Hearing of the United States House of Representatives Committee on Homeland Security's Subcommittee on Emergency Preparedness, Response, and Communications

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Statement for the Record

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Chairman Donovan, Ranking Member Langevin, and distinguished members of the Subcommittee, I am honored to appear before you today for this hearing entitled, "How Effective is the Department of Homeland Security's Science and Technology Directorate?: Stakeholder Perspectives".

As a matter of full disclosure, I am a member of the Homeland Security Science and Technology Advisory Committee (HSSTAC), but I appear before you today representing my own perspectives, and not of the HSSTAC nor Texas A&M University. I will offer insights from my role as a public servant that spanned 26 years active duty military service primarily in Army medical research & development at the Unites States Army Medical Research and Materiel Command and the United States Army Medical Research Institute of Infectious Diseases; 10 years in the career senior executive service (DHS, HHS and DOD); and now as faculty/administrator at Texas A&M University.

I do not have to tell you how difficult the homeland security mission is today. You are well aware of the challenges, and the difficult decisions that must be made regarding authorizations, budget allocation and appropriations for the many competing demands.

The homeland security mission is extremely complex and the threats we face are constantly evolving and range from terrorism, natural disasters and pandemics. Threats from terrorism and violent extremism include the use of weapons of mass destruction against our nation, the civilian population and our critical infrastructure.

Today, I am more concerned than ever about the risks from biological threats – including bioterrorism and naturally occurring transboundary emerging infectious diseases that could affect humans, animals and our economy. Although we are much better prepared today, partly due to the dedicated efforts of the DHS Science and Technology Directorate and many others

across the vast U.S. Government interagency; state, local, territorial and tribal governments; and non-government organizations. However, recent reports by the Biodefense Blue Ribbon Panel tell us that we have a long way to go. These reports include "A National Blueprint for Biodefense: Leadership and Reform Needed to Optimize Efforts" [1] and "Defense of Animal Agriculture: A Report of the Biodefense Blue Ribbon Panel"[2]. Recent high consequence infectious disease outbreaks, to include the Ebola outbreak of 2014-2016 and Highly Pathogenic Avian Influenza outbreaks in the United States from 2014 to 2016, also tell us we are not prepared, and remain highly vulnerable to naturally occurring transboundary infectious diseases, as well as bioterror attacks.

I previously testified before the House Committee on Energy and Commerce's Subcommittee on Oversight and Investigation, and I will repeat a statement I made then in my testimony today:[3]

1. Biological threats are real, and the bioterror threat has the potential to cause mass casualties on a scale similar to a nuclear weapon;
2. The inter-epidemic period, or time between outbreaks, requires urgent action to optimize available resources and biopreparedness; and
3. Strong centralized leadership will be necessary to drive urgent action in the inter-epidemic period.

This statement has relevancy to the topic today regarding the DHS Science and Technology Directorate. We cannot afford to remain complacent about biological threats, nor can we afford to continue business as usual. *Innovation, creative imagination and leadership are more important than ever.*

The complexity and changing nature of the threats we face today, including from biological threats, are confounded by the complexity of the vast homeland security enterprise. The homeland security enterprise extends far beyond the Department of Homeland Security. Other federal department/agencies have homeland security responsibilities, as do state, local, territorial and tribal governments, and the private sector. I also believe that communities, families and individuals have homeland security and preparedness responsibilities, too.

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[1] Blue Ribbon Biodefense Study Panel. *A National Blueprint for Biodefense: Leadership and Reform Needed To Optimize Efforts.* October 2015.

[2] Blue Ribbon Biodefense Study Panel. *Defense for Animal Agriculture*. October 2017.

