intergovernmental structure. But in fact, as extensive archival research reveals, the historical process was far more complex and involved different rationales. First, the creation of an intergovernmental structure devoted to molecular biology was, by itself, envisioned as a means to increase the scientific standing of molecular biology among the different biological disciplines. International legitimacy, it was felt, could help molecular biology gain a more secure institutional footing at the national level. Second, achieving intergovernmental sponsorship represented a crucial means for securing the survival of EMBO itself and establishing the organization as the representative for molecular biology in Europe, mediating between different national perspectives. However, even within EMBO, there were concerns about the risks of becoming involved in a protracted political process. As the first executive secretary of EMBO, Raymond K. Appleyard, wrote to the British crystallographer John Kendrew in January 1966: "Can the cohesion and the obvious friendliness and the good will in the EMBO council master such a transition?"

Securing intergovernmental support turned out to be an even more complex endeavour than anticipated by the EMBO Council members. They could not simply follow CERN's path nor count on its unconditional support. Indeed, in May 1964, Weisskopf reported that the CERN Council was eager to assist EMBO by providing meeting facilities, computer support, libraries, and other administrative resources, but did not intend to approach the governments on EMBO's behalf. This decision implied that EMBO was obligated to find alternative channels to gain institutional and political support. The EMBO Council adopted two different strategies in parallel: it tried to collaborate with existing intergovernmental organizations (Strasser, 2006), and it prompted a direct diplomatic action towards the Western European governments through the Swiss Department of Foreign Affairs (Strasser and Joye-Cagnard, 2005; Strasser, 2009).

A key concern among EMBO Council members was to keep their project tied to the European political space in order to prevent any one-sided national commitment. In the post-war period national governments became the main patrons of scientific research and often supported science to serve their own national interests, as the case of nuclear physics made so clear. Remaining focussed on the European level was crucial to avoid dissensions within EMBO and to deflect the attempts by countries to exploit EMBO's momentum to serve their own national agendas. For example, in April 1964, the French Minister of Health offered to fund EMBO through the International Cancer Project, provided that the contribution would only be used to support French laboratories or researchers. Faced with this proposal, the EMBO Council decided to reject financial support it needed so urgently, but which would have undermined the European vision. Similarly, when it received a large grant from the Volkswagen Foundation in 1965, the EMBO Council

accepted under two conditions: the financial support should not be permanent, because EMBO wanted its permanent funds to be provided by several European governments, not just by a German foundation; and, EMBO should not commit itself to locate its planned central laboratory in Germany, because EMBO wanted to preserve its liberty to decide this delicate issue at a later stage. Along the same lines, the EMBO Council was wary to accept funding from American institutions, especially the Ford Foundation, because EMBO was “a European organization” and, “at least in its initial phases”, should rely on European funding.

Rather than approaching individual governments, EMBO held initial negotiations with several intergovernmental organizations, such as UNESCO, WHO, OECD and the Council of Europe. Molecular biology was particularly attractive to these organizations operating at the time of the Cold War. Unlike physics or space research, molecular biology looked like a perfectly “neutral” science, untied to military or political problems, and was thus easier to organize at the international level (Strasser, 2009). Further, as a

representative of OECD put it in May 1965, molecular biology did not raise delicate economic issues and required relatively modest investments. However, the risk for EMBO was high: while these organizations were interested in the EMBO proposals, they were also competing among themselves for legitimacy and power in the European political landscape. Such organizations had their own agendas and might have tried to take advantage of EMBO’s scientific prestige and its representation of the European molecular biology community. The challenge for EMBO, then, was how to preserve its scientific and administrative autonomy while gaining political and financial support from European governments.

Working with intergovernmental organizations had another advantage: they could defend EMBO’s projects against any attempt by nations to use EMBO for their own goals. EMBO was thus attempting to preserve its independence, while navigating between nations and intergovernmental organizations, which all hoped to use science to foster their own political agendas.

