

# Supporting Information

## Optimization of a benzothiazole indolene scaffold targeting bacterial cell wall assembly

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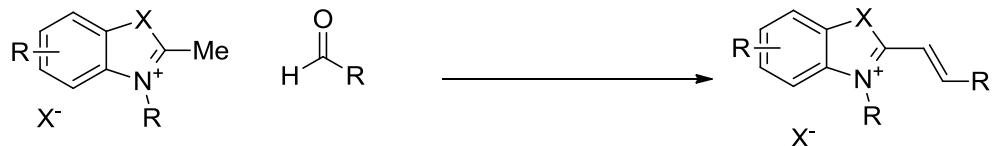
**Methods and compound characterizations.....Pages 1-13**

### *General Chemistry*

Unless otherwise stated, all reaction were performed under an inert atmosphere ( $N_2$ ). Reagents and solvents were ACS grade, and purchased from Sigma–Aldrich, Alfa Aesar, Oakwood and TCI America. Anhydrous solvents were used as provided from Sigma–Aldrich. Reactions were monitored by thin-layer chromatography (TLC), visualizing with a UV lamp and/or  $KMnO_4$  stain. Flash column chromatography was performed with silica gel 60 Å (70–230 mesh, Merck).  $^1H$  and  $^{13}C$  NMR spectra were recorded on a Varian INOVA 400 MHz NMR spectrometer at 25 C. Chemical shifts are reported in parts per million (ppm). Data for  $^1H$  NMR are reported thus: chemical shift ( $\delta$  ppm) (multiplicity, integration, coupling constant (Hz), assignment), where multiplicities are: s = singlet, d = doublet, t = triplet, m = multiplet. The residual solvent peak was used as an internal reference:  $CDCl_3$  ( $\delta_H$  7.26;  $\delta_C$  77.21) and  $d_6$ -DMSO ( $\delta_H$  2.50;  $\delta_C$  39.51). Mass spectra were obtained on an Electrospray TOF (ESI-TOF) mass spectrometer (Thermo Scientific LXQ). All final molecules were deemed to be >90% pure by reverse-phase HPLC using a Thermo Scientific Accela analytical/preparative HPLC fitted with a C18 reverse-phase column (Phenomenex, Kinetex : 2.6 um, 2.1 mm × 100 mm) according to the following conditions with solvents (A)  $H_2O$  with 0.1% Formic

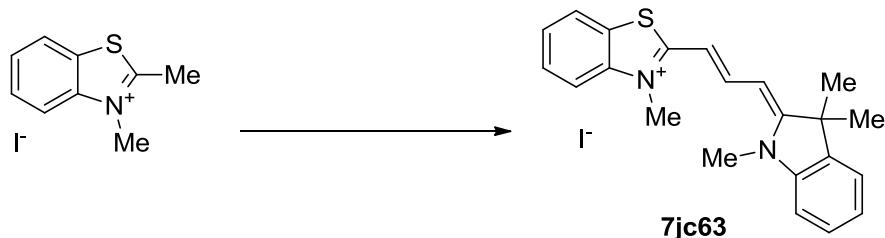
acid, (B) CH<sub>3</sub>CN with 0.1% Formic acid at 0.5 ml min<sup>-1</sup>: a gradient of 10% B maintained for 4 min, increased to 95% B over 10 min, then maintained at 95% B for 3 min. HPLC data are presented as retention time (*t*<sub>R</sub> (min)), purity (%).

*General procedure 1 for the condensation reaction with aldehydes*



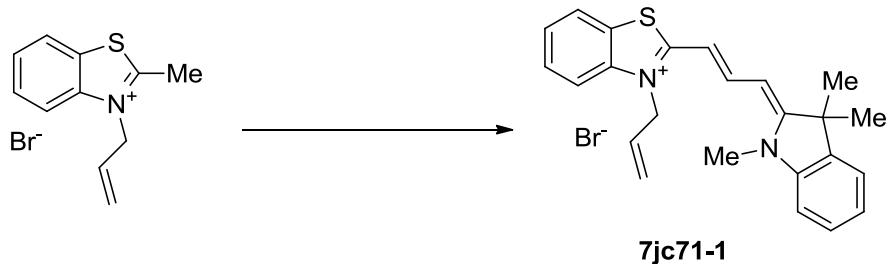
Heterocyclic salt (0.28 mmol) and aldehyde (0.34 mmol) in MeOH or Ac<sub>2</sub>O (8 mL) was heated to reflux for 4 h. The reaction was cooled, reduced in vacuo, poured into EtOAc and allowed to stand for 1 h. The solid was filtered and washed with excess EtOAc to give the title compounds as the halide salt.

3-methyl-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-iium iodide salt **7jc63**



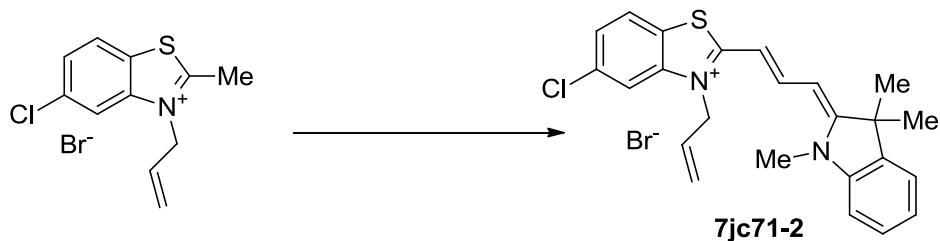
Using General Procedure 1 gave purple solid. δ<sub>H</sub>(DMSO-*d*<sub>6</sub>, 400 MHz) 8.14-7.95 (m, 2 H, Ar, H-vinyl), 7.88 (d, 1 H, J = 7.6, Ar), 7.66 (t, 1 H, J = 8.0, Ar), 7.60 (d, 1 H, J = 7.2, Ar), 7.52 (t, 1 H, J = 8.0, Ar), 7.41-7.33 (m, 2 H, Ar), 7.23 (t, 1 H, J = 8.0, Ar), 6.80 (d, 1 H, J = 13.2, H-vinyl), 6.26 (d, 1 H, J = 13.2, H-vinyl), 3.95 (s, 3 H, Me), 3.56 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M-I]<sup>+</sup> requires: 347.5, found: 347.2 (100%); *t*<sub>R</sub> = 7.69 (93.4%).

