

Dear APHIS officials,

The *Drosophila* community Board of Directors is a representative body elected by scientists in more than 2,000 laboratories worldwide who use flies of the genus *Drosophila* in their research. We oversee scientific conferences under the auspices of the Genetics Society of America, support research resource efforts benefiting the *Drosophila* community and communicate with governmental agencies concerning issues impacting *Drosophila* research. We appreciate this opportunity to comment on the proposed changes to 7 CFR 340 “Importation, Interstate Movement, and Release into the Environment of Certain Genetically Engineered Organisms” (Docket No. APHIS-2008-0023).

*Drosophila* species are important model organisms for studies in a wide range of biological disciplines. A large and vibrant research community has formed around these experimentally versatile insects and thousands of publications result every year from its efforts. *Drosophila melanogaster* has been studied by geneticists for more than a century and remarkable molecular technologies exist for manipulating its genes. Its biomedical significance has grown as scientists model human diseases by reproducing human genetic defects in the *Drosophila* genome. Genome Projects for twelve *Drosophila* species have provided an unparalleled opportunity to understand the evolution of gene regulatory mechanisms and has emphasized the experimental utility of the entire genus. The importance of *Drosophila* is apparent to anyone acquainted with contemporary trends in biological research.

The success of genetics research depends on the exchange of live research strains. Collaborations between U.S. *Drosophila* researchers and their colleagues in more than fifty countries require compliance with USDA import regulations. The success of U.S. scientists depends on the existence of unambiguous regulations and their appropriate, consistent and predictable implementation. Unfortunately, our experiences with recent APHIS practices have not been favorable. We believe that APHIS practices with respect to the importation of *Drosophila* strains are not consistent with the language or intentions of current regulations and, consequently, impede scientific progress. We hope our comments will urge APHIS to reexamine its practices under current regulations and will influence how new regulations are implemented.

Flies of the genus *Drosophila* are generally recognized as posing no significant risks to agriculture. To our knowledge, APHIS has never formally categorized any *Drosophila* species as a plant pest in any public document. *Drosophila* is not a genus classified as containing plant pests in the current version of 7 CFR 340. Consequently, the only *Drosophila* strains that should require import permits are the uncommon strains carrying a transgenic construct with DNA sequences derived from an APHIS-recognized plant pest. Under current regulations, nontransgenic strains and transgenic strains lacking plant pest sequences should not require import permits.

Despite this, U.S. *Drosophila* researchers cannot import any *Drosophila* strain without a permit. APHIS staff advise that permits are necessary for all strains and shipments lacking permits are routinely detained at inspection stations. It is apparent that internal APHIS practices towards *Drosophila* are different than current regulations stipulate. Plant Protection and Quarantine (PPQ) issues standard permits for the importation of nontransgenic *Drosophila* strains. Biotechnology Regulatory Services (BRS) issues standard permits for transgenic strains carrying plant pest sequences and courtesy permits for transgenic strains lacking plant pest sequences. Although courtesy permits are intended by 7 CFR 340 merely “to facilitate the movement of organisms outside the scope of these regulations”, they are not optional in any meaningful way. APHIS has made it abundantly clear that it expects these courtesy permits to accompany all *Drosophila* transgenic

strains lacking plant pest sequences and it enforces this expectation in ways that assure that they are used. Regardless of the language of 7 CFR 340, import permits are mandatory for all *Drosophila* strains in practice.

The imposition of the permit requirement for *Drosophila* shipments was sudden. There was no effort to educate *Drosophila* researchers ahead of time and there was no opportunity for public input on the decision. The *Drosophila* community discovered the requirement only when shipments began to be detained. After nearly a century of importing *Drosophila* strains without permits, the abrupt change in APHIS policy caused considerable distress and frustration among *Drosophila* researchers.

The following statement on the PPQ website and a similar statement on the BRS website are the only written justifications we have seen for the APHIS stance on *Drosophila* permits:

*All shipments of Drosophila fruit flies into the United States (including Territories) from foreign sources must now be pre-authorized with a Plant Pest Permit (PPQ Form 526). Interstate shipments among States in continental North America (including Alaska) do not require Plant Pest Permits, but interstate shipments to and from Hawaii and the Territories do require permits. Although Drosophila fruit flies present minimal plant pest risk (e.g., feeding on overripe fruit in storage), shipments manifested as "fruit flies" have recently raised agricultural and environmental concerns because this common name also refers to notoriously significant plant pests like the Mediterranean and oriental fruit flies. As a result, plant pest permits are now required so that shipments are appropriately routed to PPQ inspection stations for confirmation of the identities of the enclosed organisms. Permits and the appropriate use of shipping labels will facilitate movement through Customs and Border Protection inspection processes with minimal delays in PPQ inspection stations.*

We appreciate the desire of APHIS to expedite the movement of *Drosophila* strains, but its approach is not consistent with the intention of 7 CFR 340. Rather than creating a new permit requirement not justified by regulations, the solution to the problem of ambiguous labeling should have been to enforce existing customs laws requiring clear identification of shipment contents. APHIS made no attempt to encourage compliance with existing rules by educating the *Drosophila* research community. APHIS could have used several well-established means of contacting all active *Drosophila* researchers and the *Drosophila* Board of Directors would gladly have aided an educational outreach effort.

There is no possibility that a *Drosophila* researcher could mistakenly culture and ship economically harmful fruit flies of the Family Tephritidae: they are morphologically distinct from *Drosophila* and it is impossible to rear them on *Drosophila* growth medium. Very few labs culture both species, so cross-contamination is a very small risk. While someone might intentionally attempt to import Tephritids labeled as *Drosophila*, it seems unreasonable to burden all *Drosophila* researchers with a permit requirement to prevent this remote possibility.

