

# Shinobu Satoh

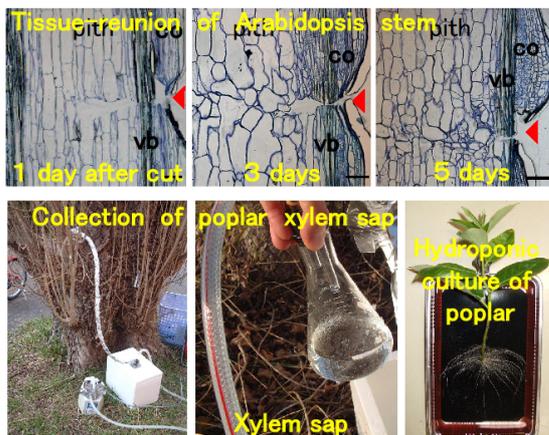
## Plant Physiology

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<http://www.biol.tsukuba.ac.jp/~plphys/shinobuhomepage/SSindex.html>

My research focusses on two main topics. 1) Tissue reunion process of injured stem is involved in graft-union of crop plants and the regulation of cell division of cortex and pith is controlled by fine mechanisms. Involvement of hormone signaling, transcription factors and cell wall components in the tissue-reunion process is studied with *Arabidopsis* cut flowering stem. 2) Xylem sap is the fluid flowing in xylem vessels which contains various organic substances including hormones, proteins and sugars as well as metal ions. The production and absorption of those substances are controlled by the seasonally changing environments. Hormonal regulation and the functions of xylem sap components and root-expressed genes are studied in poplar and *Arabidopsis*.



Upper panels show the sections of *Arabidopsis* stem 1 - 5 days after cutting (red arrow). Division and elongation of pith cells occur 3 days and the reunion completes 7 days after cutting.

Lower panels show the collection of xylem sap from a cut branch of poplar with pump and the hydroponic culture of poplar shoot cutting with vigorous growth of roots.

## Publications

1. Asahina, M., Azuma, K., Pitaksaringkarn, W., Yamazaki, T., Mitsuda, N., Ohme-Takagi, M., Yamaguchi, S., Kamiya, Y., Okada, K., Nishimura, T., Koshiha, T., Yokota, T., Kamada, H., and Satoh, S. (2011). Spatially selective hormonal control of RAP2.6L and ANAC071 transcription factors involved in tissue reunion in *Arabidopsis*. *Proc. Natl. Acad. Sci. USA* 108, 16128-16132.
2. Furukawa, J., Abe, Y., Mizuno, H., Matsuki, K., Sagawa, K., Kojima, M., Sakakibara, H., Iwai, H., and Satoh, S. (2011). Seasonal fluctuation of organic and inorganic components in xylem sap of *Populus nigra*. *Plant Root* 5, 56-62.
3. Furukawa, J., Abe, Y., Mizuno, H., Matsuki, K., Sagawa, K., Mori, H., Iwai, H., and Satoh, S. (2011). Abscisic acid-inducible 25 kDa xylem sap protein abundant in winter poplar. *Plant Root* 5, 63-68.
4. Kuroha, T., Okuda, A., Arai, M., Komatsu, Y., Sato, S., Kato, T., Tabata, S., and Satoh, S. (2009). Identification of *Arabidopsis* subtilisin-like serine protease specifically expressed in root stele by gene trapping. *Physiologia Plantarum* 137, 281-288.