Jenny Ito, Vespucci Fellow

Jenny Ito is an undergraduate at Titletowne University. She recently won a Vespucci Fellowship to join the bioengineering lab of Dr. Chris Holzer. Ito will be working directly with Joe Gilmartin, a graduate student who has been overseeing an experiment that Holzer designed to determine whether a special anti-bacterial coating can reduce the incidence of infection associated with the use of steel surgical pins. The research team has inserted a 2-cm pin into the right tibia of 30 rabbits; fifteen have standard surgical pins, and fifteen have the anti-bacterial coating. In Jenny's Vespucci Fellowship, she proposed to examine how white blood cell counts of the rabbits change over the course of the experiment. In her proposal, she explained that the team would inoculate all of the rabbits with 1×10^8 *Staphylococcus aureus* and routinely administer morphine at 5mg/kg to alleviate any discomfort the rabbits may experience.

They start the project. For almost a month, Jenny and Joe care for the rabbits and record their observations, watching for any sign of distress or infection, and periodically drawing blood to do the white blood cell count. Then they have a meeting with Dr. Holzer, where they report that none of the rabbits seem to be uncomfortable, none show signs of infection, and none have an elevated white blood cell count.

Holzer is impatient. "If we don't get an infection, we won't learn anything about the pins. Here's what we'll do. Since it would be a shame to have put these rabbits through this, not to mention wasting all your time, without getting *some* results, I want you to help things along a bit. Inoculate the rabbits with 1×10^9 *Pseudomonas aeruginosa*. That should definitely provoke an immune response."

Joe hesitates. "But the protocol specifies *Staphylococcus*, Chris." Jenny is silent.

Holzer responds "Yeah, hmmm. Well, it's a minor change. We're approved to infect the rabbits; all we're going to do is give the process a boost." And with that, Holzer walks away.

Joe looks at Jenny. "I guess we need to get some *Pseudomonas*, but man, I hate those things"

Jenny asks "Aren't *Pseudomonas* really nasty? I'm not sure I want to expose myself to that."

Joe responds, "They are. As long as we're careful with our safety procedures, it shouldn't matter. I guess you can quit the project if you want, though."

That night, Jenny talks with her roommate, Ruth, who is majoring in Environmental Studies. Ruth snorts. "Why are you so squeamish now? Go ahead and do it. In fact, if you and Joe really want the project to work, just put the Killer Death Bacteria on the untreated pins. Less risk to you, Human."

Jenny responds, "Thanks for the sarcasm. You know we can't do that; it would be bad science."

"The whole thing is bad science," Ruth retorts. "Torturing bunny wabbits like that."

Jenny throws up her hands in exasperation. "You're not helping at all, Ruth! I know you don't approve of animal experimentation, but sometimes it's necessary. Would you rather us start with experimenting on people? Besides, I've got to have something to show for this in my med school interviews. Still, *Pseudomonas* is hard to treat, and it is a really tough infection. The rabbits are sort of cute, and I've really gotten to like Flopsie, the big one with the lopey ear. But if we do something different from what I said we were going to do, then what will I say at Discover Titletowne?" Jenny moans and throws herself down on the couch, opening a tub of butter pecan ice cream.

Ruth takes a deep breath. "Well, your Prof thinks it falls within the realm of reasonable interpretation of the protocol. You've always got to interpret everything, you know. Besides, you always planned on some of the bunnies developing infections. What does it matter if they're infected by one vs. the other? If it makes you feel better, look at it this way: If you don't get results, they'll just have to rip the pins out of these bunnies, and torture a whole new batch. And they'll do it with or without you. In the end, it would reduce the suffering if you just brew up the new bugs and pour them on."

Should Jenny stay with the project? Should she and Joe go ahead with changing to the *Pseudomonas*? Why or why not?

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