3-allyl-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-iium bromide salt **7jc71-1**



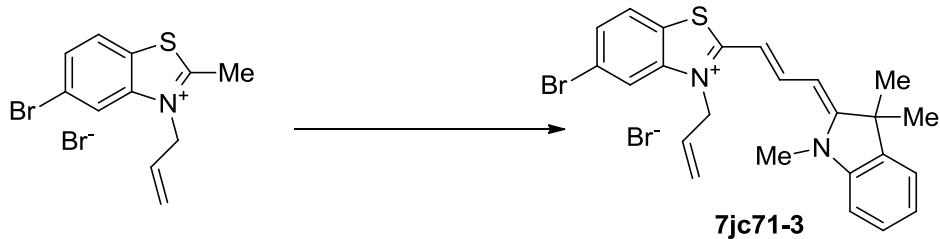
Using General Procedure 1 gave purple solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.15-8.00 (m, 2 H, Ar, H-vinyl), 7.83 (d, 1 H, *J* = 8.8, Ar), 7.69-7.59 (m, 2 H, Ar), 7.49 (t, 1 H, *J* = 8.8, Ar), 7.45-7.35 (m, 2 H, Ar), 7.24 (t, 1 H, *J* = 8.8, Ar), 6.74 (d, 1 H, *J* = 13.2, H-vinyl), 6.29 (d, 1 H, *J* = 13.2, H-vinyl), 6.07-5.99 (m, 1 H, H-vinyl), 5.35-5.10 (m, 4 H, CH<sub>2</sub>, Ar, 2 x H-vinyl), 3.57 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M-Br]<sup>+</sup> requires: 373.5, found: 373.2 (100%); *t*<sub>R</sub> = 8.31 (99.3%).

3-allyl-5-chloro-2-((1*E*,3*Z*)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-i um bromide salt **7jc71-2**



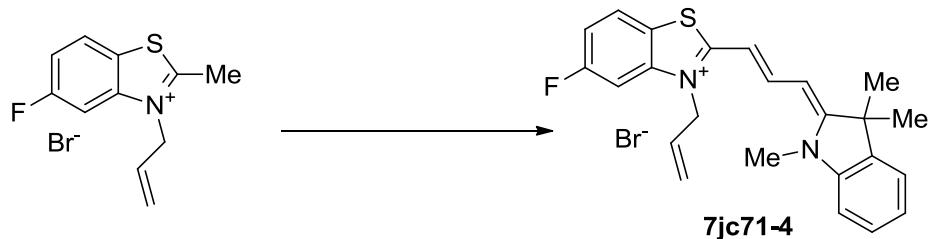
Using General Procedure 1 gave purple solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.12-7.95 (m, 3 H, Ar, H-vinyl), 7.63 (d, 1 H, *J* = 8.0, Ar), 7.55 (d, 1 H, *J* = 8.0, Ar), 7.45-7.20 (m, 3 H, Ar,), 6.69 (d, 1 H, *J* = 13.2, H-vinyl), 6.34 (d, 1 H, *J* = 13.2, H-vinyl), 6.05-5.94 (m, 1 H, H-vinyl), 5.35-5.05 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.61 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M-Br]<sup>+</sup> requires: 407.9, found: 407.2 (100%); *t*<sub>R</sub> = 8.71 (99.9%).

3-allyl-5-bromo-2-((1*E*,3*Z*)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-i um bromide salt **7jc71-3**



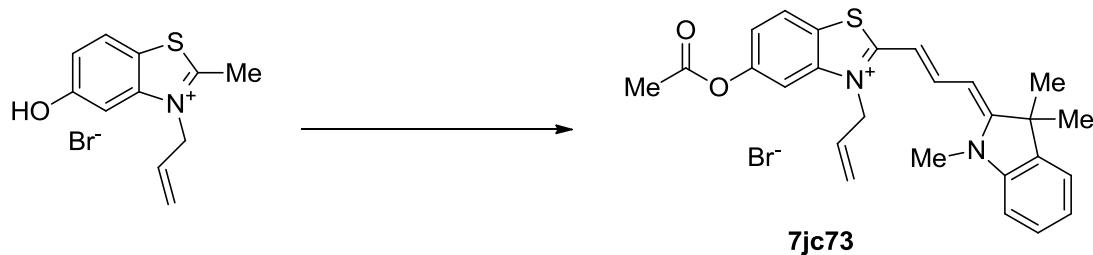
Using General Procedure 1 gave purple solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.13-7.98 (m, 3 H, Ar, H-vinyl), 7.71-7.20 (m, 5 H, Ar), 6.69 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.34 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.06-5.94 (m, 1 H, H-vinyl), 5.35-5.05 (m, 4 H,  $\text{CH}_2$ , 2 x H-vinyl), 3.61 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS:  $m/z$  [M- Br<sup>-</sup>]<sup>+</sup> requires: 451.4, found: 451.2 (100%);  $t_{\text{R}} = 8.85$  (99.9%).

