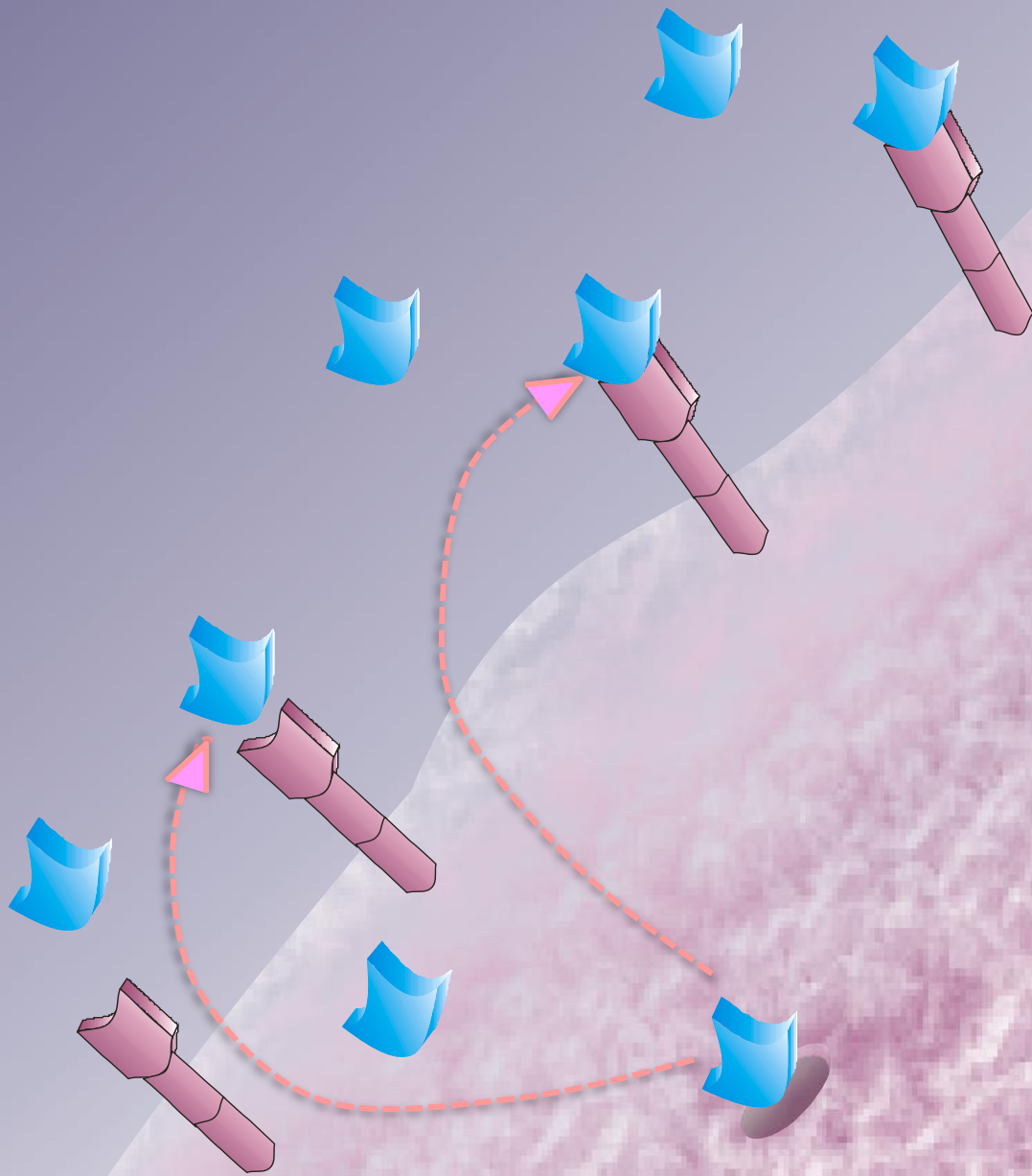
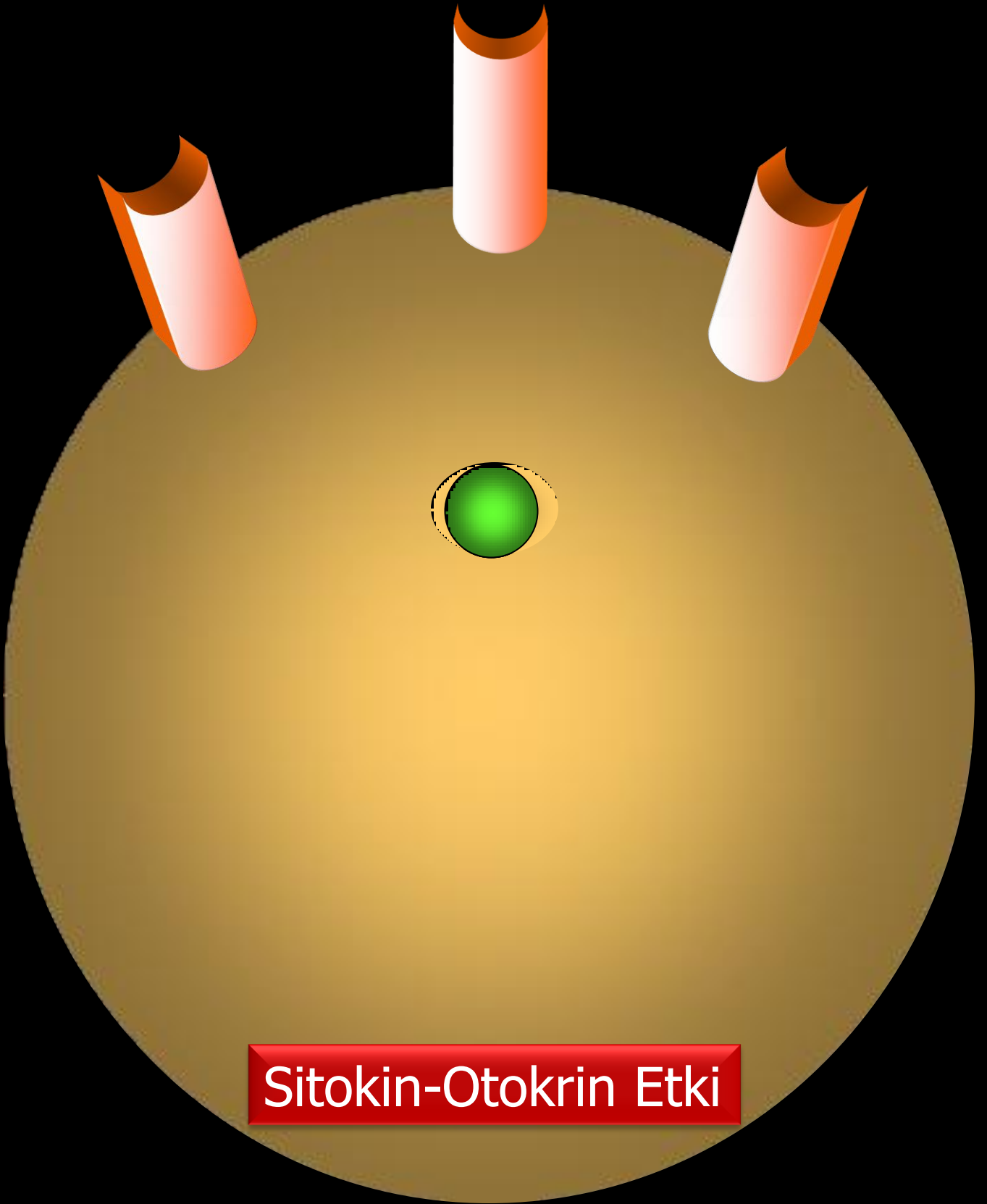


SİTOKİN

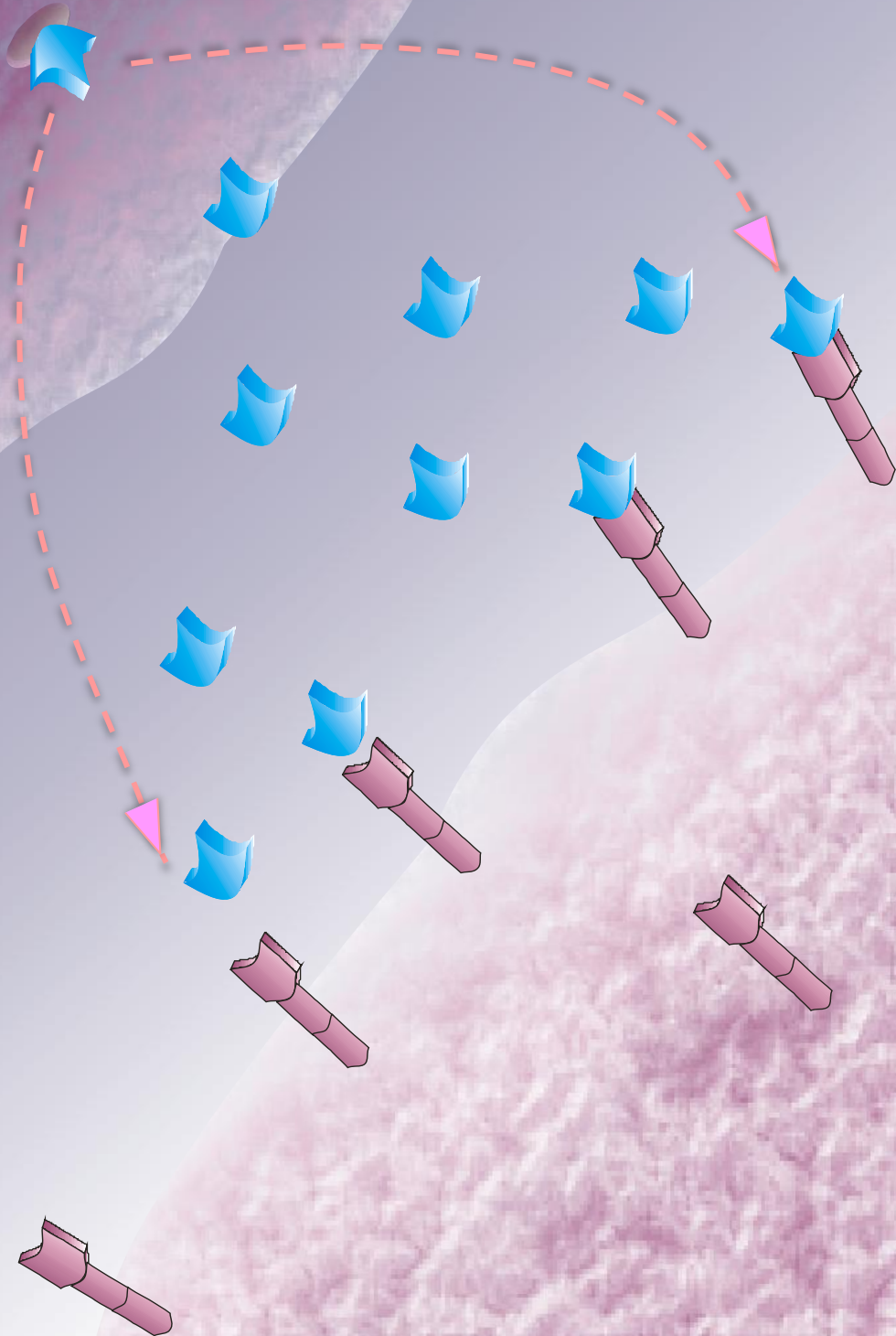


Sitokin-Otokrin Etki

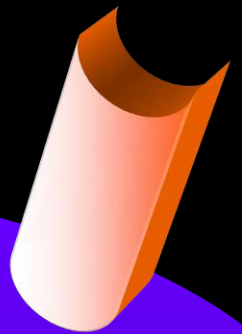
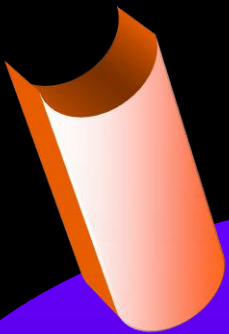
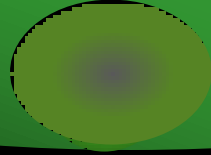


