# IN THE UNITED STATES COURT OF FEDERAL CLAIMS

## OFFICE OF SPECIAL MASTERS

| | | |
|---|---|---|
| * * * * * * * * * * * * * * * * * * * * * * * * * * | | |
| DAVID MYERS, | * | |
| | * | |
| Petitioner, | * | No. 99-631V |
| | * | Special Master Christian J. Moran |
| v. | * | |
| | * | Filed: September 11, 2008 |
| SECRETARY OF HEALTH | * | Reissued: Oct. 2, 2008 |
| AND HUMAN SERVICES, | * | |
| | * | entitlement, hepatitis B vaccine, |
| Respondent. | * | autoimmune hepatitis, credibility of |
| | * | Dr. Bellanti |
| * * * * * * * * * * * * * * * * * * * * * * * * * * | | |

*Ronald C. Homer and Sylvia Chin-Caplan*, Conway, Homer & Chin-Caplan, P.C., Boston, Massachusetts for petitioner;
*Althea Davis and Rebecca Trinrud*, Department of Justice, Washington, D.C. for respondent.

**PUBLISHED DECISION DENYING COMPENSATION**[*]

David Myers filed a petition seeking compensation under the National Vaccine Injury Compensation Program ("the Program"). 42 U.S.C. §§ 300aa-1 et seq. Mr. Myers claims that the hepatitis B vaccine, which he received in three doses in 1994, caused him to suffer autoimmune hepatitis.

The evidence demonstrates that Mr. Myers is not entitled to compensation. Mr. Myers does not suffer from autoimmune hepatitis. Instead, he suffers from non-alcoholic

[*] The decision as originally issued on September 11, 2008, informed the parties that they may propose redactions of certain material. See 42 U.S.C. § 300aa-12(d)(4)(B); Vaccine Rule 18(b). However, neither party did so in the time permitted by Vaccine Rule 18(b).

Consequently, this decision is being released for publication with only slight modifications. This reissued decision incorporates errata, dated September 17, 2008. This reissued decision also corrects various non-substantive typographical or grammatical errors.

steatohepatitis. Mr. Myers did not present any evidence that the hepatitis B vaccinations caused his non-alcoholic steatohepatitis. Thus, he is not entitled to compensation.

## I. Facts

### A. Chronology

Mr. Myers was born in 1961. As relevant to this case, Mr. Myers's medical history begins in 1992, before he received the hepatitis B vaccine.

In June 1992, Mr. Myers had blood drawn and tested. (The medical records do not explain if any particular problem prompted the blood test.) Although most of the tests produced normal results, two abnormal results affect Mr. Myers's claim for compensation. His alanine aminotransferase ("ALT") was elevated. This result could indicate a liver disease. Mr. Myers's albumin was also slightly above the normal range. Exhibit 9 at 32. Albumin is also a function of the liver.

In November 1992, Mr. Myers visited Dr. Richard Cunningham. He reported that he was having insomnia due to problems at his job as a law enforcement officer. Dr. Cunningham prescribed medicine to help with his sleep. Mr. Myers had follow up visits for his insomnia and tension headaches in December 1992, and February 1993. Exhibit 9 at 14-17.

Over the next year, there are no medical reports showing significant health problems. On February 3, 1994, Mr. Myers received his first dose of the hepatitis B vaccine. Exhibit 10. In an affidavit signed in 2000, Mr. Myers stated that he noticed "some arm swelling and local pain." Exhibit 11 ¶ 1.

On February 17, 1994, Mr. Myers saw Dr. Cunningham because of pruritis over his arms, legs, and right shoulder. Dr. Cunningham provided some medications. About one week later, Mr. Myers returned. His pruritis had cleared. However, he reported that his blood pressure was elevated. Dr. Cunningham prescribed dyazide for hypertension. Exhibit 9 at 11.

At this visit, Dr. Cunningham's notes indicate that Mr. Myers and he discussed the hepatitis B vaccine that Mr. Myers received. Dr. Cunningham stated that he did not believe that the vaccination was "contributing to [Mr. Myers's] present problem." Exhibit 9 at 11.

On March 7, 1994, Mr. Myers received the second dose of the hepatitis B vaccine. Exhibit 10. He experienced abdominal pain and felt sick. Exhibit 11 ¶ 2. His affidavit does not state when the pain and sickness began.

On March 18, 1994, Mr. Myers went to an Immediate Care Center. He reported that he was having right upper quadrant pain for about three weeks. (The onset of this pain is after the first dose, but before the second dose.) Blood was drawn and tested. The results again showed

elevated ALT, and elevated albumin. In addition, Mr. Myers had elevated alkaline phosphatase ("ALP"). Exhibit 1 at 87. An elevated ALP test is consistent with a problem in the liver.

On March 28, 1994, to follow up on the right upper quadrant pain, Mr. Myers saw Dr. Daniel Maico, who was practicing for an entity known as Digestive Disease Associates. Dr. Maico believed that his pain was related to his bowels. Dr. Maico requested additional blood work and more testing. These tests took place on April 11, 1994. Dr. Maico seemed to consider the problem to be caused by constipation and recommended Metamucil. Exhibit 5 at 2-5. Dr. Maico later stated that Mr. Myers's problems were not related to the hepatitis B vaccination. Id. at 7.

The blood that Dr. Maico requested was drawn on March 31, 1994. The AST and the ALT again were outside of the normal limits. The albumin, however, was within the normal range. Exhibit 1 at 86.

On April 4, 1994, Mr. Myers saw Dr. Steven Jones for the first time. (Mr. Myers had stopped seeing Dr. Cunningham because Dr. Cunningham retired.) Dr. Jones noted Mr. Myers's history of elevated ALP and AST as well as Mr. Myers's recent vaccination with the hepatitis B vaccine. Dr. Jones changed Mr. Myers's hypertension medication from dyazide to lotensin because dyazide can impair liver function. Exhibit 9 at 10.

On April 26, 1994, Mr. Myers returned to see Dr. Jones for his hypertension and elevated transaminases. Blood work from this visit showed that the ALP was within normal limits. The AST and albumin were barely outside the normal ranges. Exhibit 9 at 8, 24.

About one month later, Mr. Myers saw Dr. Jones again. Dr. Jones attributed Mr. Myers's mild hepatitis to the dyazide. Mr. Myers was also experiencing shortness of breath and difficulty breathing. Dr. Jones believed that this problem was due to the lotensin, which Mr. Myers was taking for hypertension. Dr. Jones, therefore, discontinued the lotensin and started cardura. Blood work from this date differed slightly from his April blood work. The AST, which had been slightly elevated, was now within the normal range. The ALT was elevated. The albumin, which was slightly elevated previously, remained so. The ALP was normal. Dr. Jones directed that Mr. Myers return for a check-up in six weeks. Exhibit 9 at 7, 23.

The exam from June 15, 1994, did not reveal any dramatic changes. The AST and ALP, again, were within normal limits. The ALT and albumin were slightly outside of the normal range. Exhibit 9 at 6, 32.

The third dose of the hepatitis B vaccine was given to Mr. Myers on August 15, 1994. Exhibit 10.

On August 27, 1994, Mr. Myers was seen in an emergency room because of generalized fever, headache, and chills for one day. The doctor diagnosed acute viremia. Exhibit 1 at 13-14.

This emergency room visit prompted Mr. Myers to see Dr. Jones again. Dr. Jones diagnosed probable diverticulitis. He ordered tests and prescribed cipro and flagyl. Exhibit 9 at 5.

The blood work from this visit was dramatically different in some respects. The AST, ALT and ALP were much higher than reported previously. While some earlier tests showed mildly elevated values, the results for blood drawn on August 31, 1994, were considerably outside the normal range. The albumin, however, was at the low end of normal. Exhibit 9 at 21.

The diverticulitis improved over the next few weeks. However, his transaminases remained elevated. Consequently, Dr. Jones referred Mr. Myers to Dr. Kniffen for a gastrointestinal consultation. Exhibit 9 at 3-4; exhibit 1 at 78.

Mr. Myers saw Dr. Jared Kniffen on September 23, 1994, because of his abnormal liver function tests. Dr. Kniffen created a chart presenting the different values for the different liver functions tests across time. This chart also notes when Mr. Myers received different doses of the hepatitis B vaccine. Dr. Kniffen ordered additional tests. Exhibit 7 at 1-3. One of these tests, a CT scan of Mr. Myers's abdomen, showed no problems with his liver, spleen, pancreas, or kidneys. Exhibit 1 at 92.

On October 10, 1994, Mr. Myers talked to Dr. Kniffen and questioned whether the hepatitis B vaccinations could have caused the elevation in his liver function tests. Apparently, Dr. Kniffen acquired some literature that indicated that ALT levels of more than 200 have followed the hepatitis B vaccination. Exhibit 7 at 5. The source of Dr. Kniffen's information is not clear — the context suggests that it came either from Mr. Myers or from the manufacturer of the hepatitis B vaccine. Furthermore, a copy of this literature does not appear in the material submitted as the records of Dr. Kniffen. However, the literature filed at page 10 of Exhibit 1 may be part of this literature, although not directly identified as so.

On November 8, 1994, Mr. Myers returned to Dr. Kniffen. Dr. Kniffen reported that Mr. Myers's most recent liver function tests were normal. Exhibit 7 at 6.

Mr. Myers's liver function tests did not remain normal. In 1995, his SGPT (aka ALT) was moderately elevated. Exhibit 1 at 66-69. Mr. Myers was also visiting a different doctor and was complaining about abdominal pain, chest pain and hypertension. Exhibit 1 at 43-57. Mr. Myers was referred to Dr. Rolland Dickson, an assistant professor of the University of Florida Shands Clinic. Dr. Dickson recommended a liver biopsy. Exhibit 3 at 24-25.

The liver biopsy was performed on November 3, 1995. The pathologist stated that the results showed a "[l]iver with scattered macrovesicular steatosis and minimal lobular hepatitis suggestive but not diagnostic of Hepatitis C." Exhibit 3 at 48. When Dr. Dickson reviewed these results, he ruled out hepatitis C because Mr. Myers had been tested for that disease. Dr. Dickson believed that "this is most likely steatohepatitis, . . . I will check autoimmune markers to

make sure he has not developed a precipitated autoimmune hepatitis, although this would be less likely." Exhibit 3 at 20.

Over the next few years, Mr. Myers's continued to complain about abdominal pain, particularly in his right upper quadrant. In addition, the results of his liver function tests varied. Sometimes, the results were within the normal range. Other times, the results were outside of the normal range.

Due to continuing problems, Mr. Myers had another liver biopsy in May 2000. The pathologist stated that the tissue "represents mild chronic steatohepatitis which may have been caused by alcohol drinking, obesity or certain medications." Exhibit 20 at 12; see also Exhibit 18 at 40.

More recent records show that Mr. Myers's liver levels fluctuate both inside and outside of the normal range. Exhibit 21 at 5.

### B. Description of Autoimmune Hepatitis

As discussed below, to establish that he is entitled to compensation, Mr. Myers relies upon the opinion of Dr. Bellanti, an immunologist. Dr. Bellanti's opinion is predicated on a diagnosis that Mr. Myers suffers from autoimmune hepatitis. Exhibit 23. As noted, Dr. Bellanti's diagnosis is controverted. Consequently, this disease needs to be explained.

Autoimmune hepatitis "is a chronic inflammatory disease of the liver, characterized by a loss of tolerance against hepatocytes [one type of liver cell] leading to the destruction of hepatic parenchyma [part of the liver]." Exhibit A, tab 2 (Michael P. Manns and Arndt Vogel, Autoimmune Hepatitis, From Mechanisms to Therapy, 43 Hepatology No. 2, Suppl. 1 S132, S132 (2006)).[1] Autoimmune hepatitis is part of a spectrum of diseases affecting the liver, bile ducts, and gall bladder. Exhibit A, tab 1(Edward L. Krawitt, Autoimmune Hepatitis, 354 N Engl. J Med. 354, 360 (2006)). If untreated, autoimmune hepatitis, like other forms of hepatitis, can progress to cirrhosis (destruction of the liver) and carcinoma (a malignant tumor). Id. at 357.

