Supplementary information for:

Gold-Catalysed Synthesis of Amino Acid-Derived 2,5-Disubstituted Oxazoles

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General Experimental

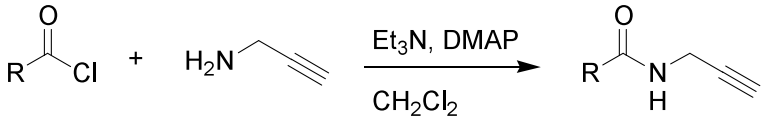
Unless otherwise stated, commercially available materials were used without further purification. All solvents were of HPLC or ACS grade. Solvents used for moisture-sensitive operations were dried over molecular sieves (4 Å, Aldrich). Pyridine was dried over solid KOH; anhydrous *N*,*N*-dimethylformamide and CH_3CN were purchased from commercial sources. Reactions were performed under an atmosphere of nitrogen with magnetic stirring unless noted otherwise. Flash chromatography was performed using *E. Merck* silica gel 60 (240–400 mesh). Thin layer chromatography (t.l.c.) was performed using pre-coated plates purchased from *E. Merck* (silica gel 60 PF254, 0.25 mm) and were visualized using a $KMnO_4$ or Ce (IV) stain. Declared yields are isolated yields, unless otherwise stated.

NMR spectra were recorded with an internal deuterium lock and referenced to the residual solvent peak[1] on the following instruments: 500 MHz: Varian Inova-500; 400 MHz: Varian Inova-400; 300 MHz Mercury-300 spectrometers. ^{1}H NMR data are presented as follows: chemical shift (in ppm), integration, multiplicity (s= singlet, d= doublet, t= triplet, q= quartet, m= multiplet, *br*= broad, *app*.= apparent), coupling constants (H / Hz) and interpretation. ^{1}H-^{1}H coupling constants were taken from the spectra.

[1] Gottlieb, H. E.; Kotlyar, V.; Nudelman, A. *J. Org. Chem.* **1997**, *62*, 7512.

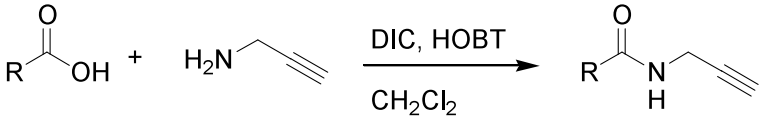
Infrared spectra were recorded on a *Perkin-ElmerI* 1000 series FTIR, with wavenumbers expressed in cm^{-1}, using samples prepared as thin films between NaCl plates. Electrospray ionization mass spectra (ESI-MS) were recorded on a Shimadzu 2010-LCMS.

General procedure A for preparation of propargylic amides 3 from acid chlorides[2]

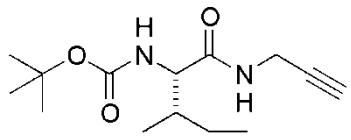


To a solution of propargyl amine (138 μL, 2 mmol), DMAP (4.8 mg, 40 μmol) and Et_3N (274 μL, 2 mmol) in CH_2Cl_2 (5 mL) at 0 °C was added acid chloride (2 mmol) in CH_2Cl_2 (1 mL). The reaction mixture was stirred at 0 °C for 30 min, then allowed to warm to RT for 3 h. The reaction was quenched by the addition of H_2O (5 mL). The layers were separated and the aqueous fraction was extracted with CH_2Cl_2 (3 x 5 mL). The combined organic fractions were washed with 10% (w/w) aqueous citric acid, dried ($MgSO_4$) and concentrated *in vacuo*. Further purification was usually deemed unnecessary.

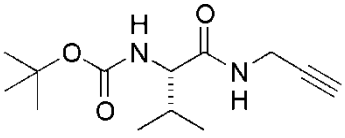
General procedure B for preparation of propargylic amides 3 from carboxylic acids



To a solution of carboxylic acid (2 mmol) and HOBT (310 mg, 2 mmol) in CH_2Cl_2 (20 mL) at 0 °C was added DIC (310 μL, 2 mmoL) *via* syringe.[3] The resulting solution was allowed to stir for 5 min. Propargyl amine (200 μL, 2.4 mmol) was added *via* syringe. The resulting light orange solution was then allowed to warm to RT and stirred for 16 h. The solution was concentrated *in vacuo*. The crude material was purified by flash chromatography.



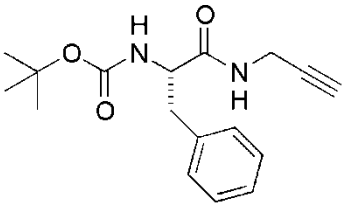
***tert*-Butyl (2*S*,3*S*)-3-methyl-1-oxo-1-(prop-2-ynylamino)pentan-2-ylcarbamate 3a:** Prepared using general procedure B, with 462 mg (2 mmol) carboxylic acid. Yield: 525 mg (98%). R_f 0.40 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.89 (d, J = 7.0 Hz, 3H), 0.92 (t, J = 7.0 Hz, 3H), 1.11 (m, 1H), 1.44 (s, 9H), 1.49 (m, 1H), 1.91 (m, 1H), 2.22 (t, J = 2.5 Hz, 1H), 3.92 (dd, J = 8.7, 6.5 Hz, 1H), 4.05 (m, 2H), 4.96 (m, 1H), 6.12 (m, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 11.4, 15.6, 25.0, 28.5, 29.1, 37.5, 59.2, 71.6. 79.6, 80.1, 156.1, 171.9; **IR** (thin film) ν_{max} (cm^{-1}) 3296, 3065, 2965, 2932, 2875, 1694, 1544, 1455, 1390, 1368, 1342, 1318, 1289, 1244, 1215, 1176, 1129, 1045, 1025, 908, 826, 764, 667; **ESI-MS** calcd. for $C_{14}H_{24}N_2O_3$ 291.2 $[M+Na]^+$, found 291.1.



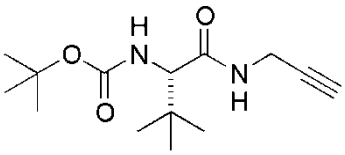
(*S*)-*tert*-Butyl 3-methyl-1-oxo-1-(prop-2-ynylamino)butan-2-ylcarbamate 3b: Prepared using general procedure B, with 434 mg (2 mmol) carboxylc acid. Yield: 485 mg (97%). R_f 0.40 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.91 (d, J = 7.0 Hz, 3H), 0.95 (d, J = 7.0 Hz, 3H), 1.44 (s, 9H), 2.16 (m, 1H), 2.22 (m, 1H), 3.89 (dd, J = 8.0, 7.0 Hz, 1H), 4.05 (m, 2H), 5.29 (m, 1H), 6.16 (m, 1H);

[2] Hashmi, A. S. K.; Weyrauch, J. P.; Frey, W.; Bats, J. W. *Org. Lett.* **2004**, *6*, 4391.
[3] In some instances DMF was required to aid solubility.

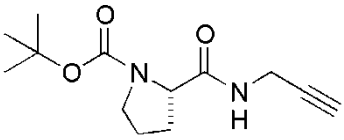
^{13}C NMR (125 MHz, $CDCl_3$) δ_C 18.4, 19.2, 28.4, 28.8, 28.9, 31.4, 59.8, 71.3, 79.8, 156.1, 172.1; **IR** (thin film) ν_{max} (cm^{-1}) 3305, 2967, 1657, 1526, 1391, 1366, 1297, 1247, 1170. ESI-**MS** calcd. for $C_{13}H_{22}N_2O_3$ $[M+Na]^+$ 277.2, found 277.1.



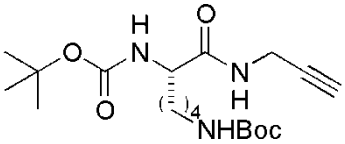
(*S*)-*tert*-Butyl 1-oxo-3-phenyl-1-(prop-2-ynylamino)propan-2-ylcarbamate 3c: Prepared using general procedure B, with 530 mg carboxylic acid. Yield: 574 mg (95%). R_f 0.38 30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 1.37 (s, 9H), 2.18 (s, 1H), 2.98 (m, 1H), 3.06 (m, 1H), 3.95 (s, 2H), 4.47 (m, 1H), 5.49 (d, J = 9.0 Hz, 1H), 7.04 (br s, 1H), 7.17-7.27 (m, 5H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 28.4, 29.0, 38.9, 55.6, 71.6, 79.4, 80.1, 126.8, 128.6, 129.5, 136.8, 155.7, 171.6; **IR** (thin film) ν_{max} (cm^{-1}) 3297, 3063, 3029, 2929, 1662, 1532, 1455, 1392, 1367, 1250, 1169, 1084, 1047, 1022, 856, 740, 699; ESI-**MS** calcd. for $C_{17}H_{22}N_2O_3$ 325.2 $[M+Na]^+$, found 325.1.



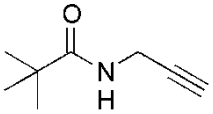
(*S*)-*tert*-Butyl 3,3-dimethyl-1-oxo-1-(prop-2-ynylamino)butan-2-ylcarbamate 3d: Prepared using general procedure B, with 461 mg carboxylic acid. Yield: 498 mg (93%). R_f 0.39 (30% EtOAc/hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.99 (s, 9H), 1.42 (s, 9H), 2.19 (t, J = 3.0 Hz, 1H), 3.86-3.95 (m, 2H), 4.08-4.14 (m, 1H), 5.28 (d, J = 10.0 Hz, 1H), 6.35 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 26.7, 28.6, 29.0, 34.9, 62.2, 71.7, 79.5, 80.0, 156.2, 171.0; **IR** (thin film) ν_{max} (cm^{-1}) 3311, 3073, 2970, 2874, 1660, 1513, 1392, 1368, 1340, 1248, 1172, 1076, 1008, 908, 859, 778, 734; **ESI-MS** calcd. for $C_{14}H_{24}N_2O_3$ $[M+Na]^+$ 291.2, found 291.1.



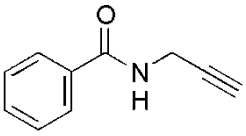
(*S*)-*tert*-Butyl 2-(prop-2-ynylcarbamoyl)pyrrolidine-1-carboxylate 3e: Prepared using general procedure B, with 431 mg carboxylic acid. Yield: 398 mg (79%). R_f 0.35 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$ at 60 ˚C) δ_H 1.41 (s, 9H), 1.86 (m, 2H), 2.19 (m, 2H), 3.28-3.41 (m, 2H), 3.98-4.22 (m, 3H), 6.38 (br s, 1H), 7.23 (br s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ˚C) δ_C 24.3, 28.5, 28.6, 29.2, 47.2, 60.6, 71.5, 79.8, 80.6, 155.3, 172.1; **IR** (thin film) ν_{max} (cm^{-1}) 3305, 3070, 2978, 2932, 2880, 2118, 1694, 1543, 1479, 1455, 1404, 1367, 1246, 1164, 1245, 1091, 1035, 1015, 976, 924, 885, 857, 774, 731; **ESI-MS** calcd. for $C_{13}H_{20}N_2O_3$ $[M+Na]^+$ 275.2, found 275.2.



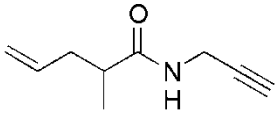
(*S*)-*tert*-Butyl 6-oxo-6-(prop-2-ynylamino)hexane-1,5-diyldicarbamate 3f: Prepared using general procedure B, with 1.055 g carboxylic acid (as its DCHA salt). Yield: 421 mg (55%). R_f 0.15 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.34-1.54 (m, 3H), 1.43 (s, 9H), 1.44 (s, 9H), 1.63 (m, 1H), 1.84 (m, 1H), 2.21 (t, J = 3.0 Hz, 1H), 3.10 (m, 2H), 3.95 (m, 1H), 4.03 (m, 3H), 4.58 (br s, 1H), 5.29 (br s, 1H), 6.43 (s br, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 8.9, 22.7, 28.5, 28.6, 29.7, 34.0, 40.3, 44.9, 49.1, 79.4, 126.1, 146.6, 155.5, 156.3, 165.6; **IR** (thin film) ν_{max} (cm^{-1}) 3312, 3061, 2978, 2933, 2868, 1694, 1520, 1456, 1392, 1367, 1250, 1170, 1045, 1021, 921, 866, 780, 735; **ESI-MS** calcd. for $C_{19}H_{33}N_3O_5$ $[M+Na]^+$ 406.2, found 406.2.



2,2-Dimethyl-*N*-prop-2-ynyl-propionamide 3g:[4] Prepared using general procedure A, with 245 µL pivaloyl chloride (2 mmol). Yield: 272 mg (98%). R_f 0.30 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.20 (s, 9H), 2.22 (t, J = 2.5 Hz, 1H), 4.03 (dd, J = 5.0, 2.5 Hz, 2H), 5.74 (br s, 1H). These data are in agreement with those previously reported, so no further characterisation was performed.

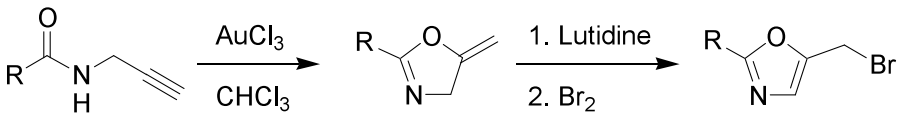


***N*-Prop-2-ynyl-benzamide 3h:**[5] Prepared using general procedure A, with 231 µL (2 mmol) benzoyl chloride. Yield: 305 mg (96%). R_f 0.40 (30% EtOAc/ hexanes); **^{1}H NMR** (300 MHz, $CDCl_3$) δ_H 2.29 (t, J = 2.4 Hz, 1H), 4.27 (*app*. dd, J = 5.2, 2.4 Hz, 2H), 6.25 (br s, 1H), 7.45 (m, 2H), 7.53 (m, 1H), 7.78 (m, 2H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 29.9, 71.8, 79.9, 127.5, 128.8, 132.0, 133.9, 167.8; **IR** (thin film) ν_{max} (cm^{-1}) 3292, 3060, 2930, 1643, 1603, 1578, 1542, 1492, 1449, 1414, 1348, 1309, 1264, 1190, 1160, 1076, 1052, 1028, 1002, 986, 928, 914, 820, 806, 716, 690, 662, 629; **ESI-MS** calcd. for $C_{10}H_9NO$ $[M+H]^+$ 160.1, found 160.0.



