1.MUMPS SIDE EFFECTS | MORE DANGEROUS

Their actions allowed the continued marketing to infants and others of a knowingly inadequate and dangerous vaccine - dangerous because immunity from the vaccine was not protective and over time, left people vulnerable to mumps at an older age when it is a more dangerous disease. Their actions were not motivated by concerns for the wellbeing of children, but were a commercial expedient on behalf of their employer. As a matter of fact, mumps is more dangerous in adults with a higher rate of complications than in children, in whom mumps is almost invariably a mild disease. [see Exhibit 13, Section 10]. Therefore, for a vaccine whose efficacy is short lived, such as the mumps vaccine, individuals become susceptible to mumps again when they are adults (post puberty) when the complications are more severe. For example, testicular inflammation does not occur in male children who suffer mumps before puberty. However, it does occur in post-pubertal males and is associated with an increased risk of infertility. Therefore a vaccine like mumps, that does not work adequately, and whose efficacy is falsely represented to the public, makes mumps a more dangerous disease.

1.1

https://www.cdc.gov/mumps/about/complications.html
Mumps can occasionally cause complications, especially in adults.
Complications can include:

- inflammation of the testicles (orchitis); this may lead to a decrease in testicular size (testicular atrophy)
- inflammation of the ovaries (oophoritis) and/or breast tissue (mastitis)
- inflammation in the pancreas (pancreatitis)
- inflammation of the brain (encephalitis)
- inflammation of the tissue covering the brain and spinal cord (meningitis)
- Deafness
- Inflammation of the testicles could lead to temporary sterility or decrease fertility in men, but no studies have assessed if it results in permanent infertility.

1.2

MALONE REPORT [EXHIBIT 2A] | PAGE 8 | APPX 468 | PARAGRAPH ONE | LINES 7-11

In adults, mumps complications include infection and inflammation of the testes (orchitis), ovaries (oophritis) or female breast (mastitis). Mumps infection during pregnancy carries a spontaneous abortion rate of up to 25%. Complications of mumps in adults can include infection of the pancreas (pancreatitis), deafness, inflammation of the membranes surrounding the brain and spinal cord (meningitis), and inflammation of the brain (encephalitis).

1.3

https://www.hopkinsmedicine.org/health/conditions-and-diseases/mumps-in-adults

Johns Hopkins: Medicine
What complications are commonly associated with mumps? Complications of mumps happen more often among adults than children, and may include:

- Meningitis or encephalitis. Inflammation of the membrane that covers the brain and spinal cord or inflammation of the brain.
- Orchitis. Inflammation of one or both testicles.
- Mastitis. Inflammation of breast tissue.
- Parotitis. Inflammation of one or both parotid glands.
- Oophoritis. Inflammation of one or both ovaries.
- Pancreatitis. Inflammation of the pancreas.
- Deafness

1.4

Krahling Deposition | Appx 5671 | Page 444 | Lines 8-24

Merck employees were aware that low vaccine effectiveness made mumps more dangerous.

Q. Do you think it has zero effectiveness, the vaccine?

A. I know from talking to Krah and publications he gave me that having low vaccine efficacy can actually make a disease more dangerous. So when you say any effectiveness, there's kind of an implication there that a lower amount is just a lower amount of a good thing. A lower amount of antibodies that don't neutralize the virus can actually make the disease more severe. He gave me publications that documented that this has already occurred in the measles vaccine and he was concerned about that low efficacy in measles. So, yeah, I mean, **a low amount of non-neutralizing antibodies can be a very dangerous thing.**

2. MUMP'S VACCINE EFFECTIVENESS

2.1

KESSLER REPORT [EXHIBIT 3A] | PAGE 31 MMRII LABEL IN UNITED STATES IN 1996 [Merck Package Insert for MMR]

M-M-R®II PACKAGE CIRCULAR

M-M-R® II (MEASLES, MUMPS, and RUBELLA VIRUS VACCINE LIVE)

DESCRIPTION

M-M-R® II (Measles, Mumps, and Rubella Virus Vaccine Live) is a live virus vaccine for immunization against measles (rubeola), mumps and rubella (German measles).

M-M-R II is a sterile lyophilized preparation of (1) ATTENUVAX® (Measles Virus Vaccine Live), a more attenuated line of measles virus, derived from Enders' attenuated Edmonston strain and grown in cell cultures of chick embryo; (2) MUMPSVAX® (Mumps Virus Vaccine Live), the Jeryl Lynn (B level) strain of mumps virus grown in cell cultures of chick embryo; and (3) MERUVAX® II (Rubella Virus Vaccine Live), the Wistar RA 27/3 strain of live attenuated rubella virus grown in human diploid cell (WI-38) culture.[1,2] The vaccine viruses are the same as those used in the manufacture of ATTENUVAX (Measles Virus Vaccine Live), MUMPSVAX (Mumps Virus Vaccine Live) and MERUVAX II (Rubella Virus Vaccine Live). The three viruses are mixed before being lyophilized. The product contains no preservative.

The reconstituted vaccine is for subcutaneous administration. When reconstituted as directed, the dose for injection is 0.5 mL and contains not less than the equivalent of 1,000 $TCID_{50}$ (tissue culture infectious doses) of the U.S. Reference Measles Virus; 20,000 $TCID_{50}$ of the U.S. Reference Mumps Virus; and 1,000 $TCID_{50}$ of the U.S. Reference Rubella Virus. Each dose contains approximately 25 mcg of neomycin. The product contains no preservative. Sorbitol and hydrolized gelatin are added as stabilizers.

CLINICAL PHARMACOLOGY

Clinical studies of 279 triple seronegative children, 11 months to 7 years of age, demonstrated that M-M-R II is highly immunogenic and generally well tolerated. In these studies, a single injection of the vaccine induced measles hemagglutination-inhibition (HI) antibodies in 95 percent, mumps neutralizing antibodies in 96 percent, and rubella HI antibodies in 99 percent of susceptible persons.

The RA 27/3 rubella strain in M-M-R II elicits higher immediate post-vaccination HI, complement-fixing and neutralizing antibody levels than other strains of rubella vaccine[3-9] and has been shown to induce a broader profile of circulating antibodies including anti-theta and anti-iota precipitating antibodies.[10,11] The RA 27/3 rubella strain immunologically simulates natural infection more closely than other rubella vaccine viruses.[11-13] The increased levels and broader profile of antibodies produced by RA 27/3 strain rubella virus vaccine appear to correlate with greater resistance to subclinical reinfection with the wild virus,[11,13-15] and provide greater confidence for lasting immunity.

Vaccine induced antibody levels following administration of M-M-R II have been shown to persist up to 11 years without substantial decline.[16,43] Continued surveillance will be necessary to determine further duration of antibody persistence.

2.2

MALONE REPORT [EXHIBIT 3A] | PAGE 88 - 89 | APPX 548-549

Since at least 1995, Merck's package insert for M-M-R II has contained the following statement: Clinical studies of [284] triple seronegative children, 11 months to 7 years of age, demonstrated that . . . a single injection of the vaccine [M-M-R II] induced . . . mumps neutralizing antibodies in 96% . . . of susceptible persons.

In my opinion, this statement is inaccurate, false and misleading because the clinical study it references was not conducted on the M-M-R II vaccine that Merck has sold since it switched (in 2005) to its rHA formulation of the product and changed (in 2007) its mumps end-expiry potency specification to 4.1 log10 TCID50/dose. 291 Merck has conducted no neutralization studies for M-M-R II with rHA, let alone any that demonstrated "mumps neutralizing antibodies in **96%** . . . of susceptible persons." For M-M-R II at potencies as low as 4.1 log10, the only neutralization study Merck conducted was the AIGENT which as discussed above was not specific to mumps and did not reliably measure neutralizing antibodies. See Sec. V.A. Moreover, in Merck's developmental testing for [Protocol 007], Merck's standard PRN measured mumps neutralization responses in the **66% - 75%** range when testing against currently circulating wild-type mumps strains.

2.3

EXHIBIT 12 | Amended Complaint for Violations of the Federal False Claims Act. Civil Action Number 10-4374 (cjd)

United States District Court for the Eastern District of Pennsylvania.

Plaintiffs' Counsel

This case is about Merck's efforts for more than a decade to defraud the United States through Merck's ongoing scheme to sell the government a mumps vaccine that is mislabelled, misbranded, adulterated and falsely certified as having an efficacy rate that is significantly higher than it actually is.

2.4

APPEAL [EXHIBIT 1] | PAGE 1 | PARAGRAPH ONE

Plaintiffs' Counsel:

This False Claims Act case centers around Merck's cascade of misrepresentations and omissions to the CDC surrounding Merck's sales of its MMR-II and [ProQuad] mumps vaccines. It started with Merck's discovery in the mid-1990's of mumps potency failures in MMR-II; which led to Merck's Protocol 007 clinical trial to demonstrate MMR-II still provided sufficient mumps protection at the lower potencies; which led to Merck's fraudulent Protocol 007 testing because Merck could not demonstrate this protection; which led to Merck's fraud in securing MMR-II and [ProQuad] vaccine licenses; all of which resulted in Merck's sales to the CDC of vaccines violating numerous prerequisites and material conditions to CDC purchase relating to mumps vaccine potency, protection, shelf life, licensing, and labeling. Indeed, Merck's misconduct goes to the very essence of

the CDC's vaccine purchases and Merck's absolute duty to disclose any problems with its vaccines.

2.5
APPEAL [EXHIBIT 1] | PAGE 14 | PARAGRAPH TWO

Plaintiffs' Counsel:
C. Merck's Fraud in Securing Its MMR-II and ProQuad Licenses
The record thus powerfully demonstrates that Protocol 007 -- both the AIGENT and [ELISA] tests -- failed to measure protection against mumps. Nevertheless, Merck repeatedly represented that Protocol 007 measured how well low-potency MMR-II protected against mumps. That is what Merck told the parents of the children participating in the testing to secure their consent, the clinical investigators administering the vaccines to the children, and the public health community more broadly. It also is what Merck told the DOJ when it investigated Relators' original Complaint:

2.6
APPEAL [EXHIBIT 1] | PAGE 15 | PARAGRAPH ONE

Plaintiffs' Counsel:
Merck similarly misrepresented the test results to the FDA to support its application to lower MMR-II's minimum mumps potency specification on the vaccine label so it could get back into compliance and avoid a product recall. Throughout the application process, Merck falsely represented that -- contrary to what Merck knew to be true -- Protocol 007 demonstrated low-potency MMR-II still afforded sufficient protection against mumps. See, e.g., Appx6480 (MMR-II Application) (claiming Protocol 007 data "indicate with a high level of assurance that decreasing the mumps [potency] ... will ensure that M-M-RTMII remains a highly effective vaccine."); Appx4350 (Clinical Study Report) (claiming Protocol 007 results "support the effectiveness" of low-potency MMR-II); Appx5171 (Merck Document) (characterizing AIGENT "as a surrogate marker for vaccine efficacy").

2.7
APPEAL [EXHIBIT 1] | PAGE 16 | PARAGRAPH TWO

Plaintiffs' Counsel:
D. Merck's Fraud in Its MMR-II and ProQuad Labeling
As a result of Merck's MMR-II potency problems and Merck's fraud in securing its MMR-II and [ProQuad] licenses, Merck's vaccine labels have misrepresented the mumps vaccines Merck has been selling since 2000. For MMR-II through December 2007, as Merck conceded internally, the vaccine was "misbranded" and "out of compliance" because it did not meet or lacked adequate assurances of meeting the label's potency and shelf-life specifications. See supra 8-10. And for MMR-II and [ProQuad] through the present, the labels have misrepresented the mumps protection the vaccines provide and their basis for licensure. They rely on outdated studies and statements of protection in no

way linked to or supported by the AIGENT and [ELISA] tests Merck used to obtain its current licenses. Appx366-369 (Rels. SUMF).

2.8

MALONE REPORT [EXHIBIT 2B] | PAGE 88 | APPX 548 | PARAGRAPH 4

In my opinion, this statement is inaccurate, false and misleading because the clinical study it references was not conducted on the M-M-R II vaccine that Merck has sold since it switched (in 2005) to its rHA formulation of the product and changed (in 2007) its mumps end-expiry potency specification to 4.1 log10 TCID50/dose.291

2.9

MALONE REPORT [EXHIBIT 2A]| PAGE 7 | APPX 467 | PARAGRAPH THREE

The M-M-R II and [ProQuad] package inserts are inaccurate, false and misleading in claiming and/or suggesting Merck has conducted clinical studies demonstrating these vaccines afford protection against mumps.

2.10

MALONE REPORT [EXHIBIT 2B] | PAGE 89 | APPX 549 | PARAGRAPH FOUR

This statement is also inaccurate, false and misleading as it relates to the mumps component of M-M-R II formulated with rHA or at potencies as low as 4.1 log10.

2.11

MALONE REPORT [EXHIBIT 2B] | PAGE 89 | APPX 549 | PARAGRAPH FIVE

Merck's package insert for [ProQuad] is also inaccurate, false and misleading in its statements on how well the vaccine protects against mumps.

2.12

MALONE REPORT [EXHIBIT 2A] | PAGE 6 | APPX 466 | SUMMARY OF OPINIONS

A summary of my opinions is as follows:

1.Merck's AIGENT assay failed to provide a reliable or clinically relevant measure of protection against mumps.

3. Merck misrepresented the AIGENT results in its submission to the FDA of the preliminary subset analysis.

4. Merck misrepresented the Protocol 007 results in its Supplemental Biologics License Application to the FDA to lower the mumps end-expiry potency specification for M-M-R II.

7. Merck has conducted no clinical studies that demonstrate or support how well M-M-R II (as of 2005) or ProQuad protect against mumps.

8. The M-M-R II and ProQuad package inserts are inaccurate, false and misleading in claiming and/or suggesting Merck has conducted clinical studies demonstrating these vaccines afford protection against mumps.

2.13

KESSLER REPORT [EXHIBIT 3B]| PAGE 516 | APPX 1077 |

The Form 483 observation that "raw data is being changed with no justification" in the Protocol 007 testing rendered that data unreliable. Furthermore, Merck had already relied on that data, "changed with no justification," on at least three instances: (1) in response to the 2001 Warning Letter to "justify the efficacy of lower potency product;" (2) in its Serial 63 submission of the results of the preliminary analysis from Protocol 007; and (3) in Biological Product Deviation Report 01-005.

Because a reasonable and prudent manufacturer must assure submissions to the FDA are accurate, Merck's prior submissions relying on the Protocol 007 data changed without justification should have been amended. Furthermore, after two Form 483s, a Warning Letter and two BPDRs within twelve months all relating in some way to the mumps potency issue, a reasonable and prudent manufacturer would have described to the FDA that it was unable to assure the mumps end expiry specification in MMRII even after the overfill and while it did not have clinical data to support lowering the end expiry specification.

2.14

KESSLER REPORT [EXHIBIT 3B] | PAGE 524 | APPX 1085

From May 1998-December 2007, MMRII was adulterated because Merck was unable to assure the potency specification for mumps of not less than 4.3 log10 [20,000] TCID50 for the shelf life of the vaccine.

2.15

MALONE REPORT [EXHIBIT 2A] PAGE 21 | APPX 481 | PARAGRAPH TWO | LINES 1-8

CBER also insisted that Merck test against a wild-type mumps virus indicator strain, which is one actually circulating in the real world, as opposed to the attenuated Jeryl Lynn mumps virus strain, which is the weakened mumps virus used in the vaccine.40 Merck engaged in preliminary testing with its standard PRN assay using various indicator virus isolates, including the attenuated Jeryl Lynn mumps virus strain as well as several wild-type mumps virus strains. With this initial developmental testing, Merck measured PRN seroconversion rates of approximately 90% for the Jeryl Lynn vaccine strain, and seroconversion rates of roughly 66% to 75% for the various wild-type strains that were tested.41 The original testing did not yield $\geq$ 95% wild-type PRN seroconversion rates.

2.16

KESSLER REPORT [EXHIBIT 3A] | PAGE 34 | APPX 595 | PARAGRAPH TWO | LINES 7

FDA also required the use of a wild type virus in Merck's immunogenicity testing.155

2.17

KRAH DEPOSITION | APPX 5031-5032 | PAGE 598-602

On the issue of the objective of the assay in the title of Exhibit [Exhibit 5] under 'Objective', Krah wrote "Identify a mumps neutralization assay format using a 'wild-type' mumps strain that **permits** measurement of a ≥ 95% seroconversion rate in M-M-RII vaccines. that The AIGENT assay was developed to provide a measure of mumps antibody and seroconversion that was consistent with CBER's requirement.

Below, the meaning of the word 'permits' is apparent. Krah states "**The AIGENT assay was developed to provide a measure of mumps antibody and seroconversion that was consistent with CBER's requirement"** CBER's requirement was a seroconversion rate ≥95%. This is read as the test being designed to achieve a particular result.

Q. Dr. Krah, you developed the AIGENT test. Correct?

A. Yes, along with other members of the lab.

Q. You and Mary Yagodich developed the AIGENT assay. Correct?

A. Yes.

Q. Other than you two, you can't identify anyone else involved in that development. Correct?

MR. SANGIAMO: Object to the form. Misstates prior testimony.

THE WITNESS: There are others in the lab who contributed to experiments that were part of the development. Mary and I were the leads in designing the experiments for the development.

BY MR. SCHNELL: Q. And here the FDA wrote that Merck has developed an assay as an immunological correlate for the efficacy of mumps vaccination. Is that what you developed the AIGENT assay for?

MR. SANGIAMO: Object to the form.

THE WITNESS: My objective and our lab's objective was to develop an assay that would be capable of measuring 95 percent seroconversion. The clinical application is something that's beyond my responsibility of assigning.

BY MR. SCHNELL: Q. So is your question -- is your answer, then, that you did not develop the AIGENT assay as an immunological correlate . -- for the efficacy of mumps vaccination?

MR. SANGIAMO: Objection. Asked and answered. We've gone over this, Gordon.

THE WITNESS: **The AIGENT assay was developed to provide a measure of mumps antibody and seroconversion that was consistent with CBER's requirement.** Its application or interpretation of what the data would be applied to is beyond my responsibility and understanding.

BY MR. SCHNELL: Q. So did the FDA get it wrong here?

MR. SANGIAMO: Gordon, come on. Let's go one more round. You can give your answer again, Dr. Krah, and hopefully we're done.

THE WITNESS: I defer to the FDA and their interpretation. That's beyond my responsibility.

Q. During the inspection, did you discuss with anyone at the FDA what you developed the AIGENT assay for?

MR. SANGIAMO: Dr. Krah, if you want to read the rest of the document given that it may document those discussions, feel free to do so.

THE WITNESS: I would say I personally did not -- I don't recall indicating to the FDA the purpose for the assay development other than it was a mumps neutralization assay to support Protocol 007.

BY MR. SCHNELL: Q. Now, further on this page, the last paragraph it's the second sentence beginning with the word "Thus...." Do you see that?

A. I'm sorry?

Q. On page 3, last paragraph, second sentence beginning with the word "Thus..."

A. "Thus, there is no...."

Q. "Thus, there is no guarantee that the numbers on the worksheet were the original data, even at time of transfer of count from plate to worksheet." Do you see that?