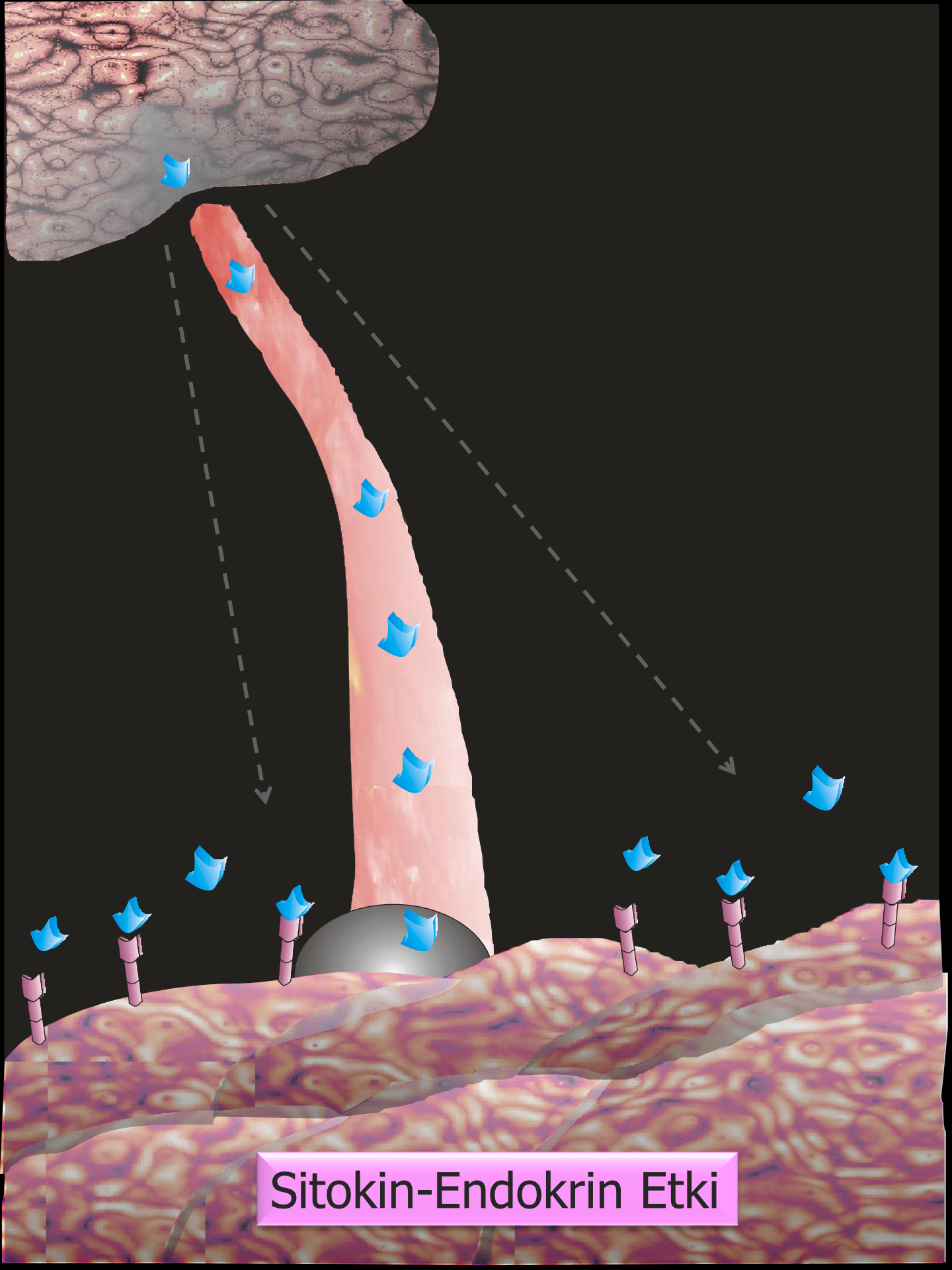
Sitokin-Otokrin Etki

Sitokin-Parakrin Etki

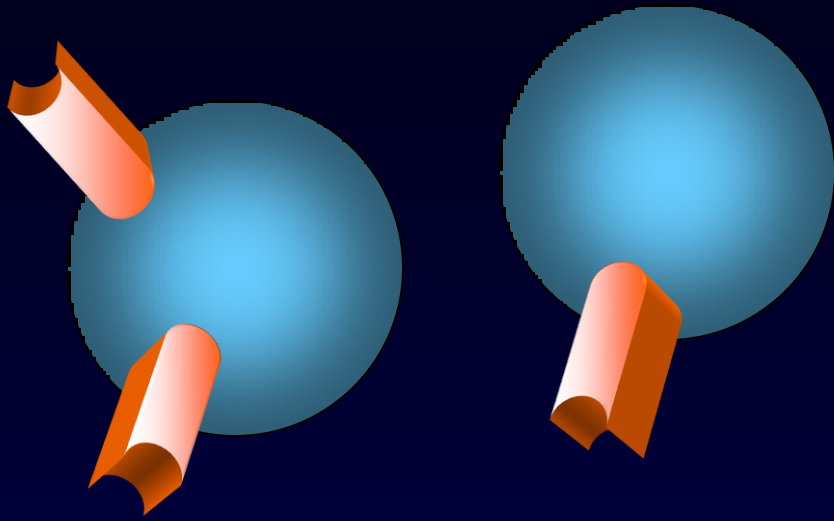


Sitokin-Parakrin Etki



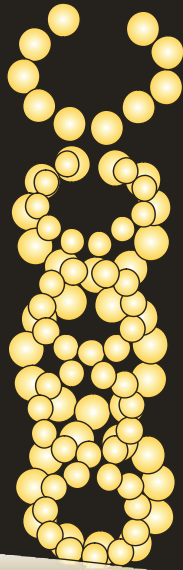
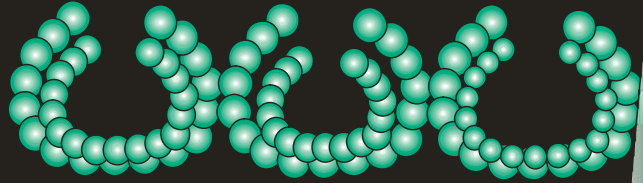
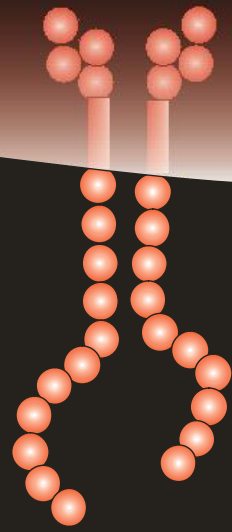
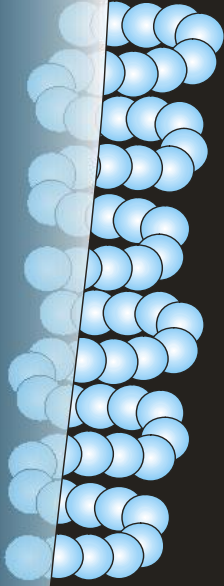


