



Part I of an Exclusive FTW Series

Unholy Grail: The Quest for Genetic Weapons

- South Africa, Israel Have Sought "Ethnic Bombs"
- Genetic "Agroterrorism" Could Look Like an "Act of God" and the U.S., the Worlds' Biotech leader, Could become the Biggest Victim

by Kellia Rames

(Special to *From The Wilderness*)

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[Since the attacks of 9-11-01 there has been a great deal of discussion and speculation as to whether or not gene-specific bioweapons might be used as a weapon of war or, in the gloomiest of scenarios, as an instrument of global population reduction to alleviate the inevitably drastic consequences of Peak Oil. FTW asked radio public affairs producer and investigative journalist Kellia Rames to take a critical look at whether such weapons actually exist. While not definitively establishing that such weapons do exist, Rames had documented, in chilling detail, both their scientific feasibility of such weapons and the fact that many nations have been actively pursuing them for some time. - MCR]

"...to the extent that any country were to attack us with nuclear weapons then we obviously have a nuclear response. With respect to biologicals and chemicals, we have indicated it would be a swift, devastating response and overwhelming force. We have not indicated what that might entail. We've left that deliberately open."

-- Secretary of Defense William S. Cohen in an interview for the PBS "Frontline" program "Plague Wars" aired on 10.13.98.

Mar. 4, 2003, 00:30 PST (FTW) -- **B**iological and chemical weapons are as old as the discovery of poison. Examples of chemical warfare go back at least as far as Ancient Greece, where Solon of Athens poisoned his enemy's water supply during the siege of Krissa in 6th Century B.C.E. ¹ In Europe, biological weapons, in the form of the bodies of plague victims being catapulted over the walls of a besieged city, go back to at least the year 1346.² In 18th Century North America, Indian populations were given smallpox infected blankets during the French and Indian War.³ In modern times, there is evidence of a World War II-era Japanese biological weapons program and Japanese use of plague against the civilian Chinese population of Chiangking

Province.⁴ Out of World War II came the mushroom cloud that still haunts popular imagination. But the still-unsolved anthrax attacks in the U.S. in October 2001 and the White House's insistence that Iraq is concealing chemical and biological weapons has again brought these types of weapons to public attention.

The Biological and Toxin Weapons Convention⁵ prohibits the development, production and stockpiling of biological and toxic weapons. The BTWC was signed on April 10, 1972, and entered into force on March 26, 1975. The Convention is a disarmament treaty, meant to "exclude completely the possibility" of biological agents and toxins being used as weapons by abolishing the weapons themselves.⁶

The United States, the United Kingdom, and several countries thought by the United States Government to have bioweapons programs are original signatories to the BTWC. These include the Russian Federation, Iran, South Africa, South Korea and Syria.⁷ North Korea, Iraq and Libya subsequently signed the convention.⁸ The United States ratified the BTWC on March 26, 1975.⁹ Non-signatories include several former Soviet republics in volatile Central Asia: Azerbaijan, Kazakhstan, Kyrgyzstan, and Tajikistan.¹⁰

The BTWC forbids work on offensive biological weapons. Perhaps the most egregious violation of the Convention has been the former Soviet Union's offensive biological weapons program.¹¹

The Convention allows defensive biological work, such as the development of vaccines. However, the line between defensive and offensive work is very thin; in order to make a vaccine or an antidote, one must first learn how a pathogen works, and that information could be put to offensive use.

Biological and Chemical Weapons: Is their use inevitable?

In 1997, Secretary of Defense William S. Cohen reported that more than 25 countries had-or may be developing-nuclear, biological and chemical (NBC) weapons and the means to deliver them, and that a larger number were capable of producing such weapons, potentially on short notice.¹²

There are a number of reasons why, despite the BTWC, the use of biological and chemical weapons becomes more and more likely:

- 1) It is extremely difficult to monitor the creation of bioweapons because there are no critical raw materials, e.g. uranium or plutonium, the mining, manufacture or transportation of which could be evidence of the creation of the weapon; a small amount of a bioagent can do a lot of damage, so no major stockpiling is needed;¹³
- 2) Bioweapons are cheap compared to conventional and nuclear weapons, and can be economically developed through computer modeling. Furthermore, bioweapons do not require a large and expensive delivery infrastructure of conventional weapons, i.e. planes, aircraft carriers, missiles, etc.¹⁴ For example, anthrax was sent through the U.S. mails in 2001;
- 3) The spread of human, animal or crop disease can be made to look like an "act of

