# Supplementary Information

## Crystallographic Fragment Screening Reveals Ligand Hotspots in TRIM21 PRY-SPRY Domain

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## Table of Content:

## 1. Binding sites comparison of human and murine TRIM21 PRY-SPRY domain

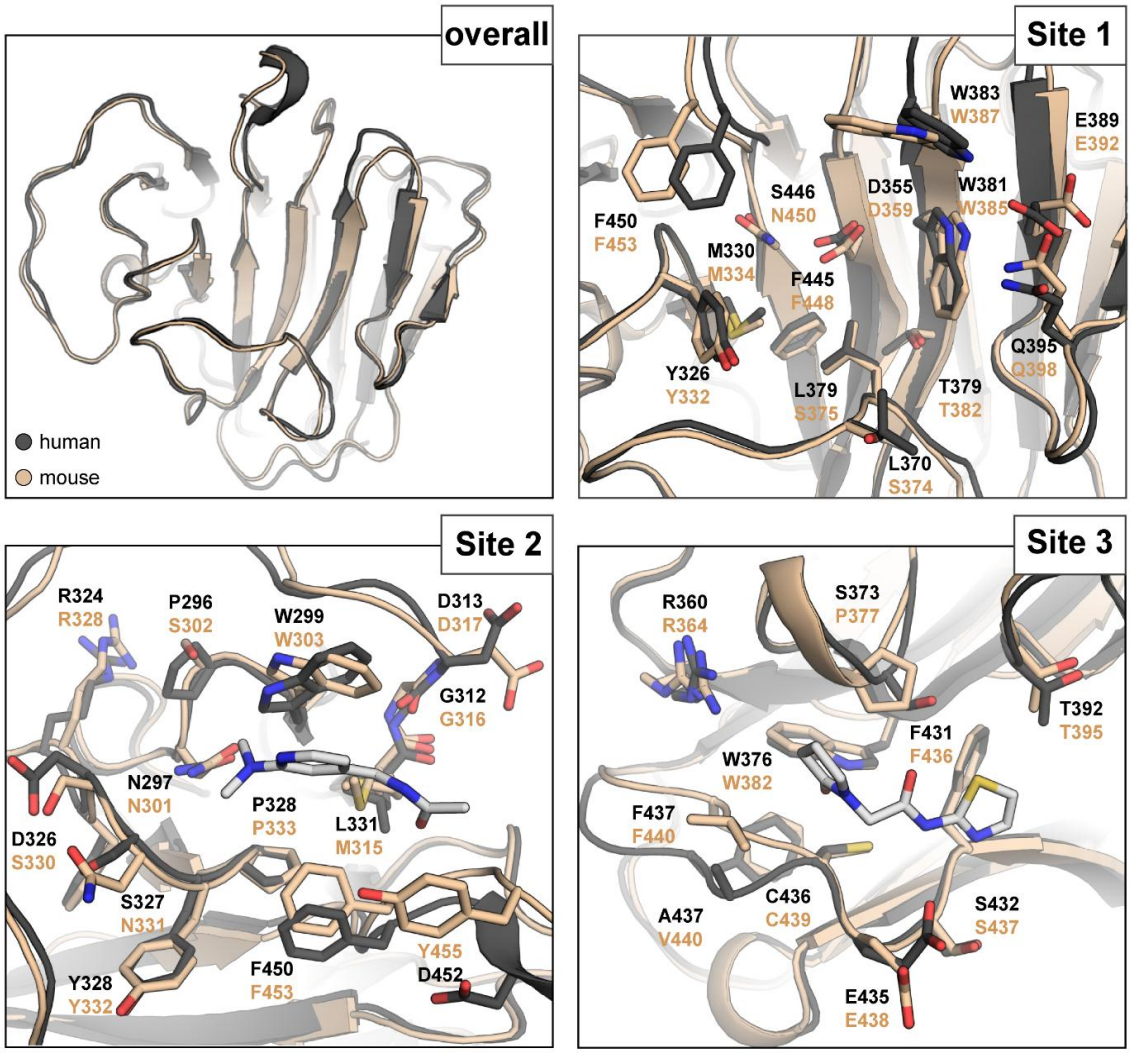



**Figure S1:** Overall backbone and amino acids comparison of site 1-3 between human (black) and murine TRIM21 (wheat).

## 2. Crystal package comparison of murine TRIM21 PRY-SPRY

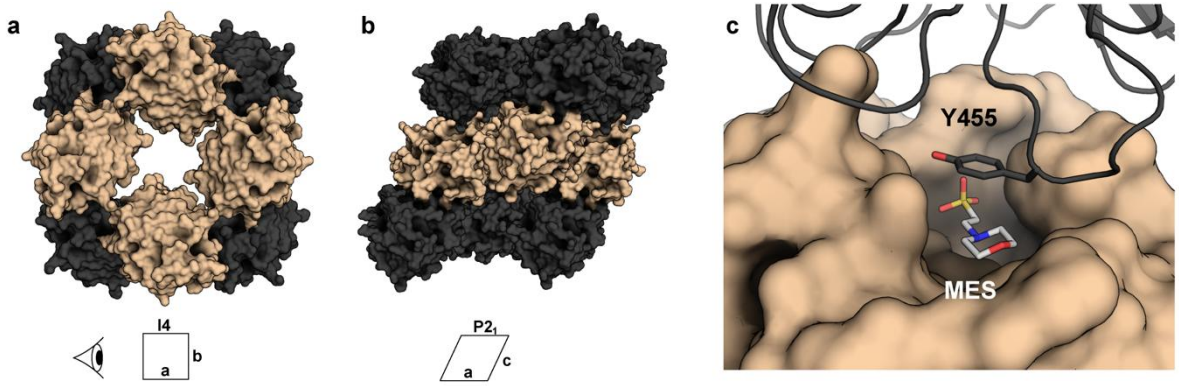



**Figure S2:** Comparison of different crystal packaging of murine TRIM21 **a)** Space group I4 **b)** space group $P2_1$ The colours represent different layers in each crystal form **c)** illustrates the blocking of the primary binding pocket in the space group $P2_1$ by a symmetry related molecule.

## 3. Comparison of antibody Fc-region binding to human and murine TRIM21

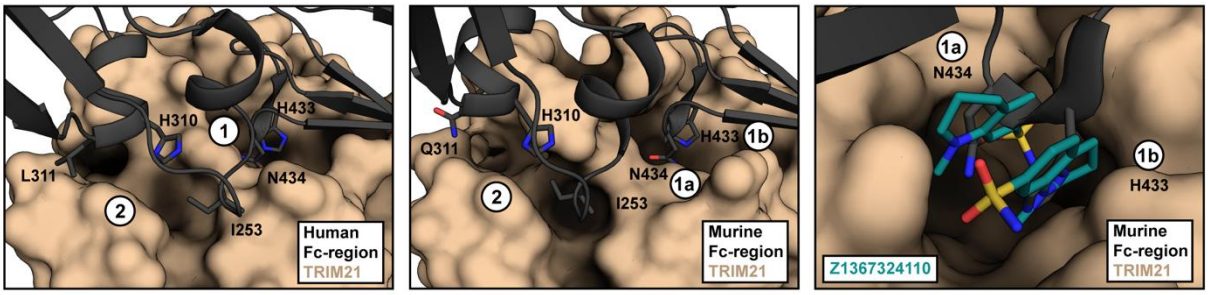



**Figure S3:** The left panel shows the interaction between the antibody Fc-region and TRIM21 from human, while the middle panel displays the same interaction in mouse. The right panel shows a close up of the mouse AB binding in comparison with the two sub binding sites found in the fragment screen. The primary and secondary (sub) binding sites are indicated in each panel by 1a and 1b.

## 4. Electrostatic surface potential of binding sites

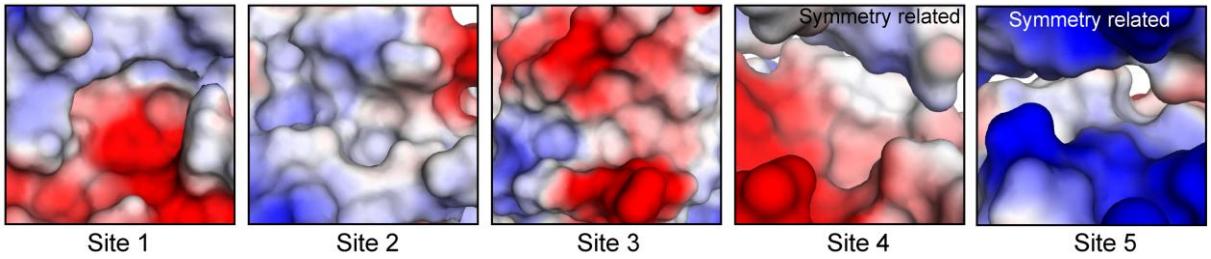



**Figure S4:** Electrostatic surface potential of binding sites. For site 4 & 5 the symmetry related molecules are shown.

## 5. Recently published human TRIM21 mutant structure (PDB: 8Y58)

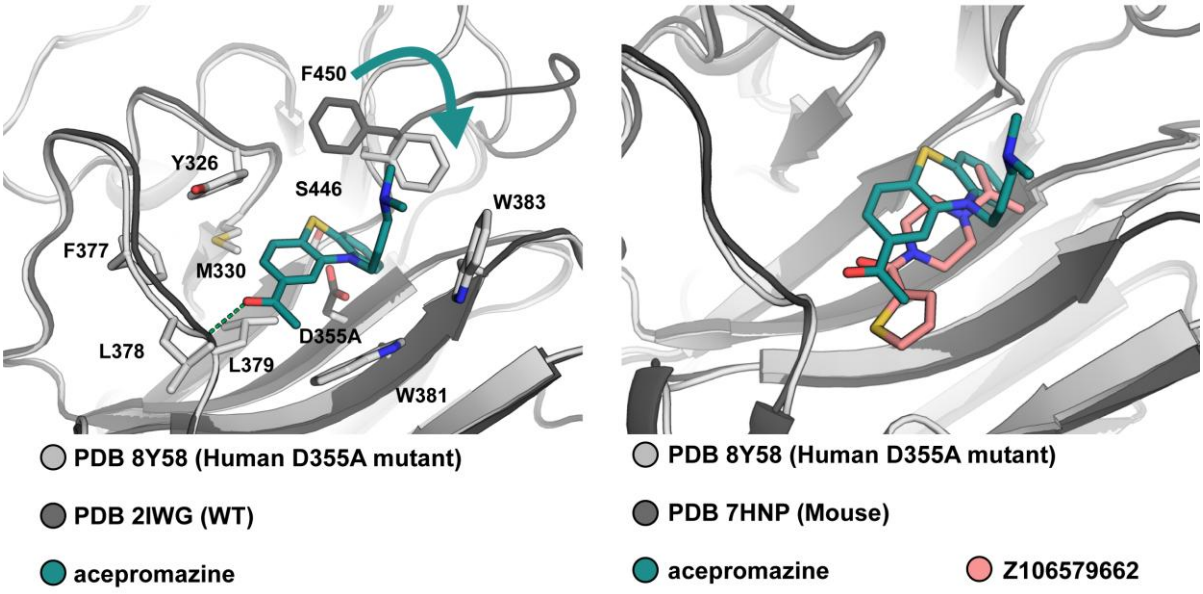
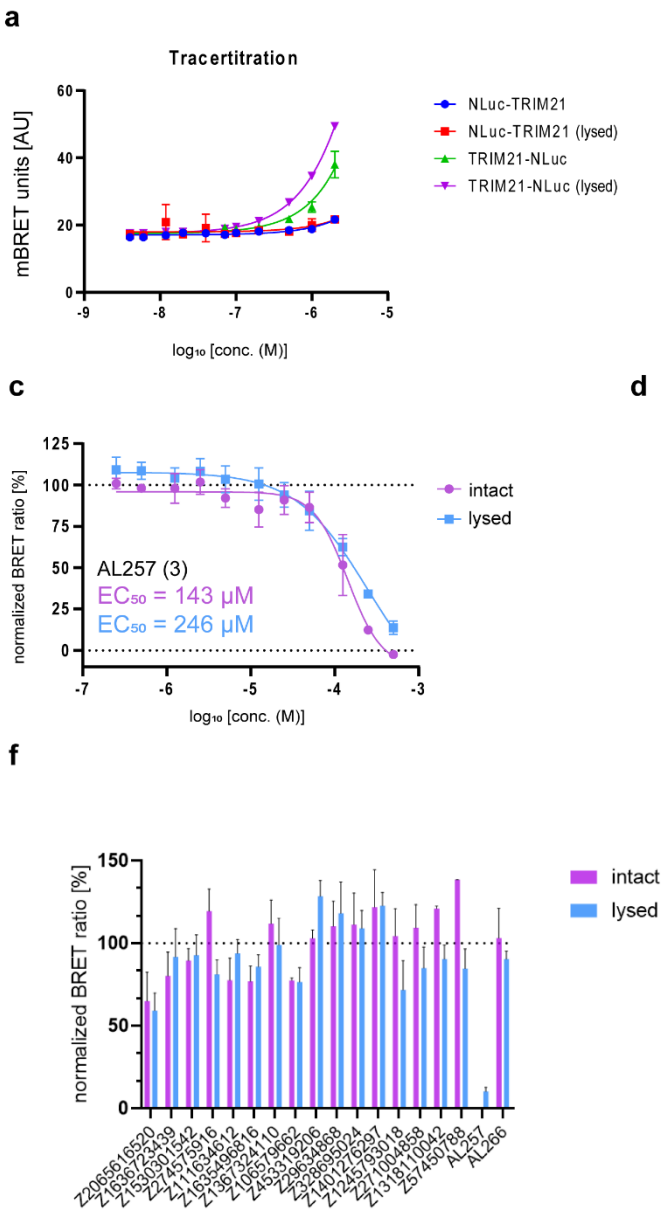



**Figure S5:** The left panel shows the recently published PDB 8Y58, with an acepromazine bound to human TRIM21. The compound exhibits greater activity on the D355A mutant compared to the wild type, likely due to steric hindrance from the larger side chain or less favourable charge interactions. The binding mode is notable, as it differs from what has been observed in most fragments in our screen as the aromatic rings systems do not bind in a manner that facilitates π-stacking. Additionally, the conformational change of F450 by approximately 180° is intriguing, although this may also result from the mutation. The right panel shows an overlay of PDB 8Y58 with PDB 7HNP, a fragment that binds similarly.

## 6. NanoBRET assay validation and results




d

| | Log EC50 | | |
|---|---|---|---|
| | value | + error | - error |
| AL236 (1) lysed | -6,53 | 0,04 | 0,04 |
| AL236 (1) intact | -6,71 | 0,08 | 0,08 |
| AL257 (3) intact | -3,61 | 1,09 | 0,26 |
| AL257 (3) lysed | -3,85 | 0,23 | 0,10 |

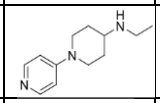
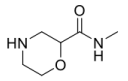
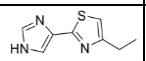
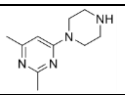
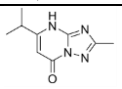
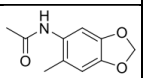
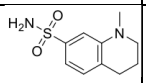
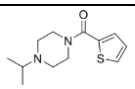
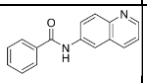
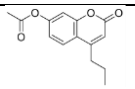
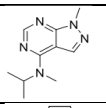
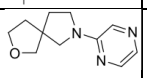
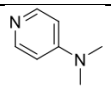
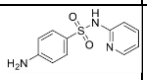
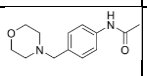
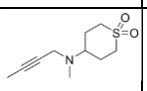
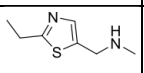
| | EC50 | | |
|---|---|---|---|
| | value | + error | - error |
| AL236 (1) lysed | 2,98E-07 | 3,15E-08 | 2,85E-08 |
| AL236 (1) intact | 1,96E-07 | 4,05E-08 | 3,36E-08 |
| AL257 (3) lysed | 2,46E-04 | 2,76E-03 | 1,12E-04 |
| AL257 (3) intact | 1,43E-04 | 9,82E-05 | 2,90E-05 |

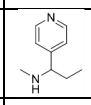
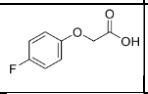
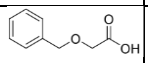
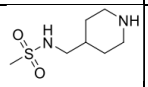
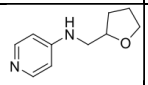
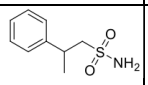
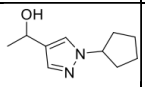
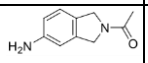
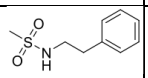
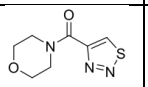
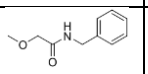
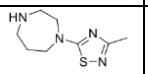
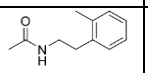
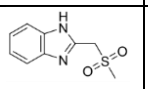
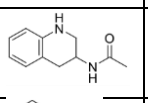
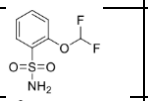
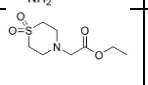
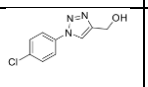
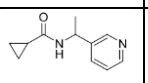
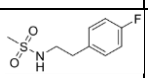
| | Normalized NanoBRET response at 500 µM | | | |
|---|---|---|---|---|
| | intact | | lysed | |
| compound | value | error | value | error |
| Z2065616520 | 65,0 | 12,1 | 59,1 | 8,2 |
| Z1636723439 | 80,2 | 10,5 | 91,7 | 13,2 |
| Z1530301542 | 89,4 | 5,0 | 92,7 | 9,4 |
| Z274575916 | 119,4 | 10,3 | 81,2 | 6,4 |
| Z111634612 | 77,6 | 8,9 | 93,8 | 6,5 |
| Z1635496816 | 76,9 | 6,2 | 85,6 | 5,3 |
| Z1367324110 | 111,9 | 10,8 | 98,9 | 11,3 |
| Z106579662 | 77,5 | 1,1 | 76,5 | 6,2 |
| Z453319206 | 102,9 | 3,7 | 128,5 | 6,4 |
| Z29634868 | 110,3 | 11,6 | 118,1 | 14,5 |
| Z328695024 | 111,2 | 14,4 | 109,0 | 7,4 |
| Z1401276297 | 121,7 | 17,0 | 122,7 | 5,9 |
| Z1245793018 | 104,2 | 12,7 | 71,7 | 13,5 |
| Z271004858 | 109,3 | 10,7 | 84,9 | 9,0 |
| Z1318110042 | 120,9 | 1,2 | 90,5 | 5,7 |
| Z57450788 | 138,4 | 0,0 | 84,6 | 9,1 |
| AL257 (3) | -19,6 | 1,1 | 10,1 | 2,0 |
| AL266 (4) | 103,0 | 13,8 | 90,5 | 3,4 |

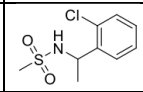
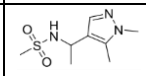
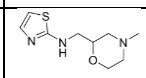
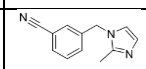
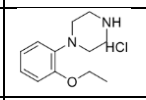
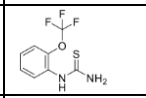
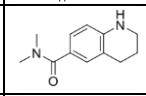
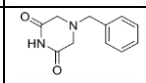
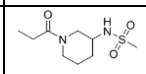
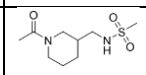
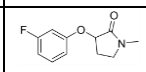
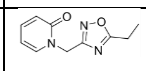
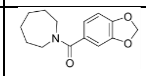
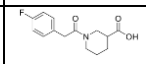
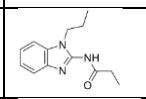
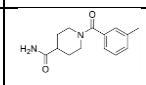
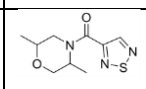
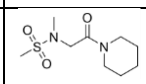
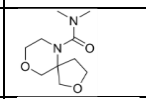
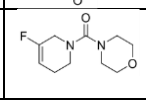
**Figure S6: (a)** NanoBRET Tracer titration against cells expressing human full length TRIM21 with N-terminally or C-terminally fused Nano-Luciferase in intact and lysed cell mode. As the C-terminal NanoLuc fusion provided a better assay window in both intact and lysed mode, all competition assays were performed with the human TRIM21-Nano Luciferase construct **(b)** $EC_{50}$ determination of AL236 **(1)** in intact/lysed cell mode **(c)** $EC_{50}$ determination of AL257 **(3)** in intact/lysed cell mode. **(d)** The table contains the exact values of the $LogEC_{50}$/$EC_{50}$ plus errors. **(f)** Normalized NanoBRET response of fragments targeting site #1 at a concentration of 500 µM. Data points and error bars represent the mean ± standard deviation (SEM) based on three independent measurements. The values were calculated with the program Graph Pad Prism.

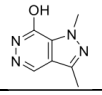
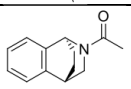
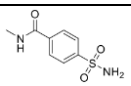
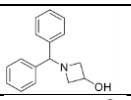
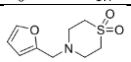
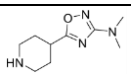
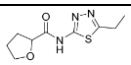
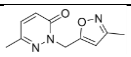
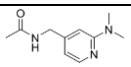
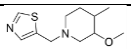
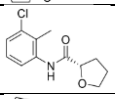
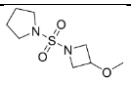
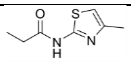
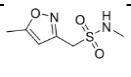
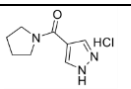
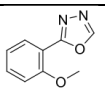
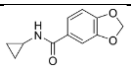
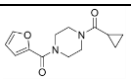
## 7. Fragments hits overview with SMILES, DSF, SPR data and PDB codes

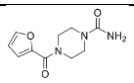
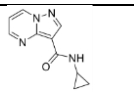
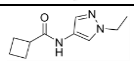
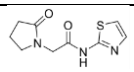
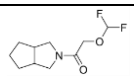
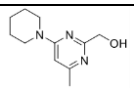
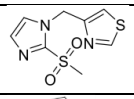
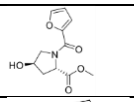
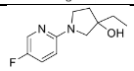
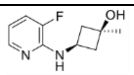
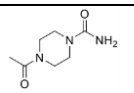
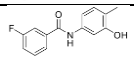
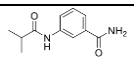
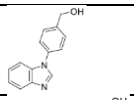
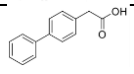
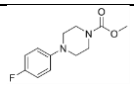
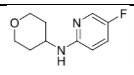
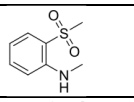
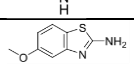
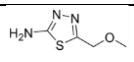
**Table S1:** Fragment information including SPR response, DSF results, binding site, compound ID, chemical structure, and PDB code. Only fragments targeting site 1, 2 and 3 were validated. Some fragments were not able to be measured in DSF because of high auto fluorescence interference, and some were not able to be measured in SPR because of possible precipitation and unspecific binding to the chip at higher concentrations. They are marked on the table as N.D..