The "diagnosis of autoimmune hepatitis is based on characteristic clinical and biochemical findings, circulating autoantibodies, and abnormal levels of serum globulins." Id. at 358. The disease is sometimes asymtompatic, in which case it is detected by routine blood tests. The symptoms associated with autoimmune hepatitis include "fatigue, fluctuating jaundice, right upper quadrant pain, and arthralgia." Exhibit A, tab 2 (Manns and Vogel, Autoimmune Hepatitis) at S132; accord exhibit A, tab 1 (Krawitt, Autoimmune Hepatitis) at 56. The biochemical findings include extremely high levels of aminotransferase. Autoimmune hepatitis

[1] The pinpoint cites are to the page of the article as originally published, rather than to the page number assigned by the submitting party.

is also associated with antinuclear antibodies and smooth-muscle antibodies. Exhibit A, tab 1 (Krawitt, Autoimmune Hepatitis) at 56.

The exact pathogenesis of autoimmune hepatitis is not understood. A theory is that "an environmental agent . . . triggers a cascade of T-cell-mediated events directed at liver antigens in a host genetically predisposed to this disease, leading to a progressive necroinflammatory and fibrotic process in the liver." Exhibit A, tab 1 (Krawitt, Autoimmune Hepatitis) at 54. In most cases, the exact infectious agent is not identified. Exhibit A, tab 2 (Manns and Vogel, Autoimmune Hepatitis) at S137. The usual treatment is designed to suppress the immune system. This treatment is usually successful to at least some degree. Exhibit A, tab 2 (Manns and Vogel, Autoimmune Hepatitis) at S139; exhibit A, tab 1 (Krawitt, Autoimmune Hepatitis) at 61.

Several different antigens have been proposed as the triggering agent. These include viruses and certain drugs, including minocycline. Exhibit A, tab 2 (Manns and Vogel, Autoimmune Hepatitis) at S137; exhibit A, tab 1 (Krawitt, Autoimmune Hepatitis) at 54.

### C. Description of Nonalcoholic Steatohepatitis

Because Dr. Koff believes that Mr. Myers suffers from nonalcoholic steatohepatitis, an explanation of that condition is warranted. The following discussion is based upon the five medical articles submitted by Respondent and the testimony of Dr. Koff.

Nonalcoholic steatohepatitis is a severe form of nonalcoholic fatty liver disease. Tr. 532-33. Due to the changes in the liver, such as lesions, nonalcoholic steatohepatitis carries serious clinical sequella. Exhibit D, tab 3 (Yngve Falck-Ytter et al., Clinical Features and Natural History of Nonalcoholic Steatosis Syndromes, 21 Seminars in Liver Disease 17, 18 (2001)) at 18.

The best way to diagnose nonalcoholic steatohepatitis is to obtain a liver biopsy. Exhibit D, tab 2 (Jeanne Clark, The Epidemiology of Nonalcoholic Fatty Liver Disease in Adults, 40 J. Clin. Gastroenterology (Supp. 1) S5 (2006)) at 1; tr. 534. Most patients do not display any particular symptoms. However, the patients that do have symptoms typically have right upper quadrant pain, abdominal discomfort, fatigue or malaise. Exhibit D, tab 3 (Falck-Ytter, Clinical Features) at 19-20. Obesity increases the risk of being affected by nonalcoholic steatohepatitis. Id. at 23.

"The most common abnormality in liver function tests is a two- to five-fold elevation in alanine aminotransferase (ALT) and aspartate aminotransferase (AST)." Id. at 20. Albumin levels are typically normal. Id. Whether an elevation of triglycerides (fatty molecules) is associated with the disease is uncertain. Exhibit D, tab 3 (Falck-Ytter, Clinical Features) at 19; exhibit D, tab 2 (Clark, Epidemiology) at S7.

Nonalcoholic steatohepatitis is a common disease. It occurs in approximately 2-14 percent of the population in the United States. Exhibit D, tab 3 (Falck-Ytter, Clinical Features) at 19 (estimating 2-3 percent); Exhibit D, tab 2 (Clark, Epidemiology) at S9 (estimating 6-14 percent) ; tr. 532. The disease occurs more commonly in males. As mentioned, it is also associated with obesity. Exhibit D, tab 2 (Clark, Epidemiology) at S7.

## II. Procedural History

Mr. Myers filed a petition on August 4, 1999. He did not file any medical records at that time. Instead, medical records were filed for the first time on May 1, 2000. Respondent filed his report, pursuant to Vaccine Rule 4, on June 23, 2000, and denied that Mr. Myers was entitled to compensation. Mr. Myers periodically filed additional medical records, including a set of eight exhibits on December 27, 2004.

This case was assigned to the undersigned special master in 2006. This case generally moved at the same time as other cases in which petitioners alleged that the hepatitis B vaccine caused them to suffer from autoimmune hepatitis. Initially, this group included four other cases in which the same attorney represented all petitioners. Later, this group expanded to include two more cases in which petitioners were represented by two different attorneys.

On June 13, 2006, Mr. Myers filed the expert report and curriculum vitae of Dr. Joseph Bellanti, an immunologist. Dr. Bellanti offered the opinion that Mr. Myers suffers from autoimmune hepatitis and that the hepatitis B vaccine caused this condition. Exhibit 23. Respondent, in turn, filed expert reports from Dr. Burton Zweiman, an immunologist, and Dr. Raymond Koff, a specialist in hepatology, on November 13, 2006. Both Mr. Myers and respondent filed medical literature cited by the experts.

On April 3, 2007, a hearing was scheduled to take place on September 17-19, 2007. Several factors contributed to the length of time between the scheduling of the hearing and the holding of the hearing. First, petitioners preferred that this group of cases be tried at one time. A single trial is more efficient in terms of saving the time of the attorneys, the doctors, and the Court. Second, two cases of the seven cases required small amounts of additional time to attain the same procedural posture as the other cases. Third, the personal and professional commitments of the many attorneys involved, of three doctors and of the Court prevented an earlier date for holding the hearing.

The interval between the scheduling of the hearing and the commencement of the hearing supported extending to Mr. Myers the opportunity to retain an additional expert. Mr. Myers did not request this opportunity. However, the undersigned recognized that respondent, and not Mr. Myers, presented a doctor (Dr. Koff), who specializes in treating people with liver diseases. Thus, Mr. Myers was given an opportunity, despite respondent's objection, to obtain the report from a person who could comment knowledgeably about the disease affecting Mr. Myers such as

a gastroenterologist or a hepatologist. The April 3, 2007 order set a deadline for the report as August 1, 2007.

Mr. Myers did not file another expert report. The omission of an expert on gastroenterology or hepatology affects the outcome of this litigation. For the reasons explained below, Dr. Koff's opinion that Mr. Myers's steatohepatitis began long before he received the hepatitis B vaccine was much more persuasive than Dr. Bellanti's opinion that the hepatitis B vaccine caused Mr. Myers to suffer from autoimmune hepatitis.

The hearing took place in two sessions. In the first session, which was held across three days in September 2007, the petitioners presented most of their evidence that the hepatitis B vaccine "can cause" autoimmune hepatitis in general. Respondent disputed this point and presented evidence in response. Tr. 6 through 203. The first session also included testimony about some individuals specifically. For example, Mr. Myers's case was discussed during the second day. Tr. 480-584.

The second session was held in two days in March 2008.[2] During this session, the parties presented their remaining evidence regarding whether the hepatitis B vaccination can cause autoimmune hepatitis. The second session also completed the discussion of individual cases.

Following the filing of the transcript, a status conference was held on July 7, 2008. The parties confirmed that they did not want to file briefs after the hearing. Thus, this case is ready for adjudication.

## III. Analysis

In this case, the evidence includes conflicting opinions from each side's experts. The persuasiveness of the experts must be evaluated, and the testimony of one side's expert may be rejected when a reasonable basis supports such a rejection. Burns v. Sec'y of Health & Human Servs., 3 F.3d 415, 417 (Fed. Cir. 1993). A decision about the persuasiveness of an expert is virtually not reviewable on appeal. Bradley v. Sec'y of Health & Human Servs., 991 F.2d 1570, 1575 (Fed. Cir. 1993); Sword v. Sec'y of Health & Human Servs., 44 Fed. Cl. 183, 188 (1999) (noting that special masters acquire "specialized knowledge and expertise" to resolve disputes between experts).

This case largely turns on a determination of which disease affects Mr. Myers. Dr. Bellanti, an immunologist retained by Mr. Myers, wrote that Mr. Myers has autoimmune hepatitis. Exhibit 23 at 7 (expert report). In his testimony, Dr. Bellanti recognized that Mr. Myers's condition did not meet the classic definition of autoimmune hepatitis. Tr. 488, 490. Dr. Koff holds a different opinion. Dr. Koff, a hepatologist retained by respondent, believes that Mr.

[2] The length of time between the two sessions was longer than originally anticipated due to unexpected health troubles in a family member of an expert.

Myers suffers from a different condition known as steatohepatitis. Dr. Koff's opinion is much, much more persuasive.

Mr. Myers has not presented any evidence explaining how the hepatitis B vaccination caused his steatohepatitis. Thus, Mr. Myers fails to meet his burden of proving the elements listed in Althen v. Sec'y of Health and Human Servs., 418 F.3d 1274, 1278 (Fed. Cir. 2005). Although the finding that Mr. Myers suffers from steatohepatitis and not autoimmune hepatitis essentially resolves this case, the weaknesses with Dr. Bellanti's medical theories with regard to autoimmune hepatitis are discussed in further detail below.

### A. Mr. Myers Suffers From Non-Alcoholic Steatohepatitis And He Failed To Establish That The Hepatitis B Vaccine Caused This Disease

A preponderance of the evidence establishes that Mr. Myers suffers from non-alcoholic steatohepatitis (NASH). Because not even Dr. Bellanti, the expert retained by Mr. Myers, offered an opinion that the hepatitis B vaccine is causally connected to non-alcoholic steatohepatitis, the finding that Mr. Myers has non-alcoholic steatohepatitis determines the outcome in this case.

#### 1. A Preponderance of Evidence Establishes that Mr. Myers Suffer From Non-Alcoholic Steatohepatitis

The primary evidence that Mr. Myers suffers from non-alcoholic steatohepatitis is the opinion of Dr. Koff, which is supported by peer-reviewed literature. Dr. Koff has treated liver diseases for more than 30 years. Tr. 418. He has published 150 articles, written chapters in 85 books, and written or edited five other books. Exhibit E (curriculum vitae). His writings have focused on heptalogy and diseases of the liver. Tr. 419; see also exhibit E. Dr. Koff has also served as the editor of medical journals in gastroenterology. Exhibit E at 3-4. His background, including his education and experience, makes him extremely well-qualified to distinguish between non-alcoholic steatohepatitis and autoimmune hepatitis.

Dr. Koff believes that Mr. Myers suffers from NASH. Exhibit D at 1-2; tr. 531-32. As indicated above, the method for diagnosing NASH is to obtain a biopsy of the liver. Exhibit D, tab 2 (Clark, Epidemiology) at 1; tr. 534.

Two biopsies were performed on Mr. Myers. The first biopsy was performed on November 3, 1995. The report from the biopsy concludes that the tissue shows a "[l]iver with scattered microvesicular steatosis, minimal lobular hepatitis suggestive, but not diagnostic of hepatitis C." Exhibit 3 at 47-48. Mr. Myers's treating doctor, Dr. Dickson, excluded hepatitis C because Mr. Myers was tested for that disease previously. Instead, Dr. Dickson believed that "this is most likely steatohepatitis." Exhibit 3 at 20. Dr. Koff opined that this biopsy indicates steatohepatitis. Tr. 536-38, 553-55.

Mr. Myers had a second liver biopsy in May 2000. The pathologist stated that the tissue "represents mild chronic steatohepatitis which may have been caused by alcohol drinking, obesity or certain medications." Exhibit 20 at 12; see also exhibit 18 at 40.[3] This report confirms that the appropriate diagnosis is steatohepatitis.

Despite the reports of the pathologists, Dr. Bellanti presents the contrary opinion that Mr. Myers has autoimmune hepatitis. Dr. Bellanti's opinion has so little support that it raises questions about the good faith of Dr. Bellanti.

