

Table 1 Suppl. Mutants of *Arabidopsis thaliana* used to study the roles of gasotransmitters in guard cells during events leading to stomatal closure (ABA - abscisic acid; MeJA - methyl jasmonate; NO - nitric oxide; PA phosphatidic acid; PYL - pyrabactin resistance-like; PYR - pyrabactin resistance).

Mutant	Deficiency	Observation	Reference
<i>rbohD</i> and <i>rbohF</i>	NADPH oxidase (RBOH)	RBOHD and RBOHF are involved in the H <sub>2</sub> S mediated stomatal closure	Scuffi <i>et al.</i> 2018
<i>nia1nia2</i>	nitrate reductase (NIA)	reduced NO synthesis and ABA insensitivity	Chen <i>et al.</i> 2016
<i>Atalmt12</i>	loss of aluminum-activated malate transporter (ALMT), a sulfate-channel	insensitive toward sulfate and ABA-induced stomatal closure	Malcheska <i>et al.</i> 2017
<i>Atmrp4/5</i>	multidrug resistant protein (MRP), an ATP-binding cassette transporters	stimulation by H <sub>2</sub> S of outward K <sup>+</sup> currents diminished	Wang <i>et al.</i> 2015
<i>GORK</i> -null mutant	guard cell outward-rectifying K <sup>+</sup> ( <i>GORK</i> ) channel	stomatal closure induced by ABA, NO or H <sub>2</sub> O <sub>2</sub> was partially suppressed	Xie <i>et al.</i> 2014
<i>rcn1</i>	root curling in n-naphthylphthalamic acid (RCN), a protein phosphatase 2A	NO production by MeJA and ABA was impaired	Saito <i>et al.</i> 2009
<i>Atd-cdes</i>	L-/D-cysteine desulfhydrase (L/D-CDES) enzyme	No effect of ethephon on stomatal closure	Liu <i>et al.</i> 2011
<i>Atl-cdes</i>	clade-A protein phosphatase 2C ( <i>ABI</i> ) mutant	absence of stomatal closure by H <sub>2</sub> S	Scuffi <i>et al.</i> 2014
<i>pyr1/pyl1/pyl2/pyl4</i>	quadruple ABA receptors	inability of to induce ROS or NO production	Yin <i>et al.</i> 2013
<i>Snrk2e</i>	SnRK2 kinase (SNRK)	ABA-induced stomatal closure was abolished	Yin <i>et al.</i> 2013
<i>pldα1 pldδ</i>	phospholipase Dα, Phospholipase Dδ	NaHS treatment did not increase PA levels and subsequently ROS	Uraji <i>et al.</i> 2012
<i>Atmos1</i>	nitric oxide synthase (NOS)-like enzyme	impaired NO production and ABA-induced stomatal closure	Guo <i>et al.</i> 2003
<i>hyl</i>	heme oxygenase (HO)-1	reduced content of ROS and NO in plants	Xie <i>et al.</i> 2016

Table 2 Suppl. Examples of post-translational modifications promoted by the gasotransmitters or related molecules observed in *Arabidopsis thaliana* guard cells. These modifications result in either up- or down-regulation of target proteins (cGMP - cyclic guanosine monophosphate; Flg22 - flagellin22; GSNO - S-nitrosoglutathione).

Process	Trigger	Gasotransmitter involved	Example of protein target	Reference
S-nitrosation / S-nitrosylation including Cys-nitration	GSNO	NO	nitrate reductase	Fancy <i>et al.</i> 2017
S-sulfhydration / persulfidation	Flg22	NO	several proteins of guard cell	Lawrence <i>et al.</i> 2020
Glutathionylation	Hydrogen sulfide	H <sub>2</sub> S	biotin	Gotor <i>et al.</i> 2019
Tyrosine nitration	NO	NO	dehydroascorbate reductase	Sami <i>et al.</i> 2018
S-guanylation	NO	NO	peroxisomal NADH-dependent hydroxypyruvate reductase	Ruiz-May <i>et al.</i> 2019
	8-nitro-cGMP	NO and H <sub>2</sub> S	cGMP - dependent protein kinases	Honda <i>et al.</i> 2015