



Introduction

Molecular biology in postwar Europe: towards a ‘glocal’ picture

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This special issue of *Studies* collects a set of original papers on the making of molecular biology in postwar Europe. It includes several contributions on countries which have not yet received much attention in the historiography of molecular biology, for example, Italy, Spain, Germany, or Switzerland, along with new perspectives on better known cases such as France and Britain. Yet not all papers deal with developments on the national level: some papers focus on single laboratories or follow specific research tools and practices; others adopt comparative approaches and international perspectives. While each study *per se* offers much rich material and analysis, together they document the breadth of new scholarship in the field and, through the common time frame and the European focus, introduce a comparative perspective which contributes significantly to our understanding of the early history of molecular biology and to the postwar transformation of the sciences more generally. The picture which emerges differs from conventional ‘big picture’ accounts in that it is based on in-depth local studies.¹

That we focus on developments in Europe does not mean that we turn a blind eye to American developments. On the contrary, the scientific and political relations to the United States and how these played out in the different national contexts, as well as in the attempt to build a European laboratory, become one of the central themes. Other questions raised by the set of papers are: the impact of the different wartime legacies on national developments; the role and relative weight of postwar economic developments, national science policies, and local or national research tra-

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¹ On the continuing need of ‘big picture’ accounts see Secord (1993).

ditions in the establishment of molecular biology; and the different arguments used to further the new science. All in all, molecular biology emerges as a highly polymorphic science, deeply embedded in the political and cultural developments of the time.

Introducing the theme of transatlantic scientific exchanges, Angela Creager, in the first paper, examines how, immediately after World War II, political considerations and above all America's fear of losing atomic supremacy led the US Atomic Energy Commission to restrict the export to Europe of radioactive isotopes, a new research tool with many potential applications in the biomedical field, then still in scarce supply. This decision was taken despite the manifest tensions between it and the emerging consensus, then laid down in the Marshall Plan, to aid the reconstruction of science in war-destroyed Europe, and despite concerted protest from the American academic community, which upheld the international ideal of science. In 1947 the restrictions were largely lifted, but the export of radioactive isotopes remained a contentious political issue. The story demonstrates both the (in this case initial) dependence of European scientists on American resources and the political dimensions of transatlantic collaborations in the biomedical sciences, much as was the case in atomic physics. The parallel is less surprising when it is taken into account that funding for both branches of science often came from the same state agencies.

Pursuing the theme of transatlantic relationships, Jean-Paul Gaudillière follows French biologists and science administrators on their first trips to America after the end of World War II. They were as much impressed by what they saw as they were ambivalent in respect to introducing into France the American 'model' of large scale biomedical research, a legacy of the wartime mobilisation programmes. Travels to America and scientific exchanges continued during the reconstruction period, but despite borrowings from the American system, the scientific landscape in France remained markedly different. One crucial difference, Gaudillière argues, lay in the relation of biological researchers to the clinic. While molecular biologists in America worked in close association with medical researchers, the introduction of molecular biology in France was part of a politics of 'demedicalisation' of the biological sciences. In addition, French researchers remained much more distant from the pharmaceutical industry than their American counterparts and derived most of their funds from the State.

Taking a close look at the research of François Jacob on temperate phages in the 1950s, Nadine Peyrieras and Michel Morange complement Gaudillière's analysis of the postwar reconstruction of the sciences in France by stressing both the importance of exchanges with American colleagues and the persistence of a local research tradition in the work which led to the formulation of the operon model, a key concept of the emerging discipline of molecular biology. The authors make a parallel case for the American phage school, thus emphasizing that the traffic of research problems and methods across the Atlantic went both ways.

Following a theme introduced in the first two papers, Soraya de Chadarevian integrates the history of one of the key institutions of molecular biology, the Medical Research Council Unit of Molecular Biology in Cambridge, dedicated to the crystallographic analysis of biological molecules, into the context of postwar reconstruction and the cold war. She studies the legacies of wartime scientific mobilisation on the

careers of would-be molecular biologists, the instruments they used and the funding they received, and follows their intricate molecular models in public displays of the 1950s. Molecular biology, she argues, was a product of a new scientific culture set in place after World War II.

