

# Imperceptible Microorganisms

A Tribute to Abigail Salyers



IMPERCEPTIBLE RELICS

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Some of the first Microscopes

In 2004, Spring Semester, I took an introductory microbiology course, MCB 300, a lecture of around 90 students. It was the first microbiology course I could take after completing pre-requisite molecular and cell biology courses. One of the guest lecturers was a professor named

[Abigail Salyers](#). She was able to discuss a lot of the different types of bacteria that existed. She was also named the president of the American Society for Microbiology just months before the 2001 anthrax attacks, and consulted with the U.S.P.S. during that time:

*“She learned that providing basic information to the postal workers about the bacterium made it possible to have discussions about sophisticated topics in microbiology in a simple way, and that having that information made them feel less frightened.”*[\[1\]\[5\]](#)

It was also one of the reasons I switched majors to microbiology- to understand bacteria more and the news at the time wasn't very in-depth. [Bruce Ivins](#) had not yet been a main suspect until 2006, and even after the fact, Senator Leahy had his [doubts](#) that he acted alone. Anyways, that wasn't the main reason I majored in biology.

I remember her discussing in a lecture that microbiologists have an added difficulty in describing their work to laymen because their subject matter is not visible without a microscope. She contrasted microbiologists to plant biologists, who could describe kernels on corn cob, petals on a flower, and other phenotypes. In a lot of ways, microbiology is a lot like chemistry, math, and physics, because it involves things so small or abstract that it cannot be translated easily into poetic language.

The other lecturer of the class, would introduce the history of microbiology, and mentioned the phrase, “invisible microorganisms.” He would repeat the phrase on several occasions during that lecture, with a dramatic pause, as if trying to spook the class, but he was saying it in a funny way. The reason was, he was trying to take the class on a field trip to 500 years ago, when the [germ](#) theory had first been formalized. It also been described as an “invisible substance” even [earlier](#), by some scholars.

*“Basic forms of germ theory were proposed by [Girolamo Fracastoro](#) in 1546, and expanded upon by [Marcus von Plenciz](#) in 1762. However, such views were held in disdain in Europe, where [Galen's miasma theory](#) remained dominant among scientists and doctors.”*

A scientist who is describing invisible or imperceptible things is often going to sound crazy because no one understands what he is or she is talking about, even with a cartoons and colorful illustrations.

To be a great communicator, one must in essence become a polyglot, because the world speaks many languages, and to speak to a multitude, one must speak in multitudes.

Ever since switching from English to Biology, I later would feel I made a Faustian bargain. I felt like I was sacrificing an education of humanities for scientific understanding. But not all scientists speak the same language. Computer science, for example, has many programming languages:

*“Perl gained widespread popularity in the mid-1990s as a [CGI scripting](#) language, in part due to its powerful [regular expression](#) and [string parsing](#) abilities.<sup>[19][20][21][22]</sup> In addition to CGI, Perl 5 is used for [system administration](#), [network programming](#), finance, [bioinformatics](#), and other applications, such as for [GUIs](#). It has been nicknamed “the Swiss Army chainsaw of scripting languages” because of its flexibility and power.<sup>[23]</sup> In 1998, it was also referred to as the “[duct tape](#) that holds the [Internet](#) together”, in reference to both its ubiquitous use as a [glue language](#) and its perceived inelegance.<sup>[24]</sup>”*

I have never really understood programming languages very well. I can understand the structures well enough to know how the machine will use the input, but I do not really have the attention span to learn all the grammatical nooks and kinks of the language (realizing I don't need to know every operator). I have never really written a complex program more than what a tutorial would copy and paste.

But I have always found the metaphor of Perl as a glue language funny and practical to describe the role of the polyglot. The polyglot is stuck between the elegant, fluent language speakers, sometimes as a translator. They are permanently lodged in a machine as cogs of pidgin speakers. That's what I feel my eternal role is, after making that Faustian bargain. I imagine technical polyglots are how the space shuttle was built. Radio engineers speaking with rocket scientists and plasma physicists in broken technical jargon to deconflict when operating their apparatuses in the spectrum of invisible wavelengths. A systems architect is a polyglot. It's not the job I necessarily want- it's the only thing I can do well without forgetting everything I ever learned. I'd rather my memories be lodged to other memories so that they can't be easily untangled and organized, as would a subspecialist. The memories' net-like category system helps ideas stay generalized for multi-disciplinary applications.

Scientists often have a need (or at least interest) to learn languages in many fields. Salyers studied Mathematics as an undergrad and got a Ph.D in Nuclear Physics. Some of the greatest Biologists got their start in Math and Physics. You could say the curricula trains one well. A lot of engineer bachelors go into medicine (I've heard and seen that it helps one's chances at admission to medical school). [Being well-rounded](#) in science is never a bad thing, even if many roles require specialties.