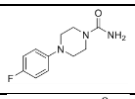
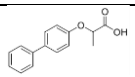
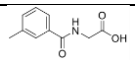
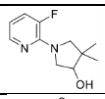
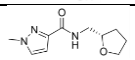
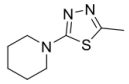
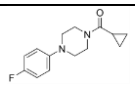
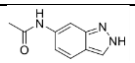
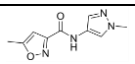
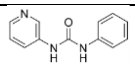
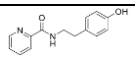
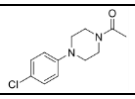
| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 1 | CCNC1CCN(CC1)C=2C=CN=CC2 | Z2065616520 |  | 0.4 | 0.6 | N.D. | N.D. | 7HN1 |
| Site 1 | CNC(=O)C1CNCCO1 | Z1636723439 |  | 0.4 | 0.1 | 142.5 | 46.15 | 7HMH |
| Site 1 & 5 | CCC1=CSC(=N1)C2=CNC=N2 | Z1530301542 |  | -0.1 | 0.1 | 39.06 | 45.06 | 7HMP |
| Site 1 | CC=1C=C(N=C(C)N1)N2CCNCC2 | Z274575916 |  | 0 | 0.2 | 164.1 | 76.44 | 7HMG |
| Site 1 | CC(C)C1=CC(=O)N2N=C(C)N=C2N 1 | Z111634612 |  | -0.4 | -0.4 | 63.45 | 61.58 | 7HLA |
| Site 1 | CC(=O)NC=1C=C2OCOC2=CC1C | Z1635496816 |  | 0 | 0.1 | 140.9 | 148.8 | 7HM7 |
| Site 1 | CN1CCCC=2C=CC(=CC12)S(=O)(= O)N | Z1367324110 |  | -0.6 | -0.7 | 76.48 | 97.24 | 7HMF |
| Site 1 | CC(C)N1CCN(CC1)C(=O)C2=CC=C S2 | Z106579662 |  | 0.2 | 0.6 | 157.7 | 37.03 | 7HNP |
| Site 1 | O=C(NC=1C=CC=2N=CC=CC2C1)C =3C=CC=CC3 | Z453319206 |  | N.D. | N.D. | N.D. | N.D. | 7HLH |
| Site 1 | CCCC1=CC(=O)OC=2C=C(OC(=O)C )C=CC12 | Z29634868 |  | N.D. | N.D. | 78.57 | 95.03 | 7HLP |
| Site 1 | CC(C)N(C)C=1N=CN=C2N(C)N=CC 12 | Z328695024 |  | -0.6 | -0.6 | 47.77 | 48.11 | 7HLT |
| Site 1 | C1CC2(CCN(C2)C=3C=NC=CN3)C O1 | Z1401276297 |  | 0.2 | 0.6 | 374.2 | 640.3 | 7HLD |
| Site 1 | CN(C)C=1C=CN=CC1 | Z1245793018 |  | 0.1 | 0 | 131.3 | 47.83 | 7HNZ |
| Site 1 | NC=1C=CC(=CC1)S(=O)(=O)NC=2 C=CC=CN2 | Z271004858 |  | -0.1 | -0.1 | 106.3 | 79.01 | 7HMK |
| Site 1 | CC(=O)NC=1C=CC(CN2CCOCC2)= CC1 | Z57450788 |  | 0 | 0.4 | 64.68 | 43.78 | 7HNO |
| Site 1 & 2 | CC#CCN(C)C1CCS(=O)(=O)CC1 | Z1318110042 |  | 0.1 | 0 | 68.46 | 20.83 | 7HN8 |
| Site 2 | CCC1=NC=C(CNC)S1 | Z1267773633 |  | -0.4 | -0.4 | 58.5 | 45.3 | 7HMQ |

| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 2 | CCC(NC)C=1C=CN=CC1 | Z1250132788 |  | 0 | -0.1 | 53.11 | 50.74 | 7HO9 |
| Site 2 | OC(=O)COC=1C=CC(F)=CC1 | Z56978034 |  | -0.2 | 0 | 107.1 | 99.74 | 7HMV |
| Site 2 | OC(=O)COCC=1C=CC=CC1 | Z993967070 |  | -0.3 | 0 | 63.84 | 56.18 | 7HO8 |
| Site 2 | CS(=O)(=O)NCC1CCNCC1 | Z1741966151 |  | 0.2 | 0.1 | 29.2 | 18.48 | 7HMU |
| Site 2 | C(NC=1C=CN=CC1)C2CCCO2 | Z1267882044 |  | 0 | -0.1 | 85.46 | 39.64 | 7HMR |
| Site 2 | CC(CS(=O)(=O)N)C=1C=CC=CC1 | Z1407673036 |  | -0.3 | -0.4 | 43.51 | 47.04 | 7HM4 |
| Site 2 | CC(O)C=1C=NN(C1)C2CCCC2 | Z2004563941 |  | -0.2 | 0 | 41.62 | 39.09 | 7HMT |
| Site 2 | CC(=O)N1CC=2C=CC(N)=CC2C1 | Z1354416068 |  | 0 | 0.1 | 104.9 | 107.4 | 7HML |
| Site 2 | CS(=O)(=O)NCCC=1C=CC=CC1 | Z45617795 |  | -0.3 | -0.2 | 50.84 | 53.67 | 7HN5 |
| Site 2 | O=C(N1CCOCC1)C2=CSN=N2 | Z741055844 |  | -0.2 | -0.1 | 32.54 | 28.98 | 7HLU |
| Site 2 | COCC(=O)NCC=1C=CC=CC1 | Z31478538 |  | -0.3 | -0.3 | 37.9 | 38.23 | 7HNB |
| Site 2 | CC1=NSC(=N1)N2CCCNCC2 | Z1578665941 |  | -0.1 | 0.1 | 154 | 59.22 | 7HMJ |
| Site 2 | CC(=O)NCCC=1C=CC=CC1C | Z52314092 |  | -0.3 | -0.4 | 79.62 | 75.76 | 7HND |
| Site 2 | CS(=O)(=O)CC1=NC=2C=CC=CC2N 1 | Z126932614 |  | -0.1 | -0.2 | 65.26 | 80.74 | 7HMS |
| Site 2 | CC(=O)NC1CNC=2C=CC=CC2C1 | Z1492796719 |  | -0.1 | -0.1 | 54.86 | 55.11 | 7HMW |
| Site 2 | NS(=O)(=O)C=1C=CC=CC1OC(F)F | Z1003146540 |  | -0.1 | 0.5 | 35.49 | 38.84 | 7HO4 |
| Site 2 | CCOC(=O)CN1CCS(=O)(=O)CC1 | Z793778804 |  | 0 | 0.1 | 30.52 | 29.17 | 7HM1 |
| Site 2 | OCC1=CN(N=N1)C=2C=CC(Cl)=CC 2 | Z1374778753 |  | N.D. | N.D. | 169.5 | 114.8 | 7HMB |
| Site 2 | CC(NC(=O)C1CC1)C=2C=CC=NC2 | Z220996120 |  | -0.1 | 0 | 171.5 | 149.8 | 7HNC |
| Site 2 | CS(=O)(=O)NCCC=1C=CC(F)=CC1 | Z45705015 |  | -0.5 | -0.2 | 46.34 | 48.3 | 7HLB |

| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 2 | CC(NS(=O)(=O)C)C=1C=CC=CC1Cl | Z133729708 |  | -0.8 | -0.7 | 60.52 | 74.68 | 7HNX |
| Site 2 | CC(NS(=O)(=O)C)C=1C=NN(C)C1C | Z369263636 |  | -0.1 | 0.1 | 35.15 | 36.54 | 7HO1 |
| Site 2 | CN1CCOC(CNC2=NC=CS2)C1 | Z1002247062 |  | -0.1 | -0.2 | 105 | 20.86 | 7HN2 |
| Site 2 | CC1=NC=CN1CC=2C=CC=C(C#N)C2 | Z319545618 |  | -0.3 | 0 | 30.53 | 11.39 | 7HME |
| Site 2 | Cl.CCOC=1C=CC=CC1N2CCNCC2 | Z425387594 |  | -0.1 | 0 | 98.47 | 61.98 | 7HMD |
| Site 2 | NC(=S)NC=1C=CC=CC1OC(F)(F)F | Z291279160 |  | -0.4 | -0.2 | 37.66 | 45.42 | 7HMA |
| Site 2 | CN(C)C(=O)C=1C=CC=2NCCCC2C1 | Z1222331430 |  | -0.2 | -0.2 | 51.36 | 70.74 | 7HM9 |
| Site 2 | O=C1CN(CC=2C=CC=CC2)CC(=O)N1 | Z3220108246 |  | -0.5 | -0.1 | 58.83 | 60.94 | 7HO6 |
| Site 2 | CCC(=O)N1CCCC(C1)NS(=O)(=O)C | Z405825414 |  | -0.2 | 0 | 27.91 | 27.61 | 7HO3 |
| Site 2 | CC(=O)N1CCCC(CNS(=O)(=O)C)C1 | Z438096750 |  | 0 | -0.2 | 42.61 | 40.93 | 7HLW |
| Site 2 | CN1CCC(OC=2C=CC=C(F)C2)C1=O | Z1217960891 |  | -0.4 | -0.4 | 74.94 | 55.59 | 7HN0 |
| Site 2 | CCC1=NC(CN2C=CC=CC2=O)=NO1 | Z1162778919 |  | -0.2 | -0.1 | 48.28 | 44.97 | 7HNJ |
| Site 2 | O=C(N1CCCCCC1)C=2C=CC=3OCOC3C2 | Z31432226 |  | -0.6 | -0.8 | N.D. | N.D. | 7HNN |
| Site 2 | OC(=O)C1CCCN(C1)C(=O)CC=2C=CC(F)=CC2 | Z85893853 |  | -0.4 | -0.1 | 60.46 | 49.09 | 7HMZ |
| Site 2 | CCCN1C(NC(=O)CC)=NC=2C=CC=CC12 | Z29077827 |  | -0.6 | -0.7 | 54.53 | 48.46 | 7HLM |
| Site 2 | CC=1C=CC=C(C1)C(=O)N2CCC(CC2)C(=O)N | Z32400357 |  | -0.4 | -0.1 | 57.58 | 52.75 | 7HM2 |
| Site 2 | CC1CN(C(C)CO1)C(=O)C=2C=NSN2 | Z768399682 |  | -0.3 | 0 | 24.2 | 20.05 | 7HNM |
| Site 2 | CN(CC(=O)N1CCCCC1)S(=O)(=O)C | Z363071686 |  | -0.1 | -0.2 | 39.85 | 20.46 | 7HO0 |
| Site 2 | CN(C)C(=O)N1CCOCC21CCOC2 | Z1998104358 |  | 0 | 0.1 | 24.94 | 21.66 | 7HN6 |
| Site 2 | FC1=CCCN(C1)C(=O)N2CCOCC2 | Z1689442171 |  | -0.2 | -0.2 | -16.11 | -67.09 | 7HNF |

| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 2 | CC1=NN(C)C=2C(O)=NN=CC12 | Z2301438417 |  | -0.3 | -0.2 | 36.56 | 39.38 | 7HN3 |
| Site 2 | CC(=O)N1C[C@H]2CC[C@H]1C=3C=CC=CC23 | Z2017861827 |  | -0.7 | -0.2 | 37.47 | 47.45 | 7HLI |
| Site 2 | CNC(=O)C=1C=CC(=CC1)S(=O)(=O)N | Z165170770 |  | -0.4 | 0 | 49.37 | 49.74 | 7HMM |
| Site 2 | OC1CN(C1)C(C=2C=CC=CC2)C=3C=CC=CC3 | Z1696844792 |  | -0.5 | -0.8 | 107.8 | 122.6 | 7HLE |
| Site 2 | O=S1(=O)CCN(CC2=CC=CO2)CC1 | Z1568344634 |  | -0.2 | 0 | 60.76 | 40.64 | 7HNG |
| Site 2 | CN(C)C1=NOC(=N1)C2CCNCC2 | Z1742054999 |  | 0 | -0.2 | 84.81 | 41.66 | 7HMI |
| Site 2 | CCC1=NN=C(NC(=O)C2CCCO2)S1 | Z26823525 |  | -0.2 | -0.4 | 54.46 | 48.81 | 7HLN |
| Site 2 | CC=1C=C(CN2N=C(C)C=CC2=O)ON1 | Z1079512010 |  | -0.3 | -0.1 | 50.4 | 45.75 | 7HLC |
| Site 2 | CC(=O)N1CCCC2(C1)CCCCCC2 | Z1275599911 |  | -1.3 | -0.9 | 32.73 | 30.21 | 7HNK |
| Site 2 | CN(C)C=1C=C(CNC(=O)C)C=CN1 | Z374427992 |  | -0.1 | -0.1 | 50.3 | 46.45 | 7HM0 |
| Site 2 | COC1CN(CC2=CN=CS2)CCC1C | Z1787761777 |  | -1.6 | -0.3 | -42.9 | -50.75 | 7HN9 |
| Site 2 | CS(=O)(=O)NC1CCOC2(CCCC2)C1 | Z1446981563 |  | -0.4 | -0.1 | 27.71 | 28.35 | 7HNW |
| Site 2 | CC=1C(Cl)=CC=CC1NC(=O)[C@@H]2CCCO2 | Z1545312521 |  | -0.9 | -0.7 | 31.58 | 24.5 | 7HNR |
| Site 2 | COC1CN(C1)S(=O)(=O)N2CCCC2 | Z1343518214 |  | -0.1 | 0.2 | 38.32 | 34.32 | 7HNE |
| Site 3 | CCC(=O)NC1=NC(C)=CS1 | Z30820160 |  | -0.5 | -0.2 | 15.6 | 46.05 | 7HO7 |
| Site 3 | CNS(=O)(=O)CC=1C=C(C)ON1 | Z763030030 |  | -0.2 | -0.1 | 42.23 | 44.17 | 7HMX |
| Site 3 | Cl.O=C(N1CCCC1)C=2C=NNC2 | Z1266933824 |  | -0.3 | -0.1 | 127.7 | 193.6 | 7HO5 |
| Site 3 | COC=1C=CC=CC1C2=NN=CO2 | Z1359419878 |  | -0.6 | -0.4 | 53.75 | 57.54 | 7HM3 |
| Site 3 | O=C(NC1CC1)C=2C=CC=3OCOC3C2 | Z32367954 |  | -0.3 | -0.6 | 59.37 | 68.73 | 7HLX |
| Site 3 | O=C(C1CC1)N2CCN(CC2)C(=O)C3=CC=CO3 | Z32327641 |  | -0.2 | 0 | 37.82 | 35.48 | 7HLQ |

| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 3 | NC(=O)N1CCN(CC1)C(=O)C2=CC=CO2 | Z198194396 |  | -0.2 | -0.2 | 38.54 | 34.19 | 7HN7 |
| Site 3 | O=C(NC1CC1)C=2C=NN3C=CC=NC23 | Z285642082 |  | -0.3 | -0.2 | 44.74 | 43.71 | 7HLK |
| Site 3 | CCN1C=C(NC(=O)C2CCC2)C=N1 | Z373768900 |  | -0.4 | -0.3 | 20.02 | 21.88 | 7HNI |
| Site 3 | O=C(CN1CCCC1=O)NC2=NC=CS2 | Z79432418 |  | -0.4 | -0.3 | 63.39 | 61.55 | 7HLV |
| Site 3 | FC(F)OCC(=O)N1CC2CCCC2C1 | Z2072621991 |  | 0 | -0.2 | 46.61 | 28.49 | 7HNS |
| Site 3 | CC=1C=C(N=C(CO)N1)N2CCCCC2 | Z1980894300 |  | -0.2 | 0 | 77.01 | 66.59 | 7HLJ |
| Site 4 | CS(=O)(=O)C1=NC=CN1CC2=CSC=N2 | Z1328968520 |  | | | | | 7HLL |
| Site 4 | COC(=O)[C@@H]1C[C@@H](O)CN1C(=O)C2=CC=CO2 | Z1614545742 |  | | | | | 7HNU |
| Site 5 | CCC1(O)CCN(C1)C=2C=CC(F)=CN2 | Z2092555279 |  | | | | | 7HLF |
| Site 5 | C[C@]1(O)C[C@H](C1)NC=2N=CC=CC2F | Z2365130785 |  | | | | | 7HLG |
| Site 5 | CC(=O)N1CCN(CC1)C(=O)N | Z90122368 |  | | | | | 7HLO |
| Site 5 | CC=1C=CC(NC(=O)C=2C=CC=C(F)C2)=CC1O | Z1430613393 |  | | | | | 7HLR |
| Site 5 | CC(C)C(=O)NC=1C=CC=C(C1)C(=O)N | Z29177127 |  | | | | | 7HLS |
| Site 5 | OCC=1C=CC(=CC1)N2C=NC=3C=CC=CC23 | Z235449082 |  | | | | | 7HLY |
| Site 5 | OC(=O)CC=1C=CC(=CC1)C=2C=CC=CC2 | Z256709358 |  | | | | | 7HLZ |
| Site 5 | COC(=O)N1CCN(CC1)C=2C=CC(F)=CC2 | Z192955056 |  | | | | | 7HM5 |
| Site 5 | FC=1C=CC(NC2CCOCC2)=NC1 | Z1172243962 |  | | | | | 7HM6 |
| Site 5 | CNC=1C=CC=CC1S(=O)(=O)C | Z285782452 |  | | | | | 7HM8 |
| Site 5 | COC=1C=CC=2SC(N)=NC2C1 | Z1954800564 |  | | | | | 7HMC |
| Site 5 | COCC1=NN=C(N)S1 | Z57478994 |  | | | | | 7HMN |

| Site | Compound SMILES | Compound ID | Chemical structure | Tm-shift mTRIM21 (°C) | Tm-Shift hTRIM21 (°C) | SPR mTRIM21 (Response) | SPR hTRIM21 (Response) | PDB CODE |
|---|---|---|---|---|---|---|---|---|
| Site 5 | NC(=O)N1CCN(CC1)C=2C=CC(F)=CC2 | Z198194394 |  | | | | | 7HMO |
| Site 5 | CC(OC=1C=CC(=CC1)C=2C=CC=CC2)C(=O)O | Z111782404 |  | | | | | 7HMY |
| Site 5 | CC=1C=CC=C(C1)C(=O)NCC(=O)O | Z56827661 |  | | | | | 7HN4 |
| Site 5 | CC1(C)CN(CC1O)C=2N=CC=CC2F | Z1929757385 |  | | | | | 7HNA |
| Site 5 | CN1C=CC(=N1)C(=O)NC[C@@H]2CCCO2 | Z2643472210 |  | | | | | 7HNH |
| Site 5 | CC1=NN=C(S1)N2CCCCC2 | Z1251207602 |  | | | | | 7HNL |
| Site 5 | FC=1C=CC(=CC1)N2CCN(CC2)C(=O)C3CC3 | Z30620520 |  | | | | | 7HNQ |
| Site 5 | CC(=O)NC=1C=CC2=CNN=C2C1 | Z383202616 |  | | | | | 7HNT |
| Site 5 | CC1=CC(=NO1)C(=O)NC=2C=NN(C)C2 | Z404993336 |  | | | | | 7HNV |
| Site 5 | O=C(NC=1C=CC=CC1)NC=2C=CC=NC2 | Z44592329 |  | | | | | 7HNY |
| Site 5 | OC=1C=CC(CCNC(=O)C=2C=CC=CN2)=CC1 | Z730649594 |  | | | | | 7HO2 |
| Site 5 | CC(=O)N1CCN(CC1)C=2C=CC(Cl)=CC2 | Z275165822 |  | | | | | 7HOA |
| Ground state | | | | | | | | 7HOB |

## 8. Chemical Synthesis & Analytical data

Unless otherwise stated, all commercial reagents were purchased from BLD Pharm and Enamine with a purity ≥ 95% and were used without further purification. All solvents were analytical grade and purchased from Thermo Scientific and experimental procedures were carried out according to common techniques in an inert gas atmosphere (argon 5.0) under magnetic stirring. Silica gel-coated plates with fluorescent indicator (DC silica gel 60 $F_{254}$, neutral, from the company *Merck*) were used for reaction control. The visualization of the substances to be investigated were visualized with the aid of UV light. Flash column chromatography was performed with a puriFlash® XS 420 system from *Interchim* using puriFlash® prepacked C18-HP or SI-HP cartridges (30 µm spherical silica) with technical and HPLC grade solvents. UV absorption was detected between 200 and 400 nm. Preparative purification by HPLC was carried out on an Agilent 1260 Infinity II device using an Eclipse XDB-C18 (Agilent, 21.2 x 250mm, 7µm) reversed phase column. A suitable gradient (flow rate 21 mL/min) was used, with 0.1% (v/v) TFA in water (A) and 0.1% (v/v) TFA in acetonitrile (B), as a mobile phase. Determination of the compound purity by HPLC was carried out on an Agilent 1260 Infinity II device with a 1260 DAD HS detector (G7117C; 254 nm, 280 nm, 310 nm) and a LC/MSD device (G6125B, ESI pos. 100-1000). Compounds **2** - **7** and **9** were analyzed on a Poroshell 120 EC-C18 (Agilent, 3 x 150 mm, 2.7 µm) reversed phase column using 0.1% formic acid in water (A) and 0.1% (v/v) formic acid in acetonitrile (B) as a mobile phase. The following gradient was used: 0 min. 5% B - 2 min. 5% B - 8 min. 98% B (flow rate of0.5 mL/min.). UV-detection was performed at 254, 280 and 310 nm and all compounds used for further biological characterizations showed > 95% purity if not stated otherwise. For compounds **3**, **4**, **14** and **16** an analytical HPLC from Shimadzu Prominence with an SPD20A UV/Vis detector was used. Stationary phases were Luna 10 µm 100 Å, C18(2) (250×4.6 mm), and Luna 10 µm 100 Å, C18(2) (250×21.20 mm), from Phenomenex. The eluent was a mixture of ACN (A) and a 0.1% (v/v) aqueous formic acid solution (B). The following gradient was used: 0 min. 10% A - 8 min. 95% A (flow rate of 1 mL/min). UV-detection was performed at 254 and 280 nm and all compounds used for further biological characterizations showed > 95% purity if not stated otherwise. NMR spectroscopic measurements were performed at ambient temperatures using DMSO-$d_6$ as solvent. The chemical shifts $\delta$ are given in parts per million (ppm), the scalar coupling constants $J$ in Hz. The residual signal of the incompletely deuterated solvent served as a reference for the $^{1}$H- and $^{13}$C-NMR-spectra ($\delta$ ($^{1}$H) = 2.50 ppm, $\delta$ ($^{13}$C {$^{1}$H}) = 39.52 ppm). The following abbreviations are used to characterize the observed signal multiplicities: s (singlet), d (doublet), dd (doublet of doublet), ddd (doublet of doublet of doublet), t (triplet), td (triplet of doublet), q (quartet), qd (quartet of dublet), p (pentet) and m (multiplet).

## 8.1 Chemistry

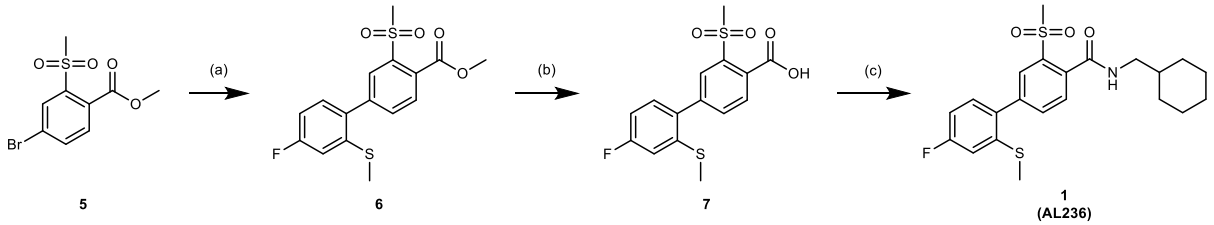
8.1.1 *General procedure I for amide coupling reaction*

The corresponding acid (1.0 eq), O-(7-Azabenzotriazol-1-yl)-*N*,*N*,*N*‘,*N*‘-tetramethyl uronium hexafluoro-phosphate (HATU) (1.2 eq) and *N*,*N*ʼ -diisopropylethylamine (DIPEA) (3 eq) were dissolved in dry DMF (3-5 mL). The solution was stirred at ambient temperatures for 30 min. Then, the amine (1.1 eq) was added and the reaction solution was stirred for 16 h at 40 °C. Subsequently, the solvent was removed under reduced pressure and the crude product was purified *via* flash chromatography on silica using acetonitrile/water or dichloromethane/methanol as eluent.

8.1.2 *General procedure II for deprotection of Boc-protected amines*

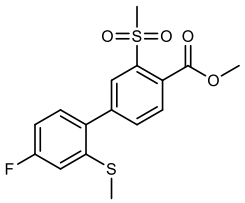
The corresponding Boc-protected amine was dissolved in 4 mL dry DCM, and TFA (20% (v/v)) was added. The reaction solution was stirred for 1 h at ambient temperature. Subsequently, the solvent was removed under reduced pressure. If necessary, the crude product was purified *via* flash chromatography on silica using acetonitrile/water as eluent.

8.1.3 *Synthesis of positive control **1** (**AL236**)*




Reagents and conditions: (a) (4-fluoro-2-(methylthio)phenyl)boronic acid, [1,1’-Bis(diphenylphosphino)ferrocen]dichlorpalladium(II) ($Pd(dppf)Cl_2$), $K_2CO_3$, and 1,4-dioxane/water (4:1), 90 min, 110 °C; (b) lithium hydroxide monohydrate, and methanol/water (4:1), 16 h, 75 °C; (c) cyclohexylmethanamine, HATU, DIPEA, and dry DMF, 16 h, 40 °C.

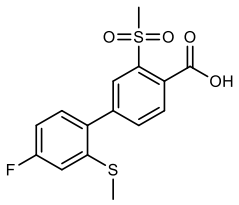
*Methyl 4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxylate* (**6**)




Methyl 4-bromo-2-(methylsulfonyl)benzoate (**5**) (500 mg, 1.71 mmol) was dissolved in 1,4-dioxane/water (12.5 mL, 4:1). The solution was degassed. Then, (4-fluoro-2-(methylthio)phenyl)boronic acid (349 mg, 1.88 mmol), $K_2CO_3$ (472 mg, 3.41 mmol) and $Pd(dppf)Cl_2$ (62.4 mg, 85.3 µmol) were added in succession. The reaction mixture was stirred for 90 min at 110 °C. Afterwards, the solvent was removed under reduced pressure. The crude product was dissolved in ethyl acetate and filtered over Celite®. The filtrate was washed with brine and dried over $MgSO_4$. Subsequently, the solvent was removed under reduced pressure and the crude product was purified

*via* flash chromatography on silica using dichloromethane/methanol as eluent. The product was isolated as an off-white solid in a yield of 83%. **$^1$H NMR** (400 MHz, DMSO-$d_6$): $\delta$ = 7.98 (t, *J* = 1.1 Hz, 1H), 7.85 – 7.83 (m, 2H), 7.36 (dd, *J* = 8.5, 6.0 Hz, 1H), 7.25 (dd, *J* = 10.2, 2.5 Hz, 1H), 7.12 (td, *J* = 8.5, 2.6 Hz, 1H), 3.90 (s, 3H), 3.40 (s, 3H), 2.46 (s, 3H) ppm. **MS (ESI+)**: *m/z* = 377.00 $[M+Na]^+$; calc.: 377.03.

