

Library synthesis and screening: 2,4-diphenylthiazoles and 2,4-diphenyloxazoles as potential novel prion disease therapeutics

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mp, IR, ¹H NMR and ¹³C NMR Spectroscopic Data:

***N*-(2,4-Diphenylthiazol-5-yl)-benzamide (1e).** mp 181–183° C; ν_{\max} (Solid)/cm⁻¹ 3237, 1643, 1548, 1475, 1303, 1288, 758, 675; δ_{H} /ppm (250 MHz, CDCl₃) 7.39–7.63 (m, 9H), 7.75–7.87 (m, 4H), 7.98–8.05 (m, 2H), 8.77 (br s, 1H); δ_{C} /ppm (125 MHz, CDCl₃) 126.1, 127.2, 127.9, 128.4, 129.0, 129.14, 129.17, 129.6, 129.7, 132.4, 132.7, 133.8, 134.3, 141.1, 160.2, 163.4; R_f = 0.20 (60% DCM–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)-4-fluorobenzamide (1f).** mp 201–203° C; ν_{\max} (Solid)/cm⁻¹ 1637, 1498, 1478, 1312, 1290, 1233, 844, 755, 674; δ_{H} /ppm (250 MHz, CDCl₃) 7.11 (t, 2H, J = 8.6 Hz), 7.31–7.42 (m, 4H), 7.46–7.54 (m, 2H), 7.66–7.81 (m, 4H), 7.94 (dd, 2H, J = 1.8 Hz, 7.9 Hz), 8.61 (br s, 1H); δ_{C} /ppm (125 MHz, CDCl₃) 116.2 (d, $^2J_{\text{C-F}}$ = 22 Hz), 127.9, 128.4, 128.50, 128.53, 128.89, 128.92, 129.54, 129.56, 129.6, 129.7, 133.7, 134.2, 141.1, 160.3, 162.4, 165.3 (d, $^1J_{\text{C-F}}$ = 253 Hz); δ_{F} (235 MHz, CDCl₃) –106.1; R_f = 0.45 (20% EtOAc–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)-4-methoxybenzamide (1g).** ν_{\max} (solid)/cm⁻¹ 3159, 3010 (br), 1631, 1607, 1549, 1498, 1297, 1253, 755, 675; δ_{H} (250 MHz, CDCl₃) 3.80 (s, 3H), 6.91 (dt, 2H, J = 2.6 Hz, 8.8 Hz), 7.31–7.42 (m, 4H), 7.46–7.55 (m, 2H), 7.91–7.98 (m, 2H), 8.62 (br s, 1H); δ_{C} (125 MHz, CDCl₃) 55.6, 114.3, 124.5, 126.1, 127.9, 128.3, 128.9, 129.1, 129.5, 129.6, 133.9, 134.5, 140.7, 160.0, 162.9, 163.1; R_f = 0.07 (60% DCM–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)-2-trifluoromethylbenzamide (1h).** mp 230–231° C (dec.); ν_{\max} (solid)/cm⁻¹ 3206, 1657, 1551, 1474, 1312, 1122, 761, 676; δ_{H} (250 MHz, d₆-DMSO) 7.38 (t, 1H, J = 7.2 Hz), 7.44–7.57 (m, 5H), 7.68–7.89 (m, 6H), 7.95–8.03 (m, 2H), 11.47 (s, 1H); δ_{C} (100 MHz, d₆-DMSO) 123.7 (q, $^1J_{\text{C-F}}$ = 272 Hz), 125.7, 125.8, 126.0, 126.4 (q, $^3J_{\text{C-F}}$ = 4.6 Hz), 126.7, 128.0, 128.3, 128.5, 128.7, 129.2, 129.3, 130.1, 130.5, 132.6, 133.5 (q, $^2J_{\text{C-F}}$ = 66.2 Hz), 143.6, 160.1, 166.1; δ_{F} (235 MHz, d₆-DMSO) –57.4; R_f = 0.20 (60% DCM–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)-3-trifluoromethylbenzamide (1i).** mp 154–157° C (dec.); ν_{\max} (solid)/cm⁻¹ 3262, 1650, 1549, 1474, 1334, 1271, 1117, 764, 693, 678, 666; δ_{H} (250 MHz, CDCl₃) 7.32–7.43 (m, 4H), 7.46–7.62 (m, 3H), 7.68–7.80 (m, 3H), 7.87–7.97 (m, 3H), 8.07 (s, 1H), 8.69 (br s, 1H); δ_{C} (125 MHz, CDCl₃) 122.4 (q, $^1J_{\text{C-F}}$ = 271 Hz), 123.5 (q, $^1J_{\text{C-F}}$ = 3.8 Hz), 125.1, 126.9, 127.5, 127.6, 127.9, 128.2 (q, $^3J_{\text{C-F}}$ = 3.5 Hz), 128.6, 130.7 (q, $^2J_{\text{C-F}}$ = 33.1 Hz), 132.2, 132.6, 133.1, 140.8, 159.7, 128.7, 128.8, 129.0, 161.1; δ_{F} (235 MHz, CDCl₃) –63.4; R_f = 0.26 (60% DCM–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)-4-trifluoromethylbenzamide (1j).** mp 201–203° C (dec.); ν_{\max} (solid)/cm⁻¹ 1646, 1557, 1480, 1326, 1122, 1066, 852, 758, 678; δ_{H} (250 MHz, CDCl₃) 7.50–7.38 (m, 4H) 7.57 (t, 2H, J = 7.5 Hz), 7.72–7.81 (m, 4H), 7.91–8.04 (m, 4H), 8.76 (s, 1H); δ_{C} (125 MHz, CDCl₃) 122.5 (q, $^1J_{\text{C-F}}$ = 271 Hz), 124.5, 126.19, 126.21 (q, $^3J_{\text{C-F}}$ = 3.5 Hz), 127.7, 127.9, 128.59, 128.64, 129.0, 129.7, 129.9, 133.6, 134.3 (q, $^2J_{\text{C-F}}$ = 32.8 Hz), 135.7, 141.8, 160.7, 162.2; δ_{F} (235 MHz, CDCl₃) –63.6; R_f = 0.23 (60% DCM–hexane).