God" with no one able to trace the perpetrator(s); ¹⁵

Additionally, smaller states with little or no nuclear capability can view chemical and biological weapons as a counterforce to the heavy nuclear and conventional capabilities of the United States, which is threatening possibly nuclear "preemptive action" under the so-called Bush Doctrine"¹⁶

Biological and chemical weapons can be used by countries, corporations, terrorist groups, organized crime and disaffected or mentally ill individuals who would not have the means to build up a conventional or nuclear arsenal. Properly deployed, they have the capability of rapidly killing more people than a nuclear weapon. In an interview for the PBS television program *Frontline* in 1998, then Secretary of Defense William S. Cohen said, "If you look at the impact that a biological weapon can have, in terms of its cost and consequence, you will find that it does not take a great deal to develop it in terms of money. It has a major consequence if you were to, for example, take roughly 100 kilograms (about 220 pounds) of anthrax and you were to properly disperse [it], that would have the impact of something like two to six times the consequence of a one megaton nuclear bomb."¹⁷

Moreover, the May 1997 *Report of the Quadrennial Defense Review* stated:

*...the threat or use of chemical and biological weapons (CBW) is a likely condition of future warfare, including in the early stages of war to disrupt U.S. operations and logistics. These weapons may be delivered by ballistic missiles, cruise missiles, aircraft, special operations forces, or other means. To meet this challenge, as well as the possibility that CBW might also be used in some smaller-scale contingencies, U.S. forces must be properly trained and equipped to operate effectively and decisively in the face of CBW attacks. This requires that the U.S. military continue to improve its capabilities to locate and destroy such CBW, preferably before they can be used, and defend against and manage the consequences of CBW if they are used. But capability enhancements alone are not enough. Equally important will be adapting U.S. doctrine, operational concepts, training, and exercises to take full account of the threat posed by CBW as well as other likely asymmetric threats. Moreover, given that the United States will most likely conduct future operations in coalition with others, we must also encourage our friends and allies to train and equip their forces for effective operations in CBW environments."*¹⁸

The adaptation to future warfare involving CBW is being done in such a way as to increase the likelihood of such a war. The United States, and perhaps other nations as well, is engaging in so-called defensive research known as "threat assessment." That means creating the threat or a simulant of it, and testing its delivery by various means in order to assess how harmful it could be.

Dr. Barbara Hatch Rosenberg, Chair of the Federation of American Scientist's Working Group on Biological Weapons and Director of the Federation's Chemical and Biological Arms Control Program, has written that the outcome of threat assessment "may be a covert international arms race to stay at the cutting edge of BW development, using defence as a cover." ¹⁹

To make matters worse, the United States is moving toward more secrecy about the general conduct of its defensive research, a practice which could make other nations suspicious about the true nature of the research. It's also appears that the U.S. is

up to lawyerly tricks to evade the requirements of the Biological and Toxin Weapons Convention. Dr. Rosenberg has reported:

It is startling to find, in the Assessment Report of a meeting of US and UK defence officials, that 'in the US these [relevant treaties, including the BWC] do not apply to the Department of Justice (DOJ) or Department of Energy.' Therefore, the Report lists as one of the Recommended Actions for the US: 'If there are promising technologies that DoD is prohibited from pursuing, set up MOA [memoranda of agreement] with DOJ or DOE.' The US delegation to this event - the Non-Lethal Weapons Urban Operations Executive Seminar, held in London on November 30, 2000 - was led by four US Marine Corps Generals, including one who was Staff Judge Advocate to the Commandant of the Marine Corps.²⁰

Chemical and biological weapons (CBW) create the possibility of warfare in which battlefields are intentionally or unintentionally rendered obsolete, as it may not be possible to confine diseases or chemicals to a limited geographical area. They also ensure a future of warfare, perhaps a very near future, in which civilians are not "collateral damage" but the prime targets. And the combination of a lowered moral barrier towards CBW, the stirring up of ages-old ethnic hatreds, and advances in genome research within the last decade has brought the genocidal possibility of genetic weapons, i.e., weapons that target some component of the genetic makeup (genome) of its victim, closer to reality.