3-allyl-5-fluoro-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-i um bromide salt **7jc71-4**



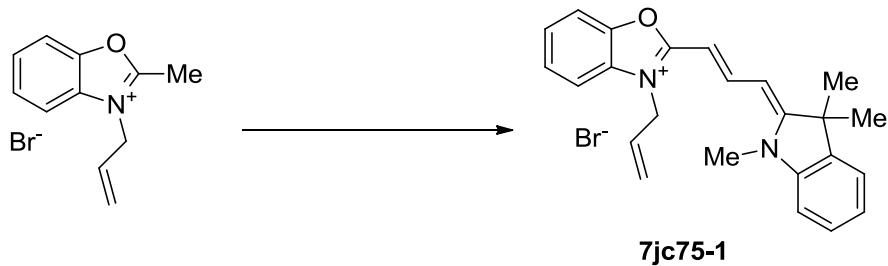
Using General Procedure 1 gave brown solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.15-7.98 (m, 3 H, Ar, H-vinyl), 7.84 (d, 1 H,  $J = 10.0$ , Ar), 7.62 (d, 1 H,  $J = 6.8$ , Ar), 7.46-7.21 (m, 4 H, Ar), 6.69 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.32 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.06-5.95 (m, 1 H, H-vinyl), 5.36-5.02 (m, 4 H,  $\text{CH}_2$ , 2 x H-vinyl), 3.60 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS:  $m/z$  [M- Br<sup>-</sup>]<sup>+</sup> requires: 391.5, found: 391.3 (100%);  $t_{\text{R}} = 8.34$  (99.9%).

5-acetoxy-3-allyl-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-i um bromide salt **7jc73**



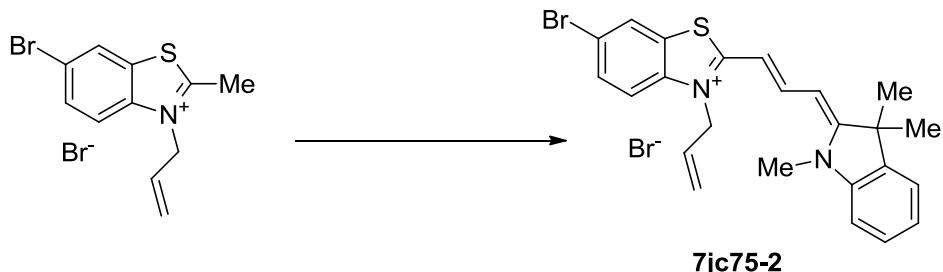
Using General Procedure 1 gave black solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.15-7.99 (m, 2 H, Ar, H-vinyl), 7.01 (s, 1 H, Ar), 7.62 (d, 1 H,  $J = 7.6$ , Ar), 7.48-7.21 (m, 4 H, Ar), 6.70 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.32 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.06-5.95 (m, 1 H, H-vinyl), 5.36-5.00 (m, 4 H,  $\text{CH}_2$ , 2 x H-vinyl), 3.59 (s, 3 H, Me), 2.34 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS:  $m/z$  [M- Br<sup>-</sup>]<sup>+</sup> requires: 431.6, found: 431.2 (100%);  $t_{\text{R}} = 8.24$  (94.5%).

3-allyl-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]oxazol-3-iun bromide salt **7jc75-1**



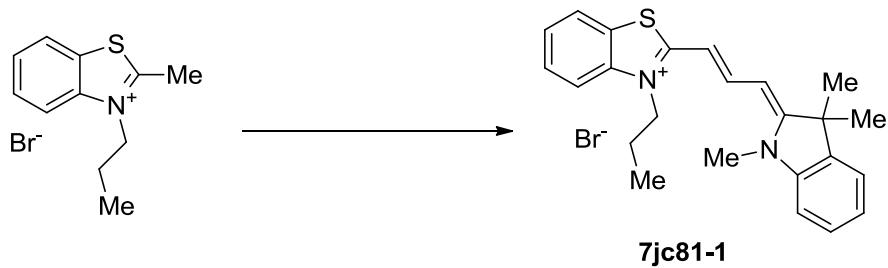
Using General Procedure 1 gave green solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.35 (t, 1 H, J = 13.6, H-vinyl), 7.90 (d, 1 H, J = 7.6, Ar), 7.74 (d, 1 H, J = 7.6, Ar), 7.65-7.33 (m, 5 H, Ar), 7.23 (t, 1 H, J = 7.6, Ar), 6.33 (d, 1 H, J = 13.2, H-vinyl), 6.22 (d, 1 H, J = 13.2, H-vinyl), 6.10-5.97 (m, 1 H, H-vinyl), 5.45-4.95 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.57 (s, 3 H, Me), 1.67 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 357.5, found: 357.3 (100%); *t*<sub>R</sub> = 8.08 (94.9%).

3-allyl-6-bromo-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-iun bromide salt **7jc75-2**



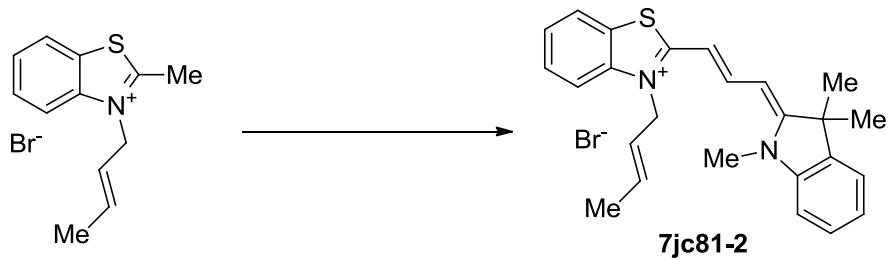
Using General Procedure 1 gave green solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.34 (s, 1 H, Ar), 8.03 (t, 1 H, J = 13.2, H-vinyl), 7.82-7.70 (m, 2 H, Ar), 7.62 (d, 1 H, J = 7.6, Ar), 7.49-7.22 (m, 3 H, Ar), 6.69 (d, 1 H, J = 13.2, H-vinyl), 6.33 (d, 1 H, J = 13.2, H-vinyl), 6.07-5.94 (m, 1 H, H-vinyl), 5.36-5.02 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.60 (s, 3 H, Me), 1.67 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 451.4, found: 451.1 (100%); *t*<sub>R</sub> = 8.90 (99.9%).