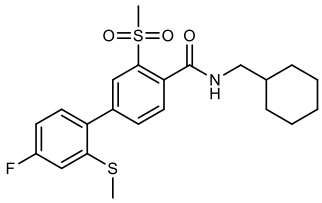
*4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxylic acid* (**7**)



Methyl 4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxylate (**6**) (499 mg, 1.41 mmol) and lithium hydroxide monohydrate (237 mg, 5.63 mmol) were dissolved methanol/water (10 mL , 4:1). The reaction mixture was stirred for 16 h at 75 °C. Subsequently, the solvent was removed under reduced pressure and the crude product was purified *via* flash chromatography on silica using acetonitrile/water as eluent. The product was isolated as a colorless solid in a yield of 90%. **$^1$H NMR** (400 MHz, DMSO-$d_6$): $\delta$ = 7.74 (d, *J* = 1.4 Hz, 1H), 7.55 – 7.44 (m, 2H), 7.25 (dd, *J* = 8.4, 6.1 Hz, 1H), 7.17 (dd, *J* = 10.3, 2.6 Hz, 1H), 7.06 (td, *J* = 8.5, 2.6 Hz, 1H), 3.49 (s, 3H), 2.43 (s, 3H) ppm. **MS (ESI+)** *m/z* = 323.05 $[C_{15}H_{12}FO_3S_2\cdot]^+$; calc.: 323.03.

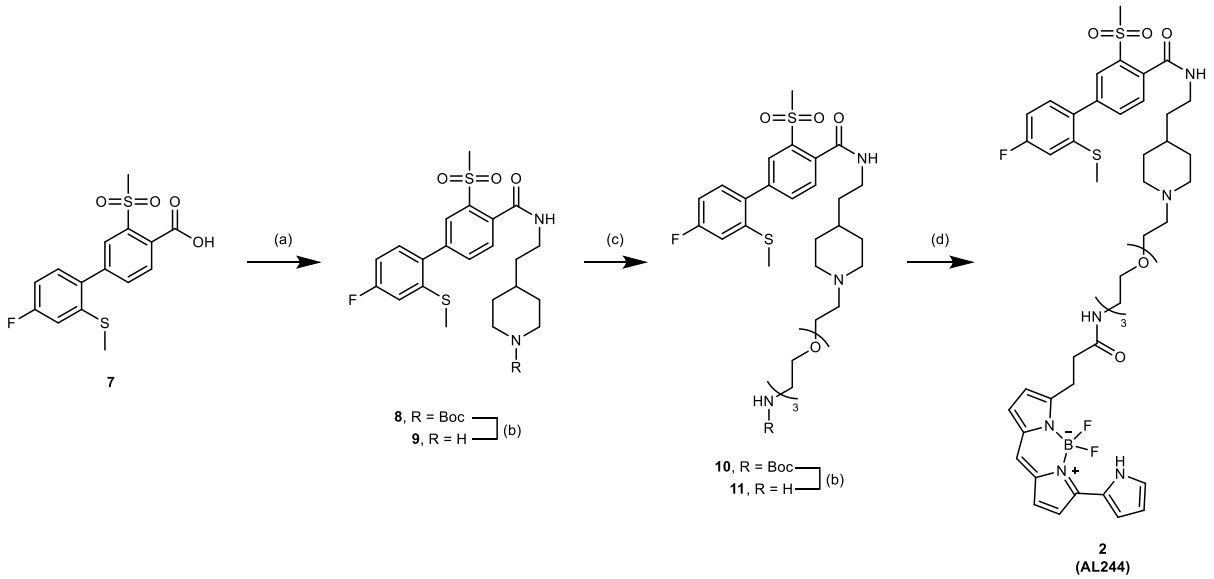
*N-(cyclohexylmethyl)-4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamide* (**1**)

(**AL236**)



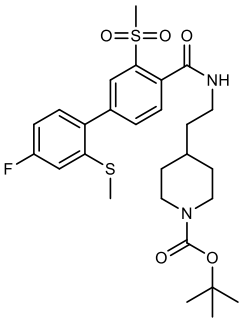
Compound **1** was synthesized according to general procedure I, using **7** (50.0 mg, 147 µmol) as starting material. The product was isolated as a colorless solid in a yield of 83%. **$^1$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 8.69 (t, *J* = 5.8 Hz, 1H), 7.91 (d, *J* = 1.8 Hz, 1H), 7.76 (dd, *J* = 7.8, 1.8 Hz, 1H), 7.58 (d, *J* = 7.7 Hz, 1H), 7.31 (dd, *J* = 8.4, 6.0 Hz, 1H), 7.23 (dd, *J* = 10.3, 2.6 Hz, 1H), 7.11 (td, *J* = 8.4, 2.6 Hz, 1H), 3.40 (s, 3H), 3.13 – 3.05 (m, 2H), 2.46 (s, 3H), 1.82 – 1.74 (m, 2H), 1.73 – 1.66 (m, 2H), 1.65 – 1.50 (m, 2H), 1.27 – 1.10 (m, 3H), 0.99 – 0.88 (m, 2H) ppm.**$^{19}$F NMR** (471 MHz, DMSO-$d_6$): $\delta$ = -112.49 – -112.55 (m) ppm. **$^{13}$C{$^1$H} NMR** (126 MHz, DMSO-$d_6$): $\delta$ = 167.3, 162.6 (d, *J* = 246.6 Hz), 140.3, 139.9 (d, *J* = 8.2 Hz), 138.0, 137.0, 134.2, 133.6 (d, *J* = 3.1 Hz), 131.7 (d, *J* = 9.0 Hz), 129.8, 129.2, 112.1, 111.9, 111.7, 111.5, 45.5, 45.0, 37.2, 30.5, 26.1, 25.5, 15.0 ppm. **MS (ESI+)**: *m/z* = 436.05 $[M+H]^+$; calc.: 436.15.

*8.1.4 Synthesis of tracer **2** (**AL244**)*



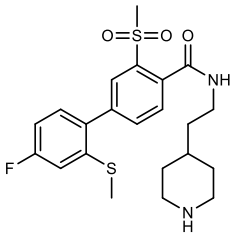

Reagents and conditions: (a) *tert*-butyl 4-(2-aminoethyl)piperidine-1-carboxylate, HATU, DIPEA, and dry DMF, 16 h, 40 °C; (b) TFA (20 vol%), and dry DCM, 1 h, rt; (c) *tert*-butyl (2-(2-(2-(2-bromoethoxy)ethoxy)ethoxy)ethyl)carbamate, DIPEA, and dry DMF, 16 h, 90 °C; (d) 2,5-dioxopyrrolidin-1-yl 3-(5,5-difluoro-7-(1*H*-pyrrol-2-yl)-5*H*-5λ$^4$,6λ$^4$-dipyrrolo[1,2-*c*:2',1'-*f*][1,3,2]diaza-borinin-3-yl)propanoate, DIPEA, and dry DMF, 16 h, rt.

*Tert-butyl 4-(2-(4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamido)ethyl)piperidine-1-carboxylate* (**8**)



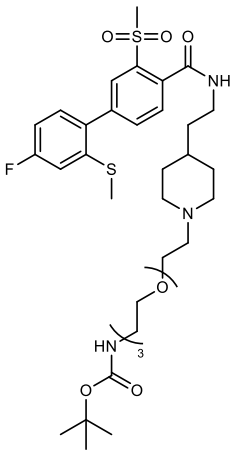
Compound **8** was synthesized according to general procedure I, using **7** (100 mg, 294 µmol) as starting material. The product was isolated as a off-white solid in a yield of 90%. **$^1$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 8.67 (t, *J* = 5.6 Hz, 1H), 7.91 (d, *J* = 1.8 Hz, 1H), 7.76 (dd, *J* = 7.8, 1.8 Hz, 1H), 7.58 (d, *J* = 7.7 Hz, 1H), 7.31 (dd, *J* = 8.4, 6.0 Hz, 1H), 7.23 (dd, *J* = 10.2, 2.5 Hz, 1H), 7.11 (td, *J* = 8.4, 2.6 Hz, 1H), 3.93 (d, *J* = 12.9 Hz, 2H), 3.41 (s, 3H), 3.31 – 3.26 (m, 2H), 2.76 – 2.62 (m, 2H), 2.46 (s, 3H), 1.72 – 1.66 (m, 2H), 1.64 – 1.54 (m, 1H), 1.46 (q, *J* = 6.9 Hz, 2H), 1.39 (s, 9H), 0.98 (qd, *J* = 12.5, 4.3 Hz, 2H) ppm. **$^{19}$F NMR** (471 MHz, DMSO-$d_6$): $\delta$ = -112.48 – -112.55 (m) ppm. **MS (ESI+)**: *m/z* = 451.10 [M-Boc+H]$^+$; calc.: 451.16.

*4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-N-(2-(piperidin-4-yl)ethyl)-[1,1'-biphenyl]-4-carboxamide* (**9**)



Compound **9** was synthesized according to general procedure II. The product was isolated as a colorless solid (TFA-salt) in a yield of 85%. **$^{1}$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 8.69 (t, *J* = 5.7 Hz, 1H), 8.46 (s, 2H), 7.92 (d, *J* = 1.8 Hz, 1H), 7.77 (dd, *J* = 7.8, 1.8 Hz, 1H), 7.61 (d, *J* = 7.7 Hz, 1H), 7.31 (dd, *J* = 8.4, 6.0 Hz, 1H), 7.24 (dd, *J* = 10.2, 2.6 Hz, 1H), 7.11 (td, *J* = 8.4, 2.5 Hz, 1H), 3.41 (s, 3H), 3.33 – 3.25 (m, 3H), 2.82 (td, *J* = 12.8, 2.9 Hz, 2H), 2.46 (s, 3H), 1.90 – 1.83 (m, 2H), 1.77 – 1.65 (m, 1H), 1.48 (q, *J* = 6.9 Hz, 2H), 1.36 – 1.22 (m, 2H) ppm. **$^{19}$F NMR** (471 MHz, DMSO-$d_6$): $\delta$ = -73.53, -112.43 – -112.50 (m) ppm. **$^{13}$C{$^{1}$H} NMR** (126 MHz, DMSO-$d_6$): $\delta$ = 167.3, 162.6 (d, *J* = 246.8 Hz), 158.1 (q, *J* = 30.8 Hz), 140.4, 139.9 (d, *J* = 8.2 Hz), 138.0, 136.8, 134.3, 133.6 (d, *J* = 3.1 Hz), 131.7 (d, *J* = 8.9 Hz), 129.9, 129.1, 117.3 (q, *J* = 300.3 Hz), 112.2, 112.0, 111.7, 111.6, 45.1, 43.4, 36.2, 34.8, 30.3, 28.3, 15.0 ppm. **MS (ESI+)**: *m/z* = 451.15 $[M+H]^+$; calc.: 451.16.

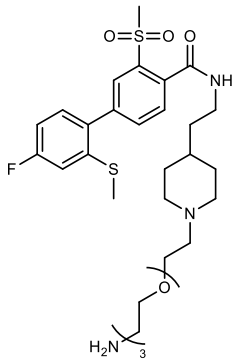
*Tert-butyl (2-(2-(2-(2-(4-(2-(4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamido)ethyl)piperidin-1-yl)ethoxy)ethoxy)ethoxy)ethyl)carbamate* (**10**)



4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-N-(2-(piperidin-4-yl)ethyl)-[1,1'-biphenyl]-4-carboxamide (**9**) (60 mg, 134 µmol) and *tert*-butyl (2-(2-(2-(2-bromoethoxy)ethoxy)ethoxy)ethyl)carbamate (72 mg, 200 µmol) were dissolved in dry DMF (4 mL). Then, DIPEA (93 µL, 533 µmol) was added and the reaction solution was stirred for 16 h at 90 °C. The solvent was removed under reduced pressure and the crude product was purified *via* flash chromatography on silica using acetonitrile/water as eluent. The product was isolated as a yellow solid (TFA-salt) in a yield of 45%. **$^{1}$H NMR** (400 MHz, DMSO-$d_6$): $\delta$ = 9.35 (s, 1H), 8.71 (t, *J* = 5.6 Hz, 1H), 7.92 (d, *J* = 1.8 Hz, 1H), 7.77 (dd, *J* = 7.8, 1.8 Hz, 1H), 7.60 (d, *J* = 7.7 Hz, 1H), 7.31 (dd, *J* = 8.4, 6.0 Hz, 1H), 7.24 (dd, *J* = 10.2, 2.5 Hz, 1H), 7.12 (td, *J* = 8.4, 2.5 Hz, 1H), 6.76 (t, *J* = 5.8 Hz, 1H), 3.74 (s, 2H), 3.63 – 3.46 (m, 10H), 3.42 (s, 3H), 3.37 (t, *J* = 6.2 Hz, 2H), 3.30 (d, *J* = 6.2 Hz, 3H), 3.06 (q, *J* = 6.1 Hz, 2H), 2.88 (s, 1H), 2.46 (s, 3H), 1.90 (d, *J* = 13.4 Hz, 2H), 1.67 (s, 1H), 1.55 – 1.44 (m,

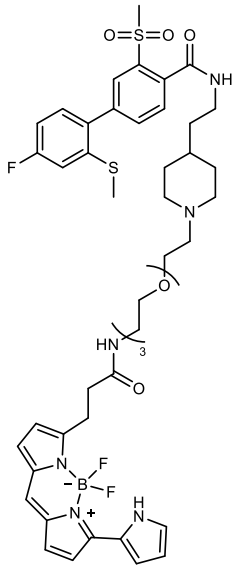
2H), 1.37 (s, 12H) ppm. **$^{19}$F NMR** (377 MHz, DMSO-$d_6$): $\delta$ = -73.47, -112.42 – -112.51 (m) ppm. **MS (ESI+)**: *m/z* = 726.25 $[M+H]^+$; calc.: 726.33.

*N-(2-(1-(2-(2-(2-(2-aminoethoxy)ethoxy)ethoxy)ethyl)piperidin-4-yl)ethyl)-4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamide* (**11**)



Compound **11** was synthesized according to general procedure II. The reaction was monitored *via* TLC and the crude product was used *in situ* without further purification.

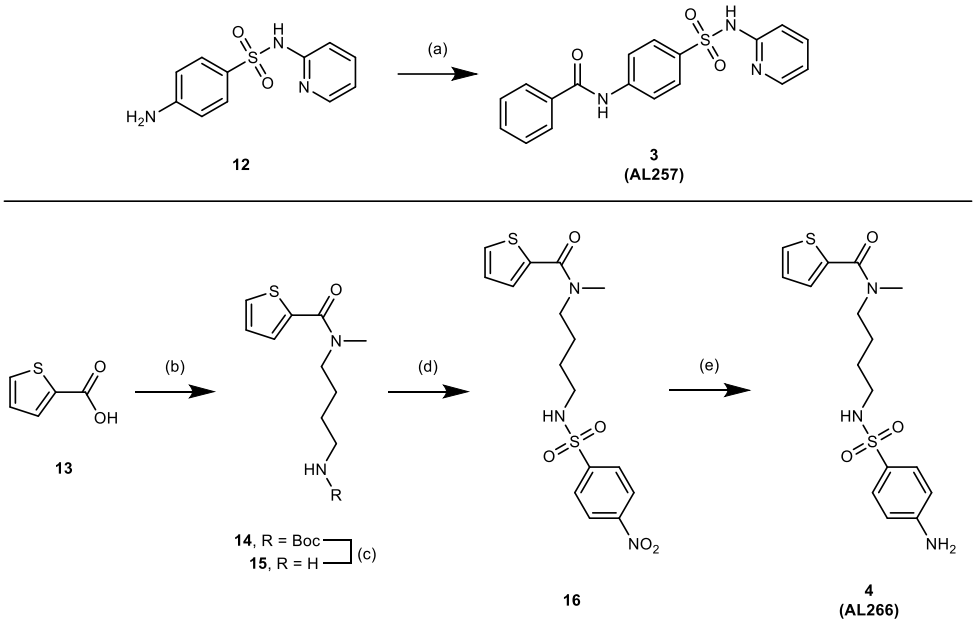
*N-(2-(1-(15-(5,5-difluoro-7-(1H-pyrrol-2-yl)-5H-5λ$^4$,6λ$^4$-dipyrrolo[1,2-c:2',1'-f][1,3,2]diazaborinin-3-yl)-13-oxo-3,6,9-trioxa-12-azapentadecyl)piperidin-4-yl)ethyl)-4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamide* (**2**) (**AL244**)



N-(2-(1-(2-(2-(2-(2-aminoethoxy)ethoxy)ethoxy)ethyl)piperidin-4-yl)ethyl)-4'-fluoro-3-(methylsulfonyl)-2'-(methylthio)-[1,1'-biphenyl]-4-carboxamide (**11**) (15.5 mg, 24.7 µmol) was dissolved in dry DMF (300 µL), then DIPEA (32.7 µL, 188 µmol) and 2,5-dioxopyrrolidin-1-yl 3-(5,5-difluoro-7-(1*H*-pyrrol-2-yl)-5*H*-5λ$^4$,6λ$^4$-dipyrrolo[1,2-*c*:2',1'-*f*][1,3,2]diaza-borinin-3-yl)propanoate (10.0 mg, 23.5 µmol) were added in succession. The reaction solution was stirred for 16 h at ambient temperature. Subsequently, the crude product was purified *via* preparative HPLC chromatography on silica gel using acetonitrile/water with added 0.1% (v/v) TFA as eluent. The product was isolated as a purple solid (TFA-salt) in a yield of 44%. **$^1$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 11.76 – 11.40 (m, 1H), 9.35 – 9.10 (m,

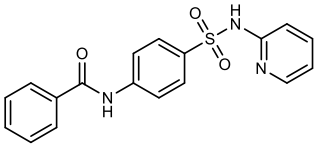
1H), 8.69 (t, *J* = 6.1 Hz, 1H), 8.01 (t, *J* = 6.0 Hz, 1H), 7.92 (s, 1H), 7.78 – 7.72 (m, 1H), 7.63 – 7.52 (m, 1H), 7.49 – 7.40 (m, 1H), 7.38 – 7.32 (m, 2H), 7.32 – 7.26 (m, 2H), 7.24 (dd, *J* = 10.2, 2.6 Hz, 1H), 7.17 (d, *J* = 4.7 Hz, 1H), 7.11 (td, *J* = 8.4, 2.6 Hz, 1H), 7.05 – 7.00 (m, 1H), 6.36 – 6.31 (m, 2H), 3.74 (t, *J* = 5.3 Hz, 2H), 3.57 – 3.43 (m, 10H), 3.41 (s, 3H), 3.33 – 3.21 (m, 6H), 3.14 (t, *J* = 8.3 Hz, 2H), 2.89 (q, *J* = 13.0 Hz, 1H), 2.46 (s, 3H), 1.91 (d, *J* = 16.4 Hz, 2H), 1.70 – 1.55 (m, 1H), 1.48 (q, *J* = 7.3 Hz, 2H), 1.44 – 1.32 (m, 2H), 1.29 – 1.16 (m, 2H) ppm. **$^{19}$F NMR** (471 MHz, DMSO-$d_6$): $\delta$ = -74.15,-109.90 – -114.77 (m), -138.43 – -143.60 (m) ppm. **$^{13}$C{$^{1}$H} NMR** (126 MHz, DMSO-$d_6$): $\delta$ = 171.2, 167.3, 162.6 (d, *J* = 247.2 Hz), 155.9, 150.3, 140.4, 139.9 (d, *J* = 8.3 Hz), 138.0, 137.0, 136.8, 134.3, 133.5 (d, *J* = 2.9 Hz), 133.1, 132.5, 131.7 (d, *J* = 8.9 Hz), 129.9, 129.0, 126.8, 126.2, 124.5, 122.9, 122.8, 119.4, 117.4, 116.2, 112.2, 112.0, 111.7, 111.6, 111.5, 69.8, 69.59, 69.51, 69.1, 64.3, 55.4, 52.5, 45.0, 38.6, 36.3, 34.7, 33.9, 30.2, 28.8, 24.1, 15.0 ppm. **HRMS (QTOF)**: *m/z* = 937.3803 $[M+H]^+$; calc.: 937.3770.

### *8.2.5 Synthesis of merged compounds **3** (**AL257**) and **4** (**AL266**)*



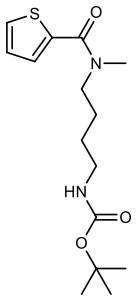

Reagents and conditions: (a benzoic acid, HATU, DIPEA, and dry DMF, 16 h, 40 °C; (b) tert-butyl (4-(methylamino)butyl)carbamate, HATU, DIPEA, and dry DMF, 16 h, 40 °C; (c) TFA (20 vol%), and dry DCM, 1 h, rt; (d) 4-nitrobenzenesulfonyl chloride, DIPEA, and dry DMF, 16 h, rt; (e) $NH_4Cl$, Fe powder, and methanol/water (9:1), 3 h, 75 °C.

*N-(4-(N-(pyridin-2-yl)sulfamoyl)phenyl)benzamide* (**3**) (**AL257**)



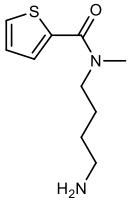
Compound **3** was synthesized according to general procedure I, using benzoic acid (50.0 mg, 410 µmol) as starting material. The product was isolated as a colorless solid in a yield of 25%. **$^{1}$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 11.74 (s, 1H), 10.54 (s, 1H), 8.05 – 8.00 (m, 1H), 7.97 – 7.92 (m, 4H), 7.89 – 7.85 (m, 2H), 7.74 – 7.68 (m, 1H), 7.63 – 7.59 (m, 1H), 7.56 – 7.51 (m, 2H), 7.17 – 7.14 (m, 1H), 6.90 – 6.82 (m, 1H) ppm. **$^{13}$C{$^{1}$H} NMR** (126 MHz, DMSO): $\delta$ = 166.1, 153.0, 142.6, 140.2, 136.1, 134.6, 132.0, 128.9, 128.5, 127.8, 127.7, 119.8, 113.6, 112.5 ppm. MS (ESI+) *m/z* = 354.05 $[M+H]^+$; calc.: 354.10.

*tert-butyl (4-(N-methylthiophene-2-carboxamido)butyl)carbamate* (**14**)



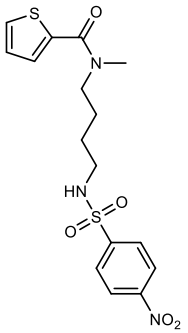
Compound **14** was synthesized according to general procedure I, using **13** (100 mg, 781 µmol) as starting material. The product was isolated as an orange solid in a yield of 90%. **$^{1}$H NMR** (600 MHz, DMSO-$d_6$): $\delta$ = 7.73 (dd, $J$ = 5.0, 1.1 Hz, 1H), 7.44 (s, 1H), 7.11 (dd, $J$ = 5.0, 3.7 Hz, 1H), 6.81 (t, $J$ = 5.8 Hz, 1H), 3.44 (t, $J$ = 7.4 Hz, 2H), 3.17 (s, 3H), 2.92 (q, $J$ = 6.6 Hz, 2H), 1.55 (p, $J$ = 8.0, 7.5 Hz, 2H), 1.37 (s, 9H), 1.35 – 1.32 (m, 2H) ppm. **MS (ESI+)** *m/z* = 313.10 $[M+H]^+$; calc.: 313.16.

*N-(4-aminobutyl)-N-methylthiophene-2-carboxamide* (**15**)



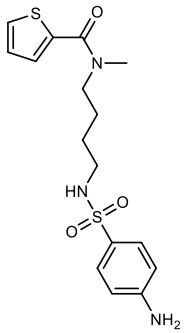
Compound **15** was synthesized according to general procedure II. The reaction was monitored over *via* TLC and the crude product was used *in situ* without further purification.

