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MESSAGE:

Thanks for your help

202-822-0055

Prof. Meselson -

I've sent the pages I believe are appropriate

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The Nixon administration's unilateral renunciation of biological weapons was predicated on the view that biological agents have little or no military value. After reviewing the information available at the time, President Nixon's advisors found biological weapons to be unreliable and unpredictable. Biological agents, the administration realized, could spread out of control and initiate epidemics in civilian populations on either side of an armed conflict and could readily backfire locally.

Because their effects are inherently uncontrollable, biological agents lack the targeting ability required by the modern military planners. As MIT biologist Jonathan King puts it, "infectious agents recognize neither national boundaries nor uniforms."[24] They are also relatively slow to act compared to other weapons of mass destruction because they usually require hours, days, or weeks to generate disease states within their victims. Equally important to Nixon's military planners was the realization that biological weapons provoke universal repugnance and could well trigger a chemical or nuclear response.

The case against the military utility of biological weapons was so strong that the Nixon administration even felt confident that stockpiles of biological weapons would be useless as a deterrent, and therefore need not be maintained. The rationale for this decision, then, was that neither military capability nor national security would be compromised by the unilateral renunciation of this category of weapons regardless of the policies adopted by other countries. The use of biological weapons would be so risky for any party concerned that the U.S. did not feel threatened by the prospect of giving them up completely.

The view was enhanced by several more strategic lines of thought. First of all, as Pentagon advisor Han Swyter noted plainly at the time, "The proliferation of chemical and biological capability would tend to change the world's balance of power, reducing ours."[25] Harvard biochemist Matthew Meselson, widely considered the driving force for the Nixon renunciation, has since explained the rationale further. It was realized at the time, Meselson told Congress in 1989, that the "[p]roliferation of biological weapons would greatly increase the number of nations to which the populations of the United States and its allies are hostage."[26]

In addition, Meselson noted, "it was realized that our biological weapons program was pioneering an easily duplicated technology and that our program was likely to inspire others to follow suit." The prospect, Meselson says, led to the conclusion "that our biological weapons program was a substantial threat to our own security."[27] A key piece of this calculation comes in the fact that chemical and biological weapons are relatively cheap to produce. A wealthy power has much to gain, therefore, by controlling their spread. In contrast, expensive armaments like nuclear weapons are less likely to proliferate widely, especially to the Third World.

Despite the Nixon administration's far-reaching change in policy, however, the U.S. did not want to give up the program altogether. The administration stated that the U.S. would "restrict our biological program to research for defensive purposes, strictly defined [emphasis added] -- such as techniques of immunization, safety measures and the control and prevention of the spread of disease." The policy left the door open for what would become the Army's current BDRP.

While the United States' arsenals of biological weapons were destroyed, a newly commissioned research program was established under the auspices of the Army. Its new mission was couched in purely defensive terms, but it employed many of the same people and retained much of the earlier program's approach. The sense of the program's continuity was heightened in 1969 when National Security Advisor Henry Kissinger

penned Decision Memorandum 35, which stated that the new U.S. biological defense research program "does not preclude research into those offensive aspects of bacteriological/biological agents necessary to determine what defensive measures are required."[28] The notion of a purely defensive program, in other words, was muddy and malleable.

The concerns expressed by Bush and Conant at the start of the nation's biological weapons program lingered. Many continued to worry about the degree to which any military research related to biological weapons might spawn "fear and distrust" among other nations and ultimately lead to a biological arms race. Nonetheless, the program was funded at a relatively modest level at the outset, not exceeding $25 million annually. The BDRP program proceeded relatively quietly for a little over a decade, until the early years of the Reagan administration.

Phase Three: Rekindled Interest

Just slightly more than a decade after Nixon's bold policy decision, the Reagan administration adopted a strikingly different analysis of the dangers of biological warfare. Almost immediately after Reagan took office, the BDRP budget jumped dramatically. Between fiscal years 1981 and 1987, the program's budget more than tripled and the administration publicly began to claim that biological weapons presented a heightened threat to national security. As Assistant Secretary of Defense Douglas Feith informed Congress in August 1986: "The prevailing judgment of years ago that biological warfare is not a militarily significant weapon is now quite unsustainable. Biological warfare can be designed to be effective across the spectrum of combat, including special operations and engagements at the tactical level."[29] Eventually, under the Reagan military buildup, it would grow to a point where it would command a larger annual budget--adjusted for inflation--than the U.S. military offensive biological weapons program had in most funding years.[30]