3-propyl-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc81-1**



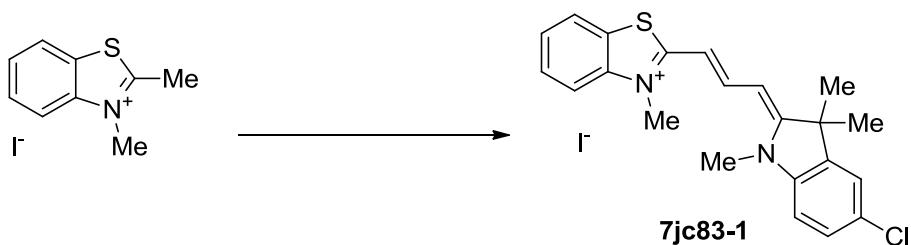
Using General Procedure 1 gave green solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.13-7.99 (m, 2 H, Ar, H-vinyl), 7.94 (d, 1 H,  $J = 8.4$ , Ar), 7.65 (t, 1 H,  $J = 7.6$ , Ar), 7.60 (d, 1 H,  $J = 8.0$ , Ar), 7.52 (t, 1 H,  $J = 7.6$ , Ar), 7.46-7.34 (m, 2 H, Ar), 7.23 (t, 1 H,  $J = 7.6$ , Ar), 6.85 (d, 1 H,  $J = 13.6$ , H-vinyl), 6.30 (d, 1 H,  $J = 13.6$ , H-vinyl), 4.43 (t, 2 H,  $J = 7.6$ ,  $\text{CH}_2$ ), 3.57 (s, 3 H, Me), 1.83 (q, 2 H,  $J = 7.6$ ,  $\text{CH}_2$ ), 1.66 (s, 6 H, 2 x Me), 1.02 (t, 1 H,  $J = 7.6$ ,  $\text{CH}_3$ ); LRMS:  $m/z$  [M– Br<sup>-</sup>]<sup>+</sup> requires: 375.5, found: 375.2 (100%);  $t_{\text{R}} = 8.65$  (99.9%).

3-((E)-but-2-en-1-yl)-2-((1E,3Z)-3-(1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc81-2**



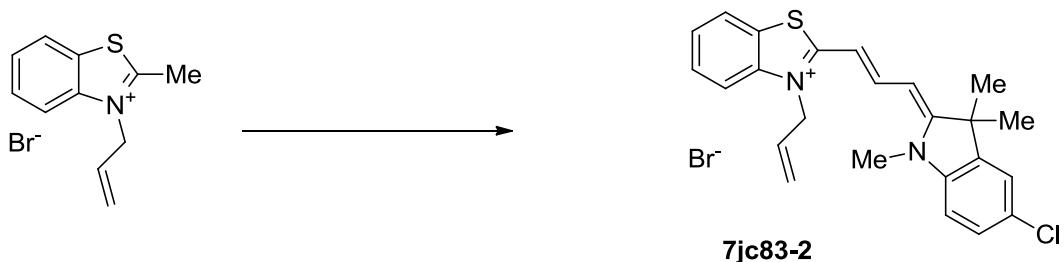
Using General Procedure 1 gave green solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.12-7.99 (m, 2 H, Ar, H-vinyl), 7.86 (d, 1 H,  $J = 8.0$ , Ar), 7.69-7.35 (m, 5 H, Ar), 7.24 (t, 1 H,  $J = 6.8$ , Ar), 6.80 (d, 1 H,  $J = 13.2$ , H-vinyl), 6.31 (d, 1 H,  $J = 13.2$ , H-vinyl), 5.90-5.80 (m, 1 H, H-vinyl), 5.71-5.60 (m, 1 H, H-vinyl), 5.06 (s, 2 H,  $\text{CH}_2$ ), 3.58 (s, 3 H, Me), 1.71-1.63 (m, 9 H, 3 x Me); LRMS:  $m/z$  [M– Br<sup>-</sup>]<sup>+</sup> requires: 387.6, found: 387.1 (100%);  $t_{\text{R}} = 8.81$  (96.8%).

2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)-3-methylbenzo[d]thiazol-3-ium iodide salt **7jc83-1**



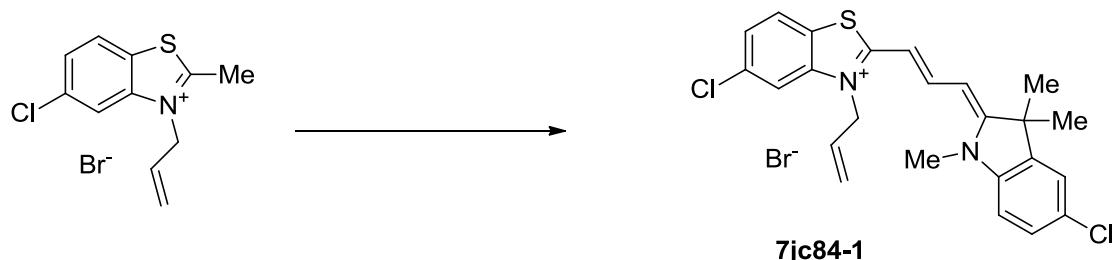
Using General Procedure 1 gave brown solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.12 (d, 1 H, J = 7.6, Ar), 8.03 (t, 1 H, J = 13.2, H-vinyl), 7.92 (d, 1 H, J = 8.0, Ar), 7.75 (s, 1 H, Ar), 7.69 (t, 1 H, J = 8.0, Ar), 7.55 (t, 1 H, J = 8.0, Ar), 7.48-7.32 (m, 2 H, Ar), 6.84 (d, 1 H, J = 13.2, H-vinyl), 6.21 (d, 1 H, J = 13.2, H-vinyl), 3.97 (s, 3 H, Me), 3.40 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M-I]<sup>+</sup> requires: 381.9, found: 381.3 (100%); *t*<sub>R</sub> = 8.31 (99.2%).

