Table S1. Compilation of experimental membrane binding free energies of AMPs, in the molarity standard state.

The listed experiments are carried out in temperature close to room temperature. Unless specifically stated, the room temperature is assumed to be 25 ℃. a-f, the conversion and correction done to the peptides. No conversion is needed for those articles reporting ΔG_c (ref7, ref 22 and ref 24).

a. Converted from ΔG_{app}. With Gouy-Chapman correction, where in the parenthesis is the effective charge of the peptide and after the slash is the energy value with electrostatic interaction added back.
b. Converted from ΔG_{app}. The ΔG_{app} is measured at low peptide/lipid ratio. If present, the value inside the parenthesis is the peptide concentration at which the K_{app} was measured.
c. Converted from ΔG_a, which is independent of peptide concentration. $\Delta G_c = RT\ln(K_d \nu_L)$.
d. Converted from ΔG_a but considering the binding site size. $\Delta G_c = RT\ln(nK_d \nu_L)$. The binding site size n is in the parenthesis.
e. Converted from ΔG_x.
f. Monolayer correction applied, where the peptide is considered to bind only to the outer leaflet of the membrane (the effective lipid volume $V'_L = 0.6V_L$).
g. Interpolated.

In red font are the data used in Figure 3.

Peptide	Sequence	Method	Membrane	Binding Energy ΔG_c^0 (kcal/mol)	Original Data	Ref
Magainin	GIGKFLHSAKKFG KAFVGEIMNS-NH2	ITC	POPC/POPG(75:25)	-2.54 (3.7-3.8)/-7.50[a] -5.72 (1μM)[b]	K_{app}=55.5 M^{-1} K_{app}=1.2x10^4 M^{-1}	[1]
		ITC	POPC SUV	-4.74[a]	K_{app}=2000 M^{-1} under 30 ℃	[2]
		ITC	POPC/POPG 3:1 LUV SUV	 -3.14/-8.16[a] -2.64/-7.65[a]	under 45 ℃ K_{app}=110 M^{-1} K_{app}=50 M^{-1}	[3]
		ITC	POPC/POPG (3:1) SUV POPC SUV	-6.0[b] -3.7[b]	K_{app}=2x10^4 M^{-1} K_{app}=400 M^{-1} under 23 ℃	[4]
		CD titration	POPC:POPG(3:1)	-5.98(0M)[b]	K_{app}=2x10^4 M^{-1}	[5]
		Fluorescence Kinetics	POPC:POPG(1:1) POPC:POPG(7:3) POPC:POPG(8:2) POPC:POPG(9:1) POPC:POPG(10:0)	-7.99[c] -6.23[c] -5.56[c] -4.84[c] -3.30[c]	K_d=1.8 μM K_d=35 μM K_d=110 μM K_d=370 μM K_d=5000 μM	[6]
I6A8L15I17-M2a	GIGKFIHAAK KFGKLFIGEI MNS(NH2)	ITC	POPC SUV	-5.6[a]	K_{app}=7700 M^{-1} under 30 ℃	[2]
I6V9W12T15I17-M2a	GIGKFIHSVKKWG KTFIGEI MNS(NH2)	ITC	POPC SUV	-6.1[a]	K_{app}=20000 M^{-1} under 30 ℃	
I6L15-M2a	GIGKFIHSAKKFGK LFVGEIMNS-NH2	CD titration	POPC:POPG(3:1)	-6.11(0M)[b]	K_{app}=25000 M^{-1}	[5]
L2R11A20-M2a	GLGKFLHSAKRFG KAFVGEAMNS-NH2		POPC:POPG(3:1)	-5.40(0M)[b]	K_{app}=7400 M^{-1}	
I6A8L15I17-M2a	GIGKFIHAAKKFG KLFIGEIMNS-NH2		POPC:POPG(3:1)	-6.96(0M)[b]	K_{app}=105000 M^{-1}	
PGLa	GMASKAGAIAGKI AKVALKAL-NH2	ITC LUV	POPC/POPG(3:1) POPC	-4.5(5)/-11.1[a] -4.1[a]	K_{app}=1500 M^{-1} K_{app}=800 M^{-1} under 30 ℃	[2]

