Supplementary Material

Gibberellins Inhibit Nodule Senescence and Stimulate Nodule Meristem Bifurcation in Pea (*Pisum sativum* L.)

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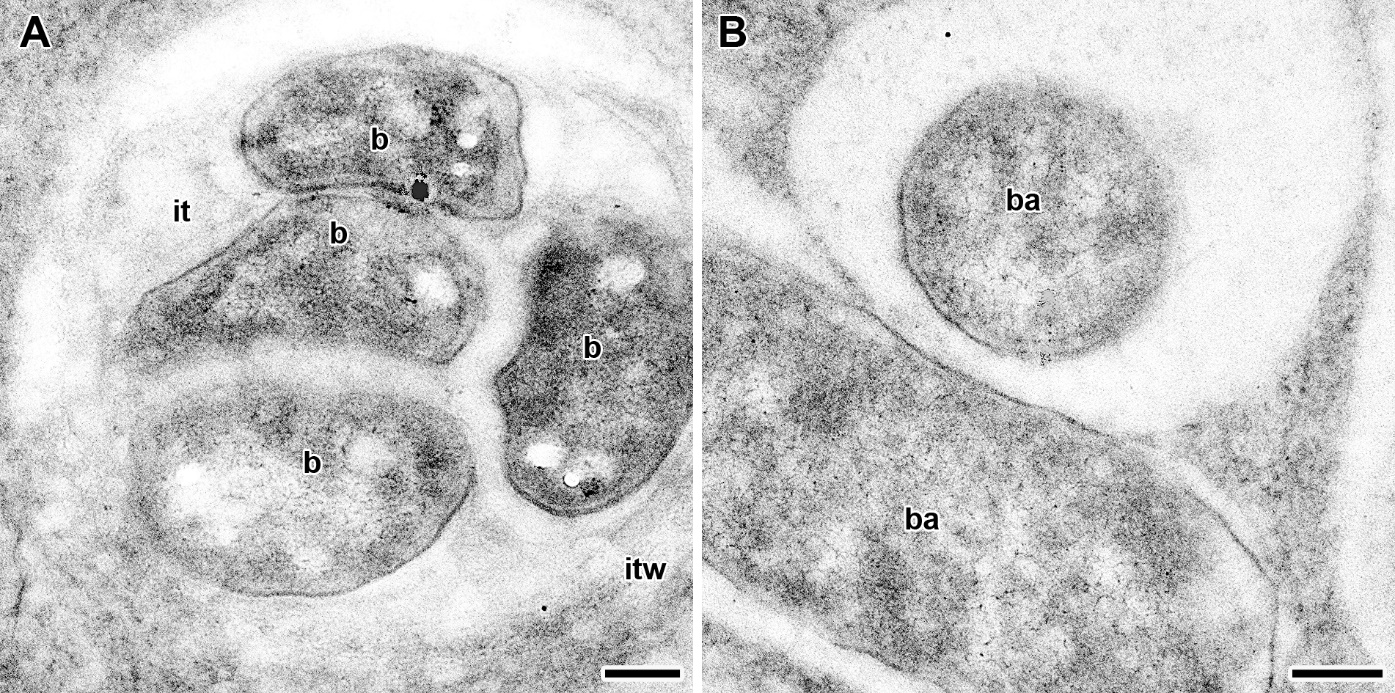
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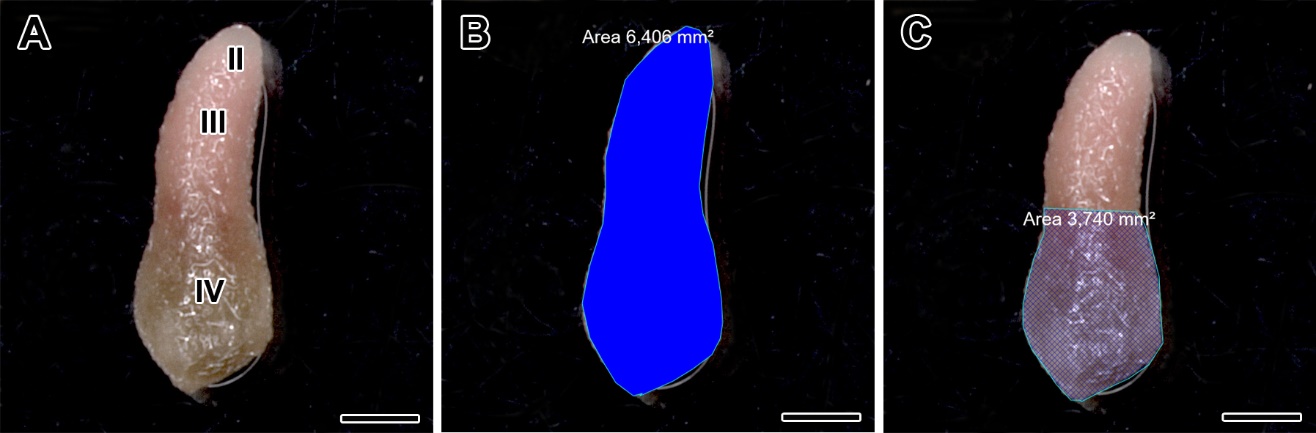
Изображение выглядит как фотография, другой, показывает

