Respondent's Exhibit V

My name is Bertus Karel Rima. I qualified as a chemical engineer in 1968 gaining a degree from the Technological University in Delft (The Netherlands). I further gained an engineering degree equivalent to a master of science in the same university in 1970 having specialized in bacterial virus genetics. I gained a Ph.D. at McMaster University (Hamilton, Ontario, Canada) in 1975 specializing in bacterial genetics and bacteriophage (viruses of bacteria) genetics. In September 1974, I joined Professor Martin's group in Belfast. I decided to come to Belfast because it had been the centre of measles virus disease research and Professor Allen and Dr Connolly were the first to implicate measles directly into a disease called subacute sclerosing panencephalitis (SSPE); Professor Kenneth Fraser was active in measles immunology and Professor Sam Martin and his group had described measles virus for the first time in biochemical terms. Since 1974, I have worked on measles virus as well as mumps virus. I have been Professor of Molecular Biology at Queen's University Belfast since 1993. Currently I am Head of the School of Biomedical Sciences. I am a Fellow of the Institute of Biology in the UK and I have been elected to membership of the Royal Irish Academy in 2002.

I have published over 150 papers on measles virus and mumps virus and other viruses of the same group in the peer reviewed literature dealing with aspects as varied as the molecular biology of virus replication; attenuation for vaccines; molecular epidemiology and genotyping and pathogenesis of the virus.
I have a special interest in persistent virus infections and have therefore been especially active in assessing claims made from time to time by various research groups for the involvement of persistent measles virus infections in causing or being associated with a multitude of diseases such a multiple sclerosis; Crohn's disease; autism; Paget's disease of bone or more recently otosclerosis. The main conclusion I have drawn from this is that there is no solid reproducible evidence for a role of measles virus in the diseases mentioned. In only two diseases, which I have studied, is there solid reproduced and replicated evidence for measles involvement based on the application of a number of different techniques. These are both rare sequelae of measles virus infection called subacute sclerosing panencephalitis ("SSPE") and measles inclusion body encephalitis ("MIBE") which manifests itself in immuno-compromised patients only. These diseases are discussed in more detail below.

I hereby present a short submission relating to the report by Dr R Kennedy in the Colten Snyder case.

Discussion of SSPE and MIBE

As noted above, SSPE is a relatively rare sequelae of measles virus ("MV") infection. In the case of SSPE the rate observed after street virus infection was quoted in the literature as 1:300,000 to 1:1,000,000. After the US outbreaks in the late 1980's, where 70,000 cases led to 7 SSPE cases in the ensuing decade, we estimate the rate to be much higher at 1:10,000. However, no cases of SSPE caused by vaccine virus have been documented. All cases of SSPE are caused by persistence of the wild type viruses.

As stated above, MIBE occurs only in immuno-compromised individuals. The report of Dr Kennedy and, to a similar extent, that of Dr Bradstreet create confusion in my opinion about what exactly it is, that is claimed to be wrong with Colten. In that light, the statement on page 8 paragraph 3 of Dr Kennedy's report is not clear. Is the claim that Colten was or was not immune suppressed at the time of vaccination?

In addition, it is not clear what is now actually being claimed with respect to the timing and disease state at vaccination, and the consequence. In other words, what is Colten's diagnosis? Whatever the diagnosis, I have seen nothing to suggest that Colten has SSPE or MIBE e.g. the two known diseases caused by persistence of measles virus.

Discussion of Dr. Kennedy's opinions regarding persistent MV infection

Dr. Kennedy provides no hard data (other than the Unigenetics testing, discussed below) to support his opinion that a persistent measles virus infection can cause neurological disorders like autism. Much of the discussion included in Dr. Kennedy's report is based on speculation or inappropriate comparisons to other viruses. For example:

- It is not clear why Dr. Kennedy makes the argument on page 5 of his report regarding the other morbilliviruses, canine distemper virus (CDV) and rinderpest virus (RPV). He states correctly that MV is more closely related to RPV. This is based on comparisons of the nucleotide sequence of RPV and the other morbilliviruses. He then points out the neurovirulence of CDV. However, there is no indication that anyone has ever found RPV in the CNS of naturally infected animals. So, the virus most closely related to MV has no known CNS involvement. Dr. Kennedy is aware of this as he writes in his published paper (page 135 bottom of left hand column) that the RPV and peste des petits ruminant virus (another morbillivirus) are not associated with CNS infection and do not appear to cause neurologic disorders and sequalae (sic) in their natural hosts.

- Formalin inactivated virus but not Tween inactivated virus has led to these complications **when the children were infected with street virus**. It is erroneous to imply that the vaccine itself gave rise to an atypical form of measles. Nor is it reasonable to describe this as somehow linked to the previous sentence. The reader of thereport may be led to consider that there are connections which do not exist (see page 6 line 4).