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Peptide	Sequence	Method	Membrane	Binding Energy ΔG_c^0(kcal/mol)	Original Data	Ref
Melittin	GIGAVLKVLTTGL PALISWIKRKRQQ-NH_2	Surface potential measurement	Lethicin	-7.55(10mM Salt)[f] -7.96(100mM Salt)[f]		[7]
		CD	POPC/POPG(9:1) POPC/POPG(8:2)	-6.5(1.9)/-7.7 [a,f] -6.3 (0.77μM)[b,f] -6.5/-8.2[a,f]	K_{app}=4.5x10^4 M^{-1} K_{app}=3.19x10^4 M^{-1} K_{app}=4.5x10^4 M^{-1}	[8]
		Fluorescence NBD	POPC LUV_{200} LUV_{100} SUV DOPC LUV_{200} LUV_{100}	-4.92(2.2)[a,f] -4.82(1.5) [a,f] -5.16(1.2) [a,f] -4.82(1.6) [a,f] -5.01(1.3) [a,f]	K_{app}=6x10^3 M^{-1} K_{app}=5x10^3 M^{-1} K_{app}=9x10^3 M^{-1} K_{app}=5x10^3 M^{-1} K_{app}=7x10^3 M^{-1} under 30 ℃	[9]
		Ultrafiltration	EPC EPC:PS(85:15)	-5.1 [e,f] -6.4 [e,f]	ΔG_x=-7.6 kcal/mol ΔG_x=-8.9 kcal/mol	[10]
		Ultrafiltration	DOPC	-5.1 [e,f]	ΔG_x=-7.6 kcal/mol	[11]
		CD	 POPC/POPG(10:0) POPC/POPG(9:1) POPC/POPG(3:1) POPC/POPG(1:1)	 -3.7[e,f] -4.3(1.0)/-5.5 [e,f] -4.62/-6.0 [e,f] -5.0/-6.4 [e,f]	ΔG_x= kcal/mol -6.2 -6.8/-8.0 -7.12/-8.5 -7.5/-8.9	[12]
Pardaxin	GFFALIPKIISSPLF KTLLSAVGSALSSS GGQE	Fluorescence NBD-label	POPC LPS	-6.21 [b,f] -7.1[c]	K_{app}=3.3x10^4 M^{-1} K_d= 8.5 μM	[13,14]
Dermaseptin	GLWSKIKAAGKEA AKAAAKAAGKAA LNAVSEAV	Fluorescence NBD-label	PC PC/PS(1:1)	-5.28 [b,f] -6.12 [b,f]	K_{app}=6.6x10^3 M^{-1} K_{app}=2.8x10^4 M^{-1}	[15]
Dermaseptin S1	ALWKTMLKKLGT MALHAGKAALGA AADTISQGTQ	Surface Plasmon Resonance	PC PC/PA(1:1)	-6.47 [c,f] -8.0 [c,f]	K_d=14.29 μM K_d=1.01 μM	[16]
Dermaseptin S4	ALWMTLLKKVLK AALNAVLGANA		PC PC/PA(1:1)	-8.86 [c,f] -9.64 [c,f]	K_d=0.25 μM K_d=0.067 μM	
K4K20-S4	ALWKTLLKKVLK AAAKAALKAVLV GANA		PC/PA(1:1)	-9.68 [c,f]	K_d=0.0625 μM	
K4-S4(1-16)a	ALWKTLLKKVLK AAAK-NH2		PC/PA(1:1)	-8.10 [c,f]	K_d=0.91 μM	
K4-S4(1-13)a	ALWKTLLKKVLK A-NH2		PC/PA(1:1)	-6.68 [c,f]	K_d=10 μM	
K4-S4(1-10)a	ALWKTLLKKV-NH2		PC/PA(1:1)	-5.01 [c,f]	K_d=167 μM	
DD K	GLWSKIKAAG-KEAAKAAGKAAL NAVSEAV-NH_2	ITC	PC-LUVs	-3.97 (9.7) [d,f]	K_d=100 μM	[17]