A. Yes.

Q. Do you recall having that discussion or a discussion on that topic with Drs. Bennett and/or Carbone?

A. I recall having that discussion with Dr. Carbone, yes.

Q. And you told her that the numbers on the worksheet were the original data. Correct?

A. The original entry on the -- I told her that the numbers recorded on the counting sheet were the original counts from the plates.

Q. Here the FDA is saying there's no guarantee that that's the case. So I'm wondering in your discussion with Dr. Carbone or Bennett, or both on this topic, did they believe, as

you recall, that there was no guarantee that the numbers on the worksheet were the original data?

THE WITNESS: Those are the words -- as best I recall, those are the words she has listed here. In subsequent discussion with her, we explained the flow of accounting, the reasons for the checks. My understanding was that she -- that -- still say there was no guarantee but she was not having a reservation. I wouldn't say as best I recall that was like an absolute guarantee that they were the original counts, but she, from my understanding, did not question that they represented the original counts.

Q. So is your testimony that, as you understand it, you convinced Dr. Carbone that the numbers on the worksheet were the original data in every case?

MR. SANGIAMO: Object to the form.

THE WITNESS: I recall indicating that to her. And I don't recall her making a contrary -- a comment against it, that reply.

2.18
KRAH DEPOSITION | APPX 5053 | PAGES 688-689

Alan Shaw was aware of the progress of the AIGENT testing.

Q. I'd like to mark as Krah Exhibit 51, a memo dated September 21, 2000, from Dr. Krah to Alan Shaw, subject "Monthly report for September, 2000." Were you in the practice of preparing monthly reports for Dr. Shaw?

A. Yes. Or whoever was my manager at the time.

Q. Did you have a manager that -- other than Dr. Shaw during the AIGENT testing?

A.No.

2.19
KRAH DEPOSITION | APPX 5070 | PAGE 754 | Lines 12-23

The accuracy of the AIGENT test developed by Krah is precisely within his expertise which is the reason he was instructed to develop it.

Q. What about if the parent (sic) are interested to know what the most accurate measure of the kid's titers were with the vaccine?

A. I would not characterize the mumps, I would not be able to say that the AIGENT assay is the most accurate measure of mumps antibody. It's an assay that's intended as an imperfect model for looking at immune response in terms of an antibody response to the vaccine. Whether it's accurate or not, that's beyond my expertise.

2.20

EFFICACY - EMINI DEPOSITION | APPX 4516 | PAGE 70 | LINES 10-17

A. Efficacy has a very specific definition. It is whether or not -- well, again, it depends on the context of the product. But in the context of a vaccine is whether or not the vaccine, okay, is effective in a clinical setting to prevent disease caused by the pathogen against which the vaccine is designed to be effective.

3. FAILURE OF MMR II TO MEET FDA REQUIREMENTS

3.1

MALONE REPORT [EXHIBIT 2B] | PAGE 88 | APPX 548

> In my opinion, this statement is inaccurate, false and misleading because the clinical study it references was not conducted on the M-M-R II vaccine that Merck has sold since it switched (in 2005) to its rHA formulation of the product and changed (in 2007) its mumps end-expiry potency specification to 4.1 log10 TCID50/dose.291 Merck has conducted no neutralization studies for M-M-R II with rHA, let alone any that demonstrated "mumps neutralizing antibodies in 96% . . . of susceptible persons." For M-M-R II at potencies as low as 4.1 log10, the only neutralization study Merck conducted was the AIGENT which as discussed above was not specific to mumps and did not reliably measure neutralizing antibodies. See Sec. V.A. Moreover, in Merck's developmental testing for [Protocol 007], Merck's standard PRN measured mumps neutralization responses in the 66% - 75% range when testing against currently circulating wild-type mumps strains.

3.2

KESSLER REPORT [EXHIBIT 3B] | PAGE 98 | APPX 659 | PARAGRAPH 4

> According to Merck documents, Merck had several requirements for the serologic assays to be used in Protocol 007 (1) a neutralization assay was necessary; (2) testing against a wild-type virus was important to measure protection;

3.3

KESSLER REPORT [EXHIBIT 3B] PAGE 99 | APPX 660 | PARAGRAPH TWO

> By the middle of 1999, Merck had results from two independent assays testing against wild type mumps virus with seroconversion rates of approximately 70% in contrast to the 96% Merck assumed it would measure based on the seroconversion rates from the "original MMRII submission using an older neutralization assay." Merck's Clinical Assay Subcommittee proposed how to present the data to FDA and "defend" the 96% claim on the MMRII label, should FDA "raise the issue of the 96% SCR in the current label." Merck also considered delaying the completion of Protocol 007 until it could develop a more sensitive neutralization assay that would allow Merck to measure a 96% seroconversion rate.

3.4

KESSLER REPORT [EXHIBIT 3B] | PAGE 97 | APPX 658 | LINE 4

> enhance[ing] assay sensitivity, CBER does not use either complement or IgG to enhance sensitivity and feels that these maneuvers should not be necessary.

3.5

KESSLER REPORT [EXHIBIT 3B] | PAGE 105 | APPX 666 | PARAGRAPH TWO

> In my opinion, the objective of Protocol 007 was to measure MMRII's ability to protect against currently circulating wild-type mumps, especially at a potency lower than the 4.3 log10 [20,000] TCID50 stated on the MMRII label.342 A reasonable and prudent manufacturer would design a serologic assay that would accomplish the stated goal of the study.

3.6

KESSLER REPORT [EXHIBIT 3B] | PAGE 108 | APPX 669 |

Following the March 13, 2000 meeting, according to FDA's minutes, (1) the neutralization assay to be used in the end expiry study (Protocol 007) was to measure protection against wild-type disease, (2) the indicator virus used in the assays needed to be wild-type, (3) FDA could not comment on the appropriateness

3.7

KESSLER REPORT [EXHIBIT 3B] | PAGE 108-109 | APPX 669-670

An email from MRL's Principal Investigator, Virus and Cell Biology, Dr. David Krah, to MRL's Director, Clinical Research, Leonard Rubinstein, with the subject: Re: Do you need any help?," dated January 17, 2003, stated:

The M-M-RII [end expiry] study used an anti IgG enhanced neutralization and the low passage Jeryl Lynn indicator virus. We would have used the same assay in 006 for 007 except that we could not achieve the 90% seroconversion sensitivity with any of the wild-type mumps strains without enhancing the sensitivity.346 We could measure > 90% seroconversion using the vaccine strain as the indicator, but CBER required us to use a "wild-type" indicator virus for 007.

3.8

APPEAL [EXHIBIT 1]| PAGES 8-10 | FULL PAGES

A. Merck's MMR-II Mumps Potency Failures

Starting in the mid-1990's, Merck discovered mumps potency problems with MMR-II. Appx312 (Rels. SUMF). Merck was unable to maintain the minimum required mumps potency for the full 24-month shelf life specified on the product label. Appx310-311 (Rels. SUMF). Merck attempted to resolve this issue by significantly increasing the amount of mumps virus in each MMR-II dose, doubling the vaccine's manufactured mumps potency. Appx313 (Rels. SUMF). It did not fix the problem. According to Merck's calculations, even with this mumps overfill, Merck could only assure MMR-II would meet the minimum mumps potency specification on the vaccine label for roughly 12 months or less. Appx316-317 (Rels. SUMF).

Merck acknowledged at the highest levels of the company that MMR-II was "misbranded" and "out of compliance," and required "immediate corrective action" to avoid a product recall. Appx317-318 (Rels. SUMF). The record is full of this evidence from Merck's own documents, in Merck's own words:

- "Critical Milestones ... label is out of compliance. Timing of Critical Milestones ... OVERDUE!"). [Appx4052 (emphasis in original).]

- "Mis[]branded – stability continues to be an issue, even with the increase in mumps ...." [Appx4025 (emphasis in original).]

- "[O]ur most recent stability analysis for mumps does not support the current label claim ...." [Appx3877.]

- "8% of current product is expected to fail [minimum potency specification]." [Appx3912.]

- "[W]e are out of compliance." [Appx4033.]

- "[M]aximum [] shelf life of 12 months." [Appx3930 (emphasis in original).]

- "[W]e do not have adequate (95%) confidence that the current manufacturing process supports the ... label claim. As such, an immediate corrective action must be taken." [Appx3918.]

- Label claim "is wrong as we cannot guarantee this potency in our product." [Appx3903.]

- "[T]here continues to be an unacceptable risk of current product failure. This has serious implications for these vaccines, potentially culminating in a recall ...." [Appx4082.]

- "[I]ssue of short s[h]elf life was of significant concern to marketing ... - we may not have any other immediate solution to keep product on the market ...." [Appx4118.]

- "[W]e wanted to salv[a]ge the product ... alternative was a product recall." [Appx4062.]

3.9

APPEAL [EXHIBIT 1] | PAGE 19 | PARAGRAPH ONE | LINES 1-9

F. Merck's Fraud in Its MMR-II [and ProQuad] Sales to the CDC

Despite the mumps resurgence and widespread call for a new mumps vaccine, until late last year the CDC's only options for mumps, measles, and rubella vaccines for the millions of children covered by the Vaccines for Children Program were Merck's MMR-II [and ProQuad]. The CDC has made these purchases without actual knowledge of Merck's mumps vaccine potency, protection, shelf-life, labeling, and licensing issues. Appx374 (Rels. SUMF). Merck has failed to disclose these issues despite its clear duty to do so and its own concerns about how well its mumps vaccines protect against mumps.

3.10

APPEAL [EXHIBIT 1]| PAGE 17 | PARAGRAPH ONE | LINES 3-4 - LINES 10-14

E. MMR-II [and ProQuad] Have Not Provided Sufficient Protection to Prevent a Mumps Resurgence.

Merck's supervisor of the AIGENT testing predicted this resurgence would occur because of the diminished level of mumps protection Merck's vaccines provide. Appx370 (Rels. SUMF). On multiple occasions, he told Relator Krahling "the efficacy rate of the mumps

vaccine had significantly diminished since its original licensure." Appx5721 (Interrogatory Response).

3.11

MALONE REPORT [EXHIBIT 2B]| PAGE 89 | APPX 549 | PARAGRAPH ONE | LINES 1-4

…Moreover, in Merck's developmental testing for [Protocol 007], Merck's standard PRN measured mumps neutralization responses in the 66% - 75% range when testing against currently circulating wild-type mumps strains.292

3.12

MALONE REPORT [EXHIBIT 2A]| PAGE 18 | PARAGRAPH TWO | LINES 1-3

Protocol 007 was designed to address CBER's stated concern that lots of M-M-R II that failed to meet the mumps end-expiry potency specification did not provide sufficient protection against mumps.30

3.13

MALONE REPORT [EXHIBIT 2A] PAGE 21 | APPX 481 | PARAGRAPH TWO | LINES 1-8

CBER also insisted that Merck test against a wild-type mumps virus indicator strain, which is one actually circulating in the real world, as opposed to the attenuated Jeryl Lynn mumps virus strain, which is the weakened mumps virus used in the vaccine.40 Merck engaged in preliminary testing with its standard PRN assay using various indicator virus isolates, including the attenuated Jeryl Lynn mumps virus strain as well as several wild-type mumps virus strains. With this initial developmental testing, Merck measured PRN seroconversion rates of approximately 90% for the Jeryl Lynn vaccine strain, and seroconversion rates of roughly 66% to 75% for the various wild-type strains that were tested.41 The original testing did not yield $\geq$ 95% wild-type PRN seroconversion rates.

3.14

MALONE REPORT [EXHIBIT 2B] | PAGE 53 | APPX 513 | PARAGRAPH ONE | LINES 1-2

Internal Merck documents support my opinion that Merck did not use anti-IgG for a legitimate scientific purpose.

3.15

KESSLER REPORT [EXHIBIT 3A] | PAGE 34 | APPX 595 | PARAGRAPH TWO | LINES 7

FDA also required the use of a wild type virus in Merck's immunogenicity testing.155

3.16

KESSLER REPORT [EXHIBIT 3A] | PAGE 94 | APPX 655 | PARAGRAPH TWO | LINES 1-4

In response to FDA's request to provide clinically valid justification for determining serostatus, Merck concluded that the neutralization assay must be "100% specific" for a wild type323 neutralization response.324 Merck documented that FDA was interested in protection against wild type mumps virus. Merck continued to consider the use of ELISA, if it could correlate the assay to a neutralization assay.

3.17

MALONE REPORT [EXHIBIT 2A] | PAGE 22 | APPX 482 | PARAGRAPH ONE | LINES 1-4

> The first change was to use a low-passage Jeryl Lynn mumps vaccine strain (rather than a true wild-type strain) as the indicator virus. Second, Merck added rabbit anti-human Immunoglobulin G (anti-IgG) to the clinical serum samples for the purpose of, as Merck characterized it, enhancing the sensitivity of the assay

3.18

MALONE REPORT [EXHIBIT 2B] | PAGE 45 | APPX 505 | PARAGRAPH TWO

> Despite these well-accepted standards for avoiding bias in human clinical research, Merck designed the AIGENT as a results-oriented test to ensure it achieved its predetermined criteria of a seroconversion rate of at least 95%.

3.19

KESSLER REPORT [EXHIBIT 3A] | PAGE 106 | APPX 667 | PARAGRAPH TWO

> March 13, 2000, dated April 11, 2000, stated:
>
> As the PRN assay is an immunological endpoint for protection against wildtype disease, CBER stated that the virus used in the assay must be wild type (early passage) virus, not attenuated virus vaccine.

3.20

MALONE REPORT [EXHIBIT 2B] | PAGE 46 | APPX 506 | PARAGRAPH THREE

> Merck chose to cheat in order to meet the FDA's requirements.
>
> Merck acknowledged internally that it would have used this industry standard PRN design for Protocol 007 but it would not achieve Merck's predetermined seroconversion objectives:
>
> > The M-M-RII Protocol 006 study used a straightforward, non-enhanced neutralization, using several different indicator viruses. The M-M-RII study used an anti-lgG enhanced neutralization and the low-passage Jeryl Lynn indicator virus. We would have used the same assay used in 006 for 007 except that we could not achieve the 90% seroconversion sensitivity with any of the wild-type mumps strains without enhancing the assay sensitivity. We could measure >90% seroconversion using the vaccine strain as the indicator, but CBER required us to use a 'wild-type' indicator virus for 007.

3.21

KRAHLING DEPOSITION | Appx 5581 | Page 92 | Lines 20-24

> Merck misled the public and the purchasers of the vaccine.
>
> Q. So is the statement clinical studies of 284 triple seronegative children 11 months to 7 years of age demonstrated that MMR II is highly immunogenetic and generally well tolerated? Is that true or false, in your opinion?

A. It omits the fact that Merck had more recent data with a larger sample size and a more specific test or accurate test that that number was not true, that the number was significantly lower than that.

3.22

KRAHLING DEPOSITION | Appx 5583 | Page 99-100

Krah reveals to Krahling the real reason behind the use of Protocol 007

Q: Why is it that you think the vaccine's efficacy or effectiveness has diminished since the time that Hilleman ran his studies on the mumps vaccine?

A. Krah told me it did. We were working to try and -- I shouldn't say we. He and his lab and some members of his lab were working to try and say the vaccine worked as well as they state it did in the label. He said the FDA mandate that we show 95 percent efficacy was based on what they were representing in the label. And that if they couldn't show it, they would either have to change the label or they would lose their market, their exclusive license for it. So I mean, do you want reasons beyond that he told me?

Q. Yes, I would like to know whether there are any other reasons beyond what Dr. Krah told you that you believe the vaccine has a diminished efficacy or a diminished effectiveness?

A. Emini mentioned the same thing. He said we had to use rabbit secondary antibodies in order to get these results combined with Krah doing his thing with these data so that they could get the results for financial reasons.

3.23

KESSLER REPORT [EXHIBIT 3A] | PAGE 36 - 37 | APPX 597-598

The AIGENT testing in Protocol 007 substituted specificity (for mumps antibodies) with sensitivity (with a greater risk of false-positive results)

Dr. David Krah developed the standard neutralization assay and was also tasked with developing the assay Merck would use in Protocol 007.170 An internal Merck document stated that the assay to be used in the mumps end expiry study, Protocol 007, needed to be "highly specific for [a] W[ild]T[ype] neutralizing response."171 Specificity in mumps testing means measuring mumps-specific neutralizing antibodies.172 When the results of preliminary experiments with the standard neutralization assay using the wild-type indicator virus showed that Merck would not meet the criteria for success in Protocol 007, Dr. Krah conducted further experiments to develop a neutralization assay that was more "sensitive."

3.24

MALONE REPORT [EXHIBIT 2B] | PAGE 61 | APPX 521 | PARAGRAPH THREE

GCP [Good Clinical Practice] Violations.

Merck engaged in extensive violations of the GCP requirements in its AIGENT testing.184 These requirements must be followed in any clinical trial to ensure the testing is well controlled, scientifically sound and the results properly documented and

accurately reflect the purpose for which the test is being conducted. Failure to abide by these requirements seriously undermines the reliability and accuracy of the test results. Merck's AIGENT testing was rife with GCP violations, some of which were identified by CBER in its August 2001 inspection.185 Dr. Krah testified quite clearly to his lack of knowledge (still to this day) of GCP requirements and whether he conducted the AIGENT assay in compliance with them.186

3.26
EMINI DEPOSITION | APPX 4531 | PAGE 132-134

The FDA required a wild-type mumps virus in the PRN assay but such a virus produced neutralization rates far below the 90% required. Emini is adamant that the vaccine works but that the assay must be at fault. He ignores the alternative; that the vaccine does not work and manipulating the test will not alter this.

A. Well, according to this, the assays had been developed, that there was a PRN assay and the CPE assay, apparently both assays were being -- I'm reading what's in the rest of the document, that were being done. And they were being developed, you know, probably with the concurrence, not probably but for a fact, with the concurrence of the agency using a wild type virus. And with a wild type virus, and, again, reading through the rest of the document, one of the ones that was used, probably the initial one that was used was this Lo1 [London 1] wild type virus. It was giving seroconversion rates that were much lower than 90 percent, approximately 70 percent. And that was not going to meet the agency's requirement for a sensitive enough test that would allow you to answer the questions posed by 007.

Q. Do you know if the agency was told, if CBER was told about the low SCR for Lo1?

A. Based on documents that I reviewed, these were discussions that were going on in collaboration with the agency because the agency very much wanted an assay that would answer the question that would allow them to establish a value for end expiry in the label. An SCR of 70 percent, all right. So what we know is the following: We know that the vaccine is effective –

Q. My question –

MS. DYKSTRA: Let him answer.

MR. BEGLEITER: He's not answering my question.

THE WITNESS: I will get into the answer. Allow me to answer the question, please. What we know is that the vaccine is effective, it's been given to children, to all the children in the study, and that the assay that had been developed using Lo1 was only yielding an SCR of 70 percent. That would not have been fit for purpose. That indicates that the assay, the assay is not fit for purpose. It's not allowing you to determine whether

or not -- it was not allowing you to -- would not allow you, it would not prospectively allow you to determine whether or not there would be a difference in the seroconversion rate that would be statistically acceptable among the different, the three different potency levels that were being tested in 007. So, therefore, the discussion with the agency was how can we modify the assay that would give us an assay or assays of sufficient sensitivity.

3.28

KRAH DEPOSITION | APPX 4948 | PAGE 272

Krah knew that the FDA required them to use a 'wild-type' as the indicator virus in Protocol 007.