[3] Gerald W Parker, Jr., DVM PhD. Hearing of the House Committee on Energy and Commerce Subcommittee on Oversight and Investigations. *Attacks, Outbreaks and Attacks.* February 12, 2016

Science and Technology will play a key, if not a vital, role in defending against the many threats to homeland security. But, harnessing the interagency science and technology enterprise that extends beyond the Department of Homeland Security's Science and Technology Directorate to take urgent action on the highest priorities in a focused manner that optimizes available resources remains elusive. I am also concerned that Department of Homeland Security's Science and Technology Directorate may not give biological threats priority consideration. I am particularly concerned that the DHS Science and Technology Directorate may eliminate funding for research and development for animal agriculture defense, and that the National Biodefense and Analysis Countermeasures Center may be closed.

Finally, funding for the University Centers of Excellence is significantly reduced by the DHS Science and Technology Directorate in the President's Budget request on a yearly basis only to be restored by Congress. I can understand the Science and Technology Directorate's need to have more budget discretion for research and development accounts, but if the S&T Directorate is not satisfied with the performance of the University Centers of Excellence then the whole program should be considered for elimination, rather than a slow attrition through reduced funding for the centers. That uncertainty only serves as a disincentive for university participation. However, the original intent of the Science and Technology Directorate to engage university scientists in homeland security solutions remains unchanged and should be valued and embraced by the Department rather than continually reduced in the budget exercise. I strongly recommend maintaining the University Centers of Excellence program, or an alternative strategy that maintains meaningful university involvement to ensure our best and brightest academicians are included in homeland security solutions in a manner to how the Defense Department ensures that universities are included in national security solutions.

Fortunately, the Trump Administration is developing a new national strategy for Biodefense as recommended by the Biodefense Blue Ribbon Panel[4]. Although the new strategy has not been released, I am hopeful that the biodefense strategy will be comprehensive, and include strategies for the defense against attacks, outbreaks and accidents; linked to a unified interagency budget; and include strong White House leadership with clearly identified lead and supporting accountability metrics for all Departments and Agencies, including the Department of Homeland Security and the underpinning Science and Technology Directorate.

Interagency coordination and leadership for the homeland security science and technology enterprise is an important policy question that hopefully will be addressed in the new national strategy. The strategy should include a clearly identified role for the Department of Homeland Security (DHS) Science and Technology Directorate.

Regarding the primary question for this hearing, I believe the Department of Homeland Security's Science and Technology Directorate has made great strides since its establishment by the original homeland security act, and particularly in recent years under the leadership of Dr.

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[4] Blue Ribbon Biodefense Study Panel. *A National Blueprint for Biodefense: Leadership and Reform Needed To Optimize Efforts.* October 2015.

Brothers and Dr. O'Toole. Dr. Brothers established new, visionary goals and areas of focus that included, 1) Responder of the future; 2) Enabled decision makers; 3) Screening at speed; 4) Trusted Cyber Future; 5) Transformed airport borders; 6) Resilient communities; and 7) CBRN defense. Dr. Brothers also extended the APEX Program initiated by Dr. O'Toole, and brought a sense of priority to meeting near-term requirements of the Department of Homeland Security components over those needs of the broader homeland security enterprise. Command culture and worker satisfaction of the Science and Technology Directorate also made great strides during Dr. Brother's tenure as the Under Secretary. I know several program managers and scientists in the Science and Technology Directorate. They are dedicated professionals working hard to make a difference, and I believe they are making a difference.

Performing organizations supported or funded by the Science and Technology Directorate - whether from national laboratories, universities and the private sector - are also making a difference, and I believe largely enjoy the working relationship they have with the Science and Technology Directorate. However, I also believe the uncertainty of not having a new Under Secretary for the Directorate is causing apprehension for the Directorate's staff and performing organizations. It is critical that a new Under Secretary be appointed and approved soon.

Despite the hard work by many and the progress to date, I believe the Science and Technology Directorate has ceded responsibility to be a lead coordinator for the broader science and technology homeland security enterprise. I believe an interagency lead role for the broader homeland security enterprise is required as originally envisioned when the DHS Science and Technology Directorate was established - particularly for biodefense. It is clear now that strong leadership for the interagency biodefense enterprise is needed now more than ever before.