***N*-(2,4-Diphenylthiazol-5-yl)nicotinamide (1k).** mp 184–185° C (dec.); ν_{\max} (solid)/cm⁻¹ 3236 (br), 3054 (br), 1644, 1544, 1282, 760, 694, 676; δ_{H} (250 MHz, CDCl₃) 7.35–7.57 (m, 7H), 7.71–7.78 (m, 2H), 7.94–8.02 (m, 2H), 8.17 (dt, 1H, J = 2.0 Hz, 8.2 Hz), 8.70 (d, 1H, J = 4.0 Hz), 8.97 (br s, 2H); δ_{C} (125 MHz, CDCl₃) 123.9, 126.2, 128.0, 128.4, 128.5, 128.6, 129.6, 129.0, 129.9, 133.6, 134.1, 135.6, 142.1, 147.9, 153.1, 160.8, 161.9; R_f = 0.20 (2% MeOH–DCM).

***N*-(2,4-Diphenylthiazol-5-yl)isonicotinamide (1l).** mp 214–215° C (dec.); ν_{\max} (solid)/cm⁻¹ 3198, 1646, 1510, 1482, 1297, 975, 759, 683; δ_{H} (250 MHz, d₆-DMSO) 7.35–7.58 (m, 6H), 7.84–8.03 (m, 6H), 8.78–8.85 (m, 2H), 11.39 (s, 1H); δ_{C} (62.8 MHz, d₆-DMSO) 122.3, 126.3, 128.5, 129.2, 129.7, 130.7, 133.7, 134.4, 140.4, 145.3, 150.9, 161.3, 165.0; R_f = 0.31 (2.5% MeOH–DCM).

Quinoline-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1m). mp 229–230° C; ν_{\max} (solid)/cm⁻¹ 3318, 3058, 1678, 1544, 1495, 1470, 1421, 763; δ_{H} (250 MHz, CDCl₃) 7.32–7.47 (m, 4H), 7.53–7.62 (m, 3H), 7.68–7.76 (m, 1H), 7.80–8.01 (m, 6H), 8.30 (s, 2H), 11.24 (br s, 1H); δ_{C} (125 MHz, CDCl₃) 118.7, 126.1, 127.8, 128.0, 128.2, 128.6, 128.9, 129.1, 129.3, 129.5, 129.7, 130.6, 133.9, 134.3, 138.1, 141.2, 146.3, 147.8, 159.6, 160.8; R_f = 0.25 (60% DCM–hexane).

Furan-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1n). ν_{\max} (solid)/cm⁻¹ 3398.0, 2920.7, 1667.8, 1588.6, 1547.7, 1498.7, 1469.7, 1451.8, 1426.7, 1358.4, 1280.4, 1158.2, 1070.3, 1010.3, 979.1,

891.8, 808.8, 736.5, 702.5, 687.9, 675.8, 530.7; δ_{H} (250 MHz, CDCl_3) 6.58 (1H, dd, J 1.8, 3.7 Hz, furan-CH), 7.31 (1H, dd, J 0.9, 3.5 Hz, furan-CH), 7.35 (4H, m, Ph), 7.51 (1H, dd, J 0.9, 1.7 Hz, furan-CH), 7.52–7.62 (2H, m, Ph), 7.73–7.82 (2H, m, Ph), 7.95–8.04 (2H, m, Ph), 8.87 (1H, s, NH); δ_{C} (62.8 MHz, CDCl_3) 112.9, 116.6, 126.1 (furyl-CH), 127.9 (Ph-CH), 128.2 ($\text{C}(\text{O})\text{C}=\text{O}$), 128.3, 128.9, 129.4, 129.6 (Ph-CH), 133.8, 134.2, 146.4, 154.4, 160.2 (Quat.).