Q. Could you read what you wrote to Mr. Rubinstein, please?

A. I'm sorry, for the Friday, January 17th?

Q. Friday, January 17th at 3:25 p.m.

A. It says, "Len, Yes - The MMR II Protocol 006 study used a straightforward, non-enhanced neutralization, using several different indicator viruses. The MMR II study...," which it doesn't say here but implies 007, "...used an anti-IgG enhanced neutralization and the low-passage Jeryl Lynn indicator virus. We would have used the same assay used in 006 and 007...," meaning Protocol 006 and Protocol 007, "...except that we could not achieve the 90 percent seroconversion sensitivity with any of the wild-type mumps strains without enhancing the assay sensitivity. We could measure greater than 90 percent seroconversion using the vaccine strain as the indicator, but CBER required us to use a 'wild-type' indicator virus for 007."

3.29

KRAH DEPOSITION | APPX 4903 | PAGE 89-90

Krah misrepresents his understanding of the objective of Protocol 7.

Q. When you said that your understanding of the Protocol 007 was **to compare the immunogenicity between three doses,** is that a fair statement of what you just testified to?

A. That's my recollection of my understanding.

Q. Did you understand that to be the objective of Protocol 007?

MR. SANGIAMO: Object to the form.

THE WITNESS: I can't say that that is -- I don't know what the objective -- the formal objective was. That was in a practical way my interpretation of what I thought the purpose of the study was for.

BY MR. KELLER:

Q. Nobody disclosed to you what the purpose of the study was for?

A. As best I can recall, but **it's comparison between the immunogenicity between two (sic) different vaccine doses, as best I can recall, my understanding**.

3.30
KRAH DEPOSITION | APPX 4952 | PAGE 287-289
Compare this with KRAH DEPOSITION | APPX 4903 | PAGE 89-90 above.

Q. So is this the presentation that you gave to the CAS subcommittee on October 24?

A. It's the same date, but I don't have an immediate recollection of the presentation, but that's the date, the same date as the clinical assay sub-committee meeting.

Q. Do you have any reason to believe that you didn't present it on that date?

A. No. If it's dated, I would expect -- my expectation would be if it's dated that date, that that's the date it was provided.

Q. Did you draft this document, Exhibit 32

A. The wording looks like my wording. I can't exclude that someone didn't contribute to it, but at least the majority of the wording looks like it's my wording.

Q. In the experiments that supported this particular document -- did you provide this copy to the CAS subcommittee or was it just a presentation -- strike that. Did you provide a copy of Exhibit 32 to the CAS subcommittee?

A. I don't recall.

Q. And the individuals on Exhibit 31, D. Arena, Dr. Chirgwin, William Long, S. Olsen, N. Morsy, J. Staub, Dr. Thaler and Ms. Yagodich, were those members of the CAS?

A. I can't say for certain.

Q. And if you look on the first page of 269123 of Exhibit 32, can you read the objective that you wrote?

MR. SANGIAMO: Object to the form.

THE WITNESS: The objective, as listed, is **"Identify a mumps neutralization assay format using a 'wild-type' mumps strain that permits measurement of a 95 percent seroconversion rate in MMR II vaccinees."**

3.31

KRAH DEPOSITION | APPX 4987 | PAGE 425 | Lines 18-23

Alan Shaw instructed Krah to develop the Protocol 007 assay. This is relevant to the first scene in Emini's office at Merck.

> Q. What was -- was there anything special about Protocol 006 and Protocol 007 that led to you being tasked with running those assays?
>
> MR. SANGIAMO: Objection. Answer if you know.
>
> THE WITNESS: I'm not aware of anything special about the studies. I would offer that at least **my manager Alan Shaw approached our group to develop the assays given our virology expertise**.

3.32

CONSULTED ON ASSAYS - EMINI DEPOSITION | APPX 4506 | PAGE 33 | LINES 2-8

> Q. Did you -- were you consulted by others in the conduct of 007?
>
> THE WITNESS: I was consulted with regards to the assays that were developed and run in support of the study.

3.33

EMINI DEPOSITION | APPX 4518 | PAGE 80 | LINES 1-4

> A. No, the 90 percent is, I presume, but the 90 percent, because in the documents I saw the number that I recollect was 90 percent, 90 percent is a measure of the assay sensitivity. So, for instance, if one wants to look at -- do a comparison, which is of the ability of the vaccine at three different dosage levels, its ability to elicit a seroconversion response in young children, one wants as sensitive a vaccine as possible

4. RABBIT'S BLOOD

In [Exhibit 11, page 6, second paragraph] - "it is a telling indication that the seroconversion rate, calculated through the use of rabbit antibodies, significantly exaggerates vaccine efficacy. More precisely, it conceals the extreme ineffectiveness of the mumps vaccines."

4.1

See Exhibit 4 - Virus and Cell Research Procedure Page 3, Para #6 "Anti-Human IgG."

6. Anti-human IgG

Rabbit IgG fraction to human IgG (whole molecule), ICN/Cappel catalog #55008, or equivalent (5 mg/mL antibody protein; formulation typically contains 0.05% sodium azide).

Note: lot 1943 of this anti-IgG was used in assay development studies, and is being used routinely at a 1:6 dilution for use in the AIGENT testing of pediatric sera. Additional dilutions may be used as needed to achieve the required neutralization sensitivity. A new lot of anti-IgG is qualified by comparing the anti-IgG dilution of lot 1943 to different dilutions (including 1:4, 1:6, 1:8) of the new lot against a panel of paired pediatric sera. The use level of the new lot is established as the dilution of the new lot that provides comparable Nt results (titers) to those obtained using the 1:6 dilution of lot 1943.

Reconstitute with RCM66 or equivalent (typically 5 mL/vial, allowing 2-30 min for reconstitution, aseptically pool replicate vials, if applicable, after reconstitution) and dilute in RCM563 or equivalent to the desired concentration.

SUBJECT: Anti-IgG Enhanced Mumps Plaque-Reduction Neutralization Assay

No.: 874.3489
Rev.: 00
Page: 4 of 10
Effective Date: 18-DEC-2000

Anti-IgG should be used only on the day of reconstitution (unless further studies confirm the acceptability of longer holding times after reconstitution).

4.2

In Exhibit 5 - Anti-IgG Update 10.24.2000 below, provided to Andrew Wakefield by Relator Krahling, see also reference to "permits measurement". Presentation prepared by Dr. David Krah. Protocol 7 is described as follows:

Anti-IgG Enhanced Mumps Neutralization Assay-Update: October 24, 2000

Objective: Identify a mumps neutralization assay format using a "wild-type" mumps strain that permits measurement of a ≥95% seroconversion rate in M-M-R®II vaccinees

4.3

KESSLER REPORT [EXHIBIT 3B | PAGE 453 | APPX 1014 | PARAGRAPH 3

In my opinion, Merck's statement to FDA is misleading because it omitted that Merck had not performed a formal specificity analysis 909 for the AIGENT assay, and the AIGENT had not been validated as a measure of mumps neutralizing antibodies. Furthermore, the statement omitted that the endpoint measured by the AIGENT had not been demonstrated to have a connection to protection from disease.

4.4

KESSLER REPORT [EXHIBIT 3B]| PAGE 454 | APPX 1015 | PARAGRAPH ONE

In my opinion, Merck's statement to FDA was misleading because it omitted that the seroconversion rates measured by the AIGENT assay had not been shown to relate to protection from disease. Furthermore, unlike the neutralization assay used in the early efficacy studies to support the licensure of mumps vaccines, the seroconversion rate measured by the AIGENT assay did not "parallel protection from disease."

4.5

WLOCHOWSKI DEPOSITION | Appx 6004 | Page 423 | Lines 5-10

Q. I heard you testify that you believe that the reason why you were being asked to recheck the pre-positives was because the antihuman IgG was being used in the assay which was causing there to be more pre-positives. Is that part of it right?

A. It was causing an enhancement across the assay.

4.6

KRAH DEPOSITION | APPX 4962 | PAGE 327 - 329

The "requirements of the assay" were that it gave a "predetermined result". The problem was that the addition of rabbit's blood - an entirely artificial step - increased the seroconversion target (95%) but also increased the pre-positive rate (>10%).

Q. So that target, is that consistent with your understanding, your belief that that target drove your development of the AIGENT?

MR. SANGIAMO: Object to the form.

THE WITNESS: A goal in the development of the AIGENT was to have an assay that was capable of measuring 95 percent seroconversion and had a minimum -- in my mind a minimize or minimal pre-positivity rate, whatever that wound up being.

BY MR. KELLER: Q. And the goal was 10 percent -- around 10 percent pre-positive rate. Correct?

A. That was at least the target that was in some of the documents.

Q. So that's what you -- that's what drove your developing the assay to get to that target. Correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: The goal was to find an assay that was capable of meeting those two targets.

BY MR. KELLER: Q. Fair enough. Have you ever developed an assay where you developed the assay to get a certain result–

MR. SANGIAMO: Object to the form.

BY MR. KELLER:

Q. -- a predetermined result --

MR. SANGIAMO: Object to the form.

BY MR. KELLER: Q. -- before Protocol 007?

MR. SANGIAMO: Object to the form.

THE WITNESS: I would not characterize it as getting a predetermined result. I would characterize it as developing an assay to achieve sensitivity that was meeting the requirements for the assay.

4.7
KRAH DEPOSITION | APPX 5030 | PAGE 594-595

The exchange below as to whether a more sensitive test meant a more accurate test is captured in Lexi's deposition of Emini. Whether Merck employees believed this or not, they skewed the testing to enhance the apparent immunogenicity of the vaccine.

Q. You thought the test would be more accurate, the varicella test would be more accurate using both complement and anti-IgG?

A. My belief at the time and still now is that that assay provided a more sensitive measure of varicella antibodies. So it would be a more accurate indicator of whether varicella antibodies were present or not.

Q. Do you equate sensitivity with accuracy?

A. I'm not a statistician. I understand that there is a formal definition to accuracy. So I would, on a statistical description, would not equate them.

Q. In your experience, is an assay that's more sensitive more accurate?

THE WITNESS: My experience is limited to the assays that I have developed or read about. I would say that the more sensitive assays are a more accurate measure of antibodies, whether that qualifies as from a statistical definition of what constitutes an accurate assay, I can't say.

BY MR. SCHNELL: Q. But in your experience, a more sensitive assay is a more accurate assay in terms of measuring antibodies?

MR. SANGIAMO: Object to the form. Asked and answered.

THE WITNESS: It's a more accurate means to or provides -- a more sensitive assay provides a more accurate way of measuring antibodies, meaning that if antibodies are present, you have a greater chance of detecting them.

5. RABBIT BLOOD FAILURE

5.1

MALONE REPORT [EXHIBIT 2B] | PAGE 60 | APPX 520 | PARAGRAPH THREE

> For all the reasons set forth above, both independently and collectively – the assay's results-oriented design and approach, Merck's use of the low passage vaccine strain as the test antigen, Merck's improper use of anti-IgG, the assay's poor specificity, and ultimately, Merck's Selective recounting of plaques – the AIGENT assay results were unreliable, inaccurate and invalid for any scientific or clinical purpose. They certainly provided no relevant measure of protection from disease and provided no support for Merck's various mumps-related applications to the FDA.

5.2

MALONE REPORT [EXHIBIT 2B] | PAGE 53 | APPX 513 | PARAGRAPH ONE | LINES 1-2

> Internal Merck documents support my opinion that Merck did not use anti-IgG for a legitimate scientific purpose.

5.3

MALONE REPORT [EXHIBIT 2A] | PAGE 22 | APPX 482 | PARAGRAPH ONE | LINES 1-4

> The first change was to use a low-passage Jeryl Lynn mumps vaccine strain (rather than a true wild-type strain) as the indicator virus. Second, Merck added rabbit anti-human Immunoglobulin G (anti-IgG) to the clinical serum samples for the purpose of, as Merck characterized it, enhancing the sensitivity of the assay

5.4

MALONE REPORT [EXHIBIT 2B] | PAGE 45 | APPX 505 | PARAGRAPH TWO

> Despite these well-accepted standards for avoiding bias in human clinical research, Merck designed the AIGENT as a results-oriented test to ensure it achieved its predetermined criteria of a seroconversion rate of at least 95%

5.5

EXHIBIT 9 | PAGE 4 | PARAGRAPH ONE

> [Krahling] I asked him for a scientific explanation for using the rabbit antibodies [in the AIGENT]. When he refused to provide an answer I declared my intention to call the FDA to make the same inquiry. Emilio stated that it was a business decision, not a scientific one.

5.6

APPEAL [EXHIBIT 1] | PAGE 12 - PAGE 13

> The end result was a clinical trial that had no clinical relevance and failed to provide an accurate or reliable measure of how well low-potency MMR-II protected against mumps. Merck's key witnesses and experts admitted this:
>
> - Merck's supervisor of the AIGENT testing admitted the test he developed and ran was not "designed to indicate whether [patients] were protected or not," and that he had no opinion on whether the test was even "accurate or not." [Appx5070 (Krah

Deposition).]

- Merck's statistician who…authored the AIGENT Validation Report admitted the AIGENT results did not "reflect protection," "[w]e don't really know what a clinically protective level is in either [test]," and "there is no clinical history/expectation/meaning that can be attached" to the AIGENT results. [Appx5819 (Antonello Deposition), 5322, 9269 (Merck Documents).]

☐ Merck's Director of Clinical Vaccine Research admitted Protocol 007 "does not give you a certainty that you're protected or not," the AIGENT was a "very unreliable assay," and he "could not overemphasize the weakness of the [test] (50% specificity!!!!!!)." [Appx4621, 4673 (Schodel Deposition), 5318 (Merck Document).]

☐ Merck's Director of Worldwide Regulatory Affairs reported speaking with the responsible statistician who "re-emphasized that the precision with the [AIGENT] was very poor ...." [Appx5318 (Merck Document).]

☐ Merck's Director of Clinical Research and 30(b)(6) witness admitted she "really can't answer" whether the Protocol 007 results "have any relationship to protection from disease," or whether the AIGENT "results in any way inform Merck's understanding of how well its vaccine protects recipients from mumps." [Appx5360, 5367-5368 (Kuter Deposition).]

☐ One of Merck's experts testified the AIGENT "doesn't measure protection," and there was "no way" for the test to "distinguish between seroconversion results that were protective against mumps and those that were not." [Appx2707, 2710 (Durbin Deposition).]

- Another Merck expert testified Protocol 007 "did not measure protection," and "did not include a proper analysis of vaccine efficacy," meaning "protection or effectiveness." [Appx2667, 2669- 2670 (Pasetti Deposition).]

- Still another Merck expert testified Protocol 007 "would not have really anything to do with effectiveness." [Appx7228 (Atkinson Deposition).]

Relators' experts agreed. See, e.g., Appx1090 (Kessler Report) ("Neither the AIGENT nor ELISA measured protection against disease ...."); Appx1575 (Kessler Deposition) ("[T]here was no clinical relevance whatsoever."); Appx2067 (Calcott Report) ("[T]he data [Merck] generated by [the Protocol 007] methods and the correlation lacked technical validity. As such the data and conclusions are meaningless.").

5.7

MALONE REPORT [EXHIBIT 2B] | PAGE 43 | APPX 503

MY FINDINGS - Merck’s AIGENT Assay Failed to Provide a Reliable or Clinically Relevant Measure of Protection Against Mumps

5.8

MALONE REPORT [EXHIBIT 2B] | PAGE 44 | APPX 504 | PARAGRAPH TWO | LINES 1-6

Bias in testing

Design and performance of clinical trials must not incorporate characteristics, features or tests which have been selected to favor one clinical outcome over another or to influence study or test performance outcomes to improve the chances of achieving a predetermined outcome or objective. Clinical trials designed to achieve one desired outcome over another, rather than to objectively assess study results and compare differences between study groups, will result in unacceptable study outcome bias.

5.9

KESSLER REPORT [EXHIBIT 3A]| PAGE 102 | APPX 663 | PARAGRAPH TWO | LINES 6-8

Merck did not test protection against disease (mumps) and did use an AIGENT test with increased sensitivity

FDA still required that seroconversion reflect protection against disease, and did not believe increased sensitivity in the neutralization assay was necessary.

A reasonable and prudent vaccine manufacturer presented with this information would use a neutralization assay that measures protection against disease, and report the results of that study as promptly as possible.

5.10

KESSLER REPORT [EXHIBIT 3A] | PAGE 234 | APPX 796 | PARAGRAPH ONE

Merck relied upon their falsified data in their representations to the FDA.

In my opinion, the Form 483 observation that "raw data is being changed with no justification" in the Protocol 007 testing rendered that data unreliable. Furthermore, Merck had already relied on that data, "changed with no justification," on at least three instances: (1) in response to the 2001 Warning Letter to "justify the efficacy of lower potency product;"518 (2) in its Serial 63 submission of the results of the preliminary analysis from Protocol 007; 519 and (3) in Biological Product Deviation Report 01-005.520

5.11

ANTI IgG | EMINI DEPOSITION | APPX 4578 | PAGE 321-322

In the movie, Emini is asked in his deposition about the merits of adding the rabbit anti-human IgG.

Q. What was the purpose of using antihuman IgG?

A. It is a general method to increase the sensitivity of a virus neutralization assay when the virus neutralization assay is designed to specifically measure virus neutralizing antibody.

Q. So it makes the testing more sensitive, is that it?

A. It makes the testing more sensitive.

6. THE THREAT TO MERCK'S MARKET SHARE

6.1

APPEAL [EXHBIT 1] | PAGE 10 - 11

B. Merck's Fraud in Protocol 007

> Merck nonetheless continued to sell MMR-II to the CDC without disclosing these critical potency, shelf-life, and label-compliance problems, or the risk of a product recall. [Appx374 (Rels. SUMF)]. To bring the vaccine back into compliance and protect Merck's MMR vaccine monopoly from the competitive threat GSK posed with its competing Priorix vaccine, Merck needed to lower its minimum mumps potency specification. Appx318-320 (Rels. SUMF). To make this product label change, Merck needed to provide the FDA data from a new clinical trial called Protocol 007 -- comprising an AIGENT and [ELISA] test -- demonstrating that the vaccine was as protective at the lower mumps potencies. Appx321, 325 (Rels. SUMF).

6.2

APPEAL [EXHIBIT 1] | PAGE 8 | PARAGRAPH 1 | LINES 4-6

Merck was the only supplier of MMR vaccines in the United States, until late 2022 after GSK obtained a license to sell its Priorix MMR vaccine.