Particular public concern was raised about the expanding program when, in 1984, the Army tried to slip through Congress a multi-million-dollar aerosol testing facility for biological agents at Dugway Proving Ground in Utah. Submitted on the final day before the summer Congressional recess, the controversial appropriation was sought as a routine "reprogramming" request to bypass the authorization process. Reprogramming requests are usually reserved for minor, non-controversial reallocation of funds.[31]

During this period, judging from the BDRP's rapidly increasing funding, from the accounts given by Feith and others in the administration, and from the military's effort to quickly build an aerosol testing facility for "toxin agent test support," it is clear that the Reagan administration believed something in the equation had changed since the 1969 unilateral renunciation of biological weapons.

Given the advances in genetic engineering, this view would seem reasonable enough at first glance: the Nixon administration's decision to renounce biological weapons just slightly predated the birth of recombinant DNA technology -- a virtual revolution in microbiology. In fact, 1972, the year that the Biological Weapons Convention was signed, was also the year that the first gene-splicing experiments were performed. At that time few members of either the military or scientific establishments anticipated the speed and breadth of the far-reaching advances to come in genetic engineering and other areas of biotechnology.

In testimony that laid out the new Reagan administration calculus, Feith warned Congress, "New

technology has exploded the standard ideas about BW that prevailed ten or more years ago." According to Feith, "The technology that makes possible so-called 'designer drugs' also makes possible designer BW."[32] To be sure, gene-splicing techniques -- through which specific genes and the traits they carry are inserted into existing microorganisms -- have created the potential for new avenues of exploitation. But experts have been deeply split over the implications of this technological advance.

If genetic technologies increase the potential for novel biological agents, some note, they also diminish the prospects for successful medical-defense measures. This derives from two factors: First, naturally occurring pathogens (disease-causing organisms) are already very difficult to defeat medically -- witness the decades of as yet unsuccessful work to conquer influenza or tuberculosis, for example. And the Defense Department has been trying to develop and refine medical countermeasures to organisms that were well defined and designated as biological warfare threat agents since the 1940s. Second, while it is no small matter to create a novel pathogens using the tools of genetic engineering, it is vastly more difficult to defend against the potentially unlimited array of agents that gene splicing could unleash even if such agents could be anticipated -- itself a prospect that strains credulity. The new genetic technologies simply favor offense over defense. Furthermore, as Dr. Richard Novick, molecular biologist and director of the Public Health Research Institute of New York, has outlined in detail, in the foreseeable future, new genetic technologies do little to overcome the inherently uncontrollable nature of biological agents that so hinders their military utility.[33]

Despite the apparently fatal logical contradiction inherent in the program's approach to the problem of biological warfare, in its 1980s buildup the BDRP called on some of the strategies the military had used in the 1940s. The program has continued to make ample use of outside researchers. Despite its much-touted commitment to unclassified research, the program continues to obscure much of its work; it fought, for instance, a Congressional initiative in 1989 to issue publicly a complete listing of its research efforts.[34] And finally, like its offense-based predecessor program, the BDRP remains burdened with confusion about how best to implement its role of offering a credible medical defense against biological weapons.

interviews with current and former BDRP researchers revealed a program that has become insulated and unaccountable. Program managers seem more interested in pursuing the latest high-tech virus research--however far-removed from the BDRP's mission -- than in fulfilling their prescribed mandate.

Embarrassed by the U.S. military's lack of a meaningful defense against the perceived biological threat in the Persian Gulf War, and frustrated by the findings of the GAO, the Senate attempted in 1991 to rein in some of the BDRP's excesses by stipulating that BDRP researchers must receive special permission from the Senate Armed Services Committee to research any threat agents that were not validated by the BDRP's intelligence data. In addition, Congress required that such research on exotic threats could under no circumstances exceed 20 percent of the program's funding.

Today, BDRP officials and researchers alike bemoan these restrictions. BDRP spokesperson Dasey, for instance, stresses the importance of allowing exploratory research within the program to anticipate any "technological surprise" that might materialize in the biological-weapons arena. In reality, many in the program acknowledge that the Senate's stipulations have made little functional difference in the military's biological research efforts. Dasey, for example, notes that only one area of research within the BDRP has actually been stopped to date by the Congressional mandate -- work on broad-spectrum anti-viral drugs, a program area that received a fair amount of funding in our snapshot 1989 year (see Tables 1 and 2). Other research on non-validated threat agents, Dasey says, has often been shifted to other branches of the military's complex medical-research apparatus.[44]

The GAO report and subsequent, largely ineffectual efforts to force greater accountability upon the BDRP's research agenda highlight lingering contradictions about the program's mission. First, while the program officials adamantly maintain that the intent of their efforts and content of their work is purely defensive, BDRP scientists continue to engage in a considerable amount of work that goes well beyond the program's own "strictly defined" bounds of defensive research.