2. The UNESCO-EMBO partnership

The negotiations between EMBO and UNESCO, from September 1963 to November 1964, are paradigmatic of these tensions (Strasser, 2006). The choice of UNESCO as a possible intergovernmental administrative umbrella for EMBO was motivated by two main factors. First, UNESCO had been crucial for the foundation of CERN, starting with the US delegate Isidor I. Rabi's resolution at the UNESCO conference of June 1950. Second, UNESCO was already involved with two international initiatives in the field of the life sciences that seemed to parallel EMBO's objectives to establish a foundation and a laboratory: the International Cell Research Organization (ICRO), and the International Life Science Institute (ILSI) in Belgium. Important members of the EMBO Council were also involved with the two organizations (Adriano Buzzati-Traverso and Conrad H. Waddington with ICRO; Jean Brachet with ILSI).

Although it seemed initially promising, the collaboration between EMBO, ICRO, and ILSI, under the auspices of UNESCO, collapsed within a few months for political and scientific reasons. UNESCO was a complex bureaucratic machine with a global, worldwide dimension, while EMBO—to quote a confidential memorandum of November 1964 by EMBO's first Secretary-General Jef-

fries Wyman—was a “Western European enterprise”. Max Perutz also found the national scope of the ILSI project to be incompatible with the European goals of EMBO: “I don't think we should tie ourselves down to anything which is so national as I understand the Belgian enterprise to be”. Furthermore, EMBO's mission was to promote the molecular approach within the whole of biology (“biology at the molecular level”, in Kendrew's words); on the contrary, ICRO and ILSI wanted to include molecular biology under the general framework of “basic biology” or “cell biology”. Perutz thus pressed EMBO to remain independent from these two organizations in order to secure a privileged place for molecular biology in any future European organization: “they should become part of us rather than we part of them”, reflecting the conviction of the founding members that all biology would have to eventually be explained on the molecular level. An additional divergence was that UNESCO included the USSR in its initial discussions about European scientific cooperation, but not all EMBO member states favoured the inclusion of “Iron Curtain countries”. Finally, EMBO was concerned about the “rather cumbrous and slow way in which UNESCO is constrained to move”. The political and scientific vision carried by EMBO required different partners.

3. The Swiss Initiative

In November 1964, EMBO inaugurated an original strategy: a direct diplomatic consultation of the European governments through the Swiss Department of Foreign Affairs. The collaboration between Switzerland and EMBO could be mutually beneficial: on the one hand, international scientific cooperation, in particular in a “neutral” field as molecular biology, could add legitimacy to Switzerland’s neutrality policy; on the other, Swiss participation could guarantee that EMBO’s projects remained politically “neutral” and not used as a political instrument by individual nations (Strasser, 2009).

The EMBO Council helped prepare the Swiss government’s diplomatic action by providing a confidential report on the preliminary attitudes of each European government towards EMBO’s plans. EMBO Council members had approached the political representatives of their respective countries and attempted to convince them of the value of the EMBO foundation and laboratory. The report synthesising the governmental positions made clear that there was no consensus on either of these plans. Most opposed to EMBO’s plans was Great Britain, in particular towards the idea of a laboratory. Most favourable towards a laboratory were Denmark and, to a lesser degree, Germany. The foundation was more easily accepted by other countries, especially by France, Sweden and Netherlands. Italy essentially supported both proposals.

Before Switzerland even launched its diplomatic initiative, it was confronted not only with a variety of attitudes of European governments, but also with growing competition from other political actors. Between March and September 1965, the Council of Europe, OECD, WHO, and UNESCO simultaneously promoted parallel actions in the field of molecular biology. Faced with the activism of these international organizations, the privileged relation between EMBO and the Swiss Department of Foreign Affairs

was under strain. After many meetings with Swiss officials, EMBO became convinced that the “Swiss initiative” represented the best chance of success. As Wyman put it: “It is gratifying indeed that the Swiss are so serious and full of enthusiasm. We must not let them down”.