3-allyl-2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc83-2**



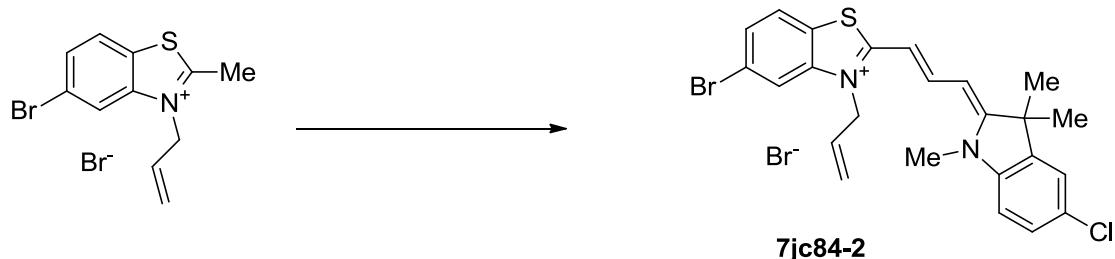
Using General Procedure 1 gave purple solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.18-7.99 (m, 2 H, Ar, H-vinyl), 7.86 (d, 1 H, J = 8.0, Ar), 7.77 (s, 1 H, Ar), 7.65 (t, 1 H, J = 8.8, Ar), 7.54 (t, 1 H, J = 8.0, Ar), 7.50-7.34 (m, 2 H, Ar), 6.80 (d, 1 H, J = 13.2, H-vinyl), 6.24 (d, 1 H, J = 13.2, H-vinyl), 6.10-5.98 (m, 1 H, H-vinyl), 5.35-5.10 (m, 1 H, H-vinyl), 3.54 (s, 3 H, Me), 1.67 (s, 6 H, 2 x Me); LRMS: *m/z* [M- Br]<sup>+</sup> requires: 407.9, found: 407.2 (100%); *t*<sub>R</sub> = 8.81 (98.6%).

3-allyl-5-chloro-2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc84-1**



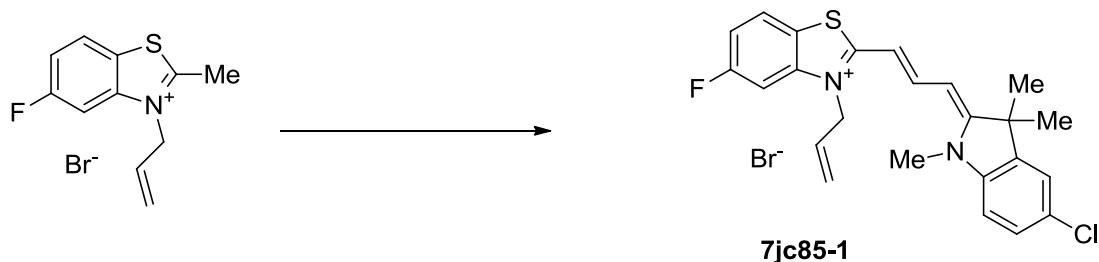
Using General Procedure 1 gave blue solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.15-7.98 (m, 3 H, Ar, H-vinyl), 7.79 (s, 1 H, Ar), 7.58 (d, 1 H, *J* = 8.4, Ar), 7.51-7.39 (m, 2 H, Ar), 6.73 (d, 1 H, *J* = 13.2, H-vinyl), 6.30 (d, 1 H, *J* = 13.2, H-vinyl), 6.08-5.95 (m, 1 H, H-vinyl), 5.34-5.09 (m, 1 H, H-vinyl), 3.57 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M- Br<sup>-</sup>]<sup>+</sup> requires: 441.2, found: 441.2 (100%); *t*<sub>R</sub> = 9.15 (99.9%).

3-allyl-5-bromo-2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc84-2**



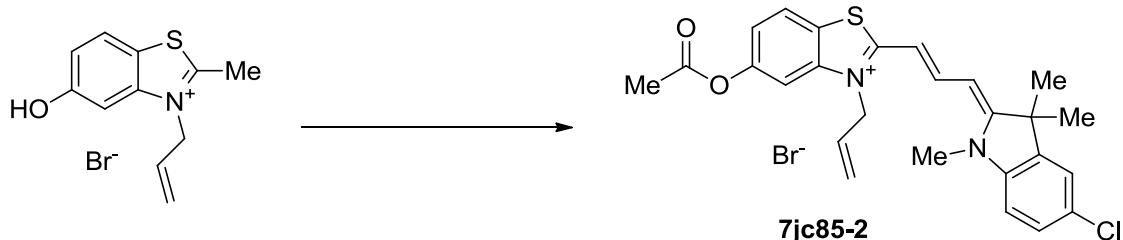
Using General Procedure 1 gave blue solid.  $\delta_H$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.13 (s, 1 H, Ar), 8.10-7.99 (m, 2 H, Ar, H-vinyl), 7.80 (s, 1 H, Ar), 7.69 (d, 1 H, *J* = 8.8, Ar), 7.52-7.39 (m, 2 H, Ar), 6.74 (d, 1 H, *J* = 13.2, H-vinyl), 6.30 (d, 1 H, *J* = 13.2, H-vinyl), 6.08-5.95 (m, 1 H, H-vinyl), 5.34-5.08 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.57 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M- Br<sup>-</sup>]<sup>+</sup> requires: 487.9, found: 487.1 (100%); *t*<sub>R</sub> = 9.28 (99.9%).

3-allyl-2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)-5-fluorobenzo[d]thiazol-3-ium bromide salt **7jc85-1**



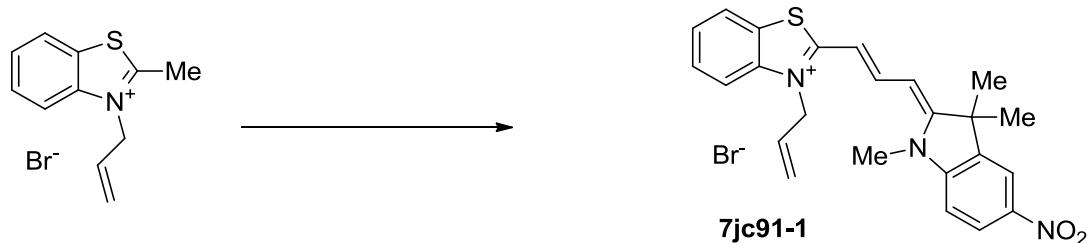
Using General Procedure 1 gave black solid.  $\delta_{\text{H}}$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.17-7.99 (m, 2 H, Ar, H-vinyl), 7.88 (d, 1 H, J = 7.6, Ar), 7.89 (s, 1 H, Ar), 7.52-7.38 (m, 3 H, Ar), 6.76 (d, 1 H, J = 13.6, H-vinyl), 6.30 (d, 1 H, J = 13.6, H-vinyl), 6.08-5.94 (m, 1 H, H-vinyl), 5.36-5.08 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.56 (s, 3 H, Me), 1.66 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 425.9, found: 425.1 (100%); *t*<sub>R</sub> = 8.81 (99.9%).

