

# **Your Money or Your Life**

*An Exploration of the Implications of Genetic Testing in the Workplace*

## **Activity Instructions**

This Role Play Activity is designed to promote discussion and critical thinking about the issues of genetic testing and pesticide exposure. While much of the information included in the activity is real and accurate, the people and places are, for the most part, fictional.

The activity is for a group of 4 or more participants. It can be used with middle and high school students as well as adults. The facilitator should be familiar with the basic principles of public health, environmental health and genetic testing and should have read all the activity materials beforehand.

### **Before the Event:**

Make the following number of copies of the handouts:

- a. Your Money or Your Life, Part I and Part 2 - 1 copy for each participant and for each leader. It works well to print Parts 1 and 2 back-to-back on a single page.
- b. Each participant will receive one of the five Outcomes so you can make fewer copies of these pages. Print one copy of the Outcomes for those choosing to take the test and one copy of the Outcomes for those choosing NOT to take the test for every 4 participants.

Cut the 5 Outcomes on each page apart. Place the 5 Outcomes for those choosing to take the test together in an envelope marked "TEST". Place the 5 Outcomes for those choosing NOT to take the test together in an envelope marked "NO TEST".

If there are several leaders, prepare a set of TEST and NO TEST envelopes for each leader.

### **At the Event:**

Each participant should have a writing surface and a pen or pencil. Sitting in table groups will allow for small group discussion.

Introduce the activity by saying that this is a roleplay about a man who is trying to support his family. He has to make some hard choices about his job.

Give each participant the page, "Your Money or Your Life". Ask them to look at Part 1 and not to read Part 2 on the flip side until the whole group has had a chance to complete and discuss Part 1.

Invite participants to read Part 1 in table groups by having each person read a paragraph aloud. Or ask for volunteers to read one paragraph to the whole group while others follow along.

Ask clarifying questions of the whole group to make sure everyone understands the text.

Ask participants to complete the Discussion Questions for Part 1. They may discuss the questions with their table group.

When all participants are finished with Part 1, go through their answers to the Discussion Questions. There are several answers to each question; several possible answers should emerge.

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For the 3<sup>rd</sup> question, ask several participants what job they would pick and why. Then poll the group to see how many chose the pesticide applicator job and how many chose the clerk job. Invite a few participants to share something that surprised them or was new information for them.

Invite the participants to turn the page over to Part 2. As with Part 1, read Part 2 aloud by table groups or ask for volunteers who will read one paragraph each to the whole group.

Ask clarifying questions to make sure everyone understands the text.

As with Part 1, ask participants to complete the Discussion Questions for Part 2. They may discuss the questions with their table group.

When all participants are finished with the Part 2 Discussion Questions, go through the first two questions with the whole group. There are several answers to each question; make sure several possible answers are named.

Now take the Outcomes Envelopes. Ask for a volunteer to stand and give their answer to Question 3 to the whole group, and to explain why. Then invite the volunteer to take one Outcome from the TEST or NO TEST envelope according to their answer. Ask them to read the outcome to themselves while you ask for another volunteer to answer Question 3 and explain why. Invite that volunteer to take an Outcome from the appropriate TEST or NO TEST envelope and read it silently. If both volunteers had the same answer, either to take the genetic test or not to take the test, ask whether someone answered differently. Ask that person to share their answer and why, and let them take an Outcome from the appropriate envelope.

Carry the envelopes to every participant and ask them to choose an Outcome according to how they answered Question 3. If there are several leaders, each leader should have a TEST and a NO TEST envelope. Leaders can then circulate to the table groups and invite participants to answer Question 3 in table groups. When participants give their answer, invite them to choose an Outcome from the appropriate envelope.

Reconvene the large group and invite participants to read their outcome, first reporting whether they decided that Frank got the genetic test or didn't get the test. Invite several people to report until the whole group has listened to several possible outcomes.

Close with a discussion about the health risks of being exposed to pesticides and Frank's hard choice to earn enough money to support his family, or protect himself from being exposed to pesticides.

Ask whether participants think someone could really face this kind of choice, and invite them to give examples. Do participants face any choices like this where they live, work, go to school, or play? Are there things society can do to prevent dilemmas like the one Frank faced?