So far, there is no proof that genetic weapons targeting any organism have actually been developed. But several countries have researched or are researching the subject. The possibilities for genetic weapons range from botanical pathogens that could wipe out a region's crops in an act of military or economic warfare, or terrorism, to the ultimate Hitlerian nightmare: the "ethno-bomb," a weapon targeted at unique or nearly unique genetic characteristics of a population.ⁿ (For the purposes of this article, pathogens that can harm anyone, but which are distributed, intentionally or accidentally, to a specific racial or ethnic group are not considered "ethno-bombs" or "ethnic weapons." A strong case for HIV being a laboratory created virus distributed intentionally or accidentally to Central Africa and the New York gay community via smallpox and hepatitis B vaccines is made by Dr. Leonard Horowitz in *Emerging Viruses: AIDS & Ebola - Nature, Accident or Intentional?*, (Tetrahedron, Inc., Rockport MA, 1996). In the worst case scenario of unintended consequences, government and corporate genome research intended for legitimate medical applications may someday provide the knowledge required to develop genetically specific ethnic weapons.

"Ethno-Bombs": Warnings were raised a decade ago

In 1993, RAFI, Rural Advancement Foundation International, now the ETC Group - Action Group on Erosion, Technology and Concentration,²¹ raised concerns that the gathering of human genetic material by, among other organizations, the Human Genome Diversity Project (HGDP) could make feasible the development of ethnically targeted viruses.²²

RAFI's executive director, Pat Roy Mooney wrote: "Not since we warned, at the beginning of the 1980s, that herbicide manufacturers were buying seed companies in order to develop plant varieties that liked their chemicals, has RAFI borne the brunt of so much abuse."²³

But in 1996, Dr. Vivienne Nathanson, the British Medical Association's (BMA) Head of Science and Ethics told a congress of the World Medical Association that ethnically targeted genetic weapons were now possible, and she cited as example the possibility of designing an agent that could sterilize or pass on a lethal hereditary defect in specific ethnic groups.²⁴

In 1999, the BMA issued a report called *Biotechnology, Weapons and Humanity*²⁵, which warned that genetic knowledge could be misused to develop weapons aimed at specific ethnic groups. The executive summary, available online, stated:

Over the last few decades rapid advances in molecular biology have allowed the heritable material (DNA) of different organisms to be interchanged. The Human Genome Project and the Human Genetic Diversity Projects are allowing the identification of human genetic coding and differences in normal genetic material between different ethnic groups.

During the review conferences on the BTWC, an increasing level of concern has been expressed by national governments over the potential use of genetic knowledge in the development of a new generation of biological and toxin weapons.

Legitimate research into microbiological agents, relating both to the development of agents for use in, for example agriculture, or to improve the medical response to disease causing agents, may be difficult to distinguish from research with the malign purpose of producing more effective weapons.

Research that could be used to develop ethnic weapons has historically been based upon natural susceptibilities, or upon the absence of vaccination within a target group. Genetic engineering of biological agents, to make them more potent, has been carried out covertly for some years, but not as an overt step to produce more effective weapons. In genetic terms there are more similarities between different people and peoples than there are differences. But the differences exist, and may singly or in combination distinguish the members of one social group (an "ethnic" group) from another.²⁶

Rapid Advances: How fast is fast?

Advancements in genome research have occurred at an amazing pace. The U.S. Human Genome Project expects to complete the Human DNA Sequence in the spring of 2003,²⁷ two years ahead of the original schedule. RAFI's (now ETC Group's) Pat Roy Mooney has written:

The amount of genetic information being stored in the international gene banks is doubling every 14 months... A quarter century ago, it took a laboratory two months to sequence 150 nucleotides (the molecular letters that spell out a gene). Now, scientists can sequence 11 million letters in a matter of hours. The cost of DNA sequencing has dropped from about US\$100 per base pair in 1980 to less than a dollar today [early 2001] and will be down to pennies by 2002. Standard gene sequencing technology once required at least two weeks and \$US20,000 to screen a single patient for genetic variations in 100,000 SNPs (single nucleotide polymorphisms). Now 100,000 SNPs can be screened in a few hours for a few

*hundred dollars.*²⁸

Single Nucleotide Polymorphisms (SNPs) are small genetic variations that occur in individuals. But studies are also being done by the SNP Consortium, an organization of private biotechnology firms,²⁹ to see how they vary from group to group. The groups being studied are African Americans, Asians and Caucasians.

Sequencing the Human Genome: What do genes say about race?

The Human Genome Project has shown that 99.9% of human DNA is identical throughout the species and that there are more genetic variations within groups than between groups.³⁰ Thus, race, as we think of it socially, is a cultural construct, rather than a genetic one.

Yet, our eyes tell us that there *are* differences. All humans would look alike otherwise. It is also well known that certain ethnic groups have predispositions to certain illnesses. *Something* must account for those predispositions. Is that something in the .1% of non-identical genes scattered throughout humanity? More specifically, is that something explained by Single Nucleotide Polymorphisms?