2-Methyl-pent-4-enoic acid prop-2-ynylamide 3i: Prepared using general procedure A, with 267 mg acid chloride. Yield: 257 mg (85%). R_f 0.41 (30% EtOAc/ hexanes); **^{1}H NMR** (300 MHz, $CDCl_3$) δ_H 1.16 (d, J = 7.0 Hz, 3H), 2.17 (quintet, J = 7.0 Hz, 1H), 2.23 (t, J = 2.6 Hz, 1H), 2.31 (sextet, J = 7.0 Hz, 1H), 2.41 (quintet, J = 7.0 Hz, 1H), 4.05 (*app.* dd, J = 5.2, 2.8 Hz, 2H), 5.05 (dd, J = 10.0, 2.0 Hz, 1H), 5.08 (dd, J = 17.0, 2.0 Hz, 1H), 5.75 (ddt, J = 17.0, 10.0, 7.0 Hz, 1H), 5.95 (br s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 17.4, 29.3, 38.4, 41.0, 71.7, 79.9, 117.2, 135.8, 175.8; **IR** (thin film) ν_{max} (cm^{-1}) 3300, 3078, 2975, 2934, 2878, 2121, 1839, 1651, 1538, 1456, 1440, 1422, 1372, 1347, 1247, 1218, 1160, 1104, 1053, 1026, 995, 918, 630; **ESI-MS** calcd. for $C_9H_{13}NO$ $[M+H]^+$ 152.1, found 152.1.

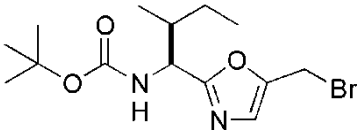
General procedure for preparation of bromomethyl oxazoles 7



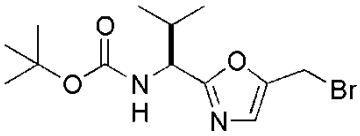
A solution of propargyl amide (1 mmol) and $AuCl_3$ (3 mg, 1 mol %)[6] in chloroform (5 mL) was stirred RT. The solution, initially light yellow, turned colorless. The reaction was monitored *via* TLC or NMR for complete consumption of alkyne. The reaction mixture was cooled to 0 ^{O}C and 2,6-lutidine (128 μL, 1.1 mmol) was added *via* syringe. After 2 min a solution of Br_2 (51 μL, 1.0 mmol) in $CHCl_3$ (550 μL) was added dropwise *via* syringe over 3 min. The resulting orange solution was allowed to warm slowly to RT. Upon complete consumption of the intermediate enol ether, the reaction mixture was quenched by the addition of saturated aqueous Na_2SO_3 (5 mL). The biphasic mixture was diluted with CH_2Cl_2 (15 mL) and the phases were separated. The aqueous fraction was extracted with CH_2Cl_2 (3 x 15 mL). The combined organic fraction were sequentially washed with saturated aqueous $CuSO_4$ (3 x 10 mL), saturated $NaHCO_3$ (2 x 10 mL) and brine (2 x 10 mL). The organic

[4] Known compound: Deng, J.; Zhao, W.; Wang, J.; Zhang, Z.; Yang, W. *Macromol. Chem. Phys.* **2007**, *208*, 218.
[5] Known compound: Capozzi, G.; Caristi, C.; Gattuso, M.; Stagno D'Alcontres, G. *Tetrahedron Lett.* **1981**, *22*, 3325.
[6] Weighed under inert atmosphere.

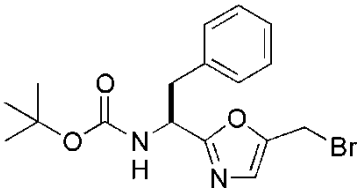
fraction was then dried ($MgSO_4$), filtered and concentrated *in vacuo*. The crude material was purified flash chromatography (0-100% EtOAc in hexanes) to furnish the desired bromomethyl oxazole.



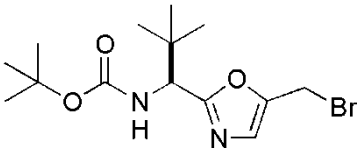
***tert*-Butyl (1*S*,2*S*)-1-(5-(bromomethyl)oxazol-2-yl)-2-methylbutylcarbamate 7a**: Prepared using the general procedure with 268 mg (1 mmol) propargyl amide **3a**. Yield: 304 mg (88%). R_f 0.33 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.89 (d, J = 7.0 Hz, 3H) 0.94 (t, J = 7.0 Hz, 3H), 1.19 (quintet, J = 7.0 Hz, 2H), 1.46 (s, 9H), 1.94 (m, 1H), 4.47 (s, 2H), 4.85 (dd, J = 9.0, 6.0 Hz, 1H), 5.20 (d, J = 9.0, 1H), 7.01 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.4, 20.1, 25.3, 28.5, 39.6, 53.7, 80.2, 125.9, 147.7, 155.5, 165.0; **IR** (thin film) ν_{max} (cm^{-1}) 3289, 2968, 2934, 2878, 1708, 1682, 1503, 1456, 1391, 1366, 1308, 1251, 1169, 1108, 1044, 1016, 987, 919, 874, 837, 778, 733, 662; ESI-**MS** calcd. for $C_{14}H_{23}N_2O_3Br$ $[M+H]^+$ 347.2, found 347.1.



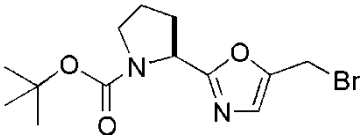
(*S*)-*tert*-Butyl 1-(5-(bromomethyl)oxazol-2-yl)-2-methylpropylcarbamate 7b: Prepared using the general procedure with 254 mg (1 mmol) propargyl amide **3b**. Yield: 290 mg (88%). R_f 0.50 (30% EtOAc/ hexanes); **^{1}H NMR** (300 MHz, $CDCl_3$) δ_H 0.93 (d, J = 7.0 Hz, 6H), 1.45 (s, 9H), 2.17 (m, 1H), 4.46 (s, 2H), 4.76 (dd, J = 9.0, 6.0 Hz, 1H), 5.17 (d, J = 1.0 Hz, 1H), 6.99 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 18.0, 18.9, 28.4, 32.9, 54.8, 80.4, 137.4, 150.0, 155.5, 168.8, 176.6; **IR** (thin film) ν_{max} (cm^{-1}) 3291, 2968, 2932, 2875, 1694, 1602, 1510, 1391, 1366, 1302, 1275, 1249, 1170, 1107, 1043, 1015, 986, 876, 662; ESI-**MS** calcd. for $C_{13}H_{21}N_2O_3Br$ $[M+H]^+$ 331.1, found 331.1.



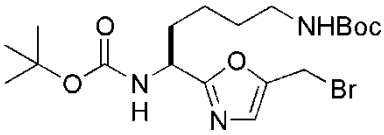
(*S*)-*tert*-Butyl 1-(5-(bromomethyl)oxazol-2-yl)-2-phenylethylcarbamate 7c: Prepared using the general procedure with 290 mg (1 mmol) propargyl amide **3c**. Yield: 250 mg (66%). R_f 0.48 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 1.43 (s, 9H) 3.23 (m, 2H) 4.44 (s, 2H), 5.16 (br s, 1H), 5.16 (br s, 1H), 6.97 (s, 1H), 7.05 (m, 2H), 7.25 (m, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 19.9, 28.5, 40.4, 50.4, 80.3, 126.1, 127.2, 128.7, 129.6, 135.9, 148.0, 155.1, 164.5; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2978, 1710, 1496, 1454, 1367, 1250, 1166, 1049, 986, 700; ESI-**MS** calcd. for $C_{17}H_{21}N_2O_3Br$ $[M+H]^+$ 381.1, found 381.0.



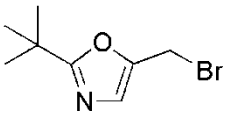
(*S*)-*tert*-Butyl 1-(5-(bromomethyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 7d: Prepared using the general procedure with 268 mg (1 mmol) propargyl amide **3d.** Yield: 242 mg (70%). R_f 0.50 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.98 (s, 9H), 1.44 (s, 9H), 4.47 (s, 2H), 4.69 (d, J = 10.0 Hz, 1H), 5.28 (d, J = 9.0 Hz, 1H), 7.00 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 20.1, 26.4, 28.5, 36.0, 57.5, 80.1, 125.9, 147.5, 155.6, 164.7; **IR** (thin film) ν_{max} (cm^{-1}) 3293, 2970, 1709, 1503, 1367, 1318, 1250, 1169, 1055, 1009, 987, 872; **ESI-MS** calcd. for $C_{14}H_{23}N_2O_3Br$ $[M+Na]^+$ 369.1, found 369.0.



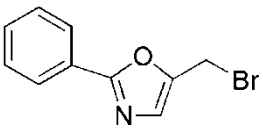
(*S*)-*tert*-Butyl 2-(5-(bromomethyl)oxazol-2-yl)pyrrolidine-1-carboxylate 7e: Prepared using the general procedure with 252 mg (1 mmol) propargyl amide **3e**. Yield: 211 mg (64%). R_f 0.45 (30% EtOAc/ hexanes); **^{1}HNMR** (500 MHz, $CDCl_3$ at 60 ºC) δ_H 1.38 (s, 9H), 1.94 (m, 1H), 2.09 (m, 2H), 2.29 (m, 1H), 3.52 (m, 1H), 3.64 (m, 1H), 4.45 (s, 2H), 4.92 (br s, 1H), 6.99 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ºC) δ_C 19.9, 24.0, 28.6, 32.4, 46.7, 55.2, 80.2, 126.4, 147.5, 154.3, 166.5; **IR** (thin film) ν_{max} (cm^{-1}) 3468, 2977, 1698, 1556, 1479, 1454, 1393, 1367, 1253, 1162, 1120, 989, 876, 772; **ESI-MS** calcd. for $C_{13}H_{19}N_2O_3Br$ $[M+Na]^+$ 353.1, found 353.0.



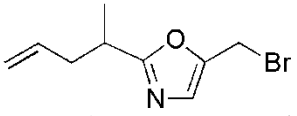
(*S*)-*tert*-Butyl 1-(5-(bromomethyl)oxazol-2-yl)pentane-1,5-diyldicarbamate 7f: Prepared using the general procedure with 383 mg (1 mmol) propargyl amide **3f**. Yield: 264 mg (57%). R_f 0.10 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.24-1.38 (m, 4H), 1.42 (s, 9H), 1.43 (s, 9H), 1.81 (m, 1H), 1.91 (m, 1H), 3.09 (m, 2H), 4.33 (s, 2H), 4.57 (br s, 1H), 4.87 (m, 1H), 5.15 (d, J = 7.0 Hz, 1H), 6.99 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 8.9, 22.7, 28.5, 28.6, 29.7, 34.0, 40.3, 44.9, 49.1, 79.4, 126.1, 146.6, 155.5, 156.3, 165.6, 156.3; **IR** (thin film) ν_{max} (cm^{-1}) 3337, 2977, 2930, 1694, 1519, 1456, 1391, 1366, 1250, 1170, 1046, 986, 867, 733; **ESI-MS** calcd. for $C_{19}H_{32}N_3O_5Br$ $[M+Na]^+$ 486.3, found 486.2.



5-Bromomethyl-2-*tert*-butyl oxazole 7g: Prepared using the general procedure using 139 mg (1 mmol) propargyl amide **3g**. Yield: 174 mg (80%). R_f 0.55 (30% EtOAc/ hexanes); ^{1}H NMR (400 MHz, $CDCl_3$) δ_H 1.37 (9H, s), 4.46 (s, 2H), 6.93 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ_C 20.7, 28.9, 34.1, 125.9, 147.0, 172.8; **IR** (thin film) ν_{max} (cm^{-1}) 3433, 2972, 2933, 2871, 1714, 1600, 1553, 1514, 1461, 1365, 1344, 1252, 1203, 1146, 1106, 987, 836, 715, 665; **ESI-MS** calcd. for $C_8H_{12}NOBr$ $[M+H]^+$ 218.0, found 217.9.

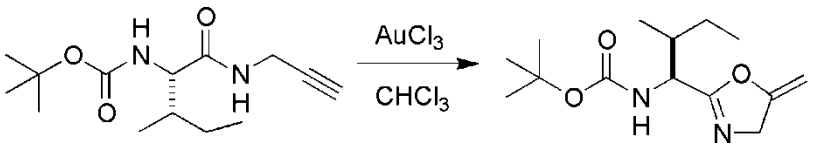


5-Bromomethyl-2-phenyl oxazole 7h: Prepared using the general procedure with 159 mg (1 mmol) propargyl amide **3h**. Yield: 192 mg (81%). R_f 0.60 (30% EtOAc/ hexanes); ^{1}H (300 MHz, $CDCl_3$) δ_H 4.58 (s, 2H), 7.19 (s, 1H), 7.48 (m, 3H), 8.06 (m, 2H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 20.4, 126.8, 127.5, 129.1, 131.1, 147.8, 162.8; **IR** (thin film) ν_{max} (cm^{-1}) 3368, 1712, 1608, 1545, 1482, 1448, 1355, 1253, 1202, 1136, 1071, 1025, 987, 842, 778, 728, 712, 690, 658; **ESI-MS** calcd. for $C_{10}H_8NOBr$ $[M+H]^+$ 238.0, found 238.0.



5-Bromomethyl-2-(1-methyl-but-3-enyl)-oxazole 7i: Prepared using the general procedure with 151 mg (1 mmol) propargyl amide **3i**. Yield: 131 mg (57%). R_f 0.65 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.35 (d, J = 7.0 Hz, 3H), 2.34 (quintet, J = 7.0 Hz, 1H), 2.57 (quintet, J = 7.0 Hz, 1H), 3.06 (dq, J = 7.0 Hz, 1H), 4.47 (s, 2H), 5.05 (m, 2H), 5.76 (ddt, J = 17.0, 10.0, 7.0 Hz, 1H), 6.96 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 17.9, 20.6, 33.9, 39.3, 117.5, 125.9, 135.3, 147.2, 181.2; **IR** (thin film) ν_{max} (cm^{-1}) 2976, 2933, 1642, 1556, 1455, 1252, 1202, 1108, 985, 919, 721, 668; **ESI-MS** calcd. for $C_9H_{12}NOBr$ $[M+H]^+$ 230.0, found 229.9.

***tert*-Butyl (1*S*,2*S*)-2-methyl-1-(5-methylene-4,5-dihydrooxazol-2-yl)butylcarbamate**



The intermediate methyleneoxazoline can be isolated from the cyclization procedure.

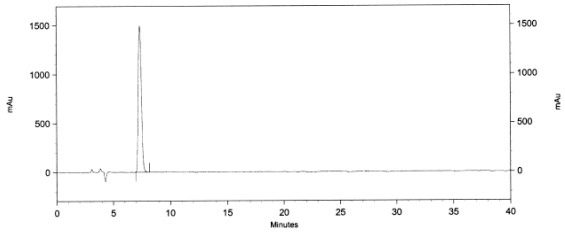
A solution of propargyl amide **3a** (599 mg, 2.23 mmol) and $AuCl_3$ (7 mg, 1 mol %)[7] in $CHCl_3$ (12 mL) was stirred at RT. The solution, initially light yellow, turned colorless. The reaction was monitored *via* TLC or NMR for complete consumption of alkyne. The reaction mixture was directly subjected to flash chromatography utilizing 16% (v/v) EtOAc / hexane to reveal methyleneoxazoline **5a** (558 mg, 2.08 mmol) as a clear oil (93%).