5-acetoxy-3-allyl-2-((1E,3Z)-3-(5-chloro-1,3,3-trimethylindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc85-2**



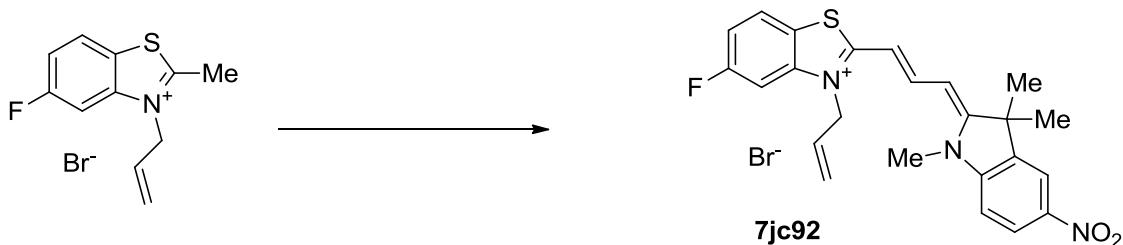
Using General Procedure 1 gave green solid. (DMSO-*d*<sub>6</sub>, 400 MHz) 8.12 (d, 1 H, J = 8.4, Ar), 8.04 (t, 1 H, J = 13.2, H-vinyl), 7.78 (s, 1 H, Ar), 7.40 (s, 1 H, Ar), 7.51-7.30 (m, 3 H, Ar), 6.76 (d, 1 H, J = 13.2, H-vinyl), 6.27 (d, 1 H, J = 13.2, H-vinyl), 6.07-5.95 (m, 1 H, H-vinyl), 5.35-5.05 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.55 (s, 3 H, Me), 2.34 (s, 3 H, Me), 1.67 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 465.0, found: 465.2 (100%); *t*<sub>R</sub> = 8.76 (96.3%).

3-allyl-2-((1E,3Z)-3-(1,3,3-trimethyl-5-nitroindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc91-1**



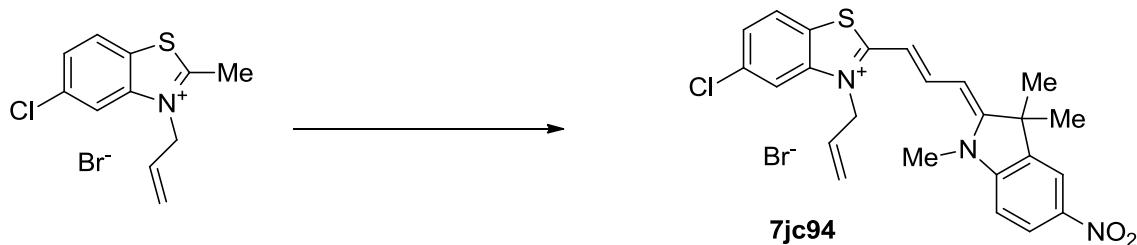
Using General Procedure 1 gave black solid.  $\delta_{\text{H}}$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.50 (s, 1 H, Ar), 8.31 (d, 1 H, J = 9.6, Ar), 8.22 (d, 1 H, J = 7.6, Ar), 8.11 (t, 1 H, J = 13.2, H-vinyl), 7.99 (d, 1 H, J = 7.6, Ar), 7.73 (t, 1 H, J = 8.0, Ar), 7.62 (t, 1 H, J = 8.0, Ar), 7.46 (d, 1 H, J = 8.8, Ar), 7.03 (d, 1 H, J = 13.2, H-vinyl), 6.32 (d, 1 H, J = 13.2, H-vinyl), 6.13-5.99 (m, 1 H, H-vinyl), 5.39-5.16 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.53 (s, 3 H, Me), 1.73 (s, 6 H, 2 x Me); LRMS: *m/z* [M– Br<sup>-</sup>]<sup>+</sup> requires: 418.5, found: 418.3 (100%); *t*<sub>R</sub> = 7.97 (97.9%).

3-allyl-5-fluoro-2-((1E,3Z)-3-(1,3,3-trimethyl-5-nitroindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc92**



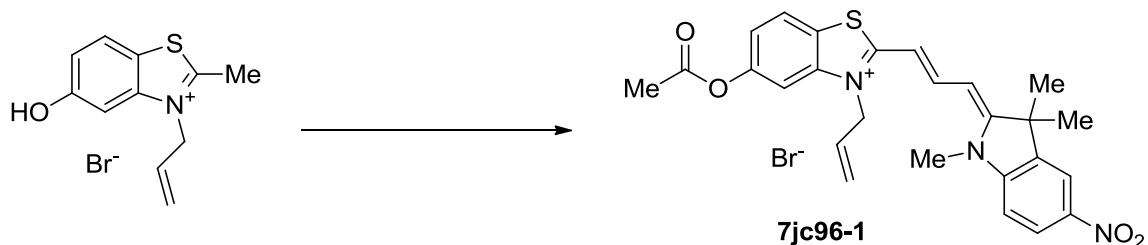
Using General Procedure 1 gave green solid.  $\delta_{\text{H}}$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.51 (s, 1 H, Ar), 8.38-8.19 (m, 2 H, Ar), 8.11 (t, 1 H, J = 13.2, H-vinyl), 8.02 (d, 1 H, J = 8.0, Ar), 7.58-7.44 (m, 2 H, Ar), 7.00 (d, 1 H, J = 13.2, H-vinyl), 6.34 (d, 1 H, J = 13.2, H-vinyl), 6.10-5.98 (m, 1 H, H-vinyl), 5.30-5.16 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.55 (s, 3 H, Me), 1.73 (s, 6 H, 2 x Me); LRMS: *m/z* [M– Br<sup>-</sup>]<sup>+</sup> requires: 436.5, found: 436.1 (100%); *t*<sub>R</sub> = 8.00 (99.9%).