Before exploring the reasons Dr. Bellanti offers in support of his opinion that Mr. Myers suffers from autoimmune hepatitis, Dr. Bellanti's background should be explained as a preliminary matter. Dr. Bellanti is an immunologist, someone who studies the way the body protects itself against foreign substances. Tr. 6-7, 12. Although Dr. Bellanti has published articles, chapters and books, his field of study has been immunology. (One article, which was published in 1962, happened to consider hepatitis.) Exhibit 24. Dr. Bellanti, forthrightly, recognized that distinguishing autoimmune hepatitis from steatohepatitis is not his "particular area of expertise." Tr. 489; accord tr. 499. Dr. Bellanti's background makes any challenge to Dr. Koff in matters relating to liver disease circumspect. (The difference in backgrounds also explains why Mr. Myers was invited to obtain a report from a gastroenterologist or a hepatologist. See order, filed April 3, 2007.)

Despite limited qualifications, Dr. Bellanti offered an opinion that Mr. Myers suffered from autoimmune hepatitis. Exhibit 23 (report of Dr. Bellanti) at 7 (stating based upon a review of Mr. Myer's medical records, Dr. Bellanti has the opinion that "his autoimmune hepatitis was likely due to his hepatitis B immunizations."). When Dr. Bellanti testified, his opinion changed. He acknowledged that Mr. Myers's case "is not a classic finding of autoimmune hepatitis. This is a steatosis, with features suggestive of an immunologic component." Tr. 488, 490; accord tr. 497-98.

Although Dr. Bellanti changed his idea of the disease that afflicted Mr. Myers, Dr. Bellanti did not revise his expert report. Probably because he did not revise his expert report, Dr. Bellanti did not offer an even marginally developed theory that the hepatitis B vaccine caused the steatohepatitis. Nevertheless, the section below will analyze the scant evidence offered by Dr. Bellanti that the hepatitis B vaccine caused Mr. Myers's steatohepatitis.

### 2. With Regard to Steatohepatitis, Mr. Myers Did Not Establish The Factors Required by *Althen*

To prove causation in fact, a petitioner must establish at least three elements. The petitioner's

[3] Information in the record indicates that Mr. Myers did not abuse alcohol.

> burden is to show by preponderant evidence that the vaccination brought about [the] injury by providing: (1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the vaccination was the reason for the injury; and (3) a showing of a proximate temporal relationship between vaccination and injury.

Althen v. Sec'y of Health and Human Servs., 418 F.3d 1274, 1278 (Fed. Cir. 2005). Proof of medical certainty is not required; a preponderance of the evidence suffices. Bunting v. Sec'y of Health and Human Servs., 931 F.2d 867, 873 (Fed. Cir. 1991).

**a. A Medical Theory Causally Connecting the Vaccination and the Injury**

The first part of Althen is a theory connecting the vaccination and the injury. Dr. Bellanti's opinion on this element is almost entirely absent because his opinion – as expressed in his report – was that "the injury" from which Mr. Myers suffers is autoimmune hepatitis. After Dr. Bellanti revised his opinion while testifying, Mr. Myers did not solicit any testimony from Dr. Bellanti that constitutes a medical theory connecting the hepatitis B vaccination to "the injury."

Differentiating between steatohepatitis and autoimmune hepatitis is important because the pathogenesis is different. With regard to autoimmune hepatitis, one reason Dr. Bellanti believes that the hepatitis B vaccine can cause autoimmune hepatitis is that autoimmune hepatitis is an autoimmune disease. Exhibit 23 at 3. Dr. Bellanti believes that vaccinations can cause autoimmune diseases. Exhibit 23 at 4. From these two points, Dr. Bellanti reasons that vaccines, specifically including the hepatitis B vaccine, can cause autoimmune hepatitis. Id.

Even if a preponderance of the evidence established that Dr. Bellanti's opinion that the hepatitis B vaccine can cause autoimmune hepatitis were accurate, this opinion provides no information about Mr. Myers's steatohepatitis. Unlike autoimmune hepatitis, steatohepatitis is not an autoimmune problem. Tr. 535. Rather, steatohepatitis is a metabolic disease, meaning that people have problems metabolizing carbohydrates and lipids. Tr. 532, 579. Dr. Bellanti could not state that steatohepatitis is an immune disorder. Tr. 499.

Consequently, Mr. Myers has not met his burden of establishing a medical theory connecting the hepatitis B vaccine to steatohepatitis. Dr. Bellanti has offered no theory to explain how a vaccination can cause a metabolic disease.

### b. A Logical Sequence of Cause and Effect Showing That the Vaccination Was the Reason for the Injury

Even without a medical theory connecting the hepatitis B vaccines to steatohepatitis, Dr. Bellanti offered two reasons for why he thought the hepatitis B vaccine caused Mr. Myers's problems. First, Dr. Bellanti pointed to the infiltration of lymphocytic cells detected in the biopsy. Second, Dr. Bellanti maintained that the temporal sequence of events showed that the hepatitis B vaccine caused Mr. Myers's liver problem. Tr. 494, 501. Both reasons are significantly flawed. The question of timing will be analyzed as part of the third Althen prong below.

With regard to the lymphocytes, Dr. Bellanti stated that this type of cell is usually seen in a chronic inflammatory case. Tr. 495. However, Dr. Bellanti did not know whether lymphocytes are commonly seen in cases of steatohepatitis and was willing to defer to a more knowledgeable person on this topic. Tr. 500. Dr. Koff is such an expert. According to Dr. Koff, chronic inflammatory cells are typically found in most chronic liver diseases and do not indicate an autoimmune process. Tr. 538. Thus, Dr. Bellanti's first reason is found deficient.

### c. A Showing of a Proximate Temporal Relationship Between Vaccination and Injury

The third Althen prong concerns the timing between the vaccination and the injury. Mr. Myers has failed to meet his burden of persuasion on this factor as well.

Dr. Bellanti was incorrect when he asserted that the hepatitis B vaccinations preceded Mr. Myers's elevated liver enzymes and clinical problems. Dr. Koff's report, which was filed before trial, identified the first abnormal result on the series of liver function tests as occurring on June 3, 1992. Exhibit D at 2, citing exhibit 9 at 30. This test was performed more than 20 months before Mr. Myers received the first dose of the hepatitis B vaccine.

Dr. Bellanti dismissed this result. In doing so, Dr. Bellanti again stepped beyond his field of expertise. Dr. Bellanti stated that characterizing a test result of 48 (when the normal range is zero to 40) as elevated would be "reaching for straws." Thus, Dr. Bellanti stated that this test result was not significant. Tr. 516. In contrast, Dr. Koff explained that a hepatologist would not ignore an ALT of 48. A hepatologist would respond to this result. Tr. 544.

Setting aside the 1992 laboratory test that indicated that Mr. Myers's liver was not functioning normally, Dr. Bellanti maintains that the temporal sequence shows that the hepatitis B vaccine caused an adverse reaction.[4] Dr. Bellanti asserts that Mr. Myers had an adverse reaction to the first dose of the hepatitis B vaccine and that the second dose caused a worse

[4] Mr. Myers did not offer a theory that the hepatitis B vaccine significantly aggravated a pre-existing disease.

reaction. Tr. 491. Again, Dr. Bellanti's assertions do not withstand scrutiny on cross-examination.

During cross-examination, Dr. Bellanti acknowledged that the alleged reaction to the first dose of the vaccination was pruritus on his arms, legs, and right shoulder. Dr. Bellanti stated that he could not attribute the pruritus to the hepatitis B vaccine or to liver disease. In Dr. Bellanti's word, the symptoms after the first dose of the vaccine are "questionable." Tr. 503.

For the second dose of the vaccination, Dr. Bellanti said that "11 days after the second immunization, [Mr. Myers] had an exacerbation of right-upper quadrant pain." Tr. 491. However, Dr. Bellanti's assertion is based upon an inaccurate reading of the relevant medical record, which is found at exhibit 8 at 2. This document shows that on March 18, 1994, Mr. Myers complained about a three week history of pain in his upper right quadrant. Exhibit 8 at 2. Mr. Myers received the second dose of the hepatitis B vaccine on March 7, 1994. Exhibit 10. Because the onset of Mr. Myers's right upper quadrant pain preceded his receipt of the second dose, the vaccine could not have caused the pain. Dr. Bellanti acknowledged this point on cross-examination. Tr. 506. No evidence supports an assertion that the pain became worse after the second dose. Id. Thus, Dr. Bellanti may not reasonably assert that there is a temporal relationship between the second dose of the hepatitis B vaccine and Mr. Myers's problems.

Regarding the third dose of the vaccine, Dr. Bellanti again was forced to soften his position. Mr. Myers received the third dose on August 15, 1994. Exhibit 10. On August 27, 1994, Mr. Myers went to an emergency room and reported having fever, chills, aches, and headaches. Mr. Myers also reported that members of his family were experiencing similar problems. The doctor diagnosed Mr. Myers as having a viral infection. Exhibit 1 at 13-14. Despite the treating physician's diagnosis, Dr. Bellanti associated these problems as an adverse reaction to the hepatitis B vaccine. Tr. 490-91.

On cross-examination, Dr. Bellanti testified that whether a virus caused Mr. Myers's fevers, chills, aches and headaches or whether they were caused by the hepatitis B vaccine was only "about 50/50." Tr. 511. Dr. Bellanti's demeanor during this portion of his testimony strongly suggested that Dr. Bellanti truly thought that the virus affecting Mr. Myers's family caused Mr. Myers's own fever.

In creating a sequence of events, Dr. Bellanti did not state events accurately. He overlooked the elevation in Mr. Myers's ALT score on June 2, 1992. In Dr. Bellanti's own words, any relationship of pruritus to the first dose of the vaccine was "questionable." Dr. Bellanti flatly erred in saying that there was a reaction to the second dose. Finally, the possibility that there was a reaction to the third dose was, according to Dr. Bellanti, only "50/50." Consequently, Mr. Myers has not established the third prong of Althen. Therefore, he is not entitled to compensation for steatohepatitis.

### B. Alternatively, Mr. Myers Did Not Establish That The Hepatitis B Vaccinations Caused Him To Suffer From Autoimmune Hepatitis

For the reasons explained in the section A, above, Mr. Myers suffers from steatohepatitis. For sake of completeness, the following discussion explains why Mr. Myers has not met his burden of establishing that the hepatitis B vaccine caused autoimmune hepatitis. This section assumes that Mr. Myers has autoimmune hepatitis.

To receive compensation for autoimmune hepatitis, the elements of Mr. Myers case remain the same. His

> burden is to show by preponderant evidence that the vaccination brought about [the] injury by providing: (1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the vaccination was the reason for the injury; and (3) a showing of a proximate temporal relationship between vaccination and injury.

Althen, 418 F.3d at 1278. Mr. Myers has not established, by a preponderance of the evidence, any of these elements.

#### 1. Medical Theory

Dr. Bellanti presented four theories possibly explaining how autoimmune diseases arise. They are: (a) molecular mimicry, (b) bystander theory, (c) polyclonal activation, and (d) a dysregulation in the function of T-cells. Tr. 24.[5] For the reasons set forth in the following sections, none of these theories presents a reliable explanation of how the hepatitis B vaccine can cause autoimmune hepatitis.

The theory connecting the vaccine to the injury "must be supported by a sound and reliable medical or scientific explanation." Knudsen v. Sec'y of Health & Human Servs., 35 F.3d 543, 548 (Fed. Cir. 1994). To determine whether an expert's theory is reliable a special master may use the factors set forth in Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 594 (1993). Terran v. Sec'y of Health & Human Servs., 195 F.3d 1302, 1316 (Fed. Cir. 1999) (affirming special master's use of Daubert in vaccine program cases). After Terran, decisions from judges of the Court of Federal Claims have consistently cited to Daubert. E.g. De Bazan v. Sec'y of Dept. of Health & Human Servs., 70 Fed. Cl. 687, 699 n.12 (2000) ( "A special master assuredly should apply the factors enumerated in Daubert in addressing the reliability of an expert witness's testimony regarding causation."), rev'd on other grounds, No. 2008-5013, – F.3d

[5] Petitioner's counsel suggested that "loss of tolerance" also constitutes a medical theory. Tr. 26. However, loss of tolerance is not a theory explaining the origins of autoimmune diseases. Loss of tolerance describes the autoimmune disease itself.