6.3

KESSLER REPORT [EXHIBIT 3B] | PAGE 483| APPX 1044

X. FDA LICENSING OF MUMPS VACCINES BY OTHER MANUFACTURERS

As described in Section III.A above, since the approval of Mumpsvax in 1967 Merck has been the only manufacturer licensed to sell a mumps containing vaccine in the United States. Starting in the 1990's, SmithKline Beecham, now GlaxoSmithKline (GSK)936, has sought FDA approval to license Priorix, another measles, mumps and rubella vaccine, in the United States. According to the testimony of GSK's corporate designee, April Cohen, in these cases

6.4

KESSLER REPORT [EXHIBIT 3A] | PAGE 113 -114 | APPX 674-675

The licensure of SmithKline Beecham's Priorix in Germany, the United Kingdom and Cyprus in the 1990's was a competitive threat for Merck.350

A Merck document titled "Phase V Clinical Development Plan for M-M-R®II" stated:

Phase V Clinical Studies
An Exploratory Study to Investigate the Breadth of Mumps Neutralization Induced by M-M-R®II and PriorixTM in Children 12-18 Months of Age. ...
Major Developmental Issues
Marketing Needs

- Competitive Threat From Recent Licensure of Priorix™ in Germany, the United Kingdom and Cyprus

6.5

KESSLER REPORT [EXHIBIT 3A]| PAGE 46 | PARAGRAPH TWO

> In an April 10, 2002 email from MRL's Associate Director, Worldwide Regulatory Affairs, Dr. Manal Morsy, to Dr. Krah and others, with the subject "Timing for Analysis of mumps neutralization assay data," Dr. Morsy stated: "filing the mumps end expiry and label change is the highest priority from a regulatory and compliance standpoint - every day delay ... is a problem for the rest of the team and our ability to resolve this compliance issue which is a concern not only for the US but also for the EU and the rest of the world... [Protocol 007 AIGENT] at this point is the critical path and bottleneck."231 Merck's documents evidence Merck's continued inability to ensure compliance with the "not less than 4.3" mumps end expiry claim on the MMRII label for 24 months until 2007.

6.6

KESSLER REPORT [EXHIBIT 3A] | PAGE 152 | APPX 713

> MRL's former Vice President, Vaccine & Biologics Research, Dr. Emilio Emini, testified as follows:
>
> > Q. So what's a warning letter from CBER?
> >
> > A. It's exactly what it says. It's a warning letter from CBER in which the agency indicates specific deficiencies that it wishes to see corrected immediately. And it gives the recipient a relatively short period of time to put together a corrective action plan that the agency would then need to certify.
> >
> > Q. And what could happen if CBER is not satisfied with the correction plan?
> >
> > A. Again, it depends on what's the nature of the warning letter. If the warning letter reflects a manufacturing facility, they will close down a manufacturing facility. If it refers to a specific product, they can request withdraw of the product. It depends on the details.

6.7

APPEAL [EXHBIT 1] | PAGE 10 - 11

> B. Merck's Fraud in Protocol 007
>
> Merck nonetheless continued to sell MMR-II to the CDC without disclosing these critical potency, shelf-life, and label-compliance problems, or the risk of a product recall. [Appx374 (Rels. SUMF)]. To bring the vaccine back into compliance and protect Merck's MMR vaccine monopoly from the competitive threat GSK posed with its competing Priorix vaccine, Merck needed to lower its minimum mumps potency specification. Appx318-320 (Rels. SUMF). To make this product label change, Merck needed to provide the FDA data from a new clinical trial called Protocol 007 -- comprising an AIGENT and [ELISA] test -- demonstrating that the vaccine was as protective at the lower mumps potencies. Appx321, 325 (Rels. SUMF).

6.8

KRAHLING DEPOSITION Appx 5669 | Page 437 | Lines 4-20 Protecting monopoly - purpose of 007

Q. Have you ever participated in a meeting with the CDC in any form around the contract?

A. In person and over the phone, no. Krah made it clear that Protocol 007 was designed to keep the vaccine on the market, protect the shelf life so that they could

make -- first of all, it was to keep it on the market because it could be removed. Protect the label so that it wouldn't be changed and to maintain its exclusivity so that it

wouldn't have competitors. That was the financial goal of Protocol 007. He made it clear that you don't start working on a scientific objective unless you understand the financial goal that that exists in pursuit of. I think I cited it in an e-mail to him.

6.9

KRAHLING DEPOSITION | Appx 5574 | Page 64 | Lines 18-21 | [Loss of exclusive licensing]

Krahling: And he said regardless, we needed to show that this vaccine had 96% percent efficacy or Merck would lose its exclusive licensing rights to this vaccine.

6.10

EMINI DEPOSITION | APPX 4509 | PAGE 42 | LINES 3-13

Q. You understood that Priorix was GSK, GlaxoSmithKline's version, that there was -- did you understand that there was potential competition between the two vaccines?

THE WITNESS: Well, there's certainly competition worldwide between the two vaccines, but in the United States I did not perceive that as being a competitive issue.

6.11

KRAH DEPOSITION | APPX 4935 - 4936 | PAGE 221-225

Merck had set up a specific Task Force to protect its US monopoly on MMR.

Q. If you go to the first page of the e-mail, there's a reference that says, "Attached please find the backgrounder and appendix document for the **MMR II Competitive Defense Presentation** to the TPAC on June 21." Do you see that?

A. Yes.

Q. You were a member of the **Competitive Defense Task Force**, weren't you?

A. That I -- I was invited to this meeting. Whether I was a member of that, I don't know.

Q. Your counsel has represented that you were a member during this time frame. Does that refresh your memory that you were a member of this particular committee?

6.12

KRAH DEPOSITION | APPX 4937-4939 | PAGE 228-237

Merck's had a **Competitive Defense Task Force for MMR,** of which Krah was a member. Its stated purpose was to **"delay and disrupt the launch of Priorix** [the MMR product of competitor SmithKline Beecham] **into the** [US] **market."**

BY MR. KELLER: Q. My question is, again, do you recall ever learning that Protocol 007 was to be used as part of the defense of the mumps expiry titers as part of Merck's competitive defense?

MR. SANGIAMO: Object to the form.

THE WITNESS: My understanding was that Protocol 007 was being used to support and characterize MMR whether -- I'm not -- I don't recall that it was part of a -- like a competitive defense strategy.

BY MR. KELLER: Q. Fair enough. Look on page 285279 under "Marketing Response to SB Competition. you Smith Barney? (sic) Do you see that?

A. Okay. Yes.

Q. SB, do you understand that to be Smith Barney? I'm sorry, **Smith Beecham**. Sorry, strike that. What do you recall SB to stand for?

A. Two paragraphs down it has **SmithKline Beecham** as SB. I don't have a recollection of it, but the paragraph just before -- or just under the graphs defines that SB as SmithKline Beecham.

Q. Gotcha. Did you understand that **SmithKline Beecham had its own MMR product that it was selling outside the United States called Priorix**?

MR. SANGIAMO: Object to the form.

THE WITNESS: I was aware that they had one or more vaccines that contained measles, mumps and rubella. I don't recall having familiarity with -- it wasn't being sold in the US. It was being sold outside the US.

BY MR. KELLER: Q. Do you recall as part of this presentation in June of 1999 a discussion about **Priorix and its threat of Priorix coming to the US market**?

MR. SANGIAMO: Object to the form.

THE WITNESS: In reading through the document, at the beginning of the discussion **I recall seeing sections that comment on that aspect of the GSK -- I'm sorry, the SmithKline Beecham vaccine being a competitive threat to the MMR vaccine**. Krah was aware of this and contradicts himself.

BY MR. KELLER: Q. Do you recall -- other than reading this document today, do you recall any discussions about it back in 1999?

A. At least one aspect to it, yes.

Q. What is that?

A. When we did -- conducted the Protocol 006 study which was a head-to-head study of MMR with Priorix, that was, from my understanding, a competitive trial to compare immunogenicity of the mumps component of MMR with Priorix.

Q. They may have used a plaque reduction neutralization assay in that study. Correct?

A. Yes.

Q. That study, that was Protocol 006. Correct?

A. Yes.

Q. That study didn't use any anti-IgG steps, did it?

A. That's correct.

Q. Which assay do you think is a better assay for showing immunogenicity, the AIGENT or the assay used in Protocol 006?

A. Let me tell you, it depends on the goals of the study. I would say both are equally relevant and important. So at 1.1 (sic) is better than the other.

Q. When you say the goals of the study, you testified that you didn't know what the goals were for the Protocol 007. Correct?

A. I knew from discussions with CBER that -- so I don't -- it's correct I don't know the overall study goals, but I do know from discussion with CBER that a 95 percent seroconversion was a requirement.

Q. And that requirement of 95 percent, do you understand that that was what was represented in the then current label of MMR II for mumps?

A. I don't recall.

Q. Just that they wanted 95 percent seroconversion in a neutralizing assay. Correct?

A. Yes.

Q. What were the goals of Protocol 007? I mean, sorry. What were the -- strike that.

What were the goals of Protocol 006?

A. I have a -- my perspective or my understanding of the goals in the same context of Protocol 007, there may have been other study goals than are beyond what I was thinking, the goals that I was aware of were comparing the immunogenicity of the mumps component of MMR and Priorix against different wild type mumps strains to see if there's a difference in the breadth of neutralization induced by MMR versus Priorix.

Q. Do you recall ever discussing with anybody that Merck's MMR product, that they had -- that Merck had an exclusive license for MMR II in the US?

A. I do not recall discussing that with anyone.

Q. In the next paragraph it says, **The objectives of the Marketing element of MMR II Competitive Defenses are to, in 1, "Pursue a proactive tactical plan including initiatives to delay and disrupt the launch of Priorix into the market."** Do you see that?

A.Yes.

Q. Do you recall any discussion at this meeting regarding that tactical plan to prevent Priorix from entering the market?

A. I do not.

Q. Have you ever discussed that with anybody at Merck outside of this presentation?

A. As part of the Protocol 006 study **I would say yes**, because my understanding of the study was a potential first step in trying to show whether MMR was superior to Priorix in protecting from a range of different viruses.

Q. I thought you just testified that Protocol 006 had nothing to do with determining whether or not it was protective against disease. I'm confused.

MR. SANGIAMO: Hold on a second. What's your question?

Q. So my question is, can you explain yourself, what you mean?

MR. SANGIAMO: What he means by what, I'm sorry?

BY MR. KELLER: Q. The differences between protection in discussion of Protocol 006 and your discussion testimony earlier that Protocol 006, as you understand it, was not linked to protection from disease?

MR. SANGIAMO: Object to the form.

THE WITNESS: It was not -- the study Protocol 006 was not, to my understanding, designed to evaluate protection. But from a scientific standpoint, the concept of one vaccine giving higher seroconversion rate and geometric mean titer to a wider range of viruses would be suggestive or indicated in vitro at least one vaccine versus the other

would be able to produce a more broadly neutralizing set of antibodies. It's not a direct indicator or measure of protection but suggestive of a broader in vitro capacity of sera from the one -- generated by one vaccine to induce a different quality antibody.

7. ALTERING DATA SHEETS | RECOUNTING | MANIPULATING

7.1 - RECOUNTING

MALONE REPORT [EXHIBIT 2B] | PAGE 60 | APPX 520 | PARAGRAPH THREE

> For all the reasons set forth above, both independently and collectively – the assay's results-oriented design and approach, Merck's use of the low passage vaccine strain as the test antigen, Merck's improper use of anti-IgG, the assay's poor specificity, and ultimately, Merck's Selective recounting of plaques – the AIGENT assay results were unreliable, inaccurate and invalid for any scientific or clinical purpose. They certainly provided no relevant measure of protection from disease and provided no support for Merck's various mumps-related applications to the FDA.

7.2 - MANIPULATING DATA

APPEAL [EXHIBIT 1] | PAGE 11 | PARAGRAPH TWO AND THREE

> Merck was unable to demonstrate that protection through standard testing. Merck resorted to fraud instead. Relators worked on the AIGENT testing as virologists at Merck and witnessed this fraud firsthand. Appx337-340 (Rels. SUMF). It included manipulating how Merck designed and conducted the testing to ensure it reached the desired outcome. Appx328 (Rels. SUMF). In the words of the Merck supervisor in charge of the AIGENT testing: "[M]y goal and my understanding ... was to have an assay that would allow us to have the capability of measuring 95 percent seroconversion ... without considering the impact on accuracy." Appx5063 (Krah Deposition). See also Appx5606 (Krahling Deposition)

7.6 - DATA CHANGED

KESSLER REPORT [EXHIBIT 3A] | PAGE 224 | APPX 785 | PARAGRAPH ONE

> Furthermore, the submission of clinical data from the testing conducted in Dr. Krah's lab was inadequate to support the medical assessment of the risk of receiving lower potency vaccine because raw data was changed without justification during the testing in Dr. Krah's lab. [See Exhibit 10]
>
> See Section VIII.L below (discussing a Form 483 citing deficiencies in the testing in Dr. Krah's lab including changes to the raw data without justification.).

7.8 - RECOUNTING

REFERENCE FROM KRALING'S DOCUMENTS [EXHIBIT 7 - KRAHLING NOTES]

> Dr Wakefield,
>
> I wrote this chronology for my lawyer in Nov. 2001…I was never Forced to Falsify data and no one ever changed data that I signed. Once I fell out of favor, Dave [Krah] no longer respected the sanctity of my data and replaced my counting sheets with "revised" data.
>
> That was the point I decided to gather evidence to prove fraud.
>
> [EXHIBIT 7 - Krahling Notes] Page 3.

June 19 Dave informs me that he has recounted two of my assays.

[June/July] Joan [Relator Wlochowski] and I compile data and audit changes made to original counts…

Alan [Shaw] requests to meet with me:...ignores my concerns that the data for the mumps project is intentionally biased.

I call the FDA and set up a telephone conference in which I present my findings to them.

7.9
EMINI DEPOSITION | APPX 4525 | PAGE 109 -110

Emini has no explanation for the raw data being changed without justification and fails to remember Krahling's unprecedented reporting to him of this manipulation in 2001.

Q. I'll read it to you. Number 1 says, "Raw data is being changed with no justification, for example...," and then it gives a series of numbers which I'm not going to read to you. Do you have an understanding sitting here today of what that meant, what that referred to?

A. What that referred to was, again, remember 483 is a notice of observations that the agency or that the inspector specifically actually in the end wishes to have some explanation for. So if the inspector was not able to find at the time that she conducted this inspection was that there were changes being made to the data related to whatever assay she was looking at, that did not have clear justification noted when the changes were made.

Q. And do you know Mr. Krahling who was sitting here –

A. Yes, I did.

Q. Did he warn you of this before August 7, 2001?

THE WITNESS: I have no recollection of any discussions with Mr. Krahling related to this issue save one. Again, this was as a result of review of documents, and the document that I saw that indicated that at some point, and I don't remember what the date is, Mr. Krahling came to me to show me -- to express his concerns and presumably show me some data on which he had his concerns.

Q. And was that concern that data was being changed with no justification?

A. I don't recall the nature of that concern.

7.10

KRAH DEPOSITION | APPX 5016 -5017 | PAGES 540-544

Krah lies about the way in which the data were handled. Plaintiff's counsel puts it to him that "changes in the data were made after results were calculated and selective wells were re-reviewed". This is what happened. 'Selective wells' were reviewed and re-reviewed and pre-positive counts were altered in the knowledge that they were pre-positive and unhelpful.

Q. Now, in the two paragraphs up, the last sentence, so we're in the second paragraph on this page, the last sentence, Dr. Carbone stated that if changes in the data were made after results were calculated and selective wells reviewed, then the practices were not consistent with GLP (Good laboratory Practice). This topic was further discussed later in the day. Do you see that?

A. Yes.

Q. Do you recall discussing that topic with Dr. Carbone?

MR. SANGIAMO: Object to the form. Just so the record is clear, Gordon, I think you might have said wells reviewed and the documents says wells re-reviewed.

MR. SCHNELL: Thank you.

THE WITNESS: I remember -- I recall discussions with her -- or Dr. Carbone about the re-review of the data and corrections or changes. I don't recall -- and I recall discussions with Deborah Bennett about the GMP aspects. I don't recall the discussion with Cathy Carbone about the GLP topic.

BY MR. SCHNELL: Q. Now, it's true, isn't it, that in the AIGENT testing that you ran, changes in the data were made after results were calculated and selective wells were re-reviewed. Correct?

THE WITNESS: Changes were made to the data, meaning the data being coded serum samples were -- we don't know which study group the samples are in. And to the extent of having a sero -- either a positive or a negative -- I'm sorry, a seropositive or seronegative status at end of titer. So the data were calculated -- the data were calculated to the point of having those -- a serum titer and serostatus when corrections were made.

BY MR. SCHNELL: Q. I'll ask the question again. Listen to the question. Isn't it true that in the AIGENT testing you ran, changes in the data were made after results were calculated and selective wells were then re-reviewed?

MR. SANGIAMO: Objection. Asked and answered. He just answered that question very directly, Gordon.

MR. SCHNELL: Object to the form is all you need to say, Dino.

MR. SANGIAMO: I can say whatever is appropriate to say.

THE WITNESS: There were -- the calculations were completed for the calculated percent of mock end titers, for example, and re-review of the data was made so samples were blinded as to which treatment group they received. And the -- it is correct that they were re -- sorry. They were selective wells, wells identified by some of the criteria that we identified earlier as flags for like, for example, single positive dilution.

BY MR. SCHNELL: Q. So your answer is yes?

MR. SANGIAMO: Object to the form. He gave his answer. Results is a vague term. You know that. He answered your question. I'm sorry, so what's your question, Gordon. There's no question pending, don't say anything.

MR. SCHNELL: Do you need to hear the question again?

MR. SANGIAMO: What's the question? I need to hear the question again. What's the question?

MR. SCHNELL: No, you don't. You're not answering my questions. Your witness is. You need to be quiet. I'm not going to take this, Dino.

MR. SANGIAMO: I'm here to represent Merck and I'm entitled --

MR. SCHNELL: Will you repeat the question, please?

MR. SANGIAMO: I'm entitled to find out what the question is. I don't think there is a question, but if there is one, I'd like to hear it.

— (The court reporter read the pertinent part of the record.) ---

MR. SANGIAMO: Objection. Asked and answered.

THE WITNESS: So, yes, with the results meaning the titers and serostatus of individual coded serum samples.

8. FDA VISIT

8.1

See for example [Exhibit 6 - Krahling - FDA Handwritten Memo | Page 2] (handwritten note following Relator's Krahling's meeting with Emini in late July 2001):

> Following his meeting with Emini in late July 2001, Relator Krahling wrote:
>
> [Emini] ordered me not to contact the FDA…I openly disagreed with him and told him I would call the FDA unless he could convince me with science why it is not unethical to use the additive (Rabbit anti-human antibody) in the mumps assay. He agreed that our lab was falsifying data but said we are using the additive because the FDA allows us to. I asked if he agreed that the additive is non-specific and irrelevant and its only use is to report an artificially high seroconversion rate so we could keep our MMR patent. He agreed. I asked again if he could give me a scientific reason why we use the additive. He said it was a business decision not a scientific one. I told him I should call the FDA to get their opinion. He ordered me not to do that. I left.

Merck receives a visit from FDA Inspector Dr. D. Bennett in August 2001

8.2

EXHIBIT 10 - OFFICIAL FDA REPORT] See copy of original Form 483 violation report from D. Bennet (CBER/FDA)

> "raw data is being changed with no justification."

8.3

KESSLER REPORT [EXHIBIT 3A]| PAGE 45 | APPX 606 | PARAGRAPH TWO

> In August 2001, before the Protocol 007 AIGENT testing that would support lowering the mumps end expiry claim on the MMRII label was completed, FDA conducted an unannounced inspection in Dr. Krah's lab where that testing was ongoing.219 The FDA issued a Form 483 with four deficiencies, including that "raw data is being changed with no justification."220 The FDA inspection was prompted, in part, by a contact made by Steve Krahling,221 regarding falsification of data in Dr. Krah's lab.222 Merck prepared and submitted a response to the Form 483 on August 20, 2001.223

8.4

KESSLER REPORT [EXHIBIT 3A] | PAGE 229 | APPX 790

> L. FDA Issued a Form 483 for Deficiencies in the AIGENT Testing in Dr. Krah's Lab After Accusations of Falsification of Data in the Testing
>
> This was confirmed by CBER inspector D. Bennet.
>
> In August 2001, FDA conducted an inspection in Dr. Krah's lab where the Protocol 007 testing was ongoing. The FDA issued a Form 483 with four deficiencies, including that "[r]aw data is being changed with no justification."514 The FDA inspection was prompted, in part, by a contact made by Steve Krahling, regarding falsification of data in

Dr. Krah's lab.515 Merck prepared and submitted a response to the Form 483 in September 2001.