3-allyl-5-chloro-2-((1E,3Z)-3-(1,3,3-trimethyl-5-nitroindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc94**



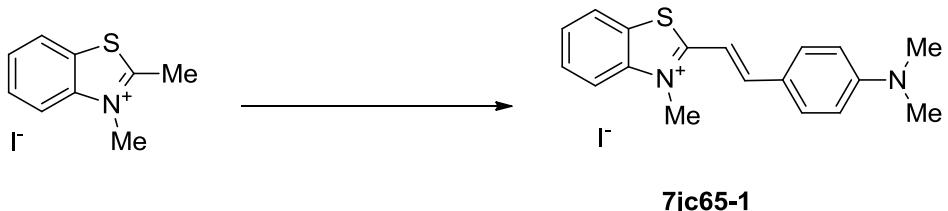
Using General Procedure 1 gave green solid.  $\delta_{\text{H}}$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.52 (s, 1 H, Ar), 8.38-8.05 (m, 4 H, Ar, H-vinyl), 7.67 (d, 1 H, *J* = 8.8, Ar), 7.50 (d, 1 H, *J* = 8.8, Ar), 6.97 (d, 1 H, *J* = 13.2, H-vinyl), 6.36 (d, 1 H, *J* = 13.2, H-vinyl), 6.10-5.95 (m, 1 H, H-vinyl), 5.30-5.16 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.56 (s, 3 H, Me), 1.73 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 452.9, found: 452.3 (100%); *t*<sub>R</sub> = 8.37 (99.9%).

5-acetoxy-3-allyl-2-((1E,3Z)-3-(1,3,3-trimethyl-5-nitroindolin-2-ylidene)prop-1-en-1-yl)benzo[d]thiazol-3-ium bromide salt **7jc96-1**



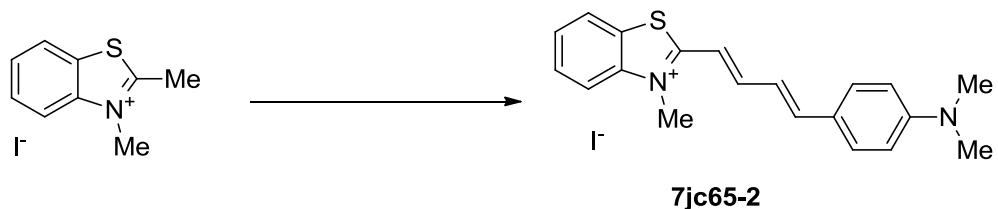
Using General Procedure 1 gave black solid.  $\delta_{\text{H}}$ (DMSO-*d*<sub>6</sub>, 400 MHz) 8.51 (s, 1 H, Ar), 8.33 (d, 1 H, *J* = 8.8, Ar), 8.22 (d, 1 H, *J* = 8.4, Ar), 8.11 (t, 1 H, *J* = 13.2, H-vinyl), 7.88 (s, 1 H, Ar), 7.47 (d, 1 H, *J* = 8.4, Ar), 7.43 (d, 1 H, *J* = 8.4, Ar), 7.00 (d, 1 H, *J* = 13.2, H-vinyl), 6.34 (d, 1 H, *J* = 13.2, H-vinyl), 6.10-5.95 (m, 1 H, H-vinyl), 5.28-5.13 (m, 4 H, CH<sub>2</sub>, 2 x H-vinyl), 3.54 (s, 3 H, Me), 2.35 (s, 3 H, Me), 1.73 (s, 6 H, 2 x Me); LRMS: *m/z* [M - Br<sup>-</sup>]<sup>+</sup> requires: 476.6, found: 476.3 (100%); *t*<sub>R</sub> = 7.98 (96.0%).

(E)-2-(4-(dimethylamino)styryl)-3-methylbenzo[d]thiazol-3-ium iodide salt **7jc65-1**



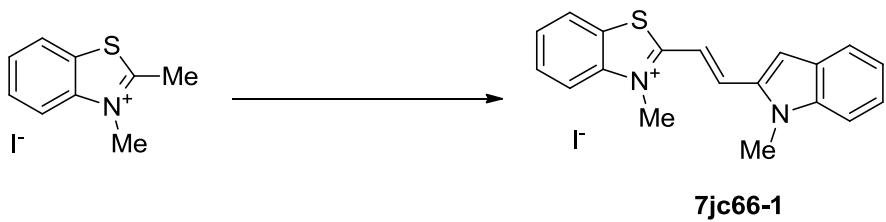
Using General Procedure 1 gave brown solid. δ<sub>H</sub>(DMSO-*d*<sub>6</sub>, 400 MHz) 8.31 (d, 1 H, J = 7.6, Ar), 8.16-8.04 (m, 2 H, Ar, H-vinyl), 7.92 (d, 2 H, J = 8.4, Ar), 7.80 (t, 1 H, J = 8.0, Ar), 7.73-7.60 (m, 2 H, Ar, H-vinyl), 6.86 (d, 2 H, J = 8.4, Ar), 4.23 (s, 3 H, Me), 3.12 (s, 6 H, 2 x Me); *t*<sub>R</sub> = 6.49 (90.0%).