5-Nitrofuran-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1o). δ_{H} (250 MHz, d_6 -DMSO) 7.38–7.58 (m, 6H), 7.67 (d, 1H, $^3J_{\text{H-H}} = 4.0$ Hz), 7.84 (d, 1H, $^3J_{\text{H-H}} = 3.7$ Hz), 7.89–7.96 (m, 2H), 7.98–8.04 (m, 2H), 11.47 (br s, 1H); δ_{C} (125 MHz, d_6 -DMSO) 113.4, 117.7, 125.9, 127.9, 128.2, 128.7, 129.3, 130.4, 133.0, 133.7, 145.5, 146.7, 152.0, 155.4, 161.5; $R_f = 0.45$ (DCM).

Isoxazole-5-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1p). mp 191° C (dec.); ν_{max} (solid)/ cm^{-1} 3268 (br), 3129 (br), 1674, 1554, 1475, 1431, 1269, 904, 773, 763, 750, 691, 678, 662; δ_{H} (250 MHz, CDCl_3) 7.03 (d, 1H, $^3J_{\text{H-H}} = 1.9$ Hz), 7.34–7.43 (m, 4H), 7.46–7.55 (m, 2H), 7.67–7.73 (m, 2H), 7.90–7.97 (m, 2H), 8.33 (d, 1H, $^3J_{\text{H-H}} = 1.8$ Hz), 9.05 (br s, 1H); δ_{C} (125 MHz, CDCl_3) 108.0, 126.3, 127.0, 128.0, 128.8, 129.0, 129.7, 130.0, 133.5, 133.6, 142.8, 151.5, 151.9, 161.1, 161.2; $R_f = 0.08$ (60% DCM–hexane).

Thiophene-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1q). mp 161° C (dec.); ν_{max} (solid)/ cm^{-1} 3206 (br), 1636, 1625, 1546, 1476, 1289, 675; δ_{H} (250 MHz, CDCl_3) 7.14 (dd, 1H, $J = 3.7$ Hz, 4.9 Hz), 7.35–7.49 (m, 4H), 7.51–7.62 (m, 4H), 7.77 (d, 2H, $J = 7.0$ Hz), 7.99 (dd, 2H, $J = 2.1$ Hz, 7.9 Hz), 8.57 (s, 1H); δ_{C} (125 MHz, CDCl_3) 126.1, 127.9, 128.2, 128.4, 128.7, 128.8, 129.0, 129.4, 129.6, 129.7, 131.9, 133.8, 134.2, 136.8, 141.2, 158.1, 160.4; $R_f = 0.15$ (60% DCM–hexane).

5-Methylthiophene-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1r). mp 190° C; ν_{max} (solid)/ cm^{-1} 3208, 1626, 1553, 1478, 1296, 675; δ_{H} (250 MHz, d_6 -DMSO) 2.53 (s, 3H + DMSO), 6.96 (d, 1H, $^3J_{\text{H-H}} = 3.7$ Hz), 7.35–7.63 (m, 6H), 7.83 (d, 1H, $^3J_{\text{H-H}} = 4.0$ Hz), 7.89–8.03 (m, 4H), 10.92 (s, 1H); δ_{C} (62.8 MHz, d_6 -DMSO) 15.4, 125.8, 127.0, 127.8, 127.9, 128.7, 129.3, 129.7, 130.1, 130.8, 133.2, 134.0, 135.1, 144.6, 147.0, 160.4, 160.9; $R_f = 0.18$ (60% DCM–hexane).

Benzol[β]thiophene-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1s). mp 209–210° C (dec.); ν_{max} (solid)/ cm^{-1} 3417, 1663, 1552, 1274, 746, 705, 689, 679; δ_{H} (250 MHz, CDCl_3) 7.38–7.51 (m, 6H), 7.59 (t, 2H, $J = 7.5$ Hz), 7.76–7.91 (m, 5H), 7.96–8.03 (m, 2H), 8.69 (s, 1H); δ_{C} (125 MHz, CDCl_3) 122.8, 125.3, 125.5, 125.6, 126.1, 126.9, 127.1, 127.9, 128.47, 128.51, 128.7, 128.9, 129.6, 129.7, 133.6, 134.1, 135.9, 138.8, 141.2, 141.4, 158.6, 160.5; $R_f = 0.21$ (60% DCM–hexane).

Benzofuran-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1t). mp 196–197° C; ν_{max} (solid)/ cm^{-1} 3397, 1678, 1555, 1283, 1168, 954, 830, 741, 680; δ_{H} (250 MHz, d_6 -DMSO) 7.35–7.61 (m, 8H), 7.74 (d, 1H, $^3J_{\text{H-H}} = 8.3$ Hz), 7.82–8.07 (m, 6H), 11.26 (s, 1H); δ_{C} (62.8 MHz, d_6 -DMSO) 112.3, 112.5, 123.7, 124.5, 126.3, 127.4, 128.1, 128.3, 128.5, 129.2, 129.3, 129.7, 130.7, 133.6, 134.4, 145.7, 148.0, 155.1, 157.8, 161.6; $R_f = 0.23$ (60% DCM–hexane).