In March 1966, the Swiss Ministry of Foreign Affairs sent out invitations to each of the twelve member states of CERN to attend a conference to be held in Geneva in April 1967. But European governments were still divided about EMBO’s plans and the Swiss initiative. Only France, Italy, Sweden, and Denmark accepted it without reservations. Reactions from other countries were rather different: Belgium stressed once again the relevance of UNESCO’s role and subordinated any support for EMBO to specific returns for Belgian laboratories; Germany asked for the participation of the Council of Europe; Great Britain explicitly preferred to discuss the issue within the OECD framework; the Netherlands called for the inclusion of Eastern Europe, the USA, the USSR, and Israel. With regard to the laboratory project, it had even less support than previously, with Great Britain, Germany, Italy, and Belgium being unconvinced it was worth discussing at all.

To make matters worse, UNESCO officials were upset by the Swiss initiative, launched just one month after it had initiated its own consultation of European member states. The Swiss Department of Foreign Affairs adopted a conciliatory attitude towards UNESCO, but declined to issue a joint invitation to the conference. At that point, Perutz clearly expressed his worries: “It will now be up to EMBO Council not to allow themselves to be swallowed by UNESCO”.

Faced with the complex spectrum of reactions both from European governments and from intergovernmental organizations, the Swiss Department of Foreign Affairs and

EMBO Council refined their diplomatic strategy along three principles. First, the Swiss government and the EMBO Council defended the “CERN model” as a basis for the inter-governmental conference: only countries already members or observers at CERN could participate in the preliminary phases of discussion of the EMBC. This choice was a practical solution to a delicate political problem: how to justify who should be invited to the conference. Second, the conference organizers maintained the autonomy of the Swiss initiative by inviting the Council of Europe, OECD, WHO, and UNESCO as observers, and including, as working papers of the preliminary meetings, the reports on the situation of molecular biology prepared by these institutions. Third, to allow a broader consensus over EMBO’s scientific proposals to emerge, they astutely set aside, without removing, the project of the central laboratory which many European governments considered controversial.

In preparing its meeting, the Swiss envisioned two possible legal entities to carry out EMBO’s plans: an intergovernmental organi-

zation — the traditional institutional structure to pursue an international agenda — or a “permanent” conference, where representatives of member states could meet to discuss the objectives of a programme and allocate funds. This second solution, with secretariat functions being entrusted to an existing entity, such as EMBO, rendered unnecessary the creation of a complex structure.

The two months preceding the meeting were dominated by intense lobbying orchestrated by the EMBO Council members towards their respective governments. In view of the initial responses, the EMBO Council members were not very optimistic about the chances of success for the meeting. As Raymond K. Appleyard put to John Kendrew, “From such gossip I hear, it seems as if this conference may get very complicated; and you will need all your firmness of hand to keep it in line”. The same impression was shared by Max Perutz in a letter to Ephraim Katchalski: “I fear that the conference will be a very difficult one and we shall have to muster all available strength and persuasive powers to get it to arrive at sensible decisions”.

4. The “temporary” conferences

The Swiss-EMBO diplomatic action led to the organization of two meetings, in April 1967 and January 1968, of the “temporary” European Conference on Molecular Biology. John Krige regarded these two meetings as a substantial failure (Krige, 2000). We would like to propose a different interpretation, based on two main arguments. First, it was not the creation of a laboratory that was mainly at stake in the temporary Conferences, but the establishment of an intergovernmental structure to assure the survival of EMBO after the Volkswagen grant ran out. Second, the actors involved in this diplomatic effort did not interpret the results of these preliminary sessions as a failure, but as a “real victory”, insofar as the main objective – the constitution of a permanent European Molecular Biology Conference (EMBC) – had been reached. Given the conflicting positions about EMBO’s plans, the fact that these meetings were held at all, with governmental representatives, could already be considered as a significant political success for EMBO.

