Arlotta Clip 5 Transcript

PAOLA ARLOTTA: Let's assume for a moment that this experiment is really right, hypothetically. What have we learned? Why is it so important that I see responsiveness to lithium in the culture by neurons that I make from pluripotent stem cells like I see matching the patient situation? Why would that be so useful? Think about drug treatment. Yes?

STUDENT: I guess it shows that lithium's mechanism of action acts on the neurons themselves and not on something else in the environment.

PAOLA ARLOTTA: Nice. So it shows you that there is a direct effect by that drug onto the cells themselves. So let's not make it too complicated. Even if you just give it to the neurons. So it tells you something about the mechanism of the disease and of lithium action. What else?

STUDENT: It also tells you that if a drug works for one patient population it might not work for all patient populations.

PAOLA ARLOTTA: It tells you that. Great.

STUDENT: You could also take those cells--

PAOLA ARLOTTA: Take that.

STUDENT: You could also take those two samples of cells and look at the differences between them.

PAOLA ARLOTTA: Yes, you can understand why. Why is the unresponsive neuron not responding to, and can we figure out another target? Yes, go ahead.

STUDENT: If you're assuming that these results are correct and the lithium response is the same in vitro as it is in vivo, then you know that you've found a viable disease model.

PAOLA ARLOTTA: Perfect. Perfect ending. It's exactly that. It's the power of being able, by simply taking a sample of blood turned into an IPS cell from a patient and making these neurons in culture predict ahead of any trial whether that patient will be or will not be responsive to that one drug. This is the basis of what some people call personalized medicine, where the choice of a drug is determined upfront for a specific patient by using methods of this type that tailor the drug to the cell of the patient, basically.