



Matthew Meselson <msmeselson@gmail.com>

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## B. subtilis, etc.

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Bannan, Jason D. <Jason.Bannan@ic.fbi.gov>  
To: Matthew Meselson <msmeselson@gmail.com>

Sun, Nov 9, 2008 at 1:06 PM

Dear Matthew,

Dr. Bannan is so formal! Besides, you are the revered scientist among us. I trust you and Jeanne are both well?

I suppose you have heard about the many hoax anthrax letters that have been going to financial institutions all over the country. There is also a strange gentleman sending out hundreds of sugar packets with avery labels containing a biohazard symbol and ANTHRAX. During a highly charged Presidential election and financial crisis, emotions and tensions were high. I have been acting as Unit Chief for several weeks in the absence of my boss, so I apologize for the delay.

However today is a beautiful sunny Autumn day, I have had my coffee and bagel, and do not have the distractions of work preventing me from writing you back.

First let me thank you and Jeanne for a absolutely wonderful evening at the Harvard Club. Ben told me that you were a delightful couple and I see why he has so much affection for you both. I sincerely hope that I can have the pleasure of your company again in the near future.

I had the good fortune to travel with Ben to Australia in October and he is always an interesting companion. We were there to attend a forensic conference. While there, Ben was able to be my dinner companion on my birthday. We also had the opportunity to take a day trip out to the Yarra River Valley, one of Australia's wine regions, visit a wildlife sanctuary, and sample the pub fare back in Melbourne. I always enjoy his company.

I will try to answer your questions. As you can imagine, there were many questions that we would have liked to answer which would have involved consuming evidence.

If it was a question who's answer was not going to be probative for the investigation, we couldn't risk consuming the limited evidence we had.

Regarding the presence of B. subtilis in RMR1029 you stated "If based only on methods requiring viability, could it be that B. subtilis spores in the phenol-containing flask had become inviable during the time between removal of samples by the perpetrator and the later sampling for analysis done by the Bureau?"

Yes, we had the same concern. Yet if we assume that in 2001 it was still viable, we still have the fact that the DC mailings contained the B. anthracis mutants but not the B. subtilis. That would make it unlikely that the seed material did contain the contaminant.

However, we have considered several experiments that were related to direct DNA extraction of sufficient quantities of RMR 1029. Examining directly

extracted DNA for the B. subtilis was one of them. We are still trying to decide the fate of much of the evidence we hold from the investigation. The US Attorney's office must first weigh in on experiments that consume limited evidence. I will keep you informed if we are able to proceed. We developed 4 very sensitive and specific real-time PCR assays to loci in the B. subtilis. One is designed to detect all B. subtilis as it is based upon the Subtilisin locus, a small bacteriocin that B. subtilis produce. The other three are specific for our isolate and very few others.

Regarding your follow-up question about sequencing, we won't be using that approach since the RMR 1029 material is overwhelmingly B. anthracis and the meta-genomic approach has not been fully validated. Our calculations suggest that it would require too much sequencing coverage to detect the B. subtilis specific sequence.

However, we are looking into Metagenomic approaches to finding sequences in mixtures of evidence that could be used as forensic signatures. I have been discussing this approach with Claire Frazer-Liggett and her staff at the Univ. of MD Institute for Genomic Sciences.

As to the dispersal of biological powders, much has been done about this topic by several contractors for the government. The Battelle aerosol group in Ohio and the MidWest Research Institute in Kansas City have both performed aerosol work for various Government programs. I cannot discuss the results since much of the information is controlled by the various sponsors, but you are correct in your statement that no specific coatings or treatments are required for aerosol dispersal once energy has been imparted to powders to create the aerosol.

The US and British Postal Services have conducted many experiments showing the dispersal of powders contained in envelopes as a result of the high forces imparted by mail sorting equipment. Some of the slow motion video's are incredible and I wonder if anyone would have expected the result prior to the 2001 mailings?

The papers in the October 2002 issue of Emerging Inf. Diseases are an interesting read which highlight the contamination in the postal facilities.

That DRES work relating to mail certainly did create quite a bit of interest following the 2001 incident.

Please stay in touch and share your ideas or comments with us. Your insight is valued and it may prompt us to think about things we did not consider.

I hope to see you again soon.

Cheers,

Jason

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