–, 2008 WL 3927499 (Fed. Cir. Aug. 28, 2008); Campbell v. Sec'y of Dept. of Health & Human Servs., 69 Fed. Cl. 775, 781 (2006); Piscopo v. Sec'y of Health & Human Servs., 66 Fed. Cl. 49, 54 (2005).

Daubert lists several non-exhaustive factors that may be considered in assessing the reliability of an expert's opinion. Kumho Tire Co., Ltd. v. Carmichael, 526 U.S. 137, 149 (1999). These factors include whether the expert's opinion is well accepted in the relevant community. Daubert, 509 U.S. at 594; see also McDowell v. Brown, 392 F.3d 1283, 1299 (11th Cir. 2004) (affirming district court's exclusion of expert whose theory lacked "testing, peer review, a potential error rate, and general acceptance."); Sullivan v. United States Dep't of Navy, 365 F.3d 827, 834 (9th Cir. 2004) (reversing exclusion of expert whose theory was generally accepted).

A closely related factor is how peer-reviewed articles have evaluated a theory. This point may also be considered in weighing the value of a medical opinion. Id.; see also Merck & Co., Inc. v. Teva Pharmaceuticals USA, Inc., 395 F.3d 1364, 1374 (Fed. Cir. 2005); Libas v. United States, 193 F.3d 1361, 1366-67 (Fed. Cir. 1999); Knight v. Kirby Inland Marine Inc., 482 F.3d 347, 354 (5th Cir. 2007) (stating a lack of textual support may "go to the weight, not the admissibility" of the expert's testimony); Waleryszak v. Sec'y of Health & Human Servs., 45 Fed. Cl. 573, 578-79 (1999), appeal dismissed, 250 F.3d 753 (Fed. Cir. 2000). These factors are useful in evaluating each of the four theories proposed by Dr. Bellanti.

### a. Molecular Mimicry

Dr. Bellanti's first theory to explain how the hepatitis B vaccine can cause autoimmune hepatitis is molecular mimicry. Dr. Bellanti stated that among the different theories, he favored molecular mimicry and the fourth-listed theory, a deficiency in T-regulatory cells, as the theories most likely to be valid. Tr. 90, 201. Mr. Myers and Dr. Bellanti have not established, by a preponderance of the evidence, that molecular mimicry is a reliable theory to explain a causal relationship between the hepatitis B vaccine and autoimmune hepatitis.[6]

Molecular mimicry is based upon a premise that some parts of the human body share a sequence of proteins with the foreign substance, here the hepatitis B vaccine. Tr. 23, 130-31; exhibit 23 at 4. This sharing of protein sequences is known as homology. Tr. 171-72.

For the hepatitis B vaccine to cause autoimmune hepatitis via molecular mimicry, cells within the liver must share homology with the hepatitis B vaccine. Tr. 172. The hepatitis B vaccine is a genetically engineered recombinant vaccine consisting of a single protein, the surface antigen. Tr. 84-85, 116. Therefore, comparing the protein sequences in the hepatitis B vaccine

[6] This decision does not comment upon whether molecular mimicry is a reliable theory connecting other vaccines and other diseases.

to liver proteins would be easier than comparing liver proteins to a more complex vaccine, such as one containing an attenuated virus. See tr. 392-93.

However, despite the possibility that there could be homology between the hepatitis B vaccine and liver proteins, no homology has been found. Tr. 86-87 (Dr. Bellanti), 131, 173 (Dr. Zweiman); 616-17 (Dr. Bellanti). Without establishing this basic postulate, the reliability of molecular mimicry in this case is questionable.

Furthermore, an article presented by respondent's expert, Dr. Zweiman, caused Dr. Bellanti "to seek another explanation." Tr. 203. In the article, a set of researchers vaccinated people who already had chronic autoimmune hepatitis with the hepatitis B vaccine. If the hepatitis B vaccine could cause autoimmune hepatitis, the expected result is an aggravation or exacerbation of the underlying condition. However, the people's condition did not worsen. Tr. 129-30, 184-85; exhibit 1004 (J. Beran, Safety and Immunogenicity of a Combined Vaccine Against Hepatitis A and B in Patients with Autoimmune Hepatitis, 13 Cent Eur J Pub Health, 20-3 (2005)). This lack of an adverse consequence undermines the reliability of molecular mimicry as a theory.

Dr. Bellanti agreed. He stated the Beran article "doesn't support molecular mimicry . . . so we have to seek another explanation." Tr. 203; accord tr. 970. Dr. Bellanti's retreat from a theory that he proposed is a poor mark on his credibility as an expert.[7]

**b. Bystander Activation**

Dr. Bellanti's second theory to explain how the hepatitis B vaccine can cause autoimmune hepatitis is bystander activation, although this theory is not one he prefers. Tr. 24, 90, 201. Dr. Bellanti's explanation of this theory was confusing. He stated that the innocent bystander is "where an immune reaction occurs because of the cytokines and all of the other molecules are being synthesized a normal tissue is involved and damaged." Tr. 24. A preponderance of the evidence does not support a finding that bystander activation is a reliable theory linking the hepatitis B vaccine to autoimmune hepatitis.

Other than Dr. Bellanti's own testimony, Mr. Myers presented little evidence to show that bystander activation is a reliable theory for this case. Dr. Zweiman's testimony supplied some confirmation that researchers have explored bystander activation in experimental models and have found it exists with other substances that stimulate the immune system. Tr. 180. However, Mr. Myers did not present evidence to explain why this theory about some antigens provides information about the hepatitis B vaccine specifically. Because the hepatitis B vaccine contains a

[7] A troubling aspect about Dr. Bellanti's retreat is that respondent presented the Beran article several months before Dr. Bellanti testified. This time was ample for Dr. Bellanti to reconsider his opinion about molecular mimicry. Nevertheless, Dr. Bellanti not only presented molecular mimicry as a theory, he also said it was a theory he "favored." Tr. 90, 201.

single, non-replicating protein, there is no evidence that this antigen causes any bystander activation.

With regard to the hepatitis B vaccine specifically, the Institute of Medicine ("IOM") has investigated the theory of bystander activation and found that this theory is weak. Exhibit 1005 (Institute of Medicine, Immunization Safety Review: Hepatitis B Vaccine and Demyelinating Neurological Disorders (Kathleen Stratton et al. eds. (2002)) 64, 69; tr. 138, 195, 883.

Dr. Bellanti presented no response to the Institute of Medicine's report, which had been filed before he testified. He was questioned about this report during cross-examination and merely said the IOM has its opinion. Tr. 89. Although given an opportunity to conduct re-direct examination, Mr. Myers's counsel did not. Tr. 109.

Reports from the IOM are favored, although not dispositive, in the Vaccine Program. Cucuras v. Sec'y of Health & Human Servs., 993 F.2d 1525, 1529 (1993) (finding that special master did not abuse his discretion in determinating that a 1991 IOM report was entitled to great weight); Cohen v. Sec'y of Health & Human Servs., Fed. Cl. 94-353V, 1998 WL 408784 *8 (Spec. Mstr. July 1, 1998). Furthermore, Dr. Zweiman explained why he thought the IOM's report is authoritative – primarily because the IOM draws experts from many different fields who are not biased or prejudiced in evaluating the evidence. Tr. 135-36.

Dr. Bellanti may disagree with the IOM's conclusion that the hepatitis B vaccine does not induce bystander activation. However, for Dr. Bellanti's disagreement to be relevant, his opinion must be reliable. Knudsen, 35 F.3d at 548. Reliability, at least in this context, requires that Dr. Bellanti offer some reason for disagreement. For example, a logical argument might be that research conducted after the IOM issued its report in 2002, which the IOM could not have considered, has raised doubts about the IOM's conclusion. But, Dr. Bellanti did not proffer any reasoning. Instead, his response to a question about the IOM's report was to say that the IOM has its "opinion." Tr. 89. Shortly following this passage, Dr. Bellanti again said that the authors of the IOM report "are entitled to their opinion. They are not infallible, and perhaps uninformed." Tr. 97.

Dr. Bellanti's disagreement with the IOM is neither reliable nor persuasive. The context of Dr. Bellanti's use of the term "opinion" is comparable to how people commonly express disputes over matters of style and taste. These can be matters of "opinion." The IOM's study is not an "opinion" in that sense. The IOM examined available data and reached a conclusion. If Dr. Bellanti believes that the IOM was "uninformed," then it is incumbent upon Dr. Bellanti to identify the information that the IOM lacked. Pointing out the fallibility of an investigation without specifying an error does not constitute relevant testimony.

As the party bearing the burden of proving that the hepatitis B vaccine caused autoimmune hepatitis, Mr. Myers was responsible for presenting a reliable theory. Althen, 418 F.3d at 1278 (quoting Grant v. Sec'y of Health & Human Servs., 956 F.2d 1144, 1148 (Fed. Cir.

1992)). Mr. Myers did not. Dr. Bellanti's assertion that the bystander activation theory is a reliable method to explain how the hepatitis B vaccine can cause autoimmune hepatitis is tantamount to a statement ipse dixit. Pursuant to Terran, which affirmed using Daubert in vaccine cases to evaluate an expert's theory, special masters are not required to accept an expert's theory merely because an expert himself said it. Kumho Tire Co., Ltd. v. Carmichael, 526 U.S. 137, 157 (1999) (quoting General Elec. Co. v. Joiner, 522 U.S. 136, 137 (1997)). "[W]ithout more than credentials and a subjective opinion, an expert's testimony that 'it is so' is not admissible." Hathaway v. Bazany, 507 F.3d 312, 318 (5th Cir. 2007) (citation and quotation marks omitted) (affirming district court's decision to exclude testimony of proposed expert). As such, a preponderance of the evidence indicates that bystander activation is not a reliable theory to explain how the hepatitis B vaccine could cause autoimmune hepatitis.

**c. Polyclonal Activation**

The third theory offered by Dr. Bellanti is known as polyclonal activation. This theory postulates that an antigen, such as the hepatitis B vaccine, stimulates the production of too many B-cells and that these excess B cells led to autoimmune disease. Tr. 24 (Dr. Bellanti), 881 (Dr. Zweiman).

Other than Dr. Bellanti's own assertions, a minimal amount of evidence supports a finding that polyclonal activation is a reliable theory. First, Dr. Zweiman recognizes that some antigens will stimulate an immune response that is broad-based, not limited to a response against one antigen. Tr. 139. Thus, investigators have looked for polyclonal activation to explain autoimmune disease. Tr. 181. Whether polyclonal activation has actually been found to cause an autoimmune disease is not clear.

The second piece of evidence that lends some support to the polyclonal activation theory is the set of antibodies found in people with autoimmune hepatitis. People with autoimmune hepatitis sometimes have elevated levels of antibodies, but the presence of autoantibodies does not definitively establish that the person has an autoimmune disease. It is extremely important to note that the elevated antibodies have not been found to cause autoimmune hepatitis. Tr. 27, 135, 176, 462 (Koff), 618 (Bellanti), 922-23.

Despite some evidence supporting the reliability of the polyclonal activation theory in general, evidence about the hepatitis B vaccine is missing. According to Dr. Zweiman, there is no evidence that the hepatitis B vaccine is an antigen that induces polyclonal activation. Tr. 140, 881-82. The Institute of Medicine report underlies Dr. Zweiman's opinion. Exhibit 1005 (Institute of Medicine, Immunization Safety Review: Hepatitis B Vaccine and Demyelinating Neurological Disorders (Kathleen Stratton et al. eds. (2002)) at 64, 69.

Dr. Bellanti did not produce any affirmative evidence showing that the hepatitis B vaccine produces polyclonal activation. Because Dr. Zweiman presented his "no evidence" opinion during the first session, the nearly six months between sessions gave Dr. Bellanti

sufficient time to counter Dr. Zweiman's assertion. In other contexts, Dr. Bellanti did in fact conduct additional research and presented new articles during the second session. See, e.g., tr. 1204-07. Dr. Bellanti's failure to present rebuttal articles about polyclonal activation strongly suggests that there are no articles showing that the hepatitis B vaccine stimulates polyclonal activation.

