

USDA KITTEN CANNIBALISM

Cat and dog meat markets abroad.
Taxpayer-funded animal testing at home.

Jim Keen DVM, PhD and
White Coat Waste Project

UNITED STATES

DEPARTMENT
OF
AGRICULTURE

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A report by

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March 2019

TABLE OF CONTENTS

- I. Overview
- II. Past and current USDA toxoplasmosis experimentation using cats and kittens
- III. USDA cat experimentation in the 21st century has had limited impact on public health
- IV. Cat breeding and use is unnecessary for current ARS research
- V. USDA kittens and cats can safely be adopted out
- VI. USDA makes false and misleading claims to Congress, the media and the public
- VII. Conclusions
- VIII. Recommendations

I – OVERVIEW

Since 1982, the United States Department of Agriculture (USDA) Agricultural Research Service (ARS) has conducted, and continues to perform, toxoplasmosis experiments on cats.

The currently approved protocol for this project calls for up to 100 kittens to be bred each year at ARS's Animal Parasitic Disease Laboratory (APDL) in Beltsville, Maryland.¹ At eight weeks old, the kittens are fed raw meat infected with the *Toxoplasma gondii* (*T. gondii*) parasite, and their feces is collected for up to 3 weeks so experimenters can harvest oocysts (eggs) for use in food safety experiments. These healthy kittens—who briefly pass the parasite's eggs and become immune within weeks—are then killed and incinerated by USDA because they are no longer useful.

According to ARS, the project currently receives \$650,000 a year in taxpayer funds. The agency has spent \$22.5 million and killed more than 3,000 cats for this project since the it began in 1982.

In 2018—the 36th year of the project—an investigation by White Coat Waste Project first brought this experiment to the public's attention using documents obtained through the Freedom of Information Act (FOIA).² Subsequently, concerns were raised by Congress members,³ veterinarians,⁴ and others regarding the necessity of cat use, as well as USDA's long-standing policy of killing healthy kittens after the parasite eggs are collected.

Specifically, in the 115th Congress more than 60 bipartisan lawmakers in the House of Representatives co-sponsored the Kittens in Traumatic Testing Ends Now (KITTEN) Act to permanently end these USDA cat experiments.⁵ In the Senate, Jeff Merkley (D-OR)—who serves as Ranking Member on the Agriculture Appropriations Subcommittee—introduced the KITTEN Act and secured language in the USDA's FY19 funding bill that directs the agency to seek alternatives to the use of cats and to develop a program to adopt out the cats.^{6,7} In March 2019, the KITTEN Act was re-introduced in the 116th Congress.⁸

After 37 years of taxpayers' support, the USDA's use of kittens for toxoplasmosis experiments merits critical review. Through an exhaustive analysis of scientific publications, FOIA documents, USDA statements to the media and Congress, and conversations with issue experts, this report concludes:

1. USDA's current use of cats for toxoplasmosis experiments is unnecessary and unjustifiable;
2. USDA's killing of cats at the completion of the experiments is unnecessary and unjustifiable;

3. Much of USDA's toxoplasmosis research is irrelevant to American public health and the USDA's mission, including feeding dogs and cats purchased at Chinese meat markets and rounded up in other countries to laboratory cats at the USDA;
4. The contributions of USDA cat experimentation to improving public health is limited, especially in the last two decades; and
5. USDA leadership has repeatedly made false and misleading claims to Congress about its cat experimentation

II - PAST AND CURRENT USDA TOXOPLASMOSIS EXPERIMENTATION USING CATS AND KITTENS

Toxoplasmosis is an extremely common protozoan (single cell) parasitic infection caused by *Toxoplasma gondii*.⁹ The parasite is unusual in that it can infect virtually any tissue in any warm-blooded animal - birds, mammals and humans. At least a third of people and cats worldwide are infected, most harmlessly. This is because a healthy person's (or cat's) immune system prevents the parasite from causing illness. Pregnant women and people with suppressed immune systems (e.g. those who are HIV-positive) are more susceptible to the illness, though basic preventive measures can help protect these more vulnerable populations.

