



Independent Forensic Services

Law Office of Patrick Morgan Ford,
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per email: ljlegal@sbcglobal.net

Conifer, March 14, 2020

Dear Mr. Ford,

On behalf of your client Benjamin Bathen, date of birth November 30, 1977, I hereby send you some background information on CYP450 testing and my findings in the case of your client.

Qualifications and Experience

I have been trained as a social worker and I have worked in that capacity for 9 years. After I finished medical school in 1992, I practiced medicine as an intern in surgery, obstetrics, emergency medicine and internal medicine for 8 years.

I have been a forensic medical examiner since 1999, previously employed by the City of Amsterdam as a coroner and by the Netherlands Forensic Institute, the state forensic laboratory. In 2003, we started IFS. We have laboratory facilities that provide forensic DNA-testing, crime scene reconstruction, trace recovery, bloodstain pattern analysis and forensic medical examinations in, among others, cause and time of death, toxicology and injury interpretation.

In 2011, we moved to Colorado and opened a second laboratory. Our facilities have been accredited according to ISO-17025 by the Dutch Board of Accreditation (RvA) and the American Society of Crime Laboratory Directors (ASCLD).

In 2013, I started working on criminal cases that involved the use of medication and genetic variants for the DNA of enzymes that metabolize drugs and other substances from the body, called the cytochrome P450 system (CYP450).

I have been conducting investigations in more than 100 cases of violent behavior under the influence of psychoactive medication. I have testified in court as an expert in this area in Holland. In the US I have been accepted as an expert on CYP450 testing in a Shreck hearing.

I followed a course in Toxicogenomics and Systems Toxicology, I have published in peer reviewed journals, wrote a blog about pharmacogenomic testing and recently, I finished my Ph.D. at the University of Denver, focusing on CYP450.

I have been a court appointed witness in the Netherlands since 2004. I have provided opinions under the instructions of both the prosecution and the defense, and I see it as my duty to provide a comprehensive, scientific and impartial opinion for the court on matters that are within my expertise. The nature of that opinion is not influenced by the requirements of any individual party. I also inform the court of any matters that are outside my expertise, and I understand my obligation to revise my opinion if matters are disclosed that make this necessary.



Available Documents

Files from the Office of the District Attorney of San Diego, Appellant's Opening brief, Respondent's brief, Appellant's reply, all for the Court of Appeal, mental health evaluation done by prof. dr. D. Antonuccio, dated June 12, 2019, declaration by A. Abrams, psychiatrist, dated January 28, 2020.

CYP450 genetic testing was ordered by me and performed by OneOme laboratory in Minneapolis, August 2nd, 2019.

Opinion

In 2017, Mr. Bathen threatened his former psychologist by telephone on three different occasions. During that period, he was on prescription antidepressant medication, *e.g.*, 10mg of escitalopram, a selective serotonin reuptake inhibitor (SSRI).

This substance, like all psychoactive medication, has an effect on the brain function. Psychoactive medication can cause side effects. It leads to changes in the equilibrium of the brain chemistry, especially the neurotransmitters, which conduct the signals transference between brain cells (neurons).

Neurotransmitters play a major role in the higher brain functions, like the modulation of emotions, cognitive functions and behavior. Psychiatric drugs disturb the delicate equilibrium in the brain chemistry. Because of the chemical imbalance they cause, the coherence between the different parts of the brain can be disturbed, leading to an interruption in the communication between the frontal lobes and the rest of the brain. The frontal lobes guide the "higher functions" of the brain, and that is where judgment and memory are primarily located. When that coherence is disrupted, it can cause mental malfunctions, with impulses that any ordinary person is unlikely to be able to withstand.^[1-3] This goes to the heart of the question of whether these individuals possess free will or are able to form intent.

In the scientific literature, there is an abundance of articles and papers about a possible causal relation between psychoactive medication and abhorrent behavior, acts of violence, and suicide.^[2, 4-6] All psychoactive medication can cause these side effects, but antidepressants like SSRIs, are notorious.

Most medications that interact with brain chemistry are metabolized and expelled from the body by so-called CYP450 genes and enzymes. The individual genes produce the enzymes, and the enzymes metabolize the medication. As metabolism proceeds, the concentration of the medication in the blood is reduced. However, many people have genetic variants for their CYP450 DNA, which generate enzymes that have reduced metabolic capacity. This can lead to accumulation of the medication in the blood, to toxicity and to the dangerous side effects as mentioned previous.

There are many CYP450s, but there are six most important ones. These six CYP450 were tested, and your client has genetic variants for five of them. The medication your client was on when he called his former therapist, was escitalopram. This drug needs to be metabolized by CYP2C19, CYP2D6 and CYP3A4. In your client's case, all three CYP450s have reduced to severely reduced metabolic function. He would not have been able to metabolize escitalopram at the rate somebody who has a normal CYP450 DNA profile could expelled this medication from the body. The dose prescribed by physicians, is based on the metabolic capability of a normal metabolizer and not on an individual with a significantly reduced rate of metabolism like your client.



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It is my opinion as a medical professional that, at the time of the telephone calls, Mr. Bathen was suffering from severe neurotoxicity. The side effects of the substances in his blood prohibited him from being able to deliberate and prevented him from forming the requisite intent. With his impaired brain function he was not capable of making a sound judgment, and overseeing the consequences of his actions. Nor was he able to control his impulses, or to conform his behavior to the law. When the brain is inundated with chemicals and normal conductivity is disrupted, the subsequent behavior is not under a person's mental control, they are not willful decisions.

When behavior and violence can be classified as side effects of medication, within the scientific community that is considered strong evidence for a causal relation. The DNA variants for your client's CYP450 genes provide a biochemical explanation for the occurrence of medication-induced toxicity, with symptoms of akathisia. Consequently, the conclusion is justified that, had escitalopram not been prescribed to him, the behavior he exhibited most likely would not have occurred. Given that this medication was prescribed, and he was not warned for the side effects, this can be considered involuntary intoxication. This should provide him with a defense of temporary insanity.

It was already known in 1995 that psychoactive medication is metabolized by CYP450 enzymes and that DNA variants for CYP450 genes could lead to toxic levels with dangerous side effects.^[7-9] In 2004, Kircheimer in a large review study explained the need for predictive pharmacogenetic CYP450 testing.^[10] Grasmader (2004) recommended CYP450 genotyping to prevent side effects like the ones your client suffered from.^[11] Since that time, CYP450 testing has been widely accepted in the medical community^[12-15] Consensus guidelines for the use of pharmacogenetic testing have been published.^[16, 17]

Your client's CYP450 DNA profile should have been determined before he was prescribed escitalopram. Had the physician been aware of your client's CYP450 profile and his significantly reduced metabolic capacity, I am convinced he would not have dispensed that medication to him.

Kind regards,

Conifer March 14, 2020

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