Without any information to suggest that Dr. Bellanti's assertion that the hepatitis B vaccine stimulates a "polyclonal activation" of the immune system resulting in autoimmune disease is reliable, Mr. Myers fails to meet his burden of introducing reliable evidence. In short, on the one hand, there is Dr. Bellanti's testimony. This testimony is tempered by his admission that polyclonal activation is not a theory he favors. Tr. 90, 201. On the other hand, there is the testimony of Dr. Zweiman corroborated by the report from the IOM. When the weight of the evidence so greatly favors one side, a finding that Dr. Bellanti's theory is reliable cannot be made.

### d. Dysfunction in T-regulatory cells

Dr. Bellanti's fourth theory for explaining how the hepatitis B vaccine can cause autoimmune hepatitis "involves participation of CD4+ regulatory T cells." Exhibit 23 at 4. This theory involves a deeper understanding of the immune system, and is necessarily more complicated. The complication, however, is not the flaw. The problem with the "theory" is that it is not a theory that postulates how the hepatitis B vaccine can cause autoimmune hepatitis. Instead, the comment about dysfunction in T-regulatory cells is an observation about some people with autoimmune diseases. The observation exists without the hepatitis B vaccine.

To show how Dr. Bellanti's comments do not amount to a theory explaining a causal role for the hepatitis B vaccine, a portion of his report is quoted below. This passage is all that Dr. Bellanti wrote about T-regulatory cells. He states:

> These [T-regulatory cells] have been identified as the cells that maintain immunologic tolerance, the property of the immune system which distinguishes one's own tissues as self from those exogenous materials which are recognized as "non-self." The failure of, or escape from, normal suppression of reactivity against "self" has an essential role in the development of autoimmune disease. Studies suggest that a decrease in the number of regulatory T cells and their ability to expand may lead to autoimmune liver disease.

Exhibit 23 at 4. Noticeably absent from this passage is any reference to vaccines.

Dr. Bellanti's testimony did not fill this gap. He explained how T-regulatory cells function. Tr. 14-19. In doing so, he noted that a current theory to explain the pathogenesis of autoimmune disease is that the regulation of T-cells is not working properly. Tr. 16. Dr.

Zweiman offered some limited support for the theory that immunologists believe that problems with T-regulatory cells may lead to autoimmune disease. Tr. 181-82, 1099.

As support for his assertion that a problem with regulatory T cells may contribute to causing autoimmune hepatitis, Dr. Bellanti identified an article by Longhi during the hearing. Tr. 45. Because this article seemed important, the Court introduced it as an exhibit during the hearing. Tr. 1103-04. On cross-examination, Dr. Bellanti tried to clarify his opinion. He stated:

> Whether [T-regulatory cells] produce, you know, specifically, you can say definitively they cause autoimmune hepatitis, I can't say that definitively, but I can say it's my opinion based on my knowledge, putting it all together that they do; that it in some way is related. It's more probable than not.

Tr. 91.

For sake of argument, Dr. Bellanti's assertion that a problem (an imbalance) with the regulatory T cells causes, in some way, autoimmune hepatitis can be accepted. (Dr. Zweiman did not agree with Dr. Bellanti on this point. Dr. Zweiman noted that although a problem with regulatory T cells may be associated with autoimmune hepatitis, it is unclear which came first. It is possible that the autoimmune hepatitis causes the defect in T regulatory cells. Tr. 143, 1131.) But, Dr. Bellanti's assertion again says nothing about the role of the hepatitis B vaccine. Questioning from the Court on the first day of the hearing revealed the hole in Dr. Bellanti's "theory." This passage is quoted at length to demonstrate the limits of Dr. Bellanti's statement:

> THE COURT: The T-regulatory deficiency, I understand you saying that the immune system gets out of balance. Is that right?
>
> THE WITNESS: Yes. There is an imbalance, that's correct.
>
> THE COURT: <u>But is it your theory that something in the hepatitis B vaccine causes the T- cell regulatory deficiency</u>?
>
> THE WITNESS: <u>That isn't known, Your Honor</u>. You know, the publication I think that was referred to in the article simply referred to deficiency in patients with autoimmune hepatitis. Whether it was the cause or the result, it isn't clear.
>
> If you ask my opinion, I would favor it being a preexisting deficiency, but I have no direct evidence for that. That would be speculative.
>
> THE COURT: You mean preexisting, existing before the introduction of the antigen?
>
> THE WITNESS: No. Because of the genetic relationships of the effects of genetic control on the immune system and because of the genetic relationships that are known to occur with patterns of certain HLA types in certain patients with autoimmune disease, this is a distinct possibility.
>
> Whether it will turn out to be, I don't know, but it's very attractive, and it is the center of current research in the field of immunology. This is

> a very hot field. You know, the regulation of the immune system, how antigen is recognized, processed and delivered determines in all cases the ultimate success or failure of elimination, and that ties in with autoimmune disease, but it's all inferential.
>
> THE COURT: Now, the imbalance in the T-regulatory system would be genetic-based?
>
> THE WITNESS: Yes.
>
> THE COURT: So is it your theory that the introduction of the hepatitis B vaccine would trigger the adverse effects of this imbalance?
>
> THE WITNESS: No, I would say that in certain genetically predisposed individuals, their response to certain vaccines leads to adverse effects due to this genetic inability to handle the antigen as that bell-shaped curve -- 95-99 percent of the population.
>
> There is [sic] these outliers that are responding differently, and those are the unfortunate ones that get into trouble with vaccines. There is documentation that there is a T-reg deficiency in autoimmune disease. Whether it's in the case of hepatitis B that was caused by the vaccine, or it was a preexisting condition which led subsequently to their autoimmune disease. I honestly don't know. I would favor that but I have no direct evidence for that.

Tr. 107-09 (emphasis added). As the emphasized portion illustrates, Dr. Bellanti could not connect the hepatitis B vaccine to his belief that an imbalance in T-regulatory cells causes autoimmune hepatitis.

Later testimony did not link the observation in the Longhi article that people with autoimmune hepatitis have an imbalance in their T-regulatory cells with the hepatitis B vaccine. T-regulatory cells were discussed in the context of a particular petitioner, Ms. Rotoli, who did not respond to the hepatitis B vaccine. See, e.g., tr. 620. Yet, no testimony showed how the hepatitis B vaccine connects to an imbalance in T-regulatory cells.

Even after the hearing resumed following a six-month suspension, petitioners did not elicit testimony offering, in any sense, a basis for linking the hepatitis B vaccine with a problem in T-regulatory cells. Dr. Zweiman pointed out that the Longhi article studied people who had autoimmune hepatitis, not people who received the hepatitis B vaccine. Tr. 1100, 1130-32. Dr. Zweiman described the limits of medical knowledge. He stated that "nobody has ever reported whether or not hepatitis immunization induces alteration of immunoregulatory T-cells." Tr. 1132. Dr. Bellanti did not contradict Dr. Zweiman's statement, which seems to be in accord with Dr. Bellanti's testimony quoted at length above.

Petitioner's cause of action is that the hepatitis B vaccine caused autoimmune hepatitis. Dr. Bellanti's statements about the role of the T-regulatory cells are not relevant because no evidence connected a problem with T-regulatory cells to the hepatitis B vaccine. Therefore,

statements about T-regulatory cells do not qualify as "a medical theory causally connecting the vaccination and the injury." Althen, 418 F.3d at 1278.

### e. Other Arguments in Favor of a Causal Relationship Between the Hepatitis B vaccine and Autoimmune Hepatitis

Dr. Bellanti makes two other observations that he says support a causal relationship, although these observations are not directly tied to any of the four theories discussed above. One is an argument that because the hepatitis B virus can cause autoimmune hepatitis, the vaccine is presumed to be capable of causing the same disease. Another is the argument based on challenge - rechallenge. Neither observation supports a finding that the hepatitis B vaccine can cause autoimmune hepatitis.

#### (1) Is the hepatitis B vaccine analogous to the hepatitis B virus in causing autoimmune hepatitis?

Dr. Bellanti wrote in his report that because the hepatitis B virus causes autoimmune disease, "it should be assumed that the vaccine [for that virus] can also lead to autoimmunity." Exhibit 23 at 3. Even Dr. Bellanti's choice of words are problematic in that he states that "it should be assumed" that the vaccine is similar to the virus in that it can cause autoimmunity. To "assume" means to take something for granted or without proof. Assumptions are not evidence in vaccine cases.

In his testimony, Dr. Bellanti refined his position to some extent. Tr. 34, 93, 200. There are two problems with Dr. Bellanti's argument. One is the proposition that the hepatitis B virus causes autoimmune hepatitis. The other is whether the hepatitis B vaccine is analogous to the hepatitis B virus.

#### (a) Does the Hepatitis B Virus Cause Autoimmune Hepatitis?

A preponderance of the evidence establishes that the hepatitis B virus does not cause autoimmune hepatitis. Therefore, Dr. Bellanti errs when he states that "infection with the hepatitis B virus is known to cause autoimmune hepatitis." Exhibit 23 at 3.

Dr. Bellanti offers only a scintilla of support for his statement. Significantly, in his report, Dr. Bellanti did not identify any sources. This omission seems inconsistent with a fact that Dr. Bellanti asserts "is known."

In his testimony on the first day of hearing, Dr. Bellanti introduced a textbook to support his statement. Dr. Bellanti cites the third edition of a textbook, The Autoimmune Diseases, edited by Noel Rose and Ian Mackay. Tr. 78-83. This textbook appears to support Dr. Bellanti's assertion. Exhibit 42 (Michael P. Manns et al., Chapter 26: Autoimmune Diseases:

The Liver, in The Autoimmune Diseases (Noel R. Rose and Ian R. Mackay, eds., 3d ed. 1998)) at 518.[8]

However, further examination indicates that the textbook's statement was in error. The textbook itself cites two articles. One from 1989 written by Laskus and Slusarczky. (The transcript of the hearing mistakenly shows the first author as "Velascquez.") The other was from 1984, and was written in German by Hopf and Möller.

Current medical knowledge strongly suggests that current doctors would not accept the diagnoses of autoimmune hepatitis from these case reports, which are more than 15 years old. The patient in the German study actually had chronic hepatitis B, not autoimmune hepatitis. Tr. 458-59, 854 (Dr. Koff's testimony). Similarly, the subject of the article by Laskus probably had hepatitis C, not autoimmune hepatitis. Tr. 460, 854.

After learning Dr. Koff's views about the Laskus and Hopf articles, Dr. Bellanti performed more research. He discovered two other articles that, initially, seem to offer some modest support for his assertion that "infection with the hepatitis B virus is known to cause autoimmune hepatitis." (Why these articles were not cited in Dr. Bellanti's initial report was not explained adequately.) However, neither article is persuasive.

In one article, an exacerbation of autoimmune hepatitis was associated with an administration of the Twinrix vaccine. Exhibit 49 (Antal Csepregi et al., Acute Exacerbation of Autoimmune Hepatitis Induced by Twinrix, 11 World J. Gastroenterol., 4114-4116 (2005)). Twinrix contains a vaccine against hepatitis A and a vaccine against hepatitis B. Tr. 1035, 1121. Although the presence of another vaccine confounds the analysis, the case report is weak evidence for another reason.

The problem with the Csepregi article is that it is a report about one case. As such, ruling out a possible coincidence is impossible. Case reports have little reliability in establishing causation. See, e.g., McClain v. Metabolife Intern., Inc., 401 F.3d 1233, 1253 (11th Cir. 2005); Meister v. Medical Engineering Corp., 267 F.3d 1123, 1129 (D.C. Cir. 2001); Glastetter v. Novartis Pharmaceuticals Corp., 252 .3d 986, 989-90 (8th Cir. 2001). The symptoms of

---

[8] Dr. Zweiman criticizes Dr. Bellanti for using the third edition of the Rose and Mackay textbook. Dr. Zweiman observes that a chapter on "Chronic Hepatitis" from the fourth edition of this textbook does not mention the hepatitis B virus causing autoimmune hepatitis. Tr. 144.

