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SUPPLEMENTARY INFORMATION

Structure-guided discovery of selective methionyl-tRNA synthetase inhibitors with potent activity against *Trypanosoma brucei*

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Contents:

1) Crystallography section

Table S1. Crystallographic data collection and refinement statistics.

Compound	**1**	**26**
PDB ID	**6MES**	**6CML**
Data collection		
Space group	$P\ 2_12_12_1$	$P\ 2_12_12_1$
Cell dimensions		
a, *b*, *c* (Å)	87.64, 106.13, 207.55	87.6, 106.2, 208.3
Resolution (Å)	30.63 – 2.90 (3.02 – 2.90)	41.64 – 2.70 (2.78 – 2.70)
R_{merge}	0.289 (1.481)	0.200 (1.054)
R_{pim}	0.143 (0.729)	0.084 (0.452)
Observed reflections	198682 (21703)	357758 (27891)
Unique reflections	39797 (4342)	54250 (4381)
Mean $I / \sigma I$	5.6 (1.1)	6.8 (1.9)
Multiplicity	5.0 (5.0)	6.6 (6.4)
Completeness (%)	91 (89)	100 (100)
$CC_{1/2}$	0.966 (0.406)	0.991 (0.725)
Refinement		
Resolution (Å)	30.63 – 2.90	41.64 - 2.70
Reflections used	37736	51494
R_{work} / R_{free}	0.23 / 0.25	0.20 / 0.23
Number of atoms		
Protein	8433	8263
Met	9	9
Compound	25	29
Water	297	137
Number of residues	1053	1045
Average *B*-factors (Å^2)		
Protein	48.9	57.0
Met	32.3	44.2
Compound	45.4	55.4
Water	36.8	42.2
R.m.s. deviations		
Bond lengths (Å)	0.010	0.010
Bond angles (°)	1.32	1.38
Ramachandran plot[#]		
Favored (%)	97	98
Outlier (%)	0	0
Molprobity score	1.21	1.03

Values in parentheses are for highest-resolution shell

[#]Ramachandran Plot statistics as reported by the wwPDB validation report

2) Chemistry Section

Compound characterization data

The final purity of all compounds was determined by analytical LCMS with Phenomenex Onyx Monolithic C18 column (4.6 mm x 100 mm). The product purity was measured by UV detector at the detection wavelength of 220 nm. The mass spectra were recorded with an Agilent Ion Trap Mass Spectrometer. NMR spectra were recorded with a Bruker 500 MHz spectrometer at ambient temperature.

1-((1H-benzo[d]imidazol-2-yl)methyl)-4-(2,4-dichlorobenzyl)-1H-imidazol-2(3H)-one (1): ^{1}H NMR (500 MHz, MeOD) δ 7.55 (br, 2H), 7.46 (s, 1H), 7.30 (q, *J* = 8.2 Hz, 2H), 7.24 (m, 2H), 6.19 (s, 1H), 5.01 (s, 2H), 3.82 (s, 2H); LC/MS: (ESI) $(M+H)^+$= 374.3; purity 97%.

3-((1H-benzo[d]imidazol-2-yl)methyl)-5-(2,4-dichlorobenzyl)-1-ethyl-1H-imidazol-2(3H)-one (2): ^{1}H NMR (500 MHz, MeOD) δ 7.55-7.50 (m, 3H), 7.31 (s, 2H), 7.24 (s, 2H), 6.12 (s, 1H), 5.03 (s, 2H), 3.93 (s, 2H), 3.68 (m, 2H), 1.16 (t, J = 7.0 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 402.3; purity 100%.

5-(2,4-dichlorobenzyl)-3-((benzo[d]oxazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (3): ^{1}H NMR (500 MHz, MeOD) δ 7.68 (d, *J* = 8.3 Hz, 1H), 7.61 (d, *J* = 6.8 Hz, 1H), 7.52 (s, 1H), 7.44-7.36 (m, 2H), 7.34 (s, 2H), 6.23 (s, 1H), 5.13 (s, 2H), 3.97 (s, 2H), 3.69 (q, *J* = 7.2 Hz, 2H), 1.18 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 403.3; purity 95%.