Описание создано автоматически

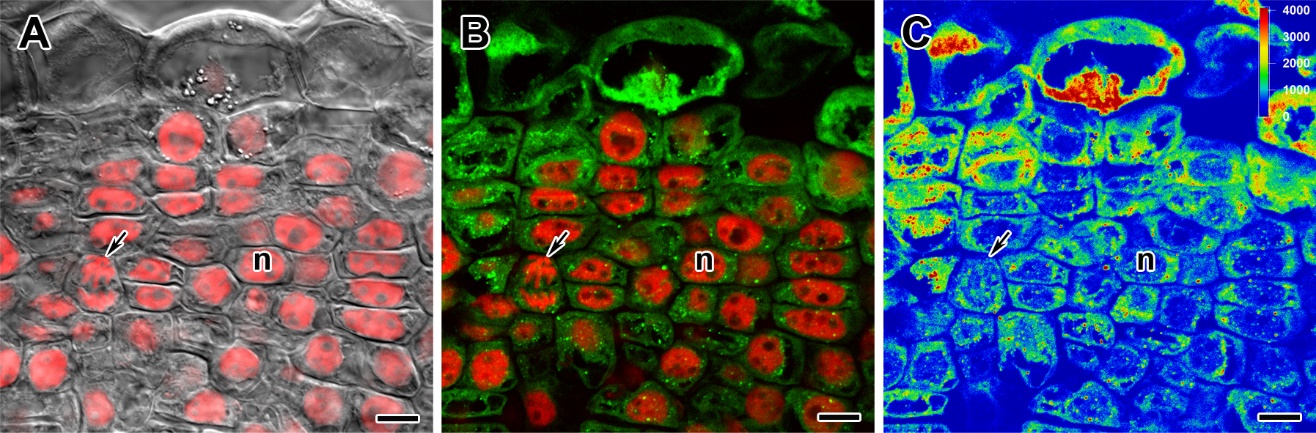
**Supplementary Figure 1.** The controls show specificity of antibodies to gibberellin (GA3). To confirm specificity of the anti-GA3 antibody, slices of wild-type SGE 2-week-old nodules were incubated with GA3-specific antibodies supplemented with GA3-BSA conjugate before immunostaining (**A–C**). Note the absence in fluorescence in the whole nodule. Primary anti-GA3 antibodies were omitted as a negative control, resulting in the absence of fluorescence (**D–F, J–L**). The controls show specificity of antibodies to gibberellin (GA3) in nuclei (**G–L**). A differential interference contrast microscopy image merged with laser scanning confocal microscopy image in red channel **(A, D, G, J).**  Merged images of laser scanning confocal microscopy in green and red channels (**B, E, H, K**). Heat map provides a color code of fluorescence signal intensities (**C, F, I, L**). GA3 in green, nuclei and bacteria in red. Scale bar = 100 µm (**A–F**), 10 µm (**G–L**).