Discussions held at the conferences and in separate working groups focused on two main points: the administrative organization of the future body to support EMBO and the question of the laboratory. The EMBC Working Group proposed to focus on a “lighter” structure, a permanent intergovernmental conference, rather than an intergovernmental organization. The Conference would entrust EMBO with the execution of a “General Programme”, but “Special Projects” could be studied and potentially realised by a group of member states. This formulation left the door open for an EMBO laboratory project, yet it was sufficiently vague to allow a consensus among States unfavourable to the laboratory. The EMBC Working Group proposed to appoint a Secretary General who would assist the President of the Conference; under the Secretary General’s authority, continuity of business would be maintained between sessions. In the exercise of these duties, the

Secretary General would make use of the services of EMBO rather than of a separate Secretariat. This organizational structure, once again, secured EMBO’s role in setting the agenda for the EMBC. To make this point even clearer, Perutz invited EMBO Council members to seek the approval of their national delegations on a specific clause: the EMBC Secretary General had to be a molecular biologist and, if possible, a member of EMBO.

When the first meeting of the “temporary” Conference addressed the question of the creation of a laboratory (only point 6 on the agenda), discussions became far more contentious. France, Italy, and Switzerland, all hoping to land the laboratory on their territory, strongly supported the laboratory project. The French delegates offered to pay for the building and the initial equipment of an international laboratory located in Nice. This offer resulted from a working group at the French Ministry for Foreign Affairs, including the 1965 Nobelists Francois Jacob, André Lwoff, and Jacques Monod. The working group suggested support for the creation of a European laboratory in France in order to strengthen national investments in the field of molecular biology, while enhancing France’s political role in the process of European integration, in line with De Gaulle’s nationalist and anti-British policy. As Monod and Jacob put it, a European laboratory in Nice would be valuable “for the radiance of our country and for the development of French science” (in addition, Monod’s sailing boat was anchored there). Besides Nice, Naples remained another possible site for the European laboratory, vigorously supported by the Italian delegates. European intergovernmental investments would have in fact enhanced the activities of Buzzati-Traverso’s International Laboratory of Genetics and Biophysics, with obvious political and scientific benefits for Italian science. A laboratory located in or near Geneva, in Switzerland,

always remained an attractive option, if only for political reasons. The laboratory project presented by EMBO was harshly criticised by Sweden and the UK as technically incomplete, especially with regard to the apparatus needed and to research programmes. The first conference thus ended without reaching any consensus on the desirability or location of the laboratory.

Overall EMBO was delighted by the first EMBC conference. Jeffries Wyman welcomed the conclusion of the April session as “a victory for EMBO”. Max Perutz shared Wyman’s positive feeling: “The meeting was much more successful than I had ever dared to hope.”

After the close of the first temporary Conference, and in preparation for the second planned for January 1968, EMBO attempted to address the harsh criticism about their laboratory project. The EMBO Council elaborated a far more ambitious and detailed proposal, emphasizing in particular the role of teaching and training that would take place at the European laboratory. The geneticist Adriano Buzzati-Traverso, who had already organized advanced courses in his International Laboratory of Genetics and Biophysics in Naples (Cassata, 2013), modelled future EMBO courses after the summer courses that were taking place at the Cold Spring Harbor Laboratory. The teaching function of the European laboratory was now considered a key element for the success of the EMBO proposal vis-à-vis European governments: “I think”, Kendrew wrote to Buzzati-Traverso, “the Governments will only get enthusiastic about the Laboratory if they feel it will have a real teaching function”.

The second meeting of the temporary Conference, in January 1968, was dominated by the British opposition to the Draft Arrangement drawn up by the EMBC Working Group. The British government objection

was not only constitutional and administrative, but “primarily” scientific, it claimed. In particular, the British delegation objected strongly to placing molecular biology “in a closed category”. It was impossible, in fact, to foresee “what molecular biology would become in five years’ time”. In addition, the British delegation remained opposed to the laboratory. But this time the United Kingdom was isolated. The British opposition was overruled not only in the definition of the Draft Arrangement (or Agreement, as it came to be called), but also in the discussion of the single articles of the treaty.