Sitokin-Endokrin Etki

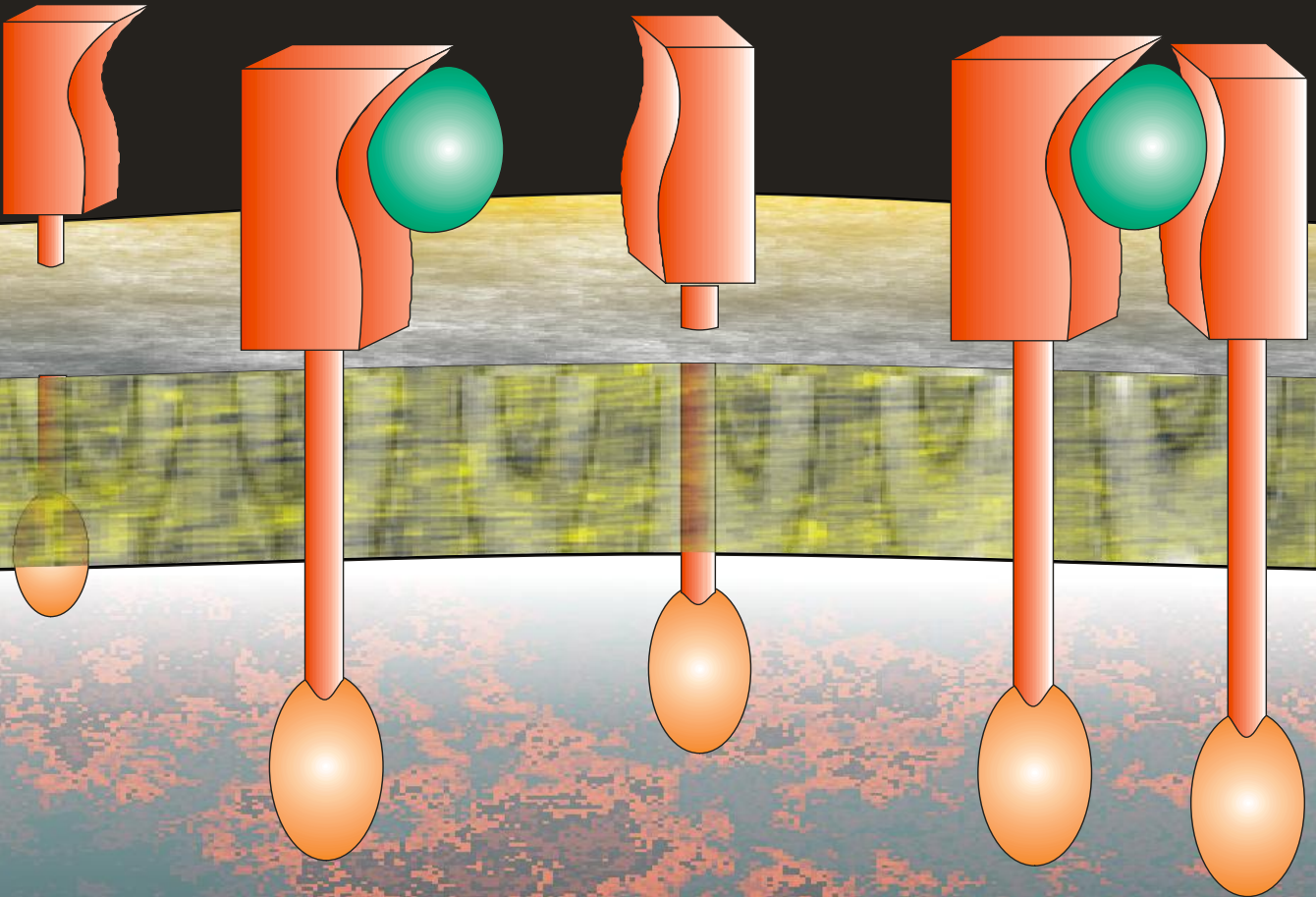


Sitokin-Endokrin Etki

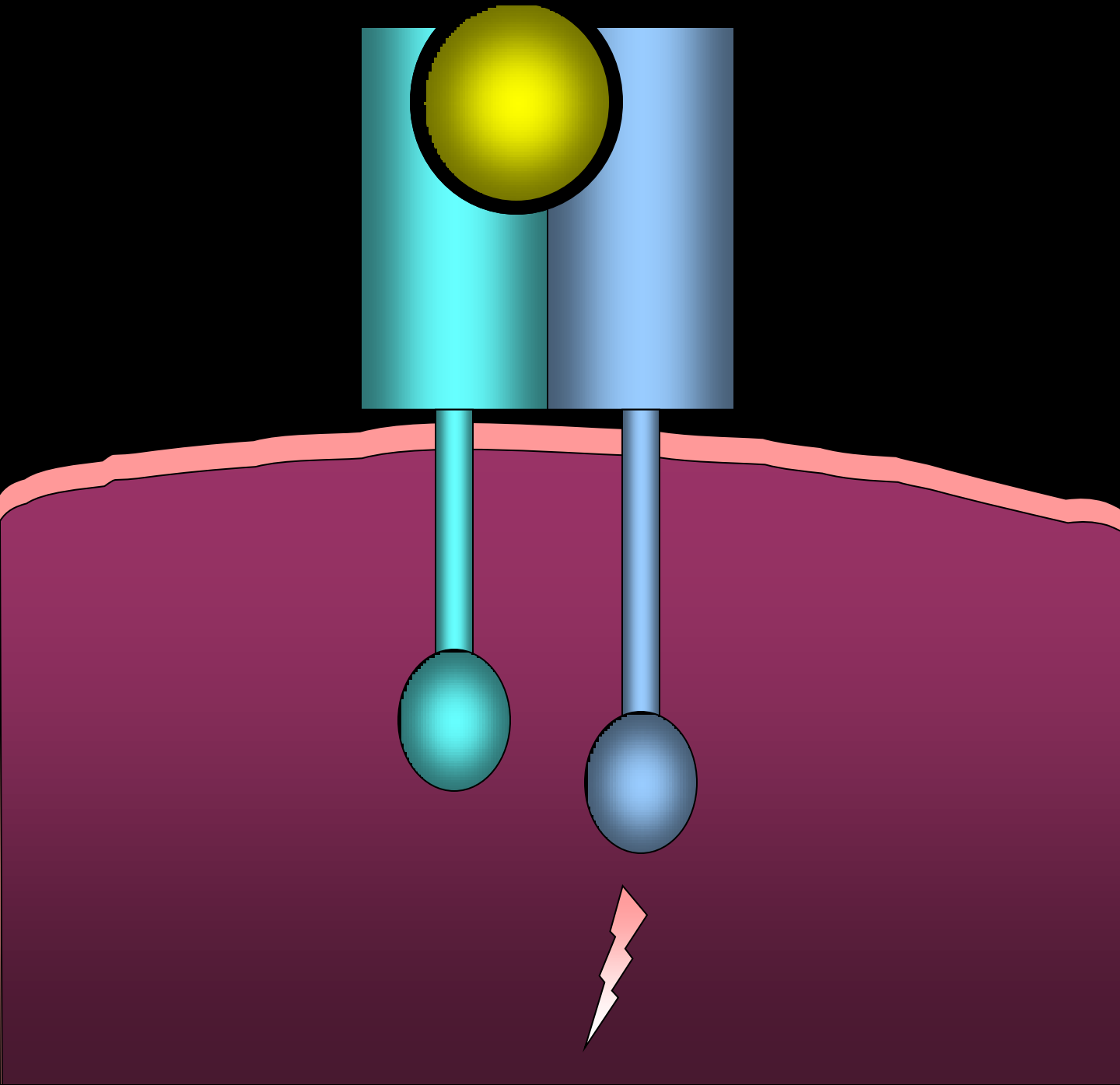
Sitokin Reseptörleri



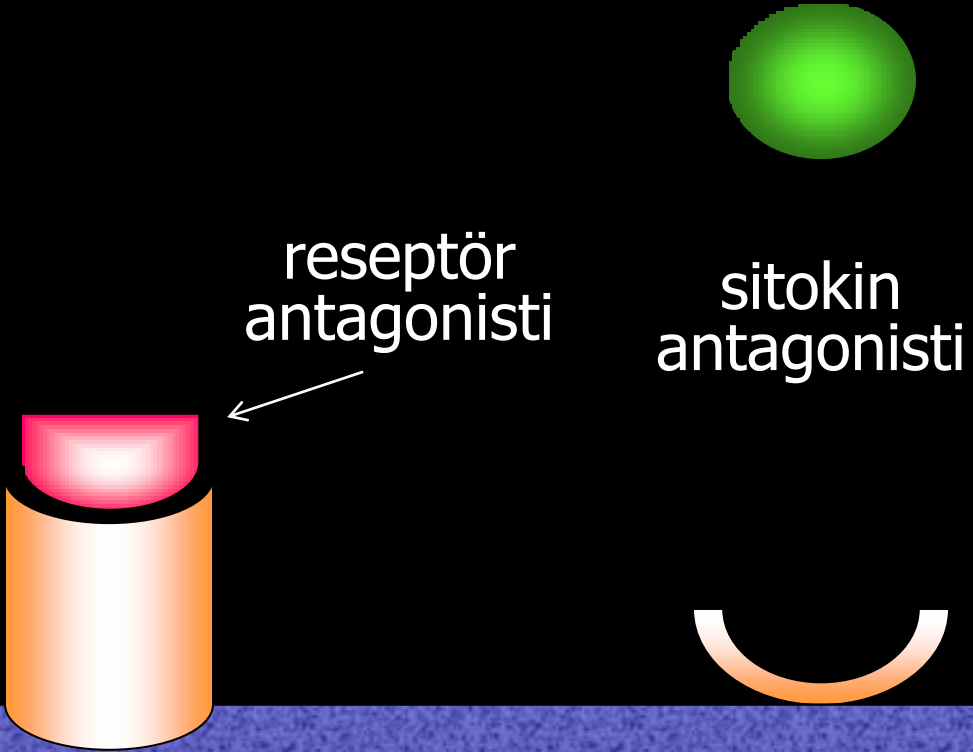
Sitokin Reseptörleri



Sitokin Reseptörleri

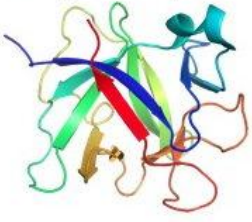


Sitokin Regülasyonu

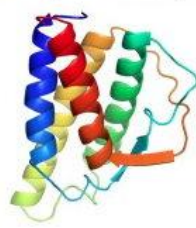


Sitokinlerin moleküler tipleri

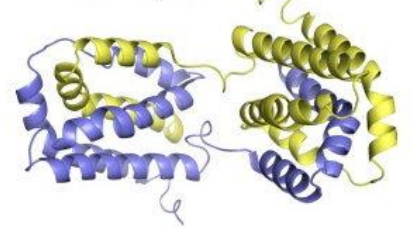
IL1 (β trefoil)



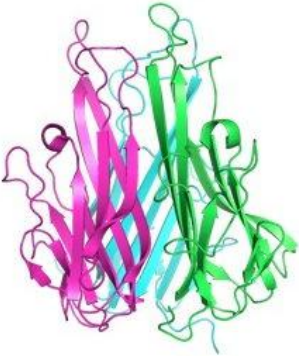
IL4 (4-helical)



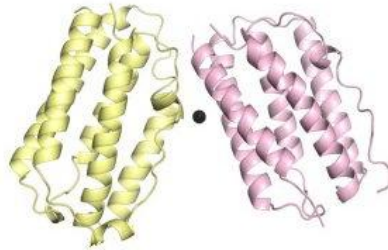
IL10 (4-helical)



TNF α (jelly roll)



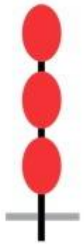
IFN- β (4-helical)



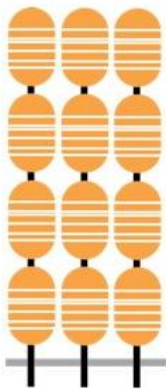
IFN- γ (4-helical)



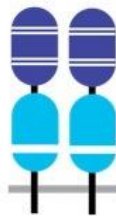
Sitokinlerin reseptör tipleri



Ig-type



TNFR-type

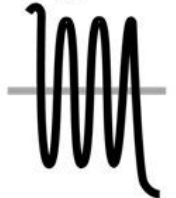


cytokineR
type I



cytokineR
type II

chemokineR
type

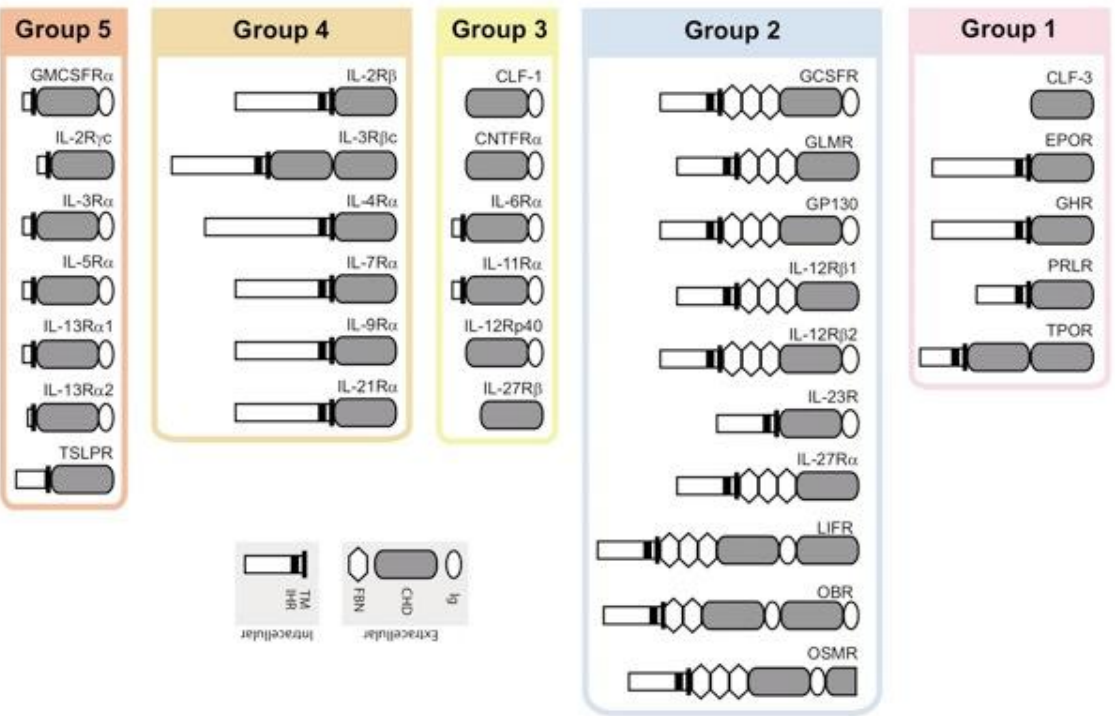


Adı	Sinonim	AA		Molekül ağırlık	Reseptör
Interleukins					
IL-1-like					
IL-1 α	hematopoietin-1	271	2q14	30606	CD121a, CDw121b
IL-1 β <small>(çiftli Ekran Alintisi)</small>	catabolin	269	2q14	20747	CD121a, CDw121b
IL-1RA	IL-1 receptor antagonist	177	2q14.2	20055	CD121a
IL-18	interferon- γ inducing factor	193	11q22.2-q22.3	22326	IL-18R α , β
Common g chain (CD132)					
IL-2	T cell growth factor	153	4q26-q27	17628	CD25, 122, 132
IL-4	BSF-1	153	5q31.1	17492	CD124, 213a13, 132
IL-7		177	8q12-q13	20186	CD127, 132
IL-9	T cell growth factor P40	144	5q31.1	15909	IL-9R, CD132
IL-13	P600	132	5q31.1	14319	CD213a1, 213a2, CD1243, 132
IL-15		162	4q31	18086	IL-15R α , CD122, 132
Common b chain (CD131)					
IL-3	multipotential CSF, MCGF	152	5q31.1	17233	CD123, CDw131
IL-5	BCDF-1	134	5q31.1	15238, homodimer	CDw125, 131
Also related					
GM-CSF	CSF-2	144	5q31.1	16295	CD116, CDw131
IL-6-like					
IL-6	IFN- β 2, BSF-2	212	7p21	23718	CD126, 130
IL-11	AGIF	199	19q13.3-13.4	21429	IL-11R α , CD130
G-CSF	CSF-3	207	17q11.2-q12	21781	CD114
IL-12	NK cell stimulatory factor	219/328	3p12-p13.2/ 5q31.1-q33.1	24844/37169 heterodimer	CD212
LIF	leukemia inhibitory factor	202	22q12.1-q12.2	22008	LIFR, CD130
OSM	oncostatin M	252	22q12.1-q12.2	28484	OSMR, CD130
IL-10-like					
IL-10	CSIF	178	1q31-q32	20517, homodimer	CDw210
IL-20		176	2q32.2	20437	IL-20R α , β
Others					
IL-14	HMW-BCGF	498	1	54759	IL-14R
IL-16	LCF	631	15q24	66694, homotetramer	CD4
IL-17	CTLA-8	155	2q31	17504, homodimer	CDw217
Interferons					
IFN- α		189	9p22	21781	CD118
IFN- β		187	9p21	22294	CD118
IFN- γ		166	12q14	19348, homodimer	CDw119

TNF						
CD154	CD40L, TRAP	261	Xq26	29273, homotrimer	CD40	
LT-β		244	6p21.3	25390, heterotrimer	LTβR	
TNF-α	cachectin	233	6p21.3	25644, homotrimer	CD120a, b	
TNF-β	LT-α	205	6p21.3	22297, heterotrimer	CD120a, b	
4-1BBL		254	19p13.3	26624, trimer?	CDw137 (4-1BB)	
APRIL	TALL-2	250	17p13.1	27433, trimer?	BCMA, TACI	
CD70	CD27L	193	19p13	21146, trimer?	CD27	
CD153	CD30L	234	9q33	26017, trimer?	CD30	
CD178	FasL	281	1q23	31485, trimer?	CD95 (Fas)	
GITRL		177	1q23	20307, trimer?	GITR	
LIGHT		240	16p11.2	26351, trimer?	LTβR, HVEM	
OX40L		183	1q25	21050, trimer?	OX40	
TALL-1		285	13q32-q34	31222, trimer?	BCMA, TACI	
TRAIL	Apo2L	281	3q26	32509, trimer?	TRAILR1-4	
TWEAK	Apo3L	249	17p13.3	27216, trimer?	Apo3	
TRANCE	OPGL	317	13q14	35478, trimer?	RANK, OPG	
TGF-β						
TGF-β1	TGF-β	390	19q13.1	44341, homodimer	TGF-βR1	
TGF-β2		414	1q41	47747, homodimer	TGF-βR2	
TGF-β3		412	14q24	47328, homodimer	TGF-βR3	
Miscellaneous hematopoietins						
Epo	erythropoietin	193	7q21	21306	EpoR	
Tpo	MGDF	353	3q26.3-q27	37822	TpoR	
Flt-3L		235	19q13.1	26416	Flt-3	
SCF	stem cell factor, c-kit ligand	273	12q22	30898, homodimer	CD117	
M-CSF	CSF-1	554	1p21-p13	60119, homodimer	CD115	
MSP	Macrophage stimulating factor, MST-1	711	3p21	80379	CDw136	
C Chemokines						
XCL1	lymphoactin a, SCM-1a, ATAC	114	1q21-q25	12517	XCR1	
XCL2	lymphoactin b, SCM-1b, ATAC	114	1q23	12567	XCR1	
CC Chemokines						
CCL1	I-309	96	17	10992	CCR8	
CCL2	MCP-1, MCAF	99	17q11.2-q12	11025	CCR2	
CCL3	MIP-1α, LD78α	92	17q11-q21	10085	CCR1, CCR5	
CCL4	MIP-1β, LAG-1, ACT-2	92	17q11-q23	10212	CCR5	
CCL5	RANTES	91	17q11.2-q12	9990	CCR1, CCR3, CCR5	
CCL7	MCP-3	99	17q11.2-q12	11200	CCR1, CCR2, CCR3	
CCL8	MCP-2	99	17q11.2	11246	CCR3	
CCL11	eotaxin	97	17q21.1-q21.2	10732	CCR3	
CCL13	MCP-4	98	17q11.2	10986	CCR2, CCR3	
CCL14	HCC-1	93	17q11.2	10678	CCR1	