A FDA Form 483 signed by Debra J. Bennett and Dr. Kathryn Carbone (head of CEBR0, dated August 6, 2001, stated:

IND 1016:
1) Raw data is being changed with no justification, for example; NB 31689 pg 343,

NB 31688 pg 13; 31688 pg 15; 31688 pg. 17.

2) There is no procedure in place to determine when a Research Lab is assessed to assure suitability for clinical testing prior to start up. For example: Bldg 16 Rooms 203 and 213 has not been evaluated for testing IND 1016 samples.

3) Spreadsheets used to determine questionable results and retesting of clinical samples for IND-1016 has not been validated.

4) Notebooks do not identify all each technicians performing each task.
MRK-KRA01649971 (original underline removed, underline added).

8.5

MALONE REPORT [EXHIBIT 2B] | PAGE 57 | APPX 517

In my opinion, Merck's performance of the AIGENT assay failed with respect to each of these critical requirements. Merck did not follow any kind of strict plaque counting procedure, nor did it abide by a blinding protocol that kept hidden from the plaque counters the type of sample or control counted. Instead, Dr. Krah and his team, with Dr. Emini's direction, ran the assay according to an ad hoc set of rules designed to eliminate problematic plaque counts (pre- positives). And they were guided by an unblinded contemporaneous analysis of the plaque count results and directed to achieve the target pre-positive rates by selectively recounting specific results. This conclusion comes in part from my review of the CBER record following its August 2001 inspection of Dr. Krah's lab where CBER concluded, among other things, that Merck selectively re-reviewed plaque counts and made changes without documenting the reason.167

8.6

KESSLER REPORT [EXHIBIT 3A] | PAGE 230 | APPX 791 |

218.4. MRL's former Vice President, Vaccine Research, Dr. Emilio Emini, testified as follows:

Q. Before that date, how often in your career had there been an unannounced visit from the FDA?

A. Well, it would not have happened to me because very rarely would a research laboratory have been put into a position of running the assay the way in which this was done.

Q. I'm only asking about you. Prior to the unannounced visit on August 6, 2001, how often had there been an unannounced visit to one of the labs under your supervision?

A. Under my supervision?

Q. Yes.

A. Never before. This was the first time.

8.7

KRAHLING DEPOSITION | Appx 5629 | Pages 283 What the FDA didn't know.

I tried to explain to him that Krah was under a lot of pressure; that the reason he had to falsify the data, that he was supposed to get this done, he had to get the right answer, and that they were using a control that counted a lot of nonspecific effects. So they were counting false positives. I said Krah would not have to falsify the data perhaps if they used a non-immune serum control. He pointed out to me something to the effect that, look, the FDA is aware of the protocol. You don't need to tell them about it. And my rebuttal was they certainly don't know that Krah is committing fraud in the lab so that they could use that protocol. He said, You will not call the FDA. I just said, you know, if you can give me a scientific reason why we're using the rabbit antibodies without a non-immune serum control such [as] to cause Krah to falsify that data, I said I won't call them. He said it's a business decision. And then I was moving towards the door. He said, You will not call the FDA.

8.8

KRAH DEPOSITION | APPX 5034-5035 | PAGE 612-614

Q. And your position during your discussions with Carbone and Bennett was that the recounting process that you employed did not result in any bias?

MR. SANGIAMO: Object to the form.

BY MR. SCHNELL: Q. Is that correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: My best understanding is that the recheck that Cathy Carbone did in her narrative summary, the document we looked at earlier today was that the changes were both up and down, it wasn't a systematic change and there weren't many of them.

BY MR. SCHNELL: Q. Is that true?

A. That's my understanding, yes.

Q. So if we were going to analyze all the changes that were made in the AIGENT testing, you would expect to see an equal distribution of changes made to the pre-vaccination samples as to the post-vaccination samples?

A. I don't know that I would say equal, but in some statistical evaluation of that. So what constitutes equal, I can't say. I'm not familiar with what would qualify as equal.

Q. Well, would you expect there to be more changes on the pre-vaccination side than on the post-vaccination side?

A. Not being a statistician, I can't give a statistical, accurate number, but it could be a numerically larger number but maybe not -- perhaps not statistically, significantly different from the post.

Q. Well, would you expect there to be more changes on the pre-vaccination than the post-vaccination?

A. Not -- I would say not from -- not as best I can -- I wouldn't expect that to be the case.

8.9

KRAH DEPOSITION | APPX 5051 | PAGES 680 - 681 This exhibit has yet to be unsealed.

Exhibit 180 to Reilly Declaration - Memo re: Review of mumps-AIGENT neutralization data, dated August 1, 2001 (MRK-CHA00026864)

Q. You had no idea they were about to come visit?

A. That's correct.

Q. You had no idea that any members of your lab had complained and threatened to go to the FDA?

A. That's correct.

Q. So it was just pure coincidence that you happened to write this memo five days before the FDA inspected?

A. Yes.

9. “THREATS” AND “BRIBERY”

Merck has a prior history of threatening behavior in the context of fraud.

9.1 MERCK AND PRIOR VIOXX LITIGATION

https://www.bmj.com/content/338/bmj.b1432

> “The court also heard about an email exchange later that year between two executives discussing how Merck was “out gunned” at a scientific meeting to discuss Vioxx. One executive said that Merck needed to be better prepared to meet “the barbarians at the gate,” and another executive responds by saying that “we may need to seek them out and destroy them where they live.””

9.2

https://www.multinationalmonitor.org/mm2009/052009/lines.html

> ““We may need to seek them out and destroy them where they live,” one e-mail excerpt read to the court stated. There are also indications that the company used intimidation tactics against researchers critical of the drug, including insinuating that funding to academic and research institutions would be rescinded.”

9.3

https://www.proquest.com/openview/ed92eef87b328f7634ae46de566a4393/1?pq-origsite=gscholar&cbl=48578

> Merck were ordered to pay nearly $5 Billion dollars in damages in the VIOXX litigation.

9.4

EXHIBIT 9 | PAGE 4 | PARAGRAPH ONE

Document provided to Andrew Wakefield by Relator Krahling re: Emini’s “independent audit in response to Krahling’s threat to call in the FDA.

> We were all threatened with losing our jobs if we didn't give them the answers they wanted to hear. In my opinion this audit was really an investigation to find out where each lab member stood in case the FDA did come in. The intimidation was meant as a warning to be quiet. It occurred on July 30. When I questioned my inquisitors to please give me an explanation as to why we are using the additive in the first place I was told that it is not my job to editorialize my concerns and that I did not have the appropriate education to understand the intellectual basis for the assay.

9.5

KRAHLING DEPOSITION | Appx 5608 | Pages 200 | Lines 19-20 Threats

> A: Merck had a lawyer there that was threatening the workers.

9.6

KRAHLING DEPOSITION | Appx 5612-5613 | Pages 217-218 HR threats.

A: [HR] directed me to do, which was jump through some hoops. He described it, he gave me a big World War I analogy. He said, You know when Germany invaded France in World War I and then they set up a line of trenches for four years? It was a stalemate. He said that there is trench warfare. And he said, You know what happened when people stuck their head up? He said, They got killed. I said, I hope you're talking metaphorically. But he called it a trench policy. And he said, You need to keep your head down. Don't accuse anything (sic) of fraud. Make sure you're talking about administrative things, challenge Krah on any administrative policy that might make its way through Suter to Emini, and I should be nice about it. This was me following Suter's orders.

Q. Mr. Suter is in Merck -- was in Merck HR at the time?

A. That was my understanding. When I went to the human resources, that's he was there (sic).

Q. Did you talk to anybody else in Merck's HR department about your concerns?

A. I don't recall.

9.7

KRAHLING DEPOSITION Appx 5618 | Pages 241 | Lines 4-6 & 15-16 Jail threats

Q. In paragraph 55 you say that Mr. Suter told you you would go to jail if you contacted the FDA. Is that true?

A: He said that more than once.

Q. Who would put you in jail if you contacted the FDA?

A. He didn't say who would put me in jail. I assume he meant the police. He just said you'd go to jail.

Q. Did he say why you would go to jail if you contacted the FDA?

A. No. He just said you'll go to jail.

9.8

KRAHLING DEPOSITION | Appx 5630 | Pages 286-287 Lab workers frightened

Q: You said you had conversations with your other lab colleagues following the interviews?

A. And before it. They were very nervous. Suzie said that she was just a contract employee. If she went in there and told the truth, she'd be fired. Everybody was nervous about it. Frank was like, I can't afford to lose my job. Jill was nervous. Jill had some sort

of -- she had some sort of injury and she said that Alan was giving her a tough time about how she would get paid, things like that. She felt that her -- it might get denied if she said anything. And so, you know, it was like everybody do what you want. We're like, we understand whether you're going to tell the truth or not. After the meeting, Suzie came out and said I told the truth, I told them the truth about it and they threatened to fire me. And then we had a meeting with that. That's the most adamant thing I remember because she was so upset that they threatened to fire her. But she stuck to her guns and told the truth.

9.9

KRAHLING DEPOSITION | Appx 5639 | Pages 323 & 324 | Lines 15-25 & 2-25 Warnings of physical harm

[Krahling] And by this time in late September, I was seriously concerned over staying there physically.

Q. Were you threatened physically?

A. Different Merck employees told me that I should be scared for my physical well-being.

Q. Who told you that?

A. Frank Kennedy and Kevin Szczypiorski at two different times. Well, Frank Kennedy numerously. Kevin Szczypiorski met with me to tell me I need to be careful, that I should be worried.

Q. Who did they think was going to hurt you physically?

A. They didn't say who. They just said I should be concerned about my physical safety because what had happened was such a big deal and people were very -- Szczypiorski said very pissed off and that I should be very concerned. I was talking to Kevin at the bar right next to the -- right next to Merck. And, you know, that was when I previously told you I had talked to him about the allegations of fraud in the lab. A lot of that happened then. He said, I told you. He said, I told you all along you have to be careful of Colleen and Mary and things like that. He was very concerned about my safety. I thought I was -- you know, he's a good guy to warn me. I'm not saying I agree with him. But that stuff weighs on your mind, you keep hearing it. Frank said that I would be -- he said he would never get in the car with me because he thought it would blow up.

9.10

KRAHLING DEPOSITION | Appx 5652 | Page 371 "I could be killed"

A. Start with Kevin Szczypiorski.

Q. Tell me the substance of the conversation to the extent that you remember it?

A. Mostly he was informing me of things. So I didn't have to tell him much of anything because he already knew the FDA came in. So he was telling me about how the kind of

scientific misconduct he sees in that lab has been going on long before I was there, when he was there. And he said, Why do you think I got out? He said, you know -- he told me that, he said, you always liked Colleen and got along with Colleen. I told you she was like this. But I still defended Colleen as a friend. I thought she was good. But I appreciated that he was -- he wanted to meet with me, he was concerned. And then he said that what he heard, that this was a very, very big deal with the FDA and I should really be concerned about my physical safety.

Q. In what way should you be concerned about your physical safety?

A. He said I could be killed. He thought they'd kill -- like somebody would kill me. That it was costing the -- it was costing the company so much money.

9.11

WLOCHOWSKI DEPOSITION | Appx 6032 | Page 535-536 Pressure to participate in fraud

Q. If you go to paragraph 3.

A. Yes.

Q. And the last sentence in paragraph 3 reads: In fact, their superiors and senior Merck management pressured them to participate in the fraud and subsequent cover-up when Relators objected to and tried to stop it. Do you have personal knowledge of your superiors and senior Merck management pressuring you to participate in the fraud?

THE WITNESS: Your question was if I had personal knowledge?

Q. Uh-huh.

THE WITNESS: Yes.

Q. What is that pressure that you're referring to there in that sentence of the Complaint?

THE WITNESS: From the discussions we had earlier, from some of the responses I had provided earlier was that Dave Krah was asking us to change data. The meeting with Emilio was asking us to, you know, expedite the testing and complete the testing, offering us bonuses. So in my personal knowledge, that was being pressured to participate in the fraud.

9.12

KESSLER REPORT [EXHIBIT 3A] | PAGE 230 | APPX 791 | FOOTNOTE

See RELATOR_00001044 (Merck Workbook 31688 Pages 217-218 stated: ¶ Dave Krah had been accused by myself [Krahling] and a co-worker during lab meeting, in front of the entire lab, that he was intentionally falsifying data in order to lower the pre-positive rate and meet the FDA targeted goal of measuring 95% seroconversion in MMRII vaccinees. ¶ I also reported this fraud to Alan Shaw, executive director of vaccine research. He admitted the policy and responded that our lab was to be compensated with large bonuses. ¶

9.13

KRAHLING DEPOSITION | Appx 5608 | Pages 201 | Lines 21-25 "Bribery"

> He started talking about these big bonuses we were supposed to receive. He said, You already earned the money to get it, you're going to get a lot of money, just basically do as you're told.

9.14

KRAHLING DEPOSITION | Appx 5624 | Pages 262 | Lines 16-22 Follow orders and get bonuses

> A. Emini met with our entire lab and instructed us to follow Krah's orders. He said that the only way we would get Protocol 007 testing done is if we followed Krah's orders. And he said if we did that, he would double the amount of a bonus that we had already earned. So Emini for sure.

10. PRESERVATION OF DATA

10.1

KRAHLING DEPOSITION | Appx 5622 | Pages 257 | Lines 6-10 Preservation of data

A. Well, it was Suzie and Jon's idea that they should be photocopying counting sheets and giving them to me or someone should be preserving them so that they didn't get destroyed.

10.2

KRAHLING DEPOSITION | Appx 5575 | Page 69 | Lines 6-7, 12-16 & Appx 5576 | Page 70 | Lines 3-6

A. I retained the photocopies of documents that were being destroyed in Merck's lab when I left -- I had them before I left Merck, I had them after I left Merck.

10.3

KRAHLING DEPOSITION | Appx 5636 | Page 311 | Lines 15-25 Krahling protects data

Q. Was there any documentation that you prepared to be provided to the FDA in response to their questions raised in the FDA inspection in August and September of 2001?

A. So I didn't start gathering -- I gathered information like photocopying counting sheets and preserving them. When Krah was destroying plates, I tried to salvage some and hide them so they wouldn't be destroyed. So those things I did before the FDA came in, trying to preserve them.

10.4

WLOCHOWSKI DEPOSITION | - Appx 5960 | Page 211-213 JW documents concerns

Q. Are you sure that you created it -- strike that. Do you know when you created it?

A. I don't recall exactly when, but based on the last date entry there, it's April 11th, it's around that time frame.

Q. I'm sorry, I don't mean to nitpick on this. But do you have a basis to believe it was around April 11th other than seeing that date there?

A. If there -- if it was late --well, obviously if it was earlier, I couldn't have written the other dates, but if it was later in time, I would have likely filled in more information up to the date that it was being documented.

Q. Why is it that you wanted to document your work activities from your start date until whenever it was that you prepared this document?

A. I was seeing things in the laboratory that I wasn't comfortable with, that in my work experience had not been exposed to before and I wanted to document the activities that were occurring.

Q. And that's what this document does. Right?

A. Correct.

Q. Did you end up showing this document to anybody?

A. While I was at Merck?

Q. Yes.

A. No.

Q. Did you intend to show it to someone when you first created it?

A. My intent was really my record when I created this.

Q. Why did you want a record?

A. So, again, I could keep track of the activities because I felt like there were things that were being done wrong in the lab and I wanted at least to have information around that.

Q. Were you contemplating filing a lawsuit based on what's described here in this document?

A.No.

Q. Maybe we can go through some of the concerns you express in the document. At the top there is a section that begins with "Start date," and the first entry there reads: "offered no direction or training." I gather that's a statement that neither Dr. Krah nor anyone else in the lab provided you with what you consider to be the adequate direction or training?

A. I believe it was more geared towards receiving no training from my supervisor which was Dave Krah.

11. FRAUD

11.1
KRAHLING DEPOSITION | Appx 5571 | Page 50 | Lines 9-16 Fraud

Q: Why are you bringing this case against Merck, in your own words.

A: The reason I brought the case is because it seemed the most effective avenue forward to expose the fraud that was committed at Merck and to get information in front of the FDA and CDC which are the regulatory agencies that I felt would be better served having that information, which I knew they didn't have.

11.2
KRAHLING DEPOSITION | Appx 5605 | Page 189 | Lines 8-16 Fraud

Q. Well, tell me why it was amicable and if when it changed, if it did?

A. I don't know why it was amicable. He liked me, I thought he was okay. I know why it changed, because I pointed out the fraud that Krah was committing in the lab. That soured my relationship with Krah, too.

Q. When did you first point out the fraud in Dr. Krah's lab to anyone, and to whom did you do that?

A. I pointed it out to Krah sometime in the first half of January of 2001. Maybe toward the middle front of January 2001.

11.3
KRAHLING DEPOSITION | Appx 5608 | Pages 199 | Lines 14-25 Krah accused of fraud (SK)

[Krahling] So I made it very, very clear, I don't remember the exact day, at some point in July that the entire -- not the entire lab. There were several of us in the lab had accused Krah of committing fraud at a lab meeting. That was my complaint where I -- unequivocally he knew I was saying there was fraud being committed.

Q. That was in July of 2001?

A. Yeah. I was reporting to him about a lab meeting where Joan had stood up and called Krah a fraud right in the middle of the lab meeting.

11.4
KRAHLING DEPOSITION | Appx 5609 | Pages 204 | Lines 19-25 Fraud

A. There was an ongoing fraud.

Q. But you continued to work there from January to July 2001?
A. I was trying to stop it.

Q. But you didn't go to Alan Shaw until July 2001?

A. I was told by Bob Suter (Human Resources) not to even email him.

11.5
KRAHLING DEPOSITION | Appx 5612 | Pages 215 | Lines 2-6 Fraud, altering data.

Q. Other than witnessing Dr. Krah wipe those numbers off the plate, did you witness other employees in the lab wipe numbers off the plates?

A. All the time. All the time. We can go through example by example.

Q. Who else in the lab did you identify wiping numbers off the plates?

A. Jenny Kriss, Mary Yagodich, Colleen.

11.6
KRAHLING DEPOSITION | Appx 5617 | Pages 237 | Lines 5-11 Fraud

Q. The whole first paragraph says, "In July 2001, ...Joan Wlochowski openly accused Krah during a lab meeting of committing fraud in the mumps testing." You then met with Shaw and confronted him. Is that accurate, that you met with Shaw after that July meeting?

11.7
KRAHLING DEPOSITION | APPX 5618 | Pages 238 | Lines 4-10 Fraud

Q. Okay. Paragraph 54 says, In July 2001, after completing the secret audit, Relator Wlochowski openly accused Krah during a lab meeting of committing fraud. Relator Krahling then met with Shaw, the Executive Director of Vaccine Research and confronted him about the fraudulent testing.