Benzothiazole-2-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1u). mp 227° C; ν_{max} (solid)/ cm^{-1} 3345, 1673, 1554, 1500, 1088, 912, 756, 679, 605; δ_{H} (250 MHz, CDCl_3) 7.32–7.66 (m, 8H), 7.83–7.91 (m, 2H), 7.95–8.15 (m, 4H), 10.14 (s, 1H); δ_{C} (62.8 MHz, CDCl_3) 122.5, 124.8, 126.2, 127.2, 127.3, 127.9, 128.1, 128.5, 129.0, 129.5, 129.8, 133.6, 133.9, 137.4, 142.3, 152.6, 156.5, 160.6, 161.4; $R_f = 0.23$ (60% DCM–hexane).

Benzol[β]thiophene-5-carboxylic acid (2,4-diphenylthiazol-5-yl)amide (1v). mp 205–206° C (dec.); ν_{max} (solid)/ cm^{-1} 3154, 3066, 2927, 1634, 1544, 1477, 756, 687, 677; δ_{H} (250 MHz, CDCl_3) 7.28–7.42 (m, 5H), 7.45–7.55 (m, 3H), 7.63–7.76 (m, 3H), 7.86–7.97 (m, 3H), 8.24 (d, 1H, $J = 1.5$ Hz), 8.77 (s, 1H); δ_{C} (62.8 MHz, CDCl_3) 122.1, 127.07, 123.14, 124.3, 126.1, 128.0, 128.4, 128.5, 128.6, 128.9, 129.3, 129.5, 129.6, 133.8, 134.4, 139.7, 141.1, 143.7, 160.2, 163.7; $R_f = 0.53$ (DCM).

Cyclopropanecarboxylic acid (2,4-diphenylthiazol-5-yl)amide (1w). mp 215–216° C; ν_{max} (solid)/ cm^{-1} 3239, 1646, 1549, 1505, 1479, 1237, 962, 762, 677; δ_{H} (250 MHz, d_6 -DMSO) 0.85–0.92 (m, 4H), 2.07 (quintet, 1H, $^3J_{\text{H-H}} = 6.2$ Hz), 7.37–7.58 (m, 6H), 7.79–7.87 (m, 2H), 7.92 (dd, 2H, $J = 2.1$ Hz, 7.9 Hz), 10.99 (s, 1H); δ_{C} (125 MHz, d_6 -DMSO) 8.1, 13.5, 125.5, 127.7, 128.1, 128.6, 129.2, 129.7, 130.1, 133.4, 134.0, 141.0, 158.7, 172.1; $R_f = 0.10$ (60% DCM–hexane).

2-Propylpentanoic acid (2,4-diphenylthiazol-5-yl)amide (1x). ν_{max} (solid)/ cm^{-1} 3230, 2951, 2927, 2870, 1651, 1546, 1479, 759, 676; δ_{H} (250 MHz, CDCl_3) 0.92 (t, 6H, $^3J_{\text{H-H}} = 7.2$ Hz), 1.23–1.57 (m, 6H), 1.61–

1.78 (m, 2H), 2.21–2.34 (m, 1H), 7.36–7.46 (m, 4H), 7.48–7.57 (m, 2H), 7.66–7.72 (m, 2H), 7.93–8.00 (m, 3H); δ_{C} (100 MHz, CDCl_3) 14.1, 20.8, 35.1, 47.6, 126.0, 127.9, 128.2, 128.7, 128.8, 129.3, 129.5, 133.7, 134.1, 140.3, 159.9, 172.8.

(2,4-Diphenyloxazol-5-yl)-carbamic acid *tert*-butyl ester (2c). mp 150° C (dec.); δ_{H} (250 MHz, d^6 -DMSO) 1.43 (br s, 9H), 7.36 (dt, 1H, $^3J_{\text{H-H}} = 7.3$ Hz, $^4J_{\text{H-H}} = 1.2$ Hz), 7.43–7.61 (m, 5H), 7.78–7.86 (m, 2H), 7.96–8.07 (m, 2H), 9.70 (s, 1H); δ_{C} (62.8 MHz, d^6 -DMSO) 28.3, 81.0, 126.3, 127.1, 128.4, 129.1, 129.7, 131.1, 131.3, 139.4, 153.8, 157.3; $R_f = 0.40$ (DCM).

***N*-(2,4-Diphenyloxazol-5-yl)benzamide (2d).** mp 196–197° C; ν_{max} (Solid)/ cm^{-1} 3278.2, 3056.2, 2366.1, 1969.8, 1948.0, 1673.2, 1631.4, 1599.2, 1496.2, 1476.5, 1481.9, 1447.8, 1325.7, 1304.3, 1270.5, 1197.9, 1156.1, 1064.6, 1009.9; δ_{H} /ppm (250 MHz, CDCl_3) 7.23–7.62 (9H, m, Ar-H), 7.74–8.17 (7H, m, Ar-H, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 166.9, 157.5, 138.6, 132.7, 132.4, 132.0, 130.9, 130.5, 129.3, 128.82, 128.76, 128.1, 128.0, 126.6, 125.9, 125.8.

