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The Asilomar 2025 conference, a pipe dream

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The Asilomar Conference (California, United States) on '*recombinant DNA*' was organised in 1975 by molecular biology researchers. Its aim was to define the safety conditions necessary for handling genetically modified bacteria shortly after the first attempts at transgenesis. Today, despite their medical, agricultural and environmental promises, biotechnological advances, combined with other technologies such as 'artificial intelligence', are above all a sword of Damocles hanging over all living things. In 2025, a new Asilomar conference failed to produce a joint statement by the participants.



The 50th anniversary of the Asilomar Conference provides an opportunity to recontextualise the conditions under which it was held and to recall the fears of the time. Other conferences followed in

the wake of the first, and the one in February 2025, entitled "*The Spirit of Asilomar*", is an opportunity for *Inf'OGM* to take stock of some of its aspects, particularly societal and ethical ones.

The early 1970s: the beginnings of transgenesis

In 1971, following the discovery of restriction enzymes, "*tools*" that, like the current Crispr/Cas, can split DNA, biochemist Paul Berg[1] and his colleagues at Stanford University (United States) planned to insert a fragment of DNA from the SV40 virus, a simian virus[2], into the genome of the bacterium *Escherichia coli*. In fact, an intermediate step was necessary, involving a virus that attacks bacteria, the bacteriophage lambda[3]. This was one of the first known attempts at transgenesis, then known as gene "*cloning*" or recombinant DNA techniques. However, the final step, which consisted of placing the recombinant DNA into *Escherichia coli,* could not be completed in the original experiment. Why?

These technical achievements raised concerns. A colleague of Berg's[4] drew his attention to the fact that SV40 was known to cause cancerous tumours in mice; wasn't there a risk that these manipulations could create carcinogenic bacteria that could escape from the laboratories? Later, in 2008, Paul Berg wrote: "*We therefore decided to postpone our experiments until we were certain that this risk did not exist. Most researchers, like myself, recognised that this new technology opened up extraordinary prospects for genetics and could ultimately lead to exceptional opportunities in the fields of medicine, agriculture and industry. But we acknowledged that the unbridled pursuit of these goals could have unforeseen and harmful consequences for human health and terrestrial ecosystems*"[5].

This concern about risks led to a moratorium on genetic manipulation under a newly established "*precautionary principle*": "*If we had any courage at all, we would tell people not to conduct these experiments until we know where they are leading us*," suggested biologist Norton Zinder in 1974[6]. Their fears were mainly motivated by the risk that their research could lead to the development of biological weapons, with the shadow of the Manhattan Project[7] still looming large.

The 1975 Asilomar Conference

Held in the United States in February 1975, the Asilomar Conference resulted in the lifting of the moratorium and the establishment of "*safety rules*". The era of "*genetic engineering*" and then biotechnology could begin. How can this change of direction be explained?

This international conference, attended by around 150 people, mostly biochemists or molecular biologists, including some of the project's initiators such as Paul Berg, was held behind closed doors. Lawyers, journalists, a few politicians and doctors were also present. However, no social scientists or philosophers were there.

Thus, by choosing to hold the conference behind closed doors and selecting the participants, the organisers "*deliberately limited the discussions to technical risks, sidestepping broader societal and ethical challenges to make the issue more manageable for self-regulation*"[8]. It was a closed circle.

However, according to Paul Berg, the conference was heated, with some wanting to maintain the moratorium. But a turning point in the discussions took place: *"What turned the debate around was the suggestion to assign a risk assessment to the different types of experiments being considered and to apply safety guidelines differently depending on the degree of risk*"[9]*.*

The main focus was on implementing containment measures, educating laboratory staff, and establishing biological barriers between genetically modified microorganisms and humans. In short,

the aim was to manage risks and trust scientists in the field, who were supposed to be in control of their manipulations – a *leitmotif* that is still relevant today.