^{1}H NMR (300 MHz, $CDCl_3$) δ_H 0.91 (m, 6H), 1.14 (m, 1H), 1.42 (s, 9H), 1.45 (m, 1H), 1.84 (m, 1H), 4.26 (q, J = 3.0 Hz, 1H), 4.40 (m, 2H), 4.44 (m, 1H), 4.66 (q, J = 3.0 Hz, 1H), 5.09 (d, J = 9.0 Hz, 1H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ_C 11.8, 15.5, 24.9, 28.5, 38.2, 53.5, 56.9, 80.0, 84.2, 158.9, 166.8, 185.3.

Epimerisation check

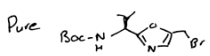
Following the general procedure, Boc-D-Val-Propargyl amide ***ent*-3b** and Boc-L-Val-propargyl amide **3b** were synthesised. Each of these substrates was subjected to the general procedure to yield Boc-D-Val-Oxazole-Br ***ent*-7b** and Boc-L-Val-Oxazole-Br **7b**, respectively. A solution of **7b** (10 µL, 2.4 mg / mL) was injected onto a Phenomenex (*R*)-Polygly chiral column running on a Shimadzu HPLC system (4.6 x 100 mm, 30% *i*-PrOH / hexanes), and found to have a retention time of 7.3 min. Similarly, a solution of ***ent*-7b** (15 µL, 2.1 mg / mL) was injected onto the same column and was found to have a retention time of 10.24 min. To the limit of detection of the instrument no epimerisation was found (limit <0.85%). A sample, prepared by mixing **7b** and ***ent*-7b**, was found to exhibit two peaks. In a similar manner, no epimerisation was detected in the formation of **7c** (L-isomer: $\mathbf{R}_T$= 6.8 min; D- isomer: $\mathbf{R}_T$= 5.0 min) (data not shown).

Boc-L-Val-Ox-Br:

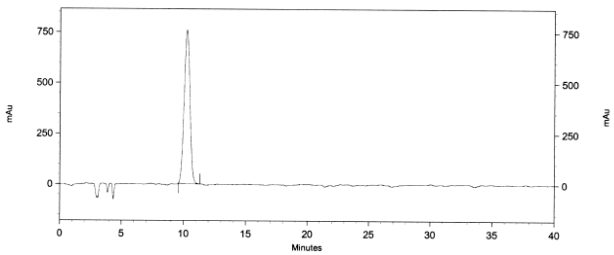


4: 254 nm, 8 nm
Results

Retention Time	Area	Area %	Height	Height %
7.333	28509452	100.00	1492000	100.00
Totals	28509452	100.00	1492000	100.00



Boc-D-Val-Ox-Br:

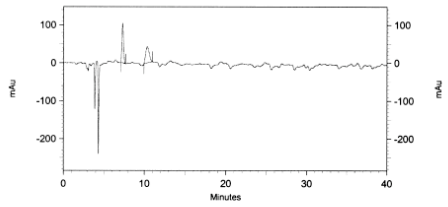


4: 254 nm, 8 nm
Results

Retention Time	Area	Area %	Height	Height %
10.240	24391101	100.00	756609	100.00
Totals	24391101	100.00	756609	100.00

[7] Weighed under inert atmosphere.

Mixed Sample:

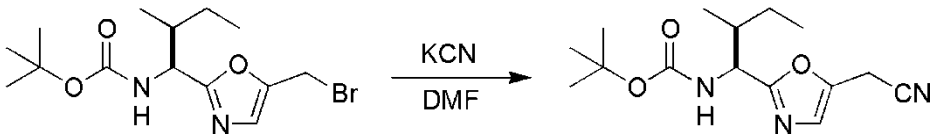


4: 254 nm, 8 nm
Results

Retention Time	Area	Area %	Height	Height %
7.307	1437349	52.88	104810	71.32
10.341	1280570	47.12	42152	28.68
Totals	2717919	100.00	146962	100.00

Attack of bromomethyl oxazoles with nucleophiles

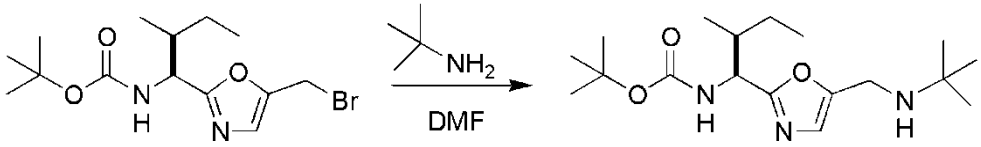
tert-Butyl (1*S*,2*S*)-1-(5-(cyanomethyl)oxazol-2-yl)-2-methylbutylcarbamate 8



To a solution of bromomethyl oxazole **7a** (230 mg, 0.66 mmol) in DMF (3 mL) at RT were added H_2O (1 mL) and KCN (430 mg, 6.6 mmol). The resulting solution was stirred vigorously for 4 h. The reaction was diluted with EtOAc (20 mL) and H_2O (10 mL). The layers were separated and the organic fraction was sequentially washed with H_2O (5 x 10 mL) and brine (2 x 10 mL). The organic fraction was dried ($MgSO_4$), filtered and concentrated *in vacuo* to give the title compound **8** (138 mg, 0.469 mmol, 71%) as a thin oil.

$\boldsymbol{R_f}$ 0.28 (30% EtOAc/Hex); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.83 (d, J = 7.0 Hz, 3H), 0.88 (t, J = 7.0 Hz, 3H), 1.14 (m, 2H), 1.40 (s, 9H), 1.88 (m, 1H), 3.77 (d, J = 1.0 Hz, 2H), 4.76 (dd, J = 9.0, 6.0 Hz, 1H), 5.21 (d, J = 6.0 Hz, 1H), 6.95 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.5, 15.3, 15.6, 25.2, 28.4, 39.3, 53.5, 80.2, 114.5, 125.4, 140.6, 155.5, 165.0; **IR** (thin film) n_{max} (cm^{-1}) 3308, 2968, 2934, 2878, 1698, 1519, 1456, 1392, 1367, 1252, 1169, 1044, 1016, 992, 921, 872, 836, 778; ESI-**MS** calcd. for $C_{15}H_{23}N_3O_3$ $[M+Na]^+$ 316.2, found 316.1.

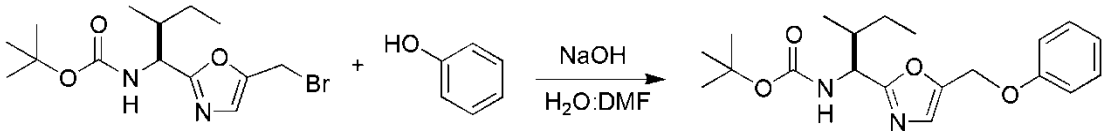
tert-Butyl (1*S*,2*S*)-1-(5-((tert-butylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 9



To a solution of bromomethyl oxazole **7a** (96.5 mg, 0.278 mmol) in DMF (2 mL) at RT was added *tert*-butyl amine (64 μL, 2.2 eq). The resulting solution was stirred for 4 h. The reaction mixture was diluted with EtOAc (10 mL) and H_2O (10 mL). The layers were separated and the organic fraction was sequentially washed with saturated aqueous $NaHCO_3$ (5 mL), H_2O (5 mL) and brine (5 mL). The organic fraction was dried ($MgSO_4$), filtered and concentrated *in vacuo* to reveal the title compound **9** (76 mg, 0.224 mmol) as thin yellow oil.

R_f 0.05 (30% EtOAc/ hexanes); **^{1}H NMR** (300 MHz, $CDCl_3$) δ_H 0.86 (d, J = 7.0 Hz, 3H), 0.89 (t, J = 7.0 Hz, 3H), 1.14 (s, 9H), 1.14 (m, 1H), 1.42 (s, 9H), 1.42 (m, 1H), 1.89 (m, 1H), 3.76 (d, J = 1.0 Hz, 2H), 4.78 (dd, J = 9.0, 6.0 Hz, 1H), 5.21 (d, J = 9.0 Hz, 1H), 6.82 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.4, 25.1, 28.5, 29.1, 38.0, 39.5, 51.0, 53.6, 79.9, 123.3, 151.6, 155.5, 163.4; **IR** (thin film) n_{max} (cm^{-1}) 3304, 2966, 2931, 2878, 1712, 1504, 1458, 1391, 1366, 1250, 1171, 1044, 1016, 874, 738, 702; **ESI-MS** calcd. for $C_{18}H_{33}N_3O_3$ $[M+H]^+$ 340.3, found 340.2.

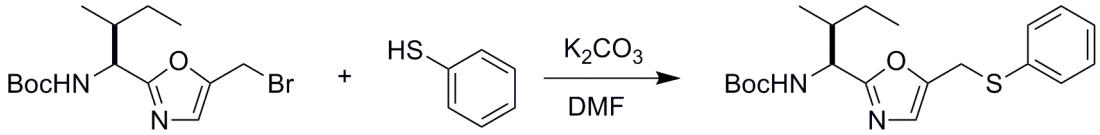
***tert*-Butyl (1*S*,2*S*)-2-methyl-1-(5-(phenoxymethyl)oxazol-2-yl)butylcarbamate 10**



To a solution of bromomethyl oxazole **7a** (95 mg, 0.274 mmol) in THF (3 mL) at RT was added PhOH (39 mg, 1.5 eq). Aqueous NaOH (4N, 3 mL) was added. The resulting biphasic solution was stirred vigorously for 4 h. The reaction was quenched by the addition of aqueous HCl (1N, 10 mL) and diluted with EtOAc (10 mL). The layers were separated and the organic fraction was washed sequentially with saturated aqueous $NaHCO_3$ (5 mL), H_2O (5 mL) and brine (5 mL). The organic layer was dried ($MgSO_4$), filtered and concentrated *in vacuo* to reveal the title compound **10** (88 mg, 0.244 mmol, 89%).

R_f 0.43 (30% EtOAc/ hexanes); **^{1}H NMR** (300 MHz, $CDCl_3$) δ_H 0.85 (d, J = 7.0 Hz, 3H), 0.90 (t, J = 7.0 Hz, 3H), 1.18 (m, 2H), 1.43 (s, 9H), 1.93 (m, 1H), 4.83 (dd, J = 9.0, 6.0 Hz, 1H), 5.02 (s, 2H), 5.22 (d, J = 9.0 Hz, 1H), 6.94-7.04 (m, 3H), 7.25-7.32 (m, 2H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.3, 25.3, 28.5, 39.6, 53.6, 60.3, 80.1, 100.4, 115.2, 121.9, 126.6, 129.8, 147.6, 158.1, 164.7; **IR** (thin film) n_{max} (cm^{-1}) 3302, 2967, 2931, 2877, 1711, 1599, 1584, 1496, 1456, 1367, 1245, 1172, 1032, 1010, 910, 873, 854, 837, 753, 734, 691; ESI-**MS** calcd. For $C_{20}H_{28}N_2O_4$ $[M+H]^+$ 361.2, found 361.1.

***tert*-Butyl (1*S*,2*S*)-2-methyl-1-(5-(phenylthiomethyl)oxazol-2-yl)butylcarbamate 11**

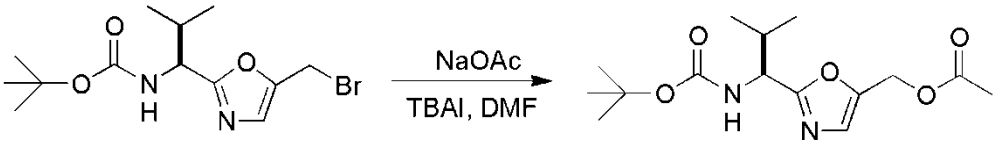


To a solution of bromomethyl oxazole **7a** (125 mg, 0.36 mmol) in DMF (2 mL) at RT were added K_2CO_3 (134 mg, 0.97 mmol) and PhSH (100 mL, 0.98 mmol). The suspension was stirred for 16 h. The reaction mixture was diluted with CH_2Cl_2 (20 mL) and saturated aqueous $NaHCO_3$ (15 mL). The layers were separated and the aqueous layer was extracted with CH_2Cl_2 (2 x 10 mL). The combined organic fractions were sequentially washed with saturated aqueous $NaHCO_3$ (2 x 10 mL) and brine (2 x 10 mL). The organic fraction was dried ($MgSO_4$), filtered and concentrated *in vacuo*. The crude material was purified by flash chromatography utilizing a gradient of 0-40% EtOAc / hexane as the mobile phase to yield the title compound **11** as a colorless oil (83 mg, 0.22 mmol, 61%).

R_f 0.45 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.82 (d, J = 6.8 Hz, 3H), 0.90 (t, J = 7.4 Hz, 3H), 1.05-1.20 (m, 1H), 1.33-1.48 (m, 1H), 1.44 (s, 9H), 1.75-1.95 (m, 1H), 4.05 (s, 2H), 4.77 (dd, J = 9.0, 5.8 Hz, 1H), 5.20 (d, J = 9.0 Hz, 1H), 6.68 (s, 1H), 7.21-7.31 (m, 3H), 7.31-7.36 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_H 11.8, 15.3, 25.3, 28.6,

29.7, 39.6, 53.6, 80.0, 124.5, 127.7, 129.3, 131.6, 134.5, 148.6, 155.6, 163.9; **IR** (thin film) n_{max} (cm^{-1}) 3284, 2966, 2931, 2876, 1713, 1504, 1366, 1170; **ESI-MS** calcd. for $C_{20}H_{28}N_2O_3S$ $[M+H]^+$ 377.2, $[M+Na]^+$ 399.2, found 377.1, 399.1.

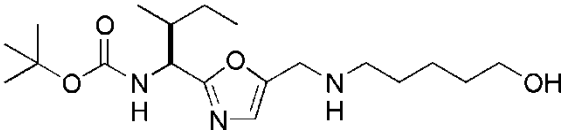
(2-((1*S*,2*S*)-1-(*tert*-Butoxycarbonylamino)-2-methylbutyl)oxazol-5-yl)methyl acetate 13



To a solution of bromomethyl oxazole **7b** (42 mg, 0.126 mmol) in DMF (2 mL) at RT was added *n*-Bu_4NI (2 mg, 4 mol%), followed by NaOAc (103 mg, 1.26 mmol). The resulting mixture was stirred vigorously for 4 h. The reaction mixture was diluted with EtOAc (15 mL) and H_2O (5 mL). The layers were separated and the organic fraction was sequentially washed with H_2O (5 x 5 mL), saturated aqueous $NaHCO_3$ (5 mL) and brine (5 mL). The organic fraction was dried ($MgSO_4$), filtered, and concentrated *in vacuo* to reveal the desired compound **13** as an oil (34 mg, 0.109 mmol, 86%).

***R**f* 0.24 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.93 (t, *J* = 7.0 Hz, 6H), 1.45 (s, 9H), 2.09 (s, 3H), 2.19 (quintet, *J* = 6.0 Hz, 1H), 4.77 (dd, *J* = 9.3, 4.9 Hz, 1H), 5.07 (s, 2H), 5.21 (d, *J* = 9.3 Hz, 1H), 7.03 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 18.0, 18.9, 21.0, 28.5, 33.0, 51.1, 55.7, 80.2, 127.3, 146.8, 155.7, 165.0, 170.7; **IR** (thin film) ν_{max} (cm^{-1}) 3348, 2967, 2931, 1748, 1715, 1519, 1455, 1366, 1244, 1170, 1027, 981, 877; **ESI-MS** calcd. for $C_{15}H_{24}N_2O_5$ $[M+H]^+$ 313.2, $[M+Na]^+$ 335.2, found 313.2, 335.1.