*N-methyl-N-(4-((4-nitrophenyl)sulfonamido)butyl)thiophene-2-carboxamide* (**16**)



4-nitrobenzenesulfonyl chloride (135 mg, 610 µmol) was dissolved in dry DMF (5 mL). The solution was cooled to 0 °C. Then, DIPEA (320 µL, 1,83 mmol) and *N*-(4-aminobutyl)-*N*-methylthiophene-2-carboxamide (**15**) (156 mg, 732 µmol) were added in succession. The reaction solution was stirred for 16 h at ambient temperature. Afterwards, the crude product was purified *via* flash chromatography on silica using acetonitrile/water as eluent. The product was isolated as a yellow solid in a yield of 21%. **$^1$H NMR** (400 MHz, DMSO-$d_6$): $\delta$ = 8.46 – 8.35 (m, 2H), 8.06 – 8.01 (m, 2H), 8.00 (s, 1H), 7.73 (dd, *J* = 5.1, 1.1 Hz, 1H), 7.41 (s, 1H), 7.10 (dd, *J* = 5.0, 3.7 Hz, 1H), 3.39 (t, *J* = 7.2 Hz, 2H), 3.06 (s, 3H), 2.82 (t, *J* = 6.5 Hz, 2H), 1.53 (p, *J* = 7.7 Hz, 2H), 1.34 (s, 2H) ppm. **MS (ESI+)** *m/z* = 398.00 $[M+H]^+$; calc.: 398.10.

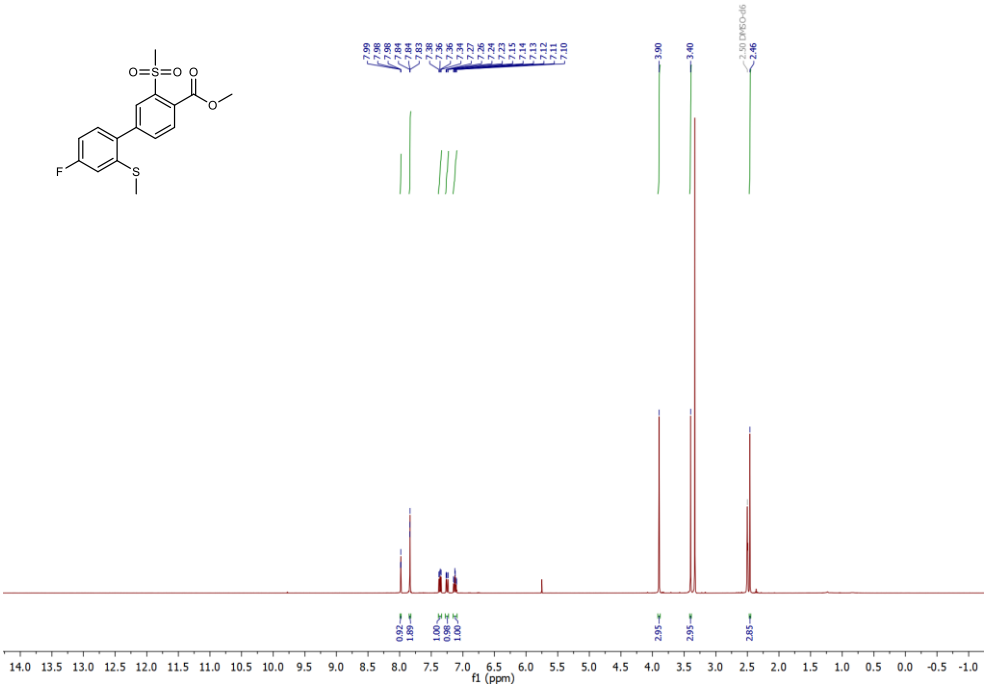
*N-(4-((4-aminophenyl)sulfonamido)butyl)-N-methylthiophene-2-carboxamide* (**4**) (**AL266**)

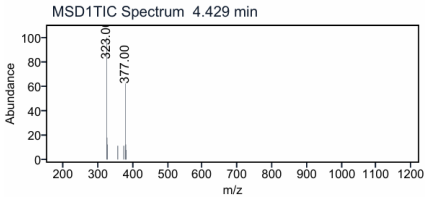


N-methyl-N-(4-((4-nitrophenyl)sulfonamido)butyl)thiophene-2-carboxamide (**16**) (45 mg, 114 µmol), ammonium chloride (43 mg, 793 µmol) and iron powder (45 mg, 793 µmol) were dissolved in methanol/water (10 mL, 9:1). The reaction solution was stirred for 3 h at 75 °C. Then, the crude solution was filtered over Celite®. The filtrate was concentrated under reduced pressure and the crude product was purified *via* flash chromatography on silica using acetonitrile/water as eluent. The product was isolated as a yellow solid in a yield of 29%. **$^1$H NMR** (500 MHz, DMSO-$d_6$): $\delta$ = 7.73 (d, *J* = 5.0 Hz, 1H), 7.56 – 7.34 (m, 3H), 7.15 – 7.06 (m, 2H), 6.60 (d, *J* = 8.3 Hz, 2H), 5.89 (s, 2H), 3.38 (t, *J* = 7.3 Hz, 2H), 3.06 (s, 3H), 2.66 (s, 2H), 1.53 (p, *J* = 7.3 Hz, 2H), 1.32 (s, 2H) ppm. **$^{13}$C{$^1$H} NMR** (126 MHz, DMSO-$d_6$): $\delta$ = 152.4, 128.4, 127.2, 125.6, 112.7, 42.2, 26.2 ppm. **MS (ESI+)** *m/z* = 368.20 $[M+H]^+$; calc.: 368.11.

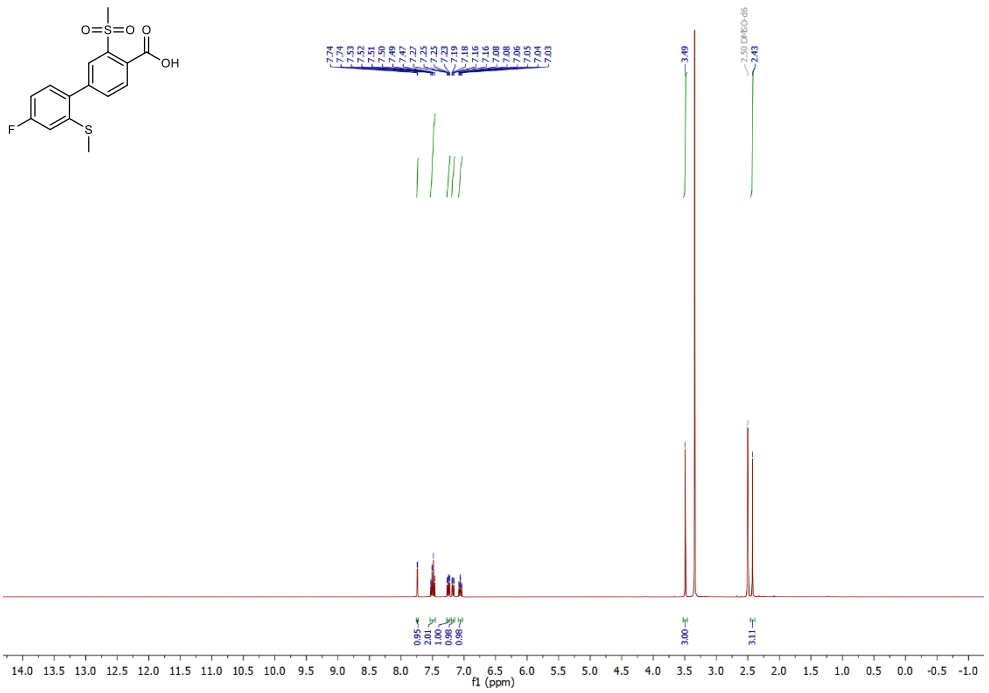
## 8.2 Analytical data

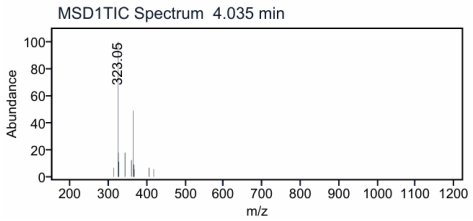
$^{1}$H NMR and MS (ESI+) spectra of compound **6**



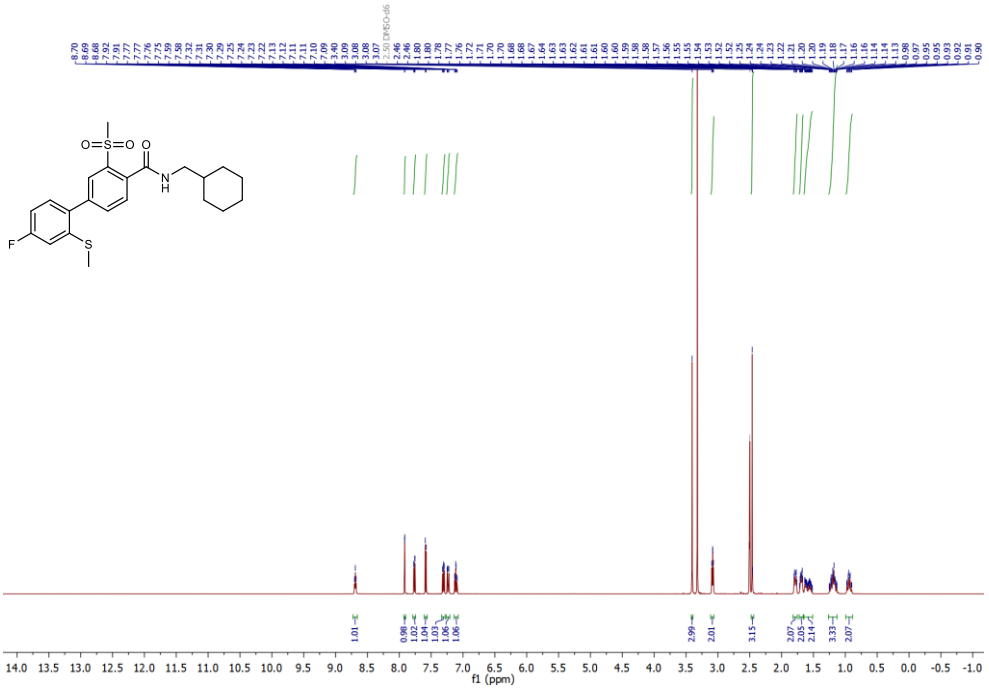



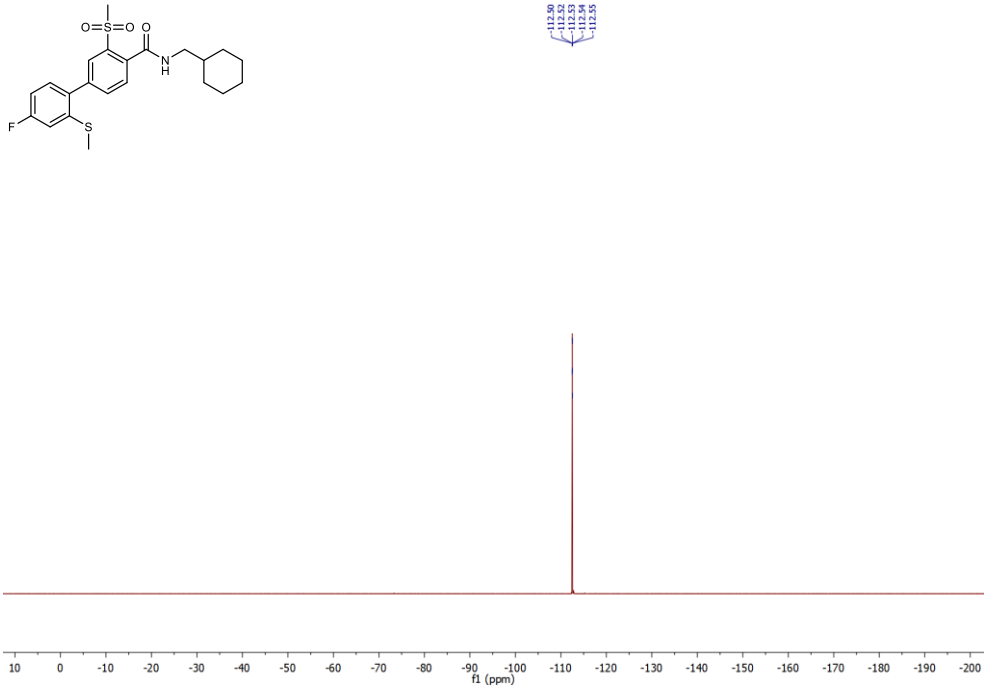
[1]H NMR and MS (ESI+) spectra of compound **7**

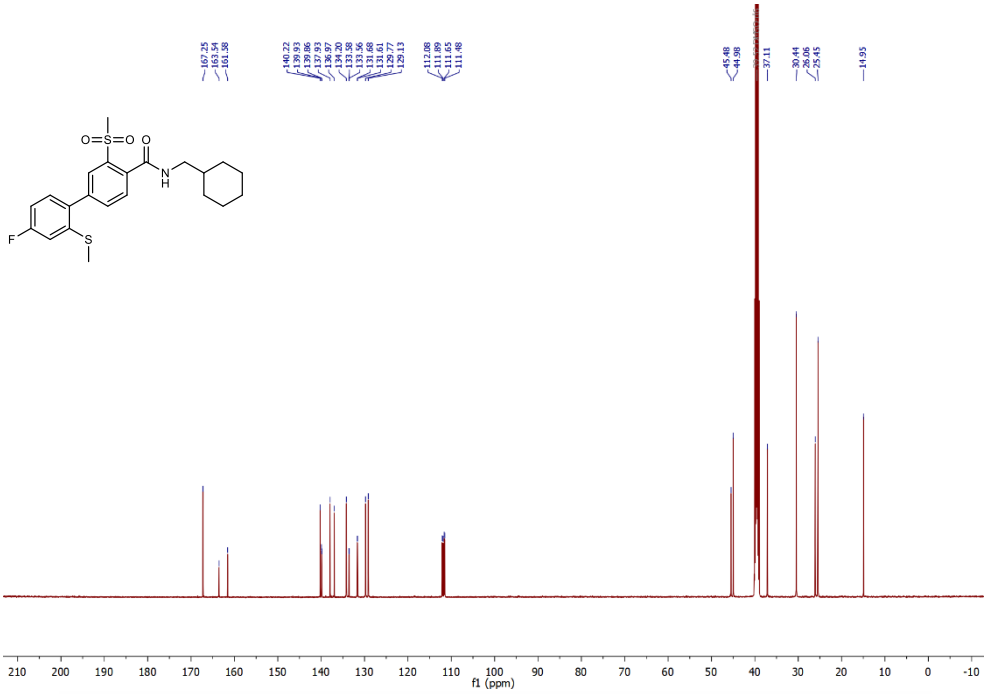


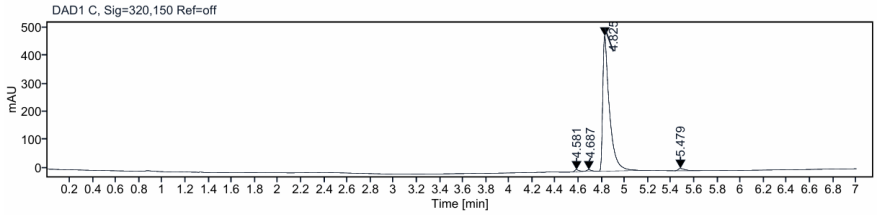



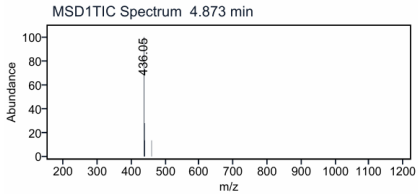
$^{1}H$, $^{19}F$, $^{13}C\{^{1}H\}$ NMR and MS (ESI+) data of compound **1**



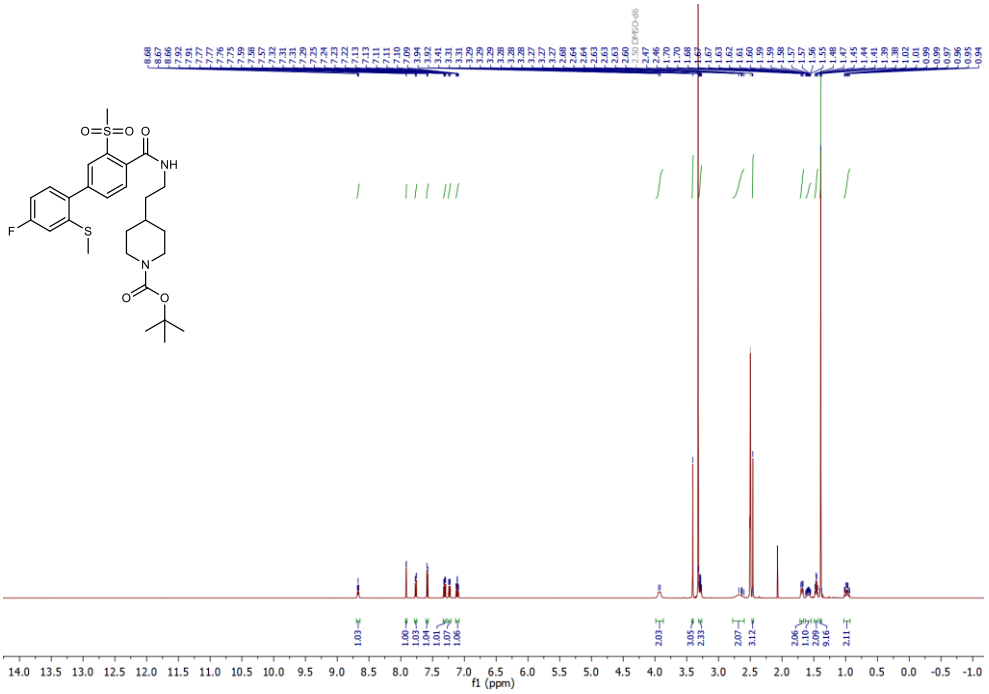


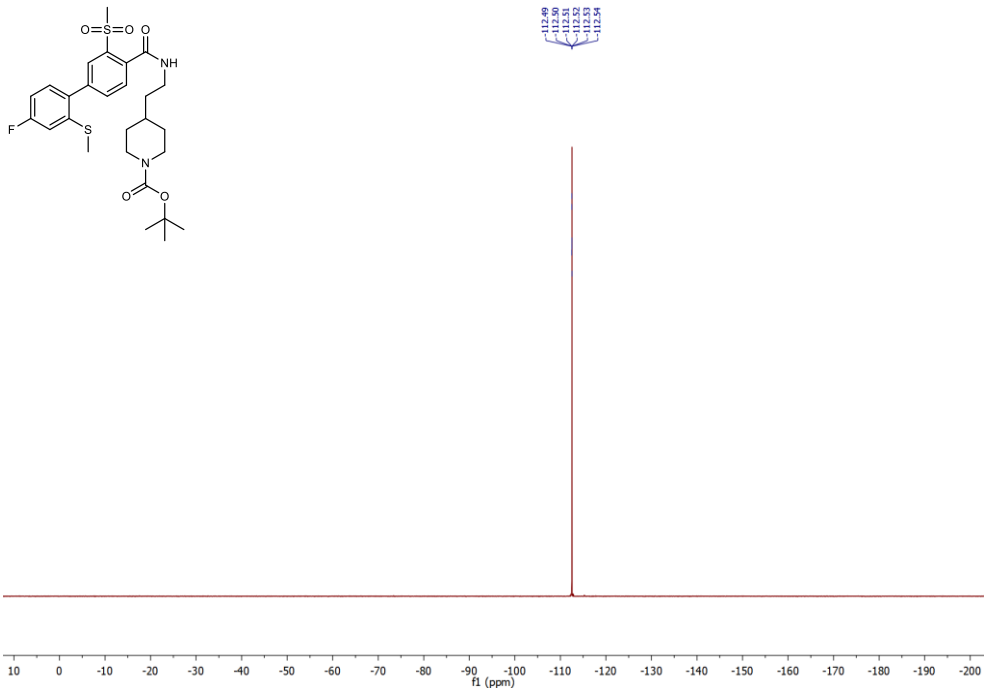



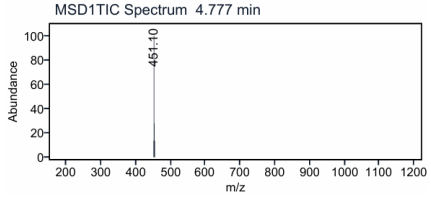




| | |
|---|---|
| Max Area% | 96.537 |
| UV Signal Purity>95% | Pass |

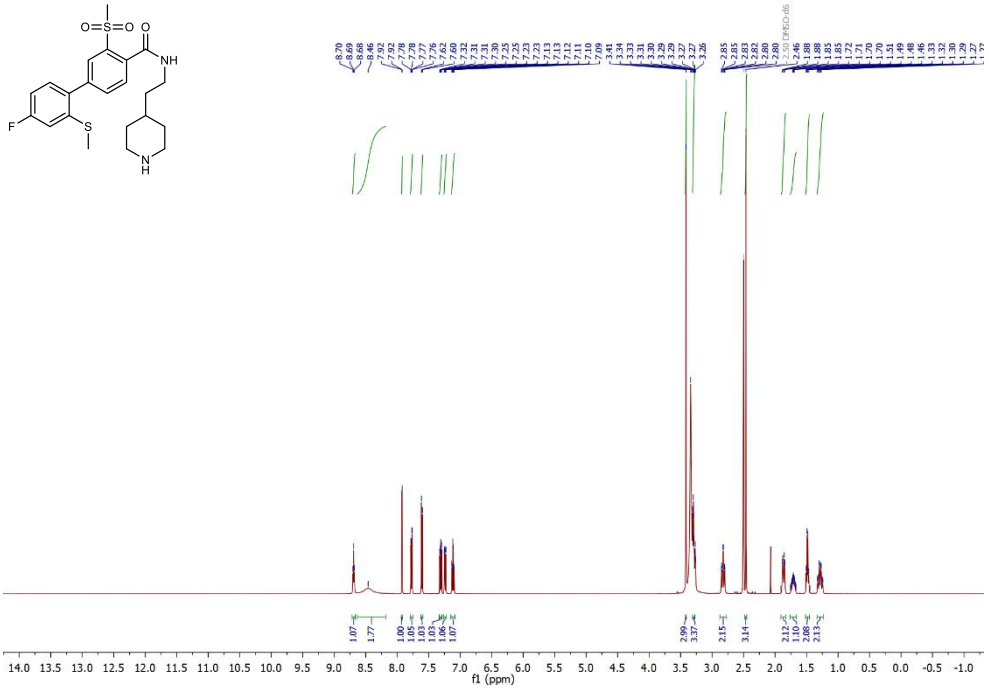
$^{1}H$, $^{19}F$ and MS (ESI+) data of compound **8**