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### **PART 1**

Until recently, Frank Lee had a great job that paid him well and still allowed him to spend time with his wife and three young children. Two months ago Frank lost his job and the family could no longer afford the house they were renting. Isabel, Frank's wife, had worked in retail before the children came along, but the cost of childcare was so high that it made more sense for her to be a stay at home parent, at least until both children were old enough to be in school full-time. After considering their options, the Lees decide to move to the city of Farmville where housing is more affordable and the schools are good. But Frank needs a job, and fast!

Soon after they arrive, Frank reads about two job openings at the largest employer in town, Fancy Fruit Farms. The first is a job as a pesticide applicator and pays \$20.00 an hour. The job requires spending eight hours a day applying the pesticide Chlorpyrifos (CP) to crops by hand. Special training in the safe application of pesticides is provided, as is protective equipment to be worn while working.

In addition to the pesticide applicator job, Fancy Fruit Farms is also looking for a clerk to work in the office. This job includes tasks such as ordering seeds, agricultural chemicals, and equipment for the company. The clerk job pays only \$8.00 an hour.

There are no other jobs currently available in Farmville and the family cannot afford to move again. Frank applies for both jobs, and is interviewed. The manager is impressed by Frank's enthusiasm and qualifications. He tells him that he can have whichever job he prefers. Frank knows that working with pesticides can be dangerous and that too much exposure to pesticides can cause health problems. But, the advertisement said there would be safety training and protective equipment provided. Frank also is aware that the clerk job pays only \$8.00 an hour – too little to support his family.

### **Discussion Questions for Part 1**

What are Frank's options?

What factors might influence his decision?

If you were Frank, which job would you pick?

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### **PART 2**

Before making his decision, Frank decides to visit the Better Business Bureau and get more information on Fancy Fruit Farms. He learns that the Department of Agriculture inspected Fancy Fruit Farms in 2006 and discovered that it was applying more CP to its crops than the regulations allowed. They issued a “notice of correction” and threatened to revoke or suspend Fancy Fruit Farms’ license to use CP if they didn’t fix the problem. As a result, Fancy Fruit Farms reduced the amount of CP they were using. They also had all pesticide applicators attend a safety course and required them to wear gloves while working. The Department of Agriculture reevaluated Fancy Fruit Farms after they had made these changes, and decided that they could continue to operate and use CP.

Frank also visits the Farmville Department of Health and learns about some interesting new research. Researchers have recently discovered that there is a gene that influences how the body reacts when exposed to CP. This gene is called PON1. There is a variation of the PON1 gene that makes people more likely to get sick if they are exposed to CP. People with this variation of the gene are more likely to experience muscle weakness, loss of coordination, and other serious health affects associated with too much CP exposure. Based on these findings, The Department of Health has recommended that Fancy Fruit Farms begin testing anyone who applies for a job as a pesticide applicator to find out whether they have this variation of the PON1 gene. Any new applicants who test **POSITIVE** for the variation will not be hired as pesticide applicators. Those currently employed as pesticide applicators will be given the option of taking the test, but won’t be required to do so.

After speaking with the manager at Fancy Fruit Farms, Frank discovers that they will officially begin administering the PON1 test the week after he will be hired, so he does not have to be tested. They give him the option, however, of having the test if he chooses. He is warned that if he opts to take the test and is **POSITIVE** for the PON1 gene variation, he will not be allowed to take the pesticide applicator job. If this happens, the only job open to him would be the clerk job that pays \$8.00 an hour. If he decides NOT to take the test, or if he takes the test and is **NEGATIVE**, he is still eligible for either job.

### **Discussion Questions for Part**

What could happen to Frank if he decides to take the genetic test?

What could happen to Frank if he decides **NOT** to take the genetic test?

Should Frank get the genetic test? Why or why not?

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### **Outcomes for those choosing to take the test**

(Cut into strips and place into an envelope marked “TEST”)

#### **You tested **POSITIVE** for the PON1 gene variation**

Frank tests positive for the PON1 variation and is not allowed to take the job applying pesticides. Instead, he takes the only other job available, the clerk job at Fancy Fruit Farms. He makes only \$8.00 an hour and soon can't afford to pay the rent on the new house. Frank and his family have to move into a tiny 2-bedroom apartment where they all share rooms and can barely afford groceries each week.