When it comes to the development of "ethno bombs," it's the study of SNPs that most worries Edward Hammond, director of the Sunshine Project³¹ and a former RAFI staff member. It's the primary focus of the Sunshine Project to prevent new breakthroughs in biotechnology from being applied for military purposes. In an interview with *FTW* in January, 2003, Hammond said of SNPs:

What these are, put in more simple language, are little, small differences in the genetic code that are in all of us, but ones which can be at least theoretically related to a particular ethnic group or a particular kind of people. And so the fear is that these discoveries that there are some very minor genetic differences that do seem to roughly break down somewhat along culturally defined ethnic lines could become exploitable, particularly once we reach the point where genetic constructs that could be created by science could take advantage of a group of these. What I mean by that is that there are very, very few genetic differences that in and of themselves are markedly different from one population to another. However, if you could do a combination of factors, a combination of small differences in genes there might be ways to roughly create something that you would call a genetic weapon.

If we arrive at the point where genetic weapons are possible, and I do believe that this will happen, the thing that I'm most concerned about are not the individual "disease" genes that have been identified in the past.[Ethnically related genetic disorders such as Cystic Fibrosis, Sickle Cell Anemia, or Tay-Sachs Disease]. Rather it is a combination of genes that occur in particular frequencies in different populations and by targeting the absence or the presence of a particularly small group of genes that seems to have some sort of ethnic association, than by that way, I think genetic weapons may become possible.

The rapid developments in genome mapping have enabled the Human Genome Project³² to meet all its goals for 1994-1998, and to add two new goals for 1999-2003: the determination of human sequence variation [mapping the SNPs] and functional analysis of the operation of the whole genome [understanding how the whole system works]. These are two goals vital to creating ethnic-specific genetic

weapons.³³

Genetic weapons development: terrorists won't try this at home

We cannot be sure how many states are trying to develop genetic weapons. But we can be sure that the entities trying to develop them *are* states (possibly with the help of large corporate contractors) and not terrorist groups. This is because only states can manage the complex science genetic research requires. Dr. Claire Fraser, President and Director of the Institute for Genomic Research (Tigr) says that although genetic data on human pathogens are public, no one knows enough to turn this information into bioweapons. Speaking out against calls to classify now public genome data, Fraser told BBC News Online: "I want to debunk the myth that genomics has delivered a fully annotated set of virulence and pathogenicity genes to potential terrorists. I have heard some describe genome databases as bioterror catalogues where one could order an antibiotic-resistance gene from organism one, a toxin from organism two, and a cell-adhesion molecule from organism three, and quickly engineer a super pathogen, This just isn't the case."³⁴

Of course, once states create these weapons, it may be possible for terrorist groups to buy or steal them.

Who's been doing what?

Since all biological and chemical weapons are illegal, and since ethnic weapons are especially abhorrent, countries doing research in these areas don't brag about it. Nor do the corporate media take much notice. Number 16 on Project Censored's list of the 25 top censored stories for the year 2000 was "Human Genome Project Opens the Door to Ethnically Specific Bioweapons."³⁵ But in recent years, some information has surfaced in government reports or corporate media indicating that some countries have been researching the possibility of ethnic weapons.

South Africa: Apartheid regime sought "black bomb"

In the 1980s, South Africa's apartheid regime ran a biological weapons program called "Project Coast". According to an April 2001 U.S. Air Force Report³⁶ one of the program's goals was to develop a "black bomb" via genetic engineering research. The "black bomb" would weaken or kill blacks but not whites.³⁷

In addition to the "black bomb," Project Coast planned to build a large-scale anthrax production facility to produce anthrax for use against black guerrilla fighters inside or outside of South Africa³⁸, and to develop a drug that would induce infertility and could be given surreptitiously to blacks, perhaps under the pretext of a vaccine.³⁹ None of these goals were achieved. However, in one of the appendices to the USAF report, the authors asked, "In its genetic engineering experiments, how close was South Africa to a "black bomb"? Are other countries developing similar biological weapons?"⁴⁰

Israel: CBW program finds genetic differences between Arabs and Jews

On November 15, 1998, the Sunday *Times of London* ran a front page article reporting that the Israelis were planning an ethnic bomb.⁴¹ The article stated that the Israelis were trying to identify distinctive genes carried by some Arabs, particularly Iraqis. "The intention is to use the ability of viruses and certain bacteria to alter the DNA inside their host's living cells. The scientists are trying to engineer deadly microorganisms that attack only those bearing the distinctive genes."