***N*-(2,4-Diphenyloxazol-5-yl)-4-fluorobenzamide (2e).** mp 245–247° C; ν_{max} 3245.8 (br), 1672.5, 1631.9, 1599.6, 1555.7, 1496.3, 1481.7, 1447.2, 1325.7, 1305.1, 1273.6, 1231.9, 1197.7, 1155.4, 1065.9, 1009.7, 993.1, 946.0, 906.4, 846.5; δ_{H} /ppm (250 MHz, CDCl_3) 7.31–7.51 (5H, m, Ph), 7.53–7.62 (3H, m, Ph), 7.79–7.87 (2H, m, Ph), 7.99–8.19 (2H, m, Ph), 11.00 (1H, bs, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 165.8, 164.8 (d, $^1J_{\text{C-F}} = 251$ Hz), 157.6, 138.4, 132.0, 130.9, 130.8, 130.4, 129.3, 128.96, 128.91, 128.8, 128.1, 126.6, 125.9, 125.8, 115.9 (d, $^2J_{\text{C-F}} = 22.0$ Hz).

***N*-(2,4-Diphenyloxazol-5-yl)-2-trifluoromethylbenzamide (2g).** mp 201–202° C; ν_{max} (Solid)/ cm^{-1} 3212.1, 2360.3, 2341.7, 1675.7, 1636.8, 1511.3, 1474.8, 1448.2, 1379.7, 1312.4, 1275.2, 1168.6, 1124.8, 1106.2, 1054.5, 1035.7, 1009.8; δ_{H} /ppm (250 MHz, CDCl_3) 7.35–7.65 (6H, m, Ph), 7.74–7.96 (6H, m, Ph), 8.00–8.09 (2H, m, Ph), 11.20 (1H, bs, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 167.4, 157.5, 137.4, 134.3, 132.8, 132.0, 131.0, 130.3, 129.3, 128.7, 128.6, 128.2, 126.7, 126.5, 126.3 (q, $^2J_{\text{C-F}} = 31.8$ Hz), 126.0, 125.9, 123.6 (q, $^1J_{\text{C-F}} = 274$ Hz).

***N*-(2,4-Diphenyloxazol-5-yl)-3-trifluoromethylbenzamide (2h).** mp 213–215° C; ν_{max} (Solid)/ cm^{-1} 3279.7, 2365.5, 2341.1, 1669.6, 1639.0, 1556.3, 1504.2, 1488.4, 1476.7, 1449.8, 1430.1, 1332.4, 1255.1, 1161.8, 1127.1, 1069.9, 1007.8; δ_{H} /ppm (250 MHz, CDCl_3) 7.30–7.63 (6H, m, Ph), 7.80–7.91 (3H, m, Ph), 8.01–8.11 (3H, m, Ph), 8.32–8.44 (2H, m, Ph), 11.27 (1H, bs, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 165.4, 157.6, 138.0, 133.3, 132.1, 132.0, 130.9, 130.3, 130.2, 129.5 (q, $^2J_{\text{C-F}} = 32.5$ Hz), 129.2, 128.7, 128.1, 126.5, 125.9, 124.59, 124.57, 123.8 (q, $^1J_{\text{C-F}} = 273$ Hz).

***N*-(2,4-Diphenyloxazol-5-yl)-4-trifluoromethylbenzamide (2i).** mp 220–221° C; ν_{max} (Solid)/ cm^{-1} 3295.6, 2359.5, 2340.3, 1677.4, 1640.1, 1554.5, 1521.8, 1498.2, 1479.2, 1450.1, 1324.4, 1270.9, 1170.2, 1130.1, 1065.8, 1007.6; δ_{H} /ppm (250 MHz, CDCl_3) 7.31–7.51 (3H, m, Ph), 7.54–7.63 (3H, m, Ph), 7.80–7.88 (2H, m, Ph), 7.95–8.10 (4H, m + d, Ph, $J = 8.2$ Hz), 8.20–8.31 (2H, d, Ph, $J = 8.2$ Hz), 11.51 (1H, bs, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 165.8, 157.6, 138.0, 136.1, 132.4 (q, $^2J_{\text{C-F}} = 32.0$ Hz), 132.0, 131.0, 130.3, 129.2, 128.9, 128.8, 128.1, 126.5, 125.88, 125.85, 123.8 (q, $^1J_{\text{C-F}} = 273$ Hz).

***N*-(2,4-Diphenyloxazol-5-yl)nicotinamide (2j).** mp 146–149° C; ν_{max} (Solid)/ cm^{-1} 3222, 1670, 1590, 1488, 1471, 1448, 1283, 1024, 1008, 906, 777, 713, 689; δ_{H} /ppm (250 MHz, d^4 -MeOH) 5.66 (1H, s, NH), 7.29–7.57 (10H, m, Ar-H), 7.78–7.98 (4H, m, Ar-H); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 158.7, 152.8, 148.3, 136.3, 136.1, 133.3, 130.7, 130.4, 128.72, 128.66, 128.2, 127.0, 126.4, 123.8.