Cats have historically been used for toxoplasmosis experiments because they are the only host animal in which *T. gondii* can complete its life cycle.¹⁰ The parasite needs cats to generate and excrete environmentally-resistant infective oocysts (eggs). Birds, mammals and people develop parasite tissue cysts (e.g. in muscle or brain) when they ingest oocysts. People become infected by ingesting oocyst-contaminated soil and water or tissue cysts in undercooked meat.

Because all *Toxoplasma*-exposed animals develop tissue cysts and an immune response, the parasite can be readily detected without cats.¹¹ Proven, accurate and widely used non-feline methods include bioassays in mice, detecting anti-*Toxoplasma* antibodies in any animal's blood (serology) or by detecting the parasites DNA by polymerase chain reaction (PCR).^{12,13} Tissue life stages of the parasite can also be identified in cell culture. In fact, little toxoplasmosis research and no clinical science uses cats at all. Rather, experimental or natural toxoplasmosis infections are detected by finding tissue cysts, antibodies or parasite DNA. For example, human toxoplasmosis infection is diagnosed almost exclusively by serology supported by PCR.

Using the National Institutes of Health's PubMed database, we identified and carefully reviewed 121 peer-reviewed papers that reported results from USDA toxoplasmosis studies that used cats or dogs since 1982.

Experiment types

Kittens and cats have been used in three ways by USDA toxoplasmosis experimenters:

1. **For oocyst generation**—how USDA is currently using cats—kittens are bred, fed various animal tissues (usually brain or muscle) that contain *Toxoplasma* cysts, and their feces is collected to harvest oocysts for use in other experiments. The USDA kills the kittens after 2 weeks, when they no longer shed oocysts, even though they become immune and are healthy.

2. **In bioassays**, cats are fed various animal tissues that might contain *Toxoplasma* cysts. If the cat then sheds oocysts, *Toxoplasma* presence in the fed tissue is confirmed. Before, during and after bioassay, cats are perfectly healthy.
3. **In challenge studies**, cats are force-fed or inoculated with various strains and doses of *Toxoplasma* tissue cysts or oocysts to observe the animal's response to infection. Unlike bioassays, some cats sicken and die or are killed as part of the experimental challenge protocols because of the unnaturally large doses they are exposed to.

Number of animals used

ARS has reported to Congress and the media that it has used approximately 3,000 cats and kittens in this experimentation since 1982. However, our review of USDA publications shows that the agency experimented on and then killed at least 3254 lab kittens and 705 stray and pet cats, a total of 3959 cats. This is likely a *significant underestimate* as cats used in failed or unpublishable experiments, kittens used to generate oocysts, and breeder cats in the ARS cat colony are not counted here.

Past and recent USDA cat experiments

Currently, cats and kittens at USDA are solely being used for oocyst production. According to the currently-approved protocol for ARS cat use, up to 100 kittens are bred each year at the APDL in Beltsville, Maryland. At eight weeks old, the kittens are fed raw meat infected with the *T. gondii* parasite. The kittens' feces are collected for up to three weeks so experimenters can harvest oocysts for use in food safety experiments with collaborators. These healthy kittens—who briefly pass the parasite's eggs and become immune within weeks—are then killed and incinerated by USDA because they are no longer useful.

Historically, however, about 82 percent (2684) of ARS lab kittens were used for bioassays in which they were fed animal tissues to test for the presence of *Toxoplasma*.¹⁴ At the end of the three-week bioassays, all kittens were killed and incinerated. In one single USDA experiment published in 2005, 1121 healthy bioassayed lab kittens were killed.¹⁵ It is worth noting that these cats were used to screen retail meat samples for *Toxoplasma*, and this could have been largely conducted without cat use because the prevalence of *T. gondii* in other screening tests (including mice) was very low.¹⁶

The remaining 18% (576) kittens were used by USDA for challenge studies, of which 308 (54%) died during the experiments. The remaining 268 kittens were killed post-experiment.

USDA states that, “The mission of the Animal Parasitic Diseases Laboratory (APDL) is to reduce parasitic disease in livestock and poultry pathogens and their risk of transmission to people.”¹⁷ Yet, a review of the USDA's past toxoplasmosis experimentation on cats, including recent work, demonstrates that it is often irrelevant to this mission.