The article reported that the program was based at Nes Tziyona, Israel's main biological and chemical weapons research facility, and that an unnamed scientist there said that while the common Semitic origin of Arabs and Jews complicated the task, "They have, however, succeeded in pinpointing a particular characteristic in the genetic profile of certain Arab communities, particularly the Iraqi people." The report also quoted Dedi Zucker, a member of the Israeli Knesset (parliament) as saying, "Morally, based on our history, and our tradition and our experience, such a weapon is monstrous and should be denied."

Israel has never signed the Biological and Toxin Weapons Convention.⁴²

The Human Genome Diversity Project

The HGDP is an international project based at the Morrison Institute for Population and Resource Studies at Stanford University in Palo Alto, California.⁴³ HGDP is not a part of the Human Genome Project. The HGDP is of grave concern to people who believe ethnically targeted genetic weapons are on the horizon. Among these people is Dr. Barbara Hatch Rosenberg. When asked by *FTW* via email if she was concerned that the Human Genome Project and the Human Genome Diversity Project will pave the way for genotype specific weapons, she replied simply. "Yes."

The FAQ (Frequently Asked Questions) list of the HGDP does deal briefly with the issue of ethnic weapons:

Could these samples be used to create biological weapons that were targeted at particular populations?

*Genocidal use of genetics is not possible with any currently known technology. On the basis of what we know of human genetic variation, it seems impossible that it will ever be developed. The Project would condemn and bar any effort to use its data for such purposes. The highly visible nature of the Project and its ethical constraints should make even the attempt less plausible.*⁴⁴

This answer is unsatisfactory on a number of levels. First of all, it was written in late 1993 and early 1994.⁴⁵

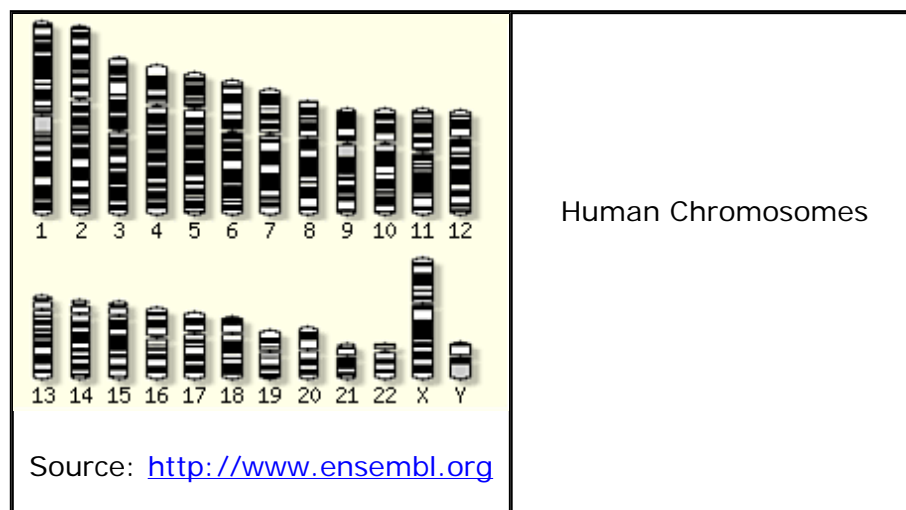
Subsequent revelations have indicated that such weapons are being attempted. That the Project would bar efforts to use its data for such purposes is unenforceable. The Project is putting its data in the public domain. How could it stop a government from surreptitiously using that data? The "highly visible nature of the Project and its ethical constraints" could make it unlikely that members of the Project would use the data for weapons development while they were members of the project. But what would prevent them from doing so in subsequent research for third parties?

Lastly the conclusion that "on the basis of what we know of human genetic variation, it seems impossible that it will ever be developed is likely premised on a false assumption that Edward Hammond pointed out in his interview with *FTW*:

One of the things that people say is that, 'Well, look. You're never going to be able to develop a genetic weapon that is perfect. Whatever combination of genes or whatever gene you target, is never going to have 100% occurrence in the population that you target. And in almost all likelihood, your own population is going to have that sequence.' In other words, even in the "best case scenario" of somebody who was evil enough to try to develop this kind of weapon, it's never going to be perfect. It's only going to get 70, 80% of the enemy are going to potentially be subject to being affected by this weapon and you might have 5, 10, 15% of your own people potentially subject to this weapon. And so experts will say, 'You know, nobody's crazy enough to do that. Nobody would actually do that because, think of the risk that would pose to their own people. And think of the fact that it really isn't going to work against all of the enemy.'