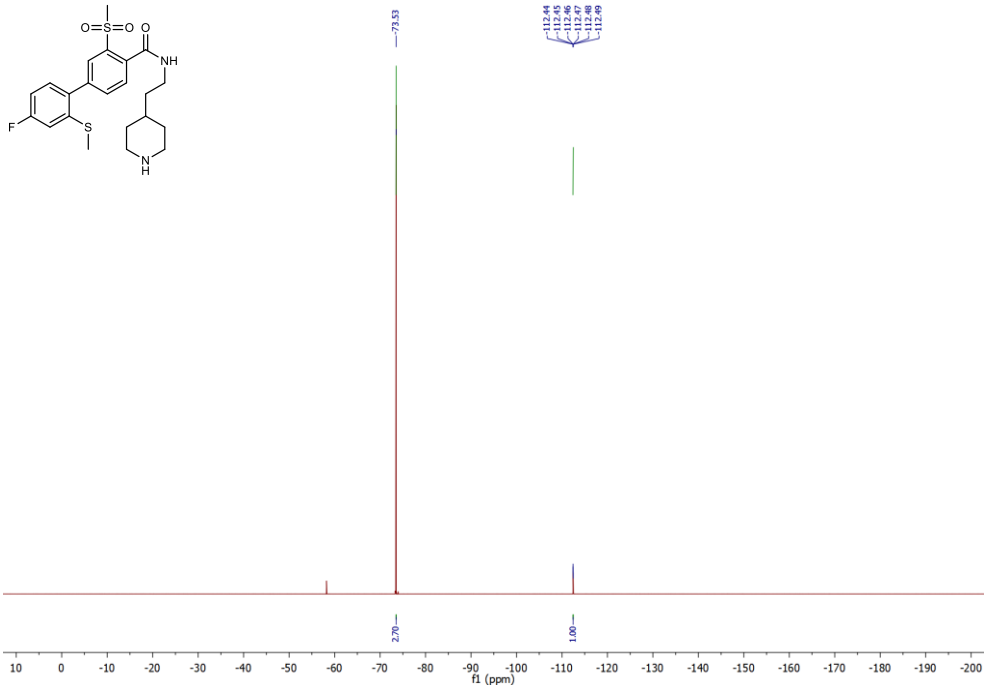


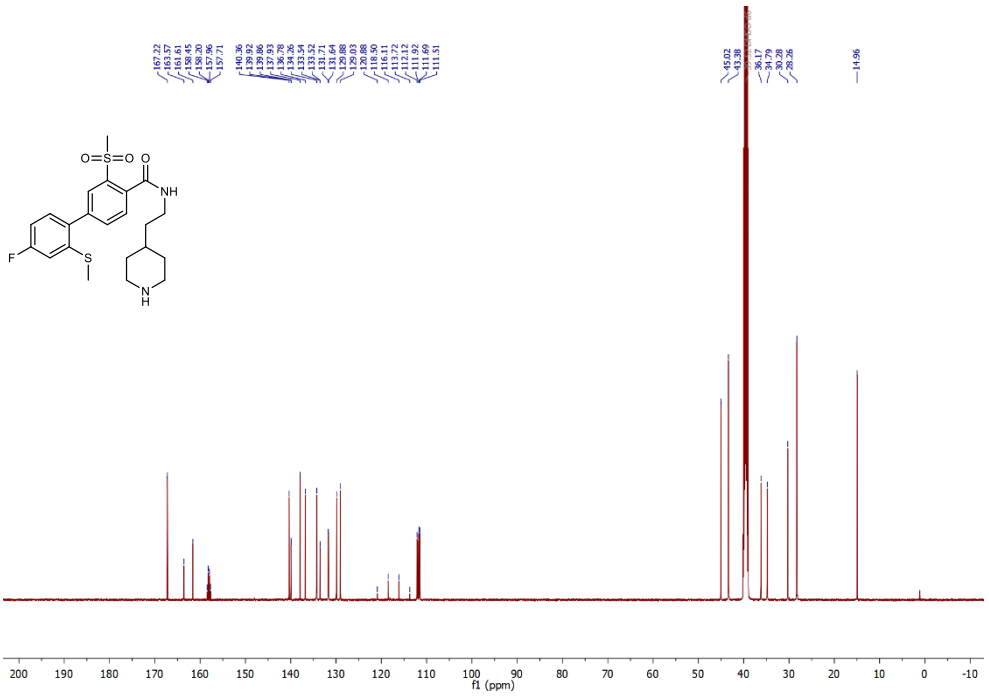



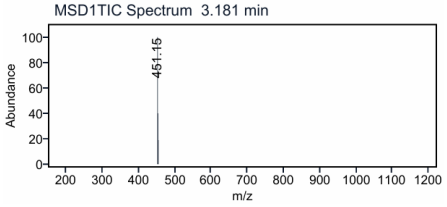



$^{1}H$, $^{19}F$, $^{13}C\{^{1}H\}$ NMR and MS (ESI+) data of compound **9**

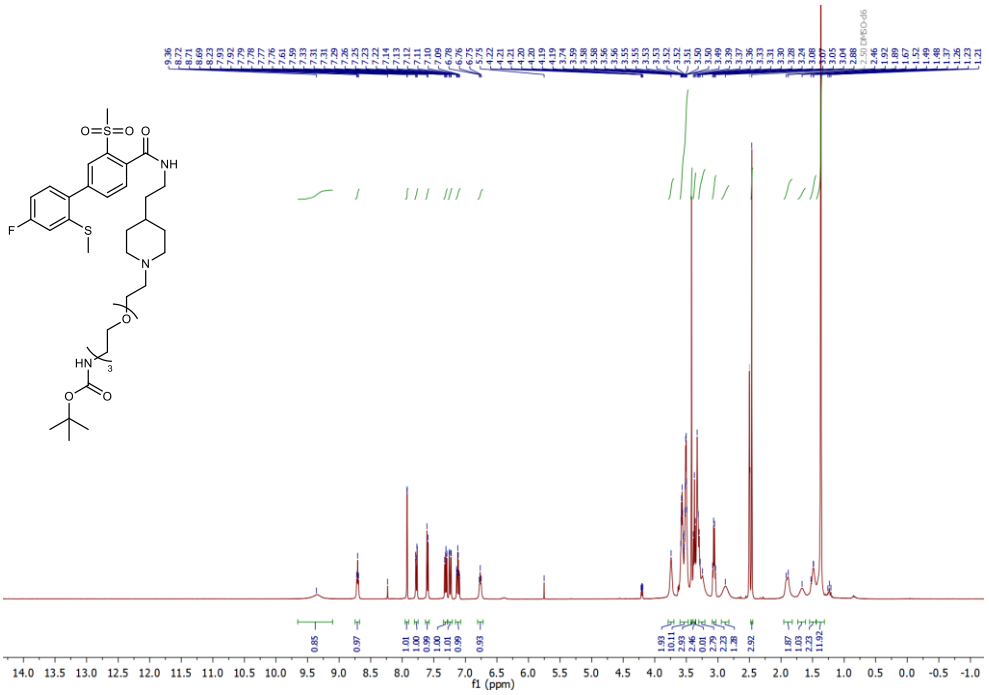


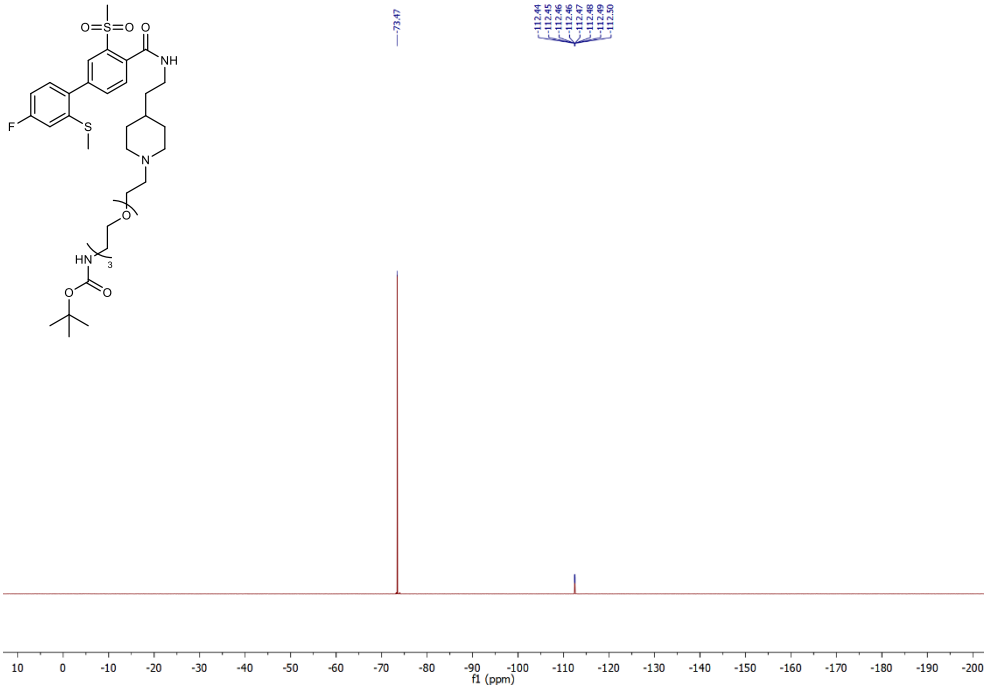



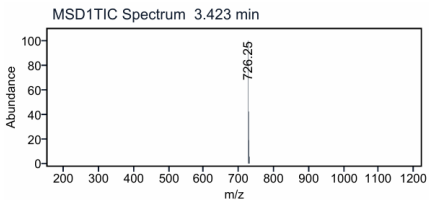

O=S=O
O
NH
F
S
N
H
157.22
163.57
161.61
160.45
158.20
157.96
157.71
140.36
139.92
139.86
137.93
136.78
134.26
133.34
133.32
131.71
131.64
131.58
129.03
120.88
118.50
114.11
113.72
113.12
111.93
111.69
111.51
45.02
43.38
36.17
34.79
30.28
28.26
14.96
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)


MSD1TIC Spectrum 3.181 min
Abundance
451.15
100
80
60
40
20
0
200 300 400 500 600 700 800 900 1000 1100 1200
m/z

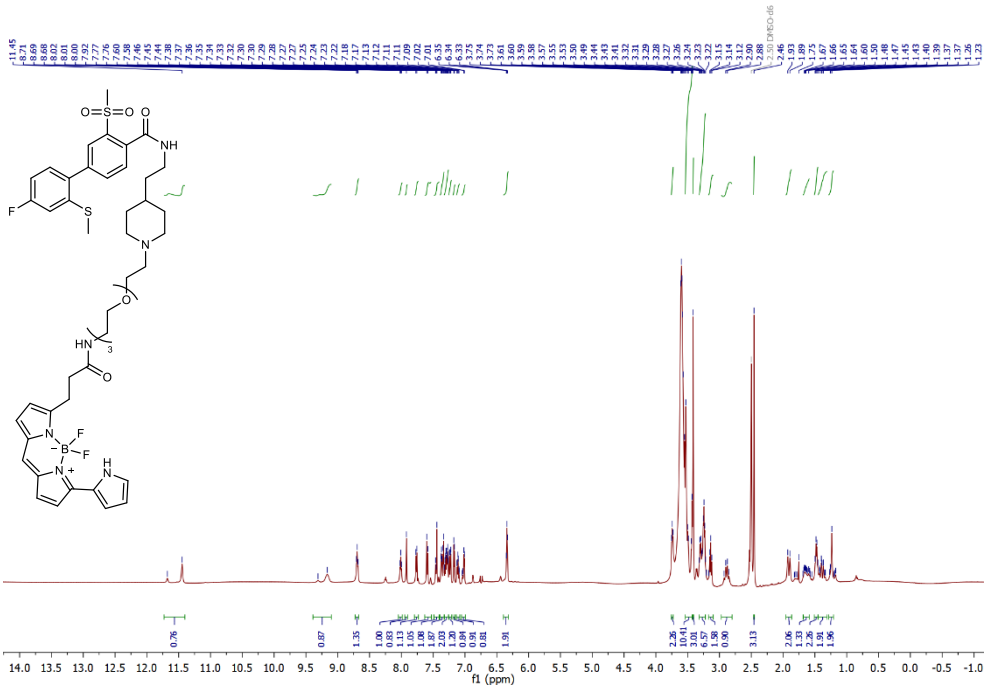
$^{1}H$, $^{19}F$ and MS (ESI+) data of compound **10**

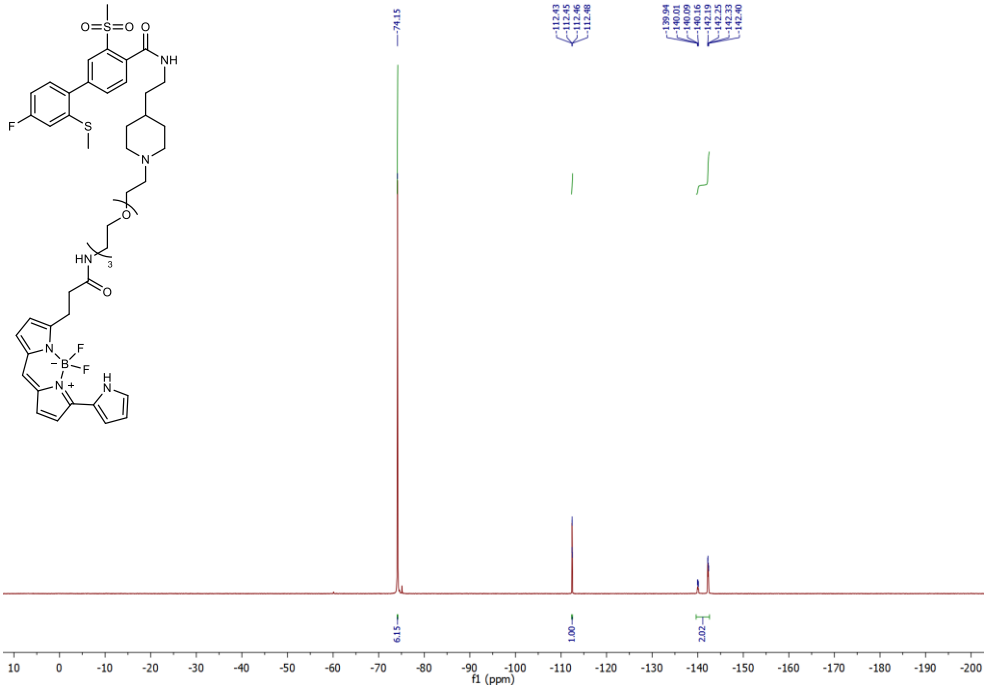


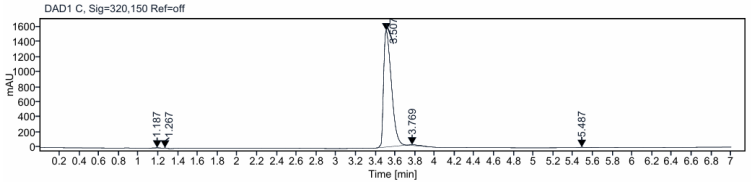



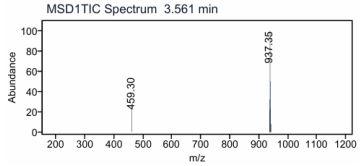



$^{1}H$, $^{19}F$, MS (ESI+), $^{13}C\{^{1}H\}$ NMR, and HRMS (QTOF) data of compound **2**

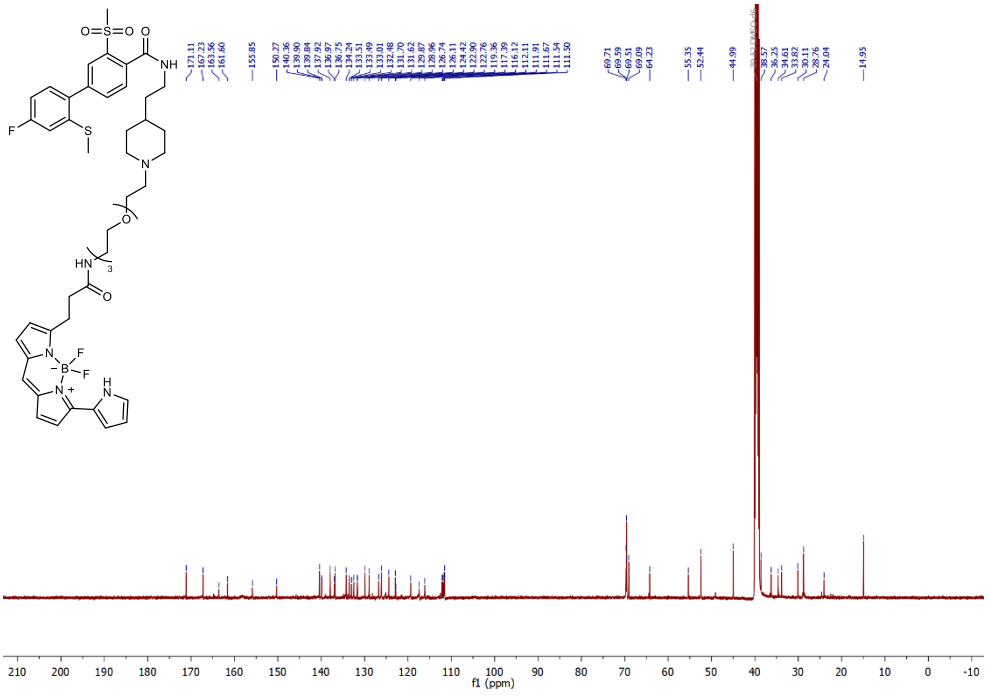


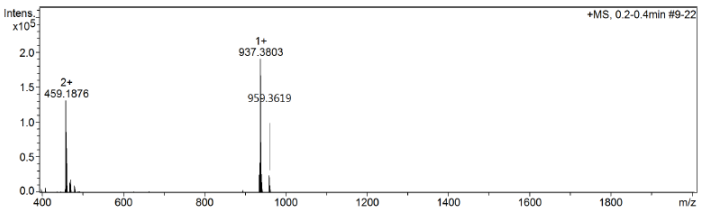




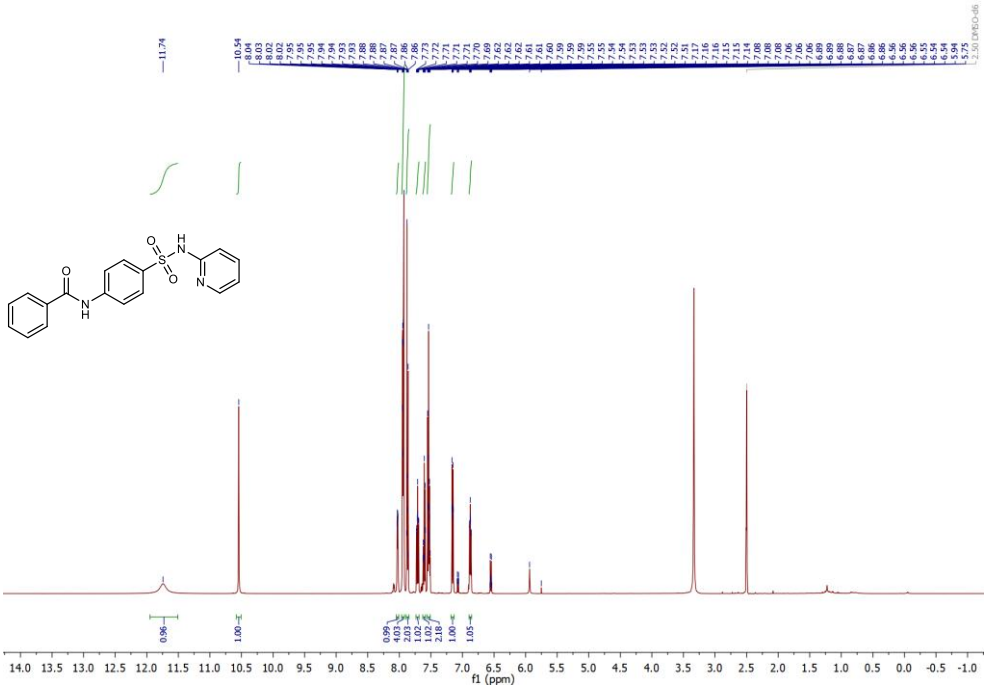



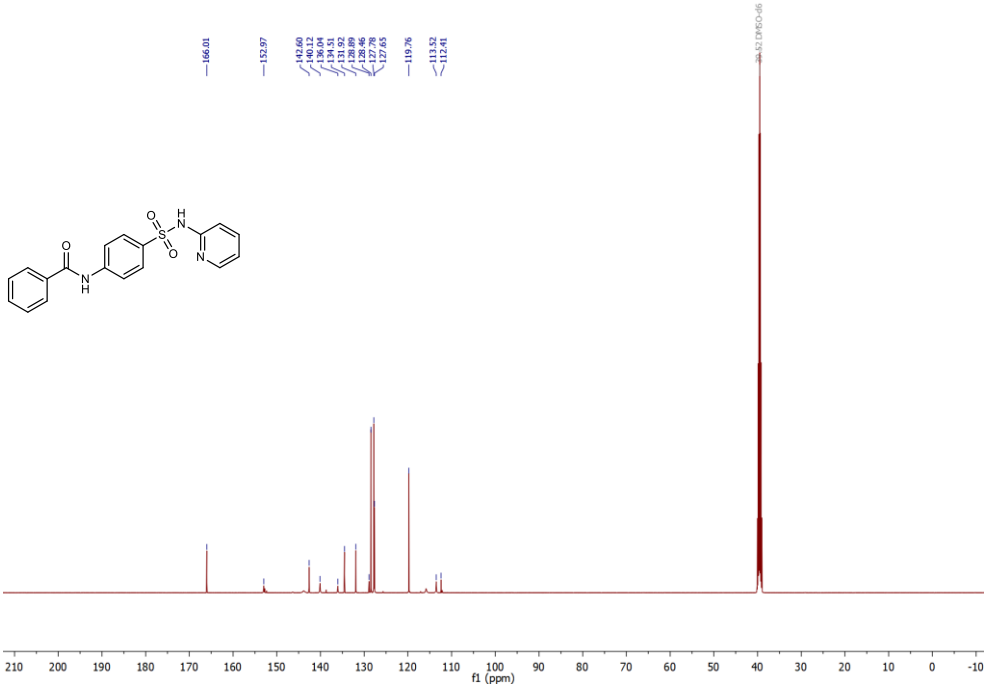

| | |
|---|---|
| Max Area% | 98.258 |
| UV Signal Purity>95% | Pass |

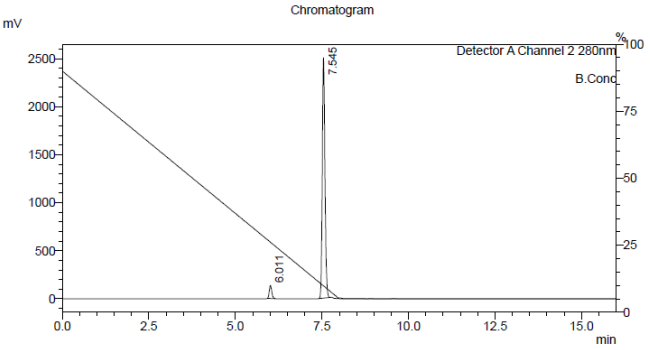

f1 (ppm)

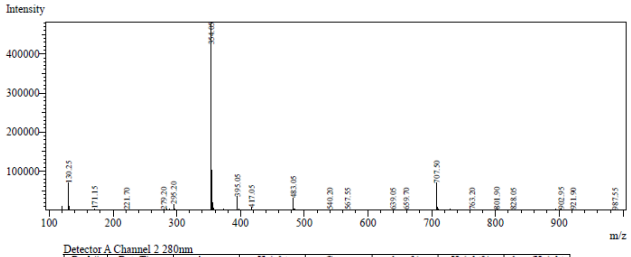

Intens.
x10^5
+MS, 0.2-0.4min #9-22
1+
937.3803
2+
459.1876
959.3619
m/z

$^{1}H$, $^{13}C\{^{1}H\}$ NMR and MS (ESI+) data of compound **3**



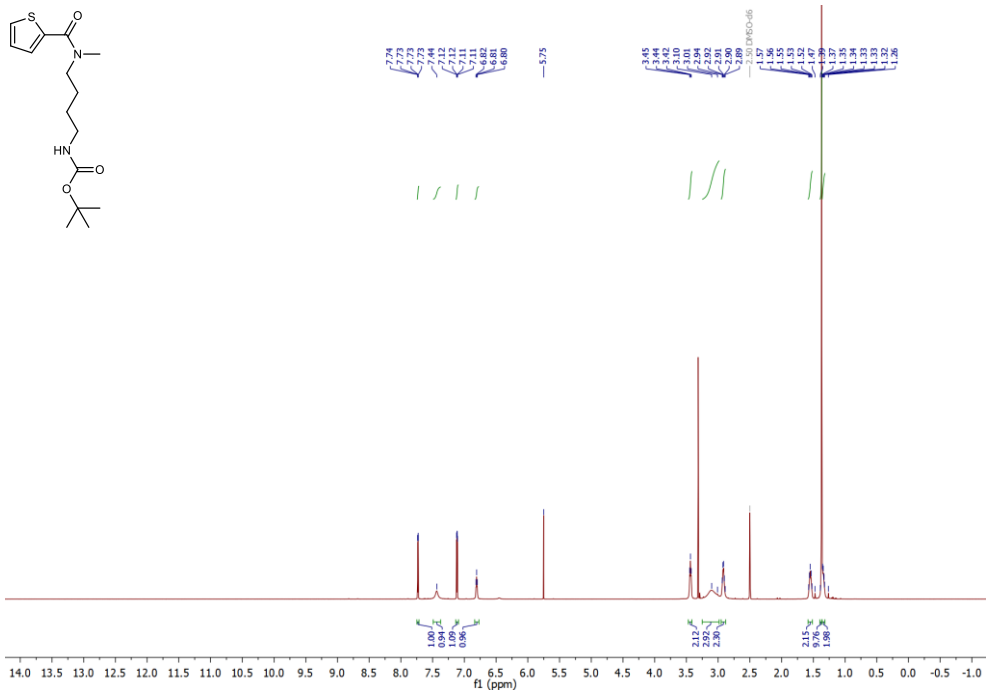


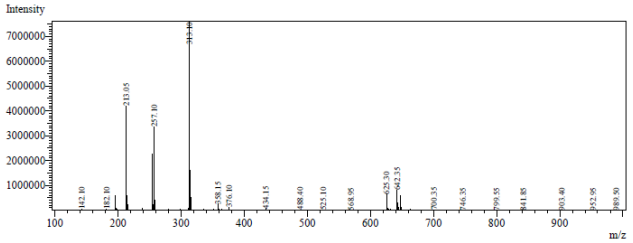




Detector A Channel 2 280nm

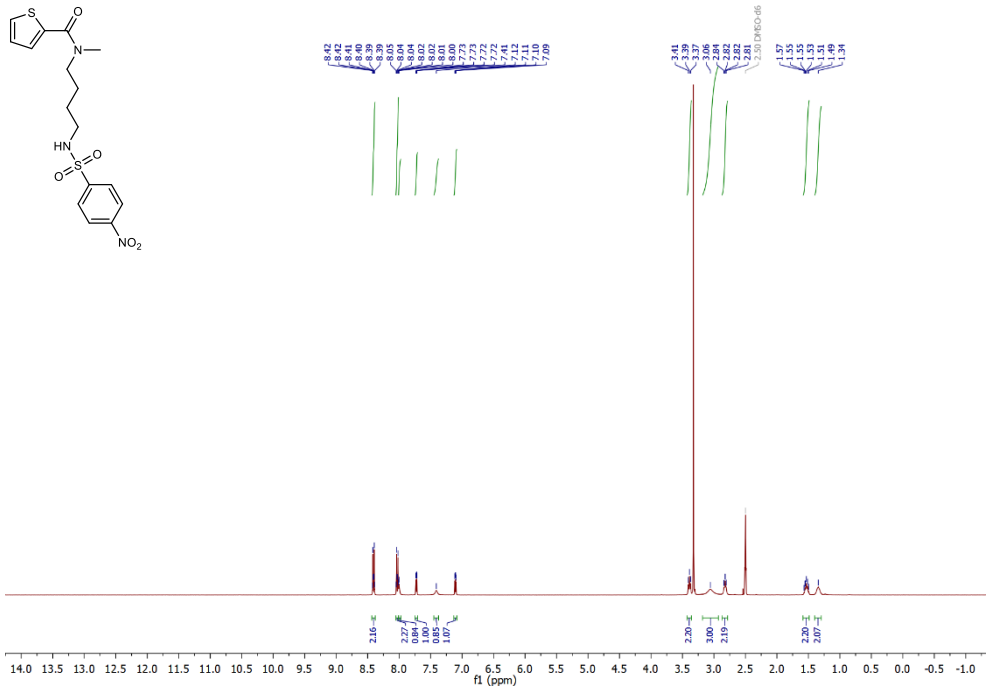
| Peak# | Ret. Time | Area | Height | Conc. | Area% | Height% | Area/Height |
|---|---|---|---|---|---|---|---|
| 1 | 6.011 | 683724 | 135596 | 4.905 | 4.905 | 5.140 | 5.057 |
| 2 | 7.545 | 13295694 | 2502463 | 95.095 | 95.095 | 94.860 | 5.313 |
| Total | | 13981418 | 2638059 | | 100.000 | 100.000 | |