This criticism is off-base for two reasons. First, this chapter uses the phrase "hepatitis viruses." Although Dr. Zweiman is correct in saying that the hepatitis B virus is not specifically mentioned, the more general term "hepatitis viruses" includes the hepatitis B virus. Second, to the extent that Dr. Zweiman is implying that the third edition of the Rose and Mackay textbook is out-of-date and that the fourth edition eliminates any mention of the hepatitis B virus, respondent should have submitted the corresponding chapter, chapter 26, from the fourth edition. The same chapters from different editions create an apples-to-apples comparison.

autoimmune hepatitis worsen episodically. Exhibit 23, Tab A (Krawitt) at 56; tr. 1145 (Dr. Koff's testimony). A worsening of symptoms may have occurred in the patient reported by Csepregi around the same time after he received the Twinrix. The Twinrix may have not caused the exacerbation of the autoimmune hepatitis. Tr. 1120-23 (Dr. Zweiman testimony); 1145-46, 1149 (Dr. Koff's testimony).

The final article that Dr. Bellanti presented to demonstrate that "infection with the hepatitis B virus is known to cause autoimmune hepatitis," concerns a child from Senegal. Doctors discovered that this child had both a chronic hepatitis B infection and autoimmune hepatitis. Exhibit 55 (Valerio Nobili et al., Co-occurrence of Chronic Hepatitis B Virus Infection and Autoimmune Hepatitis in a Young Senegalese Girl, 18 Eur. J. Gastroenterol Hepatol., 927-929 (2006)). This article, however, provides no information about which condition came first. Therefore, it is speculative to assume that the hepatitis B infection caused the autoimmune hepatitis. The patient may have had autoimmune hepatitis before being infected with the hepatitis B virus. Tr. 1116-20 (Dr. Zweiman's testimony); 1144-45, 1147-48 (Dr. Koff's testimony).

Therefore, at best, Dr. Bellanti identified four articles that minimally support the proposition that the hepatitis B virus can cause autoimmune hepatitis. However, two articles were from the 1980's and, probably, do not represent current medical analysis. The two articles from this decade (Csepregi and Nobili) do not contain any meaningful analysis about causation. Thus, the persuasiveness of these articles is lacking.

Although the articles presented by Dr. Bellanti offer some minimal support for his assertion that "infection with the hepatitis B virus is known to cause autoimmune hepatitis," other evidence contradicts the assertion. The strongest contrary evidence is the scholarly article by Dr. Edward Krawitt, who is generally considered among the world's leading researchers in autoimmune hepatitis. Tr. 813. He wrote a review for the New England Journal of Medicine that all the experts cited. In this article, Dr. Krawitt states that autoimmune hepatitis has been associated with hepatitis A infection and hepatitis C infection. Exhibit 23, tab A, at 54. However, Dr. Krawitt omits the hepatitis B virus. Id.; see also tr. 75-76.

Omitting the hepatitis B virus from the viruses considered as possible triggers for autoimmune hepatitis was intentional. (Hepatitis A, hepatitis B, and hepatitis C are three completely different viruses. Tr. 59, 473-74.) Dr. Koff recounted that between sessions of hearings in these cases, he spoke to Dr. Krawitt and two other experts in autoimmune hepatitis. All three experts told Dr. Koff that they were not aware of the hepatitis B virus causing autoimmune hepatitis. Tr. 989-92. Their statements match Dr. Koff's own statements during the first session of the hearing. Tr. 437. Collectively, this evidence is very persuasive.

Thus, a preponderance of the direct evidence regarding the hepatitis B virus contradicts an assertion that it can cause autoimmune hepatitis. Although Dr. Bellanti can state with a fair degree of support that viruses in general are thought to cause autoimmune diseases in general,

this general proposition does not make up for the lack of more specific evidence linking the hepatitis B virus to autoimmune hepatitis.

### (b) Is the Hepatitis B Vaccine Analogous to the Hepatitis B Virus?

Even assuming that the hepatitis B virus causes autoimmune hepatitis, Dr. Bellanti's reasoning that "it should be assumed" that the vaccine can cause the same result is questionable. Differences between the hepatitis B vaccine and hepatitis B virus require more analysis than an assumption.

The Institute of Medicine offers some general support for Dr. Bellanti's reasoning. The IOM has stated that "the vaccine-adverse event association should be plausible and coherent with current knowledge about the biology of the vaccine and the adverse event. Such information includes experience with the naturally occurring infection against which the vaccine is given, particularly if the vaccine is a live attenuated virus." Exhibit 66 (Vaccine Safety Committee, Institute of Medicine, Adverse Events Associated with Childhood Vaccines: Evidence Bearing on Causality (Kathleen R. Stratton et al. eds. 1994)) at 22.

However, extending this proposition to vaccines, such as the hepatitis B vaccine, that do not contain a "live attenuated virus," is uncertain. Tr. 1127-28 (Dr. Zweiman testimony). The hepatitis B vaccine does not replicate in the body. Tr. 85-86 (Dr. Bellanti's testimony).

Dr. Bellanti maintains that non-replicating vaccines and vaccines that contain live viruses, which replicate in the body, prompt a similar immune response that can, in rare cases, include an adverse consequence. Tr. 34, 63-64.

During Dr. Bellanti's testimony, he recognized how a vaccine containing a live virus interacts with a person's immune system differs from how a vaccine containing inert material interacts. He was forced to backtrack and to revise his statement to the more general proposition that a person's immune system follows the same steps in responding to a foreign invader regardless of whether the invader is a live virus or a non-replicating protein. Tr. 200, 372, 1128, 1593. This revised statement is accurate. However, its generality provides no information to connect the hepatitis B vaccine and autoimmune hepatitis.

Whether a preponderance of the evidence supports Dr. Bellanti's reasoning is unnecessary to decide. Whether the hepatitis B vaccine is comparable to the hepatitis B virus is relevant in this case only to the extent that the hepatitis B virus is capable of causing autoimmune hepatitis. The preceding section explains that a preponderance of the evidence contradicts this assertion. Therefore, Dr. Bellanti's belief about the hepatitis B virus does not help establish a reliable medical theory.

### (2) Challenge - Rechallenge

A second assertion made by Dr. Bellanti to support his overall theory that the hepatitis B vaccine can cause autoimmune hepatitis is that "[t]here are reports in the literature of positive rechallenge where [the hepatitis B vaccine] has been reported to cause various autoimmune conditions." Exhibit 23 at 4.

"A rechallenge event occurs when a patient who had an adverse reaction to a vaccine suffers worsened symptoms after an additional injection of the vaccine." Capizzano v. Sec'y of Health & Human Servs., 440 F.3d 1317, 1322 (Fed. Cir. 2006). Rechallenge can be persuasive evidence that a vaccine is causing an adverse reaction. Tr. 35-36.

Whether literature actually includes cases of rechallenge with the hepatitis B vaccine is not clear. In his report, Dr. Bellanti did not cite any literature for this proposition. Likewise, Dr. Bellanti did not discuss literature about rechallenge in his testimony. See tr. 55-69 (discussing articles). Considering that Dr. Bellanti's report refers to "reports in the literature," his silence on this topic is somewhat surprising (and telling).

Once again, Dr. Bellanti failed to meet the expectations that he himself set. On cross-examination, Dr. Bellanti was asked about rechallenge. Tr. 102-3.

Because the Court's May 31, 2007 order raised this issue specifically, Dr. Bellanti should have expected the question. However, Dr. Bellanti did not know the answer and stated that he needed to review what he submitted. Tr. 103. This evasive answer decreased Dr. Bellanti's credibility.

Furthermore, Dr. Bellanti was questioned about the Beran article. In this study, people with autoimmune hepatitis were given the hepatitis B vaccination. The subjects tolerated exposure to the hepatitis B vaccine without worsening the underlying autoimmune hepatitis. Tr. 199-203, exhibit 1004 (J. Beran, Safety and Immunogenecity of a Combined Vaccine Against Hepatitis A and B in Patients with Autoimmune Hepatitis, 13 Cent Eur J Pub Health, 20-3 (2005)). This article, therefore, is evidence contrary to Dr. Bellanti's unsubstantiated assertion.[9]

### f. Summary regarding Medical Theory

Mr. Myers bears the burden of proposing "a medical theory causally connecting the vaccination and the injury." Althen, 418 F.3d at 1278. A theory is not required to be established to a level of medical certainty and does not need to describe the precise biological mechanism.

---

[9] Requesting Dr. Bellanti to substantiate his statement does not violate Althen's statement that experts are not required to produce literature. It was Dr. Bellanti who stated "[t]here are reports in the literature of positive rechallenge." Dr. Bellanti's inability to prove what he wrote implicates his persuasiveness and his veracity.

Nevertheless, the theory must have some minimal level of reliability. Knudsen, 35 F.3d at 548; Bunting, 931 F.2d at 873.

Here, through Dr. Bellanti, Mr. Myers offers four medical theories. None of these theories satisfy Mr. Myers's burden of proof. Dr. Bellanti withdrew the molecular mimicry theory primarily because no evidence shows a homology between parts of the hepatitis B vaccine and liver cells that are attacked by autoimmune hepatitis. The Institute of Medicine has rejected two other theories, bystander activation and polyclonal activation. Dr. Bellanti did almost nothing to justify these two theories, which are theories that, by his own admission, he does not favor, nor did he rebut the Institute of Medicine's investigation and conclusion. The fourth theory, T-regulatory deficiency, is not really a theory in the sense that it does not involve the hepatitis B vaccine.

In addition, Dr. Bellanti offered two other points that, arguably, could support an argument that the hepatitis B vaccine can cause autoimmune hepatitis. However, these too were not persuasive. A preponderance of the evidence shows that the hepatitis B virus has not been shown to cause autoimmune hepatitis. Also, the evidence in this case does not establish examples of positive rechallenge with the hepatitis B vaccine.

For all these reasons, Mr. Myers has failed to meet his burden of establishing, by a preponderance of the evidence, a medical theory connecting the hepatitis B vaccine to autoimmune hepatitis (again, assuming he suffered from autoimmune hepatitis).

#### 2. Logical Sequence of Cause and Effect

The evidence relevant to this factor was analyzed in the context of steatohepatitis. For the reasons set forth in section III.A.2.b., above, Mr. Myers has failed to establish, by a preponderance of the evidence, a logical sequence of cause and effect linking the hepatitis B vaccinations to his (alleged) autoimmune hepatitis.

#### 3. Timing

Similarly, the evidence that there is an appropriate temporal relationship between the vaccinations and the onset of his (alleged) autoimmune hepatitis was discussed in section III.A.2.c., above. Mr. Myers has not established this element in regard for his claim of autoimmune hepatitis as well.

## IV. Additional Comments Regarding Dr. Bellanti

Sections I-III above resolve Mr. Myers's case based upon an analysis of the complete record in this case. The complete record includes two different types of evidence — evidence that is generic to the four other cases alleging that the hepatitis B vaccine caused autoimmune hepatitis and evidence that is specific to an individual's case, here Mr. Myers. Some portions of

this record, such as Dr. Bellanti's testimony that the hepatitis B vaccine can cause autoimmune hepatitis, are the same as the record in other cases. Consequently, the analysis in section III.B of this particular case duplicates the analysis in other cases.

Under the circumstances of this case, additional comment about Dr. Bellanti is, unfortunately, necessary. Dr. Bellanti's opinion was not persuasive in this particular case, nor was it persuasive in any of the cases in which petitioners alleged that the hepatitis B vaccine caused autoimmune hepatitis. The lack of persuasive value, however, does not warrant the following comments. The problem with Dr. Bellanti's work in these case goes to a deeper level.

In every case, his opinion suffered from two significant flaws. First, Dr. Bellanti's written report did not match his oral testimony (section A, below). Second, in terms of addressing autoimmune hepatitis, Dr. Bellanti possessed little knowledge (section B, below). These two points probably contributed to Dr. Bellanti's demeanor, which is discussed in section C, below.

### A. Dr. Bellanti's Testimony Failed To Match His Report

Taken on its face, Dr. Bellanti's report indicates that the hepatitis B vaccine can cause – and for these petitioners did cause – autoimmune hepatitis. However, Dr. Bellanti's own testimony does not support what was written in Dr. Bellanti's report. The dichotomy between the words written in Dr. Bellanti's report and words spoken by Dr. Bellanti impairs Dr. Bellanti's credibility. The point, which is repeated several times below, is that Dr. Bellanti could not substantiate the information that was in his own report.

The following six sections provide examples of when Dr. Bellanti's testimony did not match his report. If any one of the topics discussed below were the only time there was a disconnect between Dr. Bellanti's written report and Dr. Bellanti's testimony, perhaps, any discrepancy could be excused as an isolated, innocent error. However, as set forth below, Dr. Bellanti's report contains more than one discrepancy with his oral testimony. The number of places in which Dr. Bellanti's report does not match his testimony amounts to a pattern, suggesting a more significant problem with Dr. Bellanti's credibility.