5-(2,4-dichlorobenzyl)-1-ethyl-3-((4-fluoro-1H-benzo[d]imidazol-2-yl)methyl)-1H-imidazol-2(3H)-one (4): ^{1}H NMR (500 MHz, CDCl3) δ 7.41 (s, 1H), 7.29 (d, *J* = 8.2 Hz, 1H), 7.21-7.12 (m, 2H), 7.06 (d, *J* = 8.3 Hz, 1H), 6.97-6.90 (m, 1H), 5.99 (s, 1H), 5.01 (s, 2H), 3.78 (s, 2H), 3.63 (q, *J* = 7.2 Hz, 2H), 1.18 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 420.2; purity 97%.

5-(2,4-dichlorobenzyl)-1-ethyl-3-((4,5-difluoro-1H-benzo[d]imidazol-2-yl)methyl)-1H-imidazol-2(3H)-one (5): ^{1}H NMR (500 MHz, MeOD) δ 7.51 (s, 1H), 7.32-7,28 (m, 3H), 7.17 (m, 1H), 6.17 (s, 1H), 5.04 (s, 2H), 3.94 (s, 2H), 3.68 (q, *J* = 7.2 Hz, 2H), 1.17 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 438.3; purity 98%.

5-(2,4-dichlorobenzyl)-3-((4-chloro-1H-benzo[d]imidazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (6): ^{1}H NMR (500 MHz, MeOD) δ 7.49-7.46 (m, 2H), 7.30 (m, 2H), 7.27 (s, 1H), 7.22 (s, 1H), 6.17 (s, 1H), 5.05 (s, 2H), 3.91 (s, 2H), 3.66 (q, *J* = 7.1 Hz, 2H), 1.16 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 436.7; purity 97%.

5-(2,4-dichlorobenzyl)-3-((5-chloro-1H-benzo[d]imidazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (7): ^{1}H NMR (500 MHz, MeOD) δ 7.56-7.52 (m, 3H), 7.33 (s, 2H), 7.25 (s, 1H), 6.17 (s, 1H), 5.03 (s, 2H), 3.95 (s, 2H), 3.69 (q, *J* = 7.2 Hz, 2H), 1.18 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 436.7; purity 97%.

5-(2,4-dichlorobenzyl)-3-((4,6-dichloro-1H-benzo[d]imidazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (8): ^{1}H NMR (500 MHz, MeOD) δ 7.50 (m, 2H), 7.31 (m, 3H), 6.16 (s, 1H), 5.04 (s, 2H), 3.93 (s, 2H), 3.67 (m, 2H), 1.17 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 471.2; purity 98%.

5-(2,4-dichlorobenzyl)-3-((5,6-dichloro-1H-benzo[d]imidazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (9): ^{1}H NMR (500 MHz, MeOD) δ 7.65 (s, 2H), 7.42 (s, 1H), 7.20 (d, *J* = 8.3 Hz, 1H), 7.07 (d, *J* = 8.2 Hz, 1H), 5.94 (s, 1H), 4.94 (s, 2H), 3.79 (s, 2H), 3.65 (q, *J* = 7.01 Hz, 2H), 1.20 (t, *J* = 7.1 Hz, 3H); LC/MS: (ESI) $(M+H)^+$=471.2; purity 98%.

5-(2,4-dichlorobenzyl)-3-((5-chloro-6-fluoro-1H-benzo[d]imidazol-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (10): ^{1}H NMR (500 MHz, MeOD) δ 7.63 (d, *J* = 6.6 Hz, 1H), 7.50 (s, 1H), 7.40 (d, *J* = 9.2 Hz, 1H), 7.31 (s, 2H), 6.15 (s, 1H), 5.02 (s, 2H), 3.93 (s, 2H), 3.67 (q, *J* = 7.2 Hz, 2H), 1.17 (t, *J* = 7.2 Hz, 3H); LC/MS: (ESI) $(M+H)^+$=454.7; purity 96%.