Furthermore, this conference never considered the ecological and socio-economic impacts, particularly on agriculture, and did not anticipate the appropriation of living organisms through the patenting of genes and organisms. As for health risks, they did not take into account epigenetic phenomena, which were little considered in the 1970s, the era of "*all genetics*". In the same year as the conference, Robert Sinsheimer, a molecular biologist, stated: *"At Asilomar, no explicit consideration was given to the broader social or ethical implications that the launch of this line of research might have, or to its role as a possible prelude to longer-term and larger-scale genetic engineering of the planet's flora and fauna, including, ultimately, humans*"[10].

Today, the explosion of biotechnology, nanotechnology and digital technology is reshuffling the deck. This is all the more true as the private sector is becoming omnipresent in these fields, with many financial demands, which was not or only rarely the case in 1975.

The "spirit of Asilomar" of 2025

The summit "*The Spirit of Asilomar and the Future of Biotechnology*" was held in Asilomar from 23 to 26 February this year, 2025, on the occasion of the 50th anniversary of the 1975 international meeting[11].

The presentation of this spirit of Asilomar 2025 is appealing because it addresses current ethical concerns, linking them to quotes from the researchers who prepared the 1975 conference.

Reading through the topics covered, the task ahead seemed daunting: "*research on pathogens and biological weapons, artificial intelligence and biotechnology, synthetic cells, biotechnologies beyond conventional containment, defining the future of biotechnologies*"[12]. However, a short summary published by the scientific journal *Cell*[13] indicates that corporate interests were taken into account...

The 2025 meeting, like the 1975 meeting, was a closed-door event with 300 selected participants, including representatives from the social sciences, the arts, journalism and NGOs, but above all many researchers in new biotechnologies, synthetic biology and "*artificial intelligence*" (AI), which would now be "*beneficial*". A conference organised in Asilomar by the *Future of Life Institute* in 2017 had also established principles for regulating "*ethical*" AI, to which Elon Musk is a signatory[14.]

In the spirit of the 1975 conference, which was based on fears of potential risks to human health, the 2025 conference highlights the balance of benefits and risks of new technologies for human society. This effectively validates these technologies: there is no question of challenging them, no suggestion of a moratorium as in the early 1970s... This can be seen as an ideological step backwards.

However, the transhumanist potential of synthetic biology and algorithms would require reflection prior to implementation. For example, we are now imagining bringing back extinct species through genetic manipulation, synthetic biology, or the use of stem cells (known as IPS)[15]. We are even considering "*resurrecting the dead*" through AI: a trained algorithm would be able to find digital traces of the deceased on the Internet, allowing their loved ones to communicate with them[16]! In an equally reductionist perspective, there is talk of creating digital twins of living beings to solve medical problems[17,] even though not all components of living beings can be digitised and many of them are unknown.

Were these considerations taken into account at this year's Asilomar conference? No statement summarising the conference's conclusions has been published. However, a few requests for commitment or petitions have been presented[18].

For pathogenic microorganisms, for example, we see recommendations being considered for benefit/risk assessment, control and transparency of experiments, scenarios in the event of laboratory escapes, etc. The use of bioengineering in species conservation is encouraged, provided it is interdisciplinary. With regard to the release of GMOs into the environment, the aim is to mitigate risks while maximising benefits! The request concerning AI is clear: "*Advances in AI promise to significantly accelerate beneficial biological discoveries and innovations and will undoubtedly be one of AI's most important contributions to humanity and society. However, AI methods can also increase the risk of accidents and enable malicious activities targeting deliberately harmful applications, such as the development of biological weapons*." This is followed by a number of non-binding recommendations governing this technology.

However, one request catches our attention. It "*recognises that there are experiments and experimental objectives that should not be undertaken or pursued because the risks, as understood, far outweigh the potential benefits. These experiments and objectives should be defined by* 'red lines' *that science practitioners will not cross*." The use of the conditional tense is significant here.

In short, technologies are accepted without being questioned about their existence. Wishes and safeguards are simply proposed. Total control and unfailing reductionism can be read between the lines.

Finally, the request regarding genetic modifications in the human species is empty: it calls for an international debate. We would like to point out that a declaration against the legalisation of human genetic modification called *the International Coalition to Stop Designer Babies* has been written and submitted for signature[19].