BDRP representatives dismiss concerns about offensive applications simply by maintaining that all research in the program is purely defensive in nature and, furthermore, that a clear difference exists between offensive and defensive research. Col. David Huxsoll, for example, former commander of the U.S. Army Medical Research Institute of Infectious Diseases, has claimed that "[f]rom the outset, defensive research is based on different postulates and hypotheses than is research directed toward 'offensive' ends."[45]

And yet, it has long been understood that any vaccine research can have an offensive component. This fact was actually articulated by some of the United States' earliest BW planners. As a 1949 report on biological weapons put it:

> [T]he offensive employment of BW is predicated upon the ability to immunize our troops, those of our allies, or other personnel likely to come within range of infection by our own BW weapons. Information obtained from research on the defensive aspects of BW is, in the greater part, applicable to offensive problems as well.[46]

The difficulty in distinguishing offensive from defensive research was brought home in the aftermath of the Persian Gulf War, when a team from the United Nations tried to find evidence of an offensive biological

weapons program in Iraq. The investigators found that Iraq did possess cultures including Bacillus anthracis and botulinum toxin which they had received from the American Type Culture Collection. Furthermore, U.N. investigators found evidence that Iraqi researchers had undertaken toxicity studies of these agents that, the investigators believed, might indicate that they were seeking an offensive capability.

Kurdish rebels produced one document that they describe as an official Iraqi army memo calling for an inventory of biological materials, but its authenticity could not be verified. Neither U.N. nor U.S. investigators have presented evidence to indicate the presence of delivery systems, clear documentation, appropriate munitions, or production facilities that might have established that Iraq had an offensive capability. In this respect, other than the perception of offensive intent, the Iraqi research did not differ in form from research long since undertaken by the U.S. BDRP.[47] In fact, comparable U.S. research efforts have always been far more elaborate and sophisticated.

The BDRP's openness policy is riddled with similar contradictions. BDRP officials understand that an avowedly secret program would be seen as provocative by other nations. Yet, BDRP officials resist a truly open program even in theory. As BDRP spokesperson Charles Dasey contends, for instance, offering too clear a catalogue of the program's activities might reveal gaps to a potential adversary. "You'd communicate a vulnerability," he states, offering the program's underlying rationale for keeping the full scope of its activities secret.

Finally, the BDRP exhibits a contradictory message by repeatedly propounding the view that effective medical defense against biological warfare (namely, vaccines or other prophylactic treatments) is possible while doing relatively little to amass a storehouse of proven vaccines against known threat agents. The outcome of the BDRP's questionable emphasis on exotic, high-tech virus and toxin research can be seen clearly in the absence of stockpiled vaccines during the Persian Gulf War.

Especially in light of the GAO's research, there is little question that the BDRP has frequently chosen to favor diverse and exotic research over the production of vaccines or other prophylactic treatments against validated threat agents. Aside from its other drawbacks, such an emphasis undermines the program's stated adherence to the notion of a medical defense by failing to offer such a defense in those few cases where it might actually show some efficacy: namely, in the case of proven vaccines against well-known threat agents like Bacillus anthracis.

Research Overview

As stated above, in FY 1989 Congress allotted a total of $66.5 million to the BDRP's medical component. (As noted, this figure does not include funding for related projects in equipment testing, and projects that are funded through the Chemical Weapons program that pertain to problems of biological warfare.) In that funding year we found a total of 194 projects underway within the program. Given the multi-year nature of many of the projects, we determined a cumulative funding total of $134.4 million. In other words, ongoing research projects costing a total of $134.4 million were in the pipeline at this time.

From that total amount, $49.6 million (roughly 37 percent) was earmarked for 59 in-house research projects, conducted at one of several branches of USAMRIID at Fort Detrick. The remaining $84.8 million

Next, we evaluate the program's adherence to its mandate to be "strictly defensive" in nature. In the Linthicum case, research into insects that transmit VEE virus and Rift Valley Fever does not technically violate the provisions of the Biological Weapons Convention; there are legitimate prophylactic purposes for learning more about such disease-transmission pathways. Nonetheless, replicating even a "disarmed" strain of a virulent disease in insects is itself likely to stimulate concern, particularly when the disease involved is not believed to be a threat agent. Such research is an essential first step to weaponizing a biological organism.

