

Table S1. Crystallographic Data and Refinement Statistics. Related to Figure 1.

	IL-23 complex	IL-12Rβ1	IL-12Rβ1 (SeMet)		
Dataset	native	native	peak	remote	inflection
Wavelength (Å)	1.0000	1.0000	0.9792	0.9184	0.9798
Resolution range	46.54-3.401 (3.522-3.401)	36.19-2.01 (2.082-2.01)	47.4-2.5 (2.6-2.5)	47.4-2.5 (2.6-2.5)	47.4-2.5 (2.6-2.5)
Space group	P 2 21 21	P 43 21 2			
Unit cell (a, b, c, α, β, γ) (Å, °)	75.712 118.483 186.151 90 90 90	55.78 55.78 182.01 90 90 90			
Total reflections	58906 (5984)	218632 (16685)	131570 (14869)	132076 (14417)	132235 (14962)
Unique reflections	21806 (2240)	19869 (1861)	10619 (1159)	10618 (1152)	10638 (1161)
Multiplicity	2.7 (2.7)	11.0 (9.0)	12.4 (12.8)	12.4 (12.5)	12.4 (12.9)
Completeness (%)	89.67 (75.95)	98.84 (94.03)	99.9 (99.4)	99.7 (98.7)	99.9 (99.6)
Mean I/sigma(I)	8.59 (0.57)	13.80 (1.16)	26.3 (3.1)	25.4 (2.7)	26.3 (2.7)
R-merge	0.07234 (2.118)	0.1033 (1.685)	0.067 (0.840)	0.073 (0.964)	0.069 (0.967)
R-meas	0.0888 (2.602)	0.1084 (1.789)	0.073 (0.908)	0.079 (1.044)	0.074 (1.044)
R-pim	0.0506 (1.484)	0.032 (0.5814)	0.027 (0.341)	0.030 (0.398)	0.028 (0.391)
CC1/2	0.999 (0.286)	0.999 (0.438)	0.999 (0.824)	0.999 (0.761)	1.000 (0.783)
Reflections used in refinement	21297 (1768)	19820 (1844)			
Reflections used for R-free	1948 (158)	992 (94)			
R-work	0.2384 (0.4134)	0.2207 (0.3375)			
R-free	0.2943 (0.4067)	0.2419 (0.3287)			

Number of non-hydrogen atoms	6847	1696
macromolecules	6709	1634
ligands	137	23
solvent	1	39
Protein residues	852	212
RMS(bonds)	0.003	0.011
RMS(angles)	0.56	1.14
Ramachandran favored (%)	94.38	97.12
Ramachandran allowed (%)	5.62	2.88
Ramachandran outliers (%)	0.00	0.00
Rotamer outliers (%)	0.00	1.15
Clashscore	5.02	2.48
Average B-factor	157.34	48.77
macromolecules	156.30	48.62
ligands	208.71	64.78
solvent	95.66	45.72
Number of TLS groups	4	8

Table S2. Quaternary IL-23 receptor complex interatomic contacts. Related to Figure 1.

Summary of IL-23 receptor contacts from PISA (Krissinel and Henrick, 2007). Abbreviations as follows: vdw, van der Waals; hb, hydrogen bond; sb, salt bridge; sc, side chain; mc main chain.

P40-IL12R β 1 contacts

P40 residue	IL12Rβ1 residue	Type	Mainchain/sidechain
Trp 37	Leu 108	vdw	sc-sc
Pro 39	Asn 135	vdw	sc-sc
	Tyr 134	vdw	sc-sc
Asp 40	Leu 108	hb	mc-mc
	Gln 132	hb	sc-sc
Ala 41	Tyr 109	hb	sc-sc
Lys 80	Tyr 109	hb	mc-sc
Glu 81	Ser 106	vdw	sc-sc
Phe 82	Asp 101	vdw	sc-mc
	Gln 102	vdw	sc-sc
Glu 108	Tyr 134	vdw	sc-sc
		hb	sc-sc
Asp 115	Asp 58	vdw	sc-sc
His 216	Gln 102	hb	mc-sc
			sc-sc
Lys 217	Gln 102	hb	sc-mc
Lys 217	Gln 102	hb	mc-sc

	Glu 24	sb	SC-SC
Leu 218	Gln 102	hb	mc-sc
Lys 219	Asp 58	hb	SC-SC
	Asp 101	hb	SC-SC
	Gln 102	vdw	SC-SC

P40-IL23R contacts

P40 residue	IL23R residue	Type	Mainchain/sidechain
Asp 109	Gln 60	hb	mc-sc
Gly 110	Gln 60	vdw	mc-mc
Pro 123	Phe 109	vdw	SC-SC
Lys 124	Phe 109	hb	sc-mc

IL-23p19-IL23R contacts

P19 residue	IL23R residue	Type	Mainchain/sidechain
His 53	Lys 124	hb	mc-sc
Leu 56	Glu 111	vdw	mc-mc
	Tyr 100	vdw	SC-SC
	Thr 102	vdw	SC-SC
Arg 57	His 108	pi-pi	SC-SC
	Gln 110	vdw	SC-SC
	Glu 111	hb	mc-mc
	Leu 113	hb	mc-mc
Glu 59	Ser 31	vdw	SC-SC
Val 68	Ile 25	vdw	SC-SC

Pro 155	Asp 118	vdw	mc-sc
Trp 156	Gly 116	pi-pi	sc-mc
	Lys 117	pi-pi	sc-mc
	Asp 118	vdw	mc-sc
		hb	mc-sc
Leu 160	Leu 113	vdw	sc-sc
	Tyr 100	vdw	sc-sc
Leu 161	Ile 28	vdw	sc-sc
Lys 164	Gly 24	hb	sc-mc
Ala 171	Arg 230	vdw	sc-sc
Phe 172	Glu 203	vdw	mc-sc
Ala 174	Tyr 314	vdw	sc-mc
Val 175	Ala 201	vdw	sc-mc
Ala 177	Tyr 314	pi-pi	mc-sc
Arg 178	Tyr 268	vdw	sc-sc
	Asp 312	hb	sc-sc
	Tyr 136	hb	sc-sc
Val 179	Tyr 268	vdw	sc-sc
Ala 181	Ser 267	vdw	mc-mc
His 182	Ser 267	hb	sc-sc

**Table S3. Cryo-Electron Microscopy data collection and processing statistics.
Related to Figure 3.**

	IL-23 complex	IL-12 complex
Voltage (kV)	300	300
Magnification (calibrated)	58,824	58,824
Defocus (μm)	-1.5 to -2.4	-1.5 to -2.4
Pixel size (\AA)	0.8521	0.8521
Total electron dose (electrons/\AA^2)	44	62
Exposure time (s)	2	4
No. of images	946	1581
No. of frames per image	40	57
Initial particle number	488,577	120,293
Particle number for 3D classification	95,228	22,764
Final particle number	33,138	11,646
Resolution (\AA)	8.0	10.0
Map sharpened B-factor (\AA^2)	300	300