To provide context, I joined the Department of Homeland Security's Science and Technology Directorate in 2004. There was a true sense of urgency at that time as the Directorate was established after the terrorist's attacks on September 11, 2001, the anthrax letter attacks a few weeks later, enactment of Project BioShield, and issuance of Homeland Presidential Directives 9 and 10. The Science and Technology Directorate placed high priority on defense against weapons of mass destruction – including biological threats – and assumed an interagency leadership role for the homeland security scientific enterprise. Biodefense threat, risk and net assessments were established with the intent to drive interagency requirements and provide leadership for biodefense programs across the interagency. The National Security Council and Office of Science and Technology Policy also provided effective White House level policy leadership that relied on early DHS risk assessments. Initial attempts by DHS S&T to lead, coordinate and fund, where appropriate, the broader science and technology homeland security enterprise were initially successful. However, over time it became clear that other agencies were not receptive to being "coordinated" by DHS S&T. In defense of the interagency, the style of leadership practiced by DHS S&T as time went on was not as collegial and transparent as it could have been for success.

Today, I see a Science and Technology Directorate that is more concerned with staying in their "lane" and serving only the DHS components as more important than playing a broader

homeland security enterprise leadership coordinating role. I also see a broader interagency homeland security enterprise that does not place value on the DHS threat and risk assessments in driving their own homeland security requirements. From what I can discern, DHS S&T seems to have also abandoned their practice of conducting interagency biodefense net assessments, too.

In defense of the S&T Directorate, competing and "siloed" interagency biodefense interests are now common place, leading to a *relative* lack of interagency coordination and inefficient use of available resources for the growing biological threats[5]. Departmental and congressional pressures have also led to an inward, DHS-only component focus. These issues only highlight the critical importance for a new biodefense strategy and renewed strong White House leadership for Biodefense.

There are two other concerns of the DHS Science and Technology Directorate that I will highlight in my testimony. Defense of Animal Agriculture and Biological Attribution.

The Department of Homeland Security Science and Technology Director assumed operations for the Plum Island Animal Disease Laboratory and has embarked on an aggressive construction campaign to move those unique large animal research and defense functions from Plum Island in New York to the National Bio and Agro-Defense Facility (NBAF) at Kansas State University in Manhattan, Kansas. Construction is well under way and promises to provide a state of the art facility to enable critical animal health and biodefense research. The DHS S&T Directorate also supported critical research and development funding for defense against agriculture bioterrorism that is filling critical gaps identified by USDA and other key homeland security stakeholders that otherwise would not have been funded by USDA.

The President's 2018 budget request eliminates DHS Science and Technology funding for animal agriculture bioterrorism defense. This is a concern not only of mine, but several animal health stakeholders, that include state veterinarians, as well as animal health and production industries that have homeland security responsibilities. As a policy option, there is merit to shifting DHS S&T requirements and funding to USDA under existing USDA authorities and appropriations. If this is done, DHS S&T should also consider transferring the NBAF to USDA. But it is not apparent that DHS research and development requirements and programs have been coordinated with USDA for an effective transition. Rather, it appears that ongoing research and development programs supported by DHS S&T for agriculture bioterrorism defense will be terminated. This will not only cause a research and development gap, but it also causes uncertainty for the business and operations model envisioned for the NBAF, as well as ongoing commitments to the importance, or not, of defense against agriculture bioterrorism. Time will tell if the new biodefense strategy and congressional intent will address this gap. It is hoped that the new national biodefense strategy will incorporate the recommendations of the Biodefense Blue Ribbon Panel on issues related to animal health, and incorporate the practice

[5] Blue Ribbon Biodefense Study Panel. *A National Blueprint for Biodefense: Leadership and Reform Needed To Optimize Efforts.* October 2015

of one health into that strategy. If not, the business and operations model of the NBAF could be in jeopardy, as well as our capability to conduct research and diagnostics for high-consequence foreign animal diseases. I hope that latter is not the case as it could be a costly mistake to our economy and well-being in the long run.