Page 239 |Fraud

When Joan accused Krah of fraud at that lab meeting, he was quiet. And then he said, I can't be committing fraud. I don't know -- I'm blinded as to the -- as to the --
he said he was blinded. I shot back, You're not blinded as to what's the pre and post (blood samples) and you're changing pre-positives. He was just dead silent. He was very uncomfortable. And it was long and there was pizza sitting in the middle of the table. I got up and walked to Alan Shaw's office and said, We just accused Krah of committing fraud in that lab meeting. That's paragraph 54.

Q. Was that the first time you directly discussed fraud in the lab with Dr. Shaw?

A. That was the first time I unequivocally said it so that I knew 100 percent he knew what I was saying.

Q. Paragraph 54 goes on to say that you told Shaw the falsification of the pre-positive data. You also confronted Shaw about improper use of animal antibodies to inflate post-vaccination neutralization counts.

11.8

KRAHLING DEPOSITION | Appx 5620 | Pages 246 | Lines 5-6 Fraud reported to FDA

Q.What did you say during the second call to the FDA?

A. The totality of the phone calls went - I was getting to the person I believe she needed to put -- the person who answered the phone obviously isn't -- probably not that high up. But she was trying to get me in front of someone who could hear it. And so the series of four phone calls I didn't get to tell them too much. I told them that fraud was occurring, they should come in. So I'm not sure of the content so much as there was fraud happening. And the last phone call I said they needed to come in, that data was being destroyed.

11.9

KRAHLING DEPOSITION | Appx 5624 | Pages 264 | Lines 17-22 Fraud spreadsheet

A: He even at one point was excited about an Excel sheet that they have developed so that people could just plug in numbers and the undesirable results, and he called them undesirable results, would light up and you could identify them.

11.10

WLOCHOWSKI DEPOSITION | Appx 5945 | Page 191 | Lines 1-5 Fraud

Q. Why did you file this lawsuit?

THE WITNESS: I filed it because based on what I saw in Dave Krah's lab of falsifying data and knowing that that was wrong,

11.11

WLOCHOWSKI DEPOSITIONAppx 5955 | Page 231-232 Fraud documented

THE WITNESS: So to, I guess, make the clarification between fraud and data falsification which you're referring to, I guess my interpretation at that time is this data, again, was being conducted as part of a clinical trial that if the data that was reported the way it was being reported would be fraudulent.

Q. It was your opinion that the data being reported was fraudulent?

A. If it was -- yes, if the intent was to use the data for the trial, then it would be fraud, yes.

Q. You knew that the intent was to use the data for the trial. Right?

A. It was my assumption, that's my expectation.

Q. The way you captured is very serious -- strike that. You agree that that's quite serious, isn't it, if you're using data fraudulently for a clinical trial?

A. Yes.
Q. Extraordinarily serious, isn't it?

A. Yes.

Q. So the way you captured it on this document was you wrote the words "mumps protocol?

11.12
WLOCHOWSKI DEPOSITION | Appx 6025 | Page 505 | Lines 8-15 Corroboration of fraud from co-worker

Q. Just for your best recollection of the words Mr. Kennedy spoke that you are referring to in the sentence that begins on line 5 that reads, "Kennedy agreed that there was fraud in the lab regarding Protocol 007, but he did not want to be a part of taking a stand against it as he did not want to lose his job."

11.13
WLOCHOWSKI DEPOSITION | Appx 6025 | Page 507 | Lines 10-21

Q: Could you turn to page 15, please. And if you look at the paragraph at the bottom of page 15, it reads, In July of 2001, at a laboratory meeting involving all members of the laboratory, Relator accused Krah of "cheating." She stated that when the testers are not blinded as to whether samples are pre- or post-vaccination, it is wrong to recount and adjust a pre-vaccination sample only because it is found to be seropositive, Krah responded to this accusation with an awkward silence.

11.14
WLOCHOWSKI DEPOSITION | Appx 6025 | Page 508 | Lines 1-11 Additional witnesses

Q. If you turn to page 17, the last paragraph reads, On one occasion, Relator, DeHaven, Kennedy, Gombola and Suzanne Maahs learned of Emini's planned audit from Relator Krahling. Relator, Gombola and Maahs agreed to stick together and explain to the Merck auditors exactly what was going on in the lab. DeHaven and Kennedy opted to take a neutral stance with Emini's auditors. They agreed not to lie but said that they would not volunteer information unless asked.

11.15
WLOCHOWSKI DEPOSITION | Appx 6026 | Page 509 | Lines 13-17

Q. Did they express any reluctance to reveal it?

A. They were reluctant based on the -- what we went over previously with my response to Frank. Again, his reluctance was around potentially losing his job for providing information.

11.16

KESSLER REPORT [EXHIBIT 3A] | PAGE 7 | APPX 568 PARAGRAPH ONE

> Merck identified 225 lots, representing 23 million doses of MMRII, that Merck could not assure met the 4.3 potency claim on the label for the entire shelf-life, 12 million of which were released to the U.S. market; (e) Merck failed to report 220 of these lots even though Merck identified lower potency doses from these lots as a compliance issue; Merck tested Protocol 007 subjects outside the clinical protocol without consent and without informing the FDA;
>
> Falsification of data in Protocol 007; (i) Merck used the results of the clinical study to represent that children who received MMRII with mumps potency of less than 4.3 would be protected against disease;

11.17

KRAHLING DEPOSITION | Appx 5628 | Pages 279-281

> Q. It says here that you "...brought actual testing samples and plaque counting sheets to demonstrate to Emini the fraudulent testing that Krah was directing." And "Emini agreed that Krah had falsified the data." Can you describe in more detail what happened at that meeting with Dr. Emini?
>
> A: I said, I need you [Emini] to look at this plate. He tried to say, well, I wanted to -- I said, no, we got to start -- you have to look at this plate. I pointed to the one well. I said, could you count -- I said just count how many plaques are in that, that well. And he looked at it. He could see there were four plaques there. He said four. I said, That's what I saw, too. And then I showed him the sheet and said that's what my co-worker saw. I said, Krah says those four plaques aren't there, that they're a torn monolayer. And because this was the mock control, his elimination of that four lowered the standard for seroconversion for that assay. That was one of the assays which Krah had said he was recounting which prompted me to call the FDA. So I wanted to show Emini an example of the fraud. He agreed that Krah misrepresented that data, that there were not four -- I mean, there were four plaques there because the cell monolayer was there. Krah was saying no cell monolayer, torn cell monolayer. You couldn't accept four plaques, that the cells were missing.
>
> Q. What else did you discuss with Emini after that?
>
> A. I think we answered this pretty detailed [sic] in an interrogatory. I can go through that and confirm that everything we said there was true.

Krahling meets with Emini to challenge him on the fraud. He is told it was a “business decision”.

> I tried to explain to him that Krah was under a lot of pressure; that the reason he had to falsify the data, that he was supposed to get this done, he had to get the right answer, and that they were using a control that counted a lot of nonspecific effects. So they were counting false positives. I said Krah would not have to falsify the data perhaps if they used a non-immune serum control. He pointed out to me something to the effect that, look, the FDA is aware of the protocol. You don't need to tell them about it. And my

rebuttal was they certainly don't know that Krah is committing fraud in the lab so that they could use that protocol. He said, You will not call the FDA. I just said, you know, if you can give me a scientific reason why we're using the rabbit antibodies without a non-immune serum control such to cause Krah to falsify that data, I said I won't call them. **He said it's a business decision**. And then I was moving towards the door. He said, You will not call the FDA. Krahling Deposition, Appx 5629 | Pages 283-285

11.18
KRAH DEPOSITION | APPX 5010 | PAGES 516-517

Both Krahling and Wlochowski accused Krah of cheating. He cites only Krahling.

Q. Were there any members of your lab who had complained to you about any of the operations you were conducting relating to the AIGENT testing?

A. The only comment I received from lab -- one member of the lab staff was a comment that we knew which was -- which samples were pre-vaccination and which were post-vaccination.

Q. That was the only comment?

MR. SANGIAMO: Object to the form.

THE WITNESS: To the best of my recollection, yes.

BY MR. SCHNELL: Q. And that was a comment by Steve Krahling?

A. Yes.

Q. So no one other than Steve Krahling ever complained about what was going on in your lab during the AIGENT testing period?

MR. SANGIAMO: Object to the form.

THE WITNESS: Not regarding -- or not that I'm aware of.

11.19
KRAH DEPOSITION | APPX 5064 | PAGES 731 - 732

Krahling and Wlochowski accused Krah of fraud. Krah denies remembering such a significant event.

Q. And then you reference Steve Krahling and Joan Wlochowski and your expectation that they won't remain in your lab much longer. You reference "perceived concerns/issues" they had. What were you talking about there?

A. Well, I do recall questions that Steve raised. I don't recall if Joan was also raising them about the distribution of work within the laboratory and whether the work was being equitably -- or appropriately distributed.

Q. You don't recall them raising concerns about the -- how the AIGENT testing was being conducted?

A. The only recollection I have was Steve at, I believe, two lab meetings commenting that we know which is a pre-vaccination and which is a post-vaccination serum. That's the extent of the comment that I recall.

Q. You don't recall any complaints about -- from Joan Wlochowski on how the -- how you were running the AIGENT testing?

A. I do not.

Q. You don't recall concerns raised by either of them relating to any fraud in connection with the AIGENT testing?

A. No.

11.20
KRAH DEPOSITION | APPX 5044 | PAGE 652 | Lines 6-9

Krahling and Wlochowski accused Krah of fraud and refused to participate. Krahling threatened to and did call call the FDA.

THE WITNESS: The only concerns that I recall hearing from Mr. Krahling were that we knew the pre- and post-vaccination sera.

12. STATISTICAL AUDIT

12.1

KRAHLING DEPOSITION | Appx 5623 | Pages 258 | Lines 3-10 Statistical audit for fraud

> Another effort was Joan and I's decision to audit the data to make sure that there was statistical proof of fraud in the data because then we knew for certain that our allegations that the pre-positives at least were being changed, could survive independently of us saying, well, we saw it here on this one, we saw it here on that one.

13. PRE POSITIVES

Kirk made changes to the numbers of pre-positives only. He did not make changes to pre negatives, post positives, or post negatives. In other words, he changed only those data where children without previous exposure to mumps appeared to have mumps immunity. As the experts and the Relators point out this false positive rate was sometimes as high as 24 to 84% of samples tested. This negated the value of the tests to achieve Merck's aims. Statistically the changes identified by Krahling and Wlochowski, confirmed by others, were not random.

A further example of Merck's fraud (not referred to in the movie) is that an essential requisite for the scientific validity of this testing is that the counts are performed in an observer blinded fashion. In other words, Kirk, when performing those counts should have had no knowledge of the sample's provenance. Kirk did not do the counting in an observed-blinded fashion and the test was therefore fraudulent. The actual fraud that was committed is substantially worse than identified in the film Protocol 7.

13.1
MALONE REPORT [EXHIBIT 2A] | PAGE 22 | APPX 482 | PARAGRAPH TWO

> Merck observed a pre-positive rate as high as 24% at certain anti-IgG dilutions.

13.2
The Problem With Live Viral Vaccines [EXHIBIT 11] Provided to Andrew Wakefield 06.10.2003 by Relator Krahling. Pages 4 and 5.

> For some experiments the pre-positive rate was as high as 84%. That is to say that 84% of non-vaccinated children were somehow immune to the disease [mumps]. This is clearly not the case. [**page 4**]
>
> Numerous single data points within experiments were changed routinely. A statistical analysis of the changes revealed that 45% of pre-positives had been retroactively changed to pre-negatives, yet not a single pre-negative had been changed to a pre-positive. All of the changes to the original data had occurred in one direction resulting in a pre-positive rate enormously reduced to 10%. The statistical probability that this could occur unintentionally is zero. My co-workers and I challenged these results at lab meetings and notified Alan Shaw, the head of Merck's virus and cell biology department. Merck's response was to conceal the fraud and to stringently restrict availability of the data for review. [**page 5**]

13.3
KRAHLING DEPOSITION | APPX 5618 | Pages 238 | Lines 4-10 Fraud

> Q. Okay. Paragraph 54 says, In July 2001, after completing the secret audit, Relator Wlochowski openly accused Krah during a lab meeting of committing fraud. Relator Krahling then met with Shaw, the Executive Director of Vaccine Research and confronted him about the fraudulent testing.
>
> Page 239 |Fraud
> When Joan accused Krah of fraud at that lab meeting, he was quiet. And then he said, I can't be committing fraud. I don't know -- I'm blinded as to the -- as to the

– he said he was blinded. I shot back, You're not blinded as to what's the pre and post and you're changing pre-positives. He was just dead silent. He was very uncomfortable. And it was long and there was pizza sitting in the middle of the table. I got up and walked to Alan Shaw's office and said, We just accused Krah of committing fraud in that lab meeting. That's paragraph 54.

13.4
WLOCHOWSKI DEPOSITION | Appx 6025 | Page 507 | Lines 10-21

Q: Could you turn to page 15, please. And if you look at the paragraph at the bottom of page 15, it reads, In July of 2001, at a laboratory meeting involving all members of the laboratory, Relator accused Krah of "cheating." She stated that when the testers are not blinded as to whether samples are pre- or post-vaccination, it is wrong to recount and adjust a pre-vaccination sample only because it is found to be seropositive, Krah responded to this accusation with an awkward silence.

13.5
KRAHLING DEPOSITION | Appx 5606-5607 | Pages 190-194

Q. Why don't you tell me when he allegedly instructed you to commit fraud?

A. That was December 2000.
Q. What did he say?
A. Said quite a bit. That was my first week back and he was running -- he was counting plates in the front lab. And he was excited because he was explaining to me that the mumps neutralization assay, that Protocol 007 was going forward in his lab and that they got an indicator strain and a methodology that they knew could give them 95 percent efficacy which is what they needed. He was counting plates at the time and he said that in order to meet the 95 percent efficacy FDA mandate, that we needed to cross out pre-positives when we found them and change them to pre-negatives. He said that we had to target a 10 percent pre-positive rate. And that the reason we needed to do that is because the FDA might not allow them to use that protocol or method including the rabbit anti-human IgG unless they change those results. He then showed me an example of what I was supposed to do. He took a plate that had four pre-positives on it. He had counted it. There were four pre-positives. He took and wiped the numbers off the plates with an alcohol wipe. I'm sorry, he -- that time he wiped with alcohol the plate identification number and switched it with the plate identification number for the next plate, because all of the ones on the next one were positive -- or they were negative. So he had a plate that he counted that was pre-vaccine, they were all positive. The sample after it was the post for that same kid, and those were all negative. And so he crossed out the identification, switched the plates. He kept -- he had to switch those numbers on his counting sheet so he crossed them all out. And then he wrote in the next numbers fresh for the next plate. When he did that, he took a second look at the dilution above that plate and he noticed that it was also pre-positive. And he was like, damn. Because the whole thing was still pre-positive because of that one dilution. So he crossed it out. He said, This is what you have to do. You have to cross out these results and write in a

pre-negative. I just repeated, We're supposed to just cross out the results. And he said, If you need to, you can recount the plaques, but if you recount the plaques, you have to count very liberally and make sure that you count more plaques so that the result would switch from pre-positive to pre-negative. And then he wrote down on the sheet, rechecked plaques. But he was pretty clear that the directive was to change the results. He didn't order me to have to (sic) recount the plaques. He just said change the results.

Q. Let me break that down a little bit. So this is in December of 2000 when you first started?

A. It was the week between Christmas and New Year's.

Q. And how did he -- you're saying he changed the plates themselves and then crossed out the numbers on the counting sheet?
A. Start with the plate identification number. The plate identification number would have identified the first plate he was counting, the pre-vaccination sera as a pre-vaccination sample. All of those were positive. All the dilutions were positive. He counted that and wrote them on the counting sheet. He noticed that the next plate were all negative in the post. There was a comment, I said, oh, that's -- I mean, that's a seroconversion in reverse. Basically the kid had immunity, got Merck's vaccine and lost his immunity. I asked, that's a weird result. He said it was due to the artificial nature of the anti-IgG. That whenever he sees that, he just switches the plates.

So he crossed out the identification number that would identify it as a pre-vaccine versus a post-vaccine and switched them so that all the positives went to the post. Now, because he did that, he had to cross out all the results he had just written down. But because he was doing it in real-time with a calculator next to him, the next plate which is the other one that he had switched, he could write the numbers fresh onto the counting sheet. Now, after he did that, there was still one pre-positive dilution in a different plate above the first one he had switched. That pre-positive would have made the whole sample pre-positive. All that work switching the plates would have been for nothing. They still couldn't have used it. So he crossed out the numbers and said, "Change the results." I said, You just cross out the numbers.

And that's when he said, You can recount these if you need to, but you have to change the results. He told me specifically that we were targeting pre-positives. If you recount them, you need to count very liberally and find as many plaques as you can in order to switch the result from pre-positive to pre-negative

13.6
KRAHLING DEPOSITION | Appx 5624 | Pages 265 | Lines 9-11

Q: So are you saying that no recounting was done at all on pre-vaccination negatives or post-vaccination positives?

Answer:
KRAHLING DEPOSITION | Appx 5625 | Pages 266 | Lines 6-14 Changes to pre-positives only.

A: ..when a serostatus change [an alteration in raw data] occurred, what we found is every single one was a pre-positive changed to a pre-negative. There were no pre-negatives changed to -- there were no pre-negative change, there were no post-negative change, no post-positive change. All the changes were pre-positive.

13.7

KRAHLING DEPOSITION | Appx 5625 | Pages 269 Changing pre-positives

A. I'm saying I don't know what they went back and did. But originally Krah directed them and us that if you get a pre-positive result, you go back and you change it. One time Jenny counted, she counted a pre-positive and it was still a pre-positive. She took an alcohol wipe, destroyed her data. Counted it again (sic). Still got a pre-positive. Destroyed her data. She did it like five times. And she actually said can anybody else count this, I can't find enough plaques to switch this to a pre-negative. And I said, look at -- I said, why are we even trying to change pre-positives.She went and asked Krah the question, Why are we even trying to change the pre-positive anyway. Krah said, Because kids aren't normally immune to mumps before they've had a vaccine or before they've been exposed to a disease. And this would be a big red flag that the use of antibodies with an improper control, that this isn't a methodology that is providing reliable data.

13.8

KRAH DEPOSITION | APPX 4954 | PAGE 287-289

Due to the non-specific effect of the rabbit serum in Protocol 7, Krah generated a secondary objective and that was to reduce the unwanted pre-postive results to less than 10%.

Q. 26915, second bullet point you say, "Pre-positive rate is higher than desirable." What did you mean by that when you wrote that?

A. My best recollection based on the description for serum set two was that **the value was 22 percent, and that that was higher than what was deemed desirable.** How that desirable number was set, I don't recall.

Q. I see. The third bullet point you say, Continue evaluation of results using optimized anti-IgG (target less than equal 10 percent pre-positive rate and greater than/ equal to 95 percent seroconversion). Do you see that?

A. Yes.

Q.Where did you come up with that percent pre-positive rate?

MR. SANGIAMO: Object to the form.

THE WITNESS: I don't recall where that came from.

BY MR. KELLER: Q. So at this point you were still developing the assay to try to reach that target. Correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: My recollection is that we were still developing the assay to see if we could achieve 95 percent seroconversion.