Ute Deichmann examines the reasons for the ‘late’ establishment of molecular biology in Germany. According to her assessment, the postwar (sometimes self-imposed) international isolation of German scientists—rather than the forced emigration of Jewish scientists during the Nazi period, as well as the putative existence of an anti-reductionist national research tradition, and a lack of funding—most affected the direction of biological research and delayed the contribution of German scientists to the emerging discipline of molecular biology, especially as viewed from the perspective of phage research as pursued in France and America. Deichman underlines the important role of *émigré* scientists like Max Delbrück not just for science in America (a much studied theme), but for the eventual import of new approaches in Germany.

Maria Santesmases makes the same point, with respect to the *émigré* scientist Severo Ochoa, for the Spanish case. Molecular biology, Santesmases argues, was imported to Spain from abroad. In the 1960s the Franco regime, reversing a politics of scant investment in scientific research, started using science and international scientific exchanges as a means to end the political and cultural isolation of the country. Spanish scientists who had spent time abroad working in leading biochemical and molecular biological laboratories in America or Europe, seized this opportunity to win state support for their plans to introduce the new approaches in which they had been trained into their country. Support from *émigré* scientist and Nobel prize winner Severo Ochoa lent further international legitimacy, and thus political weight, to their institutional projects. The participation of Spain in the European Molecular Biology Organisation, set up around the same time, was carried by similar political motives, and gave Spanish molecular biologists further standing in the national arena.

The troubled history of the International Laboratory of Genetics and Biophysics in Naples and the career of its founder, American-trained Adriano Buzzati-Traverso, again gravitates around the role of the American model and the impact of national politics. Mauro Capocci and Gilberto Corbellini recount how, following a brief period of feverish activity in which the institute served as attractor for foreign researchers and as training centre in ‘modern’ approaches to biology for a generation of Italian scientists, the American-style research pursued at the institute became the target of anti-American sentiments in the political movements of the late 1960s. The occupation of the laboratory led to the resignation of Buzzati-Traverso from the directorship of the institute. But even before these events, his dream of turning the Naples laboratory into a European centre for research in modern biology was thwarted by alternative plans to build a European laboratory near CERN in Geneva.

Adopting a comparative approach, Bruno Strasser asks how we can explain that molecular biology was instituted at about the same time in different European countries. Comparing the institutional projects launched in Cambridge, Paris, Cologne, and Geneva around 1960, he finds the answer in the economic recovery of the

respective countries and their increasing support for science. Although the different projects fitted local exigencies, the promoters shared a common meaning of the term 'molecular biology' and resorted to common sources of legitimacy, all linked to the socio-political and cultural conditions of postwar Europe. A close reading of their proposals allows Strasser to recover the identity, the boundaries and the cultural meaning of the new science.

The European dimension projected by Strasser was realised in the creation, in 1964, of the European Molecular Biology Organisation (EMBO) and the concomitant plan of a European Molecular Biology Laboratory (EMBL). John Krige analyses the origins of this plan and the reasons why it took more than a decade for it to become accepted. The lack of a big machine, Krige argues, was less decisive than the fragile institutional position of molecular biology in the countries involved. Only once molecular biologists had secured a stronger presence and more political weight in their own countries did the plan for a European laboratory become acceptable to governments, although rationales for joining the European project varied from country to country.

How then does the picture which emerges from these papers differ from earlier accounts of the history of molecular biology? Unlike previous histories, which place the origins of molecular biology in the 1930s or earlier (Abir-Am, 1987; Kay, 1993; Morange, 1998; Olby, 1994), it views molecular biology as essentially a product of the postwar era. It draws attention to the legacies of World War II, which differed from country to country but were especially different in Europe and the United States, where the medical mobilisation and continuing appropriation by succeeding governments led to an unprecedented expansion of (large-scale) biomedical research. The developments in America become both a 'model' as well as a problem for European scientists and science administrators trying to establish the new biology in their own countries, a theme developed in depth here for the first time. The new picture which emerges draws attention to the role of national science policies and governmental funding agencies, instead of, or in addition to, that of private philanthropies such as the Rockefeller Foundation, in the formation of molecular biology. Finally, the European perspective we propose serves to highlight the multiplicity and diversity of the different local stories without losing sight of common historical trends. The result, then, would be a 'glocal' picture.

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Lily Kay who, through her historical work, has contributed significantly to our understanding of twentieth-century life sciences, was colleague, mentor and friend to many of us. The news of her untimely death reached us when work for this issue was just underway. We dedicate it to her.

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