#### 1. Hepatitis B Virus "Is Known To Cause" Autoimmune Hepatitis

Dr. Bellanti's first point is that an "infection with hepatitis B virus is known to cause autoimmune hepatitis." Exhibit 23 at 3. Although Dr. Bellanti states this fact "is known," a preponderance of the evidence indicates that Dr. Bellanti's statement was in error.

It is curious that in his report, Dr. Bellanti wrote that "infection with hepatitis B virus is known to cause autoimmune hepatitis." Exhibit 23 at 3 (Emphasis added). In describing what the medical community "knows," Dr. Bellanti was implying that there is a general agreement on

this point. But, there is no general agreement that the medical community "knows" that the hepatitis B virus causes autoimmune hepatitis.

Dr. Bellanti provided absolutely no basis for this assertion in his report. After testifying and conducting literature searches, Dr. Bellanti discovered four articles that associate the hepatitis B virus with the onset (or exacerbation) of autoimmune hepatitis. These four articles, consisting of a single case report each, cannot support the statement that "infection with hepatitis B virus is known to cause autoimmune hepatitis."

Moreover, whether Dr. Bellanti can substantiate his assertion about what "is known" about the relationship between hepatitis B vaccine and autoimmune hepatitis is a question about Dr. Bellanti's veracity. When his written report states that something "is known," Dr. Bellanti should be able to demonstrate the accuracy of his own statement. His failure to prove his assertion with any persuasive evidence suggests that Dr. Bellanti wrote his report without substantiation for his statements at all.

The sequence of events about efforts to establish the basis for Dr. Bellanti's own report at least opens the way for an argument that Dr. Bellanti's report was not written in good faith. Dr. Bellanti's report did not have any citations for his assertion. His only support on the first day of the hearing was the third edition of the Rose and Mackay textbook. Normally, a textbook would be a reliable basis for a statement. However, the Rose and Mackay textbook relied upon two articles that were out-of-date (at least 15 years old). In addition, the Krawitt article, which all experts found to be informative about autoimmune hepatitis, contradicts the Rose and Mackay textbook. After the accuracy of the textbook was called into question, Dr. Bellanti searched for additional literature. But, the articles he presented (by Csepregi and Nobili) were not persuasive. Collectively, all the literature cited by Dr. Bellanti falls well short of establishing that the medical community "knows" the hepatitis B virus causes autoimmune hepatitis.

### 2. Hepatitis B Vaccine, Autoimmune Disease and Rechallenge

Dr. Bellanti's report also introduced a concept – rechallenge – that he failed to prove. Exhibit 23 at 4.

The misleading nature of Dr. Bellanti's report comes from his failure to substantiate his own assertions. Dr. Bellanti was specifically ordered to be prepared to discuss the rechallenge point because, according to respondent's expert, Dr. Zweiman, none of the articles submitted by Dr. Bellanti supported his report. Order, filed May 31, 2007.

However, when Dr. Bellanti testified, he did not discuss any literature as showing examples of rechallenge. See tr. 55-69 (discussing articles). Considering that Dr. Bellanti's report refers to "reports in the literature," his silence on this topic raises questions about the accuracy of his report.

Besides not discussing examples of rechallenge generally, Dr. Bellanti could not identify any article that shows a rechallenge pattern for autoimmune hepatitis specifically. Tr. 102-03. Because the Court's May 31, 2007 order raised this issue specifically, Dr. Bellanti should have been prepared to answer questions about rechallenge. However, Dr. Bellanti could not answer questions regarding rechallenge and he stated that he needed to review what he submitted. Tr. 103. This evasive answer decreased Dr. Bellanti's credibility and calls into question the truthfulness of Dr. Bellanti's report. If Dr. Bellanti were aware of articles showing that a pattern of challenge and rechallenge links the hepatitis B vaccine and autoimmune hepatitis, Dr. Bellanti would have identified them. (This expectation is reasonable because Dr. Bellanti's report states that "there are reports in the literature. . ." and it was the subject of the May 31, 2007 order.) The failure of Dr. Bellanti to identify any articles strongly suggests that there are none. See tr. 129 (testimony of Dr. Zweiman saying he could not find any articles).

By writing about rechallenge, Dr. Bellanti created an expectation that further evidence on this topic will assist his theory. However, there was little testimony about this topic and what testimony that was elicited from Dr. Bellanti on this point contradicted the argument in his written report. Thus, a question arises as to why Dr. Bellanti introduced rechallenge in his report in the first place.

### 3. Other Components in the Hepatitis B Vaccine

Dr. Bellanti's report also contains an introductory point that the hepatitis B vaccine contains other components "such as yeast, aluminum and thimerosal." Exhibit 23 at 3. Dr. Bellanti expands on this point by citing articles by Gherardi (Tab B), Grotto (Tab C), and Geier (Tab D) as instances in which authors considered a causal role for these parts of the hepatitis B vaccine.

Once again, Dr. Bellanti's report promised, at least implicitly, more than Dr. Bellanti delivered. During his testimony, Dr. Bellanti explained that yeast, aluminum and thimerosal could prompt a hypersensitivity reaction. But, when questioned by the Court, Dr. Bellanti stated that a hypersensitivity reaction would not lead to autoimmune hepatitis. Consequently, Dr. Bellanti "wouldn't put too much credit on that theory." Tr. 98; accord tr. 609 (Dr. Bellanti's testimony stating that the aluminum, thimerosal and yeast are not "big contributors here.") If Dr. Bellanti discounts the role of the other components of the hepatitis B vaccine, then the question becomes why did Dr. Bellanti include this statement in his report.

Again the problem is that Dr. Bellanti, himself, expressed doubt about his own theory. It is not a situation in which experts disagreed and one expert was found to be more persuasive than the other. Here, Dr. Bellanti conceded the lack of probative force of his own theory on his own. (Although not necessary for discounting the theory that yeast, aluminum or thimerosal caused an adverse reaction, Dr. Zweiman presented testimony with supporting articles that indicated that these substances have not been found to cause adverse reactions. Tr. 126-28, citing Exhibit 1007 (Lauren D. DiMiceli et al., Vaccination of Yeast Sensitive Individuals: Review of Safety Data in

the US Vaccine Adverse Event Reporting System (VAERS), 24 Vaccine 703 (2006)). If Dr. Bellanti believes that these other components are not "big contributors" in these cases, then Dr. Bellanti should not have included them in his report. Their inclusion wrongly implies that they are relevant.

#### 4. Potential Theories That Vaccines Can Cause Autoimmune Disease

Dr. Bellanti's report lists four theories by which vaccines can cause autoimmune disease. These four theories were analyzed and rejected in section III.B.1, above.

Repeating the reasons for rejecting the four theories is not necessary. But, in the context of discussing Dr. Bellanti's credibility, a few points warrant further review. First, Dr. Bellanti promoted molecular mimicry as the more likely theory. Tr. 90, 201. Yet, when questioned about the specifics of molecular mimicry, Dr. Bellanti retreated. Tr. 86-87 (Dr. Bellanti's testimony that no homology has been found); 203 (Dr. Bellanti's testimony that molecular mimicry does not explain his alleged connection between the hepatitis B vaccine and autoimmune hepatitis). The withdrawal of this theory suggests that Dr. Bellanti failed, when writing his report, to consider what molecular mimicry entails. Instead, the implication is that Dr. Bellanti listed theories without analyzing them in the context of a particular case.

Dr. Bellanti's report also lists, as a theory to explain how the hepatitis B vaccine can cause autoimmune hepatitis, the "participation of CD4+ regulatory cells." This topic is complicated and difficult for someone not trained in immunology to understand.

A theory about CD4+ regulatory cells possibly could have been developed to be persuasive, but Dr. Bellanti's oral presentation and written report on this topic were so vague that any potential connection to or substantiation for Dr. Bellanti's theories was lost. In this testimony, Dr. Bellanti cited to Dr. Krawitt's article to support a statement that people with autoimmune hepatitis have a deficiency in CD4+ regulatory cells. Tr. 42-3. Dr. Krawitt, in turn, relies upon an article by Dr. Longhi.

In some respects, Dr. Longhi's article demonstrates that Dr. Bellanti appears not to have thought out his presentation. Dr. Bellanti did not cite Dr. Longhi's articles in his report and did not file a copy of it. However, the Longhi article was discussed much more than any article that Dr. Bellanti actually filed. After the potential importance of Dr. Longhi's article became clear at the beginning of the hearing, the Court obtained a copy of it and filed it as exhibit 1001. Dr. Bellanti would have appeared more prepared if he had cited and discussed this article in his report.

While potentially useful, the Longhi article does not enhance Dr. Bellanti's persuasiveness. The Longhi article has two problems. First, it does not explain whether the deficiency in CD4+ regulatory cells is the cause or the effect of autoimmune hepatitis. See tr. 1131 (testimony of Dr. Zweiman). Second, even if a deficiency in CD4+ regulatory cells were

the cause of autoimmune hepatitis, no evidence or theory indicates that the hepatitis B vaccine is the cause of the deficiency in CD4+ regulatory cells.

If Dr. Bellanti's report were more explicit in his reasoning, the gaps in Dr. Bellanti's theory would have been more apparent. By describing CD4+ regulatory cells in general, Dr. Bellanti's report fails to use the CD4+ regulatory cells to connect the hepatitis B vaccine and autoimmune hepatitis.

### 5. Literature Attached To Dr. Bellanti's Report

Dr. Bellanti's report also attached eight articles. With one exception, these articles were not helpful. The only relevant article was Dr. Krawitt's article about autoimmune hepatitis. This article did present useful information about the disease.

The remaining articles provided almost no information that advanced Dr. Bellanti's opinion. The article by Gherardi et al. postulates that aluminum in the hepatitis B vaccine can cause a condition called macrophage myofasciitis. Exhibit 23, tab B. But, as discussed above, Dr. Bellanti discounts the role of aluminum in causing autoimmune hepatitis. Tr. 98, 609.

The next article was written by Grotto et al. Dr. Bellanti cited this article to support his assertion that the appropriate amount of time for an adverse reaction to the hepatitis B vaccine is 20-40 days. Tr. 51. Grotto does support this proposition. But, the crucial problem here is that the evidence does not show that petitioners developed their autoimmune hepatitis within 40 days after receiving the hepatitis B vaccine. In fact, Mr. Myers did not develop autoimmune hepatitis at all. See section III.A.1., above. And, even if it is assumed that Mr. Myers has autoimmune hepatitis, there is a reasonable argument that the autoimmune hepatitis was apparent in June 1992, when he had abnormal liver function tests. Exhibit 9 at 32.

The fourth article was written by Geier et al. During Dr. Bellanti's testimony on direct examination, he stated that he "only relied on this secondarily . . . . I didn't put much credit on that one as I did on some of the others, but it's useful." Tr. 55. In Dr. Bellanti's own words, this article should not be given much weight. Dr. Zweiman agrees that the Geier article rests on a shaky foundation, the VAERS database. Tr. 144-46; accord Analla v. Sec'y of Health & Human Servs., 70 Fed. Cl. 552, 558 (2006) (citing cases and indicating "concerns about the reliability of VAERS data").

The fifth article was written by Lilic and Ghosh. This article reports a single case in which the hepatitis B vaccine was associated with transient liver dysfunction. This case report has little value because the liver dysfunction discussed in the article was not autoimmune hepatitis. Again, Dr. Bellanti recognized the limited utility of this article. Tr. 56-57.

The sixth article was written by Bogdanos. Dr. Bellanti cited this article for the proposition that the hepatitis B virus is associated with a range of autoimmune responses.

Exhibit 23 at tab F; tr. 58. The article does support this general proposition, although the article is based upon a theory that the molecular structure of the hepatitis B virus (not vaccine) mimics the molecular structure of some parts of the body. But, the relevant question is more specific – does the hepatitis B virus cause autoimmune hepatitis, the condition for which petitioners seek compensation. The evidence on this point is scant, at best. See section 1, above. Therefore, this article – even accepting it at face value – does not advance Dr. Bellanti's theories.[10]

The seventh article, which was written by Porobic et al., does not contain any relevant information. This article suggests that the hepatitis B vaccine may induce anti-phospholipid antibodies. However, according to Dr. Bellanti's understanding, anti-phospholipid antibodies do not cause autoimmune hepatitis. Tr. 62-63. Thus, Dr. Bellanti confesses he "only used as a signal." Tr. 61.