13.9

KRAH DEPOSITION | APPX 4988 | PAGE 427-428

Laboratory staff responsible for counting plaques had to be trained to a certain standard. Training was overseen by Krah. This is relevant to Krah's deposition scene in the movie.

Q. In your opinion, were there any individuals within that group, including you, who were better at counting than others?

A. To my understanding, the best of my recollection, each of the counters was compared to a -- their counting accuracy was compared against a reference counter. So there was a reference counter, but in the -- as part of the training, the plaque counting -- as best I can recall, the plaque counting verification was done with a subset of plates from, I'll say, an assay. It may not be any particular study but just a set of plates that had plaques on them and to -- and verify that the new counters were counting within a targeted range of the reference counters.

Q. And that was something that was done before the actual counting of plaques and the AIGENT study commenced?

A. As best as I recall, that plaque counting training was done before any– before those individuals counted plaques independently.

Q. So you wouldn't allow someone to count plaques unless they pass that preliminary test of counting ability. Is that correct?

A. That's the best of my recollection, yes.

13.10

KRAH DEPOSITION | APPX 5019 -5020 | PAGES 550-555

Krah denies selectively changing pre-positive results. This is despite multiple witnesses (relators and non-relators) who confirm and documented that this happened.

Q. I'm going to ask the question again. I'm not asking you whether or not this is true. I'm asking whether or not you disclosed to the FDA that the vast majority of positive neutralizations at a single dilution occurred at the pre-vaccination sample?

MR. SANGIAMO: Object to the form. Asked and answered. He answered this.

THE WITNESS: I don't believe that it's an accurate statement, and I personally did not -- don't recall providing CBER a proportion of sera that were single dilution positive pre-vaccination versus post-vaccination.

BY MR. SCHNELL: Q. Did you disclose to the FDA, anyone at the FDA, that you were directing your staff members to increase their plaque counts on the pre-vaccination samples to eliminate pre-positives?

MR. SANGIAMO: Object to the form.

THE WITNESS: That was not an accurate -- that's not an accurate statement and we did not disclose that. We didn't make that statement to the FDA.

BY MR. SCHNELL: Q. Did you disclose to the FDA that you were directing your staff to make inaccurate plaque counts?

MR. SANGIAMO: Object to the form.

THE WITNESS: That's not an accurate statement and we did not disclose that. We did not say that to the FDA.

BY MR. SCHNELL: Q. Did you disclose to anyone at the FDA that you were directing your staff to selectively review pre-vaccination samples versus post-vaccination samples?

MR. SANGIAMO: Object to the form.

THE WITNESS: That's not an accurate capturing of the practice, and we did not communicate that to the FDA.

MR. SCHNELL: Q. Did you disclose to anyone at the FDA that the vast majority of changes that were made to the plaque counts were in the pre-vaccination samples?

MR. SANGIAMO: Object to the form.

THE WITNESS: Again, I don't know that that is an accurate statement, and to the best of my knowledge, that was not communicated to the FDA.

BY MR. SCHNELL: Q. Did you disclose to the FDA that a large number of the plaque count changes that you or your staff committed changed pre-positive samples to pre-negative samples?

MR. SANGIAMO: Object to the form.

THE WITNESS: Again, I do not know that that's an accurate representation of the data and the effect of the plaque count corrections. The -- I don't recall making a statement to CBER that the majority of the samples were in effect, that were pre-positives.

BY MR. SCHNELL: Q. Did you disclose to the FDA that there were instances where you or your staff retested a sample that was pre-positive in a subsequent assay? Let me restate that. Did you disclose to anyone at the FDA that you or your staff engaged in retesting when you found a pre-positive in the sample?

MR. SANGIAMO: Object to the form.

THE WITNESS: Well, the retesting of a pre-positive sample depends on the results of the post-vaccination serum. I don't know that whether we disclosed to the FDA a retesting of a paired set where pre-vaccination serum was positive and post-vaccination serum, for example, was invalid. As I mentioned previously, we tested the samples in the same assay, the pre-vaccination and post-vaccination samples in the same assay. For example, if in a pre-vaccination result, whether it's positive or negative and the post-vaccination is invalid, that pair would be retested because one of the components of the pair was invalid. So that's the case where a retest would be done where the pre-vaccination serum could be positive but the post-vaccination serum was not valid.

BY MR. SCHNELL: Q. Did you disclose to anyone at the FDA that you retested samples specifically because you found a pre-positive in the original assay?

MR. SANGIAMO: Object to the form.

THE WITNESS: As best I recall, in the interim analysis set there was one experiment where we were -- was on line or intended to be further understanding the assay performance that there was an example in there of a pre-positive sample that was retested to confirm the results of trying to verify the result. For the clinical database, only the original result was reported. But those -- to the best of my understanding, that experiment was included in the data that was subsequently provided to the FDA.

BY MR. SCHNELL: Q. Other than that, did you disclose to the FDA that there were other instances where you retested an assay because it registered a pre-positive in the original assay?

MR. SANGIAMO: Object to the form.

THE WITNESS: I don't recall or don't believe that it's accurate that they would have been retested if there was a valid post-vaccination serum result. So I do not recall disclosing the indications of retesting a sample just because it was pre-positive.

13.11
KRAH DEPOSITION | APPX 5024 | PAGE 572-573
Krah's claims are completely at odds with those of the relators. For example, Krahling reports being told that he needn't bother recounting pre-positives, just change the data to make such results a pre-negative.

Q. So is it your testimony that on those occasions that you previously testified to when you went up to an individual in your lab who had done a plaque count, you said, hey, you missed some, recount it, you don't think that introduced bias into the recount?

MR. SANGIAMO: Object to the form. Misstates testimony.

THE WITNESS: No, I believe there is a -- looks like there's --plaques were missed, can you please verify whether you would agree that plaques were missed or not.

BY MR. SCHNELL: Q. You admit you did that. Right?

THE WITNESS: I did go to an individual and say here is a well or a plate that was identified with some flags or single positive dilutions or flags from the workbook. Plaques looks like they're being miscounted, can you please verify whether you agree that they're miscounted or not.

BY MR. SCHNELL: Q. And on those occasions you don't believe that you're disclosing the reason for your asking them to recount the plaques introduced potential bias into their recount?

A. My understanding is that that was trying to get the most accurate plaque count, that the person would make the best effort to get the best, accurate plaque count, not necessarily a bias.

Q. Did you disclose to anyone at the FDA that you went to individuals in your lab and asked them to recount plaques that you found had been missing plaques?

MR. SANGIAMO: Object to the form.

THE WITNESS: The best I recall, when I was talking to Deborah Bennett about -- not Deborah Bennett, to Cathy Carbone about the plaque count corrections, that was an example I gave to her.

13.12
KRAH DEPOSITION | APPX 5054-5055 | PAGES 690-697

Krah's observations of, and efforts to, specifically reduce the pre-positive test results are evident in the following exchange.

Q. Part of that development was determining the proper dilution of anti-IgG to be used in the assay. Correct?

A. That's at least one of the variables that was part of this study.

Q. In the first paragraph in the middle you referred to "The majority of the pre-positive sera were positive at a single dilution." Do you see that?

A. Yes.

Q. So that's what you found you (sic) were doing the pilot studies that led up to the AIGENT testing. Correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: This says that of the sera that were pre-positive were positive of a single dilution.

Q. That's an observation that you found in the experimenting you did prior to commencing the AIGENT testing. Correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: Noting of the sera that were pre-positive, they were positive single dilution was -- looks like -- this indicates that it was an observation at the time during development of the assay.

Q. Then in the next paragraph you wrote, "An option under consideration is to classify sera (pre and post-vaccination) that are positive at a single dilution as 'equivocal', and perform a retest to confirm the serostatus." Do you see that?

A. I'm sorry, what -- I've lost where you are.

Q. Second paragraph starting with the second sentence. "An option under consideration is to classify sera (pre and post-vaccination) that are positive at a single dilution as 'equivocal,' and perform a retest to confirm the serostatus."

A. Yes. Yes.

Q. You ultimately adopted that not as a measure for retesting but as a criteria for recounting. Correct?

A. The single positive -- the single positive neutralization was adopted regardless whether it was -- it's correct that it was adopted, but independent whether it's a pre-vaccination or a post-vaccination serum.

Q. But the purpose you adopted that was to address the pre-positive problem that you were facing with the AIGENT testing. Right?

MR. SANGIAMO: Object to the form.

THE WITNESS: I do not agree with that conclusion.

Q. Well, the very next sentence you wrote, "This could reduce the pre-positive rate (and allow for analysis of more serum pairs), while maintaining assay sensitivity." So isn't it true that you knew that the instances of positive neutralization at a single dilution were occurring more often on the pre-vaccination side than the post-vaccination side?

A. I don't interpret that in the data –

THE WITNESS: -- the comments on the pre-vaccination. So it doesn't -- I don't see any comment on post-vaccination sera.

Q. I'm not necessarily limiting you to this memo. I'm asking you in terms of you as a scientist and the experiments you did here, it was not your experience that the majority of

instances where positive neutralization occurred at a single dilution were in pre-vaccination samples?

A. I do not, I don't have a recollection one way or the other what the frequent (sic) was.

Q. It's your testimony also that you did not implement this criteria for rechecking as an effort to eliminate pre-positives in the AIGENT testing?

A. That's correct. It was an effort to obtain the most accurate data in the case of a single positive dilution, whether it was in a pre- or post-vaccination serum.

Q. And that's your testimony still even though with the very next sentence you wrote implementing "This could reduce the pre-positive rate"?

A. That's -- that was my thought at the time. It doesn't say that it would or wouldn't have independent confirmation if that was the case.

--- (Exhibit Krah-52, 8/15/00 E-mail, 00068546, was marked for identification.)---

Q. I'd like to mark as Krah-52 an e-mail from Dr. Krah to Dr. Shaw, dated August 15, 2000, Bates number 68546.

A. Okay.

Q. I point you to third paragraph where you wrote, "Retesting of the pre-positive sera from other serum sets have shown that the pre-positives often do not repeat (although post-positives do repeat). Although it would likely drive the testing lab mad, a retest policy on all sera might reduce the pre-positive rate...." Do you see that?

A. Yes.

Q. Is it still your testimony that the majority of instances where positive neutralization occurs at a single dilution doesn't occur on the pre side versus the post side?

MR. SANGIAMO: Objection. Misstates his testimony.

THE WITNESS: I don't have a recollection of the frequency of post-vaccination versus pre-vaccination single positive dilutions.

Q. Does this refresh your recollection that in the experimenting you did leading up to the AIGENT testing, that you found that the positive neutralizations that occurred at a single dilution were more often on the pre side than the post side?

A. That was -- that's in the development of the assay. That's an observation from that. Whether that would continue to be the case in larger scale testing, I can't say.

Q. So you do agree, though, that that was the experience you observed in the testing leading up to the commencement of the AIGENT testing?

MR. SANGIAMO: Object to the form.

THE WITNESS: I wouldn't say that that's a description of the results for that one sera set. Whether that's a description of the overall results, I don't -- I can't say.

Q. And does this also refresh your recollection that it was because of this occurring more on the pre-vaccination side than the post-vaccination side, that implementing a recheck or a retest policy for these instances of positive neutralizations at a single dilution might reduce the pre-positive rate?

MR. SANGIAMO: Object to the form.

THE WITNESS: Does that characterize the reason for implementing the recheck of the single positive dilutions.

14. RESURGENCE OF MUMPS

14.1

https://www.nbcnews.com/health/health-news/majority-mumps-cases-are-vaccinated-cdc-finds-rcna6482

https://www.scientificamerican.com/article/a-mumps-outbreak-among-fully-vaccinated-people/

https://publications.aap.org/pediatrics/article/148/6/e2021051873/183441/Mumps-in-Vaccinated-Children-and-Adolescents-2007?autologincheck=redirected

14.2

APPEAL REPORT [EXHIBIT 1] | PAGE 17

E. MMR-II and ProQuad Have Not Provided Sufficient Protection to Prevent a Mumps Resurgence.

Following Merck's introduction of its first mumps vaccine in 1967, there was a 99% reduction in mumps cases in the United States. Appx5 (Opinion). But starting in 2006, there has been a resurgence of mumps among individuals fully vaccinated with Merck's mumps vaccines. Appx370-371 (Rels. SUMF). And while the CDC has reported an 88% median 2-dose vaccine effectiveness rate from various mumps outbreak studies, the CDC has recognized the "limited" nature of these studies and how "[m]ore studies are needed to assess vaccine effectiveness over time." *CDC Manual for the Surveillance of Vaccine-Preventable Diseases*, Chapter 9: Mumps (2021), https://www.cdc.gov/vaccines/pubs/surv- manual/chpt09-mumps.html.

14.2

Merck's supervisor of the AIGENT (David Krah) testing predicted this resurgence would occur because of the diminished level of mumps protection Merck's vaccines provide. [Appx370 (Rels. SUMF)]. On multiple occasions, he told Relator Krahling "the efficacy rate of the mumps vaccine had significantly diminished since its original licensure." [Appx5721 (Interrogatory Response)].

14.3

KESSLER REPORT [EXHIBIT 3A] | PAGE 52- 53 | PARAGRAPH TWO

Starting in 2006 and occurring ever since, there has been a resurgence of Mumps cases and outbreaks in the United States. One of the largest of these outbreaks occurred in 2016-2017, affecting more than 10,000 people in 46 states. The vast majority of these people, along with the vast majority of those affected in the other outbreaks, received the recommended 2-dose regimen of MMRII. Dr. Stanley Plotkin, a noted pediatric infectious disease academician, and the virologist who developed the rubella vaccine in Merck’s MMRII, has commented upon the apparent reduced efficacy of the mumps vaccine as evidenced by these recent outbreaks of disease in populations vaccinated according to the recommended schedule.275

14.4

KESSLER REPORT [EXHIBIT 3A] | PAGE 52- 53 | PARAGRAPH TWO

> Starting in 2006 and occurring ever since, there has been a resurgence of Mumps cases and outbreaks in the United States. One of the largest of these outbreaks occurred in 2016- 2017, affecting more than 10,000 people in 46 states. The vast majority of these people, along with the vast majority of those affected in the other outbreaks, received the recommended 2-dose regimen of MMRII. Dr. Stanley Plotkin, a noted pediatric infectious disease academician, and the virologist who developed the rubella vaccine in Merck's MMRII, has commented upon the apparent reduced efficacy of the mumps vaccine as evidenced by these recent outbreaks of disease in populations vaccinated according to the recommended schedule.275 FDA's Dr. Steven Rubin, someone with extensive experience with mumps vaccines and mumps virology, has also stated that the resurgence of mumps in the United States has made it "quite clear that newer, more immunogenic vaccines are needed."276 Appx379 (Rels. SUMF). *See also* Appx7741 (NIH Grant Letter)

14.5

APPEAL [EXHIBIT 1] | PAGE 18 | PARAGRAPH TWO |

> According to the CDC, this "surge" of mumps "is not understood and it is of serious public health concern for many reasons." Appx7271 (CDC Email). A CDC 30(b)(6) witness testified the outbreaks "do not have only a disruption for the institutions and populations affected, but you have children who are being hospitalized with complications, some of which include more serious conditions, like deafness ...." Appx1752 (Pallansch Deposition). That is why leading vaccine experts (including from the CDC and FDA) have called for the development of a new mumps vaccine.

14.6

MUMPS RESURGENCE | EMINI DEPOSITION | APPX 4533 | PAGE 138

> A. Subsequent to that, your establishment of the -- one's determination of the continued effectiveness of the vaccine is that, you know, when the vaccine became widely used as a pediatric vaccine in this country, the mumps epidemics which tended to occur with certain regularity completely disappeared and those epidemics have not recurred since. The only way in which that would have happened is if the vaccine had, in fact, retained its effectiveness.
>
> This explanation is naive. If the vaccine fails in a proportion of the population that number will grow over time to the point that there is a big enough susceptible population to sustain an epidemic. This is exactly what happened. We now see epidemics in highly vaccinated populations.

15. MMR, THE “MARQUIS” VACCINE

15.1

KRAHLING DEPOSITION | Appx 5571 | Page 51 | Lines 6-14 Marquis vaccine

> THE WITNESS: It didn't focus on that. It encompassed the company and what they called their marquis vaccine. I mean, when they call it a marquis vaccine, they're talking about the entire image of the company and what it is. And it didn't encompass just that time there. It encompasses right now today (sic).

15.2

KRAHLING DEPOSITION | Appx 5574 | Page 63 | Lines 16-19 Marquis vaccine, Market

> A. He indicated that he was under stress from those above him to get it done by fall. He said we were protecting the marquis vaccine and keeping it on the market.

16. OTHER WITNESSES

16.1

KRAHLING DEPOSITION | Appx 5611 | Pages 212 | Lines 1-6 Other witnesses.

Q. Which other lab members that you worked with also agreed with you, to the best of your knowledge, that there was data manipulation in that lab?

A. Jill DeHaven, Suzie Maahs, Jon Gombola, Frank Kennedy, Joan Wlochowski and myself used to meet and talk about it.

17. DESTROYING DATA

17.1

APPEAL [EXHIBIT 1] | PAGE 11 - 12

When Merck still could not demonstrate the necessary level of mumps protection, Merck resorted to altering or destroying unfavorable data. Appx337- 342 (Rels. SUMF) (citing evidence of data falsification, "overwhelming statistical evidence of bias," destruction of data, and active concealment of wrongdoing). When the FDA investigated some of this misconduct, Merck lied to the FDA and took other steps to cover up the fraud.

17.2

MALONE REPORT [EXHIBIT 2B] | PAGE 64 | APPX 524 | PARAGRAPH ONE

…Merck destroyed a large number of the assay plates from which the plaques were counted. As the primary source for the plaque counts, these plates should have been retained through the duration of the AIGENT testing. …Dr. Krah testified that he discarded many of the assay plates during the AIGENT testing and did so without anyone from quality assurance confirming the counts on the plates matched the numbers recorded on the counting sheets.199

17.3

MALONE REPORT [EXHIBIT 2B] | PAGE 64 | APPX 524 | PARAGRAPH ONE

…Merck destroyed a large number of the assay plates from which the plaques were counted. As the primary source for the plaque counts, these plates should have been retained through the duration of the AIGENT testing. However, Dr. Krah testified that he discarded many of the assay plates during the AIGENT testing and did so without anyone from quality assurance confirming the counts on the plates matched the numbers recorded on the counting sheets.199

17.4

WLOCHOWSKI DEPOSITION | Appx 5988 | Page 359 | Lines 7-24

Q. Ms. Wlochowski, before the break we were talking about an occasion on which you discarded a counting sheet. I wonder if I could ask you to take a look at Exhibit 7 which is one of the exhibits we looked at yesterday from that stack right there. Exhibit 7 is your Answers to Merck's revised first set of Interrogatories. I wonder if I could ask you to turn to page 18. And I'd like to direct your attention to the paragraph at the bottom of page 18 that carries over to page 19. I'm going to start to read that into the record.

"On another occasion, Relator (Wlochowski) was working in the back laboratory next to Relator Krahling. She showed Relator Krahling her counting sheet that contained 11 pre-positives. Relator Krahling calculated this equaled an 84 percent pre-positive rate. Relator joked sarcastically about the unlikely possibility the data would survive the day. Krah overheard their conversation and came over to look at the plates. He told Relator that the plaques were too faint to count and ordered her to throw away her counting sheet because he intended to retest the entire assay. Relator protested that the plaques were not

too faint to count, citing as evidence the fact that she had already counted them. Krah ordered her again to throw out the counting sheet and she complied."