I really don't think that that kind of rationality pervades the people that would potentially do this. And if you look at what happens in ethnic conflicts, certainly rationality and calculation about what ends you are willing to go to, to get the other guy don't play out like that. So I think that there's a certain willful ignoring of the reality of how conflict takes place when people say that these aren't potentially practical weapons.

In light of the Israeli research into the genetic differences between Arabs and Jews, who share Semitic origin, and in light of the overwhelming evidence that the United States Government had foreknowledge of the 9-11 attacks and allowed them to occur, resulting in the deaths of thousands of U.S. citizens, no one should assume that any weapon, genetic or not, would not be developed because some of the developer's people might suffer the same fate as the targeted "enemy."



The U.S. and the "dual use" dilemma: Treatments or weapons?

A genome is the complete DNA makeup of an organism, be it human, animal or plant. Research on genomes could lead to greater understanding of how disease pathogens or genetic defects operate. This, in turn could lead to medical breakthroughs: gene therapies, treatments that take into account the individual

genetically-based responses to medications, or treatments for conditions for which certain population subgroups are susceptible. For example, NitroMed, Inc., a private biopharmaceutical company that is developing nitric oxide (NO)- enhanced medicines, is testing a drug called BiDil[®], which is designed to improve survival in African Americans with heart failure.⁴⁶ A trial involving 600 African American men and women is now in progress, with the results expected in early 2004.⁴⁷

But genome research, like many other forms of biological and chemical research, is "dual use." And the U.S. Government appears to be very interested in its military applications. Note that the government's Joint Genome Institute (JGI)⁴⁸ is not under the auspices of the Department of Health and Human Services. It is part of the Department of Energy, which often works hand-in-glove with the Defense Department.

DOE's own explanation for its involvement in the Human Genome Project betrays military roots:

After the atomic bomb was developed and used, the U.S. Congress charged DOE's predecessor agencies (the Atomic Energy Commission and the Energy Research and Development Administration) with studying and analyzing genome structure, replication, damage, and repair and the consequences of genetic mutations, especially those caused by radiation and chemical by-products of energy production. From these studies grew the recognition that the best way to study these effects was to analyze the entire human genome to obtain a reference sequence. Planning began in 1986 for DOE's Human Genome Program and in 1987 for the National Institutes of Health's (NIH) program. The DOE-NIH U.S. Human Genome Project formally began October 1, 1990, after the first joint 5-year plan was written and a memorandum of understanding was signed between the two organizations.⁴⁹

The JGI web site describes the Institute as "virtual human genome institute" that integrates the sequencing activities of the human genome centers at the three JGI member institutions: Lawrence Livermore, Lawrence Berkeley, and Los Alamos National Laboratories. JGI partner institutions include Oak Ridge National Laboratory, Brookhaven National Laboratory, Pacific Northwest National Laboratory, and Stanford Genome Center.⁵⁰ The Lawrence Livermore, Los Alamos and Oak Ridge laboratories are well known as nuclear weapons research facilities. Lawrence Livermore and Los Alamos are seeking to install high containment microbiology labs in their facilities. These labs could work with virulent organisms such as live anthrax, botulism, plague. Opponents of biowarfare are concerned that the United States is violating the Biological and Toxin Weapons Convention by genetically modifying anthrax.⁵¹

-- Kellia Rames earned a B.A. degree in economics, with honors, from Fordham University in New York in 1977. She also earned a law degree from Indiana University-Bloomington in 1980. She has been a reporter for KPFA-FM in Berkeley, CA for nearly four years. There, her specialty is toxics reporting. Kellia is also an Associate Producer for WINGS - Women's International News Gathering Service, a Contributing Editor for OnlineJournal.com and a reporter for Free Speech Radio News, which is heard in over 50 stations throughout the United States. Kellia's latest project is R.I.S.E. - Radio Internet Story Exchange, a weekly Internet-based public affairs program. The R.I.S.E. website is <http://www.rise4news.net>.

Coming in Part II (two weeks) - Surprising evidence that gene-specific weapons are very much within reach and may have actually been employed, not against humans, but against food crops. Plus a look at the deeper ethical questions behind gene research that leave room for great worry about the future, especially based on the conduct of the one nation most likely to possess these weapons, the U.S.

ENDNOTES

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47. (Ibid.)
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50. (<http://www.jgi.doe.gov/whoweare/members.html>)
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