The eighth article provided a small amount of support to a theory of molecular mimicry. This theory is based upon a homology between the antigen (the hepatitis B vaccine) and a structure in the body (in this article, the myelin surrounding nerves). But, Dr. Bellanti could not support molecular mimicry for these cases because there does not appear to be any homology between the hepatitis B vaccine and liver tissue. Tr. 86-87, 203; see also tr. 133-36 (testimony of Dr. Zweiman discussing this article).

In sum, five of the articles that Dr. Bellanti presented were not helpful at all. (The only helpful article is by Krawitt on autoimmune hepatitis. To a much lesser degree, the articles by Grotto and Bogdanos weakly supported Dr. Bellanti's opinion.) Again, the point to be emphasized is that at hearing, Dr. Bellanti, himself, indicated that the five articles were not significant. For some articles, Dr. Bellanti discounts the article's relevance explicitly by saying that he used the article as a "signal" or "secondarily." For all the articles, except Krawitt's, the lack of contribution is implicit in the amount of time spent addressing the articles listed in Dr. Bellanti's report. On direct examination, Dr. Bellanti covered his literature in about 15 pages. Then, after the first day of testimony, the articles were not discussed again. By way of contrast, the article by Longhi was discussed repeatedly. The infrequency of testimony about the articles strongly suggests that they should not have been included with Dr. Bellanti's report in the first place.[11]

---

[10] Dr. Zweiman disputes the accuracy of the Bogdanos article. Tr. 177. However, this criticism is not relevant in commenting upon the disparity between Dr. Bellanti's written report and his oral testimony. Dr. Bellanti's written report suggests that the Bogdanos article is meaningful. His testimony indicates otherwise.

[11] Articles from peer-reviewed journals are useful when they substantiate the reliability of an expert's opinion. Articles that do not support the expert's opinion are not relevant. Petitioners and Dr. Bellanti should not file irrelevant articles. Submitting irrelevant materials causes the parties and the court to waste time and resources when the articles are reviewed

### 6. Discussion Of Temporal Relationship In Dr. Bellanti's Report

Dr. Bellanti's report concludes with a discussion of timing. In every case, the report states "The temporal relationship between [the petitioner's] immunizations and the onset of symptoms is medically appropriate." Exhibit 23 at 7. As discussed in detail in each case, Dr. Bellanti was shown to lack the knowledge to make any statements about the onset. His report, therefore, is misleading and not accurate.

Dr. Bellanti could not state when the petitioner experienced an "onset of symptoms." In Porter, this problem is innate because the medical records do not show when the autoimmune hepatitis began. In Rotoli, the problem is that Dr. Bellanti did not understand the report from her liver biopsy, which showed fibrosis.

These problems with Dr. Bellanti's report became apparent only during the hearing. However, Dr. Bellanti (and, arguably, petitioner's counsel) should have realized the limits of his ability. Rereading his report in light of the testimony produces an impression that Dr. Bellanti's report omitted any discussion of when the petitioner's autoimmune hepatitis began to avoid this topic. However, this lack of forthrightness lessens Dr. Bellanti's credibility.

### 7. Summary: Dr. Bellanti's Report

The preceding six sections illustrate problems with Dr. Bellanti's report. These problems are problems because Dr. Bellanti's own testimony did not corroborate his report. Whether Dr. Bellanti had a reasonable basis for offering his report as originally written will be evaluated in the context of any request for attorneys' fees and costs.

## B. Lack of Expertise With Autoimmune Hepatitis

The preceding section about Dr. Bellanti's report explains how Dr. Bellanti's oral testimony differed from his report for no apparent reason. The situation is different for Dr. Koff's report. This report provided reasons for Dr. Bellanti to re-evaluate his conclusion that the hepatitis B vaccine caused petitioner's autoimmune hepatitis. But, Dr. Bellanti seems to have ignored Dr. Koff's report and did not adjust his report when respondent presented him with new information.

To present a reliable, credible and persuasive opinion that the hepatitis B vaccine caused autoimmune hepatitis, Dr. Bellanti should have investigated autoimmune hepatitis much more thoroughly. Even if Dr. Bellanti did not adequately research the disease about which he was opining before he wrote his report, he certainly should have been more informed about the disease when he testified.

Although Dr. Bellanti specializes in the field of immunology, his lack of knowledge about diseases of the liver can be excused only in part. Dr. Koff's report alerted Dr. Bellanti to

the salient issues. Dr. Koff also presented articles from peer-reviewed publications to support his opinion. Despite having information from articles cited by Dr. Koff readily available, Dr. Bellanti proceeded as if Dr. Koff's opinion and literature did not exist. This apparent willful blindness happened in every case.

Dr. Bellanti's opinion in each case suffered from one or more significant flaws that are directly tied to his lack of expertise about autoimmune hepatitis. These are not points which experts typically dispute. Battles between experts are common in vaccine Program cases. See Sword, 44 Fed. Cl. at 188. Rather, Dr. Bellanti's errors concern such fundamental issues over which there was no justifiable dispute, that questions have arisen about Dr. Bellanti's competence as an expert to opine about the cause of diseases of the liver.

The list of fundamental errors includes:

| | |
|---|---|
| Myers | failing to appreciate the difference between autoimmune hepatitis and nonalcoholic steatohepatitis. |
| Rotoli | failing to appreciate that Ms Rotoli's liver biopsy showed such extensive damage (fibrosis) that the disease must have begun before she received the first dose of the hepatitis B vaccine. |
| Porter | failing to recognize an alternative cause for her autoimmune hepatitis: minocycline. After Dr. Koff raised this issue, Dr. Bellanti was not prepared to explain why the hepatitis B vaccine was more likely than the minocycline to be the cause. |
| Torbett | failing to recognize an alternative cause for her autoimmune hepatitis: minocycline. After Dr. Koff raised this issue, Dr. Bellanti was not prepared to explain why the hepatitis B vaccine was more likely than the minocycline to be the cause. |

As stated, these mistakes are serious. These are errors that directly undermine Dr. Bellanti's opinion. They are also issues on which Dr. Bellanti lacked any effective rebuttal. Therefore, the evidence from each case solely supports a finding that Dr. Bellanti lacks credibility. However, the repetition of significant errors reinforces the finding that Dr. Bellanti lacked credibility.[12]

---

[12] During any application for attorneys' fees, the conduct of petitioner's counsel can be evaluated. Dr. Koff's report and literature also alerted counsel to important issues. As an advocate, counsel is responsible for anticipating arguments from the other side and preparing a response. As an officer of the court, counsel is responsible for ending litigation when the likelihood of prevailing is remote. See Perreira v. Sec'y of Health & Human Servs., 33 F.3d 1375, 1376-77 (Fed. Cir. 1994) (affirming special master's decision not to award all attorneys'

### C. Dr. Bellanti's Demeanor

The analysis in sections A and B, above, is based upon the written material, primarily Dr. Bellanti's report and the transcript of his testimony. The lack of credibility is apparent on this information alone. But, Dr. Bellanti's demeanor during his testimony strongly reinforces the doubts about Dr. Bellanti's veracity. A fact finder may evaluate an expert's demeanor in determining credibility. Andrew Corp. v. Gabriel Electronics, Inc., 847 F.2d 819, 824 (Fed. Cir. 1988).

Evaluations of credibility by fact-finders who observe testimony are accorded "great deference." Pafford v. Sec'y of Health & Human Servs., 451 F.3d 1352, 1359 (Fed. Cir. 2006); cert. denied, ___ U.S. ___, 127 S. Ct. 2909 (2007); accord Energy Capital Corp. v. United States, 302 F.3d 1314, 1329 (Fed. Cir. 2002).

At several points, Dr. Bellanti's demeanor suggested that he was uncomfortable with the topic being discussed. These included:

1) being evasive during cross-examination about molecular mimicry. Tr. 86

2) being evasive during cross-examination about bystander activation. Tr. 87

3) appearing uncomfortable and not having a better answer when asked about rechallenge. Tr. 103

4) appearing unsettled when asked to discuss his training in gastroenterology. Tr. 106.

5) appearing uncomfortable when providing a summary of his opinion in Mr. Myers's case. Tr. 220.

6) lacking confidence in his testimony when he stated that Mr. Myers's fevers, chills, headaches were due to the vaccine, and not a virus that was affecting other family members. Tr. 508-09.

7) appearing uncomfortable when admitting that he did not know when Ms. Rotoli's autoimmune hepatitis began but, nonetheless, maintaining that the temporal relationship is appropriate. Tr. 597.

8) appearing unfamiliar with the fact that Ms. Rotoli did not respond to the hepatitis B vaccination. Tr. 606.

---

fees).

9) appearing uncomfortable when informed that Ms. Rotoli's liver biopsy showed moderate fibrosis in her liver. Tr. 607.

10) appearing uncomfortable when asserting that the history of Ms. Porter's autoimmune hepatitis shows that the hepatitis B vaccine, not the minocycline, caused her disease. Tr. 959.

It is probably not a coincidence that this list of instances when Dr. Bellanti's demeanor suggested a weakness in his testimony matches many topics for which his opinion was found not to be credible. Given all the circumstances, a reasonable inference to be drawn from Dr. Bellanti's demeanor is that he was aware that his opinion was flawed, yet he chose to provide it anyway.

**4. Overall Conclusion Regarding Dr. Bellanti**

A consideration of Dr. Bellanti's report, his testimony, and his demeanor while testifying raises significant concerns not just about Dr. Bellanti's persuasiveness but also his truthfulness. Although this point has been made several times, it bears repeating. The origins about these serious questions are not based upon mere disagreements between experts. Almost every vaccine case involves some dispute between experts. Resolving a reasoned disagreement between experts is a primary function of special masters. Simply finding an expert is not persuasive differs from finding an expert not credible. Here, repeatedly, on significant issues, Dr. Bellanti has presented no credible basis for most (if not all) assertions.

Several times, Dr. Bellanti resorts to describing adverse reactions to the hepatitis B vaccine as "rare cases." Tr. 36-40, 93, 201, 499, 528. Invoking this phrase seems to be equivalent to asking that the requirement for reliable evidence be disregarded. However, even in "rare cases," petitioners bear the burden of presenting evidence to make their experts' theories reliable. For example, in Mr. Myers's cases, there appears to be no reason for Dr. Bellanti to claim that he had autoimmune hepatitis when the diagnostic tests indicated that Mr. Myers had steatohepatitis. Exhibit 3 at 20.

Here, so many questions about the basis for Dr. Bellanti's statements, contained in either his report or his testimony, have led to a question about Dr. Bellanti's veracity. As a professor and published author, Dr. Bellanti should appreciate the need for some evidence to substantiate his theories. Dr. Bellanti failed to present any evidence that was credible and persuasive to support his statements and opinions. Consequently, Dr. Bellanti's opinion, as a whole, lacks any persuasiveness.

In this case, the quality of Dr. Bellanti's work appears to be inconsistent with previous work. In other cases, Dr. Bellanti has offered opinions that a vaccine caused a particular condition that Special Masters have found persuasive. E.g., Keenan v. Sec'y of Health & Human Servs., No. 99-561V, 2007 WL 1231592 *10 ( Fed. Cl. Spec. Mstr. Apr. 5, 2007); Bowes v. Sec'y of Health & Human Servs., No. 01-481V, 2006 WL 2849816 (Fed. Cl. Spec. Mstr. Sept. 8,

2006). For some reason(s), the quality of Dr. Bellanti's work in the present cases fell below what is expected of an expert. In future cases, it is expected that Dr. Bellanti's work, beginning with his report, will again achieve a high quality.

## V. Conclusion

Mr. Myers has not established that the hepatitis B vaccine caused him any adverse reaction. Thus, he is not entitled to compensation. The Clerk's Office is ordered to enter judgment consistent with this decision unless a timely motion for review is filed.

IT IS SO ORDERED.

s/ Christian J. Moran
Christian J. Moran
Special Master