17.5
KRAHLING DEPOSITION | Appx 5632 | Pages 295-297

Q. At the bottom of page 44 in one of your phone calls it says that you called the Philadelphia branch and reported that Krah was destroying garbage bags full of experimental plates from the mumps 007 testing project. Is that accurate?

A. Where are you at on this?
Q. It's the bottom. It says, "Several weeks later, after Relator...," bottom of page 44.
A. Okay, I'm there.
Q. You "...witnessed Krah destroying garbage bags full of experimental plates..."

A. Uh-huh.

Q. You again called the Philadelphia branch office of the FDA and spoke the woman who you spoke with on previous occasions and reported what was happening?

A. Yes.

Q. Is that accurate?

A. Well, I reported that the --that evidence was being destroyed. So the FDA needs to come in and review it so that he couldn't destroy all the evidence. Krah was destroying the evidence the morning after I met with Emini. So things went fast there. I met with Emini, Krah shows up early, is destroying stuff (sic). I called the FDA and said you need to come in, evidence is being destroyed. She said it took a few days and then they showed up August 6th.
Q. So Krah didn't -- Krah didn't -- according to you, Krah did not start destroying evidence until after you meet with Emilio Emini?

THE WITNESS: The first time I ever saw him show up early to work that early, the first time I saw him autoclave, destroyed plates for a study that was ongoing, was the day after I met with Emini. And Krah had previously told me that there was a need or an obligation to preserve the Protocol 007 study results and materials that we were generating. So I knew that that was irregular for a few different reasons. At the very least I wanted to call the FDA because the very obvious thing was that the plates were destroyed after he ran the autoclave.

17.6
WLOCHOWSKI DEPOSITION | Appx 5983 | Page 338-339 Data destroyed

Q. Less than five?

A: No.
Q: Somewhere between five and a dozen?

A: Yes.

Q. Who did you see destroy a counting sheet?
A. I'm trying to remember who it was. I don't recall who exactly it was.

Q. Was it a man or a woman?

THE WITNESS: I'm trying to remember. I believe I saw Colleen Barr and Jen Kriss. I believe I was told to discard an assay as well.

17.7
WLOCHOWSKI DEPOSITION | Appx 6023 | Page 497 | Lines 8-22 Krah destroys evidence

Q. Ms. Wlochowski, if you could take out Exhibit 7, please. And turn to page 18. And turn -- if you look at the top of page 18, these are your revised Answers to Interrogatories and the particular paragraph at the top of page 18 begins with, "One morning in early August 2001, Relator witnessed Krah taking plates from completed assays and disposing them in biohazard bags. She told Relator Krahling immediately. Relator and Relator Krahling discussed how unusual this was because they had never seen Krah dispose of any plates before and Krah was intentionally destroying the evidence of raw data that was being manipulated in an ongoing clinical trial." Where in the lab was Dr. Krah when you witnessed him taking the plates from completed assays and disposing them in biohazard bags?

17.8
THE PROBLEM WITH LIVE VIRAL VACCINES [EXHIBIT 11, PAGE 7, PARAGRAPH 3]

Provided to Andrew Wakefield 06.10.2003 by Relator Krahling
"The next morning [following Krahling's meeting with Emini where Emini was informed that FDA would be contacted] hundreds of experimental plates representing thousands of irreplaceable data points were packed up and incinerated. This was a highly unusual occurrence since the study had not been completed."

17.9
KRAH DEPOSITION | APPX 5021-5022 | PAGES 558-562
Krah confirms that he destroyed the assay plates, the primary data source. According to witnesses he only did so after he was accused of fraud and Krahling threatened to call the FDA.

A. As best I recall, my understanding of this was that retention of the plates was not a requirement. That the plaque counting sheet was the primary source of the data and the assay plates were not -- wasn't required to retain them as the primary data source.

Q. Did you give them a reason for destroying the assay plates?

MR. SANGIAMO: Objection.

THE WITNESS: The explanation I gave them was that in previous assays that we had run another -- at the time, my best recollection, I indicated other assays that we had run, once the QA audit was done, we did not feel the assay plates were required to be kept and we were then able to discard them.

BY MR. SCHNELL: Q. What other assays did you run where you discarded assay plates?

A. As best I recall, Protocol 006 and all of our other lab experiments.

Q. None of those were clinical studies, though, other than Protocol 006. Correct?

A. That's correct. But I didn't know that there was a different -- I wasn't aware that there was a different requirement.

Q. Did you disclose to anyone at the FDA that quality assurance did not review the original plaque counts?

MR. SANGIAMO: Object to the form.

THE WITNESS: I don't recall. I don't recall the question being asked. I don't recall whether that information was relayed or not.

BY MR. SCHNELL: Q. Did you disclose to anyone at the FDA that you had a concern that there were too many pre-positives in the AIGENT testing?

MR. SANGIAMO: Object to the form.

THE WITNESS: I do not recall CBER questioned the characterization of being too many pre-positives. I don't know that that's an accurate statement.

Q. I'm just asking, did you disclose to anyone at the FDA that you had a concern that there were too many pre-positives in the AIGENT testing?

MR. SANGIAMO: Object to the form.

THE WITNESS: I'm not aware of a communication on that line.

BY MR. SCHNELL: Q. Did you disclose to anyone at the FDA that quality assurance did not review the assay plates before they were destroyed?

A. As best I can recall, during the discussion of the assay plate and the flow of the -- the flow of the assays and disposal of some of the assay plates, that by indication, as best I recall, was that the QA, once the audit was completed, that the assay plates were then able to be discarded. So I would say with the meeting with Deborah Bennett and Cathy Carbone, at a minimum with Deborah Bennett, that the flow of the QA audit and then disposal was discussed.

Q. So is your testimony that you did disclose to the FDA that quality assurance did not review the plates before they were destroyed?

A. Yes. Or they did not review the plates. They completed their review -- their audit of the documents and review, but they did not review -- they did not review the plates. Again, I will say I do not know that that was disclosed and I don't know that the -- I don't recall the question being posed during either of the inspections.

17.10
KRAH DEPOSITION | APPX 5049 | Pages 671-673

Krah destroyed the primary data - the assay plates - prior to the FDA's visit. According to Relator Wlochowski, he did this after he had been accused of fraud.

Q. I'm sorry, 47. This is a series of e-mails, the top one being from Dr. Krah to Gary Swantner, S-W-A-N-T-N-E-R, dated February 7, 2011, Bates range 2655 [sic] through 60. And I want to direct your attention to the page with the -- second to the last page, Bates number ending 559. There you wrote on January 20, 2011, to Luwy Musey and Deitra Areha that We have been retaining the mumps neutralization assay plaque -- assay plates from MMR Protocol 007 as the **primary data for this assay**. This was part of a commitment to CBER to retain the primary data (the assay plates). Do you see that?

A. Yes.

Q. There's nothing incorrect about what you wrote there. Right?

A. There's nothing incorrect (sic) my understanding after the FDA inspection that the assay plates were the primary assay data. It's not correct before the inspection I understood that.

Q. Your belief was that counting sheets were the primary assay data. Right?

A. Yes.

Q. The FDA's view was that it was the assay plates. Correct?

A. I can't say that with certainty or commitment to CBER was -- after the inspection was to retain the plates. I don't recall hearing a conclusion from them of what -- whether the counting sheet would be acceptable as the primary data or the plates would be needed. I don't recall getting an answer to that question.

Q. Answer or not, at the time you wrote this memo, it was your understanding that the assay plates were the primary data for the AIGENT assay. Correct?

MR. SANGIAMO: Object to the form.

THE WITNESS: The first sentence I have written that as a primary data for this assay. My understanding was that -- at least I don't recall a response from CBER to confirm that. Those are words I used here, but I can't say that that's accurate.

18. ELECTRONIC WORKBOOK

18.1

MALONE REPORT [EXHIBIT 2A] | PAGE 27 | APPX 487 | PARAGRAPH TWO

> For the remainder of the testing, the counting and recounting procedure was essentially the same, except the plaque counts were entered into an electronic workbook that automatically flagged samples for recounting.57

Here is an example of where Merck's fraud is even greater than is represented in the film Protocol 7. In order to make the manipulation and alteration of the data more efficient, they design an electronic workbook that automatically identifies pre-positive samples so that they can be recounted or excluded from the analysis.

These actions are entirely consistent with the actual scoring sheet from Merck that appears in the movie. [Exhibit 8A, 8B, 8C]. In the movie this scoring sheet is portrayed as one that was originally generated by Schilling (Krahling) and later recounted by Kirk (Krah). In reality, it is even worse than was portrayed. It was in fact a scoring sheet originally counted by Krah who then goes on to recount his own scoring sheet.

18.2 EXCEL

KRAHLING DEPOSITION -Appx 5624 | Pages 264 | Lines 17-22 Fraud spreadsheet

> A: He even at one point was excited about an Excel sheet that they have developed so that people could just plug in numbers and the undesirable results, and he called them undesirable results, would light up and you could identify them.

19. WIPING PLATES

19.1

MALONE REPORT [EXHIBIT 2B] PAGE 64 | APPX 524 | FOOTNOTE TWO

> See also Wlochowski Dep. 327:20-328:11 ("The well plate is the original data in this case. It would be a means to preserve the original raw data, maintain it through the end of the study. So, in my experience, while working in Dave Krah's lab, I did see him discard plates which had been sitting there since I had started in January through July after some escalations had happened internally. The very next day after being told that an internal audit would occur, Dave Krah came into the laboratory early in the morning, which he never does, …taking plates and putting them in the autoclave and getting rid of them, which was not something I had ever witnessed him doing in my previous months working there."). Relator Wlochowski also witnessed lab staff wiping away original plaque count, further undermining that the "original" data was truly original. Wlochowski Dep. 381:6-10 ("[T]here were instances of wiping out the original plaque counts on the plate and repeating the plaque counts. So, therefore, again, I consider that the original data was not maintained.").

19.2

KRAHLING DEPOSITION | Appx 5612 | Pages 215 | Lines 2-6 Fraud, altering data.

> Q. Other than witnessing Dr. Krah wipe those numbers off the plate, did you witness other employees in the lab wipe numbers off the plates?
>
> A. All the time. All the time. We can go through example by example.
> Q. Who else in the lab did you identify wiping numbers off the plates?
> A. Jenny Kriss, Mary Yagodich, Colleen.

19.3

KRAH DEPOSITION | APPX 5023 | PAGE 568 | LINES 7-19

Emini was also unblinded in his review of the neutralization results.

> Q. Do you believe that the potential for bias would have been less if Dr. Emini did not analyze the neutralization results while the testing was going on?
>
> A. I do not believe that his results, his review affected the bias, but the attempt was to try to increase accuracy of the results. The statistical -- not being a statistician, I can't speak to the chances of all these options providing increased biased or not, but I do not believe in my personal opinion that his review increased the risk of bias.

19.4

KRAH DEPOSITION | APPX 5022 | PAGE 562 | LINES 2-7

Krah understands the purpose of blinding. Krah was not blinded despite Emini claiming that the study was "completely blinded."

Q. What's the purpose of blinding?

A. The blinding, as best I understand, is to prevent a knowledge of which treatment groups are involved so that there isn't -- minimizes the chance of a biased standard result, one group versus another.

19.5
KRAH DEPOSITION | APPX 5025 - 5027 | PAGE 575-582

Krah was clearly responsible for ensuring adherence to the "completely blinded" (Emini) AIGENT testing protocol by his staff and in a laboratory for which he was responsible.

"Completely blinded" means that counters should have no idea of the provenance of the sample: what treatment group (vaccine dose) a sample came from and whether or not it was a sample taken before (pre-) or after (post-) vaccination. Whether samples pre and post were paired in the assay is immaterial. They could still be coded so that the laboratory staff could know which were paired samples without knowing whether the samples were pre or post.

Knowledge of the samples' provenances allowed Krah to falsify the data.

Q. Did you disclose to anyone with the FDA the blinding protocol employed in AIGENT testing?

A. That's not an area I'm responsible for. I don't recall disclosing that to them.

Q. Who is responsible for that area?

A. I don't know.

Q. You ran the AIGENT testing, right?

A. The Assay.

Q. If you had a question about the blinding -- who told you about the blinding procedure?

A. All I recall is that we were given samples identified by -- I forget all the identification of information, but that they would be blinded between -- all the three treatment groups would be -- are not visible to us. We wouldn't be able to disclose which of the three treatment groups.

Q. Who gave you that --

MR. SANGIAMO: Hold on, Gordon. I don't think he had finished.

THE WITNESS: We weren't (sic) be able to tell which sera belonged to each of the three treatment groups.

BY MR. SCHNELL: Q. Who provided you with that blinding information?

MR. SANGIAMO: Object to the form.

THE WITNESS: I don't recall who told us that the samples were blinded. We never received the blinding code. I don't recall who told us that they were blinded or if it was a given that the samples in the study would be received blinded to the treatment group.

BY MR. SCHNELL: Q. Where did you learn that you were supposed to be blinded with respect to the treatment groups?

A. I don't recall a specific document where I indicated that.

Q. Sitting here today, can you think of how you learned about what you were supposed to do in terms of blinding?

A. No. From my perspective, my responsibility was running the assay. I received samples and ran them. The blinding was something not part of our lab activities. That we received samples, the blinding was not -- from my view, not relevant to our testing of it not being unblinded.

Q. Did you consider blinding an important part of clinical studies?

A. I'm not a clinical person so I can't speak to the -- in which cases blinding is critical and when it's not.

Q. Was blinding critical, in your opinion, with the AIGENT testing?

A. All I can say is the samples were blinded. Whether that's critical to the study, I can't say.

Q. You have no opinion?

A. No.

Q. Other than the blinding of the treatment groups, you had no other restrictions in terms of blinding. Correct?

A. What do you mean by "restrictions"?

Q. Other than the blinding restrictions in terms of the individuals running the test, knowing which of the treatment groups were being tested, you had no other restrictions in terms of what information the individuals in your staff running the lab had?

MR. SANGIAMO: Object to the form.

THE WITNESS: They would have information from the identifier on the vial and then whether it was a pre- or post-vaccination serum. I don't know what -- that's the information that was available to us. I don't know what other information --

BY MR. SCHNELL: Q. Who designed that aspect --

MR. SANGIAMO: Hold on.

MR. SCHNELL: I'm sorry.

THE WITNESS: I don't know what other information would be considered.

BY MR. SCHNELL: Q. Who designed that aspect of the AIGENT testing?

A. I'm sorry, what aspect?

Q. What was blinded and what was not?

THE WITNESS: In the neutralization assay format, we as part of validation determined to run the pre- and post-vaccination serum in the same assay. So we needed to know which samples were pre-vaccination, which was the corresponding post-vaccination serum. From my perspective, that's all I needed to know to run the assay. As far as other blinding for the study groups, that's not related, from my perspective, to the assay or to us running the samples.

BY MR. SCHNELL: Q. So is it your testimony that it would have been impossible to blind for pre- and post-vaccination samples?

A. I would say it's not impossible. But someone -- someone -- I don't know someone would have been -- would have to come up with some other way of coding the samples and then providing us with a decode to allow us to identify pre- and post-vaccination samples that can be put in the same assay.

Q. Wouldn't that have been easy if you separated the group who counted the plaques from the group that analyzed the results?

MR. SANGIAMO: Object to the form.

THE WITNESS: Not necessarily.

BY MR. SCHNELL: Q. Why would it have been difficult for the plaque counters to not know whether they were counting a pre- or a post-sample?

A. One aspect to the testing was that if we ran a pre- and post-sample together -- pre- and post-vaccination serum together, each serum required, as best I can recall, two plates, each plaque of four plates was a pre- and post-vaccination -- a pre- and post-pair. So basically every four plates became a new set of pre- and post samples. The way the plates were -- the samples were inoculated onto the plates, they were sequential pre/post-pairs one after the other. So the counter could in theory know every multiple of four becomes another pre-vaccination serum.

Q. So my question is, wouldn't that have been an easy fix if you were concerned about potential bias from not being blinded to whether samples were pre or post for counting purpose, wouldn't it have been an easy fix to make it random or engage in some other process that would have blinded the plaque counters from what they were counting?

MR. SANGIAMO: Object to the form.

THE WITNESS: It could have been a solution, but it wasn't one, from my perspective, that I deemed necessary at the time. The way we were running the assay was the way it had been run during the development studies and through the interim analysis; and would have, from my perspective, have been more complicated to juggle the serum distribution throughout the assay with a concern that we might mispair sera.

20.1
BLINDING | EMINI DEPOSITION | APPX 4553 | PAGE 219-221

While not an issue raised in the movie, the issue of 'blinding' is a further example of Merck's scientific misconduct.

Emini confirms correctly, that the laboratory testing in the actual Protocol 7 (not the movie) should have been "completely blinded." This means that those undertaking the assay (including Krah, since he did much of the counting) would not and should not know the provenance of the test samples of childrens' blood. This essential element of the protocol was violated repeatedly and allowed for extensive manipulation of the data. When presented with the fact that Krah was unblinded, Emini gives a garbled and unjustifiable excuse for why Krah should be unblinded.

Q. So were you under the impression when you wrote that letter –

A. Sorry, which letter, Number 8?

Q. Number 8.

A. Yes.

Q. -- that the Protocol 007 had been a blinded protocol except for the statistician?

A. That 007 had been a blinded protocol. Well, **by definition it had been completely blinded**. The only thing that was looked at, **there was no indication whatsoever that the laboratory staff had any opportunity to unblind the samples.**

Q. Do you know sitting here today that Dr. Krah himself was unblinded?

MS. DYKSTRA: Objection.

MR. BEGLEITER: I'm asking if he knows that, I'm not saying it's true.

THE WITNESS: I have no recollection. Let's have a look.

MR. BEGLEITER: I'd like to have marked for identification Merck 52243. It's a one page e-mail. --

(Exhibit Emini-21, 8/9/01 E-mail, 00052243, was marked for identification.)

BY MR. BEGLEITER: Q. If you can read -- I'm only going to ask you about paragraph 1. You can read anything you want to read.

A. This does not refer to sample blinding. This refers to the blinding of the counting of the plaques on the plate. It's a different situation than the one you were talking about.

Q. Well, was it appropriate for someone to be unblinded, for the head of the lab to be unblinded?

A. For counter-qualification, yes, that's perfectly acceptable.

Q. Is that anywhere in the SOP?

A. I don't recall if it was specifically in the SOP, but typically someone needs to be unblinded for a qualification to be appropriately conducted. The individuals who were blinded were the individuals who were looking -- that were actually running the counters with the individual samples. Remember what the counters are doing, that this is individual counting of the plaques on the assay. So they were blinded to each other's results. He knew which ones were the actual value numbers because he was using, as he notes here very clearly, "...the workbook printout as a guide to check for extra variable /single dilution positive samples." So basically they would be -- so he was aware what the numbers were and then essentially asking you count them, you count them, you count them, and he was assessing based upon what the original numbers were, the variation that occurred if you counted them or you counted them or you counted them.

20.2

KRAH DEPOSITION | APPX 4955 | PAGE 301 | Lines 1-6

The testing was meant to be "completely blinded" according to Emini. Krah admits that it was not.

Q. So when you were running the protocol samples, you could tell what is a pre-vaccination sample and a post-vaccination sample. Right?

A. Yes.