

Veronica had been a criminal attorney for several years and had handled a number of murder cases. She thought this case was one of the strangest. Her client, Fredrick, had murdered a pizza deliveryman who had stopped to ask for directions. He bragged about it to his friends which led to an arrest and confession. When interviewing some of Fred's relatives for the penalty phase of the trial, Veronica came across some interesting information. Almost all of his immediate male relatives were in prison for violent crimes.

This reminded Veronica of an article she read in the paper a few months before. It was about a study done in Europe of a family with a condition called MAOA deficiency. The genetic defect for this condition is on the p11 area of the X chromosome, in the gene for the production of monoamine oxidase A (MAOA). MAOA is known to help metabolize serotonin, dopamine and noradrenaline, brain chemicals known to play a role in aggressive and potentially dangerous behavior. Those with the defective gene show a decrease in the enzyme's (MAOA) activity. A large number of males in the European family showed minor mental retardation and abnormal behavior that included impulsive aggression.

Serotonin, has long been implicated in animal studies as a mediator of social behavior. Scientists now believe that low serotonin levels can lead to all kinds of problems. Impulsive killers and other violent offenders have been shown by Dr. Markku Linnoila, the scientific director of the National Institute on Alcohol Abuse and Alcoholism, to have low serotonin levels. Veronica thought that she might have a chance to save Frederick from the death penalty if she argued he was predisposed to uncontrollable aggressive behavior. She filed a brief with the court asking that her client be tested for the condition.

1. Should the judge allow the testing? Why or why not?
2. If the judge asks for a hearing on the issue, what should Veronica do to support her case? Suggest three arguments that she might make.
3. Who should testify in such a hearing?
4. Suggest three possible arguments against the testing that the prosecution might make.
5. If Frederick has the condition, should his sentence be less? Why or why not?
6. Frederick's father and uncle are in prison for murder. His mother has had no violent episodes but his uncle's son has already (at age 10) been in trouble for fighting in school. Draw this pedigree, assuming that the condition exists in the family.
7. Under a new Supreme Court case, *Daubert v Merrill Dow*, the judge has the ultimate decision as to whether scientific evidence can be presented in court. How do you think this precedent will effect Veronica's case, especially if the judge doesn't really understand genetics?