

## $\gamma$ -Aminobutyrate (GABA) Regulated Defense Tolerance: Mechanisms and Opportunities

Barry J. Shelp<sup>a</sup>, Morteza Soleimani Aghdam<sup>b</sup>, Edward J. Flaherty<sup>a</sup>

<sup>a</sup> Department of Plant Agriculture, University of Guelph, Guelph, ON N1G 2W1, Canada

<sup>b</sup> Department of Horticultural Science, Imam Khomeini International University, Qazvin, 34148-96818, Iran.

**Supplementary Table S1. Important *Arabidopsis thaliana* genes associated with GABA metabolism and signaling.**

Gene name	Common gene name	Gene I.D.
<i>ALDH10A8 (AMADH2)</i>	Aminoaldehyde dehydrogenase/4-aminobutanal dehydrogenase	At1g74920
<i>ALDH10A9 (AMADH1)</i>	Aminoaldehyde dehydrogenase/4-aminobutanal dehydrogenase	At3g48170
<i>ALMT1</i>	Aluminum-activated malate transporter	At1G08430
<i>ALMT4</i>	Aluminum-activated malate transporter	At1g25480
<i>ALMT6</i>	Aluminum-activated malate transporter	At2G17470
<i>ALMT9</i>	Aluminum-activated malate transporter	At3G18440
<i>ALMT12</i>	Aluminum-activated malate transporter	At4g17970
<i>CAT9</i>	Cationic amino acid transporter	At1g05940
<i>CuAO<math>\alpha</math>1</i>	Copper amine oxidase	At1g31670
<i>CuAO<math>\alpha</math>3</i>	Copper amine oxidase	At1g31710
<i>CuAO<math>\delta</math></i>	Copper amine oxidase	At4g12290
<i>CuAO<math>\zeta</math></i> (previously <i>CuAO3</i> or <i>CuAO1</i> )	Copper amine oxidase	At2g42490
<i>CuAO<math>\alpha</math>3</i> (previously <i>CuAO2</i> )	Copper amine oxidase	At1g31710
<i>DIT1</i>	Dicarboxylate transporter	At5g12860
<i>DIT2.1</i>	Dicarboxylate transporter	At5g64290
<i>DIT2.2</i> ,	Dicarboxylate transporter	At5g64280
<i>DTC</i>	Dicarboxylate-tricarboxylate transporter	At5G19760
<i>GABA-TOG</i>	2-Oxoglutarate-dependent GABA transaminase	uncertain
<i>GABA-TP</i> ,	Pyruvate-dependent GABA transaminase	At3g22200
<i>GABP/BAT1</i> ,	GABA permease	At2g01170
<i>GAD1</i>	Glutamate decarboxylase	At5g17330
<i>GAD2</i>	Glutamate decarboxylase	At1g65960
<i>GAD4</i>	Glutamate decarboxylase	At2g02010
<i>GAT1</i>	GABA transporter	At1g15040

<i>GLYR1/SSR1</i>	Glyoxylate/succinic semialdehyde reductase	At3g25530
<i>GLYR2/SSR2</i>	Glyoxylate/succinic semialdehyde reductase	At1g17650
<i>GORK</i>	Guard cell outward rectifying channel	At5g37600
<i>OMT</i> (mitochondrial)	2-oxoglutarate/malate transporter	uncertain
<i>PAO2,</i>	Polyamine oxidase	At2g43020
<i>PAO3</i>	Polyamine oxidase	At3g59050
<i>PAO4</i>	Polyamine oxidase	At1g65840
<i>PROT1</i>	Proline transporter	At2g39890
<i>PROT2</i>	Proline transporter	At3g55740
<i>PROT3</i>	Proline transporter	At2g36590
<i>SSADH (ALDH5F1)</i>	Succinic semialdehyde dehydrogenase	At1g79440
<i>UCP1</i>	Uncoupling protein	At3g5411
<i>UCP2</i>	Uncoupling protein	At5g58970