Science and Technology Q1: Is free speech the enemy of science?

Science and free speech are often treated as if they naturally belong together. Both rely on open discussion, both challenge assumptions, and both depend on ideas being shared freely. But when looking more closely, the relationship between them is not as simple as it seems. Science is not just a method; it is also a set of institutions and a form of cultural authority. Free speech is not just a right; it is a social expectation and a political value. When these two areas overlap, they don't always support each other. The question of whether free speech is the enemy of science is not about whether citizens dislike scientific authority, nor whether liberty is incompatible with scientific knowledge. It is a question about whether unrestricted speech, once amplified through institutions, media, and the public, can undermine the conditions science needs to function.

To understand the question properly, an understanding about what science and free speech mean is required. Science usually refers to at least three distinct items. First, science as a method: a way of investigating the world through observation, testing, and constant questioning (Andersen & Hepburn, 2026). Second, science as an institution: universities, journals, funding bodies, and professional associations (Hartung, 2022). Third, science as cultural authority: the trust and legitimacy scientific claims hold in society. Free speech, as well, has multiple dimensions to its meaning. It can refer to the legal right to speak without punishment, the social freedom to express dissent without being pushed out, or the intellectual freedom to explore ideas without being shut down (Britannica Editors, 2026). The relationship between free speech and science depends on which of these items we have in mind. If free speech is understood purely as a legal right, the idea that it could be an enemy of science seems unlikely, science benefits from open criticism and debate. A scientific community in which disagreement is suppressed would cease to be scientific. Karl Popper, an Austrian British philosopher and academic, describes science as "conjectures and refutations" (Shea, n.d.) which shows how essential criticism is. In this sense, science and free speech naturally support each other. A world where speech is tightly controlled is a world where scientific progress slows down or stops completely.

Nonetheless, science has many dimensions and is not only a method. It is also an institution, and institutions have pressures, hierarchies, and vulnerabilities. Here, the relationship becomes more complex. Scientific institutions need to protect their reputations, secure funding, and maintain public trust. These pressures can create incentives to suppress controversial research, silence minority viewpoints, or enforce consensus too early. The history of science has many examples of this limitation. Early theories about cholera were dismissed because they challenged accepted beliefs. Plate tectonics was ignored for decades. Mendel's work on genetics was overlooked for years (Mann, 2025). In each of these cases, the problem was not the scientific method, but the social structure of scientific authority. However, free speech can also create pressures of its own. In an environment where every opinion is treated as equal, scientifically unsupported claims can spread faster than evidence-based ones. This can distort public understanding and make it harder for scientific institutions to maintain credibility.

When misinformation spreads faster than real evidence, people start to lose track of what is actually true. This weakens public understanding and makes it harder for science to keep its credibility. When every claim is treated as if it has the same weight, verified knowledge gets pushed aside, and the space science needs to work effectively begins to shrink. This tension becomes even stronger when free speech overlaps with political power. Governments often rely on scientific expertise to justify policies,

but public discourse, especially when driven by misinformation or populist rhetoric, can undermine that expertise. When political decisions depend heavily on scientific claims, widespread misinformation can be treated as legitimate dissent. Speech that contradicts evidence can be framed as "just another viewpoint", even when it actively harms scientific understanding. Once that happens, protecting scientific integrity becomes more difficult.

To further illustrate this dynamic, the Lysenko affair in the Soviet Union reflects how scientific authority, when combined with political power, can become a direct enemy of free speech. Trofim Lysenko, an agronomist who rejected Mendelian genetics, gained Stalin's favour by promising rapid agricultural improvements. His theories were scientifically baseless, however politically convenient. Once the state endorsed his theories, they became unquestionable and Lysenkoism became the official doctrine of Soviet biology. Scientists who disagreed were fired, imprisoned, or killed, and entire fields of research were shut down and declared "bourgeois pseudoscience". The result was then catastrophic: scientific collapse and widespread famine was endured (Gordin, 2022). The Lysenko affair demonstrates the danger of suppressing free speech yet also highlights a different point; when speech is controlled by political power, science collapses. However, in open societies, the opposite risk appears; speech can overwhelm science not through censorship, but through noise, misinformation, and the elevation of untested claims to the same status as evidence based ones. The lesson defined here is not the silence, but the distortion, and how science struggles to maintain the clarity it depends on.