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Peptide	Sequence	Method	Membrane	Binding Energy ΔG_c^0 (kcal/mol)	Original Data	Ref
CecropinP	SWLSKTAKKLENS AKKRISEGIAIAIQ GGPR	Fluorescence NBD	PC PC/PS(1:1)	-5.98 [b,f] -6.78 [b,f]	K_{app}=3.1x10^3 M^{-1} K_{app}=1.2x10^5 M^{-1}	[18]
CecropinA	KWKLFKKIEKVGQ NIBDGIIKAGPAVA WGQATQIAK-NH2	Fluorescence kinetics	POPC:POPG(1:1) POPC:POPG(7:3) POPC:POPG(8:2) POPC:POPG(10:0)	-8.88 [c,f] -5.66 [c,f] -5.03 [c,f] -3.95 [c,f]	K_d= 0.24 µM K_d= 56 µM K_d= 270 µM K_d=1000 µM	[19]
		Fluorescence Trp	POPC:POPA(8:2)	-5.92 (27.8) [d,f]	K_d=1.28 µM	[20]
δ -lysin	formyl-MAQDIISTIGDLVK WIIDTVNKFTKK	Fluorescence Kinetics	POPC	-6.0 [c,f]	K_d=30 µM	[21]
DL-1 δ –lysin D->K	formyl-MAQKIISTIGKLVK WIIKTVNKFTKK		POPC	-4.5 [c,f]	K_d=400 µM	
DL-2a	formyl-LAADLLAALGDLA KWLLDALAKAAK K		POPC	- 4.9 [c,f]	K_d=200 µM	
DL-2b	formyl-LAADLLAALGDLL KWLLDALAKLAK K		POPC	- 3.2 [c,f]	K_d=3400 µM	
CE-1	KWKLLKKLEKAG AALKEGLLKAGPA LALLGAAAALAK-NH2		POPC	- 4.5 [c,f]	K_d=400 µM	
CE-2	KWKLLKKLEKAG AALKEGLLKAGPA LALLGAAAALAK-NH2		POPC	- 3.0 [c,f]	K_d=4700 µM	
MG-1	GILKFLESAKKWL EAFLAEIMNS		POPC	-4.9 [c,f]	K_d=200 µM	
MG-2	GLGKLLHAAKKL GKAWLGELLAA		POPC	-3.9 [c,f]	K_d=1100 µM	
Tp10W	AGWLLGKINLKAL AALAKKIL-NH2	Fluorescence Kinetics	POPC	- 5.1 [c,f]	K_d=140 µM	[22]
Tp10W-COO	AGWLLGKINLKAL AALAKKIL		POPC	- 4.9 [c,f]	K_d=200 µM	
Tp10-7MC	AGYLLGK(-7MC)INLKALAALA KKIL-amide		POPC	- 6.3 [c,f]	K_d=20 µM	
mastoparan X	INWKGIAAMAKKL L-NH2		POPC	-4.7 [c,f]	K_d=300 µM	