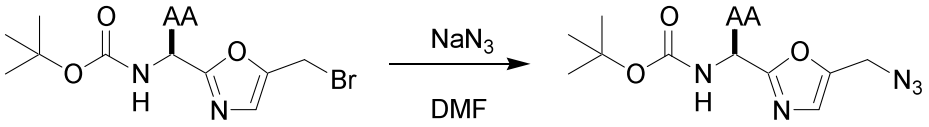
***tert*-Butyl (1*S*,2*S*)-1-(5-((5-hydroxypentylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 14**:



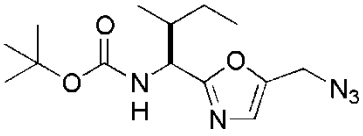
To a solution of bromomethyl oxazole **7a** (173 mg, 0.5 mmol) in DMF (2.5 mL) was added 5-amino-1-pentanol (108 µL, 1 mmol). The resulting solution was stirred 16 h at RT, then diluted with EtOAc (20 mL) and H_2O (10 mL). The layers were separated and the organic fraction was sequentially washed with saturated aqueous $NaHCO_3$ (10 mL), H_2O (10 mL) and brine (10 mL). The organic fraction was dried ($MgSO_4$), filtered and concentrated *in vacuo* to reveal the title compound **14** (120 mg, 0.325 mmol) as thin yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ_H 0.84 (d, *J* = 7.0 Hz, 3H), 0.89 (t, *J* = 7.0 Hz, 3H), 1.15 (m, 2H), 1.34-1.42 (m, 2H), 1.42 (s, 9H), 1.54 (m, 4H), 1.74 (br s, 1H), 1.89 (m, 1H), 2.59 (t, *J* = 7.0 Hz, 2H), 3.62 (t, *J* = 6.5 Hz, 2H), 3.64 (m, 1H), 3.78 (s, 2H), 4.78 (dd, *J* = 9.0, 6.0 Hz, 1H), 5.26 (d, *J* = 9.0 Hz, 1H), 6.81 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.4, 23.5, 25.3, 28.5, 29.6, 32.6, 39.6, 43.9, 48.9, 53.6, 62.8, 80.1, 124.1, 150.6, 155.6, 163.7; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2966, 2934, 2877, 1705, 1531, 1455, 1392, 1367, 1251, 1171, 1111, 1045, 1016, 874, 831, 777, 733; **ESI-MS** calcd. for $C_{19}H_{35}N_3O_4$ $[M+H]^+$ 370.3, found 370.3.

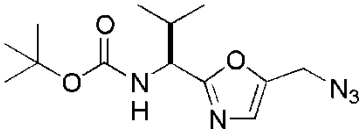
<u>General procedure for preparation of oxazole azides 12</u>



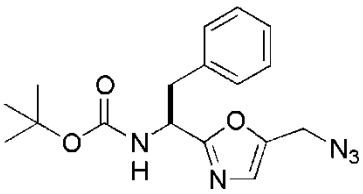
To a solution of bromomethyl oxazole (0.249 mmol) in DMF (2 mL) at RT was added NaN_3 (81 mg, 1.24 mmol). The resulting solution was stirred for 1 h. The reaction mixture was diluted with EtOAc (10 mL) and solution was washed sequentially with H_2O (5 x 5 mL) and brine (2 x 5 mL). The organic fraction was dried ($MgSO_4$), filtered and concentrated *in vacuo* to give oxazole azide as a clear oil. Flash chromatography was used to further purify **12e** and **12g**.[8]



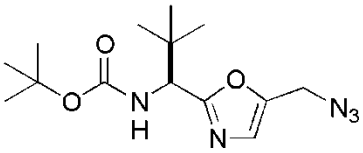
***tert*-Butyl (1*S*,2*S*)-1-(5-(azidomethyl)oxazol-2-yl)-2-methylbutylcarbamate 12a**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 303 mg (98%). R_f 0.43 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.85 (t, J = 7.0 Hz, 3H), 0.90 (t, J = 7.0 Hz, 3H), 1.17 m, 1H), 1.43 (m, 1H), 1.43 (s, 9H), 1.91 (m, 1H), 4.32 (*app*. d, J = 4.0 Hz, 2H), 4.82 (dd, J = 9.0, 6.0 Hz, 1H), 5.20 (d, J = 9.0 Hz, 1H), 7.00 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.3, 25.3, 28.5, 39.6, 44.8, 53.6, 80.1, 126.1, 146.3, 155.5, 165.1; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2969, 2934, 2878, 2102, 1709, 1502, 1455, 1391, 1367, 1251, 1170, 1044, 1016, 971, 874, 776; **ESI-MS** calcd. for $C_{14}H_{23}N_5O_3$ $[M+H]^+$ 310.2, found 310.2



(*S*)-*tert*-Butyl 1-(5-(azidomethyl)oxazol-2-yl)-2-methylpropylcarbamate 12b: Prepared using the general procedure with 332 mg (1 mmol) bromide **3b**. Yield: 280 mg (95%). R_f 0.46 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.90 (d, J = 7.0 Hz, 6H), 1.42 (s, 9H), 2.16 (m, 1H), 4.31 (*app*. d, J = 2.0 Hz, 2H), 4.75 (dd, J = 9.0, 6.0 Hz, 1H), 5.21 (d, J = 9.0 Hz, 1H), 6.69 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 18.1, 18.8, 28.5, 33.0, 44.7, 54.4, 80.1, 126.0, 146.3, 155.6, 165.2; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2970, 2103, 1710, 1504, 1392, 1367, 1248, 1170, 1043, 1015, 975, 876; **ESI-MS** calcd. for $C_{13}H_{21}N_5O_3$ $[M+H]^+$ 296.2, found 296.2.



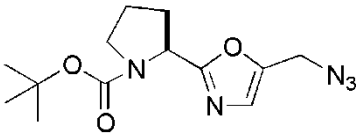
(*S*)-*tert*-Butyl 1-(5-(azidomethyl)oxazol-2-yl)-2-phenylethylcarbamate 12c: Prepared using the general procedure with 380 mg (1 mmol) bromide **7c**. Yield: 281 mg (82%). R_f 0.48 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 1.41 (s, 9H), 3.21 (m, 2H), 4.30 (s, 2H), 5.06-5.22 (m, 2H), 6.96 (s, 1H), 7.01 (m, 2H), 7.23 (m, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 28.5, 40.4, 44.8, 50.4, 80.4, 126.2, 127.3, 128.8, 129.5, 136.0, 146.5, 155.1, 164.7; **IR** (thin film) ν_{max} (cm^{-1}) 3339, 2978, 2102, 1710, 1496, 1454, 1367, 1250, 1167, 1050, 700; **ESI-MS** calcd. for $C_{17}H_{21}N_5O_3$ $[M-N_2+H]^+$ 316.2, found 316.1.



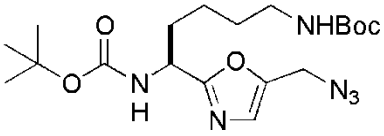
(*S*)-*tert*-Butyl 1-(5-(azidomethyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 12d: Prepared using the general procedure with 346 mg (1 mmol) bromide **7d**. Yield: 275 mg (89%). R_f 0.50 (30% EtOAc/ hexanes); **^{1}H NMR** (400 MHz,

[8] Purified by flash chromatography on silica gel, utilizing 0-100% EtOAc/hexanes as the mobile phase.

$CDCl_3$) δ_H 0.96 (s, 9H), 1.42 (s, 9H), 4.32 (*app*. d, J = 5.0 Hz, 2H), 4.69 (d, J = 10.0 Hz, 1H), 5.26 (d, J = 10.0 Hz, 1H), 7.00 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 26.4, 28.5, 36.2, 44.8, 57.5, 80.1, 126.0, 146.0, 155.6, 164.8; **IR** (thin film) ν_{max} (cm^{-1}) 3293, 2970, 2103, 1711, 1555, 1503, 1367, 1318, 1249, 1170, 1121, 1055, 1008, 971, 874; **ESI-MS** calcd. for $C_{14}H_{23}N_5O_3$ $[M+Na]^+$ 332.2, found 332.1.

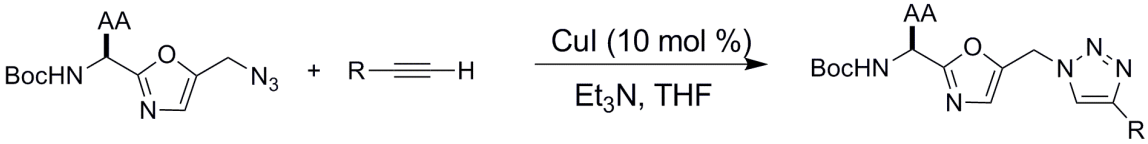


(*S*)-*tert*-Butyl 2-(5-(azidomethyl)oxazol-2-yl)pyrrolidine-1-carboxylate 12e: Prepared using the general procedure with 330 mg (1 mmol) bromide **7e**. Yield: 227 mg (77%). $\boldsymbol{R_f}$ 0.45 (30% EtOAc/ hexanes); **^{1}H NMR**: (500 MHz, $CDCl_3$ at 60 ºC) δ_H 1.37 (s, 9H), 1.93 (m, 1H), 2.10 (m, 2H), 2.26 (m, 1H), 3.50 (m, 1H), 3.61 (m, 1H), 4.31 (*app*. s, 2H), 4.92 (br s, 1H), 6.97 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 25 ºC) δ_C Major rotomer: 23.8, 28.4, 32.6, 44.9, 46.6, 55.1, 80.2, 126.3, 145.9, 154.1, 166.6; **^{13}C NMR** (125 MHz, $CDCl_3$ at 25 ºC) δ_C Minor rotomer: 24.4, 28.6, 31.5, 44.9, 46.9, 54.8, 80.2, 126.3, 146.1, 154.6, 166.2; **IR** (thin film) ν_{max} (cm^{-1}) 2978, 2101, 1698, 1563, 1479, 1454, 1393, 1367, 1255, 1161, 1116, 1083, 998, 961, 875, 772; **ESI-MS** calcd. for $C_{13}H_{19}N_5O_3$ $[M-N_2+Na]^+$ 288.2, found 288.1.

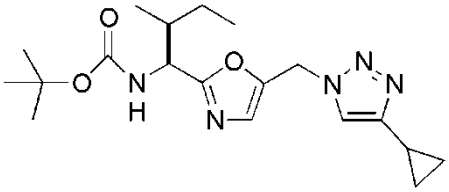


(*S*)-*tert*-Butyl 1-(5-(azidomethyl)oxazol-2-yl)pentane-1,5-diyldicarbamate 12f: Prepared using the general procedure with 463 mg (1 mmol) bromide **7f**. Yield: 382 mg (90%). $\boldsymbol{R_f}$ 0.10 (30% EtOAc/ hexanes); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 1.30-1.60 (m, 22H), 1.83 (m, 1H), 1.93 (m, 1H), 3.11 (*app*. d, J = 6.0 Hz, 2H), 4.35 (s, 2H), 4.59 (s, 1H), 4.89 (*app*. d, J = 7.0 Hz, 1H), 5.16 (m, 1H), 6.99 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 22.7, 28.5, 28.6, 29.7, 34.1, 40.3, 44.8, 49.1, 79.3, 80.3, 126.1, 146.8, 155.4, 156.2, 165.4; **IR** (thin film) ν_{max} (cm^{-1}) 3341, 2979, 2934, 2103, 1694, 1520, 1455, 1392, 1367, 1251, 1172, 1046, 998, 869, 734; **ESI-MS** calcd. for $C_{19}H_{32}N_6O_5$ $[M+Na]^+$ 447.3, found 447.2.

General procedure for preparation of *bis*-heterocycles by click chemistry

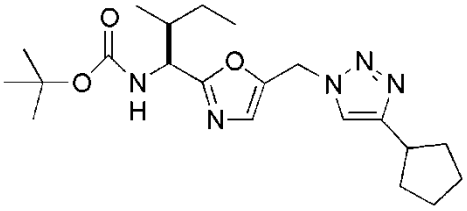


To a solution of oxazole azide **12** (0.05 mmol) in THF (0.5 mL) at RT were sequentially added alkyne (0.05 mmol), Et_3N (0.06 mmol) and CuI (0.005 mmol). The solution was stirred for 16 h before being quenched by the addition of 1 M aqueous HCl (1 mL). The solution was diluted with EtOAc (3 mL). The layers were separated and the aqueous fraction was extracted with EtOAc (3 x 2 mL). The combined organic fractions were sequentially washed with saturated aqueous $NaHCO_3$ (3 mL), H_2O (3 mL) and brine (3 mL). The organic fraction was dried with sodium sulfate, filtered and concentrated *in vacuo*. Flash chromatography (2% MeOH in CH_2Cl_2) was used to purify crude material to reveal pure the desired *bis*-heterocycle.

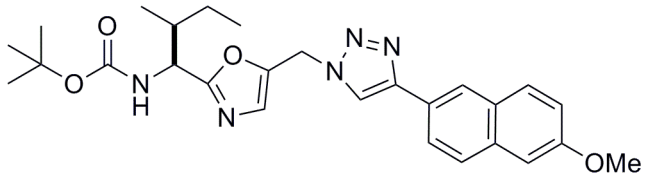


***tert*-Butyl (1*S*,2*S*)-1-(5-((4-cyclopropyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylbutylcarbamate 16a**: Prepared using the general procedure using 15 mg (0.05 mmol) azide

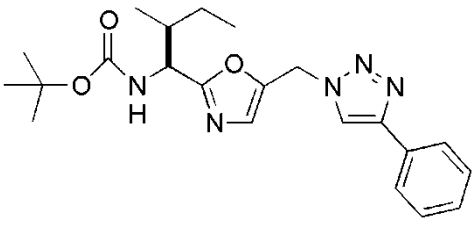
12a. Yield: 13 mg (0.035 mmol, 70%). R_f 0.50 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.82-0.97 (m, 10H), 1.15 (m, 1H), 1.44 (m, 1H), 1.44 (s, 9H), 1.94 (m, 2H), 4.81 (dd, J = 8.0, 6.0 Hz, 1H), 5.17 (d, J = 8.0 Hz, 1H), 5.51 (s, 2H), 7.07 (s, 1H), 7.28 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 6.6, 7.99, 8.0, 11.6, 15.4, 25.3, 28.5, 39.4, 44.5, 53.6, 80.3, 119.6, 126.7, 145.0, 151.2, 155.6, 165.4; **IR** (thin film) ν_{max} (cm^{-1}) 3297, 2967, 2931, 1705, 1563, 1520, 1455, 1392, 1367, 1253, 1168, 1115, 1044, 993, 873, 777; **ESI-MS** calcd. for $C_{19}H_{29}N_5O_3$ $[M+Na]^+$ 398.2, found 398.2.