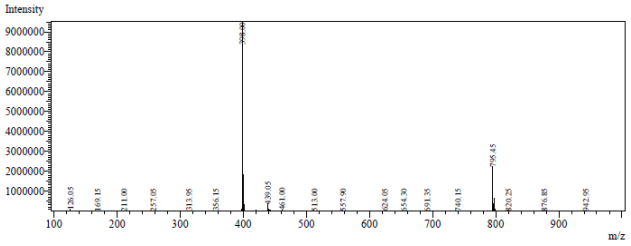
$^{1}$H NMR and MS (ESI+) spectra of compound **14**



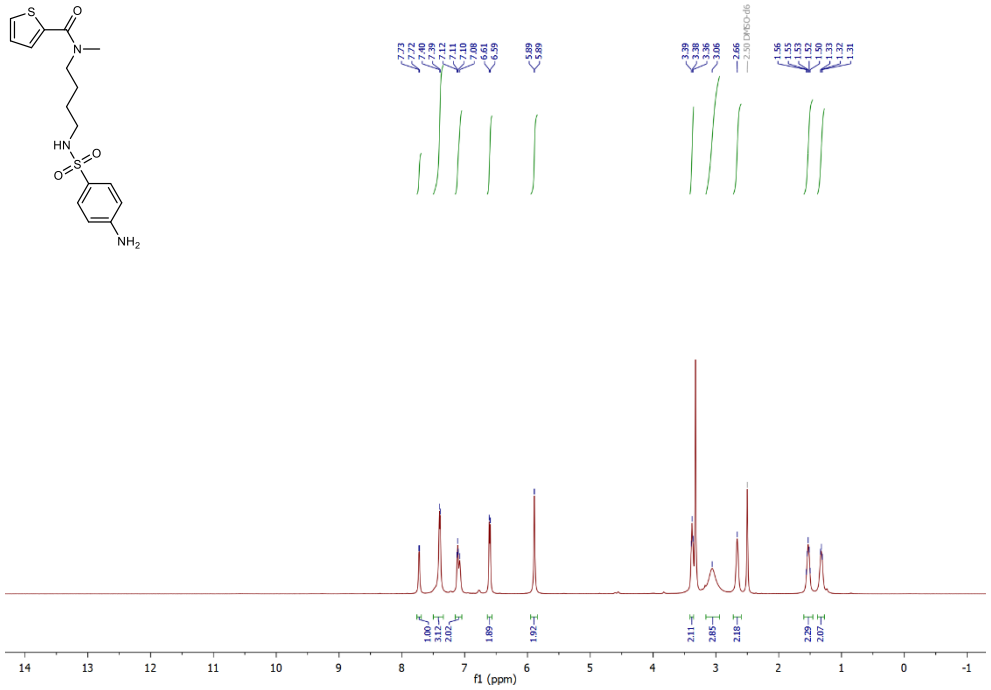



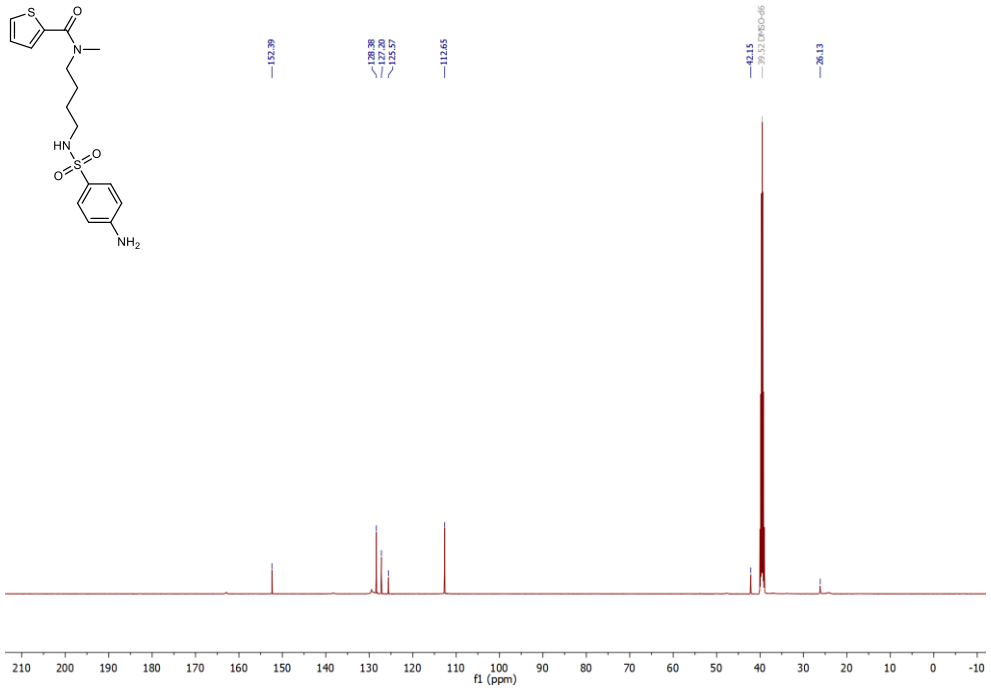
$^{1}$H NMR and MS (ESI+) spectra of compound **16**

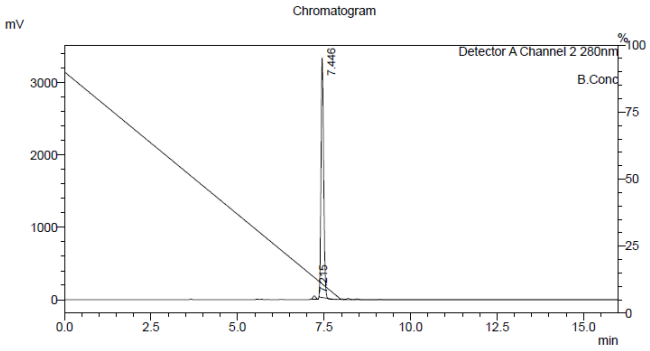


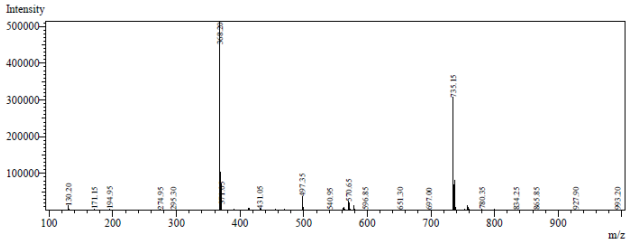



$^{1}H$, $^{13}C\{^{1}H\}$ NMR and MS (ESI+) data of compound **4**






Detector A Channel 2 280nm

| Peak# | Ret. Time | Area | Height | Conc. | Area% | Height% | Area/Height |
|---|---|---|---|---|---|---|---|
| 1 | 7.215 | 190810 | 41211 | 1.077 | 1.077 | 1.233 | 4.630 |
| 2 | 7.446 | 17525396 | 3300465 | 98.923 | 98.923 | 98.767 | 5.310 |
| Total | | 17716205 | 3341676 | | 100.000 | 100.000 | |

## 9. Used plasmids and protein sequences.

**Mouse TRIM21 construct: pET-3d vector (N-terminal $His_6$-tag-TRIM21 PRY-SPRY) UniProt-ID: Q62191**

MHHHHHHMVHITLDRNTANSWLIISKDRRQVRMGDTHQNVSDNKERFSNYPMVLGAQRFSSGKMYWEVDVT
QKEAWDLGVCRDSVQRKGQFSLSPENGFWTIWLWQDSYEAGTSPQTTLHIQVPPCQIGIFVDYEAGVVSFYNITD
HGSLIYTFSECVFAGPLRPFFNVGFNYSGGNAAPLKLCPLKM

**Human TRIM21 construct: pSUMO-Lic (N-terminal $His_6$-SUMO-tag-TRIM21 PRY-SPRY) UniProt-ID:** P19474
MCSSHHHHHHGSGSGSDQEAKPSTEDLGDKKEGEYIKLKVIGQDSSEIHFKVKMTTHLKKLKESYCQRQGVPMNSL
RFLFEGQRIADNHTPKELGMEEEDVIEVYQEQTGGVHITLDPDTANPWLILSEDRRQVRLGDTQQSIPGNEERFDSY
PMVLGAQHFHSGKHYWEVDVTGKEAWDLGVCRDSVRRKGHFLLSSKSGFWTIWLWNKQKYEAGTYPQTPLHLQ
VPPCQVGIFLDYEAGMVSFYNITDHGSLIYSFSECAFTGPLRPFFSPGFNDGGKNTAPLTLCPL

**TRIM21-NanoLuc construct: pf-32 vector**

MASAARLTMMWEEVTCPICLDPFVEPVSIECGHSFCQECISQVGKGGGSVCPVCRQRFLLKNLRPNRQLANMVN
NLKEISQEAREGTQGERCAVHGERLHLFCEKDGKALCWVCAQSRKHRDHAMVPLEEAAQEYQEKLQVALGELRRK
QELAEKLEVEIAIKRADWKKTVETQKSRIHAEFVQQKNFLVEEEQRQLQELEKDEREQLRILGEKEAKLAQQSQALQE
LISELDRRCHSSALELLQEVIIVLERSESWNLKDLDITSPELRSVCHVPGLKKMLRTCAVHITLDPDTANPWLILSEDRR
QVRLGDTQQSIPGNEERFDSYPMVLGAQHFHSGKHYWEVDVTGKEAWDLGVCRDSVRRKGHFLLSSKSGFWTI
WLWNKQKYEAGTYPQTPLHLQVPPCQVGIFLDYEAGMVSFYNITDHGSLIYSFSECAFTGPLRPFFSPGFNDGGKN
TAPLTLCPLNIGSQGSTDYGSSGVFTLEDFVGDWRQTAGYNLDQVLEQGGVSSLFQNLGVSVTPIQRIVLSGENGLK
IDIHVIIPYEGLSGDQMGQIEKIFKVVYPVDDHHFKVILHYGTLVIDGVTPNMIDYFGRPYEGIAVFDGKKITVTGTLW
NGNKIIDERLINPDGSLLFRVTINGVTGWRLCERILA