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**Supplementary Figure 2.** Transmission electron micrographs of cells from nodule of wild-type SGE at 2 weeks after inoculation treated as negative control to GA3 immunogold labeling. Gold particles were absent when cells were treated after the omission of the primary antibody (**A**), with unspecific secondary antibody (**B**). It was used secondary goat anti-mouse IgG MAb conjugated to 10 nm diameter colloidal gold. it, infection thread; itw, infection thread wall; b, bacterium; ba, bacteroid. (**A**) Infection thread, (**B**) Mature bacteroids. Scale bar = 200 nm.

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**Supplementary Figure 3.** Selection and measurement of area of wild-type nodule at 6 weeks after inoculation. General view of nodule **(A)**,selection and measurement of whole nodule area (blue background) **(B)**,selection and measurement of area of senescence zone in nodule (blue mesh background) **(C)**. Areas were selected and measured with AxioVision Rel. 4.8 software (Carl Zeiss). Zones of nodule are designated by Roman numerals: II – infection zone, III – fixation zone, IV – senescence zone. Scale bar = 1 mm.

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**Supplementary Figure 4.** Immunolocalization of gibberellin (GA3) in meristem of nodules of wild-type SGE at 2 weeks after inoculation. n, nucleus. Arrow indicates mitosis. A differential interference contrast microscopy image merged with laser scanning confocal microscopy image in red channel **(A).** Merged images of laser scanning confocal microscopy in green and red channels **(B)**.Heat map provides color code of fluorescence signal intensities **(C)**. Visualization of GA3 by the Alexa Fluor 488 conjugated secondary antibody (green), nuclei and bacteria stained with propidium iodide (red). Scale bar = 10 µm.

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**Supplementary Figure 5.** Immunolocalization of gibberellin (GA3) in nodules of wild-type plants **(A–F)** and cells in central part of nodules **(G–L)** at 6 weeks after inoculation. Zones of nodule are designated by Roman numerals: II – infection zone, III – fixation zone, IV – senescence zone. ic, infected cell; dic, degrading infected cell; uic, uninfected cell; n, nucleus. A differential interference contrast microscopy image merged with laser scanning confocal microscopy image in red channel **(A, D, G, J).**  Merged images of laser scanning confocal microscopy in green and red channels (**B, E, H, K**). Heat map provides color code of fluorescence signal intensities **(C, F, I, L)**. Visualization of GA by the Alexa Fluor 488 conjugated secondary antibody (green), nuclei and bacteria stained with propidium iodide (red). Scale bar (**A-F**) = 100 µm, (**G-L**) = 10 µm.

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**Supplementary Figure 6.** Immunolocalization of gibberellin (GA3) in cells in central part of nodules of pea mutants (SGEFix−-1 (*sym40*) **(A–C)**, SGEFix−-2 (*sym33*) **(D–F)**, SGEFix−-3 (*sym26*) **(G–I)** and SGEFix−-7 (*sym27*) **(J–L)**) at 4 weeks after inoculation. dic, degrading infected cell; uic, uninfected cell; n, nucleus. Arrow indicates infection thread, arrowhead indicates infection droplet. A differential interference contrast microscopy image merged with laser scanning confocal microscopy image in red channel **(A, D, G, J).**  Merged images of laser scanning confocal microscopy in green and red channels (**B, E, H, K**). Heat map provides color code of fluorescence signal intensities **(C, F, I, L)**. Visualization of GA by the Alexa Fluor 488 conjugated secondary antibody (green), nuclei and bacteria stained with propidium iodide (red). Scale bar = 10 µm.