USDA's kitten cannibalism

In addition to the cats USDA breeds and kills itself, for at least a decade—and as recently as 2015—the same ARS experimenters purchased and killed hundreds of pet, stray or “unwanted” cats (and dogs) from countries in Asia, Africa and Latin America.^{18,19,20,21,22,23,24,25,26,27,28,29} The dead cats' and dogs' tissues were then shipped to APDL in Maryland and fed to the USDA's lab-bred cats and other animals.

Outsourcing abuse

Particularly troubling is that some of these cats and dogs were purchased by the USDA from meat markets the some of the same Asian countries (China and Vietnam) that U.S. Congress roundly condemned for their dog and cat meat trades “on cruelty and public health grounds” in a House Resolution unanimously passed in 2018 (H. Res. 401).³⁰

Additionally, the USDA studies conducted in China state that, “the cats were killed humanely according to PRC laws for slaughtering of food animal (sic).” This claim is concerning and deceptive, as researchers studying China’s food animal industry recently noted, “there is still no national farm animal protection legislation in effect.”³¹ Indeed, in the 2018 resolution passed by Congress, lawmakers stated that the treatment of dogs and cats in these facilities “would breach anti-cruelty laws in the United States.”³²

USDA experiments using cats and dogs questionably procured abroad include:

- 42 cats purchased at Chinese pet markets and meat farms, killed, and their hearts and tongues shipped to APDL in Beltsville, MD and injected into mice³³
- 48 stray cats rounded up in Ethiopia, killed, and their hearts shipped to APDL in Beltsville, MD and fed to mice³⁴
- 34 cats purchased at a Chinese meat market, killed, and their tongues, brains, and hearts shipped to APDL in Beltsville, MD and fed to ARS cats³⁵
- 309 dogs acquired from a shelter in Colombia killed and their brains, tongues and hearts shipped to APDL in Beltsville, MD and fed to ARS cats³⁶
- 120 unclaimed Brazilian shelter dogs killed and the tongue, brain and hearts of 20 of them fed to ARS cats³⁷
- 42 dogs destined for a Vietnamese meat market were purchased and killed. The hearts, brains and tongues of some of these dogs were shipped to APDL in Beltsville, MD and fed to ARS cats³⁸

Dog and cat meat represents an abnormal diets for cats, dogs and mice so it is likely irrelevant to natural toxoplasmosis biology. Their scientific relevance and justification is questionable, at best, as is their relevance to American public health since we do not consume cats and dogs, and the practice is now outlawed in the U.S.³⁹

Other irrelevant toxoplasmosis experiments outside of USDA’s mission

The same ARS experimenter has also conducted dozens of studies abroad and many non-livestock toxoplasmosis studies that killed lab cats and have little or no relevance to toxoplasma biology or epidemiology affecting American livestock or U.S. citizens. International and U.S.-native species studies included black bears,⁴⁰ dolphins,⁴¹ sea otters,⁴² Hawaiian crows,⁴³ toucans,⁴⁴ walruses,⁴⁵ bobcats,⁴⁶ water buffalo,⁴⁷ Canada geese,⁴⁸ raccoons,⁴⁹ coyotes,⁵⁰ skunks,⁵¹ arctic foxes,⁵² feral guinea fowl,⁵³ woodrats,⁵⁴ and alpacas.⁵⁵

III. USDA CAT EXPERIMENTATION IN THE 21ST CENTURY HAS HAD LIMITED IMPACT ON PUBLIC HEALTH

The USDA APDL in Beltsville, MD has in the past made useful scientific contributions to understanding parasitic diseases impacting food and agriculture. Its contributions towards understanding protozoan parasites, especially *T. gondii* (much of it completed without the use of cats), are respectfully acknowledged. However, this review found that most influential toxoplasmosis experiments using cats supporting the APDL research mission was conducted prior to 2000.

In 2008, the lead USDA toxoplasmosis experimenter published a review paper entitled “The History of *Toxoplasma gondii* – the first 100 years.”⁵⁶ There are 72 landmark *Toxoplasma* discoveries highlighted. Thirteen papers by USDA since 1982 are listed. Stated ARS contributions were made to:

- parasite life cycle
- congenital transmission in large wild animals
- review of toxoplasmosis in animals
- serologic testing in animals
- prevention and control by cooking, freezing and irradiation to kill *Toxoplasma* in meat, and
- documenting the low prevalence of *T. gondii* in confined pigs and retail pork, beef and chicken

Of the 13 influential ARS papers, only 3 were published since 2000. Additionally, only 5 of these 13 papers used cats or kittens.^{57,58,59,60,61}

Thus, USDA cat experimentation has at best contributed marginally, especially over the past two decades.