The President's DHS S&T budget request for FY2018 also eliminates funding that would force closure of a state of the art, one of a kind biocontainment laboratory - the National Biological Analysis and Countermeasures Center (NBACC) at Fort Detrick, MD. This decision seems short sighted and not well considered.

Naturally occurring and manmade biological threats pose a grave risk to our health and national security. Globalization, population growth, urbanization and other factors are creating a perfect storm for the emergence of high-consequence infectious diseases. A terrorism nexus also exists in many of these same global disease "hot spots", and together, are changing the nature of biological risks.

This is exacerbated by the diffusion of technical expertise coupled with the biotechnology revolution, drastically increasing the threat of bioterrorism. New technologies have decreased resources and financial requirements for entry, and increased capabilities that could be misused by a determined bioterrorist.

There are many that believe we need to strengthen infectious disease surveillance and laboratory capabilities to detect threats early - an area that DHS also plays a role. Similarly, we need core microbial forensic laboratory capabilities to enable attribution – an area that DHS has a primary role.

As stated earlier in my testimony, I am more concerned than ever about the risk of biological threats – whether from outbreaks, accidents or attacks. This includes a need to underpin no-regret attribution decisions with a sound scientific foundation in microbial forensics.

The anthrax letter attacks marked the first significant act of bioterrorism in the United States. That attack was one of the easiest bioterror attacks to confront, yet the impact was far reaching. As bad as it was, it could have been much worse had the pathogen involved been a contagious agent, resistant to antibiotics, an unknown pathogen, or delivered in a covert widespread aerosol attack across multiple jurisdictions. As it was, the anthrax letters shut down the Hart Senate Office Building for three months, wreaked havoc with the U.S. Postal Service, reduced business productivity, cost the nation more than one billion dollars, and tragically, took five lives and sickened seventeen more. More than 30,000 people required post-exposure antibiotics.

Many still recall frightening moments experienced during that time, particularly those who were potentially exposed to anthrax spores in the Hart Senate Office Building, postal processing facilities and media offices.

This event also forever changed our notions of laboratory biosecurity, biosafety and personal reliability in the biological sciences, and the emerging science of microbial forensics. An understanding of the importance of microbial forensics was greatly accelerated at that time. I, along with many others at the FBI and in the DHS Science and Technology Directorate were involved in defining the laboratory requirements needed to support a core capability for microbial forensics. Unfortunately, decisions being made today regarding the NBACC seem to have lost our lessons learned from first-hand experience during that era.

The follow-on FBI Amerithrax investigation applied the emerging science of microbial forensics, and along with traditional investigative procedures, ultimately attributed the attack to a lone U.S. scientist.

Attribution to determine who is responsible for an attack, whether a crime, act of terror, or warfare is essential to hold those responsible accountable for their actions, prevent future attacks and serve as a deterrent. Attribution and the supporting microbial forensic sciences are also important to exonerate – and rule out - suspected perpetrators, whether a nation state, terror group or criminal that is innocent.

The stakes could be very high, particularly when a nation state is involved or suspected – and a rush to judgement before the science and evidence are in, should be avoided. Decisions to attribute, especially a nation sate, will be consequential, no regret decisions – that must be guided by a strong scientific and evidentiary foundation.

It is similarly important to differentiate a naturally occurring infectious diseases outbreak from an attack. It may not be readily apparent that an outbreak was natural or due to an intentional cause at the first sign of disease - or even after an outbreak has run its course - whether in people or animals.

Prior to 911 and the anthrax letter attacks, scientists and operators from the FBI, CDC and DOD had already begun establishing needed protocols to enable collaboration to account for public health and law enforcement requirements for sample collection and analysis, and imitated what we know today as the science of microbial forensics.

This same group also began planning for unique laboratory capabilities and the scientists that would be needed to support attribution - whether for an attack, accident or outbreak – and to uncover and document illicit proliferation activities. The facilities envisioned then and soon after the anthrax attacks include the laboratory that was subsequently constructed and in use today at Fort Detrick – The National Biodefense Analysis and Countermeasures Center, or NBACC.