5-(2,4-dichlorobenzyl)-1-ethyl-3-((5-methyl-1H-benzo[d]imidazol-2-yl)methyl)-1H-imidazol-2(3H)-one (11): ^{1}H NMR (500 MHz, MeOD) δ 7.50 (s, 1H), 7.42 (s, 1H), 7.32 (m, 3H), 7.09 (s, 1H), 6.13 (s, 1H), 5.00 (s, 2H), 3.93 (s, 2H), 3.67 (m, 2H), 2.45 (s, 3H), 1.17 (m, 3H); LC/MS: (ESI) $(M+H)^+$=416.3; purity 95%.

5-(2,4-dichlorobenzyl)-1-ethyl-3-((5-(trifluoromethyl)-1H-benzo[d]imidazol-2-yl)methyl)-1H-imidazol-2(3H)-one (12): ^{1}H NMR (500 MHz, MeOD) δ 7.90 (s, 1H), 7.73 (s, 1H), 7.55 (m, 2H), 7.35 (s, 2H), 6.20 (s, 1H), 5.11 (s, 2H), 3.97 (s, 2H), 3.71 (m, 2H), 1.20 (m, 3H); LC/MS: (ESI) $(M+H)^+$=470.3; purity 95%.

5-(2,4-dichlorobenzyl)-3-((1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (13): ^{1}H NMR (500 MHz, MeOD) δ 8.36 (s, 1H), 7.97 (s, 1H), 7.50 (s, 1H), 7.32 (m, 3H), 6.19 (s, 1H), 5.09 (s, 2H), 3.94 (s, 2H), 3.67 (q, *J* = 7.1 Hz, 2H), 1.17 (t, *J* = 7.1 Hz, 3H); LC/MS: (ESI) $(M+H)^+$=403.3; purity 96%.

5-(2,4-dichlorobenzyl)-3-((1H-imidazo[4,5-c]pyridin-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (14): ^{1}H NMR (500 MHz, MeOD) δ 8.82 (s, 1H), 8.28 (d, *J* = 5.8 Hz, 1H), 7.60 (d, *J* = 5.6 Hz, 1H), 7.48 (s, 1H), 7.31 (s, 2H), 6.16 (s, 1H), 5.10 (s, 2H), 3.92 (s, 2H), 3.667 (m, 2H), 1.16 (t, *J* = 7.1 Hz, 3H); LC/MS: (ESI) $(M+H)^+$=403.3; purity 97%.

5-(2,4-dichlorobenzyl)-3-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (15) was reported previously.[1]

5-(2,4-dichlorobenzyl)-1-ethyl-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1H-imidazol-2(3H)-one (16) was reported previously.[1]

5-(2,4-dichlorobenzyl)-3-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-(2,2-difluoroethyl)-1H-imidazol-2(3H)-one (17) was reported previously.[2]

5-(2,4-dichlorobenzyl)-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-(2,2-difluoroethyl)-1H-imidazol-2(3H)-one (18) was reported previously.[2]

5-(2,4-dichlorobenzyl)-3-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-propyl-1H-imidazol-2(3H)-one (19): ^{1}H NMR (500 MHz, MeOD) δ 7.90 – 7.80 (m, 1H), 7.42 (s, 1H), 7.21 (m, 3H), 6.10 (s, 1H), 5.00 (s, 2H), 3.77 (s, 2H), 3.84 (s, 3H) ,3.53 – 3.43 (m, 2H), 1.53 – 1.49 (m, 2H), 0.83 (t, *J* = 7.4 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 451,7; purity 96%.