According to the testimony of a person present at the conference[20], the main topic throughout the discussions was not safety or ethics, but how to remedy the public's lack of confidence in biotechnology. Various proposals were put forward: using public relations, encouraging "*ethical innovation*" and "*community-based technology*", etc. According to this participant, when the suspension of funding for some of these technologies by DARPA (the US military research agency) was mentioned, someone replied: "*Then we would have no more projects*." As for the risks, those that had been identified came mainly from "*bad actors*".

This 2025 conference therefore falls short of the moral, ethical and intellectual standards one might expect. Could the lack of a joint statement be an admission of failure? On the contrary, it fits perfectly into a transhumanist rush forward dominated by economic interests. What if all this were just a cleverly crafted mirage?

1 Nobel Prize in Chemistry in 1980.

2 Vacuolating Simian Virus, a DNA virus discovered in rhesus macaques and found in polio vaccines.
"Simian Virus 40 - Definition," *Techno-Science.net*.

3 The following year, another researcher perfected this technique by using a vector, a small circular DNA molecule, a plasmid capable of reproducing on its own within the bacterium.

4 Robert Elliot Pollack, biologist and philosopher.

5 Berg, P., "Asilomar 1975: DNA modification secured", *Nature* No. 455, pp. 290–291, 2008.

6 The Spirit of Asilomar and the Future of Biotechnology

7 Development of the A-bomb in the United States during the Second World War.

8 Pat Thomas, "Frankenfoods – Chewing Over a Polarised Debate", *A bigger conversation*, 18 December 2024.

9 Berg, P., "Asilomar 1975: DNA modification secured," *Nature* No. 455, pp. 290–291, 2008.

10 The Spirit of Asilomar and the Future of Biotechnology

11 "Summit | 'The Spirit of Asilomar and the Future of Biotechnology'," *Inf'OGM*.

12 The Spirit of Asilomar and the Future of Biotechnology, "Programme".

13 Molla, Kutubuddin A. *et al.*, "The Spirit of Asilomar: lessons for the next era of biotechnology governance", *Trends in Biotechnology*, Volume 43, Issue 8, pp. 1809–1812, August 2025.

14 Alexis Orsini, "The '23 Asilomar Principles' aim to regulate the development of artificial intelligence," *Numerama*, 1 February 2017.

15 "Un mammouth 2.0 pour sauver le climat ?", *Inf'OGM*, 17 September 2025.
Zoé Jacquinot and Olivier Leduc, "Bioéthique : qu'est-ce qui se cache derrière les cellules iPS ?", *Inf'OGM*, 10 February 2020.

16 Valérie Mils, "Du rite funéraire au deadbot, notre lien aux morts réinventé", Toulouse Museum, 16 January 2025.

17 Annick Bossu, Hervé Le Meur and Eric Meunier, "Vivant numérisé et technologisé : ayez confiance ou taisez-vous !", *Inf'OGM*, 11 March 2021.

18 Rice Research Repository, "2025 'The Spirit of Asilomar and the Future of Biotechnology'," 2025.

19 International Coalition Stop Designer Babies, "International Declaration Against Legalisation of Human Genetic Modification", 2025.

20 Save Our Seeds, "The new 'Spirit of Asilomar': Move fast, don't ask questions," *GMWatch*, 15 May 2025.

La conférence d'Asilomar (Californie, États-Unis) sur « *l'ADN recombinant* » a été organisée en 1975 par des chercheurs en biologie moléculaire. Elle visait alors à définir les conditions de sécurité nécessaires pour la manipulation des bactéries génétiquement modifiées peu de temps après les premières tentatives de transgénèse. Aujourd'hui, les avancées biotechnologiques, associées à d'autres technologies telles que l'« *intelligence artificielle* », constituent surtout, malgré leurs promesses médicales, agricoles et environnementales, une épée de Damoclès au dessus de tout le vivant. En 2025, une nouvelle conférence d'Asilomar n'a pu aboutir à une déclaration commune des participants.

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