IV – CAT BREEDING AND USE IS UNNECESSARY FOR CURRENT USDA RESEARCH

When USDA began toxoplasmosis research in 1982, using cats was more justifiable than it is today. It is true that challenging uninfected cats or kittens with the *Toxoplasma* parasite is required for the production of parasite oocysts. However, as APDL and many others have shown, when cats are infected for the first time with *Toxoplasma*, they shed millions to billions of oocytes over the following 14 days. For example, researchers showed that a combined total of >1.8 billion oocysts were harvested from two kittens over a 4-day collection period.⁶²

Also, as shown by ARS and many others, oocysts are extremely hardy in the environment.^{63, 64} They can survive for years and we do not yet know the outer limit of viability for *T. gondii* oocysts deposited in various environmental conditions. Thus, the oocytes *from one infected kitten, held under proper storage conditions*, could supply enough viable oocytes for hundreds of ARS experiments over many years. A colony of cats is certainly not necessary for oocyst production.

In a written response to Congress in 2018, ARS stated: “In cooperation with university scientists, (ARS) methods are being developed that will eventually allow oocysts to be produced completely in cell culture, which would do away with the need for cats for this purpose. At this time, there is no way to do this.” USDA later admitted it has not explored alternatives to using cats even though they repeatedly told Congress and the media that it has.

However, cell culture methods for protozoan parasites similar to *Toxoplasma* have been successfully developed so that live cat use to generate oocysts is no longer needed. This could likely be done for *T. gondii* as well if USDA devoted the resources to do so.

V – USDA KITTENS AND CATS CAN SAFELY BE ADOPTED OUT

The USDA has been criticized by media, lawmakers, veterinarians and advocates for its insistence on killing the kittens and cats used in these experiments rather than adopting them out to shelters, rescues or private individuals.

In 2018, ARS Administrator Chavonda Jacobs-Young wrote to Congress that, “ARS carefully determined there is insufficient data to know with certainty that intentionally *Toxoplasma gondii* infected kittens or cats will never resume shedding oocysts” and that, “As a result, adoption of these animals still presents a public health risk that is too high to consider rehoming of ARS' laboratory cat population at this time.”

These claims are false and misleading, at odds with standards of practice in veterinary medicine, and not supported by any evidence. All scientific data strongly suggests that *Toxoplasma*-exposed cats are healthy, adoptable and pose almost no zoonotic risk to people. Additionally, as USDA has acknowledged to Congress, the cats used for breeding at APDL are never infected with toxoplasmosis, yet the agency has insisted on killing them, too. This further highlights the USDA's utter lack of thought and consideration behind its current, long-standing cat experimentation policy and practices.

Feline health

Authorities including the American Veterinary Medical Association, U.S. Centers for Disease Control and Prevention, American Association of Feline Practitioners, and many other federal agencies, organizations and academic cat toxoplasmosis experts state unequivocally that it is perfectly safe to adopt out *Toxoplasma*-exposed kittens or kittens of unknown toxoplasmosis status.

- Toxoplasmosis is extremely common in cats (and humans) and very rarely makes them sick
- After initial exposure, cats shed oocysts in their feces for only two weeks, after which they become immune for life from re-infection.
- Authorities state that cat infection with toxoplasmosis by itself never warrants euthanasia.
- Cats and kittens—including 1.6 million adopted from shelters each year—are never routinely tested for toxoplasmosis infection in veterinary practice or shelter medicine. If they did represent a cat health or public health risk, they would be.

Human health

The evidence is clear that contact with cats does not increase humans' risk for contracting toxoplasmosis. Even for people with suppressed immune systems or women who are pregnant who may be more susceptible, authorities do not advise relinquishing pet cats.