The final draft of the EMBC agreement was entirely along the lines drawn by EMBO: the Conference would be established for five years; the execution of the General Programme would be entrusted to EMBO; the Special Projects could be approved with a two-thirds majority; other European states, as well as states which had made “an important contribution to the work of EMBO from its foundation” - that is, Israel - could become Members by decisions taken with a unanimous vote of the Conference; the Secretary General of the Conference could use the services of EMBO.

But the hopes for a prompt signature of the Agreement (it had been scheduled for May 1968) were dashed when Germany unexpectedly demanded that German be recognised as the third official language of the EMBC. Germany’s demand carried significant weight since it was to pay the largest single share of the cost of the Conference and had already made a serious offer to host a future laboratory in Munich. Following resolution of the translation problems, an exhausted Max Perutz reflected: “International agreement is a difficult business even when all the interested parties are agreed on what they want to do!”

The resolution of the German language controversy paved the way to the signing of the “established Conference”, on 13 February 1969. Once again, the question of the Laboratory had not reached a consensus, but the agreement mentioned “Special Projects” which could be studied and eventually realised by a group of member states, thus leaving the creation of a laboratory as an option. After more than a year, the EMBC Agreement was formally ratified and finally came into force in April 1970.

With the ratification of the EMBC Agreement, twelve Western European countries accepted to fund the EMBO foundational Programme (short-term and post-doctoral

fellowships, visiting professorships, and advanced courses), while EMBO was recognised as the sole executive body of the Conference. The EMBC constituted a diplomatic space where government officials, science administrators, and molecular biologists would regularly meet. By keeping the laboratory project alive within the EMBC, in the face of many criticisms, EMBO allowed political and scientific support for the project to grow steadily within the EMBC. Along the way, the project for a European laboratory was transformed and grew increasingly along decentralised lines, eventually leading to the creation of the European Molecular Biology Laboratory (EMBL) in Heidelberg, in 1974.

5. Conclusions

The history of molecular biology in post-war Europe offers a window into the dynamics of international scientific cooperation and the interplay between scientific and political agendas. In most historical accounts concerning the history of EMBO and EMBL, the creation of the EMBC is often missing or considered as a sort of no-man's land between EMBO and EMBL, without any historical significance. This paper provides a different interpretation. The gap between the foundation of EMBO in 1964 and the setting up of EMBL in 1974 was not simply dominated by the rejection of the central laboratory project in the name of the priority given to national developments. It was characterised by the complex political and diplomatic processes that led to the establishment of the EMBC, a major political achievement in itself.

Far from being a mere financial infrastructure for EMBO, or just an unsuccessful attempt at gaining political support for a central laboratory, the EMBC was in fact an original and powerful institutional invention, which served different goals for different actors. For EMBO, the EMBC was not only a funding system for its fellowships, courses, and grants, it also inaugurated an institutional and political space for framing and implementing the European laboratory project and developing new projects requiring intergov-

ernmental support. From the point of view of the governments of member states, the EMBC, in addition to being a science policy body, served various goals in each country's foreign policy, especially with regard to the European integration movement (Strasser 2009).

Overall, the political process at work in the EMBC illustrates how European collaboration and integration in molecular biology was more influenced by domestic policy objectives and foreign policy considerations than scientific imperatives. It also shows how politically savvy and diplomatically skilful some of the elite molecular biologists in Europe were. In the decade 1964-1974, EMBO, EMBC, and EMBL created for molecular biology a unique model connecting scientific and political interests. It inaugurated a "bottom-up" model of science funding, where a scientific organization (EMBO) made proposals to a designated intergovernmental body (EMBC) for programme activities, including infrastructures (like EMBL).

How such an institutional arrangement shaped the future of European science policy, and especially the creation of the European Science Foundation in 1974, is a matter for further historical research.

Acknowledgments

We would like to thank Colin Harris (Special Collections, Bodleian Library, Oxford) and Marlies Hertig (Schweizerisches Bundesarchiv BAR, Bern) for excellent archival assistance, Gerlind Wallon and Michele Garfinkel for very helpful comments, and the European Molecular Biology Conference for financial support.