***tert*-Butyl (1*S*,2*S*)-1-(5-((4-cyclopentyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylbutylcarbamate 16b:** Prepared using the general procedure with 15 mg (0.05 mmol) azide **7a**. Yield: 16 mg (0.040 mmol, 81%). R_f 0.50 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.84 (d, J = 7.0 Hz, 3H), 0.89 (t, J = 7.0 Hz, 3H), 1.13 (m, 1H), 1.44 (m, 1H), 1.44 (s, 9H), 1.66 (m, 2H), 1.76 (m, 4H), 1.91 (m, 1H), 2.09 (m, 2H), 3.15 (m, 1H), 4.81 (dd, J = 9.0, 6.0 Hz, 1H), 5.19 (d, J = 9.0 Hz, 1H), 5.53 (s, 2H), 7.08 (s, 1H), 7.28 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 8.7, 11.6, 15.4, 19.1, 25.3, 28.5, 33.3, 33.4, 36.9, 39.4, 44.5, 45.7, 47.2, 53.6, 80.2, 119.6, 126.7, 145.1, 153.7, 155.6, 165.3; **IR** (thin film) ν_{max} (cm^{-1}) 3292, 2965, 2875, 1694, 1520, 1504, 1455, 1392, 1367, 1252, 1202, 1172, 1132, 1048, 1017, 993, 873, 831, 800, 779, 720; **ESI-MS** calcd. for $C_{21}H_{33}N_5O_3$ $[M+Na]^+$ 426.3, found 426.2.

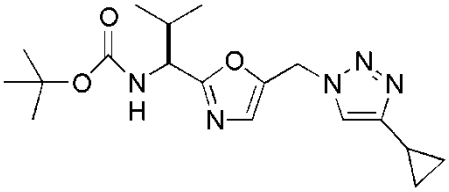


***tert*-Butyl (1*S*,2*S*)-1-(5-((4-(7-methoxynaphthalen-2-yl)-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylbutylcarbamate 16c:** Prepared using the general procedure with 15 mg (0.05 mmol) azide **7a**. Yield: 21 mg (0.042 mmol, 84%). R_f 0.47 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.85 (d, J = 7.0 Hz, 3H), 0.88 (t, J = 7.0 Hz, 3H), 1.17 (m, 1H), 1.40 (s, 9H), 1.43 (m, 1H), 1.91 (m, 1H), 3.92 (d, J = 0.8 Hz, 3H), 4.82 (dd, J = 9.0, 6.0 Hz, 1H), 5.22 (d, J = 9.0 Hz, 1H), 5.63 (s, 2H), 7.14 (m, 2H), 7.17 (m, 1H), 7.65 (d, J = 9.5 Hz, 2H), 7.82-7.88 (m, 2H), 8.23 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.5, 25.3, 28.5, 39.4, 44.7, 53.7, 55.6, 80.3, 106.0, 119.4, 119.6, 124.5, 124.7, 125.6, 127.0, 127.6, 129.1, 129.9, 134.7, 144.8, 148.9, 155.6, 158.2, 165.6; **IR** (thin film) ν_{max} (cm^{-1}) 2966, 1705, 1613, 1504, 1392, 1366, 1263, 1217, 1164, 1044, 909; **ESI-MS** calcd. for $C_{27}H_{33}N_5O_4$ $[M+Na]^+$ 514.3, found 514.3.

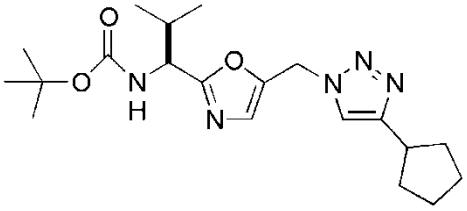


***tert*-Butyl (1*S*,2*S*)-2-methyl-1-(5-((4-phenyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)butylcarbamate 16d:** Prepared using the general procedure with 15 mg (0.05 mmol) azide **7a**. Yield: 16 mg (0.040 mmol, 80%). R_f 0.50 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.86 (d, J = 7.0 Hz, 3H), 0.90 (t, J = 7.0 Hz, 3H), 1.17 (m, 1H), 1.37 (m, 1H), 1.42 (s, 9H), 1.93 (m, 1H), 4.82 (dd, J = 9.0, 6.0 Hz, 1H), 5.17 (d, J = 9.0 Hz, 1H), 5.64 (s, 2H), 7.15 (s, 1H), 7.35 (m, 1H), 7.43 (m, 2H), 7.80 (s, 1H), 7.82 (m, 2H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.6, 15.4, 25.3, 28.5, 39.4, 44.7, 53.7, 80.3, 119.5, 126.0, 127.0, 128.6, 129.1, 130.4, 144.8, 148.7, 155.6, 166.6; **IR** (thin film) ν_{max} (cm^{-1}) 2968,

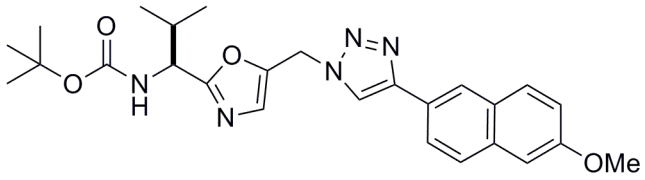
1713, 1514, 1366, 1253, 1168, 765; **ESI-MS** calcd. for $C_{22}H_{29}N_5O_3$ $[M+Na]^+$ 434.2, found 434.2.



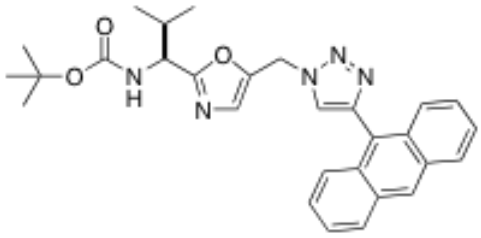
(*S*)-*tert*-Butyl 1-(5-((4-cyclopropyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 17a: Prepared using the general procedure with 15 mg (0.05 mmol) azide **7b**. Yield: 13 mg (0.036 mmol, 72%). $\boldsymbol{R_f}$ 0.50 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.84 (m, 2H), 0.91 (d, J = 7.0 Hz, 6H), 0.95 (m, 2H), 1.44 (s, 9H), 1.95 (m, 1H), 2.16 (m, 1H), 4.74 (m, 1H), 5.17 (m, 1H), 5.51 (s, 2H), 7.08 (s, 1H), 7.27 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 6.9, 7.9, 8.0, 18.1, 18.9, 28.5, 32.8, 44.5, 54.6, 80.2, 126.7, 155.6; **IR** (thin film) ν_{max} (cm^{-1}) 3293, 3141, 2970, 2933, 2876, 1708, 1563, 1524, 1454, 1392, 1367, 1276, 1248, 1170, 1123, 1043, 1013, 992, 975, 876, 819, 777, 737, 714; **ESI-MS** calcd. for $C_{18}H_{27}N_5O_3$ $[M+Na]^+$ 384.2, found 384.2.



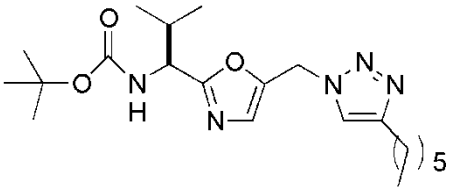
(*S*)-*tert*-Butyl 1-(5-((4-cyclopentyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 17b: Prepared using the general procedure with 15 mg (0.05 mmol) azide **7b**. Yield: 16 mg (0.042 mmmol, 84%) $\boldsymbol{R_f}$ 0.50 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.90 (m, 6H), 1.43 (s, 9H), 1.44 (m, 1H), 1.66 (m, 4H), 1.74 (m, 1H), 2.10 (m, 3H), 3.18 (m, 1H), 4.74 (m, 1H), 5.23 (m, 1H), 5.54 (s, 2H), 7.09 (s, 1H), 7.30 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 18.1, 18.9, 25.3, 28.5, 32.9, 33.4, 36.9, 44.5, 54.6, 80.3, 119.8, 126.7, 145.2, 153.9, 155.7, 165.6; **IR** (thin film) ν_{max} (cm^{-1}) 3436, 2962, 1704, 1530, 1367, 1169, 1049; **ESI-MS** calcd. for $C_{20}H_{31}N_5O_3$ $[M+Na]^+$ 412.2, found 412.2.



(*S*)-*tert*-Butyl 1-(5-((4-(7-methoxynaphthalen-2-yl)-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 17c: Prepared using the general procedure with 15 mg (0.05 mmol) azide **7b**. Yield: 20 mg (0.042 mmol, 85%). $\boldsymbol{R_f}$ 0.47 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.93 (d, J = 7.0 Hz, 6H), 1.43 (s, 9H), 2.18 (m, 1H), 3.94 (s, 3H), 4.78 (m, 1H), 5.15 (m, 1H), 5.65 (s, 2H), 7.17 (m, 3H), 7.79 (s, 1H), 7.80 (s, 1H), 7.87 (m, 2H), 8.26 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 18.1, 19.0, 28.5, 32.8, 44.8, 55.6, 80.3 106.0, 119.6, 124.6, 124.7, 125.6, 127.6, 129.1, 129.9, 134.7, 155.7, 158.2; **IR** (thin film) ν_{max} (cm^{-1}) 3271, 3129, 2969, 1711, 1632, 1612, 1557, 1520, 1504, 1481, 1454, 1392, 1366, 1263, 1217, 1164, 1122, 1067, 1047, 1030, 987, 909, 896, 859, 819, 735; **ESI-MS** calcd. for $C_{26}H_{31}N_5O_4$ $[M+Na]^+$ 500.2, found 500.1.

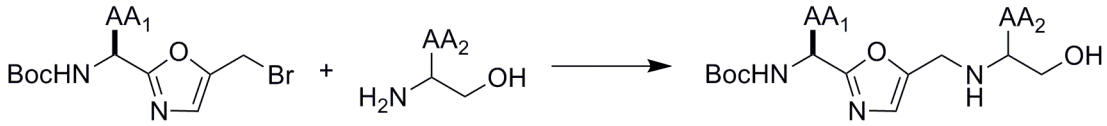


(*S*)-*tert*-Butyl 1-(5-((4-(anthracen-9-yl)-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 17d: Prepared using the general procedure with 15 mg (0.05 mmol) azide **7b**. Yield: 22 mg (0.044 mmol, 88%). R_f 0.50 (5% MeOH in CH_2Cl_2 **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.93 (m, 6H), 1.40 (s, 9H), 2.20 (m, 1H), 4.78 (m, 1H), 5.30 (m, 1H), 5.72 (s, 2H), 7.21 (s, 1H), 7.61 (m, 2H), 7.69 (m, 2H), 7.91 (m, 2H), 7.97 (s, 1H), 8.31 (d, J = 8.0 Hz, 1H), 8.70 (d, J = 8.0 Hz, 1H), 8.77 (d, J = 8.0 Hz, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C;18.2, 19.0, 28.5, 32.9, 44.8, 54.6, 80.3, 122.8, 123.3, 126.2, 126.6, 127.1, 127.5, 128.8, 129.1, 130.2, 130.6, 130.9, 131.4, 147.6, 155.7; **IR** (thin film) ν_{max} (cm^{-1}) 3293, 3135, 3059, 2971, 2933, 2875, 1710, 1504, 1453, 1392, 1367, 1247, 1168, 1122, 1052, 1015, 992, 921, 897, 875, 854, 810, 768, 750, 729; **ESI-MS** calcd. for $C_{29}H_{31}N_5O_3$ $[M+Na]^+$ 520.3, found 520.3.

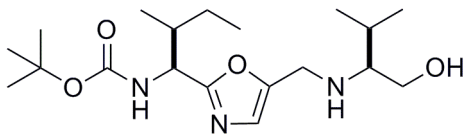


(*S*)-*tert*-Butyl 1-(5-((4-hexyl-1H-1,2,3-triazol-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 17e: Prepared using the general procedure with 15 mg (0.05 mmol) azide **7b**. Yield: 13 mg (0.032 mmol, 64%). R_f 0.52 (5% MeOH in CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$) δ_H 0.89 (m, 9H), 1.30 (m, 6H), 1.44 (s, 9H), 1.65 (quintet, J = 7.0 Hz, 2H), 2.15 (m, 1H), 2.71 (t, J = 7.0 Hz, 2H), 4.74 (m, 1H), 5.24 (m, 1H), 5.54 (m, 2H), 7.09 (s, 1H), 7.32 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11,7, 15.4, 25.3, 25.4, 28.5, 33.4, 36.9, 44.5, 53.6, 80.3, 119.5, 126.7, 145.1, 153.7, 155.5, 165.3; **IR** (thin film) ν_{max} (cm^{-1}) 3291, 3135, 2962, 2930, 2872, 1715, 1519, 1504, 1455, 1391, 1366, 1246, 1171, 1122, 1045, 1015, 992, 975, 877, 783; **ESI-MS** calcd. for $C_{21}H_{35}N_5O_3$ $[M+Na]^+$ 428.3, found 428.2.

General procedure for preparation of dipeptide isosteres by direct substitution

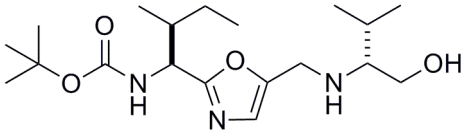


To a 0.2 M solution of bromomethyl oxazole **7** in DMF at RT was added amino alcohol (2.2 eq). The reaction was stirred for 16 h then quenched by the addition of EtOAc (20 mL) and H_2O (15 mL). The layers were separated and the organic fraction was washed with saturated aqueous $NaHCO_3$ (2 x 10 mL) and brine (2 x 10 mL). The organic layer was dried with sodium sulfate, filtered and concentrated. The crude material was purified by flash chromatography utilizing 5% (v/v) MeOH / CH_2Cl_2 as the mobile phase to reveal the product **15, 18-40** as a colorless or pale yellow oil.

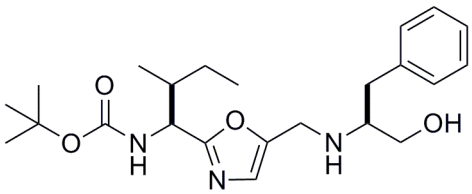


***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 15**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 262 mg (0.71 mmol, 71%). R_f 0.45 (10% MeOH / CH_2Cl_2)); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.86 (d, J = 7.0 Hz, 3H), 0.88 (d, J = 7.0 Hz, 3H), 0.90 (t, J = 7.0 Hz, 3H), 0.92 (d, J = 7.0 Hz, 3H), 1.16 (m, 1H), 1.42 (s, 9H), 1.43

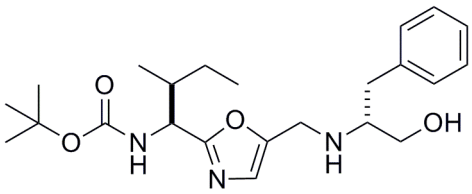
(m, 1H), 1.78 (m, 1H), 1.90 (m, 1H), 2.14 (br s, 1H), 2.39 (td, *J* = 6.0, 4.0 Hz, 1H), 3.37 (dd, *J* = 11.0, 6.6 Hz, 1H), 3.60 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.82 (m, 2H), 4.77 (dd, *J* = 9.0, 6.0 Hz, 1H), 5.26 (d, *J* = 9.0 Hz, 1H), 6.82 (s, 1H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ_C 11.6, 15.4, 18.7, 19.6, 25.3, 28.5, 29.1, 39.5, 41.9, 53.6, 60.6, 63.6, 80.0, 123,9, 150.9, 155.6, 163.7; **IR** (thin film) ν_{max} (cm^{-1}) 3323, 2965, 2933, 2878, 1713, 1526, 1463, 1391, 1367, 1251, 1172, 1044, 1016, 875, 830, 776; **ESI-MS** calcd. for $C_{19}H_{35}N_3O_4$ $[M+H]^+$ 370.3 (MH^+), found 370.3.