**T1**

#### **You tested **POSITIVE** for the PON1 gene variation**

Frank tests positive for the PON1 variation, and can't take the job applying pesticides. Instead, he takes the only other job available, the clerk job at Fancy Fruit Farms. Because he works hard at his job, he is promoted to a management position only a few weeks after being hired. The management position pays \$25.00 an hour and Frank and his family live long, happy, and healthy lives.

**T2**

#### **You tested **NEGATIVE** for the PON1 gene variation**

Frank tests negative for the PON1 variation and decides to take the job applying pesticides. He decides that the safety class and glove use will protect him from exposure. He spends several years applying pesticides and doesn't get sick. At work, he is asked to join a committee that helps develop safety plans to keep those working with pesticides as safe as they can be.

**T3**

#### **You tested **NEGATIVE** for the PON1 gene variation**

Frank tests negative for the PON1 variation and decides to take the job applying pesticides. He decides that the safety class and glove use will protect him from exposure. However, a few months after starting work Frank realizes that he is having symptoms associated with high exposure to CP. When the Department of Health returns for a second inspection, they find that the safety measures are not adequate and that some of the workers have been exposed to unsafe levels of CP. As a result, Fancy Fruit Farms is forced to close, and Frank loses his job.

**T4**

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### **Outcomes for those choosing NOT to take the test** (Cut into strips and place into an envelope marked “NO TEST”)

#### **You chose not to take the test for the PON1 gene variation**

Frank decides to take the job applying pesticides at his own risk. He works for several years, makes enough money to support his family, and even earns a promotion. In his new position, Frank teaches people how to apply pesticides safely, because safe application of pesticides is what kept him from getting sick. (If he had taken the test, Frank would have tested **POSITIVE** for the PON1 gene variation.)

**N1**

#### **You chose not to take the test for the PON1 gene variation**

Frank decides to take the job applying pesticides because he doesn't believe that genes could really make him more likely to get sick from working with pesticides. After working for one year applying pesticides, Frank realizes that he is having trouble breathing and he seems to be losing some of his muscle coordination. He remembers learning that these symptoms can be caused by exposure to too much CP. Frank visits the doctor and is told that he can no longer work applying pesticides at Fancy Fruit Farms or his symptoms may get worse. As a result Frank quits his job, and decides he should have gotten that genetic test after all. (If he had taken the test, Frank would have tested **POSITIVE** for the PON1 gene variation.)

**N2**

#### **You chose not to take the test for the PON1 gene variation**

Frank doesn't know his PON1 status and decides he needs the additional money that comes with the job applying pesticides. After a few months of applying pesticides without always following the company's safety guidelines, Frank gets sick and is sent to the hospital. Frank ends up dying in the hospital several weeks later from respiratory failure due to acute CP exposure, leaving his family with large, unpaid medical bills. (If he had taken the test, Frank would have tested **POSITIVE** for the PON1 gene variation.)

**N3**

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#### **You chose not to take the test for the PON1 gene variation**

Frank doesn't know his PON1 status and decides that he needs the additional money that comes with the job applying pesticides. Besides, no one can make him take a test! He works hard for several weeks and doesn't get sick. However, because small children are more susceptible to the harmful effects of exposure to CP, one of Frank's daughters becomes very ill. Frank continues to work applying pesticides, and doesn't realize that it's the pesticide residue on his work clothes that is making his daughter sick. Each night he puts his wet clothes by the heater to dry. His daughter gets sicker and sicker. Eventually she is hospitalized and diagnosed with CP poisoning. (If he had taken the test, Frank would have tested **NEGATIVE** for the PON1 gene variation.)

**N4**

#### **You chose not to take the test for the PON1 gene variation**

Frank doesn't want to know his PON1 status since he knows he needs the additional money that comes with the pesticide applicator job. He goes through safety training, wears his gloves while applying pesticides, and works for several years without getting sick. When a new agricultural company moves to town, Frank leaves his job at Fancy Fruit Farms for a new and better job that pays him \$30.00 an hour. (If he had taken the test, Frank would have tested **NEGATIVE** for the PON1 gene variation.)

**N5**