Figure S1. Gc UCSC1 infection phenotypes of Col-0 plants grown in soil matrix treated with 0 mM Si, 1.7 mM Si or tap water

Plants of Arabidopsis accession Col-0 grown in commercial soil matrix (Sun Gro Horticulture, Massachusetts) were irrigated with nutrient solution made with deionized water containing with 0 mM Si (-Si) or 1.7 mM Si (+Si), or nutrient solution made with tap water. Matrix-grown Col-0 plants treated with 0 mM Silicon (-Si) were slightly less susceptible to powdery mildew isolate Golovinomyces cichoracearum UCSC1 at 10 dpi than those treated with 1.7 mM Silicon (+Si) or tap water
Figure S2. Silicon content in deionized water and tap water, different soil media, and in leaves of Col-0 plants grown in regular soil matrix or perlite

(a) Silicon content in purified (deionized) water and tap water. (b) Silicon content in leaves of matrix-grown and perlite-grown Col-0 irrigated with nutrient solution made with deionized water containing with 0 mM Si (-Si) or 1.7 mM Si (+Si), or nutrient solution made with tap water. (c) Content of Silicon available to plants in peat, vermiculite, perlite and matrix. DW, dry weight. The method for measuring Silicon content in water and soil media is same as that described for measuring leaf Silicon content in the Materials and Methods section of the main manuscript.
Figure S3. Si content in leaves of different Arabidopsis lines and their respective transgenic lines expressing a heterologous Si transporter.

Expression of either *CmeLsi1* or *HvLsi1* from the 35S promoter in Arabidopsis Col-0 and mutants defective in defense signaling resulted in elevation of leaf Silicon (Si) content. The indicated Arabidopsis lines and their respective transgenic lines (indicated by “CmeLsi1” or “HvLsi1” were treated with either 0 mM (−Si) or 1.0 mM (+Si) Si. The leaf Si content was normalized to leaf dry weight (DW). Bars represent standard errors.
Figure S4. Expression levels of defense-related genes in transgenic Col-0 overexpressing HvLsi1.

Expression levels of genes encoding Pathogenesis-Related protein 1 (PR1, a), Phytoalexin Deficient 4 (PAD4, b), Plant Defensin 1.2 (PDF1.2, c) and Powdery Mildew Resistant 4 (PMR4, d) in Col-0 plants transgenic for 35S-HvLsi1. Plants were grown in perlite treated with either 0 mM (−Si) or 1.0 mM (+Si) Silicon and then inoculated with Golovinomyces cichoracearum UCSC1. Total RNA was prepared from inoculated leaves at 0, 3 and 5 dpi. Bars represent standard errors, and an asterisk denotes a significant difference between the “−Si” and “+Si” treatments (Student t-test, *P<0.05).
Figure S5. Levels of total SA, free SA and JA in Arabidopsis plants overexpressing *HvLsi1*

Levels of total SA (a), free SA (b) and JA (c) in plants of the indicated genotypes transgenic for 35S-*HvLsi1* treated with either 0 mM (−Si) or 1.0 mM (+Si) Si were measured at 0, 3 and 5 dpi with *Golovinomyces cichoracearum* UCSC1. Bars represent standard errors and an asterisk denotes a significant difference between the “−Si” and “+Si” treatments (Student *t*-test, *P*<0.05).
Figure S6. Microscopic images showing fungal microcolonies grown on leaves at 5 dpi

Plants of *eds1pad4sid2* and their transgenic lines expressing *CmeLsi1* or *HvLsi1* were treated with 0 mM (−Si) or 1.0 mM (+Si) Si and inoculated with *G. cichoracearum* (Gc) UMSG1. Inoculated leaves were subjected to trypan Blue staining at 5 dpi. Representative fungal microcolonies were shown. Scale bars=200 μm.
Figure S7. Microscopic images showing fungal microcolonies grown on leaves at 2 dpi

High Silicon (Si) did not seem to affect early infection of *G. cichoracearum* (*Gc*) UCSC1 in Col-0 plants or Col-0 transgenic for 35S-*CmeLsi1* or 35S-*HvLsi1*. Plants were treated with 0 mM (–Si) or 1.0 mM (+Si) Si and inoculated with *Gc* UCSC1. Inoculated leaves were subjected to Trypan Blue staining at 2 dpi. Representative fungal microcolonies were shown. Scale bars=100 μm.
Figure S8. Callose deposition in Arabidopsis Col-0 leaves inoculated with *G. cichoracearum* UCSC1

(a) Callose deposition in *G. cichoracearum* UCSC1-inoculated leaves of Col-0 treated with either 0 mM (–Si) or 1.0 mM (+Si) Si at 5 dpi. Leaves were subjected to Trypan Blue staining. Callose deposition is indicated by arrowheads. Scale bars=200 μm. (b) Expression of *PMR4* in Col-0 plants used in (a) at 0, 3 and 5 dpi. Bars represent standard errors, and an asterisk denotes significant difference between the “–Si” and “+Si” treatments (Student t-test, *P<0.05).
Figure S9. Leaf phenotypes of Col-0 and pad4-1 and their transgenic plants overexpressing the indicated Si transporter grown in perlite without Si or with 1.0 mM Si

The toxicity was shown by whitish spots in mature leaves of the indicated plants treated with 1.0 mM Si (+Si) for two weeks. No whitish spots were observed in plants of the same transgenic lines grown with 0 mM Si (−Si) or non-transgenic Col-0 plants grown with either 0 mM or 1.0 mM Si.