I cannot overstate the importance of having dedicated, core laboratory capabilities and scientists that are focused on microbial forensics to support attribution. It is not a part-time job, or other duties as assigned function.

Microbial forensics is still, and will always be an evolving science – perhaps not well understood outside of the relatively few professionals in their field. But, prosecutors and national command authorities who will one day be thrust into the position of making no-regret attribution decisions will quickly grasp the importance of microbial forensics as essential to underpin their pending difficult decisions.

The science of microbial forensics will only get more complex with the continued rapid advancement of new biotechnology tools that are readily available, and as new examples of dual use research of concern emerge from our scientific enterprise that could be misused to do harm. A recent example is the report by Canadian scientists on the synthesis of the horse pox virus.

There was considerable thought that went into the establishment of the NBACC laboratory to support law enforcement and national security attribution. To my knowledge, those original planning assumptions have not substantially changed. I strongly recommend that those strategies and needed capabilities are not abandoned.

Finally, it is important to reiterate that the DHS Science and Technology Directorate has made great strides. The Directorate's program managers, scientist and their contract performers are doing everything in their power to help keep our homeland safe and secure. But, we must acknowledge that the DHS Science and Technology Directorate has a difficult task. Budget limitations and other pressures will not allow them to satisfy all competing needs of the vast homeland security enterprise, not to mention those needs of just the DHS components. Given that, the Science and Technology Directorate should focus available resources on those programs that only the federal government must do, and address threats that are more existential in nature that the private sector cannot or will not be able to address. Biological threats, and other weapons of mass destruction largely fit this category. The Directorate should also take a longer-term view and imbed creative imagination, innovation, university scientist, and sound leadership practices in their programs. A true DARPA-type approach as originally envisioned for HSARPA is needed. Business as usual will not get the job done.

Recommendations:

1. The Committee should ensure that the Administration develops a comprehensive biodefense strategy that is tied to a unified and transparent budget, with clearly identified lead and supporting roles – and support a strong White House leadership role to elevate the importance of biodefense to homeland security and drive interagency coordination and optimal use of available resources.
2. The Committee should ensure that the DHS Science and Technology Directorate re-establishes leadership role in the new national strategy to help drive broader homeland security biodefense and homeland security requirements through a transparent and trusted bio-risk threat assessment and net assessment process that White House

leadership can use to enforce interagency outcomes performance and accountability.

3. The Committee should ensure the DHS Science and Technology Directorate does not eliminate their animal agriculture bioterrorism defense research and development programs unless there is a plan in place to transition those R&D requirements and programs to USDA. The Committee should also work with DHS and USDA to also consider transferring NBAF to USDA if DHS does not maintain animal defense R&D programs.
4. The Committee should work with the DHS Science and Technology Directorate to ensure that the National Biodefense and Analysis and Countermeasures Laboratory is not closed and to ensure that a plan for transition of ownership and operations of the laboratory to either the FBI, DOD, or the intelligence community is completed and implemented.
5. The DHS S&T Directorate and the broader DHS department should implement recommendations of the Biodefense Blue Ribbon Report[6,7].
6. The DHS S&T Directorate should ensure that there is an effective mechanism to keep university scientists engaged on homeland security solutions, whether that is sustainment of the Centers of Excellence model or an alternate strategy.
7. The DHS S&T Directorate should continue implementing a more innovative, DARPA type culture for the homeland security science and technology enterprise.

Thank you for the opportunity to appear before the hearing of the United States House of Representatives Committee on Homeland Security's Subcommittee on Emergency Preparedness, Response, and Communications today.

[6] Blue Ribbon Biodefense Study Panel. *A National Blueprint for Biodefense: Leadership and Reform Needed To Optimize Efforts.* October 2015.

[7] Blue Ribbon Biodefense Study Panel. *Defense for Animal Agriculture*. October 2017.