Quinoline-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2l). mp 180° C (dec.); ν_{max} (Solid)/ cm^{-1} 3339.1, 3040.1 (b), 2359.9, 1705.4, 1634.6, 1599.4, 1549.5, 1499.3, 1456.2, 1420.1, 1372.7, 1337.5, 1205.1, 1164.2, 1148.1, 1117.0, 1083.3, 1071.1, 1022.2, 1007.9; δ_{H} /ppm (250 MHz, CDCl_3) 7.25 (6H, m, Ar-H), 7.64–7.76 (1H, m, Ar-H), 7.78–7.98 (4H, m, Ar-H), 8.07–8.23 (3H, m, Ar-H), 8.36–8.44 (2H, m, Ar-H), 10.25 (1H, m, NH); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 165.2, 157.5, 148.6, 146.2, 138.42, 138.37, 132.3, 130.9, 130.6, 129.5, 129.3, 128.8, 128.7, 128.2, 128.0, 126.6, 125.90, 125.86, 119.0.

5-Nitrofuran-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2n). mp 184–186° C; ν_{max} (Nujol mull)/ cm^{-1} 3307, 1690, 1541, 1378, 1353, 1265, 719, 690; δ_{H} /ppm (250 MHz, d^6 -DMSO) 11.49 (1H, s), 8.12–8.01 (2H, m), 7.91–7.80 (3H, m), 7.74 (1H, d, $J = 3.7$ Hz), 7.64–7.33 (6H, m); δ_{C} /ppm (62.8 MHz, d^6 -DMSO) 158.2, 156.8, 152.7, 146.7, 137.2, 132.8, 131.6, 130.6, 129.8, 129.3, 128.8, 126.9, 126.44, 126.41, 118.6, 113.8.

Isoxazole-5-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2o). mp 151–153° C; ν_{max} (Solid)/ cm^{-1} 3278.1, 1687.3, 1639.3, 1599.9, 1556.1, 1505.8, 1482.8, 1459.5, 1446.3, 1385.5, 1327.2, 1266.9, 1223.1, 1206.4, 1173.0, 1080.4, 1069.0, 1026.6, 1011.5; δ_{H} /ppm (250 MHz, CDCl_3) 7.11 (1H, d, $J = 1.83$, Isox).

OCCH), 7.29–7.1 (6H, m, Ar-CH), 7.77–7.84 (2H, m, Ar-CH), 8.03–8.12 (2H, m, Ar-CH), 8.39 (1H, bs, NH), 8.43 (1H, d, $J = 1.83$, Isox. NCH); δ_C /ppm (62.8 MHz, d^6 -DMSO) 161.4, 159.0, 154.7, 151.3, 134.5, 133.8, 130.8, 130.2, 128.8, 128.7, 128.4, 126.9, 126.51, 126.49, 108.4.

Thiophene-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2p). mp 194–196° C; ν_{\max} (Solid)/ cm^{-1} 3236.0, 3066.3, 1650.9, 1634.3, 1525.7, 1478.0, 1447.3, 1411.0, 1354.0, 1282.7, 1222.2, 1207.4, 1174.6, 1078.0, 1067.6, 1005.6; δ_H /ppm (250 MHz, CDCl_3) 7.11 (1H, dd, $J = 4.0, 4.9$, Th-H), 7.28–7.51 (6H, m, Ar-H), 7.58 (1H, d, $J = 4.9$, Th-H), 7.70 (1H, d, $J = 3.1$, Ar-H), 7.78 (1H, bs, NH), 7.80 (2H, m, Ar-H), 8.02–8.12 (2H, m, Ar-H, Th-H); δ_C /ppm (62.8 MHz, d^6 -DMSO) 161.5, 157.6, 138.0, 137.4, 133.5, 132.2, 131.0, 130.8, 130.4, 129.3, 128.8, 128.6, 128.2, 126.5, 125.9, 125.8.

Benzo[β]thiophene-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2r). mp 218–220° C; ν_{\max} (Solid)/ cm^{-1} 3189.7, 1648.9, 1630.5, 1556.5, 1523.9, 1497.9, 1447.6, 1323.6, 1288.0, 1206.1, 1161.5, 1080.2, 1065.2, 1006.2; δ_H /ppm (250 MHz, CDCl_3) 7.21–7.55 (9H, m, Ar-H), 7.73–8.23 (7H, m, Ar-H + NH); δ_C /ppm (62.8 MHz, d^6 -DMSO) 162.1, 157.7, 140.9, 139.0, 137.8, 137.3, 132.2, 131.0, 130.3, 129.3, 128.8, 128.2, 127.8, 127.2, 126.5, 125.94, 125.88, 125.3, 123.0, 107.0.