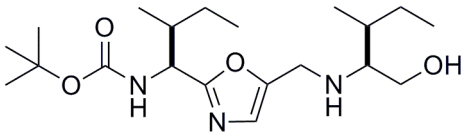
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*R*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 18:** Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 244 mg (0.66 mmol, 66%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.85 (d, *J* = 7.0 Hz, 3H), 0.88 (d, *J* = 7.0 Hz, 3H), 0.89 (t, *J* = 7.0 Hz, 3H), 0.92 (d, *J* = 7.0 Hz, 3H), 1.15 (m, 1H), 1.42 (s, 9H), 1.43 (m, 1H), 1.77 (quintet, *J* = 7.0 Hz, 1H), 2.36 (m, 1H), 3.37 (dd, *J* = 11.0, 6.6 Hz, 1H), 3.60 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.82 (m, 2H), 4.76 (dd, *J* = 9.0, 6.0 Hz, 1H), 5.21 (d, *J* = 9.0 Hz, 1H), 6.82 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.4, 18.7, 19.7, 25.3, 28.5, 29.1, 39.5, 41.8, 53.7, 60.8, 63.4, 80.1, 124.1, 150.6, 155.6, 163.9; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2965, 2933, 2878, 1711, 1526, 1463, 1391, 1367, 1250, 1171, 1044, 1016, 874, 830, 776; **ESI-MS** calcd. for $C_{19}H_{35}N_3O_4$ $[M+H]^+$ 370.3, found 370.3.



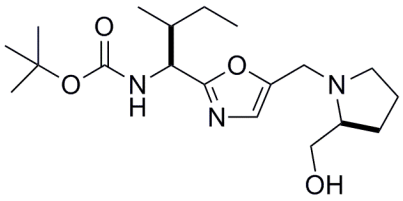
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 28**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 238 mg (0.57 mmol, 57%). R_f 0.45 (10% MeOH / CH_2Cl_2)); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.84 (d, *J* = 7.0 Hz, 3H), 0.90 (t, *J* = 7.0 Hz, 3H), 1.14 (m, 1H), 1.41 (m, 1H), 1.44 (s, 9H), 1.88 (m, 1H), 2.13 (br s, 1H), 2.75 (m, 2H), 2.91 (m, 1H), 3.37 (dd, *J* = 11.0, 5.0 Hz, 1H), 3.63 (dd, *J* = 11.0, 3.7 Hz, 1H), 3.78 (s, 2H), 4.75 (dd, *J* = 9.0, 5.7 Hz, 1H), 5.28 (d, *J* = 10.0 Hz, 1H), 6.73 (s, 1H), 7.14 (d, *J* = 7.0 Hz, 2H), 7.24 (m, 1H), 7.30 (m, 2H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ_C 11.7, 15.4, 25.3, 28.5, 38.2, 39.6, 41.5, 53.6, 59.2, 62.8, 80.0, 124.0, 126.8, 128.8, 129.3, 138.4, 150.4, 155.6, 163.7; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2967, 2931, 2877, 1712, 1497, 1366, 1250, 1170, 1114, 1044, 701; **ESI-MS** calcd. for $C_{23}H_{35}N_3O_4$ $[M+H]^+$ 418.3, found 418.2.



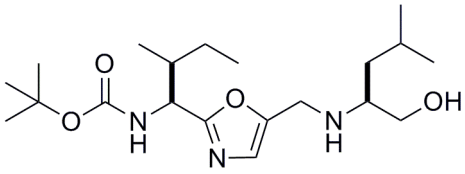
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*R*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 19**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 250 mg (0.60 mmol, 60%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.84 (d, *J* = 7.0 Hz, 3H), 0.90 (t, *J* = 7.0 Hz, 3H), 1.14 (m, 1H), 1.43 (s, 9H), 1.44 (m, 1H), 1.88 (m, 1H), 2.17 (br s, 1H), 2.74 (m, 2H), 2.88 (m, 1H), 3.36 (dd, *J* = 11.0, 5.5 Hz, 1H), 3.63 (dd, *J* = 11.0, 3.8 Hz, 1H), 3.79 (m, 2H), 4.75 (dd, *J* = 9.0, 6.3 Hz, 1H), 5.26 (d, *J* = 9.0 Hz, 1H), 6.72 (s, 1H), 7.14 (d, *J* = 7.0 Hz, 2H), 7.22 (t, *J* = 7.0 Hz, 1H), 7.29 (dd, *J* = 7.0, 7.0 Hz, 2H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ_C 11.7, 15.4, 25.3, 28.5, 38.3, 39.5, 41.5, 53.6, 59.2, 62.7, 80.1, 124.0, 126.8, 128.6, 129.4, 138.5, 150.5, 155.6, 163.8; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2967, 2931, 2877, 1712, 1497, 1366, 1250, 1170, 1114, 1044, 701; **ESI-MS** calcd. for $C_{23}H_{35}N_3O_4$ $[M+H]^+$ 418.3, found 418.2.



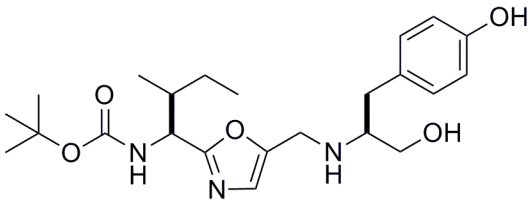
***tert*-Butyl (1*S*,2*S*)-1-(5-(((2*S*,3*S*)-1-hydroxy-3-methylpentan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 29:** Prepared using the general procedure with 345 mmol (1 mmol) bromide **7a**. Yield: 226 mg (0.59 mmol, 59%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.86 (d, J = 6.4 Hz, 3H), 0.86 (d, J = 6.4 Hz, 3H), 0.90 (t, J = 7.6 Hz, 3H), 0.92 (t, J = 7.6 Hz, 3H), 1.12-1.28 (m, 2H), 1.38-1.48 (m, 1H), 1.44 (s, 9H), 1.52-1.63 (m, 1H), 1.84-1.98 (m, 1H), 2.29 (br s, 1H), 2.53 (td, J = 6.4, 4.4 Hz, 1H), 3.38 (dd, J = 11.2, 7.2 Hz, 1H), 3.62 (dd, J = 11.2, 4.0 Hz, 1H), 3.80 (d, J = 14.8 Hz, 1H), 3.87 (d, J = 14.8 Hz, 1H), 4.80 (dd, J = 8.8, 6.0 Hz, 1H), 5.36 (d, J = 8.8 Hz, 1H), 6.84 (s, 1H); **^{13}C NMR** (100 MHz, $CDCl_3$) δ_C 11.7, 12.0, 14.7, 15.3, 25.3, 26.4, 28.5, 35.6, 39.5, 41.8, 53.6, 60.6, 61.9, 79.9, 123.9, 150.9, 155.5, 163.7; **IR** (thin film) ν_{max} (cm^{-1}) 3328, 2965, 2933, 2878, 1714, 1504, 1462, 1367, 1251, 1172, 1108, 1045, 875; **ESI-MS** calcd. for $C_{20}H_{37}N_3O_4$ $[M+H]^+$ 384.3, found 384.3.



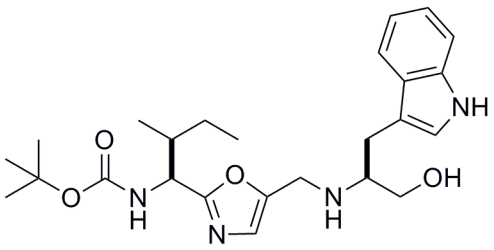
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-2-(hydroxymethyl)pyrrolidin-1-yl)methyl)oxazol-2-yl)-2-methylbutylcarbamate 30:** Prepared using the general procedure using 346 mg (1 mmol) bromide **7a**. Yield: 231 mg (0.63 mmol, 63%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.88 (d, J = 6.9 Hz, 3H), 0.92 (t, J = 7.3 Hz, 3H), 1.10-1.20 (m, 1H), 1.39-1.47 (m, 1H), 1.44 (s, 9H), 1.70-1.83 (m, 3H), 1.84-1.94 (m, 2H), 2.46 (*app*. q, J = 8.0 Hz, 1H), 2.76-2.84 (m, 1H), 3.08 (br s, 1H), 3.05-3.12 (m, 1H), 3.45 (dd, J = 11.1, 3.1 Hz, 1H), 3.61 (dd, J = 11.1, 3.5 Hz, 1H), 3.68 (d, J = 14.7 Hz, 1H), 3.93 (d, J = 14.7 Hz, 1H), 4.81 (dd, J = 8.8, 5.6 Hz, 1H), 5.26 (d, J = 9.0 Hz, 1H), 6.87 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 11.7, 15.4, 23.7, 25.3, 27.9, 28.6, 39.6, 47.5, 53.6, 54.4, 62.4, 63.8, 80.1, 125.4, 149.0, 155.6, 164.1; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2966, 2931, 1876, 1714, 1698, 1505, 1366, 1170; **ESI-MS** calcd. for $C_{19}H_{33}N_3O_4$ $[M+H]^+$ 368.2, found 368.2.



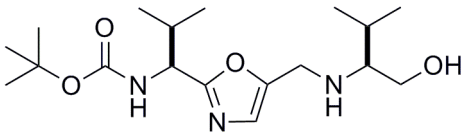
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-1-hydroxy-4-methylpentan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 31**: Prepared using the general procedure with 345 mg (1 mmol) bromide **7a**. Yield: 146 mg (0.46 mmol, 46%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.86 (d, J = 7.0 Hz, 3H), 0.87 (d, J = 7.0 Hz, 3H), 0.89 (d, J = 7.0 Hz, 3H), 0.92 (t, J = 7.0 Hz, 3H), 1.17 (m, 1H), 1.27 (m, 1H), 1.32 (m, 1H), 1.44 (s, 9H), 1.46 (m, 1H), 1.61 (m, 1H), 1.92 (m, 1H), 2.26 (br s, 1H), 2.71 (m, 1H), 3.31 (dd, J = 11.0, 7.0 Hz, 1H), 3.64 (dd, J = 11.0, 4.0 Hz, 1H,), 3.84 (m, 2H), 4.79 (dd, J = 9.0, 6.0 Hz, 1H), 5.38 (d, J = 9.0 Hz, 1H), 6.84 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 11.7, 15.4, 22.9, 23.2, 25.1, 25.3, 28.5, 39.6, 41.2, 41.4, 53.6, 55.9, 63.5, 80.0, 123.9, 150.8, 155.6, 163.8; **IR** (thin film) ν_{max} (cm^{-1}) 3298, 2962, 2932, 2875, 1714, 1526, 1465, 1391, 1366, 1250, 1172, 1045; **ESI-MS** calcd. for $C_{20}H_{37}N_3O_4$ $[M+H]^+$ 384.3, found 384.5.



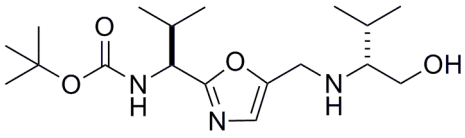
***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-1-hydroxy-3-(4-hydroxyphenyl)propan-2-ylamino) methyl) oxazol-2-yl)-2-methyl butylcarbamate 32:** Prepared using the general procedure with 347 mg (1 mmol) bromide **7a**. Yield: 208 mg (0.48 mmol, 48%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.83 (t, *J* = 6.8 Hz, 3H), 0.84 (d, *J* = 6.8 Hz, 3H), 1.00-1.12 (m, 1H), 1.16-1.31 (m, 1H), 1.47 (s, 9H), 1.74-1.83 (m, 1H), 2.49-2.56 (m, 1H), 2.70-2.80 (m, 2H), 3.48 (dd, *J* = 11.0, 3.2 Hz, 1H), 3.64 (d, *J* = 15.6 Hz, 1H), 3.68 (dd, *J* = 11.6, 3.6 Hz, 1H), 3.76 (d, *J* = 15.6 Hz, 1H), 4.63 (dd, *J* = 9.8, 4.7 Hz, 1H), 5.59 (d, *J* = 9.8 Hz, 1H), 6.69 (d, *J* = 8.4 Hz, 2H), 6.74 (s, 1H), 6.84 (d, *J* = 8.2 Hz, 2H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.4, 24.8, 28.5, 37.2, 39.9, 41.3, 53.5, 57.9, 63.3, 80.8, 116.2, 124.1, 129.3, 130.0, 149.9, 155.6, 156.2, 163.8; **IR** (thin film) ν_{max} (cm^{-1}) 3298, 2968, 2933, 2878, 1694, 1614, 1594, 1516, 1455, 1368, 1249, 1170, 1111, 1044, 911, 834, 733; **ESI-MS** calcd. for $C_{23}H_{35}N_3O_5$ $[M+H]^+$ 434.3, found 434.4.



***tert*-Butyl (1*S*,2*S*)-1-(5-(((*S*)-1-hydroxy-3-(1H-indol-3-yl)propan-2-ylamino)methyl)oxazol-2-yl)-2-methylbutylcarbamate 33**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7a**. Yield: 100 mg (0.22 mmol, 22%). R_f 0.45 (10% MeOH / CH_2Cl_2)); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.82 (d, *J* = 6.4 Hz, 3H), 0.84 (t, *J* = 7.2 Hz, 3H), 1.02-1.14 (m, 1H), 1.30-1.44 (m, 1H), 1.47 (s, 9H), 1.74-1.86 (m, 1H), 2.44 (br s, 1H), 2.83-2.95 (m, 2H), 2.95-3.04 (m, 1H), 3.50 (dd, *J* = 10.8, 3.6 Hz, 1H), 3.66-3.82 (m, 3H), 4.70 (dd, *J* = 9.6, 6.0 Hz, 1H), 5.46 (d, *J* = 9.2 Hz, 1H), 6.65 (s, 1H), 6.74 (s, 1H), 7.09 (t, *J* = 7.6 Hz, 1H), 7.18 (t, *J* = 7.6 Hz, 1H), 7.38 (d, *J* = 8.0 Hz, 1H), 7.54 (d, *J* = 7.6 Hz, 1H), 9.11 (s, 1H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ_C 11.7, 15.5, 25.1, 27.4, 28.6, 39.5, 41.4, 53.7, 57.3, 63.3, 80.5, 111.7, 118.7, 119.4, 122.1, 122.4, 124.3, 128.1, 136.5, 150.3, 156.2, 164.0; **IR** (thin film) ν_{max} (cm^{-1}) 3310, 3058, 2968, 2932, 2878, 1694, 1620, 1504, 1457, 1392, 1367, 1251, 1168, 1105, 1044, 910, 872, 737; **ESI-MS** calcd. for $C_{25}H_{36}N_4O_4$ $[M+H]^+$ 457.3, found 457.4.