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Peptide	Sequence	Method	Membrane	Binding Energy ΔG_c^0 (kcal/mol)	Original Data	Ref
Alamethicin	AibPAibAibAibAibQ AibVAibGLAibPVAi bAibEQPhl	EPR	DOPC	-5.77[f]	K_c=17100	[23]
Gramicidin S 14dK4	cyclo[VKLdKVdYPL KVKLdYP]	ITC LUV	POPC/POPG(3:1) POPC/POPS(3:1) POPG POPS POPC	-6.2 (11.1) [d] -6.5 (14.3)[d] -8.3 (5) [d] -7.6 (5.3)[d] -2.0 (166.7)[d]	K_d=3.1 μM K_d=1.7 μM K_d=22 μM K_d=62 μM K_d=278 μM	[24]
CM15	KWKLFKKIGAVLK VL	Tryptophan time-resolved fluorescence	DMPC DMPG	-4.72 -5.49	K_c=2.9x10^3 K_c=1.06x10^4	[25]
		EPR	POPE/POPG(8:2)	-4.86[b,f]	K_{app}=0.28x10^4 M^{-1}	[26]
LL37(F27W)	LLGDFFRKSKEKIG KEFKRIVQRIKDFL RNLVPRTES	Tryptophan fluorescence	SOPC SOPCPOPG(9:1) SOPCPOPG(8:2) SOPCPOPG(6:4)	-6.16[c,f] -8.44[c,f] -8.58[c,f] -8.79[c,f,g] -9.29[c,f]	K_d=23.8 μM K_d=0.51 μM K_d=0.40 μM K_d=0.12 μM	[27]
Indolicidin	ILPWKWPWWPWR R-NH 2	ITC LUV	POPC E Coli lipid	-7.26[c,f] -8.98[c,f]	ΔG_a=-7.4 kcal/mol ΔG_a=-9.12 kcal/mol	[28]
		Reverse HPLC LUV	POPC POPG	-6.3[e,f] -9.0[e,f]	ΔG_x=-8.8 kcal/mol ΔG_x=-11.5 kcal/mol	[29]
Tritrpticin	VRRFPWWWPFLR R-COO$^-$	ITC LUV	POPE/ POPG(7:3) POPC E Coli lipid	-8.59 [c,f] -5.63 [c,f] -8.14 [c,f]	ΔG_a=-8.73 kcal/mol ΔG_a=-5.77 kcal/mol ΔG_a=-8.28 kcal/mol	[28]
Tritrp1	VRRFPWWWPFLR R-NH2		POPE/ POPG(7:3) POPC	-9.86 [c,f] -6.75 [c,f]	ΔG_a=-10.0 kcal/mol ΔG_a=-6.89 kcal/mol	
Tritrp2	V**KK**FPWWWPFL**K K**-NH2		POPC	-5.28 [c,f]	ΔG_a=-5.42 kcal/mol	
Tritrp3	VRRF**A**WWW**A** FLRR-NH2		POPE/ POPG(7:3) POPC	-9.09 [c,f] -6.99 [c,f]	ΔG_a=-9.23 kcal/mol ΔG_a=-7.13 kcal/mol	
LAP1	QPEWFKARRWQW RMKKLGA	Fluorescence Trp	DMPC:DMPG 1:1	-6.47 (19.5) [d,f]	K_d=0.728 μM	[30]
LAP2	TISQPEWFKARRW QWRMKKLGA			-6.53 (22.0) [d,f]	K_d=0.581 μM	
LAP3	TISQAEWFKARRW QWRMKKLGA			-6.19 (21.0) [d,f]	K_d=1.09 μM	
LAP4	TASQAEWFKARR WQWRMKKLGA			-6.28 (21.8) [d,f]	K_d=0.898 μM	
LAP5	EWFKARRWQWR MKKLGA			-7.63 (15.4) [d,f]	K_d=0.129 μM	
LAP6	EWFKARRWGWR MKKLQA			-7.45 (15.4) [d,f]	K_d=0.175 μM	
KLA80	KLALKLALKWAK LALKAA	CD titration	POPC POPG	-4.91[b,f] -7.20 [b,f]	K_{app}=5100 M^{-1} K_{app}=2.5x10^5 M^{-1}	[31]
KLA100	KLLAKAAKKWLL LALKAA		POPG	-7.07 [b,f]	K_{app}=2 x10^5 M^{-1}	
KLA120	KLLAKAALKWLL KALKAA		POPC POPG	-4.95 [b,f] -7.13 [b,f]	K_{app}=5500 M^{-1} K_{app}=2.2x10^5 M^{-1}	
KLA140	KALKKLLAKWLA AAKALL		POPC POPG	-5.14 [b,f] -6.83 [b,f]	K_{app}=7500 M^{-1} K_{app}=1.3x10^5 M^{-1}	
KLA160	KLAAALLKKWKK LAAALL		POPC POPG	-5.14 [b,f] -7.02 [b,f]	K_{app}=7500 M^{-1} K_{app}=1.8x10^5 M^{-1}	
KLA180	KALAALLKKWAK LLAALK		POPG	-6.83 [b,f]	K_{app}=1.3x10^5 M^{-1}	

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