Cyclopropanecarboxylic acid (2,4-diphenyloxazol-5-yl)amide (2v). mp 183–185° C; ν_{\max} (Solid)/ cm^{-1} 3239.4, 2365.3, 1663.7, 1635.9, 1554.3, 1512.9, 1490.9, 1447.8, 1398.6, 1370.9, 1324.6, 1287.3, 1218.7, 1178.3, 1109.9, 1080.1, 1062.1, 1009.7; δ_H /ppm (250 MHz, CDCl_3) 0.78–0.99 (4H, m, 2CH_2), 1.81–1.95 (1H, m, CH), 7.30–7.59 (6H, m, Ar), 7.81 (2H, d, $J = 7.6$ Hz, Ar), 8.00–8.07 (2H, m, Ar), 10.69 (1H, s, NH); δ_C /ppm (62.8 MHz, d^6 -DMSO) 173.9, 157.1, 138.5, 131.2, 130.8, 130.6, 129.2, 128.7, 128.0, 126.6, 125.8, 13.8, 7.8.

***N*-(2,4-Diphenyloxazol-5-yl)-4-methoxybenzamide (2f).** mp 224–225° C; ν_{\max} (solid)/ cm^{-1} 3213, 1656, 1602, 1481, 1256, 765, 717, 692; δ_H (250 MHz, d_6 -DMSO), 8.10–8.00 (m, 4H) 3.86 (s, 3H), 7.13 (d, 2H, $^3J_{\text{H-H}} = 8.9$ Hz), 7.34 (t, 1H, $^3J_{\text{H-H}} = 7.2$ Hz), 7.46 (t, 2H, $^3J_{\text{H-H}} = 7.6$ Hz), 7.53–7.61 (m, 3H), 7.80–7.87 (m, 2H), 10.80 (s, 1H); δ_C (62.8 MHz, d_6 -DMSO) 55.5, 114.0, 124.5, 125.7, 125.8, 126.6, 128.0, 128.7, 129.2, 130.0, 130.5, 130.9, 131.9, 138.8, 157.4, 162.7, 166.2; $R_f = 0.34$ (1% MeOH–DCM).

***N*-(2,4-Diphenyloxazol-5-yl)isonicotinamide (2k).** mp 201–204° C (dec.); ν_{\max} (solid)/ cm^{-1} 3399 (br), 3134 (br), 2899 (br), 1691, 1531, 1283, 688; δ_H (250 MHz, d_6 -DMSO) 7.32–7.40 (m, 1H), 7.42–7.52 (m, 2H), 7.54–7.62 (m, 3H), 7.79–7.88 (m, 2H), 7.95 (d, 2H, $^3J_{\text{H-H}} = 5.8$ Hz), 8.00–8.10 (m, 2H), 8.87 (d, 2H, $^3J_{\text{H-H}} = 5.8$ Hz), 11.33 (s, 1H); δ_C (62.8 MHz, d_6 -DMSO) 122.1, 126.4, 126.9, 128.7, 129.3, 129.8, 130.7, 131.5, 132.6, 138.2, 139.9, 151.2, 158.2, 166.1.

Furan-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2m). mp 84–86° C; ν_{\max} (solid)/ cm^{-1} 3230 (br), 1673, 1584, 1487, 1448, 1283, 1008, 758, 716, 689; δ_H (250 MHz, d_6 -DMSO) 6.77–6.81 (m, 1H), 7.33–7.41 (m, 1H), 7.43–7.53 (m, 3H), 7.56–7.62 (m, 3H), 7.81–7.88 (m, 2H), 8.01–8.10 (m, 3H), 10.94 (s, 1H); δ_C (62.8 MHz, d_6 -DMSO) 112.5, 116.6, 125.8, 125.9, 126.5, 128.1, 128.8, 129.3, 130.4, 131.0, 132.3, 137.7, 146.2, 147.0, 157.58, 157.64; $R_f = 0.62$ (1% MeOH–DCM).

5-Methylthiophene-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2q). mp 194° C; ν_{\max} (solid)/ cm^{-1} 3240, 1664, 1447, 1326, 1257, 714, 688; δ_H (250 MHz, d_6 -DMSO) 2.54 (s, 3H + DMSO), 7.01 (d, 1H, $^3J_{\text{H-H}} = 3.7$ Hz), 7.37 (t, 1H, $^3J_{\text{H-H}} = 7.0$ Hz), 7.48 (t, 2H, $^3J_{\text{H-H}} = 7.3$ Hz), 7.54–7.63 (m, 3H), 7.84 (d, 2H, $^3J_{\text{H-H}} = 7.3$ Hz), 7.92 (d, 1H, $^3J_{\text{H-H}} = 3.4$ Hz), 8.01–8.11 (m, 2H), 10.88 (s, 1H); δ_C (62.8 MHz, d_6 -DMSO) 15.9, 126.3, 126.4, 127.0, 127.7, 128.6, 129.3, 129.8, 130.9, 131.4, 131.6, 132.6, 135.3, 138.6, 148.2, 158.0, 161.8.

Benzofuran-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2s). mp 198–199° C; ν_{\max} (solid)/ cm^{-1} 3208 (br), 1678, 1577, 1282, 1170, 1008, 746, 715, 688; $R_f = 0.27$ (DCM); δ_H (250 MHz, d_6 -DMSO) 7.64 (m, 8H), 7.78 (d, 1H, $^3J_{\text{H-H}} = 8.3$ Hz), 7.83–7.96 (m, 4H), 8.02–8.12 (m, 2H), 11.35 (s, 1H); δ_C (62.8 MHz, d_6 -DMSO) 112.1, 112.4, 123.3, 124.1, 125.9, 126.5, 126.9, 127.9, 128.2, 128.8, 129.3, 130.3, 131.0, 132.3, 137.5, 147.3, 154.8, 157.7, 158.4.

