

Supplementary data

Supplementary Fig. 1: In the agar medium experiments, pre-grown hyphae were inoculated onto a 0.45- μm pore membrane filter placed on agar medium in a plastic petri dish. The hyphae grown on the medium were recovered with the membrane filter to measure radioactivity by autoradiography.

Supplementary Fig. 2: The relation between radioactive intensity by autoradiography analysis and by Ge detector. We prepared hyphae grown on a filter, and added the radioactive solution containing known activity of ^{137}Cs to produce the standard hyphae. Radioactivity of the standard hyphae was measured by Ge detector, and radioactive intensity was measured by imaging plate with BAS 2500 system.

Supplementary Fig. 3: Photographs of the hyphae of a filamentous fungus *Epithele* sp. cultured in potato dextrose agar medium with and without ^{137}Cs , and autoradiography (AR) images of the hyphae. The photographs show the hyphae grown in the agar medium with and without ^{137}Cs . No blackish area was observed in the AR image without ^{137}Cs , indicating that natural ^{40}K in the hyphae was below the detection limit of the AR analysis at the time of measurement.

Supplementary Table 1: Species, dry weight, activity of ^{137}Cs in mushrooms and soils, and Transfer factor (TF) of ^{137}Cs for mushrooms collected in Iitate, Fukushima Japan.

Supplementary Table 2: The transfer factors (TF_{agar}) for 704 species of fungi hyphae determined by the radioactivity of ^{137}Cs and the dry weight. Species filled with yellow and gray colors are used in Fig. 2 and Figs. 4, 5, and 6.