5-(2,4-dichlorobenzyl)-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-propyl-1H-imidazol-2(3H)-one (20) was reported previously.[1]

5-(2,4-dichlorobenzyl)-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-isopropyl-1H-imidazol-2(3H)-one (21): ^{1}H NMR (500 MHz, MeOD) δ 8.03 (t, *J* = 7.3 Hz, 1H), 7.48 (s, 1H), 7.38-7.16 (m, 2H), 6.93 (d, *J* = 8.5 Hz, 1H), 6.16 (s, 1H), 5.03 (s, 2H), 4.20– 4.02 (m, 1H), 3.92 (s, 2H), 1.41 (d, *J* = 6.8 Hz, 6H); LC/MS: (ESI) $(M+H)^+$= 435.3; purity 97%.

4-(2,4-dichlorobenzyl)-3-cyclohexyl-1-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1H-imidazol-2(3H)-one (22): ^{1}H NMR (500 MHz, MeOD) δ 8.04 (t, *J* = 7.7 Hz, 1H), 7.50 (s, 1H), 7.30 (s, 2H), 6.94 (d, *J* = 8.6 Hz, 1H), 6.22 (s, 1H), 5.02 (s, 2H), 3.92 (s, 2H), 3.67-3.51 (m, 1H), 2.21-2.07 (m, 2H), 1.80-1.78 (m, 2H), 1.67-1.51 (m, 2H), 1.23-1.19 (m, 4H); LC/MS: (ESI) $(M+H)^+$= 475.4; purity 96%.

4-(2,4-dichlorobenzyl)-1-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-3-(tetrahydro-2H-pyran-4-yl)-1H-imidazol-2(3H)-one (23): ^{1}H NMR (500 MHz, MeOD) δ 8.04 (t, *J* = 7.7 Hz, 1H), 7.51 (s, 1H), 7.30 (s, 2H), 6.95 (d, *J* = 8.6 Hz, 1H), 6.23 (s, 1H), 5.02 (s, 2H), 3.97 (m, 4H), 3.83 (m, 1H), 3.34 (m, 2H), 2,55 (m, 2H), 1.50 (m, 2H); LC/MS: (ESI) $(M+H)^+$= 477.3; purity 95%.

4-(2,4-dichlorobenzyl)-1-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-3-((tetrahydro-2H-pyran-4-yl)methyl)-1H-imidazol-2(3H)-one (24): ^{1}H NMR (500 MHz, MeOD) δ 8.15-8.05 (m, 1H), 7.56 (s, 1H), 7.39 (s, 2H), 7.01 (d, *J* = 8.6 Hz, 1H), 6.24 (s, 1H), 5.11 (s, 2H), 4.00-3.97 (m, 4H), 3.55 (d, *J* = 7.5 Hz, 2H), 3.35 (m, 2H), 1.93 (m, 1H), 1.60 (m, 2H), 1.37 (m, 2H); LC/MS: (ESI) $(M+H)^+$= 491.4; purity 96%.

5-(2,4-dichlorobenzyl)-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-((tetrahydro-4-hydroxy-2H-pyran-4-yl)methyl)-1H-imidazol-2(3H)-one (25): ^{1}H NMR (500 MHz, MeOD) δ 8.02 (t, *J* = 7.7 Hz, 1H), 7.48 (s, 1H), 7.29 (s, 2H), 6.93 (d, *J* = 8.5 Hz, 1H), 6.04 (s, 1H), 5.04 (s, 2H), 4.04 (s, 2H), 3.73 (m, 4H), 3.63 (s, 2H), 1.79 (m, 2H), 1.53 (m, 2H); LC/MS: (ESI) $(M+H)^+$=507.4; purity 95%.