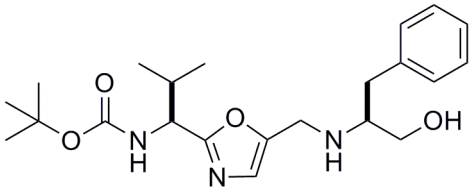


***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-methylpropylcarbamate 34:** Prepared using the general procedure with 332 mg (1 mmol) bromide **7b**. Yield: 277 mg (0.78 mmol, 78%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.90 (d, *J* = 7.0 Hz, 3H), 0.92 (d, *J* = 7.0 Hz, 3H), 0.94 (d, *J* = 7.0 Hz, 3H), 0.94 (d, *J* = 7.0 Hz, 3H), 1.44 (s, 9H), 1.81 m, 1H), 2.17 (m, 1H), 2.20 (br s, 2H) 2.41 (m, 1H), 3.39 (dd, *J* = 11.0, 7.0 Hz, 1H), 3.62 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.84 (m, 2H), 4.72 (dd, *J* = 11.0, 6.0 Hz, 1H), 5.31 (d, *J* = 5.0 Hz, 1H), 6.84 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.2, 18.7, 19.0, 19.6, 28.5, 29.1, 33.0, 42.0, 54.5, 60.9, 63.6, 80.0, 123.9, 151.0, 155.7, 163.4; **IR** (thin film) ν_{max} (cm^{-1}) 3325, 2963, 1702, 1522, 1367, 1172; **ESI-MS** calcd. for $C_{18}H_{33}N_3O_4$ $[M+H]^+$ 365.3, found 356.1.

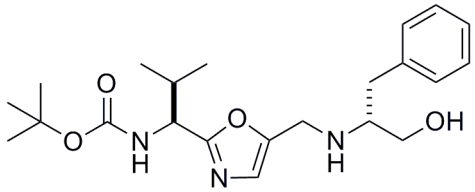


***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-methylpropylcarbamate 20:** Prepared using the general procedure with 333 mg (1 mmol) bromide

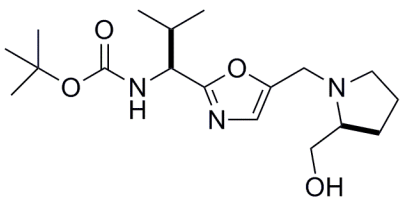
7b. Yield: 227 mg (0.64 mmol, 64%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.90 (d, J = 7.0 Hz, 3H), 0.92 (d, J = 7.0 Hz, 3H), 0.93 (d, J = 7.0 Hz, 3H), 0.94 (d, J = 7.0 Hz, 3H), 1.44 (s, 9H), 1.79 (m, 1H), 2.17 (m, 1H), 2.20 (br s, 2H), 2.41 (m, 1H), 3.40 (dd, J = 11.0, 6.0 Hz, 1H), 3.63 (dd, J = 11.0, 4.0 Hz, 1H), 3.84 (m, 2H), 4.72 (dd, J = 9.0, 6.0 Hz, 1H), 5.35 (d, J = 9.0 Hz, 1H), 6.84 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.2, 18.7, 19.0, 19.6, 28.5, 29.1, 32.9, 41.9, 54.6, 60.9, 63.4, 80.0, 124.0, 150.9, 155.7, 163.9; **IR** (thin film) ν_{max} (cm^{-1}) 3300, 2964, 1700, 1507, 1166; **ESI-MS** calcd. for $C_{18}H_{33}N_3O_4$ $[M+H]^+$ 356.3, found 356.2.



***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-methylpropylcarbamate 35:** Prepared using the general procedure with 331 mg (1 mmol) bromide **7b**. Yield: 230 mg (0.57 mmol, 57%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.88 (d, J = 6.5 Hz, 3H), 0.89 (d, J = 6.5 Hz, 3H), 1.44 (s, 9H), 2.12 (*app.* octet, J = 6.5 Hz, 1H), 2.21 (br s, 1H), 2.69-2.81 (m, 2H), 2.86-2.94 (m, 1H), 3.38 (dd, J = 10.9, 5.0 Hz, 1H), 3.63 (dd, J = 10.9, 3.9 Hz, 1H), 3.78 (s, 2H), 4.67 (dd, J = 9.8, 5.1 Hz, 1H), 5.29 (d, J = 9.2 Hz, 1H), 6.73 (s, 1H), 7.11-7.16 (m, 2H), 7.20-7.26 (m, 1H), 7.26-7.34 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.1, 18.9, 28.6, 33.0, 38.3, 41.5, 54.5, 59.2, 62.8, 80.1, 124.0, 126.8, 128.8, 129.4, 138.4, 150.5, 155.7, 163.9; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2968, 2931, 2875, 1713, 1497, 1367, 1171, 1043, 701; **ESI-MS** calcd. for $C_{22}H_{33}N_3O_4$ $[M+H]^+$ 404.3, found 404.2.

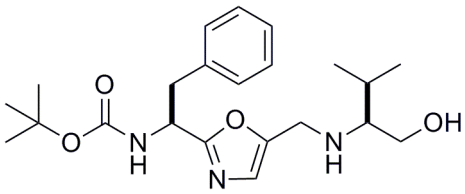


***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-methylpropylcarbamate 21:** Prepared using the general procedure with 332 mg (1 mmol) bromide **7b**. Yield: 242 mg (0.60 mmol, 60%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.89 (d, J = 6.0 Hz, 3H), 0.91 (d, J = 6.0 Hz, 3H), 1.43 (s, 9H), 2.12 (m, 1H), 2.74 (d, J = 7.0 Hz, 2H), 2.88 (m, 1H), 3.37 (dd, J = 11.0, 5.0 Hz, 1H), 3.62 (dd, J = 11.0, 4.0 Hz, 1H), 3.80 (m, 2H), 4.68 (dd, J = 9.0, 6.0 Hz, 1H), 5.33 (d, J = 9.0 Hz, 1H), 6.73 (s, 1H), 7.15 (d, J = 7.0 Hz, 2H), 7.22 (m, 1H), 7.28 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.2, 19.0, 28.5, 32.9, 38.3, 41.5, 54.6, 59.3, 62.8, 80.1, 124.0, 126.8, 128.9, 129.4, 138.5, 150.6, 155.7, 163.9; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2968, 2875, 1714, 1497, 1367, 1171, 735; **ESI-MS** calcd. for $C_{22}H_{33}N_3O_4$ $[M+H]^+$ 404.3, found .

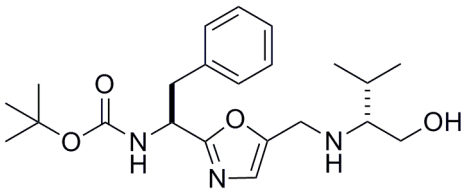


***tert*-Butyl (*S*)-1-(5-(((*S*)-2-(hydroxymethyl)pyrrolidin-1-yl)methyl)oxazol-2-yl)-2-methylpropylcarbamate 36:** Prepared using the general procedure with 333 mg (1 mmol) bromide **7b**. Yield: 307 mg (0.87 mmol, 87%). R_f 0.42 (10% MeOH/ CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.91 (d, J = 6.6 Hz, 3H), 0.92 (d, J = 6.6 Hz, 3H), 1.44 (s, 9H), 1.64-1.81 (m, 3H), 1.82-1.95 (m, 1H), 2.18 (*app.* q, J = 9.0 Hz, 1H), 2.72-2.80 (m, 1H), 2.91 (br s, 1H), 3.00-3.09 (m, 1H), 3.43 (dd, J = 10.9, 2.9 Hz, 1H), 3.60 (dd, J = 10.9, 3.7 Hz, 1H), 3.63 (d, J = 14.8 Hz, 1H), 3.92 (d, J = 14.7 Hz, 1H), 4.74 (dd, J = 8.9, 5.6 Hz, 1H), 5.30 (d, J = 8.8 Hz, 1H), 6.86 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.0, 18.9, 23.7, 28.0, 28.5, 33.0, 47.6, 54.4, 54.5, 62.5, 63.7, 80.0, 125.1, 149.4, 155.7, 164.1; **IR** (thin film)

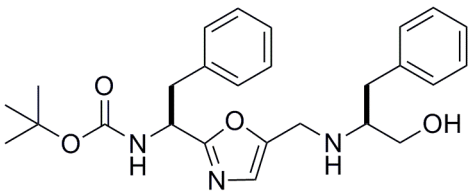
ν_{max} (cm^{-1}) 3304, 2966, 2931, 2874, 1714, 1698, 1520, 1366, 1171; **ESI-MS** calcd. for $C_{18}H_{31}N_3O_4$ $[M+H]^+$ 354.2, found 354.2.



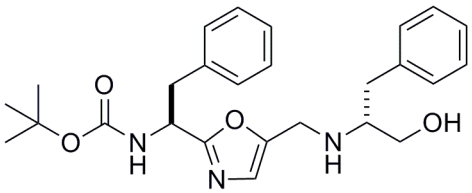
***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-phenylethyl carbamate 37:** Prepared using the general procedure with 380 mg (1 mmol) **7c**. Yield: 254 mg (0.63 mmol, 63%). $\boldsymbol{R_f}$ 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.89 (d, *J* = 7.0 Hz, 3H), 0.93 (d, *J* = 7.0 Hz, 3H), 1.41 (s, 9H), 1.78 (m, 1H), 2.05 (br s, 1H), 2.37 (m, 1H) 3.19 (m, 2H), 3.37 (dd, *J* = 11.0, 7.0 Hz, 1H), 3.61 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.79 (m, 2H), 5.13 (m, 1H), 5.30 (m, 1H), 6.81 (s, 1H), 7.06 (d, *J* = 6.0 Hz, 2H), 7.21-7.26 (m, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.6, 19.6, 28.5, 29.1, 40.6, 41.9, 50.3, 63.6, 80.2, 124.1, 127.1, 128.7, 129.6, 136.4, 151.1, 155.2, 163.4; **IR** (thin film) ν_{max} (cm^{-1}) 3344, 2962, 2930, 2874, 1712, 1637, 1498, 1456, 1391, 1366, 1264, 1252, 1167, 1104, 1048, 737, 700; **ESI-MS** calcd. for $C_{22}H_{33}N_3O_4$ $[M+H]^+$ 404.3, found 404.1.



***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2-phenylethylcarbamate 22:** Prepared using the general procedure with 379 mg (1 mmol) bromide **7c**. Yield: 274 mg (0.68 mmol, 68%). $\boldsymbol{R_f}$ 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.88 (d, *J* = 7.0 Hz, 3H), 0.92 (d, *J* = 7.0 Hz, 3H), 1.40 (s, 9H), 1.78 (m, 1H) 2.05 (br s, 1H), 2.36 (m, 1H), 3.15 (dd, *J* = 14.0, 7.0 Hz, 1H), 3.22 (dd, *J* = 14.0, 7.0 Hz, 1H), 3.38 (dd, *J* = 11.0, 7.0 Hz, 1H), 3.61 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.78 (m, 2H), 5.13 (m, 1H), 5.22 (m, 1H), 6.82 (s, 1H), 7.06 (d, *J* = 7.0 Hz, 2H), 7.18-7.27 (m, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.7, 19.6, 28.5, 29.1, 40.5, 41.9, 50.3, 60.9, 63.6, 80.2, 124.1, 127.1, 128.6, 129.6, 136.4, 151.1, 155.2, 163.4; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2961, 1701, 1497, 1366, 1167, 1047, 700; **ESI-MS** calcd. for $C_{22}H_{33}N_3O_4$ $[M+H]^+$ 404.3, found 404.2.

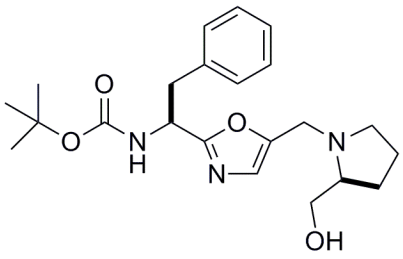


***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-phenylethylcarbamate 38:** Prepared using the general procedure with 380 mg (1 mmol) bromide **7c**. Yield 280 mg (0.62 mmol, 62%). $\boldsymbol{R_f}$ 0. 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.41 (s, 9H), 2.72 (d, *J* = 7.0 Hz, 2H), 2.84 (m, 1H), 3.10 (dd, *J* = 14.0, 6.0 Hz, 1H), 3.17 (dd, *J* = 13.0, 6.0 Hz, 1H), 3.36 (dd, *J* = 11.0, 5.0 Hz, 1H), 3.60 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.74 (s, 2H), 5.08 (m, 1H), 5.27 (m, 1H), 6.70 (s, 1H), 7.02 (d, *J* = 6.0 Hz, 2H), 7.12 (d, *J* = 7.0 Hz, 2H), 7.16-7.24 (m, 4H), 7.24-7.30 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 28.5, 38.2, 41.5, 41.6, 50.3, 59.1, 62.9, 163.4, 155.2, 150.7, 138.5, 136.4, 129.6, 129.4, 128.9, 128.6, 127.1, 126.8, 124.2, 80.2, 62.9, 59.1, 50.3, 41.6, 41.5, 38.2, 28.5; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2977, 2930, 1713, 1496, 1367, 1167, 1048, 742, 700; **ESI-MS** calcd. for $C_{26}H_{33}N_3O_4$ $[M+H]^+$ 452.3, found 452.2.

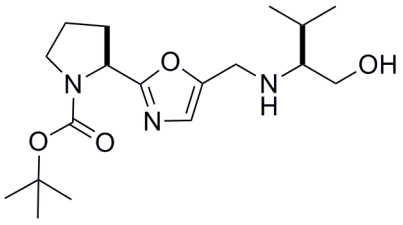


***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2-phenylethylcarbamate 23:** Prepared using the general procedure with 380 mg (1 mmol) bromide **7c**. Yield: 284 mg (0.63 mmol, 63%). $\boldsymbol{R_f}$ 0.45 (10%

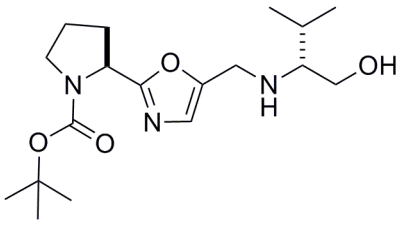
MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.39 (s, 9H), 2.38 (br s, 2H), 2.72 (m, 2H), 2.85 (m, 1H), 3.05-3.20 (m, 2H), 3.35 (dd, *J* = 11.0, 6.0 Hz, 1H), 3.59 (dd, *J* = 11.0, 4.0 Hz, 1H), 3.75 (m, 2H), 5.10 (m, 1H), 5.34 (m, 1H), 6.70 (s, 1H), 7.04 (d, *J* = 7.0 Hz, 2H), 7.12-7.14 (m, 4H), 7.16-7.30 (m, 4H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 163.4, 155.2, 150.8, 138.6, 136.4, 129.6, 129.4, 128.9, 128.7, 127.1, 126.8, 124.1, 80.2, 62.9, 59.3, 50.3, 41.5, 40.5, 38.2, 28.5; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2977, 2930, 1713, 1496, 1367, 1167, 1048, 742, 700; **ESI-MS** calcd. for $C_{26}H_{33}N_3O_4$ $[M+H]^+$ 452.3, found 452.2.