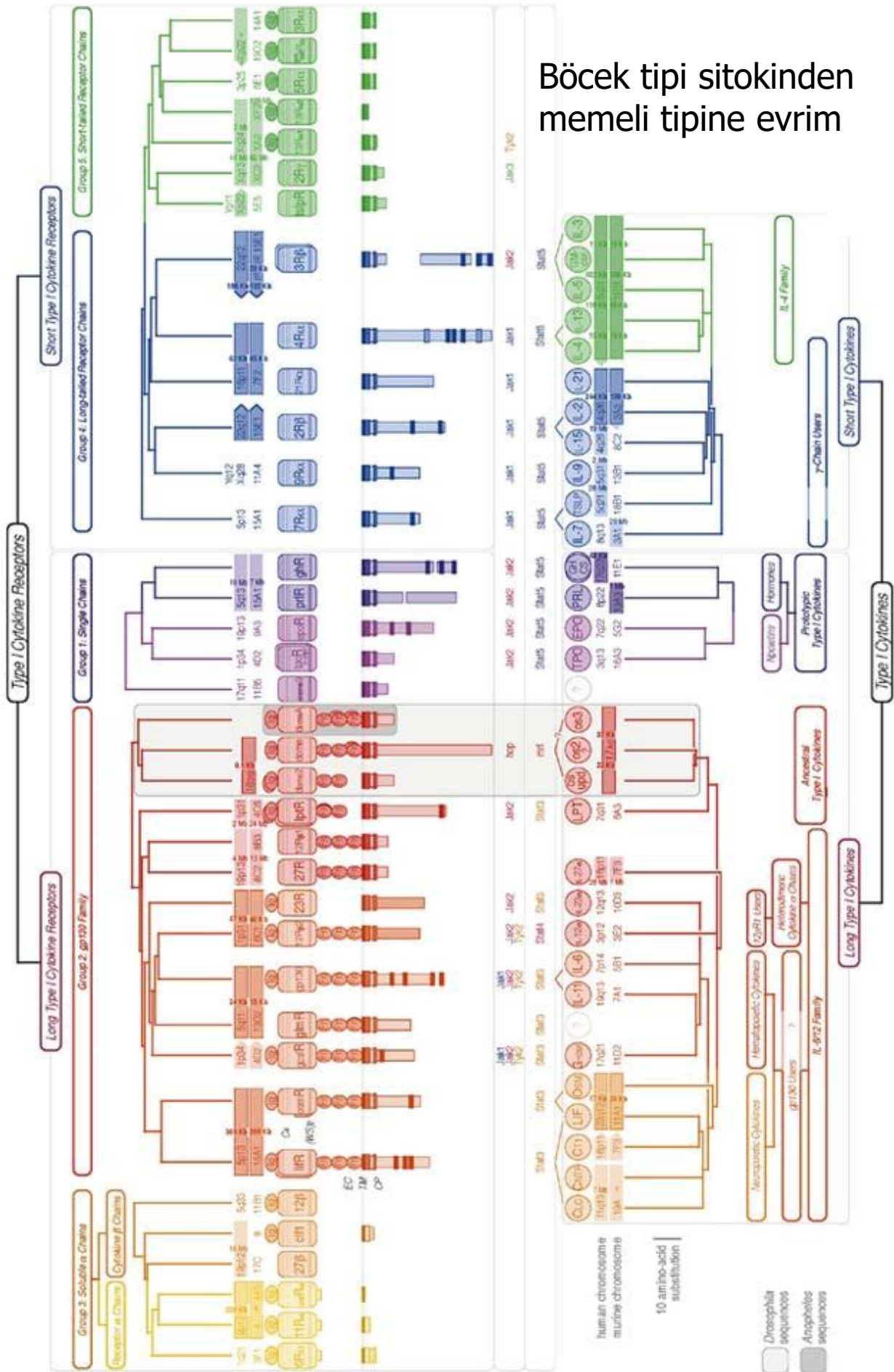
CCL15	HCC-2, Lkn-1, MIP-1d, MIP-5	113	17q11.2	12248	CCR1, CCR3
CCL16	HCC-4, LEC, LMC, LCC-1	120	17q11.2	13600	CCR1
CCL17	TARC	94	16q13	10507	CCR4
CCL18	DC-CK1, PARC, AMAC-a, MIP-4	89	17q11.2	9849	?
CCL19	MIP-3 β , ELC, exodus-3	98	9p13	10993	CCR7
CCL20	MIP-3 α , LARC, exodus-1	96	2q33-q37	10762	CCR6
CCL21	6Ckine, SLC, exodus-2	134	9p13	14646	CCR7
CCL22	MDC, STCP-1	93	16q13	10580	CCR4
CCL23	MPIF-1, MIP-3, CKb-8	120	17q11.2	13443	CCR1
CCL24	MPIF-2, eotaxin-2, CKb-6	119	7q11.23	13133	CCR3
CCL25	TECK, MIP-4a	150	19p13.2	16639	CCR9
CCL26	eotaxin-3	94	7q11.2	10648	CCR3
CCL27	Eskine, CTACK, ILC	112	9p13	12618	CCR10
CXC Chemokines	ELR?				
CXCL1	GRO α , MGSA-a +	107	4q21	11301	CXCR1, CXCR2
CXCL2	GRO β , MGSA-b, MIP-2a +	107	4q21	11389	CXCR2
CXCL3	GRO γ , MGSA-g, MIP-2b +	107	4q21	11342	CXCR2
CXCL4	PF4, oncostatin A -	101	4q12-q13	10845	?
CXCL5	ENA-78 +	114	4q13-q21	11972	CXCR2
CXCL6	GCP-2 +	114	4q21	11897	CXCR1, CXCR2
CXCL7	NAP-2, PPBP +	375	4q12-13	42823	CXCR2
CXCL8	IL-8, NAP-1, NAF, MDNCF +	99	4q12-13	11098	CXCR1, CXCR2
CXCL9	Mig -	125	4q21	14019	CXCR3
CXCL10	IP-10 -	98	4q21	10856	CXCR3
CXCL11	I-TAC -	94	4q21.2	10365	CXCR3
CXCL12	SDF-1 α/β -	93	10q11.1	10666	CXCR4
CXCL13	BLC, BCA-1 -	109	4q21	12664	CXCR5
CXCL14	BRAK -	99	5q31	11722	?
CX3C Chemokines					
CX3CL1	fractalkine	397	16q13	42202	CX3CR1

Cytokines type I receptors

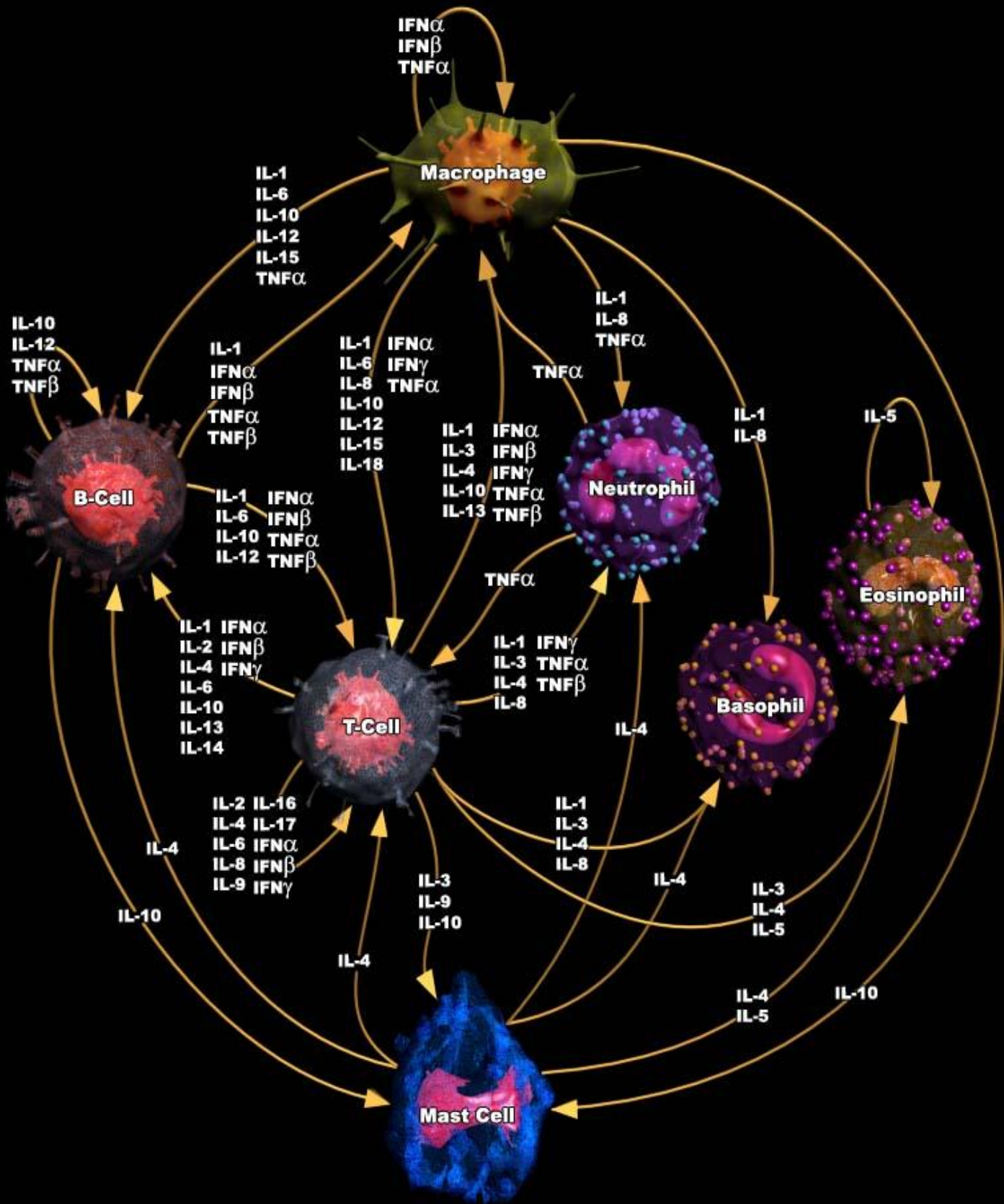


	IL-3 Family		IL-2 Family		IL-7 Sub-family	IL-4 Sub-family	IL-12 Sub-family	IL-6 Family		Hormone Family	Poitén Family	Complex	Receptor Chain(s)	Type
												EPOR	EPOR	Homodimers
												TPOR	TPOR	
												GHR	GHR	Heterocomplex
												PRLR	PRLR	
												OBR	OBR	Heterocomplex
												GCSFR	GCSFR	
												IL-6R	IL-6R α	Heterocomplex
												IL-11R	IL-11R α	
												IL-27R	IL-27R β	Heterocomplex
												CNTF-2R	IL-27R α	
												CNTF-1R	CLF-1	Heterocomplex
												LIFR	LIFR	
												LIFR	LIFR	Heterocomplex
												OSMR	OSMR	
												GLMR	GLMR	Heterocomplex
												IL-12R	IL-12p40	
												IL-12R	IL-12R β 2	Heterocomplex
												IL-23R	IL-23R	
												IL-13R	IL-4R α	Heterocomplex
												IL-13R	IL-13R α 1	
												IL-13R	IL-13R α 2	Heterocomplex
												TSLPR	TSLPR	
												IL-7R	IL-7R α	Heterocomplex
												IL-2R	IL-2R α	
												IL-2R	IL-2R β	Heterocomplex
												IL-15R	IL-15R α	
												IL-4R	IL-4R α	Heterocomplex
												IL-9R	IL-9R α	
												IL-21R	IL-21R α	Heterocomplex
												IL-3R	IL-3R α	
												IL-5R	IL-5R α	Heterocomplex
												GMCSFR	GMCSFR α	