2-((1E,3E)-4-(4-(dimethylamino)phenyl)buta-1,3-dien-1-yl)-3-methylbenzo[d]thiazol-3-ium iodide salt **7jc65-2**



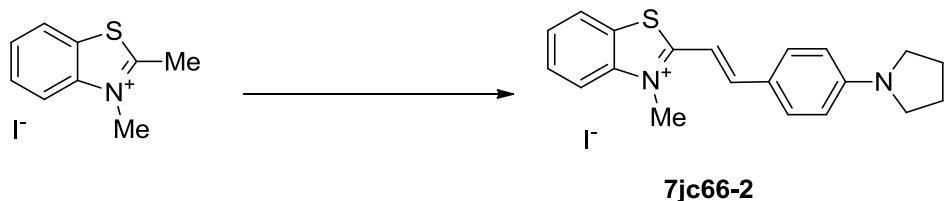
Using General Procedure 1 gave green solid. δ<sub>H</sub>(DMSO-*d*<sub>6</sub>, 400 MHz) 8.33 (d, 1 H, J = 8.0, Ar), 8.14 (d, 1 H, J = 8.0, Ar), 8.00 (t, 1 H, J = 14.8, H-vinyl), 7.81 (t, 1 H, J = 7.6, Ar), 7.12 (t, 1 H, J = 7.6, Ar), 7.55 (d, 2 H, J = 8.0, Ar), 7.46 (d, 1 H, J = 14.8, H-vinyl), 7.33 (d, 1 H, J = 14.8, H-vinyl), 7.20 (t, 1 H, J = 14.8, H-vinyl), 6.80 (d, 2 H, J = 8.0, Ar), 4.16 (s, 3 H, Me), 3.05 (s, 6 H, 2 x Me); LRMS: *m/z* [M-I]<sup>+</sup> requires: 321.9, found: 321.1 (100%); *t*<sub>R</sub> = 7.23 (89.3%).

(E)-3-methyl-2-(2-(1-methyl-1H-indol-2-yl)vinyl)benzo[d]thiazol-3-ium iodide salt **7jc66-1**



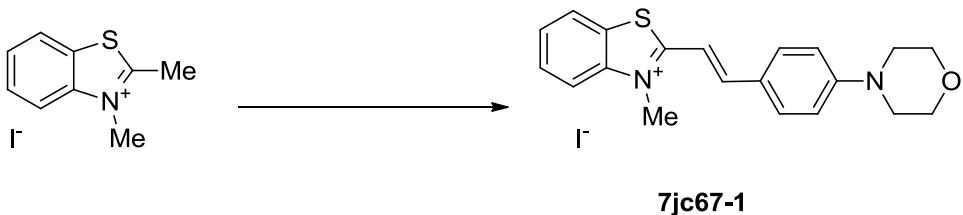
Using General Procedure 1 gave red solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.92 (s, 1 H, Ar), 8.50-8.25 (m, 5 H, Ar, H-vinyl), 7.98-7.75 (m, 3 H, Ar, H-vinyl), 7.55-7.48 m, 2 H, Ar), 4.39 (s, 3 H, Me), 2.79 (s, 3 H, Me);  $t_{\text{R}} = 6.23$  (58.2%).

(E)-3-methyl-2-(4-(pyrrolidin-1-yl)styryl)benzo[d]thiazol-3-ium iodide salt **7jc66-2**



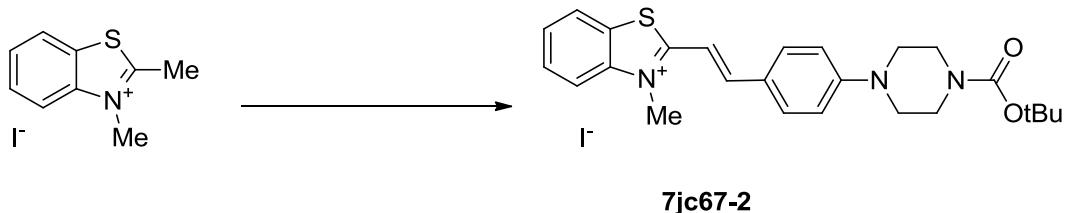
Using General Procedure 1 gave purple solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.29 (d, 1 H,  $J = 8.0$ , Ar), 8.12-8.02 (m, 2 H, Ar, H-vinyl), 7.92 (d, 2 H,  $J = 8.0$ , Ar), 7.79 (t, 1 H,  $J = 8.0$ , Ar), 7.68 (t, 1 H,  $J = 8.0$ , Ar), 7.60 (d, 1 H,  $J = 14.8$ , H-vinyl), 4.22 (s, 3 H, Me), 3.50-3.38 (m, 4 H, 2 x  $\text{CH}_2$ ), 2.08-1.95 (m, 4 H, 2 x  $\text{CH}_2$ ); LRMS:  $m/z$  [M- $\text{I}^-$ ]<sup>+</sup> requires: 321.8, found: 321.2 (100%);  $t_{\text{R}} = 7.46$  (98.3%).

(E)-3-methyl-2-(4-morpholinostyryl)benzo[d]thiazol-3-ium salt **7jc67-1**



Using General Procedure 1 gave red solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.35 (d, 1 H,  $J = 7.6$ , Ar), 8.19-8.06 (m, 2 H, Ar, H-vinyl), 7.96 (d, 2 H,  $J = 7.6$ , Ar), 7.86-7.50 (m, 3 H, Ar, H-vinyl), 7.10 (d, 2 H,  $J = 7.6$ , Ar), 4.28 (s, 3 H, Me), 3.80-3.72 (m, 4 H, 2 x  $\text{CH}_2$ ), 3.49-3.38 (m, 4 H, 2 x  $\text{CH}_2$ );  $t_{\text{R}} = 5.93$  (94.1%).

(E)-2-(4-(4-(tert-butoxycarbonyl)piperazin-1-yl)styryl)-3-methylbenzo[d]thiazol-3-ium iodide salt **7jc67-2**



Using General Procedure 1 gave red solid.  $\delta_{\text{H}}(\text{DMSO}-d_6, 400 \text{ MHz})$  8.35 (d, 1 H, J = 8.4, Ar), 8.18-8.06 (m, 2 H, Ar, H-vinyl), 7.95 (d, 2 H, J = 8.4, Ar), 7.86-7.69 (m, 3 H, Ar, H-vinyl), 7.08 (d, 2 H, J = 8.4, Ar), 4.27 (s, 3 H, Me), 3.55-3.41 (m, 8 H, 4 x CH<sub>2</sub>), 1.44 (s, 9 H, OtBu);  $t_{\text{R}}$  = 7.96 (96.4%).