

Table S1. Protoplast transformation media, buffers, and solutions modified from (Guillemette et al. (2011).

Media Name	Components	Notes
Flask A	0.50 g Yeast extract 0.50 g Skim milk powder* 25mL Milli-Q (MQ) water	Autoclaved liquid cycle 20 min at 121°C
Flask B	172.50 g Sucrose 250 mL MQ water	Autoclaved liquid cycle 20 min at 121°C
Flask C	8.0g Granulated agar 225 mL MQ water	Autoclaved liquid cycle 20 min at 121°C
1% Water Agar	5.0 g Granulated agar 500 mL MQ water	Autoclaved liquid cycle 20 min at 121°C
Protoplasting Buffer	83 g MgSO ₄ ·H ₂ O 500 mL MQ water	pH adjusted to 5.6 Autoclaved liquid cycle 20 min at 121°C
40% (w/v) PEG-Calcium Transformation Solution	12 g PEG 3000 6.0 mL MQ water 7.5 mL 0.8M Mannitol (final 0.2M) 6.0 mL 0.5M CaCl ₂ (final 0.1M)	0.22 µM bottle filtered
W5 Solution	0.093 g KCl (final 5mM) 4.6 g CaCl ₂ ·2H ₂ O (final 125mM) 2.25 g NaCl (final 154mM) 7.8 g Glucose (final 177mM) 250 mL MQ water	0.22 µM bottle filtered
Protoplast Solution	10 mL Protoplasting buffer 200 mg Lysing enzyme (Sigma-Aldrich, St. Louis, MO, USA) 200 mg Yatalase (Takara Bio USA, Inc., San Jose, CA, USA)	0.45µM bottle filtered

* skim milk power used in place of casein