Böcek tipi sitokinden memeli tipine evrim

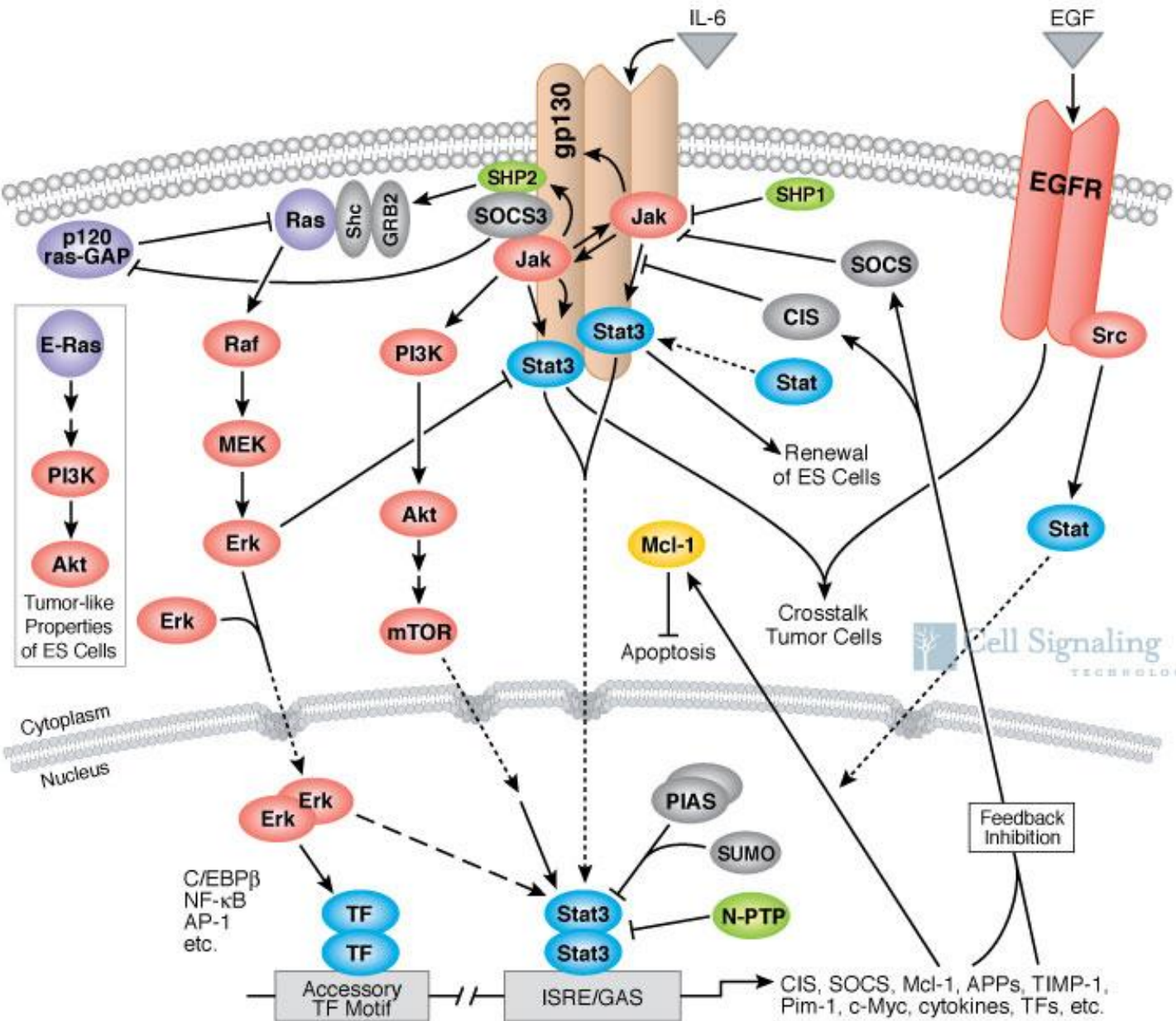


Sitokin Ağı



Sitokin Etki Yolu

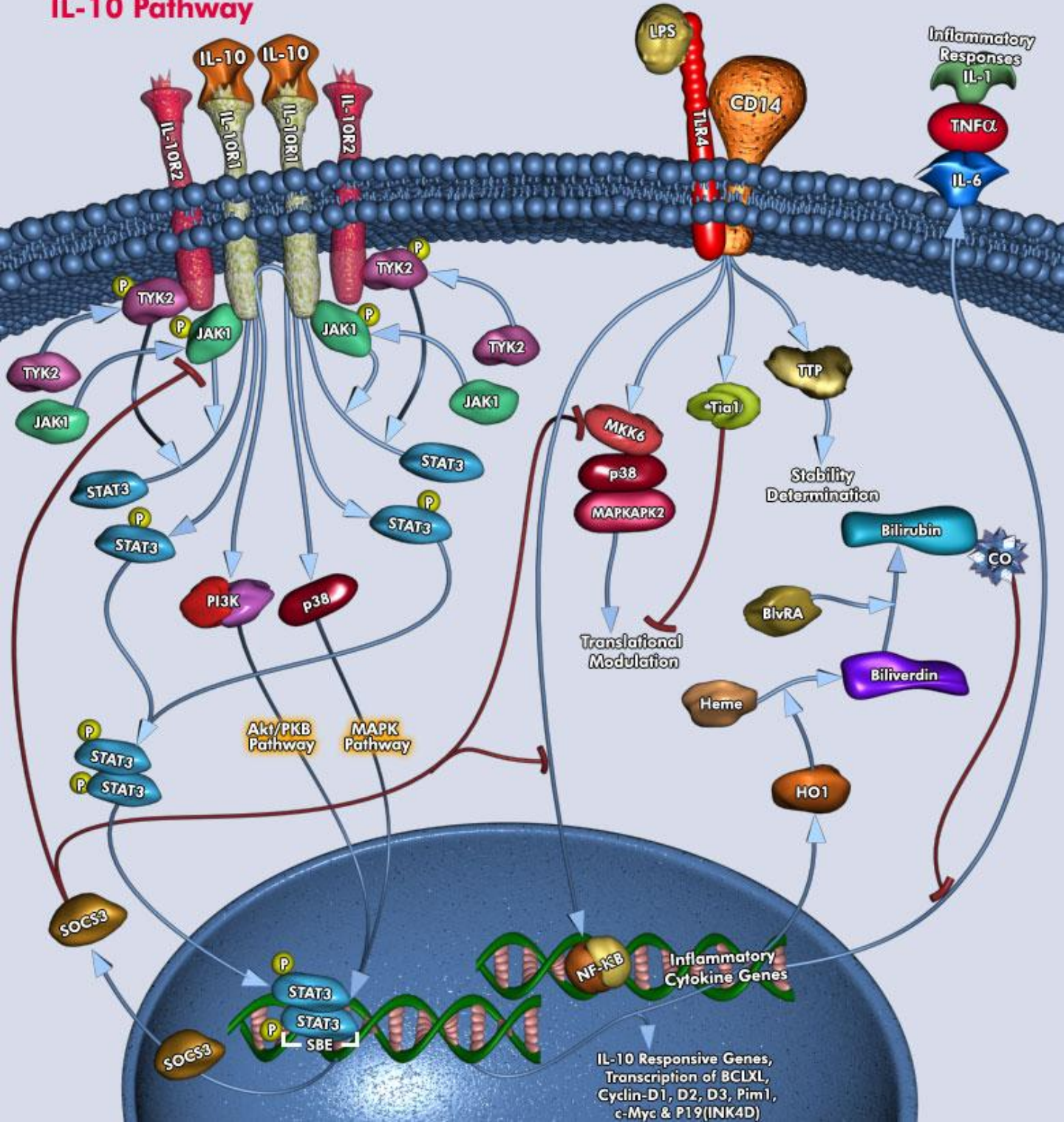
Örnek: IL-6 / Jak-Stat yolu



Sitokin Etki Yolu

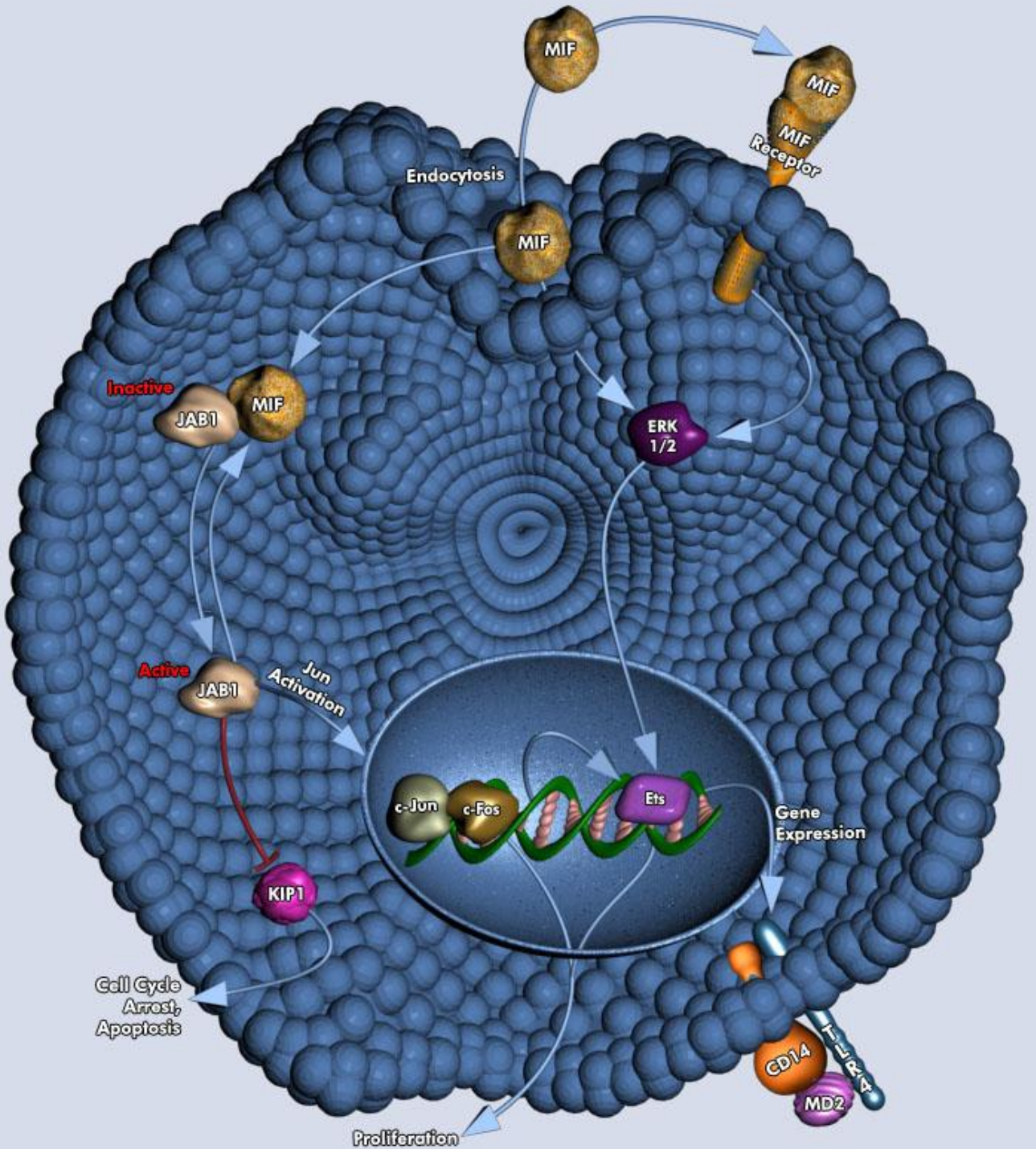
Örnek: IL-10 / Jak-Stat yolu

IL-10 Pathway



Sitokin Etki Yolu

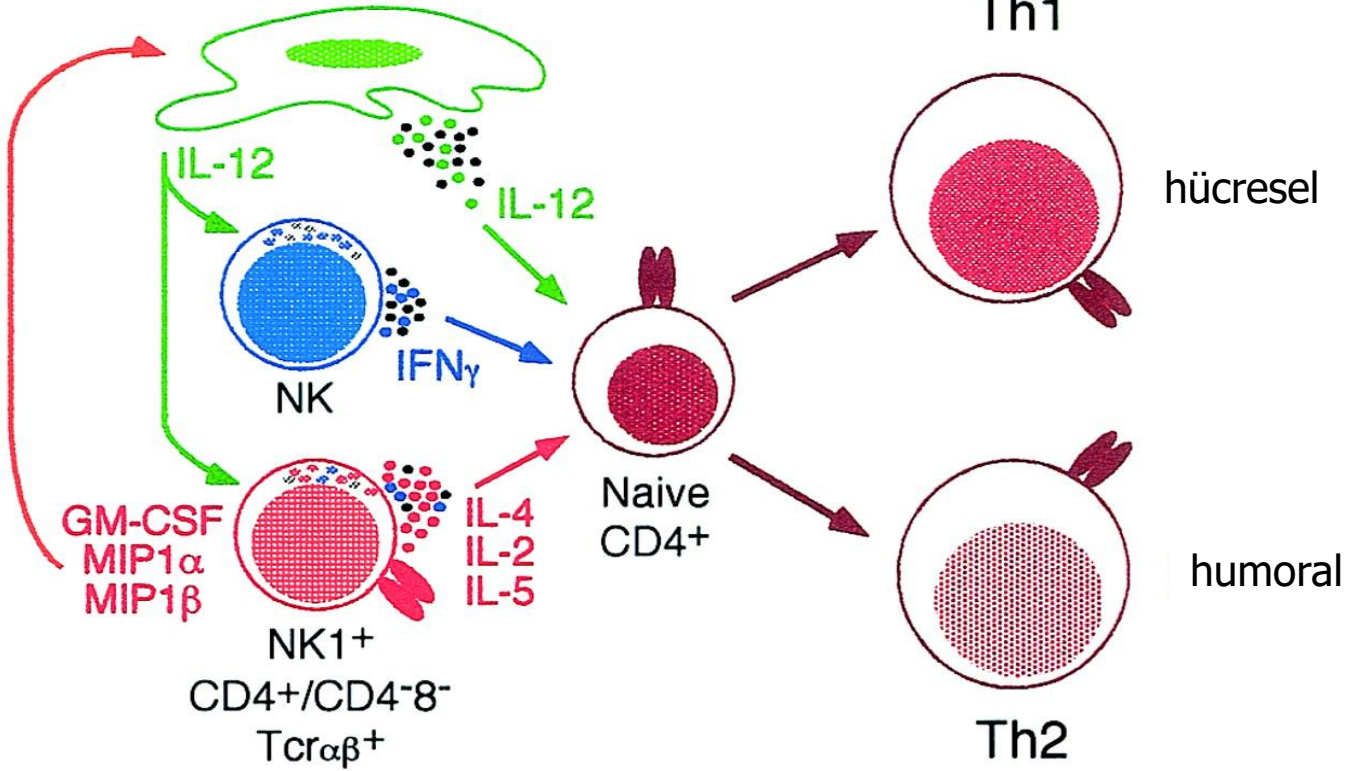
Örnek: MIF / Endositik yol



Sitokin Görevleri

Örnek: İmmün yanıt tipi

dendritik hücre



Hücre dışı patojenler, mantarlar

Otoimmünite

Örnek: İmmün yanıt tipi

IL-21
IL-17a
IL-17f
IL-22
(IL-10)