In this case, clear patterns emerge that cast serious doubts on the program's stated goals and capabilities. The BDRP continues to sponsor a good deal of research with clear offensive value, but without clear defensive utility. Linthicum's research was conducted in-house, but the provocative nature of many BDRP projects can be seen as well in the contracts that the BDRP awards to outside institutions.

A 1988 assessment by journalist and Center for Public Integrity board member Charles Piller and molecular biologist Keith Yamamoto, a member of the National Academy of Sciences, determined that a full one third of the BDRP's in-house research from 1979-1986 fell into a category they considered to be offensive in nature.[56] Consulting with several well-established biomedical scientists to try to conduct a similar assessment for the 1989 overall program, we found that only a relatively small portion of BDRP work could be construed as purely defensive. This included studies on the diagnosis of biological-weapons related illness, the detection of biological agents in the environment or in the body, and studies seeking clinical treatments. The vast bulk of the program -- including much of the BDRP's toxin and vaccine research and development – fell into a gray area, yielding research results of interest to either a defensive or an offensive program. These studies included the manipulation of organisms in ways that could increase their virulence or potency, or could increase their utility as biological weapons; any research dealing with insect vectors, aerosols or other dissemination methods; the study of exotic threat agents; and research involving the production of significant quantities of dangerous organisms or toxins.

Finally, we determined that at least one quarter of the research projects in our FY 1989 snapshot year -- 50 or more studies -- could not be considered to be solely defensive in nature. This included BDRP contracts to outside research institutions. Some examples are given below.

In one particularly controversial BDRP contract with the University of Massachusetts, for example,

biologist Curtis Thorne used genetic engineering to create a new highly virulent and antibiotic-resistant strain of anthrax.[57] Microbiologist Richard Novick, director of the Public Health Research Institute of New York, says that after close review he believes Thorne's research violates the Biological Weapons Convention of 1972. As Novick puts it, "I can see absolutely no defensive reason for this research." Novick says he considers Thorne's research an extreme example, but that based on his review of documents obtained for this study, many BDRP research projects support offensive applications.

In a similar example, Yamamoto points to a BDRP project in which researchers modified the botulism neurotoxin so that its toxicity was conserved, but its antigenicity – the ability of a virus or other substance to invoke an immune response in a victim – was altered, thus yielding a form of botulism that would be unaffected by a conventional vaccine.[58]

According to our BDRP data, these two highly provocative projects alone will cost U.S. taxpayers more than $1 million over their combined project lifetimes.

One research project at Harvard University investigated "pathogen maturation and infectivity" of infected ticks at a cost of nearly $400,000 in the 1988-89 funding year alone. Another at the University of Ohio, in Athens, Ohio, studied the ability to infect rodents using mosquito vectors. Several other research projects, amounting to millions of dollars worth of funding, investigated novel and potentially provocative toxins, such as crotoxins from snails, and snake neurotoxins. In one such project conducted at the private firm SRI International in Menlo Park, California, researchers tried to synthesize a key component of blue-green algae toxins. An in-house BDRP project involved detailed explorations of the genetic and biological character of the venom of the Australian red-bellied snake. We judge all of these projects as particularly provocative because they involve exotic agents or could be used to enhance the ability to disseminate biological weapons.[59]

Research Caliber

As USAMRIID Commander David Huxsoll testified before Congress in 1989:

> There are those who claim that USAMRIID and its scientists are second-rate. This claim is not consistent with the demonstrated performance of these individuals. Both in-house and contract BDRP scientists publish regularly in peer-reviewed journals, and present their work at national and international symposia.[60]

Huxsoll's comment – part of his prepared statement to a U.S. Senate committee rather than a response to hostile questions by committee members – is most noteworthy for its defensiveness. The USAMRIID commander clearly felt the need to address directly on the widespread sentiment that the BDRP was attracting mostly second-tier researchers.

To some extent these sentiments date back to the earliest phases of the military's program. As several historians have noted, the military's biological weapons program never had the kind of support from the top biomedical scientists enjoyed by the Manhattan Project, which drew most of the nation's top physicists.

One aspect that has long rankled scientists and policy makers alike is that the BDRP makes little use