5-(2-chloro-4-methoxybenzyl)-3-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1-ethyl-1H-imidazol-2(3H)-one (26) was reported previously.[1]

5-(2-chloro-4-methoxybenzyl)-1-ethyl-3-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-1H-imidazol-2(3H)-one (27) was reported previously.[1]

4-(2-chloro-4-methoxybenzyl)-1-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-3-(2,2-difluoroethyl)-1H-imidazol-2(3H)-one (28) was reported previously.[2]

4-(2-chloro-4-methoxybenzyl)-1-((5-fluoro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-3-(2,2-difluoroethyl)-1H-imidazol-2(3H)-one (29) was reported previously.[2]

2-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-8-(2-chloro-4-methoxyphenyl)imidazo[1,5-a]pyrazin-3(2H)-one (30): ^{1}H NMR (500 MHz, MeOD) δ 7.91 (m, 2H), 7.51 (m, 1H), 7.30 (m, 2H), 7.15 (s, 1H), 7.12 (s, 1H), 6.96 (s, 1H), 3.87 (s, 2H), 3.83 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 442.2; purity 97%.

5-chloro-2-((5-(2-chloro-4-methoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (31): ^{1}H NMR (500 MHz, MeOD) δ 7.86 (d, *J* = 8.4 Hz, 1H), 7.56 (m, 1H), 7.45 -7.40 (m, 2H), 7.44-7.23 (m, 2H), 7.21 (s, 1H), 7.08 (d, *J* = 8.5 Hz, 1H), 6.88 (d, *J* = 6.9 Hz, 1H), 4.42(s, 2H), 3.90 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 425.3; purity 100%.

5-chloro-2-((8-(2-chloro-4-methoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (32): ^{1}H NMR (500 MHz, MeOD) δ 8.42 (d, *J* = 6.0 Hz, 1H), 7.84 (m, 2H), 7.41 (d, *J* = 9.2 Hz, 1H), 7.25 (d, *J* = 8.3 Hz, 1H), 7.21 (d, *J* = 7.1 Hz, 1H), 7.11 (s, 1H), 6.99 (t, *J* = 7.5 Hz, 2H), 4.41 (s, 2H), 3.86 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 425.3; purity 100%.

2-((5-chloro-1H-imidazo[4,5-b]pyridin-2-yl)methyl)-5-(2-chloro-4-methoxyphenyl)imidazo[1,2-a]pyrazine (33): ^{1}H NMR (500 MHz, MeOD) δ 9.02 (s, 1H), 7.90 (m, 2H), 7.64 (m, 1H), 7.54 (d, *J* = 8.6 Hz, 1H), 7.27 (m, 2H), 7.13 (d, *J* = 8.6 Hz, 1H), 4.55 (s, 2H), 3.92 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 426.3; purity 98%.

5-chloro-2-((5-(2-chloro-4-ethoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (34): ^{1}H NMR (500 MHz, MeOD) δ 7.79 (d, *J* = 7.9 Hz, 1H), 7.50 (d, *J* = 8.7 Hz, 1H), 7.37 (m, 2H), 7.28 (s, 1H), 7.17 (d, *J* = 8.3 Hz, 1H), 7.13 (s, 1H), 7.00 (d, *J* = 9.9 Hz, 1H), 6.84 (d, *J* = 6.9 Hz, 1H), 4.39(s, 2H), 4.09 (q, *J* = 6.9 Hz, 2H), 1.40 (t, *J* = 6.9 Hz, 3H); LC/MS: (ESI) $(M+H)^+$= 439.4; purity 96%.

5-chloro-2-((5-(2,4-dichlorophenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (35): ^{1}H NMR (500 MHz, MeOD) δ 7.85 (d, *J* = 9.0 Hz, 1H), 7.74 (s, 1H), 7.62 -7.53 (m, 3H), 7.46-7.40 (m, 1H), 7.32 (s, 1H), 7.24 (d, *J* = 8.2 Hz, 1H), 6.93 (d, *J* = 6.9 Hz, 1H), 4.42(s, 2H); LC/MS: (ESI) $(M+H)^+$= 429.7; purity 99%.

5-chloro-2-((5-(3,5-dichlorophenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (36): ^{1}H NMR (500 MHz, MeOD) δ 7.91 (m, 2H), 7.75 (s, 2H), 7.71 (s, 1H), 7.62 (s, 1H), 7.48 (m, 1H), 7.27 (d, *J* = 6.1 Hz, 1H), 7.04 (d, *J* = 6.1 Hz, 1H), 4.53(s, 2H); LC/MS: (ESI) $(M+H)^+$= 429.7; purity 94%.