## 10. Data Collection and Refinement Table

**Table S2:** Data Collection and Refinement Statistics

| **PDB** | **7HLA** | **7HLB** | **7HLC** | **7HLD** | **7HLE** | **7HLF** |
|---|---|---|---|---|---|---|
| Fragment ID | Z111634612 | Z45705015 | Z1079512010 | Z1401276297 | Z1696844792 | Z2092555279 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 31.28 - 1.23 (1.26 - 1.23) | 31.23 - 1.21 (1.24 - 1.21) | 33.91 - 1.35 (1.39 - 1.35) | 33.80 - 1.22 (1.25 - 1.22) | 33.92 - 1.40 (1.44 - 1.40) | 31.28 - 1.39 (1.43 - 1.39) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.72 95.72 45.74 | 95.83 95.83 45.55 | 95.86 95.86 45.63 | 95.53 95.53 45.52 | 95.89 95.89 45.70 | 95.86 95.86 45.67 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 583818 (4322) | 586709 (3221) | 543224 (12868) | 568389 (2797) | 512150 (16858) | 519108 (17033) |
| Unique reflections | 55780 (1658) | 55750 (1405) | 45569 (2239) | 57891 (3398) | 41073 (2003) | 41853 (2066) |
| Multiplicity | 10.50 (2.60) | 10.50 (2.30) | 11.90 (5.70) | 9.82 (3.2) | 12.50 (8.40) | 12.40 (8.20) |
| Completeness (%) | 92.60 (55.90) | 88.40 (43.60) | 100.00 (99.60) | 94.84 (54.91) | 100.00 (99.50) | 100.00 (99.20) |
| Mean I/sigma(I) | 16.10 (1.06) | 18.30 (1.03) | 12.70 (1.01) | 19.44 (1.00) | 12.80 (1.03) | 10.10 (0.99) |
| R-merge | 0.064 (1.182) | 0.056 (1.142) | 0.086 (1.809) | 0.050 (1.257) | 0.100 (2.690) | 0.112 (2.593) |
| R-rim | 0.019 (0.840) | 0.016 (0.843) | 0.025 (0.808) | 0.015 (1.524) | 0.029 (0.986) | 0.032 (0.953) |
| CC-half | 0.998 (0.313) | 1.000 (0.309) | 0.998 (0.291) | 0.999 (0.358) | 0.998 (0.361) | 0.999 (0.329) |
| R-factor | 0.173 (0.353) | 0.179 (0.348) | 0.183 (0.383) | 0.178 (0.374) | 0.183 (0.368) | 0.183 (0.381) |
| R-free | 0.190 (0.336) | 0.197 (0.344) | 0.206 (0.393) | 0.196 (0.395) | 0.209 (0.369) | 0.204 (0.371) |
| Number of total atoms | 1762 | 1741 | 1734 | 1736 | 1729 | 1743 |
| atoms for ligands | 56 | 53 | 28 | 28 | 27 | 28 |
| atoms for waters | 140 | 141 | 140 | 142 | 136 | 149 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 17.5 | 18.3 | 21.9 | 17.7 | 21.7 | 21.5 |
| B-factor for ligands | 25.4 | 34.3 | 56.1 | 31.8 | 37.9 | 39.7 |
| B-factor for solvent | 28.6 | 29.7 | 33.5 | 28.8 | 32.4 | 36.1 |
| RMS(bonds) | 0.012 | 0.013 | 0.012 | 0.013 | 0.011 | 0.011 |
| RMS(bond angles) | 2.001 | 1.808 | 1.728 | 1.903 | 1.716 | 1.7 |
| RMS(dihedral angles) | 7.288 | 7.342 | 7.198 | 7.313 | 7.277 | 7.234 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HLG | 7HLH | 7HLI | 7HLJ | 7HLK | 7HLL |
|---|---|---|---|---|---|---|
| Fragment ID | Z2365130785 | Z453319206 | Z2017861827 | Z1980894300 | Z285642082 | Z1328968520 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 33.99 - 1.50 (1.54 - 1.50) | 33.87 - 1.38 (1.42 - 1.38) | 31.29 - 1.35 (1.39 - 1.35) | 31.20 - 1.37 (1.41 - 1.37) | 31.26 - 1.39 (1.43 - 1.39) | 33.74 - 1.15 (1.18 - 1.15) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 96.08 96.08 45.57 | 95.72 95.72 45.65 | 95.78 95.78 45.76 | 95.50 95.50 45.64 | 95.71 95.71 45.72 | 95.38 95.38 45.82 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 444419 (17448) | 525291 (16585) | 541923 (13238) | 528847 (15487) | 517352 (18228) | 585256 (446) |
| Unique reflections | 33453 (1687) | 42498 (2054) | 45681 (2309) | 43189 (2085) | 40466 (2001) | 62166 (433) |
| Multiplicity | 13.30 (10.30) | 12.40 (8.10) | 11.90 (5.70) | 12.20 (7.40) | 12.80 (9.10) | 9.40 (1.00) |
| Completeness (%) | 100.00 (100.00) | 99.80 (98.20) | 100.00 (99.30) | 99.60 (96.00) | 96.80 (90.20) | 85.20 (12.10) |
| Mean I/sigma(I) | 10.60 (1.05) | 14.80 (1.05) | 11.60 (0.99) | 12.80 (1.03) | 11.60 (1.00) | 31.70 (2.54) |
| R-merge | 0.157 (3.705) | 0.101 (2.309) | 0.094 (2.711) | 0.106 (2.349) | 0.133 (4.682) | 0.038 (0.122) |
| R-rim | 0.044 (1.208) | 0.029 (0.857) | 0.027 (1.236) | 0.031 (0.915) | 0.038 (1.618) | 0.011 (0.122) |
| CC-half | 0.996 (0.296) | 0.999 (0.407) | 0.999 (0.342) | 0.999 (0.302) | 0.998 (0.284) | 0.999 (0.927) |
| R-factor | 0.185 (0.381) | 0.176 (0.351) | 0.186 (0.388) | 0.181 (0.363) | 0.189 (0.407) | 0.170 (0.228) |
| R-free | 0.208 (0.434) | 0.195 (0.382) | 0.212 (0.390) | 0.198 (0.350) | 0.212 (0.401) | 0.188 (0.267) |
| Number of total atoms | 1621 | 1760 | 1628 | 1756 | 1624 | 1609 |
| atoms for ligands | 27 | 47 | 39 | 43 | 43 | 24 |
| atoms for waters | 28 | 147 | 31 | 147 | 33 | 19 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 23.2 | 20.3 | 23.2 | 19.9 | 22.3 | 12.7 |
| B-factor for ligands | 42.1 | 31.6 | 39.2 | 33.2 | 41.4 | 24.9 |
| B-factor for solvent | 30.9 | 33.5 | 29.3 | 32.4 | 28.4 | 22.7 |
| RMS(bonds) | 0.01 | 0.012 | 0.011 | 0.011 | 0.011 | 0.014 |
| RMS(bond angles) | 1.645 | 1.77 | 1.748 | 1.701 | 1.676 | 1.987 |
| RMS(dihedral angles) | 7.293 | 7.422 | 7.355 | 7.351 | 7.185 | 7.378 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HLM | 7HLN | 7HLO | 7HLP | 7HLQ | 7HLR |
|---|---|---|---|---|---|---|
| Fragment ID | Z29077827 | Z26823525 | Z90122368 | Z29634868 | Z32327641 | Z1430613393 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 33.79 - 1.15 (1.18 - 1.15) | 31.23 - 1.20 (1.23 - 1.20) | 33.75 - 1.15 (1.18 - 1.15) | 33.62 - 1.19 (1.22 - 1.19) | 67.52 - 1.33 (1.36 - 1.33) | 67.58 - 1.34 (1.38 - 1.34) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.51 95.51 45.88 | 95.31 95.31 45.83 | 95.40 95.40 45.79 | 95.02 95.02 45.46 | 95.49 95.49 45.91 | 95.57 95.57 45.81 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 588195 (441) | 585684 (2587) | 587100 (449) | 573574 (1889) | 552079 (11691) | 546051 (11679) |
| Unique reflections | 61914 (434) | 56056 (1332) | 62299 (436) | 59389 (1288) | 47560 (2392) | 46080 (1922) |
| Multiplicity | 9.50 (1.00) | 10.40 (1.90) | 9.40 (1.00) | 9.70 (1.50) | 11.60 (4.90) | 11.90 (6.10) |
| Completeness (%) | 84.30 (12.10) | 87.40 (42.70) | 85.40 (12.30) | 91.40 (40.10) | 99.90 (98.20) | 99.00 (84.90) |
| Mean I/sigma(I) | 43.00 (1.74) | 14.90 (1.03) | 26.00 (1.04) | 14.70 (0.98) | 18.00 (1.29) | 12.10 (1.15) |
| R-merge | 0.028 (0.147) | 0.080 (1.020) | 0.040 (0.532) | 0.063 (0.844) | 0.102 (1.653) | 0.114 (2.010) |
| R-rim | 0.008 (0.147) | 0.024 (0.833) | 0.012 (0.532) | 0.018 (0.698) | 0.030 (0.827) | 0.033 (0.867) |
| CC-half | 0.999 (0.947) | 0.999 (0.283) | 1.000 (0.622) | 0.999 (0.441) | 0.999 (0.379) | 0.998 (0.320) |
| R-factor | 0.177 (0.237) | 0.175 (0.337) | 0.176 (0.345) | 0.175 (0.376) | 0.177 (0.293) | 0.180 (0.337) |
| R-free | 0.192 (0.224) | 0.194 (0.318) | 0.190 (0.339) | 0.198 (0.402) | 0.200 (0.306) | 0.200 (0.395) |
| Number of total atoms | 1741 | 1622 | 1629 | 1645 | 1740 | 1737 |
| atoms for ligands | 26 | 24 | 25 | 49 | 31 | 31 |
| atoms for waters | 149 | 40 | 38 | 30 | 143 | 140 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 13.3 | 15 | 14.7 | 17 | 16.1 | 17.6 |
| B-factor for ligands | 27.9 | 31.8 | 31.9 | 26.1 | 32.7 | 32.1 |
| B-factor for solvent | 23.3 | 22.4 | 22.3 | 23.4 | 26.6 | 28.1 |
| RMS(bonds) | 0.014 | 0.012 | 0.013 | 0.012 | 0.013 | 0.012 |
| RMS(bond angles) | 1.948 | 1.856 | 1.876 | 1.871 | 1.842 | 1.772 |
| RMS(dihedral angles) | 7.16 | 7.124 | 7.314 | 7.277 | 7.104 | 7.307 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HLV | 7HLW | 7HLX | 7HLY | 7HLZ | 7HM0 |
|---|---|---|---|---|---|---|
| Fragment ID | Z79432418 | Z438096750 | Z32367954 | Z235449082 | Z256709358 | Z374427992 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 67.55 - 1.19 (1.22 - 1.19) | 67.71 - 1.40 (1.44 - 1.40) | 41.38 - 1.28 (1.31 - 1.28) | 41.42 - 1.32 (1.35 - 1.32) | 41.35 - 1.29 (1.32 - 1.29) | 67.53 - 1.43 (1.47 - 1.43) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.53 95.53 45.70 | 95.75 95.75 45.86 | 95.40 95.40 45.88 | 95.47 95.47 45.93 | 95.43 95.43 45.83 | 95.50 95.50 45.81 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 587692 (1968) | 514000 (16737) | 566444 (12108) | 557263 (10592) | 564213 (8659) | 486037 (17805) |
| Unique reflections | 60965 (1351) | 41002 (1975) | 52633 (3477) | 47869 (1981) | 51533 (2363) | 38348 (1963) |
| Multiplicity | 9.60 (1.50) | 12.50 (8.50) | 10.80 (3.50) | 11.60 (5.30) | 10.90 (3.70) | 12.70 (9.10) |
| Completeness (%) | 92.40 (42.30) | 100.00 (99.50) | 98.90 (88.70) | 98.40 (83.40) | 99.20 (89.60) | 100.00 (99.60) |
| Mean I/sigma(I) | 20.20 (1.04) | 9.90 (1.05) | 19.00 (1.18) | 13.60 (1.04) | 16.70 (1.18) | 9.70 (0.99) |
| R-merge | 0.054 (0.761) | 0.144 (2.348) | 0.054 (1.242) | 0.090 (1.727) | 0.077 (1.107) | 0.139 (5.227) |
| R-rim | 0.016 (0.693) | 0.042 (0.855) | 0.016 (0.761) | 0.026 (0.811) | 0.023 (0.697) | 0.040 (1.808) |
| CC-half | 1.000 (0.375) | 0.997 (0.405) | 1.000 (0.339) | 0.998 (0.333) | 0.999 (0.239) | 0.999 (0.353) |
| R-factor | 0.178 (0.337) | 0.184 (0.350) | 0.176 (0.343) | 0.181 (0.357) | 0.176 (0.332) | 0.188 (0.373) |
| R-free | 0.197 (0.365) | 0.216 (0.375) | 0.195 (0.337) | 0.199 (0.340) | 0.195 (0.309) | 0.214 (0.388) |
| Number of total atoms | 1746 | 1725 | 1740 | 1736 | 1742 | 1738 |
| atoms for ligands | 43 | 24 | 28 | 30 | 29 | 23 |
| atoms for waters | 137 | 143 | 146 | 140 | 147 | 149 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 15 | 18.1 | 18.2 | 17.9 | 17 | 22.3 |
| B-factor for ligands | 25.1 | 35.9 | 33.7 | 37.2 | 37 | 46.8 |
| B-factor for solvent | 26.2 | 29.2 | 28.8 | 28.9 | 27.6 | 33.6 |
| RMS(bonds) | 0.012 | 0.01 | 0.012 | 0.011 | 0.013 | 0.011 |
| RMS(bond angles) | 1.81 | 1.688 | 1.833 | 1.76 | 1.851 | 1.597 |
| RMS(dihedral angles) | 7.19 | 7.081 | 7.255 | 7.157 | 7.116 | 7.106 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HM1 | 7HM2 | 7HM3 | 7HM4 | 7HM5 | 7HM6 |
|---|---|---|---|---|---|---|
| Fragment ID | Z793778804 | Z32400357 | Z1359419878 | Z1407673036 | Z192955056 | Z1172243962 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 67.49 - 1.34 (1.38 - 1.34) | 67.38 - 1.15 (1.18 - 1.15) | 41.37 - 1.23 (1.26 - 1.23) | 41.31 - 1.42 (1.46 - 1.42) | 33.88 - 1.38 (1.42 - 1.38) | 67.61 - 1.33 (1.36 - 1.33) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.44 95.44 45.91 | 95.29 95.29 45.86 | 95.51 95.51 45.85 | 95.73 95.73 45.74 | 95.75 95.75 45.88 | 95.62 95.62 45.84 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 546293 (11899) | 587265 (465) | 584046 (4467) | 496399 (17359) | 527980 (16675) | 553879 (11574) |
| Unique reflections | 46517 (2269) | 62218 (455) | 55882 (1717) | 39250 (1952) | 42800 (2106) | 47652 (2380) |
| Multiplicity | 11.70 (5.20) | 9.40 (1.00) | 10.50 (2.60) | 12.60 (8.90) | 12.30 (7.90) | 11.60 (4.90) |
| Completeness (%) | 100.00 (99.70) | 85.30 (12.80) | 93.20 (58.30) | 100.00 (100.00) | 100.00 (100.00) | 100.00 (99.40) |
| Mean I/sigma(I) | 15.20 (1.05) | 23.90 (1.13) | 16.70 (1.06) | 9.70 (1.01) | 12.20 (1.03) | 13.00 (1.08) |
| R-merge | 0.086 (1.652) | 0.048 (0.561) | 0.072 (1.113) | 0.139 (3.386) | 0.107 (2.204) | 0.111 (1.725) |
| R-rim | 0.025 (0.794) | 0.014 (0.561) | 0.021 (0.799) | 0.040 (1.201) | 0.031 (0.832) | 0.033 (0.861) |
| CC-half | 0.999 (0.298) | 0.998 (0.508) | 0.999 (0.331) | 0.998 (0.314) | 0.999 (0.392) | 0.999 (0.311) |
| R-factor | 0.186 (0.353) | 0.180 (0.332) | 0.178 (0.344) | 0.188 (0.363) | 0.180 (0.363) | 0.177 (0.339) |
| R-free | 0.212 (0.358) | 0.200 (0.325) | 0.198 (0.306) | 0.213 (0.365) | 0.202 (0.373) | 0.197 (0.336) |
| Number of total atoms | 1620 | 1725 | 1746 | 1719 | 1628 | 1631 |
| atoms for ligands | 23 | 27 | 30 | 22 | 30 | 27 |
| atoms for waters | 31 | 140 | 150 | 139 | 32 | 38 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 18.3 | 15 | 16.1 | 21 | 20.1 | 16.8 |
| B-factor for ligands | 36.1 | 30.1 | 32.7 | 37.3 | 39.4 | 37.8 |
| B-factor for solvent | 26.4 | 25.8 | 26.7 | 32.5 | 26.9 | 26 |
| RMS(bonds) | 0.011 | 0.013 | 0.012 | 0.01 | 0.01 | 0.011 |
| RMS(bond angles) | 1.719 | 1.93 | 1.803 | 1.598 | 1.695 | 1.793 |
| RMS(dihedral angles) | 6.944 | 8.027 | 7.146 | 7.256 | 7.135 | 7.125 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HM8 | 7HM9 | 7HMA | 7HMB | 7HMC | 7HMD |
|---|---|---|---|---|---|---|
| Fragment ID | Z285782452 | Z1222331430 | Z291279160 | Z1374778753 | Z1954800564 | Z425387594 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 41.36 - 1.33 (1.36 - 1.33) | 67.53 - 1.25 (1.28 - 1.25) | 47.78 - 1.15 (1.18 - 1.15) | 67.46 - 1.36 (1.40 - 1.36) | 67.65 - 1.32 (1.35 - 1.32) | 33.88 - 1.29 (1.32 - 1.29) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.64 95.64 45.82 | 95.50 95.50 45.69 | 95.47 95.47 45.71 | 95.41 95.41 45.85 | 95.67 95.67 45.89 | 95.77 95.77 45.51 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 552323 (11213) | 578560 (5802) | 588478 (470) | 534013 (13723) | 559151 (10619) | 567584 (8327) |
| Unique reflections | 47530 (2204) | 50642 (1297) | 61858 (448) | 44412 (2164) | 46840 (1660) | 51602 (2282) |
| Multiplicity | 11.60 (5.10) | 11.40 (4.50) | 9.50 (1.00) | 12.00 (6.30) | 11.90 (6.40) | 11.00 (3.60) |
| Completeness (%) | 99.50 (93.60) | 89.00 (45.50) | 84.60 (12.50) | 100.00 (99.80) | 96.00 (70.50) | 99.20 (89.00) |
| Mean I/sigma(I) | 14.80 (1.05) | 16.50 (1.06) | 26.40 (1.11) | 11.80 (1.03) | 14.80 (1.05) | 18.90 (1.24) |
| R-merge | 0.082 (1.737) | 0.075 (1.460) | 0.043 (0.460) | 0.104 (2.478) | 0.093 (1.810) | 0.068 (0.982) |
| R-rim | 0.024 (0.816) | 0.022 (0.758) | 0.013 (0.460) | 0.030 (1.076) | 0.027 (0.752) | 0.020 (0.610) |
| CC-half | 0.999 (0.375) | 0.998 (0.327) | 0.999 (0.471) | 0.999 (0.322) | 0.997 (0.317) | 0.999 (0.404) |
| R-factor | 0.180 (0.348) | 0.179 (0.338) | 0.176 (0.312) | 0.182 (0.353) | 0.181 (0.342) | 0.172 (0.324) |
| R-free | 0.199 (0.355) | 0.200 (0.372) | 0.189 (0.275) | 0.207 (0.334) | 0.205 (0.346) | 0.191 (0.314) |
| Number of total atoms | 1749 | 1627 | 1629 | 1600 | 1743 | 1749 |
| atoms for ligands | 40 | 24 | 28 | 23 | 37 | 32 |
| atoms for waters | 143 | 37 | 35 | 19 | 140 | 151 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 19.6 | 17.3 | 16.4 | 18.8 | 17.5 | 15.8 |
| B-factor for ligands | 57.7 | 34.9 | 38.4 | 37 | 31 | 25.1 |
| B-factor for solvent | 29.4 | 23.9 | 23.3 | 23.8 | 28.5 | 26.9 |
| RMS(bonds) | 0.012 | 0.012 | 0.013 | 0.011 | 0.011 | 0.013 |
| RMS(bond angles) | 1.776 | 1.831 | 1.894 | 1.69 | 1.752 | 1.869 |
| RMS(dihedral angles) | 7.072 | 7.072 | 7.27 | 7.032 | 7.292 | 7.258 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HME | 7HMF | 7HMG | 7HMH | 7HMI | 7HMJ |
|---|---|---|---|---|---|---|
| Fragment ID | Z319545618 | Z1367324110 | Z274575916 | Z1636723439 | Z1742054999 | Z1578665941 |
| Wavelength | 0.9212 | 0.9212 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 67.69 - 1.51 (1.55 - 1.51) | 67.29 - 1.20 (1.23 - 1.20) | 67.55 - 1.32 (1.35 - 1.32) | 41.36 - 1.50 (1.54 - 1.50) | 67.62 - 1.42 (1.46 - 1.42) | 47.96 - 1.50 (1.54 - 1.50) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.72 95.72 45.78 | 95.16 95.16 45.73 | 95.53 95.53 45.76 | 95.50 95.50 45.84 | 95.63 95.63 45.89 | 95.83 95.83 45.88 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 434412 (17460) | 581454 (2766) | 556728 (10548) | 438729 (26065) | 499362 (17139) | 445491 (17006) |
| Unique reflections | 32650 (1662) | 59941 (1727) | 48506 (2346) | 33253 (2472) | 39275 (1929) | 33483 (1631) |
| Multiplicity | 13.30 (10.50) | 9.70 (1.60) | 11.50 (4.50) | 13.20 (10.50) | 12.70 (8.90) | 13.30 (10.40) |
| Completeness (%) | 100.00 (100.00) | 93.80 (52.20) | 99.90 (97.90) | 100.00 (100.00) | 100.00 (99.80) | 100.00 (99.40) |
| Mean I/sigma(I) | 8.80 (1.00) | 18.90 (1.03) | 17.80 (1.21) | 10.90 (1.13) | 9.60 (1.06) | 10.30 (1.02) |
| R-merge | 0.177 (4.703) | 0.054 (0.851) | 0.126 (2.968) | 0.236 (3.049) | 0.209 (4.556) | 0.165 (3.587) |
| R-rim | 0.050 (1.516) | 0.016 (0.762) | 0.038 (1.523) | 0.067 (0.982) | 0.060 (1.614) | 0.047 (1.168) |
| CC-half | 0.999 (0.287) | 1.000 (0.359) | 0.999 (0.305) | 0.997 (0.342) | 0.999 (0.370) | 0.999 (0.298) |
| R-factor | 0.184 (0.372) | 0.180 (0.357) | 0.173 (0.291) | 0.189 (0.462) | 0.185 (0.345) | 0.186 (0.378) |
| R-free | 0.204 (0.368) | 0.195 (0.346) | 0.184 (0.299) | 0.213 (0.469) | 0.215 (0.364) | 0.214 (0.408) |
| Number of total atoms | 1724 | 1749 | 1746 | 1734 | 1733 | 1731 |
| atoms for ligands | 28 | 43 | 31 | 23 | 23 | 26 |
| atoms for waters | 138 | 140 | 149 | 145 | 144 | 139 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 23.7 | 16.7 | 15.6 | 17.6 | 18.6 | 21.7 |
| B-factor for ligands | 43.7 | 31.1 | 29 | 33.2 | 36.5 | 43.3 |
| B-factor for solvent | 34.3 | 27.1 | 25.9 | 28 | 29.2 | 33 |
| RMS(bonds) | 0.01 | 0.012 | 0.013 | 0.011 | 0.01 | 0.01 |
| RMS(bond angles) | 1.586 | 1.797 | 1.87 | 1.668 | 1.648 | 1.601 |
| RMS(dihedral angles) | 7.101 | 7.097 | 7.407 | 6.967 | 7.317 | 7.278 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HMK | 7HML | 7HMM | 7HMN | 7HMO | 7HMP |
|---|---|---|---|---|---|---|
| Fragment ID | Z271004858 | Z1354416068 | Z165170770 | Z57478994 | Z198194394 | Z1530301542 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 41.30 - 1.35 (1.39 - 1.35) | 33.79 - 1.26 (1.29 - 1.26) | 67.56 - 1.28 (1.31 - 1.28) | 33.75 - 1.33 (1.36 - 1.33) | 67.63 - 1.30 (1.33 - 1.30) | 41.34 - 1.15 (1.18 - 1.15) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.60 95.60 45.74 | 95.52 95.52 45.69 | 95.55 95.55 45.79 | 95.39 95.39 45.70 | 95.65 95.65 45.81 | 95.43 95.43 45.82 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 542695 (14219) | 575184 (6503) | 571923 (7725) | 547600 (11176) | 566849 (9337) | 589226 (323) |
| Unique reflections | 44379 (1990) | 54726 (2330) | 52550 (2255) | 47236 (2274) | 45987 (1202) | 62342 (321) |
| Multiplicity | 12.20 (7.10) | 10.50 (2.80) | 10.90 (3.40) | 11.60 (4.90) | 12.30 (7.80) | 9.50 (1.00) |
| Completeness (%) | 97.70 (84.50) | 98.10 (81.00) | 98.70 (86.60) | 99.90 (97.60) | 90.20 (48.40) | 84.30 (8.80) |
| Mean I/sigma(I) | 13.00 (1.07) | 21.10 (1.03) | 16.90 (1.06) | 13.30 (0.84) | 13.70 (1.09) | 27.90 (1.09) |
| R-merge | 0.100 (1.956) | 0.052 (1.039) | 0.071 (1.283) | 0.085 (1.524) | 0.106 (2.097) | 0.039 (0.602) |
| R-rim | 0.029 (0.755) | 0.016 (0.744) | 0.021 (0.811) | 0.025 (0.748) | 0.031 (0.789) | 0.012 (0.602) |
| CC-half | 0.998 (0.279) | 1.000 (0.356) | 0.999 (0.289) | 0.999 (0.337) | 0.998 (0.396) | 0.999 (0.389) |
| R-factor | 0.183 (0.356) | 0.182 (0.353) | 0.181 (0.348) | 0.182 (0.367) | 0.180 (0.339) | 0.176 (0.316) |
| R-free | 0.209 (0.344) | 0.201 (0.382) | 0.199 (0.360) | 0.202 (0.404) | 0.201 (0.325) | 0.192 (0.302) |
| Number of total atoms | 1739 | 1628 | 1733 | 1744 | 1734 | 1760 |
| atoms for ligands | 30 | 26 | 23 | 37 | 29 | 52 |
| atoms for waters | 143 | 36 | 144 | 141 | 139 | 142 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 18.8 | 18.5 | 17.5 | 19.5 | 17.4 | 14.7 |
| B-factor for ligands | 33.9 | 37.4 | 40 | 41.2 | 31.3 | 25.6 |
| B-factor for solvent | 30.1 | 26.3 | 28.4 | 29.9 | 28.1 | 24.4 |
| RMS(bonds) | 0.011 | 0.013 | 0.013 | 0.012 | 0.011 | 0.013 |
| RMS(bond angles) | 1.721 | 1.897 | 1.837 | 1.745 | 1.748 | 1.901 |
| RMS(dihedral angles) | 7.125 | 7.086 | 7.676 | 6.947 | 7.027 | 7.291 |

