



## Cellular DNA

DNA is a very large, highly negatively charged molecule (even fragments of DNA are large and highly charged). DNA will not go into another cell unless you overcome a cell's natural defenses. For instance, in the lab, we can jolt the cells with high voltage electricity or use chemicals that mask DNA's positive and negative charges or, in the lab, create a viral vector to enable transfection. The DNA fragments would have to go through the cell's outer plasma membrane and then the nuclear membrane, a process that does not occur naturally.

Our bodies fight hard against naked DNA to stay healthy. It's one of the ways our bodies fight viral DNA. Our blood has nucleases, which chew up DNA and its smallest building blocks. Some cells (like macrophage) can take up DNA, but their job is to chew it up and recycle the building blocks.