However, this does not mean that free speech is the complete enemy of science. It means free speech can become restrictive to science when it is treated as something that automatically legitimises every claim, regardless of evidence; this distinction is crucial to note and understand. The scientific method encourages open debate, but scientific institutions sometimes struggle when public speech amplifies misinformation faster than they can be corrected. The cultural authority of science can be either strengthened or weakened depending on how free speech is utilised. Science as a method supports open debate, whereas science as an institution can sometimes shut it down. Science as cultural authority can either encourage discussion or discourage it. To see this relationship more clearly, the role of scientific consensus can be considered. Consensus is the widespread agreement of the minds among a group of people and is often invoked as a reason to close debates. In many cases, this is useful; not every idea deserves equal attention, some ideas are simply false (Holden, 2025). Nonetheless, consensus can also be used to shut down disagreement carelessly as it is not a permanent truth; it is the best understanding available at the time. But from the opposite angle, free speech can also be used to attack consensus irresponsibly. When consensus is dismissed, not because of evidence, but because everyone has a right to their own truth, scientific knowledge becomes harder to defend. Researchers may avoid challenging ideas to protect their careers, journalists may reject controversial work to avoid backlash, and funding bodies may only prioritise 'safe' research over risky, challenging ideas. These consequences all come from consensus being treated not as knowledge, but as a boundary of acceptable inquiry, which pressures individuals and institutions to avoid challenging it.

Furthermore, the problem is not that science is a danger to free speech, but that unbounded free speech can be used to decline scientific authority by placing evidence and misinformation on the same level. This is not uniquely specific to science, any field with cognitive reasoning can have similar pressures, but science is distinctive because of its authority being grounded in the claims about justified truths. When a field claims moral authority, people with different mindsets can be dismissed. When a

field claims scientific authority, disagreeing bodies can be dismissed as irrational. Both forms of dismissal can justify restrictions on speech. However, a deeper issue further arises when we consider the difference between scientific authority and free speech. Science aims to find truth; free speech aims to protect the right to speak. These goals can conflict in certain situations, but they don't need to. A society that values both needs systems that protect scientific integrity without shutting down disagreement. This requires recognising that science and free speech serve different purposes. Science tries to determine what is true. Free speech determines who gets to speak. These aims can conflict, but they can also support each other if handled properly. Nevertheless, when every claim is treated as equally valid under the banner of free speech, scientific authority can be drowned out rather than weaponised.

One solution for a balance between free speech and science is to separate between epistemic authority and coercive authority. Scientific institutions should have the authority to say what the evidence supports, the truth. However, they should not have the power to punish people for disagreeing. At the same time, free speech should not be interpreted as a licence to undermine evidence-based knowledge without detailed evaluation. Epistemic authority means having the right to speak about what is true. Coercive authority means having the power to force others to agree. Science needs the first, not the second. Another solution is to encourage institutional pluralism. When there are many journals, funding sources, and research opportunities, no single group can control what counts as acceptable knowledge. This gives space for new ideas and protects both science and free speech. Pluralism protects both science and free speech but making it harder for any one institution to define what counts as acceptable knowledge.

This can also help to recognise that not every political issue can be solved by science alone. Questions about risk, fairness, and values involve more than data. When scientific authority expands into these areas, it can silence important public discussions. Protecting free speech means acknowledging the limits of expertise. Science can inform decisions, but it cannot replace democratic debate. Likewise, protecting science means acknowledging the limits of free speech; not every claim deserves equal weight in scientific contexts. A final solution could be to build civic resilience. Instead of censoring misinformation, societies can focus on education, critical thinking, and media literacy. Censorship suggests a lack of trust in the public. Education shows confidence in people's ability to judge information for themselves. A society that responds to misinformation by banning it signals weakness. However, a society that responds by strengthening its citizens signals trust and growth. In the long run, the most effective response to misinformation is not censorship, but a more informed public.

So, is free speech the enemy of science? The answer is neither a simple yes nor no. Science as a method is a friend of free speech, but free speech, when misused, can become an enemy of scientific understanding. However, science as cultural authority can be either, depending on how it is handled. The real enemy of science is not free speech, but the misuse of free speech to undermine evidence, elevate misinformation, or discourage trust in scientific institutions. The real enemy of free speech is not science, but the misuse of scientific authority to justify coercion. The question, then, is not whether science threatens free speech, but how to design systems that prevent such threats. The solution is not to weaken science, but to ensure that this authority remains based on evidence rather than force. Free speech and science can coexist, but only if we recognise the structural tensions between them and address them with safeguards.

Ultimately, the relationship between science and free speech is a test of political maturity. A society that values truth must protect the institutions that produce it. A society that values liberty must protect the rights that sustain it. The challenge is to do both simultaneously. If this balance is lost, free speech may indeed become the enemy of science - not by its nature, but because of how it is used. The best defence for science is not to suppress disagreement, but to engage with it. The best defence for free speech is not to reject scientific authority, but to make sure it remains open to challenge. When both are protected, both become stronger.

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