Values for the highest resolution shell are shown in parentheses

| PDB | 7HMQ | 7HMR | 7HMS | 7HMT | 7HMU | 7HMV |
|---|---|---|---|---|---|---|
| Fragment ID | Z1267773633 | Z1267882044 | Z126932614 | Z2004563941 | Z1741966151 | Z56978034 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 31.28 - 1.43 (1.47 - 1.43) | 41.32 - 1.15 (1.18 - 1.15) | 67.49 - 1.15 (1.18 - 1.15) | 67.66 - 1.28 (1.31 - 1.28) | 67.44 - 1.15 (1.18 - 1.15) | 33.74 - 1.15 (1.18 - 1.15) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.48 95.48 45.90 | 95.42 95.42 45.79 | 95.44 95.44 45.86 | 95.69 95.69 45.75 | 95.38 95.38 45.81 | 95.37 95.37 45.82 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 490982 (25929) | 589970 (320) | 590480 (335) | 573429 (7718) | 589284 (443) | 587897 (303) |
| Unique reflections | 38341 (2808) | 61624 (311) | 62571 (328) | 48980 (1371) | 60819 (419) | 57034 (281) |
| Multiplicity | 12.80 (9.20) | 9.60 (1.00) | 9.40 (1.00) | 11.70 (5.60) | 9.70 (1.10) | 10.30 (1.10) |
| Completeness (%) | 100.00 (100.00) | 83.10 (8.50) | 84.70 (9.20) | 91.90 (52.40) | 83.40 (11.80) | 77.20 (7.80) |
| Mean I/sigma(I) | 12.10 (1.15) | 27.90 (1.24) | 26.50 (1.04) | 12.00 (1.04) | 25.90 (1.13) | 16.40 (1.01) |
| R-merge | 0.116 (2.764) | 0.042 (0.317) | 0.041 (0.348) | 0.110 (1.889) | 0.044 (0.576) | 0.053 (1.078) |
| R-rim | 0.033 (0.954) | 0.012 (0.317) | 0.012 (0.348) | 0.032 (0.850) | 0.013 (0.576) | 0.016 (1.078) |
| CC-half | 0.999 (0.330) | 0.999 (0.345) | 0.999 (0.320) | 0.997 (0.298) | 1.000 (0.439) | 0.999 (0.372) |
| R-factor | 0.179 (0.350) | 0.176 (0.300) | 0.178 (0.317) | 0.185 (0.343) | 0.175 (0.305) | 0.177 (0.345) |
| R-free | 0.203 (0.358) | 0.192 (0.266) | 0.194 (0.391) | 0.206 (0.390) | 0.189 (0.275) | 0.194 (0.344) |
| Number of total atoms | 1731 | 1749 | 1727 | 1729 | 1733 | 1731 |
| atoms for ligands | 19 | 37 | 23 | 22 | 21 | 21 |
| atoms for waters | 146 | 146 | 146 | 141 | 146 | 144 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 19.2 | 14.5 | 14.5 | 15.2 | 13.8 | 14.9 |
| B-factor for ligands | 38 | 42.8 | 29.9 | 25.8 | 32.4 | 28.7 |
| B-factor for solvent | 30.4 | 24.1 | 25.2 | 25.3 | 23.9 | 25.2 |
| RMS(bonds) | 0.011 | 0.014 | 0.013 | 0.011 | 0.013 | 0.013 |
| RMS(bond angles) | 1.729 | 1.898 | 1.906 | 2.01 | 1.869 | 1.839 |
| RMS(dihedral angles) | 7.033 | 7.15 | 7.328 | 8.465 | 7.184 | 7.175 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HMW | 7HMX | 7HMY | 7HMZ | 7HN0 | 7HN1 |
|---|---|---|---|---|---|---|
| Fragment ID | Z1492796719 | Z763030030 | Z111782404 | Z85893853 | Z1217960891 | Z2065616520 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 | 0.9212 |
| Resolution range | 67.57 - 1.34 (1.38 - 1.34) | 33.82 - 1.57 (1.61 - 1.57) | 67.49 - 1.15 (1.18 - 1.15) | 67.57 - 1.28 (1.31 - 1.28) | 41.41 - 1.33 (1.36 - 1.33) | 33.77 - 1.47 (1.51 - 1.47) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.56 95.56 45.93 | 95.58 95.58 45.94 | 95.45 95.45 45.85 | 95.56 95.56 45.88 | 95.42 95.42 45.92 | 95.45 95.45 45.78 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 548202 (11889) | 395942 (16778) | 590123 (475) | 573384 (7537) | 552340 (11436) | 441665 (23176) |
| Unique reflections | 46596 (2264) | 29079 (1425) | 56879 (419) | 52832 (2277) | 46750 (1971) | 35195 (2576) |
| Multiplicity | 11.80 (5.30) | 13.60 (11.80) | 10.40 (1.10) | 10.90 (3.30) | 11.80 (5.80) | 12.50 (9.00) |
| Completeness (%) | 100.00 (99.30) | 100.00 (99.30) | 77.70 (11.70) | 98.90 (87.10) | 98.40 (84.20) | 100.00 (100.00) |
| Mean I/sigma(I) | 13.40 (1.06) | 3.50 (0.95) | 29.90 (1.46) | 14.80 (1.03) | 15.40 (1.05) | 8.30 (1.18) |
| R-merge | 0.111 (1.989) | 0.356 (3.228) | 0.042 (0.382) | 0.081 (1.203) | 0.084 (1.620) | 0.226 (3.199) |
| R-rim | 0.032 (0.940) | 0.100 (0.977) | 0.012 (0.380) | 0.024 (0.759) | 0.024 (0.710) | 0.064 (1.107) |
| CC-half | 0.999 (0.318) | 0.983 (0.265) | 0.999 (0.592) | 0.998 (0.291) | 0.999 (0.356) | 0.997 (0.378) |
| R-factor | 0.186 (0.363) | 0.202 (0.350) | 0.173 (0.294) | 0.179 (0.358) | 0.181 (0.361) | 0.195 (0.359) |
| R-free | 0.207 (0.324) | 0.239 (0.369) | 0.188 (0.289) | 0.199 (0.361) | 0.204 (0.375) | 0.229 (0.354) |
| Number of total atoms | 1735 | 1725 | 1741 | 1735 | 1624 | 1734 |
| atoms for ligands | 23 | 25 | 31 | 32 | 24 | 28 |
| atoms for waters | 146 | 134 | 144 | 144 | 34 | 140 |
| Number of polymer residues | 185 | 185 | 185 | 184 | 185 | 185 |
| Average B-factor | 16.8 | 22.1 | 15 | 16.4 | 17.8 | 21.7 |
| B-factor for ligands | 29.9 | 39.9 | 32 | 32.9 | 36 | 53 |
| B-factor for solvent | 28.4 | 32.2 | 25.5 | 27.2 | 25.4 | 31.2 |
| RMS(bonds) | 0.012 | 0.007 | 0.013 | 0.012 | 0.011 | 0.01 |
| RMS(bond angles) | 1.714 | 1.434 | 1.901 | 1.813 | 1.741 | 1.564 |
| RMS(dihedral angles) | 6.896 | 6.984 | 7.251 | 7.046 | 6.993 | 7.035 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HN2 | 7HN3 | 7HN4 | 7HN5 | 7HN6 | 7HN7 |
|---|---|---|---|---|---|---|
| Fragment ID | Z1002247062 | Z2301438417 | Z56827661 | Z45617795 | Z1998104358 | Z198194396 |
| Wavelength | 0.9212 | 0.9212 | 0.9212 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 41.29 - 1.23 (1.26 - 1.23) | 31.20 - 1.28 (1.31 - 1.28) | 41.29 - 1.19 (1.22 - 1.19) | 67.40 - 1.32 (1.35 - 1.32) | 67.71 - 1.40 (1.44 - 1.40) | 67.50 - 1.31 (1.34 - 1.31) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.52 95.52 45.75 | 95.32 95.32 45.72 | 95.39 95.39 45.75 | 95.32 95.32 45.59 | 95.75 95.75 45.60 | 95.46 95.46 45.89 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 583990 (4437) | 568224 (12269) | 586822 (2022) | 549456 (10488) | 511561 (16972) | 561227 (10296) |
| Unique reflections | 57340 (1901) | 51319 (3051) | 60873 (1389) | 47626 (2064) | 40788 (1996) | 46620 (1500) |
| Multiplicity | 10.20 (2.30) | 11.10 (4.00) | 9.60 (1.50) | 11.50 (5.10) | 12.50 (8.50) | 12.00 (6.90) |
| Completeness (%) | 95.60 (63.60) | 97.00 (77.80) | 92.50 (43.60) | 98.80 (87.00) | 100.00 (100.00) | 93.90 (60.60) |
| Mean I/sigma(I) | 17.80 (1.02) | 19.10 (1.23) | 19.10 (1.08) | 15.70 (1.08) | 11.10 (1.03) | 15.60 (1.10) |
| R-merge | 0.063 (1.018) | 0.056 (1.189) | 0.056 (0.696) | 0.078 (1.561) | 0.122 (2.358) | 0.104 (2.290) |
| R-rim | 0.019 (0.802) | 0.016 (0.652) | 0.017 (0.635) | 0.023 (0.756) | 0.035 (0.855) | 0.030 (0.925) |
| CC-half | 0.999 (0.358) | 1.000 (0.357) | 1.000 (0.448) | 0.998 (0.298) | 0.997 (0.386) | 0.999 (0.314) |
| R-factor | 0.177 (0.345) | 0.176 (0.362) | 0.177 (0.344) | 0.176 (0.331) | 0.180 (0.363) | 0.180 (0.313) |
| R-free | 0.198 (0.344) | 0.198 (0.339) | 0.195 (0.304) | 0.194 (0.358) | 0.212 (0.351) | 0.203 (0.301) |
| Number of total atoms | 1753 | 1751 | 1737 | 1724 | 1739 | 1737 |
| atoms for ligands | 42 | 40 | 27 | 22 | 39 | 29 |
| atoms for waters | 145 | 145 | 144 | 144 | 142 | 142 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 16.6 | 17.6 | 15.5 | 17.8 | 19.2 | 16.9 |
| B-factor for ligands | 37.1 | 35.7 | 41.1 | 33.5 | 37.2 | 34.6 |
| B-factor for solvent | 27 | 27.7 | 25.6 | 29.1 | 29.9 | 27.7 |
| RMS(bonds) | 0.013 | 0.012 | 0.013 | 0.013 | 0.011 | 0.011 |
| RMS(bond angles) | 1.872 | 1.835 | 1.874 | 1.885 | 1.69 | 1.783 |
| RMS(dihedral angles) | 7.008 | 7.192 | 7.196 | 7.174 | 6.983 | 7.033 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HN8 | 7HN9 | 7HNA | 7HNB | 7HNC | 7HND |
|---|---|---|---|---|---|---|
| Fragment ID | Z1318110042 | Z1787761777 | Z1929757385 | Z31478538 | Z220996120 | Z52314092 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 41.28 - 1.23 (1.26 - 1.23) | 67.40 - 1.22 (1.25 - 1.22) | 41.37 - 1.29 (1.32 - 1.29) | 47.80 - 1.52 (1.56 - 1.52) | 41.43 - 1.15 (1.18 - 1.15) | 33.75 - 1.34 (1.37 - 1.34) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.40 95.40 45.75 | 95.32 95.32 45.81 | 95.42 95.42 45.87 | 95.51 95.51 45.90 | 95.40 95.40 45.95 | 95.39 95.39 45.88 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 580633 (4384) | 583026 (3668) | 567038 (8135) | 431204 (52050) | 590390 (448) | 546720 (11805) |
| Unique reflections | 57173 (1875) | 56423 (1594) | 51603 (2234) | 32043 (4617) | 62235 (426) | 46407 (2225) |
| Multiplicity | 10.20 (2.30) | 10.30 (2.30) | 11.00 (3.60) | 13.50 (11.30) | 9.50 (1.10) | 11.80 (5.30) |
| Completeness (%) | 95.60 (63.10) | 92.30 (53.20) | 99.10 (87.80) | 100.00 (100.00) | 85.10 (12.00) | 99.90 (98.00) |
| Mean I/sigma(I) | 21.70 (1.08) | 19.20 (1.05) | 17.30 (1.10) | 8.90 (1.52) | 27.60 (1.04) | 12.70 (1.04) |
| R-merge | 0.053 (0.993) | 0.063 (1.027) | 0.080 (1.417) | 0.175 (3.289) | 0.038 (0.416) | 0.116 (2.020) |
| R-rim | 0.016 (0.773) | 0.019 (0.780) | 0.024 (0.834) | 0.049 (1.023) | 0.011 (0.416) | 0.034 (0.960) |
| CC-half | 1.000 (0.340) | 0.998 (0.350) | 0.999 (0.326) | 0.998 (0.407) | 1.000 (0.557) | 0.998 (0.382) |
| R-factor | 0.178 (0.344) | 0.177 (0.339) | 0.179 (0.346) | 0.181 (0.329) | 0.181 (0.339) | 0.183 (0.346) |
| R-free | 0.197 (0.370) | 0.195 (0.333) | 0.196 (0.317) | 0.208 (0.328) | 0.203 (0.266) | 0.204 (0.355) |
| Number of total atoms | 1745 | 1736 | 1738 | 1720 | 1702 | 1729 |
| atoms for ligands | 37 | 24 | 28 | 22 | 23 | 22 |
| atoms for waters | 142 | 146 | 144 | 140 | 141 | 141 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 15.7 | 15.3 | 15.7 | 20.3 | 15 | 16.7 |
| B-factor for ligands | 25.9 | 30.5 | 30.6 | 36.1 | 28.8 | 31.2 |
| B-factor for solvent | 26.5 | 25.6 | 25.9 | 31.7 | 25.6 | 27.4 |
| RMS(bonds) | 0.013 | 0.012 | 0.013 | 0.01 | 0.013 | 0.011 |
| RMS(bond angles) | 1.897 | 1.791 | 1.91 | 1.611 | 1.941 | 1.702 |
| RMS(dihedral angles) | 7.196 | 7.011 | 7.12 | 7.068 | 7.352 | 7.09 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HNE | 7HNF | 7HNG | 7HNH | 7HNI | 7HNJ |
|---|---|---|---|---|---|---|
| Fragment ID | Z1343518214 | Z1689442171 | Z1568344634 | Z2643472210 | Z373768900 | Z1162778919 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 67.45 - 1.33 (1.36 - 1.33) | 67.50 - 1.32 (1.35 - 1.32) | 41.40 - 1.34 (1.38 - 1.34) | 67.57 - 1.34 (1.38 - 1.34) | 41.36 - 1.27 (1.30 - 1.27) | 67.44 - 1.43 (1.47 - 1.43) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.39 95.39 45.86 | 95.46 95.46 45.73 | 95.44 95.44 45.90 | 95.56 95.56 45.80 | 95.32 95.32 45.86 | 95.37 95.37 45.82 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 551574 (11539) | 554419 (10646) | 547453 (12521) | 547085 (11812) | 572959 (6897) | 488344 (17226) |
| Unique reflections | 46243 (1844) | 48226 (2280) | 45816 (2054) | 46437 (2217) | 51186 (1663) | 38158 (1891) |
| Multiplicity | 11.90 (6.30) | 11.50 (4.70) | 11.90 (6.10) | 11.80 (5.30) | 11.20 (4.10) | 12.80 (9.10) |
| Completeness (%) | 97.50 (78.90) | 99.60 (95.30) | 98.70 (88.00) | 99.90 (98.80) | 94.40 (63.60) | 100.00 (100.00) |
| Mean I/sigma(I) | 18.20 (1.36) | 17.60 (1.30) | 9.80 (1.08) | 14.70 (1.08) | 17.30 (1.09 | 13.80 (1.14) |
| R-merge | 0.096 (1.308) | 0.094 (1.926) | 0.122 (1.635) | 0.094 (1.759) | 0.083 (1.566) | 0.278 (9.999) |
| R-rim | 0.028 (0.575) | 0.028 (0.980) | 0.035 (0.726) | 0.027 (0.839) | 0.025 (0.849) | 0.081 (3.727) |
| CC-half | 0.996 (0.332) | 0.999 (0.264) | 0.998 (0.277) | 0.999 (0.319) | 0.997 (0.313) | 0.997 (0.356) |
| R-factor | 0.177 (0.283) | 0.176 (0.299) | 0.176 (0.325) | 0.176 (0.345) | 0.173 (0.327) | 0.169 (0.302) |
| R-free | 0.198 (0.306) | 0.202 (0.309) | 0.202 (0.363) | 0.194 (0.383) | 0.190 (0.300) | 0.196 (0.324) |
| Number of total atoms | 1732 | 1749 | 1734 | 1753 | 1750 | 1736 |
| atoms for ligands | 23 | 39 | 23 | 43 | 42 | 39 |
| atoms for waters | 143 | 144 | 145 | 144 | 142 | 139 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 15.2 | 17.1 | 17.2 | 17.8 | 16.4 | 20.2 |
| B-factor for ligands | 31.8 | 37.7 | 30.5 | 36 | 34.2 | 37 |
| B-factor for solvent | 25.4 | 27.6 | 28.8 | 28.5 | 27 | 31.6 |
| RMS(bonds) | 0.013 | 0.012 | 0.011 | 0.011 | 0.013 | 0.011 |
| RMS(bond angles) | 1.876 | 1.865 | 1.689 | 1.817 | 1.899 | 1.754 |
| RMS(dihedral angles) | 7.041 | 7.25 | 7.027 | 7.124 | 7.079 | 7.151 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HNK | 7HNL | 7HNM | 7HNN | 7HNO | 7HNP |
|---|---|---|---|---|---|---|
| Fragment ID | Z1275599911 | Z1251207602 | Z768399682 | Z31432226 | Z57450788 | Z106579662 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 41.39 - 1.39 (1.43 - 1.39) | 33.73 - 1.44 (1.48 - 1.44) | 47.78 - 1.49 (1.53 - 1.49) | 33.78 - 1.31 (1.34 - 1.31) | 67.39 - 1.33 (1.36 - 1.33) | 67.30 - 1.30 (1.33 - 1.30) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.57 95.57 45.88 | 95.33 95.33 45.76 | 95.47 95.47 45.76 | 95.48 95.48 45.90 | 95.31 95.31 45.66 | 95.18 95.18 45.85 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 517738 (16911) | 477372 (16894) | 447119 (52646) | 561139 (9839) | 547516 (11298) | 560966 (9093) |
| Unique reflections | 41764 (2067) | 37327 (1828) | 33608 (4888) | 49694 (2369) | 47087 (2312) | 49465 (1990) |
| Multiplicity | 12.40 (8.20) | 12.80 (9.20) | 13.30 (10.80) | 11.30 (4.20) | 11.60 (4.90) | 11.30 (4.60) |
| Completeness (%) | 100.00 (100.00) | 100.00 (99.80) | 100.00 (100.00) | 99.90 (97.70) | 99.90 (98.00) | 97.90 (81.20) |
| Mean I/sigma(I) | 10.70 (1.07) | 8.10 (0.99) | 11.30 (1.49) | 13.40 (1.04) | 13.90 (1.05) | 17.80 (1.04) |
| R-merge | 0.130 (2.108) | 0.148 (3.394) | 0.156 (3.574) | 0.084 (1.540) | 0.096 (1.707) | 0.066 (1.589) |
| R-rim | 0.037 (0.782) | 0.042 (1.176) | 0.044 (1.119) | 0.025 (0.861) | 0.028 (0.838) | 0.019 (0.809) |
| CC-half | 0.995 (0.436) | 0.997 (0.379) | 0.999 (0.337) | 0.999 (0.266) | 0.999 (0.313) | 1.000 (0.300) |
| R-factor | 0.181 (0.327) | 0.190 (0.358) | 0.181 (0.340) | 0.178 (0.350) | 0.172 (0.338) | 0.176 (0.348) |
| R-free | 0.205 (0.320) | 0.216 (0.355) | 0.209 (0.360) | 0.202 (0.335) | 0.189 (0.349) | 0.199 (0.354) |
| Number of total atoms | 1746 | 1747 | 1730 | 1708 | 1740 | 1734 |
| atoms for ligands | 39 | 40 | 24 | 27 | 34 | 29 |
| atoms for waters | 141 | 141 | 140 | 143 | 140 | 139 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 19.7 | 22.1 | 20.4 | 18.1 | 18.3 | 19 |
| B-factor for ligands | 31.1 | 49.5 | 39 | 31.4 | 28.9 | 31 |
| B-factor for solvent | 31.4 | 31.4 | 30.8 | 29.8 | 29.9 | 30.6 |
| RMS(bonds) | 0.011 | 0.009 | 0.01 | 0.011 | 0.013 | 0.012 |
| RMS(bond angles) | 1.745 | 1.583 | 1.633 | 1.829 | 1.796 | 1.841 |
| RMS(dihedral angles) | 6.993 | 7.228 | 7.031 | 7.285 | 7.209 | 7.197 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | **7HNQ** | **7HNR** | **7HNS** | **7HNT** | **7HNU** | **7HNV** |
|---|---|---|---|---|---|---|
| Fragment ID | Z30620520 | Z1545312521 | Z2072621991 | Z383202616 | Z1614545742 | Z404993336 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 41.28 - 1.37 (1.41 - 1.37) | 67.43 - 1.30 (1.33 - 1.30) | 67.48 - 1.29 (1.32 - 1.29) | 67.55 - 1.17 (1.20 - 1.17) | 67.58 - 1.15 (1.18 - 1.15) | 41.28 - 1.34 (1.38 - 1.34) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.39 95.39 45.74 | 95.36 95.36 45.77 | 95.43 95.43 45.84 | 95.54 95.54 45.87 | 95.57 95.57 45.79 | 95.42 95.42 45.73 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 528335 (15331) | 563024 (9280) | 567249 (8300) | 589758 (1054) | 586228 (468) | 545867 (11964) |
| Unique reflections | 43189 (2076) | 50408 (2363) | 50969 (2073) | 59229 (884) | 61775 (455) | 46288 (2252) |
| Multiplicity | 12.20 (7.40) | 11.20 (3.90) | 11.10 (4.00) | 10.00 (1.20) | 9.50 (1.00) | 11.80 (5.30) |
| Completeness (%) | 99.70 (97.30) | 99.50 (93.40) | 98.20 (82.90) | 85.00 (25.90) | 84.20 (12.20) | 99.90 (98.80) |
| Mean I/sigma(I) | 13.70 (1.05) | 15.50 (1.04) | 17.80 (1.07) | 15.20 (1.05) | 23.50 (0.97) | 20.10 (1.58) |
| R-merge | 0.110 (2.401) | 0.080 (1.466) | 0.072 (1.285) | 0.057 (0.977) | 0.043 (0.320) | 0.093 (1.472) |
| R-rim | 0.032 (0.936) | 0.024 (0.834) | 0.021 (0.740) | 0.017 (0.950) | 0.013 (0.320) | 0.027 (0.716) |
| CC-half | 0.999 (0.338) | 0.999 (0.284) | 0.999 (0.338) | 0.999 (0.400) | 1.000 (0.845) | 0.999 (0.307) |
| R-factor | 0.179 (0.347) | 0.179 (0.359) | 0.178 (0.333) | 0.180 (0.341) | 0.184 (0.366) | 0.171 (0.281) |
| R-free | 0.196 (0.323) | 0.202 (0.397) | 0.201 (0.324) | 0.197 (0.348) | 0.202 (0.372) | 0.191 (0.275) |
| Number of total atoms | 1752 | 1723 | 1750 | 1735 | 1736 | 1738 |
| atoms for ligands | 46 | 25 | 43 | 26 | 26 | 28 |
| atoms for waters | 140 | 140 | 141 | 143 | 144 | 144 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 19.1 | 17.4 | 17.1 | 15.4 | 16 | 15.9 |
| B-factor for ligands | 43.4 | 31.1 | 36.2 | 31.8 | 31 | 39 |
| B-factor for solvent | 29.5 | 28.6 | 27.7 | 25.8 | 26.2 | 26.1 |
| RMS(bonds) | 0.011 | 0.012 | 0.012 | 0.012 | 0.013 | 0.013 |
| RMS(bond angles) | 1.75 | 1.814 | 1.814 | 1.822 | 1.884 | 1.877 |
| RMS(dihedral angles) | 7.153 | 7.129 | 7.134 | 7.326 | 7.146 | 7.137 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HNW | 7HNX | 7HNY | 7HNZ | 7HO0 | 7HO1 |
|---|---|---|---|---|---|---|
| Fragment ID | Z1446981563 | Z133729708 | Z44592329 | Z1245793018 | Z363071686 | Z369263636 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 67.44 - 1.21 (1.24 - 1.21) | 41.20 - 1.27 (1.30 - 1.27) | 41.26 - 1.28 (1.31 - 1.28) | 67.41 - 1.15 (1.18 - 1.15) | 67.46 - 1.15 (1.18 - 1.15) | 67.51 - 1.17 (1.20 - 1.17) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.38 95.38 45.66 | 95.41 95.41 45.63 | 95.34 95.34 45.72 | 95.34 95.34 45.76 | 95.40 95.40 45.72 | 95.47 95.47 45.62 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 582943 (3071) | 570366 (7018) | 568711 (7602) | 586812 (325) | 584343 (336) | 586427 (1005) |
| Unique reflections | 57582 (1540) | 53625 (2374) | 52395 (2266) | 57933 (303) | 62017 (332) | 61164 (906) |
| Multiplicity | 10.10 (2.00) | 10.60 (3.00) | 10.90 (3.40) | 10.10 (1.10) | 9.40 (1.00) | 9.60 (1.10) |
| Completeness (%) | 92.10 (50.10) | 99.00 (86.90) | 98.80 (86.00) | 78.80 (8.50) | 84.50 (9.20) | 88.20 (26.60) |
| Mean I/sigma(I) | 19.30 (1.04) | 17.20 (1.02) | 16.50 (1.03) | 25.90 (1.13) | 30.60 (1.06) | 25.00 (1.06) |
| R-merge | 0.057 (1.020) | 0.068 (1.073) | 0.077 (1.256) | 0.044 (0.563) | 0.034 (0.277) | 0.044 (0.489) |
| R-rim | 0.017 (0.805) | 0.020 (0.720) | 0.023 (0.793) | 0.013 (0.563) | 0.010 (0.277) | 0.013 (0.467) |
| CC-half | 0.998 (0.399) | 0.999 (0.309) | 0.999 (0.340) | 0.999 (0.175) | 1.000 (-) | 1.000 (0.553) |
| R-factor | 0.176 (0.350) | 0.178 (0.348) | 0.178 (0.355) | 0.174 (0.326) | 0.177 (0.304) | 0.175 (0.334) |
| R-free | 0.191 (0.347) | 0.196 (0.342) | 0.193 (0.363) | 0.189 (0.282) | 0.196 (0.339) | 0.193 (0.350) |
| Number of total atoms | 1735 | 1725 | 1738 | 1734 | 1736 | 1739 |
| atoms for ligands | 24 | 23 | 29 | 22 | 24 | 27 |
| atoms for waters | 145 | 144 | 143 | 146 | 146 | 146 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 16.5 | 16.6 | 16.6 | 14.1 | 14.1 | 15.2 |
| B-factor for ligands | 32.2 | 35 | 37.7 | 29.3 | 25.2 | 37 |
| B-factor for solvent | 27.9 | 28.1 | 27.2 | 24 | 24.4 | 25.6 |
| RMS(bonds) | 0.013 | 0.013 | 0.012 | 0.013 | 0.013 | 0.013 |
| RMS(bond angles) | 1.869 | 1.853 | 1.852 | 1.853 | 1.877 | 1.845 |
| RMS(dihedral angles) | 7.136 | 7.217 | 7.221 | 7.189 | 7.302 | 7.192 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HO2 | 7HO3 | 7HO4 | 7HO5 | 7HO6 | 7HO7 |
|---|---|---|---|---|---|---|
| Fragment ID | Z730649594 | Z405825414 | Z1003146540 | Z1266933824 | Z3220108246 | Z30820160 |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 | 0.9213 |
| Resolution range | 67.43 - 1.15 (1.18 - 1.15) | 67.48 - 1.45 (1.49 - 1.45) | 67.39 - 1.21 (1.24 - 1.21) | 67.45 - 1.18 (1.21 - 1.18) | 67.40 - 1.24 (1.27 - 1.24) | 67.46 - 1.30 (1.33 - 1.30) |
| Space group | I 4 | I 4 | I 4 | I 4 | I 4 | I 4 |
| Cell (a b c) | 95.36 95.36 45.77 | 95.43 95.43 45.68 | 95.31 95.31 45.70 | 95.39 95.39 45.72 | 95.31 95.31 45.73 | 95.40 95.40 45.74 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 |
| Total reflections | 587535 (445) | 473460 (17079) | 583600 (3052) | 585934 (1471) | 578808 (4966) | 560400 (9205) |
| Unique reflections | 60406 (428) | 36545 (1793) | 58889 (1700) | 61408 (1189) | 55008 (1788) | 49717 (2065) |
| Multiplicity | 9.70 (1.00) | 13.00 (9.50) | 9.90 (1.80) | 9.50 (1.20) | 10.50 (2.80) | 11.30 (4.50) |
| Completeness (%) | 83.00 (12.10) | 100.00 (100.00) | 94.30 (55.80) | 90.90 (35.80) | 94.50 (62.70) | 98.20 (83.30) |
| Mean I/sigma(I) | 20.70 (1.04) | 19.00 (2.00) | 21.20 (1.10) | 22.70 (1.05) | 16.70 (1.05) | 19.20 (1.05) |
| R-merge | 0.054 (0.717) | 0.314 (8.848) | 0.061 (0.890) | 0.048 (0.608) | 0.075 (1.446) | 0.063 (1.240) |
| R-rim | 0.016 (0.717) | 0.091 (3.055) | 0.018 (0.761) | 0.014 (0.570) | 0.023 (0.972) | 0.019 (0.663) |
| CC-half | 0.999 (0.059) | 0.999 (0.152) | 1.000 (0.328) | 1.000 (0.511) | 0.999 (0.228) | 0.999 (0.328) |
| R-factor | 0.178 (0.358) | 0.167 (0.241) | 0.175 (0.329) | 0.179 (0.344) | 0.175 (0.333) | 0.184 (0.362) |
| R-free | 0.192 (0.328) | 0.185 (0.251) | 0.194 (0.300) | 0.196 (0.351) | 0.192 (0.325) | 0.204 (0.361) |
| Number of total atoms | 1757 | 1726 | 1739 | 1733 | 1617 | 1730 |
| atoms for ligands | 49 | 24 | 27 | 25 | 24 | 24 |
| atoms for waters | 142 | 144 | 146 | 142 | 35 | 140 |
| Number of polymer residues | 185 | 185 | 185 | 185 | 185 | 185 |
| Average B-factor | 14.6 | 16.5 | 15.1 | 15 | 16 | 18.1 |
| B-factor for ligands | 31 | 30.8 | 44.7 | 31.9 | 34.3 | 36.2 |
| B-factor for solvent | 24.8 | 27.4 | 25.3 | 25.5 | 22.8 | 29.2 |
| RMS(bonds) | 0.012 | 0.013 | 0.013 | 0.013 | 0.013 | 0.012 |
| RMS(bond angles) | 1.849 | 1.956 | 1.876 | 1.832 | 1.879 | 1.79 |
| RMS(dihedral angles) | 7.225 | 7.186 | 7.168 | 7.192 | 7.317 | 7.179 |
| Values for the highest resolution shell are shown in parentheses | | | | | | |

| PDB | 7HO8 | 7HO9 | 7HOA | 9QBA |
|---|---|---|---|---|
| Fragment ID / Ligand | Z993967070 | Z1250132788 | Z275165822 | AL236 (1) |
| Wavelength | 0.9213 | 0.9213 | 0.9213 | 0.976 |
| Resolution range | 47.86 - 1.39 (1.42 - 1.39) | 67.50 - 1.26 (1.29 - 1.26) | 67.46 - 1.35 (1.39 - 1.35) | 58.67 - 1.45 (1.47 - 1.45) |
| Space group | I 4 | I 4 | I 4 | P $6_2$ |
| Cell (a b c) | 95.63 95.63 45.75 | 95.46 95.46 45.72 | 95.40 95.40 45.74 | 67.75 67.75 71.1 |
| Cell (alpha beta gamma) | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 90.00 | 90.00 90.00 120.00 |
| Total reflections | 387308 (39166) | 576125 (6431) | 539021 (12511) | 681895 (31898) |
| Unique reflections | 40439 (5308) | 54627 (2310) | 45247 (2196) | 32898 (1643) |
| Multiplicity | 9.60 (7.40) | 10.50 (2.80) | 20.70 (19.0) | 20.70 (19.40) |
| Completeness (%) | 96.70 (88.10) | 98.10 (80.70) | 100.00 (99.20) | 100.00 (100.00) |
| Mean I/sigma(I) | 15.10 (2.02) | 16.50 (1.04) | 10.70 (1.03) | 19.50 (1.82) |
| R-merge | 0.133 (2.283) | 0.073 (1.107) | 0.122 (2.112) | 0.077 (1.479) |
| R-rim | 0.044 (0.849) | 0.022 (0.785) | 0.035 (0.946) | 0.018 (0.349) |
| CC-half | 0.998 (0.423) | 1.000 (0.322) | 0.998 (0.303) | 0.998 (0.819) |
| R-factor | 0.176 (0.296) | 0.179 (0.350) | 0.181 (0.354) | 0.150 (0.201) |
| R-free | 0.197 (0.257) | 0.199 (0.363) | 0.201 (0.334) | 0.162 (0.222) |
| Number of total atoms | 1732 | 1620 | 1739 | 1584 |
| atoms for ligands | 21 | 20 | 29 | 29 |
| atoms for waters | 145 | 34 | 144 | 123 |
| Number of polymer residues | 185 | 185 | 185 | 179 |
| Average B-factor | 13.6 | 16.4 | 17.8 | 18.6 |
| B-factor for ligands | 26.1 | 35.4 | 44 | 18 |
| B-factor for solvent | 24 | 23.9 | 28.4 | 30 |
| RMS(bonds) | 0.012 | 0.012 | 0.011 | 0.004 |
| RMS(bond angles) | 1.825 | 1.84 | 1.735 | 1.355 |
| RMS(dihedral angles) | 7.090 | 7.073 | 7.059 | 7.190 |
| Values for the highest resolution shell are shown in parentheses | | | | |