ROR γ t/Stat3

Foxp3/Stat5

TGF β
IL-35
IL-10



Hücre içi patojenler

Otoimmünite

IFN γ
IL-2
LT α
(IL-10)

T-bet/Stat4

GATA-3/Stat5

IL-4
IL-5
IL-13
IL-25
Amphiregulin
IL-10

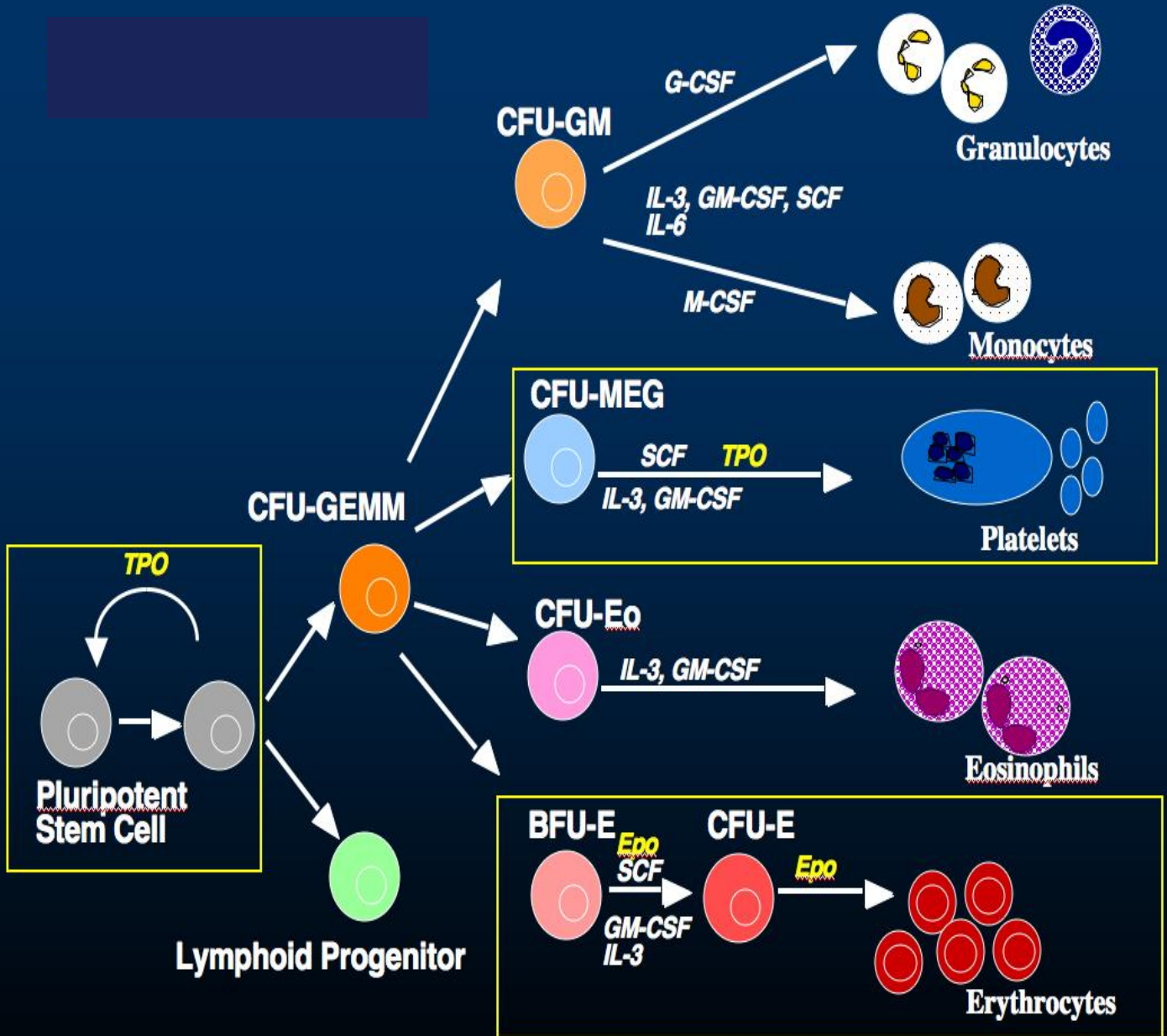


Parazitler, Allerji

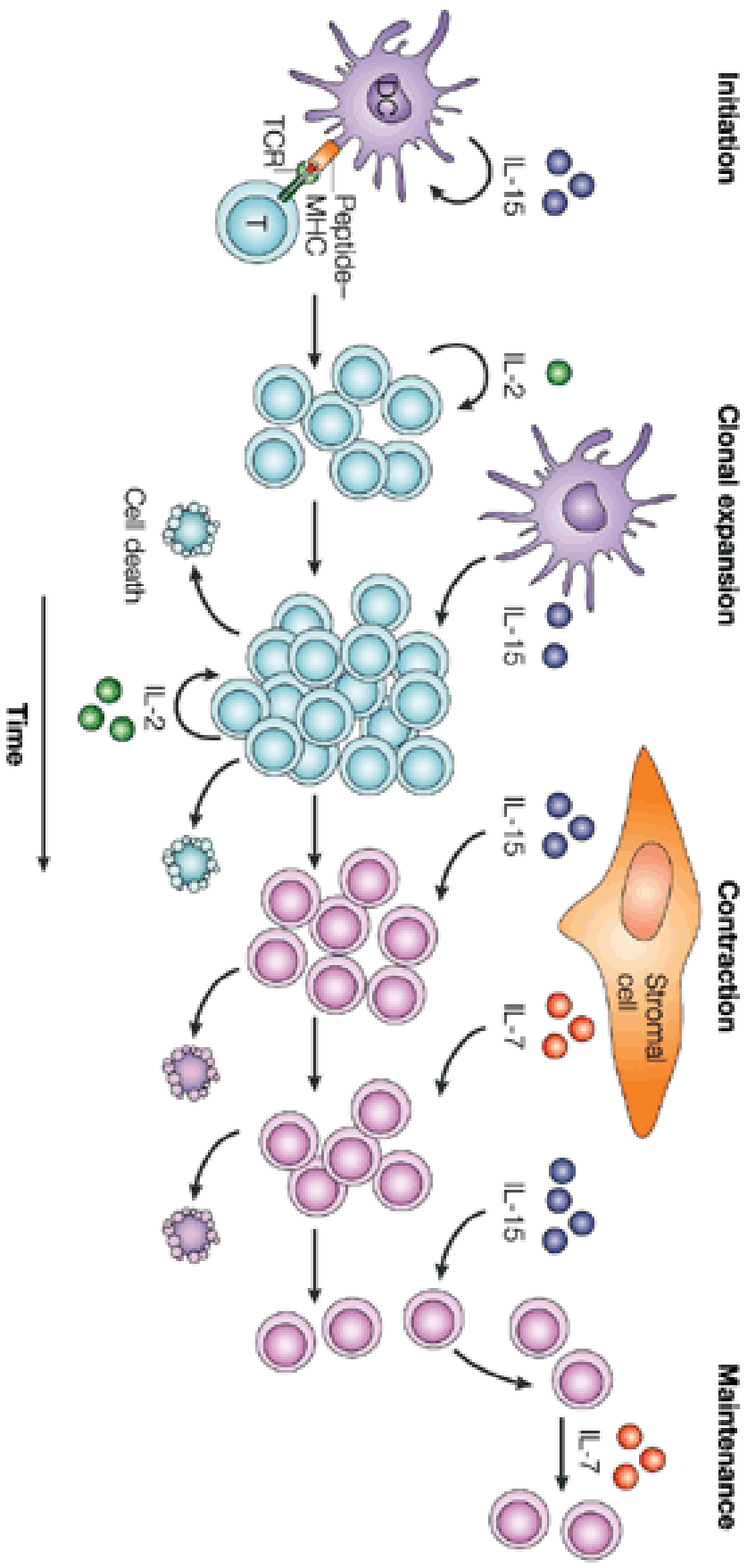
İmmüntolerans, lenfosit homostazı

İmmün yanıtın düzenlenmesi

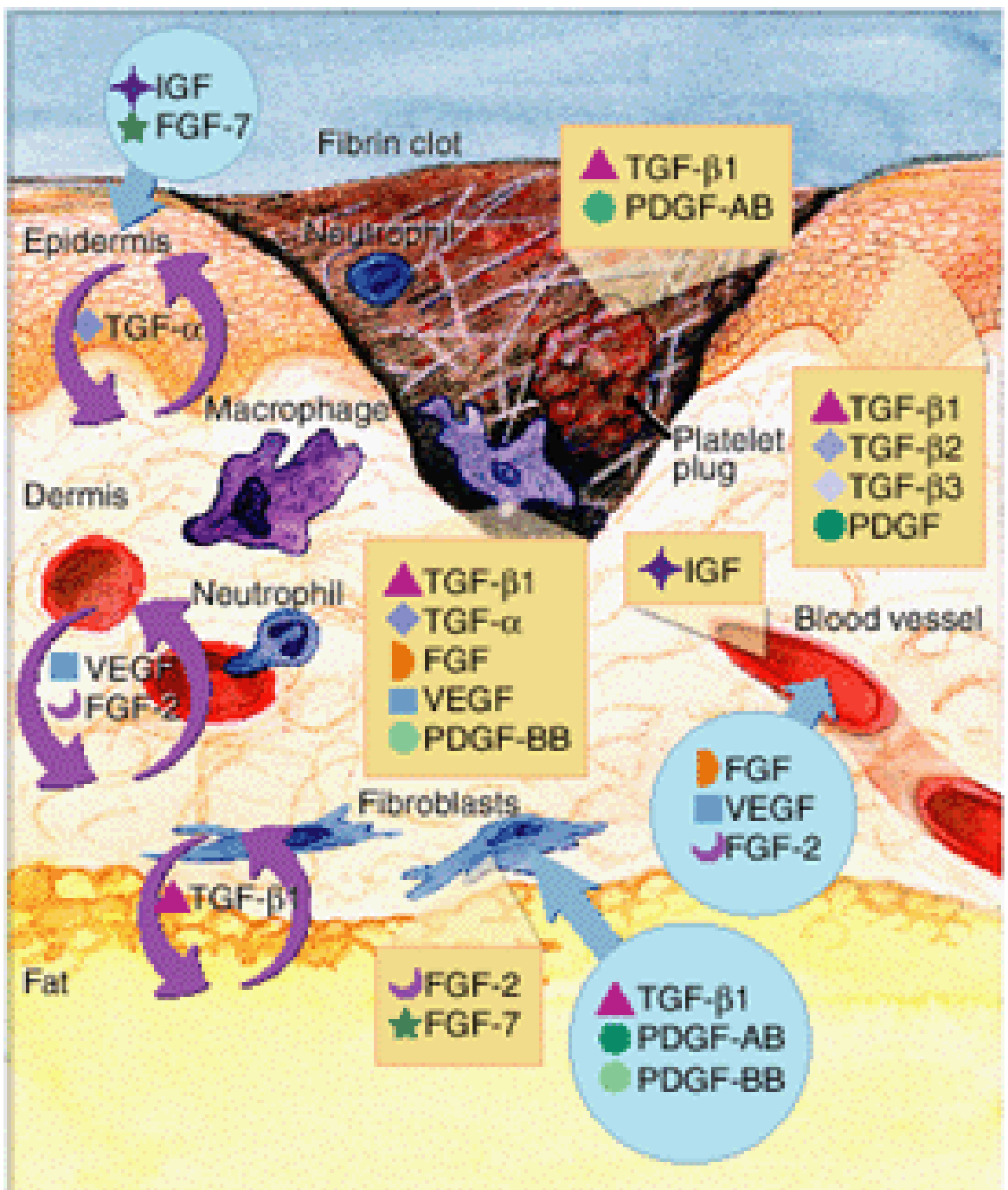
Örnek: İmmun sistem hücrelerinin gelişimi