Benzothiazole-2-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2t). mp 195–196° C; ν_{\max} (solid)/ cm^{-1} 3323, 1703, 1489, 1460, 1079, 751, 716, 687; δ_H (250 MHz, CDCl_3) 7.28–7.66 (m, 8H), 7.84–7.91 (m, 2H), 7.99–8.05 (m, 1H), 8.06–8.19 (m, 3H), 9.30 (s, 1H); δ_C (62.8 MHz, CDCl_3) 122.6, 124.8, 126.48, 126.54, 127.1, 127.3, 127.5, 128.3, 128.8, 130.5, 130.6, 133.2, 135.3, 137.6, 152.7, 158.7, 159.1, 161.5.

Benzo[β]thiophene-5-carboxylic acid (2,4-diphenyloxazol-5-yl)amide (2u). mp 195–200° C; ν_{\max} (solid)/ cm^{-1} 3212, 1668, 1500, 1445, 753, 688; δ_H (250 MHz, d_6 -DMSO) 7.36 (t, 1H, $^3J_{\text{H-H}} = 7.0$ Hz), 7.47 (t, 2H, $^3J_{\text{H-H}} = 7.5$ Hz), 7.54–7.63 (m, 3H), 7.67 (d, 1H, $^3J_{\text{H-H}} = 5.5$ Hz), 7.88 (d, 2H, $^3J_{\text{H-H}} = 7.3$ Hz),

7.96 (d, 1H, $^3J_{\text{H-H}} = 5.2$ Hz), 7.99–8.12 (m, 3H), 8.25 (d, 1H, $^3J_{\text{H-H}} = 8.4$ Hz), 8.65 (s, 1H), 11.08 (s, 1H); δ_{C} (62.8 MHz, d_6 -DMSO) 123.0, 123.2, 123.8, 124.6, 125.8, 125.9, 126.6, 128.0, 128.76, 128.82, 129.3, 129.4, 130.5, 130.9, 132.0, 138.7, 139.4, 143.2, 157.5, 167.1.

2-Propylpentanoic acid (2,4-diphenyloxazol-5-yl)amide (2w). mp 138° C; ν_{max} (solid)/ cm^{-1} 3240, 2955, 2918, 2874, 1667, 1628, 1514, 789, 682; δ_{H} (250 MHz, CDCl_3) 1.78–0.54 (m, 14H), 2.23–2.39 (m, 1H), 7.22–8.11 (m, 11H); δ_{C} (62.8 MHz, CDCl_3) 14.1, 20.8, 34.5, 35.0, 47.3, 126.4, 126.6, 127.3, 128.0, 128.4, 128.6, 130.4, 130.8, 133.2, 136.7, 158.4, 176.3.

Compound Purity:

Compound purity was verified by HPLC under two conditions: HPLC 1; Luna 5 μ C18, 150 \times 4.6 mm, 5–95% acetonitrile (0.1% TFA) in water (0.1% TFA) over 4 min, 1 mL min⁻¹, 20 μ L injection, detection at 256 nm, run time 10 min. HPLC 2; Altima HP 3 μ C18 EPS, 150 \times 4.6 mm, 35–98% acetonitrile (0.1% TFA) in water (0.1% TFA) over 4 min, 1.0 mL min⁻¹, 20 μ L injection, detection at 256 nm, run time 11 min.

Table 1. Compound purity by HPLC.

Compound No.	Purity HPLC 1 [%]	Purity HPLC 2 [%]
1c	99	– ^a
1e	99	98
1f	99	97
1g	95	95
1h	97	95
1i	98	97
1j	97	96
1k	96	96
1l	92	96
1m	99	98
1n	100	99
1o	98	95
1p	98	95
1q	98	97
1r	97	96
1s	96	95
1t	96	96
1u	100	98
1v	98	97
1w	99	99
1x	100	100
2a	97	– ^a
2c	99	94
2d	96	95
2e	97	96
2f	95	95
2g	98	97
2h	96	95
2i	99	98
2j ^b	99	94
2k ^b	98	93
2l	99	95
2m	95	92
2n ^b	95	88
2o ^b	89	82
2p	98	98
2q	97	96
2r	99	97
2s	97	97
2t	98	97
2u	99	95
2v	94	94
2w	95	95

^aTrifluoroacetamides **2a** and **1c** gave unusual and inconsistent traces under the HPLC 2 conditions, perhaps due to unexpected interaction with the Altima HP column.

^bCompounds **2j**, **2k**, **2n** and **2o** were found to be unstable and gradually decomposed over time; several impurity peaks were seen to appear on the HPLC trace over repeated runs, indicating slow decomposition. Purities recorded represent the best obtained for newly-synthesised compounds, but deteriorated significantly over a period of days or weeks.