- In a study of 17,658 US residents current cat ownership did not increase toxoplasma seroprevalence (infection risk). Among Mexican Americans, current cat ownership was associated with reduced risk for *T. gondii* seropositivity⁶⁵

- In a 2018 study of hundreds of veterinary practitioners, *veterinarians who **did not** do small animal practice (cats and dogs) had 2.3 times higher odds to be toxoplasmosis seropositive* than veterinarians who did practice small animal veterinary medicine, strongly suggesting heavy cat contact does not increase human toxoplasmosis risk⁶⁶
- In international case-control studies, neither direct daily contact with cats nor living in a household or neighborhood with cats were associated with *T. gondii* infection in humans⁶⁷

Expert Organization Positions

- American Veterinary Medical Association (AVMA)⁶⁸
 - “You are more likely to be infected with *T. gondii* from undercooked meat or the environment than from your cat”
 - Immunocompromised and pregnant individuals can certainly have pets in their lives and benefit from animal companionship. Immunocompromised or pregnant cat owners should not feel pressured to relinquish their pets.”
- U.S. Centers for Disease Control and Prevention (CDC)⁶⁹
 - “*Do I have to get rid of my cat? No, you do not have to give up your cat.* Owning a cat does not mean you will be infected with the parasite. It is unlikely that you would be exposed to the parasite by touching an infected cat because cats usually do not carry the parasite on their fur.”
 - “AIDS patients do not need to be advised to part with their cats or to have their cats tested for toxoplasmosis.”
- U.S. Food and Drug Administration⁷⁰
 - “Advice for Mom’s-To-Be”: “Don’t give “Fluffy” away, but be aware that *T. gondii* infects essentially all cats that spend any time outdoors.”
- American Association of Feline Practitioners⁷¹
 - “The primary way to avoid contracting *T. gondii* is to avoid ingestion of the organism in undercooked meat. Because humans are unlikely to contract *T. gondii* infection from direct contact with their own cats, ***owners need not be advised to part with their cats or to have them tested for toxoplasmosis.***”
- International Society of Feline Medicine⁷²
 - “Contact with cats has no influence on the probability of people developing antibodies to *T. gondii*, whereas the consumption of raw meat significantly increases infection risk.”
 - “Veterinarians working with cats are not more likely to become infected with *T. gondii* or to suffer from toxoplasmosis than the general population, including people without cat contacts.”
 - “Stroking a cat will not spread the infection. Even when cats are shedding oocysts in their feces, oocysts cannot be found on their coat.”
 - “Cat ownership does not increase the risk of toxoplasmosis in people with HIV infection. Although toxoplasmosis is more common in HIV-infected persons, the disease results from reactivation of a previous infection rather than from acquiring a new infection from cats.”

- “Bites or scratches from an infected cat do not transmit the infection.”

The evidence is overwhelming that ARS’s refusal to rehome kittens and cats from completed toxoplasmosis experiments is neither science- nor evidence-based.

VI – USDA MAKES FALSE AND MISLEADING CLAIMS TO CONGRESS, THE MEDIA AND THE PUBLIC

The USDA has repeatedly made false and misleading claims to Congress, the media and the public about its cat testing program, as described above. A May 16, 2018 letter that ARS Administrator Chavonda Jacobs-Young sent to then-Congressman Mike Bishop (R-MI) made a series of such questionable claims that warrant dissection:

ARS claim: “ARS researchers discovered and described the life-cycle of *T. gondii*”

Fact check: The claim that “ARS researchers discovered and described the life-cycle of *T. gondii*” appears to be intentionally misleading. The *T. gondii* life cycle was co-discovered in 1970 at the University of Kansas by a then-post-doctoral researcher who later joined ARS in 1982 and established a laboratory there. ARS was not involved in this 1970 discovery.⁷³

ARS claim: “Most people become infected by ingesting oocysts, either after close contact with cat feces or by consuming fruit and vegetables contaminated by cat feces. Consuming infected meat is a less frequent route of exposure, largely due to USDA’s successful efforts to refine strategies that reduce infection in livestock.”

Fact check: This is false and misleading. The AVMA states that, “Handling or consuming undercooked or raw meat, particularly pork, is the most common route of infection in North America....You are more likely to be infected with *T. gondii* from undercooked meat or the environment than from your cat...”⁷⁴ The U.S. Food and Drug Administration and other authorities also state that most toxoplasmosis infections are acquired from food.⁷⁵ The scientific and public health literature clearly states that direct cat contact, including feces contact, is not a major source of human toxoplasmosis. If it were true, why is the incidence of human toxoplasmosis infection decreasing despite the increasing incidence of cat ownership?