5-chloro-2-((5-(2-chloro-4-(trifluoromethyl)phenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (37): ^{1}H NMR (500 MHz, MeOD) δ 8.01 (s, 1H), 7.84 (m, 2H), 7.79 (m,

1H), 7.61 (d, *J* = 7.3 Hz, 1H), 7.46 (m, 1H), 7.38 (s, 1H), 7.22 (d, *J* = 8.7 Hz, 1H), 7.00 (d, *J* = 7.8 Hz, 1H), 4.43(s, 2H); LC/MS: (ESI) $(M+H)^+$= 463.4; purity 96%.

5-chloro-2-((5-(2-chloro-4-methylphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (38): ^{1}H NMR (500 MHz, MeOD) δ 7.79 (d, *J* = 8.1 Hz, 1H), 7.52 (d, *J* = 9.1 Hz, 1H), 7.42 (s, 1H), 7.37 (m, 2H), 7.29 (m, 2H), 7.18 (d, *J* = 8.3 Hz, 1H), 6.85 (d, *J* = 6.9 Hz, 1H), 4.39(s, 2H), 2.41(s, 3H); LC/MS: (ESI) $(M+H)^+$= 409.3; purity 94%.

5-chloro-2-((5-(2,4-dichloro-5-methoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (39): ^{1}H NMR (500 MHz, MeOD) δ 7.64 (d, *J* = 8.3 Hz, 1H), 7. 46 - 7.35 (m, 2H), 7.28 -7.18 (m, 2H), 7.07 (s, 1H), 7.00 (d, *J* = 8.3 Hz, 1H), 6.77 (d, *J* = 6.9 Hz, 1H), 4.27(s, 2H), 3.72 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 459.7; purity 94%.

5-chloro-2-((5-(2-chloro-4,5-dimethoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-1H-imidazo[4,5-b]pyridine (40) was reported previously.[1]

2-((5-(2-chloro-4-methoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-5-fluoro-1H-imidazo[4,5-b]pyridine (41): ^{1}H NMR (500 MHz, MeOD) δ 8.01 -7.92 (m, 1H), 7.56 (d, *J* = 9.1 Hz, 1H), 7.48 -7.39 (m, 3H), 7.27 (s, 1H), 7.21 (s, 1H), 7.08 (d, *J* = 8.5 Hz, 1H), 6.88 (m, 1H), 4.41 (s, 2H), 3.90 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 408.8; purity 97%.

2-((5-(2,4-dichloro-5-methoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-5-fluoro-1H-imidazo[4,5-b]pyridine (42): ^{1}H NMR (500 MHz, MeOD) δ 7.83 (t, *J* = 7.8 Hz, 1H), 7. 54 (s, 1H), 7.47 (d, *J* = 9.0 Hz, 1H), 7.36 -7.28 (m, 1H), 7.26 (s, 1H), 7.15 (s, 1H), 6.84 (d, *J* = 6.9 Hz, 1H), 6.75 (d, *J* = 8.5 Hz, 1H), 4.31(s, 2H), 3.79 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 443.3, purity 95%.

2-((5-(2-chloro-4,5-dimethoxyphenyl)-imidazo[1,2-a]pyridin-2-yl)methyl)-5-fluoro-1H-imidazo[4,5-b]pyridine (43): ^{1}H NMR (500 MHz, MeOD) δ 7.84 -7.75 (m, 1H), 7. 40 (d, *J* = 9.1 Hz, 1H), 7.29 -7.27 (m, 1H), 7.20 (s, 1H), 7.02 (s, 1H), 6.93 (s, 1H), 6.76 -7.71 (m, 1H), 4.28(s, 2H), 3.75 (s, 3H), 3.67 (s, 3H); LC/MS: (ESI) $(M+H)^+$= 438.9; purity 100%.

3) References

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