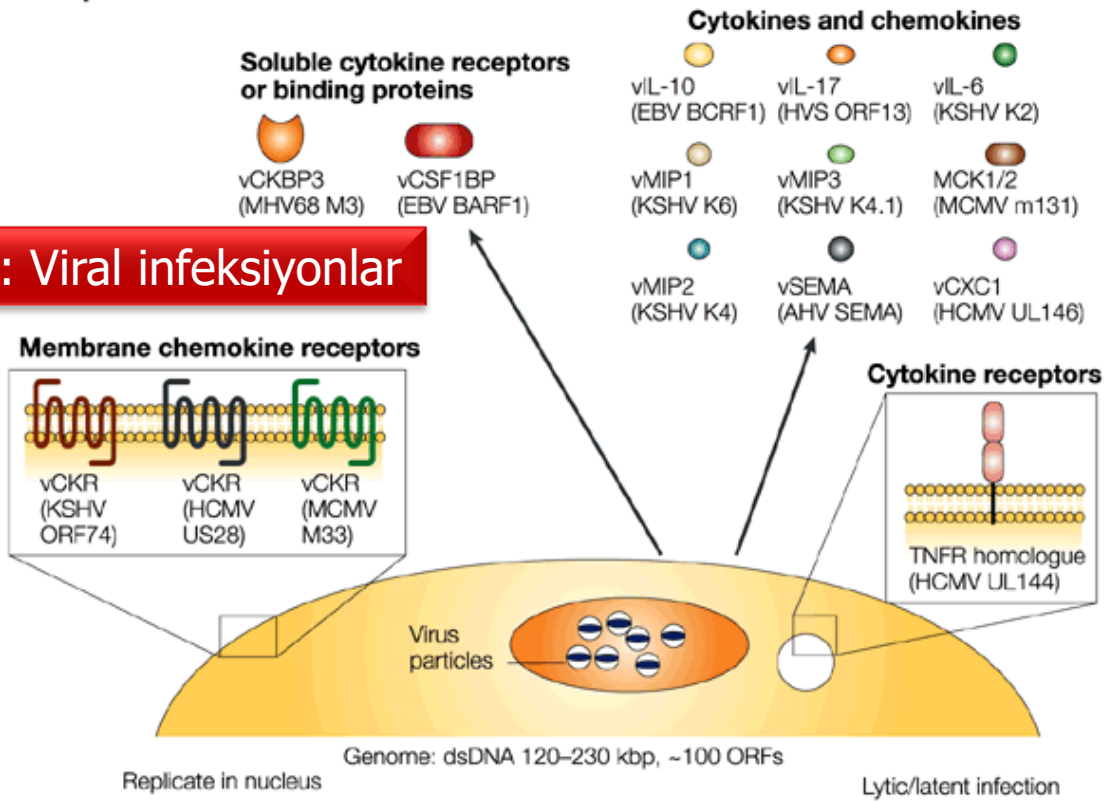
Örnek: Bellek oluşumu



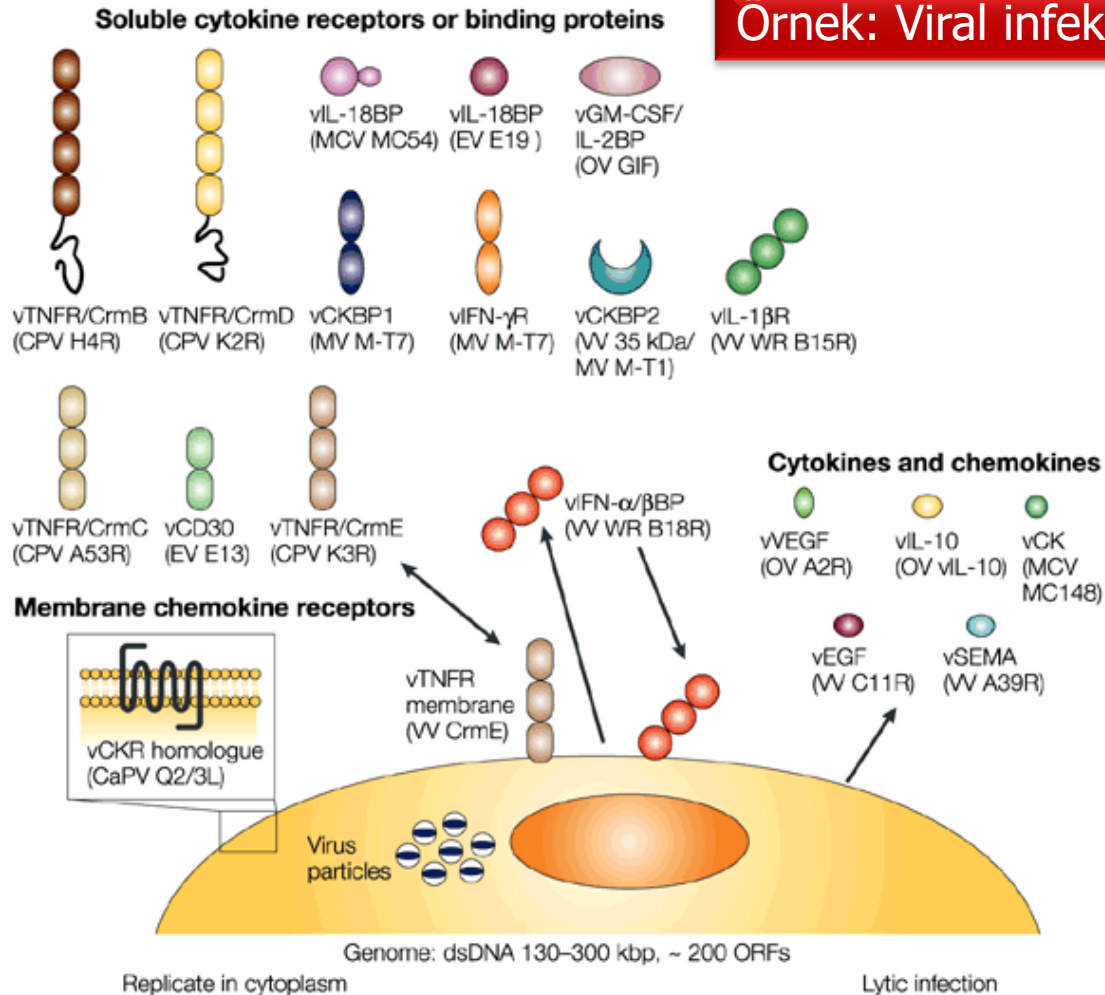
Örnek: Yara iyileşmesi



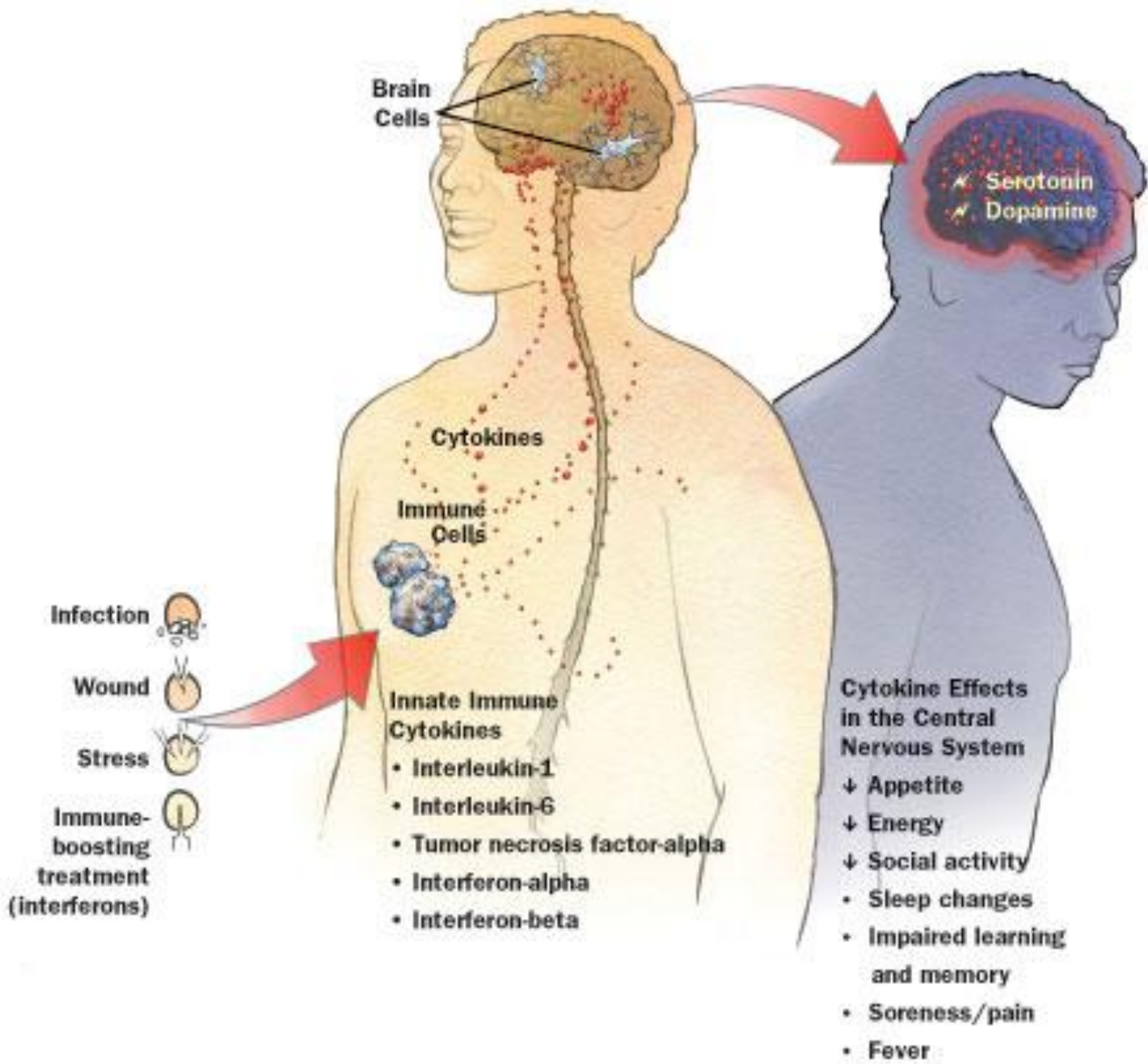
a Herpesviruses



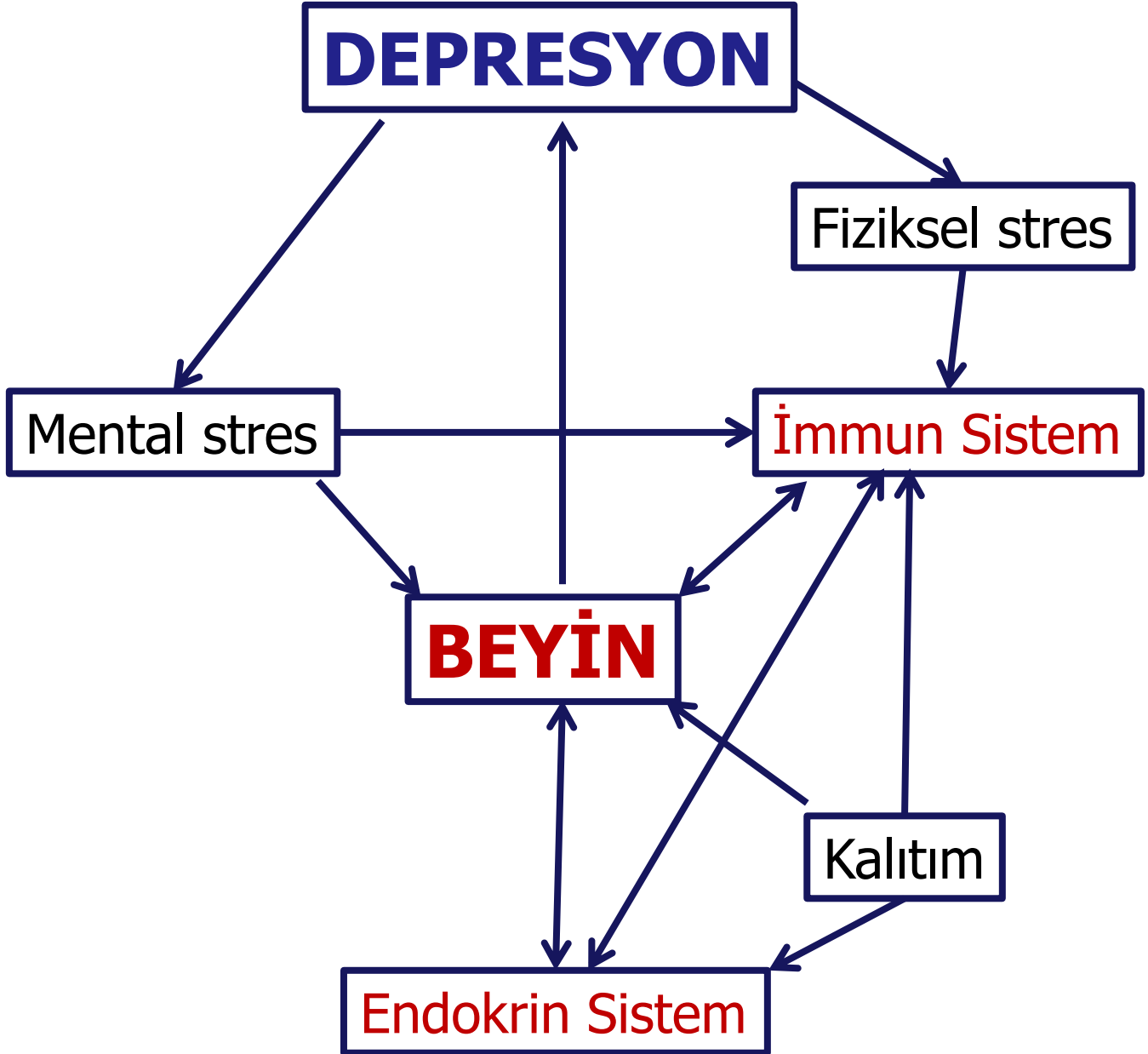
b Poxviruses



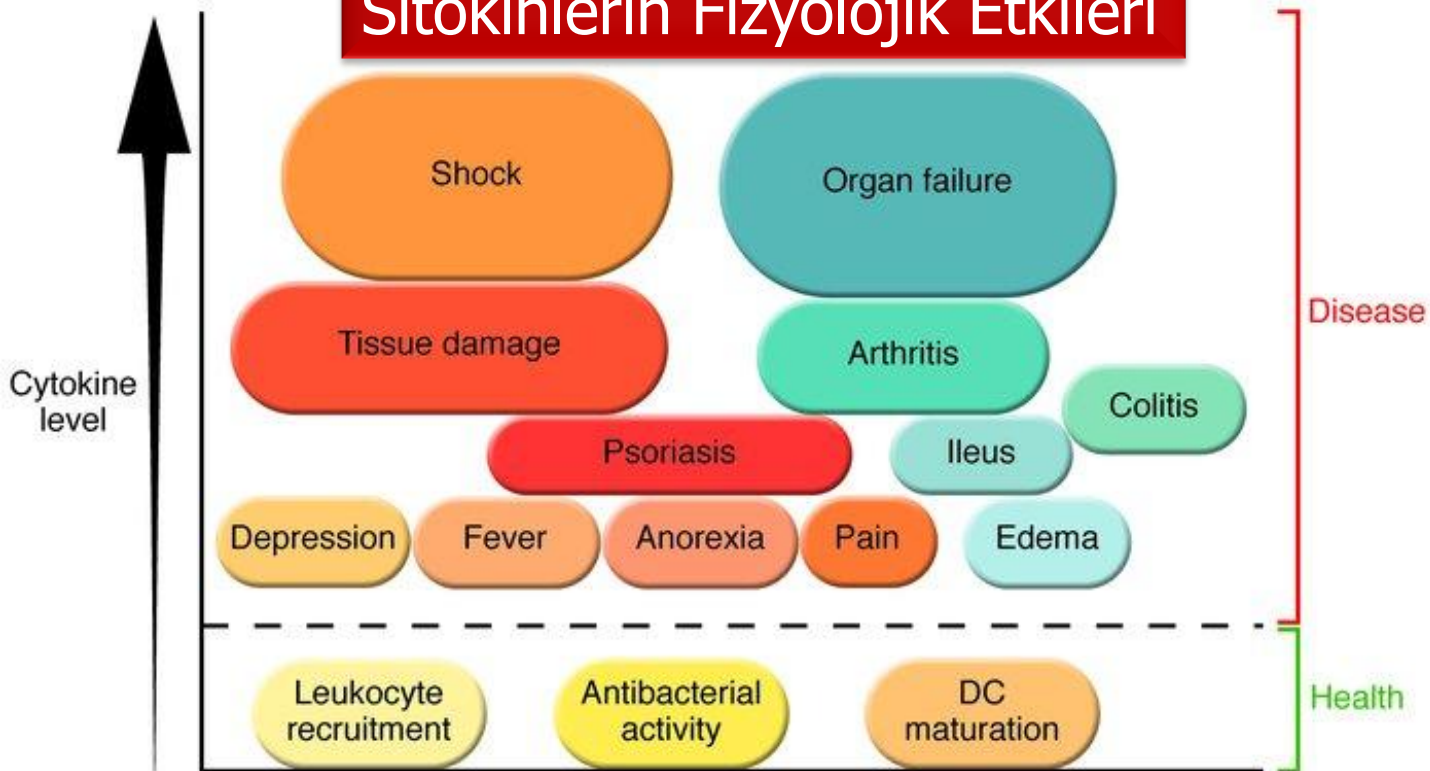
Sitokinlerin Fizyolojik Etkileri