Ironically, evidence that APHIS could have obtained the cooperation of the *Drosophila* community in improving compliance with existing regulations came from the unexpected imposition of permits. It prompted a community-based education effort. The Bloomington *Drosophila* Stock Center established web pages instructing *Drosophila* researchers on the details of the application process and publicized their availability. Our efforts saved BRS staff the work of educating researchers one-by-one on their complicated application process. The success of this effort later led BRS staff to approach Stock Center scientists to help transition from paper-based to more complex online application forms. The resulting web-based guide to BRS applications

(<http://flystocks.bio.indiana.edu/Regulatory/import.htm>) is an excellent example of cooperation between APHIS and the scientific community. BRS now receives standardized applications from *Drosophila* researchers, which makes their review much easier.

We would like to see permits issued for *Drosophila* strains as intended by current regulations and not as APHIS is currently implementing the regulations. Standard permits should be reserved for only those transgenic *Drosophila* strains carrying sequences from plant pests. There should be no requirement—in regulations or in practice—for permits from BRS or PPQ for other *Drosophila* strains. We support changes to the language of 7 CFR 340 because they may clarify the intention of the regulations and make it more difficult for APHIS staff to implement inappropriate permit requirements in the future. We have identified three aspects of the proposed regulations that we wish to endorse specifically.

First, we support the idea that “decisions regarding which organisms are regulated remain science-based and take both plant pest and noxious weed risks into account”. *Drosophila* species pose little risk to agriculture. Accidental release of nontransgenic strains is harmless. Transgenic strains are restricted to confined use within BL1 facilities. It is difficult to conceive of any genetic modification that would transform strains into agricultural threats upon accidental release.

We suggest as an aid to science-based evaluations that APHIS regulations provide a narrower definition of “plant pest”. Current and proposed regulations categorize an organism as a plant pest if it “can directly or indirectly injure, cause damage to, or cause disease in plants or plant products”. Unfortunately, this vague definition covers a huge number of organisms that have little relevance to crop plants. Instead, the definition should specify organisms that cause significant damage to agriculturally important plant species. It is plainly evident from the list of plant pest organisms in 7 CFR 340.2 that current regulations are intended to apply to species that pose significant threats to agriculture. One negative consequence of deleting this list may be that it will be easier to misapply the new regulations to organisms like *Drosophila* with limited and inconsequential interactions with crop plants.

Second, we support the elimination of courtesy permits if standard permits will not be required for any nontransgenic *Drosophila* strain or any transgenic strain lacking plant pest sequences. We whole-heartedly support the elimination of permits for all strains except those carrying plant pest sequences. If, however, APHIS will persist in requiring permits for all *Drosophila* strains despite the obvious intentions of the proposed regulations to focus on agriculturally important pest species, then we would much rather use the simpler courtesy permit mechanism than the more complicated standard permit mechanism.

We recognize the expense that BRS incurs to issue *Drosophila* courtesy permits, which constitute a large proportion of BRS permits. We encourage APHIS to reallocate the resources now spent on *Drosophila* courtesy permits to efforts that will actually benefit U.S. agriculture. It is not, as the proposal suggests, the enthusiasm of the research community for courtesy permits that is creating the workload. We are simply complying with APHIS requirements.

We are encouraged by the statements in the proposal regarding the elimination of courtesy permits that “APHIS will work with researchers and relevant government regulatory officials to facilitate the transition” and “APHIS will also be available for consultation by persons who formerly used courtesy permits and other persons moving similar non-regulated articles to discuss how to facilitate their movement”. We stand ready to help APHIS educate *Drosophila* researchers on ways to avoid

problems with customs should it eliminate the permit requirement for nontransgenic strains and transgenic strains lacking plant pest sequences.

Third, we support changes clarifying the procedures for petitioning for nonregulated status. Streamlined procedures should make it easier for APHIS to exempt genetic elements that force BRS to issue standard permits for trivial reasons. Some common components of transgenic constructs were originally derived from plant pests, even though they cannot confer plant pest characteristics and they are now considered generic molecular biology reagents. Such genetic elements account for almost all BRS standard permits issued for *Drosophila* strains.

Most BRS standard permits for *Drosophila* and mosquitoes are necessitated by the *piggyBac* transgenesis system. It consists of specific sequences at the ends of transformation vectors and a transposase gene catalyzing the genomic insertion of the vector. In practical terms, it is no different from any other transformation system derived from non-pest arthropods. Its origin in a recognized plant pest, the Cabbage Looper Moth, is irrelevant to most geneticists. Last year, we initiated a petition to grant *piggyBac* elements nonregulated status, but it was not considered due to a BRS moratorium on such petitions. Once petitions are accepted again, we would like to initiate another or assist BRS staff in initiating one internally.

In conclusion, we support aspects of the proposed regulations that will ease the burden of import permits for *Drosophila* strains. In our view, new regulations are not needed to reevaluate APHIS practices. Nevertheless, the large-scale reorganization of permitting practices necessitated by new regulations may encourage APHIS to reconsider its stance. Eliminating the requirement for all *Drosophila* permits except those required for transgenic strains carrying plant pest sequences would save time, expense and headaches for both APHIS and us. While we are critical of USDA permit requirements for *Drosophila* strains, we appreciate the role of the USDA in protecting U.S. agriculture and in promoting research in the agricultural sciences. We hope our input will help the USDA put the talents of its people and its limited resources to optimal use.

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