



Where I work Juan Pablo Tosar

When you see someone wearing gloves, you tend to think they're protecting themselves from something. In my laboratory at the Pasteur Institute in Montevideo, Uruguay, we wear gloves to protect our samples from ourselves. We study RNA, and some of the enzymes in our skin can break those molecules down.

I am a molecular biologist, and I aim to understand how cells talk to each other using their RNA. Cells sometimes release RNAs that travel from one cell to another, where they can affect gene expression. We're also studying how these travelling RNAs in human blood or urine samples can be used to diagnose disease. We can look at all the extracellular RNA in a sample, and determine whether any of the molecules contain abnormalities that might point to the presence of conditions such as cancer.

In this picture from February, I'm using a syringe to inject a sample containing extracellular RNA into a vertical column of porous resin beads. The column separates out the contents of a sample by size: small

molecules get stuck in the pores, and bigger stuff drops straight through and comes out the end faster. A protein carrying a molecule of RNA is large and comes out of the column quickly. When the sample is treated with enzymes to break down the RNA, the protein is freed and, because it is now smaller, it comes out of the column later. We study the difference between these descent speeds to see which proteins are interacting with RNA.

Uruguay is a small country, and the resources for research are not great. We often need to get creative – not just in our science, but also in how we manage our resources. If a reviewer asks for an experiment that requires special reagents that would take us months to get, I might need to think of other ways of showing the same thing. Finding alternatives is part of this job. It's a way to approach the most complex questions.

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