Peer Review Plan

Date: 12/4/2019 (Updated: 5/4/2020)

Source Center: U.S. Geological Survey (USGS)
Office of Science Quality and Integrity
12201 Sunrise Valley Drive, MS 119
Reston, VA 20192

Title: Plants as vectors for environmental prion transmission.

Subject and Purpose: Chronic wasting disease (CWD) is a transmissible spongiform encephalopathy (TSE) of deer, elk, and moose species. CWD is the only prion disease known to affect free-ranging wildlife. Since its discovery in Colorado in the late 1960s, CWD has spread widely across North America and continues to increase in prevalence in endemic regions. Prions, the causative agent of CWD and other TSEs, are remarkably stable and are composed solely of a misfolded version of the prion protein. Prions have been shown to persist in the environment for protracted periods of time, bind to soil particles, and remain infectious.

In this product, the hypothesis that plants can take up prions through their roots via several experimental settings, including plants grown in prion-contaminated soil, is tested. The product demonstrates that prion-exposed plants accumulate abnormal prion protein and prion infectivity in aerial tissues and that levels of infectivity in exposed plants is sufficient to cause disease following oral exposure in rodents. The conclusion suggest plants may serve as vectors for prion transmission in the environment—a finding with implications to wildlife conservation, agriculture, and public health. This product will be released in the scientific journal Nature Communications.

Impact of Dissemination: This product is considered by the USGS to be a Highly Influential Scientific Assessment.


Manner of Review, Selection of Reviewers, and Nomination Process: Review will be by individual letters and supporting documents. USGS will select the peer reviewers pursuant to requirements in Survey Manual chapter 502.3 - Fundamental Science Practices: Peer Review.

Expected Number of Reviewers: Three peer reviewers are anticipated.

Requisite Expertise: Disease transmission and wildlife disease ecology.

Opportunity for Public Comment: No opportunity for public comment is formally incorporated for this information product.

Agency Contact: peer_review_agenda@usgs.gov.