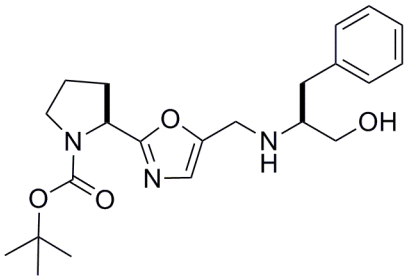
***tert*-Butyl (*S*)-1-(5-(((S)-2-(hydroxymethyl)pyrrolidin-1-yl)methyl)oxazol-2-yl)-2-phenylethylcarbamate 39:** Prepared using the general procedure with 379 mg (1 mmol) bromide **7c**. Yield: 200 mg (0.50 mmol, 50%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 1.42 (s, 9H), 1.63-1.83 (m, 3H), 1.83-1.93 (m, 1H), 2.31-2.52 (m, 2H), 2.62-2.72 (m, 1H), 2.92-3.00 (m, 1H), 3.09-3.26 (m, 2H), 3.41 (dd, *J* = 11.0 Hz, 2.9, 1H), 3.57 (d, *J* = 14.8 Hz, 1H), 3.59 (dd, *J* = 11.0, 3.6 Hz, 1H), 3.87 (d, *J* = 14.8 Hz, 1H), 5.05-5.25 (m, 2H), 6.82 (s, 1H), 7.04 (*app.* d, *J* = 6.5 Hz, 2H), 7.14-7.28 (m, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 23.6, 27.9, 28.5, 40.6, 47.4, 50.4, 54.3, 62.3, 63.5, 80.1, 125.3, 127.1, 128.7, 129.6, 136.3, 149.5, 155.6, 163.6; **IR** (thin film) ν_{max} (cm^{-1}) 3306, 2973, 2928, 1713, 1520, 1366, 1167; **ESI-MS** calcd. $C_{22}H_{31}N_3O_4$ $[M+H]^+$ 402.2, found 402.3.



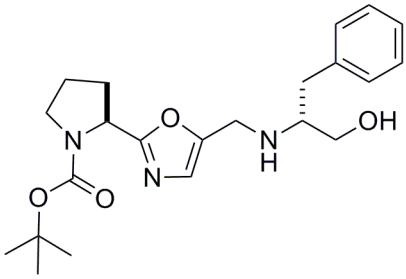
(*S*)-*tert*-Butyl 2-(5-(((*S*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)pyrrolidine-1-carboxylate 40: Prepared using the general procedure with 330 mg (1 mmol) bromide **7e**. Yield: 194 mg (0.55 mmol, 55%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$ at 60 ˚C) δ_H 0.91 (d, *J* = 7.0 Hz, 3H), 0.94 (d, *J* = 7.0 Hz, 3H), 1.27 (br s, 9H), 1.79 (m, 1H), 1.95 (m, 3H), 2.08 (m, 2H), 2.23 (m, 1H), 2.41 (dd, *J* = 10.0, 6.0 Hz, 1H), 3.39 (dd, *J* = 10.0, 6.0 Hz, 1H), 3.49 (m, 1H), 3.60 (dd, *J* = 11.0, 7.0 Hz, 2H), 3.83 (m, 2H), 4.90 (br s, 1H), 6.80 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ˚C) δ_C 18.7, 19.3, 23.9, 28.5, 29.5, 42.3, 46.6, 55.0, 61.4, 64.0, 79.9, 124.0, 128.7, 129.4, 150.8, 165.0; **IR** (thin film) ν_{max} (cm^{-1}) 3351, 2960, 2932, 2876, 1700, 1393, 1162, 1116; **ESI-MS** calcd. for $C_{18}H_{31}N_3O_4$ $[M+H]^+$ 354.2, found 354.2.



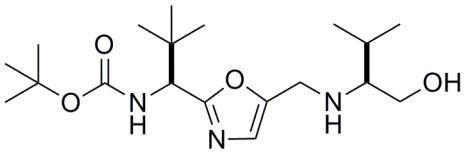
(*S*)-*tert*-Butyl 2-(5-(((*R*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)pyrrolidine-1-carboxylate 24: Prepared using the general procedure with 331 mg (1 mmol) bromide **7e**. Yield: 191 mg (0.54 mmol, 54%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$ at 60 ˚C) δ_H 0.90 (d, *J* = 7.0 Hz, 3H), 0.93 (d, *J* = 7.0 Hz, 3H), 1.37 (br s, 9H), 1.78 (m, 1H), 1.95 (m, 3H), 2.08 (m, 2H), 2.23 (m, 1H), 2.40 (m, 1H), 3.38 (dd, *J* = 10.0, 7.0 Hz, 1H), 3.47 (m, 1H), 3.60 (dd, *J* = 10.0, 4.0 Hz, 2H), 3.83 (m, 2H), 4.9 (br s, 1H), 6.81 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ˚C) δ_C 18.7, 19.3, 23.9, 28.5, 29.5, 42.3, 46.6, 54.9, 61.4, 63.4, 79.9, 124.1, 128.7, 129.4, 150.8, 165.0; **IR** (thin film) ν_{max} (cm^{-1}) 3338, 2976, 2930, 1697, 1394, 1161, 1118, 732; **ESI-MS** calcd. for $C_{18}H_{31}N_3O_4$ $[M+H]^+$ 354.2, found 354.2.



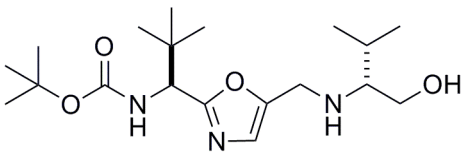
(*S*)-*tert*-Butyl 2-(5-(((*S*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)pyrrolidine-1-carboxylate 41: Prepared using the general procedure with 330 mg (1 mmol) bromide **7e**. Yield: 241 mg (0.60 mmol, 60%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (500 MHz, $CDCl_3$ at 50 ˚C) δ_H 1.35 (s, 9H), 1.91 (m, 2H), 2.07 (m, 2H), 2.21 (m, 2H), 2.73 (d, J = 7.0 Hz, 2H), 2.90 (m, 1H), 3.35 (dd, J = 11.0, 6.0 Hz, 1H), 3.48 (m, 1H), 3.57 (dd, J = 10.0, 6.0 Hz, 2H), 3.77 (m, 2H), 4.86 (br s, 1H), 6.71 (s, 1H), 7.14 (d, J = 7.0 Hz, 2H), 7.21 (m, 1H), 7.27 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ˚C) δ_C 23.8, 28.5, 32.0, 38.5, 41.8, 46.6, 55.0, 59.7, 63.1, 79.9, 124.0, 126.6, 128.8, 129.1, 129.3, 138.6, 150.5, 164.9; **IR** (thin film) ν_{max} (cm^{-1}) 3338, 2976, 2930, 2878, 1699, 1394, 1161, 1117, 702; **ESI-MS** calcd. for $C_{22}H_{31}N_3O_4$ $[M+H]^+$ 402.2, found 402.2.



(*S*)-*tert*-Butyl 2-(5-(((*R*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)pyrrolidine-1-carboxylate 25: Prepared using the general procedure with 329 mg (1 mmol) bromide **7e**. Yield: 233 mg (0.58 mmol, 58%). R_f 0.42 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$ at 60 ˚C) δ_H 1.34 (s, 9H), 1.89 (m, 1H), 2.06 (m, 3H), 2.21 (m, 2H), 2.73 (d, J = 7.0 Hz, 2H), 2.90 (m, 1H), 3.35 (dd, J = 11.0 Hz, 6.0 Hz, 1H), 3.47 (m, 1H), 3.58 (m, 2H), 3.78 (m, 2H), 4.86 (br s, 1H), 6.71 (s, 1H), 7.14 (d, J = 7.0 Hz, 2H), 7.19 (m, 1H), 7.27 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$ at 60 ˚C) δ_C 23.9, 28.5, 30.8, 38.5, 41.8, 46.6, 54.9, 59.6, 63.3, 79.9, 124.1, 126.6, 128.7, 129.1, 129.3, 138.7, 150.5, 165.0; **IR** (thin film) ν_{max} (cm^{-1}) 3333, 2976, 2930, 2878, 1699, 1394, 1162, 1118, 702; **ESI-MS** calcd. for $C_{22}H_{31}N_3O_4$ $[M+H]^+$ 402.2, found 402.2.

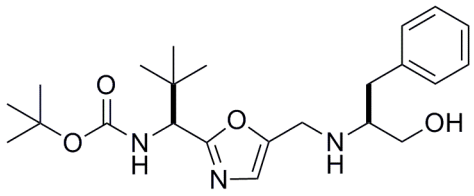


***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 42:** Prepared using the general procedure with 345 mg (1 mmol) bromide **7d**. Yield: 266 mg (0.72 mmol, 72%). R_f 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.90 (d, J = 7.0 Hz, 3H), 0.94 (d, J = 7.0 Hz, 3H), 0.97 (s, 9H), 1.43 (s, 9H), 1.80 (m, 1H), 2.23 (s, 1H), 2.42 (m, 1H), 3.38 (dd, J = 11.0, 7.0 Hz, 1H), 3.63 (dd, J = 11.0, 4.0 Hz, 1H), 3.84 (m, 2H), 4.67 (d, J = 10.0 Hz, 1H), 5.35 (d, J = 10.0 Hz, 1H), 6.85 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.7, 19.6, 26.4, 28.5, 29.1, 36.0, 41.9, 57.5, 60.9, 63.6, 80.0, 123.9, 128.9, 150.6, 155.7, 163.5; **IR** (thin film) ν_{max} (cm^{-1}) 3327, 2963, 1715, 1506, 1367, 1171, 1054; **ESI-MS** calcd. for $C_{19}H_{35}N_3O_4$ $[M+H]^+$ 370.3, found 370.3

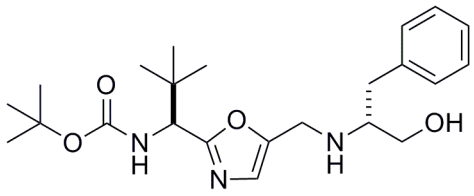


***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-methylbutan-2-ylamino)methyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 26:** Prepared using the general procedure with 345 mg (1 mmol) bromide **7d**. Yield: 277 mg (0.75 mmol, 75%). R_f 0.45 (10% MeOH/ CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.90 (d, J = 7.0 Hz, 3H), 0.94 (d, J = 7.0 Hz, 3H), 0.97 (s, 9H), 1.43 (s, 9H), 1.80 (m, 1H), 2.25 (br s, 1H), 2.38 (m, 1H), 3.40 (dd, J = 11.0, 7.0 Hz, 1H), 3.63 (dd, J = 11.0, 4.0 Hz, 1H), 3.84 (m, 2H), 4.66 (d, J = 10.0 Hz, 1H),

5.36 (d, J = 9.0 Hz, 1H), 6.85 (s, 1H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 18.7, 19.6, 26.4, 28.5, 29.1, 35.9, 41.8, 57.5, 60.8, 63.4, 80.0, 124.0, 150.6, 155.7, 163.5; **IR** (thin film) ν_{max} (cm^{-1}) 3327, 2964, 2874, 1711, 1503, 1367, 1249, 1172, 1054, 734; **ESI-MS** calcd. for $C_{19}H_{35}N_3O_4$ $[M+H]^+$ 370.3, found 370.3.



***tert*-Butyl (*S*)-1-(5-(((*S*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 43**: Prepared using the general procedure with 346 mg (1 mmol) bromide **7d**. Yield: 279 mg (0.67 mmol, 67%). $\boldsymbol{R_f}$ 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.93 (s, 9H), 1.43 (s, 9H), 2.16 (br s, 2H), 2.76 (m, 2H), 2.92 (m, 1H), 3.37 (dd, J = 11.0, 7.0 Hz, 1H), 3.63 (dd, J = 11.0, 4.0 Hz, 1H), 3.79 (s, 2H), 4.62 (d, J = 10.0 Hz, 1H), 5.34 (d, J = 10.0 Hz, 1H), 6.74 (s, 1H), 7.14 (d, J = 7.0 Hz, 2H), 7.24 (m, 1H), 7.29 (m, 2H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ_C 26.4, 28.6, 36.1, 38.3, 41.5, 57.4, 59.1, 62.8, 80.0, 123.9, 126.7, 128.9, 129.4, 138.4, 150.2, 155.7, 163.5; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2968, 2934, 2872, 1713, 1498, 1367, 1248, 1170, 1054, 737, 701; **ESI-MS** calcd. for $C_{23}H_{35}N_3O_4$ $[M+H]^+$ 418.3, found 418.2.



***tert*-Butyl (*S*)-1-(5-(((*R*)-1-hydroxy-3-phenylpropan-2-ylamino)methyl)oxazol-2-yl)-2,2-dimethylpropylcarbamate 27:** Prepared using the general procedure with 346 mg (1 mmol) bromide **7d**. Yield: 329 mg (0.79 mmol, 79%). $\boldsymbol{R_f}$ 0.45 (10% MeOH / CH_2Cl_2); **^{1}H NMR** (400 MHz, $CDCl_3$) δ_H 0.94 (s, 9H), 1.41 (s, 9H), 2.16 (br s, 2H), 2.75 (d, J = 7.0 Hz, 2H), 2.88 (m, 1H), 3.36 (dd, J = 11.0, 6.0 Hz, 1H), 3.63 (dd, J = 11.0, 4.0 Hz, 1H), 3.80 (m, 2H), 4.63 (d, J = 10.0 Hz, 1H), 5.36 (d, J = 10.0 Hz, 1H), 6.73 (s, 1H), 7.15 (d, J = 7.0 Hz, 2H), 7.22 (dd, J = 7.0 Hz, 1H), 7.29 (m, 2H); **^{13}CNMR** (125 MHz, $CDCl_3$) δ_C 26.5, 28.5, 35.9, 38.3, 41.5, 57.5, 59.2, 62.7, 80.0, 124.0, 126.8, 128.9, 129.4, 138.5, 150.3, 155.7, 163.5; **IR** (thin film) ν_{max} (cm^{-1}) 3307, 2968, 2933, 2872, 1712, 1498, 1367, 1249, 1170, 1055, 736, 701; **ESI-MS** calcd. for $C_{23}H_{35}N_3O_4$ $[M+H]^+$ 418.3, found 418.2.