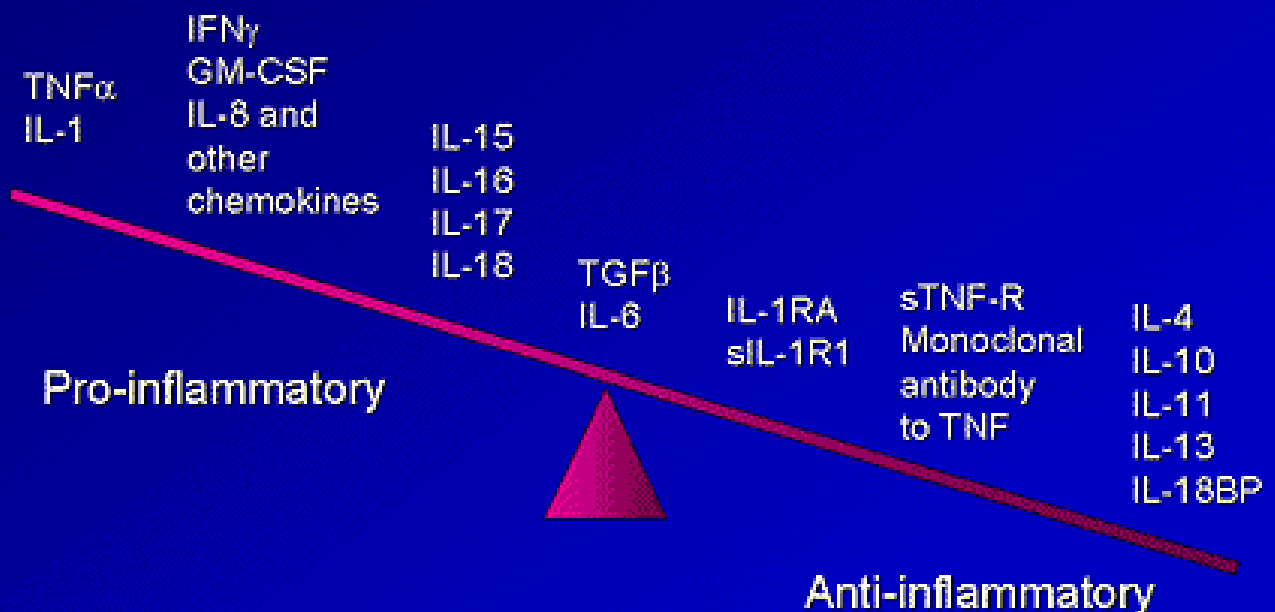
Sitokinlerin Fizyolojik Etkileri



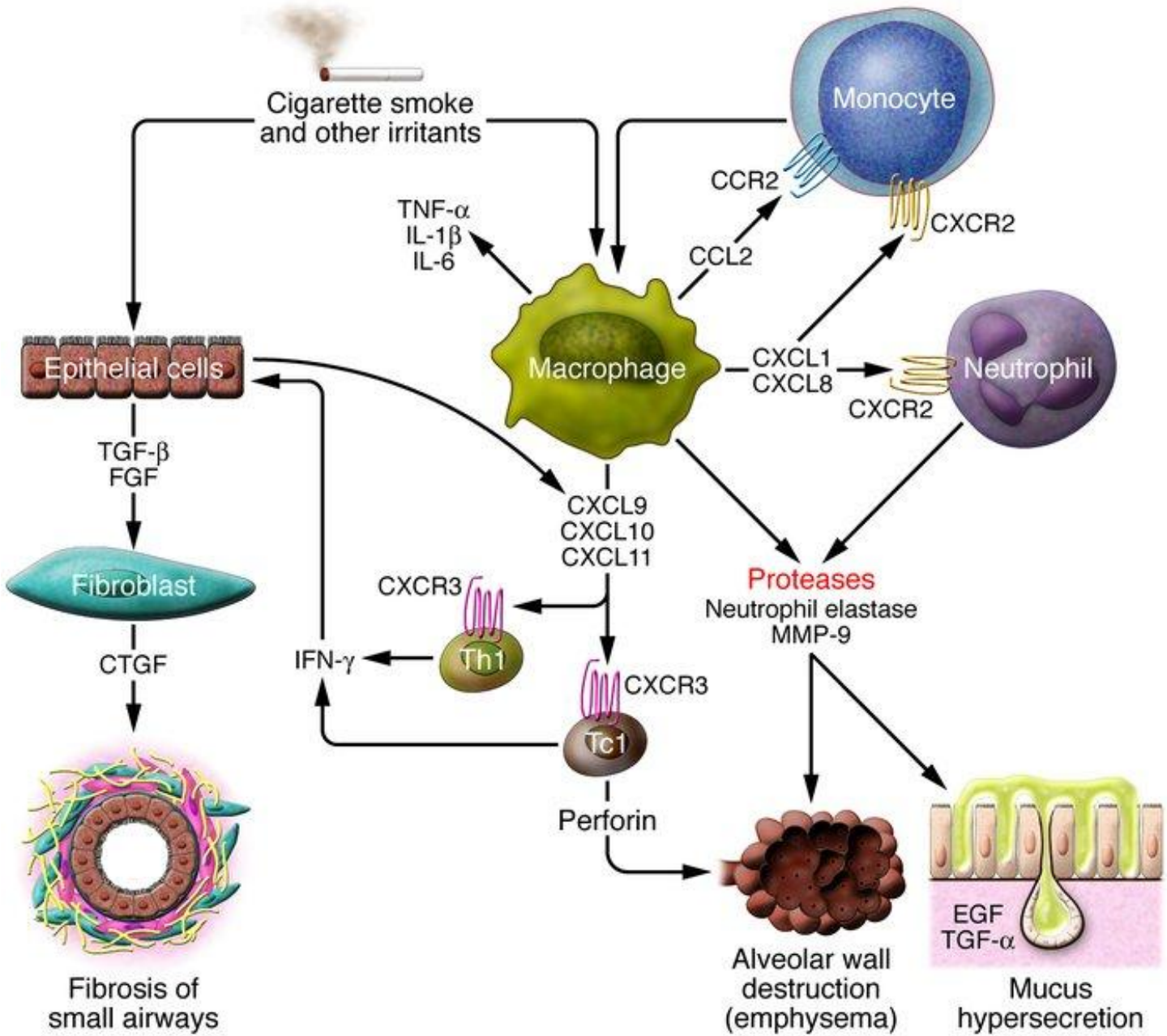
Sitokinlerin Fizyolojik Etkileri



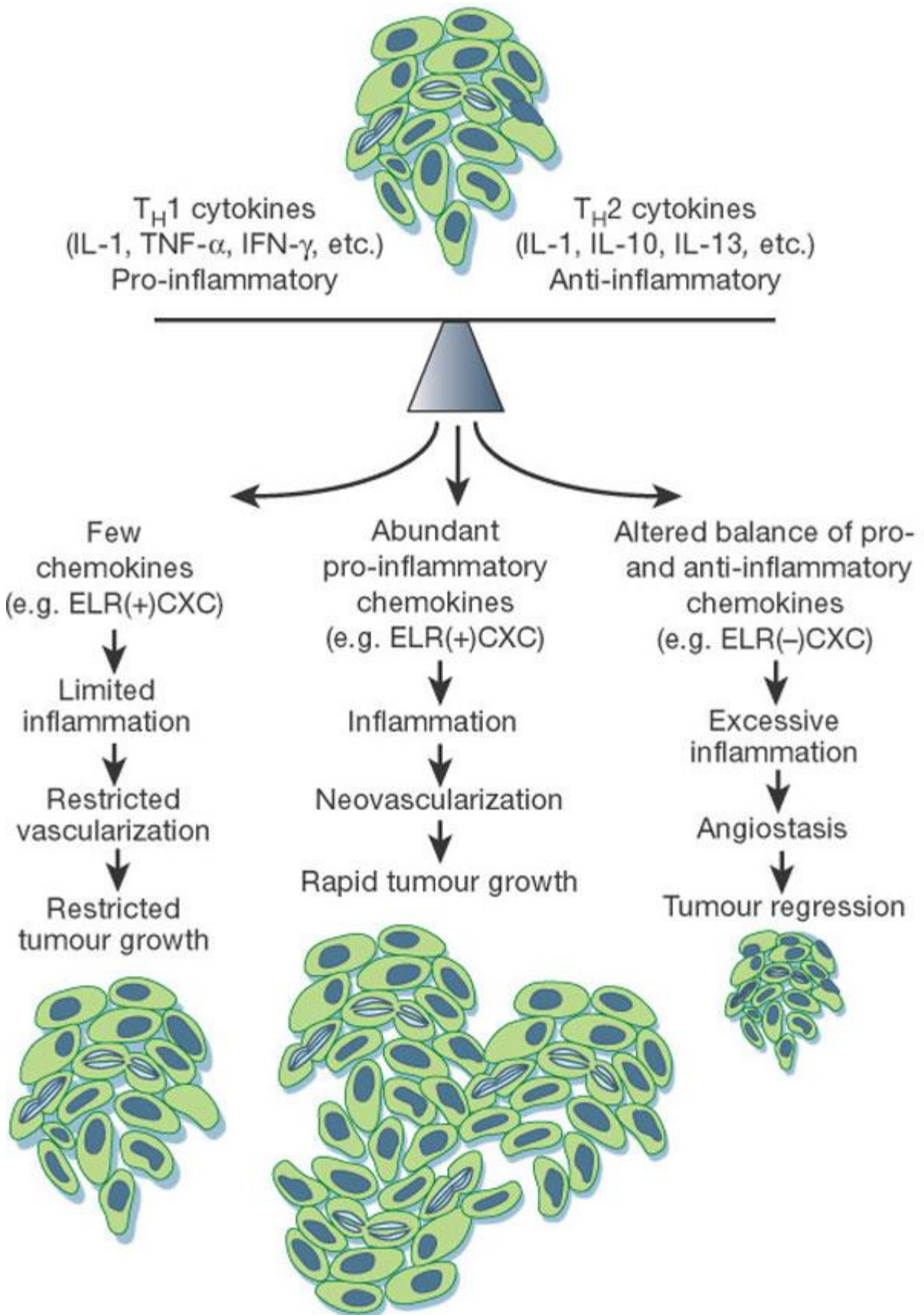
Role of Cytokines and Cytokine Inhibitors in Chronic Inflammation



Örnek: Doku tahribi (Akciğer)



Tümör gelişiminde sitokinler



K



Dead man's hand

CYTOKINE



K