Citations for commissioned papers:

This paper:

Francesco Cassata and Bruno J. Strasser. 2014. The Foundation of the European Molecular Biology Conference (EMBC), 1963-1969 (abridged version). www.embo.org/documents/science_policy/The_foundation_of_EMBC.pdf

Archival material record copy

Francesco Cassata and Bruno J. Strasser. 2014. The Foundation of the European Molecular Biology Conference (EMBC), 1963-1969. www.embo.org/documents/science_policy/The_foundation_of_EMBC_archive.pdf

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Author biographies

Francesco Cassata is Full Professor of Contemporary History at the University of Genoa. He has published on the history of eugenics and scientific racism in Italy, on the history of Lysenkoism in Italy, on the Italian geneticist Adriano Buzzati-Traverso and the International Laboratory of Genetics and Biophysics in Naples (1962-69). He is member of the History of Race and Eugenics Research Group (Oxford Brookes) and of the International Working Group on Lysenkoism (CUNY, New York). His publications include *Building the New Man. Eugenics, Racial Science and Genetics in Twentieth-Century Italy* (CEU Press, 2011); “The Italian Communist Party and the ‘Lysenko affair’” (*Journal of the History of Biology*, 2012); *L’Italia intelligente. Adriano Buzzati-Traverso e il Laboratorio internazionale di genetica e biofisica (1962-1969)* (Donzelli, 2013); “The struggle for authority over Italian genetics: the Ninth International Congress of Genetics in Bellagio, 1948-53,” in B. Gausemeier, S. Müller-Wille, E. Ramsden (eds.), *Human Heredity in the Twentieth Century*, Pickering & Chatto, London- Brookfield 2013. On Primo Levi, he recently published *Science Fiction? Seventh Levi Lecture* (Einaudi, 2016).

Bruno J. Strasser’s research focuses on the history of the life sciences in the twentieth and twenty first centuries. He is currently finishing a new book on the rise of “big data biology”. His first book, *La fabrique d’une nouvelle science: La biologie moléculaire à l’âge atomique, 1945-1964* explores the emergence of molecular biology as new scientific discipline and professional identity in the atomic age. He has published on the history of international scientific cooperation during the cold war, the interactions between experimental science and clinical medicine, the transformations of the pharmaceutical industry, the development of scientific instrumentation, the role of collective memory in science, and the relationships between science and society. He is currently working on a new book project on collections and data banks in 20th century life sciences. He has published on the history of international scientific cooperation during the Cold War, the interactions between experimental science and clinical medicine, the transformations of the pharmaceutical industry, the development of scientific instrumentation, the role of collective memory, and the relationships between science and society. He has developed an outreach lab, the Bioscope. He is professor at the University of Geneva and associate professor at Yale University.

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EMBO and the European Molecular Biology Conference (EMBC)

About EMBO

EMBO is an organization of more than 1800 leading researchers that promotes excellence in the life sciences. The major goals of the organization are to support talented researchers at all stages of their careers, stimulate the exchange of scientific information, and help build a European research environment where scientists can achieve their best work.

EMBO helps young scientists to advance their research, promote their international reputations and ensure their mobility. Courses, workshops, conferences and scientific journals disseminate the latest research and offer training in techniques to maintain high standards of excellence in research practice. EMBO helps to shape science and research policy by seeking input and feedback from our community and by following closely the trends in science in Europe.

www.embo.org

About EMBC

The European Molecular Biology Conference (EMBC), founded in 1969, is an inter-governmental organization comprising 30 Member States including most of the European Union and some of the neighbouring countries. The EMBC provides a framework for European co-operation in the field of molecular biology and closely related research areas.

embc.embo.org

Cassata F, Strasser BJ. 2019. The Foundation of the European Molecular Biology Foundation (EMBC), 1963-1969, abridged version.

This is a reprint with minor typographical corrections of: Cassata F, Strasser BJ. 2014. The Foundation of the European Molecular Biology Foundation (EMBC), 1963-1969, abridged version.