The trend over the past 50 years towards intense confinement, especially in swine, is the biggest driver of reduced toxoplasmosis prevalence in US livestock, and by extension, in people consuming meat. We found no evidence in our ARS literature review that USDA is responsible for this. In addition, ARS APDL lists no livestock *Toxoplasma* prevention or control techniques on their website.⁷⁶

ARS claim: “Most of the current farm management practices and hygienic measures to control and prevent transmission of toxoplasmosis in livestock are based on ARS research.”

Fact check: A PubMed search found no papers on preventing transmission of toxoplasmosis in livestock by ARS or anyone else. Rather, intensive livestock confinement and biosecurity have reduced *T. gondii* in swine and pork to negligible levels.

ARS claim: “ARS research into the parasite’ s life cycle led to life-saving warnings found on cat litter packaging advising.”

Fact check: Cat litter packaging does contain toxoplasmosis risk warnings, but we found no evidence that this is due to ARS research.

ARS claim: “Food safety authorities throughout the world rely on research conducted by ARS scientists to develop science-based policies that protect consumers, and have credited ARS research with helping to cut the prevalence of *T. gondii* by as much as 50 percent in the United States and Europe.”

Fact check: We found no evidence to support these statements, which we believe are gross exaggerations. If ARS toxoplasmosis prevention studies were so successful, one would expect that this research would be reflected in revised toxoplasmosis public health recommendations over time. However, there is essentially no difference between toxoplasmosis prevention recommendations on the current USDA website⁷⁷ and those published half-a-century ago.⁷⁸

Every four years, the CDC publishes a seminal US population-based survey of about 15,000 persons on toxoplasmosis seroprevalence (infection). The age-adjusted *T gondii* prevalence in US-born persons 12–49 years old decreased from 14.1% in 1988–1994 to 9% in 1999–2004 to 6% in 2009–2010.^{79, 80, 81}

Improved standards in meat processing, increased consumption of frozen food products, and improved knowledge regarding meat preparation have all been cited as reasons for declining toxoplasmosis seropositivity. This reduction in prevalence is likely to be partially due to a reduction of *T. gondii* in cysts in meat through the efforts of meat producers. The reduction could be due in part to the intensified education of physicians and the public since the 1990s about how to prevent *T. gondii* infection through the proper cooking of meat, proper cat feces/soil-related hygiene, not feeding cats raw meat, and keeping cats indoors. Taken together, these findings suggest that public health and food industry policies may be an effective strategy for controlling the spread of toxoplasmosis infection. *ARS research impacts were marginal at best in these arenas.*

VII - CONCLUSIONS

After 37 years of taxpayers’ support, the USDA’s use of kittens for toxoplasmosis experiments merits a critical review. Through this exhaustive analysis of scientific publications, FOIA documents, USDA statements to media and Congress, and conversations with issue experts, this report determined:

1. USDA’s current use of cats for toxoplasmosis experiments is unnecessary and unjustifiable;
2. USDA’s killing of cats at the completion of the experiments is unnecessary and unjustifiable;
3. Much USDA toxoplasmosis experimentation is irrelevant to American public health and the USDA’s mission, including feeding dogs and cats purchased in Chinese and Vietnamese meat markets to laboratory cats;
4. The contributions of USDA cat experimentation to improving public health is limited, especially in the last two decades; and

5. USDA leadership has repeatedly made false and misleading claims to Congress about its cat experimentation

USDA kitten toxoplasmosis experimentation causes unnecessary animal pain and suffering, little or no scientific benefit, and wastes millions of taxpayer dollars as a consequence of non-competitive perpetual intramural federal funding.

VIII. RECOMMENDATIONS

1. House and Senate Appropriations Committees should defund USDA toxoplasmosis experimentation on cats
2. Congress should enact the bipartisan KITTEN Act (S. 708/HR 1622) to permanently end USDA cat experiments
3. USDA should adopt out all cats and kittens remaining at APDL
4. USDA should implement a formal policy allowing for the adoption of cats and other animals no longer needed in all experiments
5. Congress should request an audit of USDA animal experimentation oversight policies to determine how this unnecessary program has continued to be approved and receive taxpayer funding

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