- I have been a participant in the evaluation of the safety of the high titre MV vaccine organised by WHO to evaluate problems with high titre measles vaccines (Atlanta, June 1992). The latter were introduced in order to close the window of susceptibility to measles virus infection that is generated when that part of the cohort of children in the ages 6-15 months of age, whose maternal antibody levels have decreased faster and to lower levels than others become a potential group susceptible to street virus infection. The reported effect of the higher titre vaccines was a slightly increased mortality after administration to girls but not to boys. The effect was marginally statistically significant at

the 95% confidence limit when the data for the two genders were combined. The original studies in West Africa were independently replicated in several studies in countries with a high mortality rate associated with MV. As the mortality rates dropped in the countries in question, the studies could no longer be replicated at sufficiently large scales to reach statistical significance. All deaths, including traffic accidents, falls, etc, had to be included in the statistical evaluation, as there was no reasonable basis for exclusion of some mortality causes and not others. There was no evidence, nor has any been produced since, to suggest that it was an immune dysfunction that gave rise to the effect (refs 1-6). Accordingly, the last sentence of his report (page 6 line 9) is not based on a proper analysis of the literature.

- In relation to the discussion on page 6, paragraph 6, though effects may be qualitatively similar, quantitatively the effects of the vaccine virus administration are much smaller than in the case of wild type infection, as discussed in the report by Dr. Ward that discusses the clinical lack of significance of the small effects of the vaccine.

- The argument in page 6, paragraph 4 could 1) be turned around to suggest that wild type measles virus infection should have been observed to have caused autism [which it has not,] and 2) is incorrect in relation to SSPE where no case has been found to be associated with vaccine viruses.

- On page 8, paragraph 2 of his report, the arguments are generalized, and various viral systems are swept together to an extent that ignores important detailed differences between various forms of viral persistence.

- In any event, the published literature does not support the idea of a "silent" persistent MV infection. In contrast to other viruses there is little discussion in the literature about silent MV infections, although a single report in an outbreak in Senegal has suggested that it occurs (ref 7). I know of no references or case histories to indicate that these silent cases can cause **persistent** infection.

Discussion of Unigenetics testing

Dr. Kennedy relies heavily on the testing performed by Dr. O'Leary and his Unigenetics Laboratory. Dr. O'Leary has no recent peer reviewed publications in the field of measles virology and the one that has been published (Uhlmann et al., 2002) was heavily criticised, as detailed in my affidavit in the Cedillo case.

I contend on the basis of my own observations and those of Dr. Stephen Bustin that the techniques used by the Unigenetics laboratory are not standard validated diagnostic techniques for the demonstration of the presence of measles virus in patient tissue samples. I contend that these were not validated through accreditation processes and their application was essentially experimental. This applies to the "Real time PCR," the in situ RT-PCR as well as to the allelic exclusion tests. These issues are discussed in detail in reports that have been previously submitted in the Cedillo case.

Discussion of Dr. Kennedy's relevant experience

Dr. Kennedy has authored a single paper on measles virus, which forms the basis of his report. I would describe that paper as a fairly comprehensive compilation of the literature rather than a critical analysis. Several aspects of Dr. Kennedy's report in the Snyder case indicate his lack of experience with measles, either vaccine strain or wild-type. For example:

On page 3, Dr. Kennedy states that immunosuppression and immunodeficiency are contraindications for MMR. The MMR vaccine is, however, not contra-indicated for children who are HIV positive.

On page 4, Dr. Kennedy refers to the measles virus receptor as being a molecule called CD46. He fails to point out that this is the receptor only for laboratory adapted strains and the vaccine virus and not for wild type viruses. All MV strains use CD150 (or SLAM) as their preferred receptor. This molecule is expressed exclusively on cells of the lymphoreticular system such as lymphocytes, activated macrophages, dendritic cells and some haematopoietic stem cells.

On page 5, Dr. Kennedy states: "Some studies have clearly demonstrated the adaptation of wild type MV to grow in monkey kidney cells (e.g. Vero cells) and that this growth selects for viruses that are less virulent and become attenuated as the result of predicted amino acid changes in the P and L proteins." In this case, the virus does not only contain mutations in the P and L proteins, but also the viral M and H proteins genes contain such mutations.

On page 6, Dr. Kennedy expresses the relationship between the Schwarz and Moraten strains of MV as "closely related". They actually have been found to be genetically identical. The only difference in the vaccines may be the presence and ratio of infectious virus particles and non-infectious particles and or defective interfering particles. However this has not been assessed.

Given these statements in his report, it is reasonable to question the extent of Dr. Kennedy's experience with MV, and therefore to question the general reliability of the opinions he has provided in this case.

Bert Rima 29 September 2007.

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