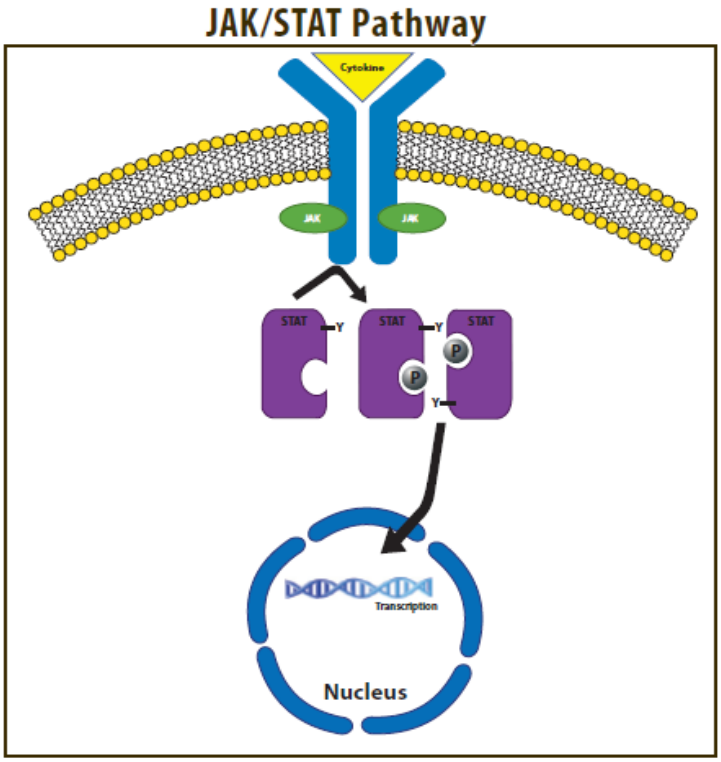
JAK/STAT Signaling



The JAK/STAT signaling pathway transmits a signal from outside the cell eventually resulting in DNA transcription and activity in the cell. Leptin (a product of the obese gene) can induce a cascade of events through its receptor (LRb; also known as Ob-Rb or the long isoform) and the JAK/STAT pathway. Siginificantly, Leptin mediated signaling through the JAK2/STAT3 pathway affects appetite and has been implicated in various carcinomas. Constitutively associated with the LRb is the Janus kinase 2 (JAK2) whose association and subsequent activation requires the so called Box 1 proline-rich motif found on all LRb receptors. Upon leptin binding, the receptor homodimerizes bringing two JAK2 in proximity to allow trans-phosphorylation of the JAK2's which activates them and leads to their phosphorylation of the receptor which creates binding opportunities for proteins that possess phosphotyrosine-binding SH2 domains. The signal transducer and activator of transcription (STAT) proteins possess such SH2 domains. Hence STAT3 recruitment via its SH2 domains results in STAT3 phosphorylation followed by its dimerization and translocation to the nucleus. Within the nucleus, STAT3 can bind promoters and affect expression of DNA sequences which control basic cell functions such as cell growth, differentiation and death. In addition, the activated JAK2 phosphorylates and activates numerous other STATs and proteins, such as IRS-1, PI3K and AkT. This LRb/JAK2/STAT3 signaling pathway is widely expressed in the brain and can control appetite by affecting the production of the anorexigenic peptide α-MSH.

Obesity also greatly influences the risk of many common forms of cancer with hepatocellular carcinoma exhibiting the highest relative-risk (4.52X) increase for obese men compared with all the cancers studied. Studies have shown that treatment with leptin increased the proliferation of HepG2 and Huh7 cells and involved the activation of STAT3, PI3K, Akt and Erk via JAK2. Temporally, studies demonstrated that JAK2/STAT3 activation followed leptin treatment and was upstream of PI3K, Akt and ERK phosphorylation. In addition, leptin was found to increase the migration capability of hepatocellular carcinoma cells and correlated with JAK2/STAT3 activation demonstrated by using the JAK/STAT inhibitor AG490.

Antibodies

Product Name	Cat. No.	Size
GH (Growth Hormone) Antibody	5769	30 µg, 100 µg
GM-CSF Antibody	5100	30 µg, 100 µg
GM-CSF Antibody	5101	30 µg, 100 µg
IFN gamma Antibody	5117	100 µg
IL-1 beta Antibody	5128	30 µg, 100 µg

155 S. Milipitas Blvd, Milipitas, CA 95035
T: 408-493-1800 F: 408-493-1801
Toll Free: 800-891-9699 (US Only)

Antibodies

Product Name	Cat. No.	Size
IL-1 beta Antibody	5129	30 µg, 100 µg
IL-2 Antibody	5133	30 µg, 100 µg
IL-2 Antibody	5131	30 µg, 100 µg
IL-3 Antibody	5134	30 µg, 100 µg
IL-4 Antibody	5137	30 µg, 200 µg
IL-6 Antibody	5143	30 µg, 100 µg
IL-6 Antibody	5144	100 µg
IL-6 Antibody	5145	100 µg
IL-7 Antibody	5148	30 µg, 100 µg
IL-12p40 Antibody	5732	30 µg, 100 µg
IL-13 Antibody	5165R	30 µg, 100 µg
IL-13 Antibody	5164	100 µg
IL-13 Antibody	5165	100 µg
Leptin Antibody	5366	30 µg, 100 µg
Leptin Antibody	5367	30 µg, 100 µg
Leptin Antibody	5368	30 µg, 100 µg
Leptin Receptor Antibody	5582	100 µg
Prolactin Antibody	5688	30 µg, 100 µg
Prolactin Antibody	5689	30 µg, 100 µg
SOCS1 Antibody	3861	30 µg, 100 µg
Stat1 Antibody	3133R	30 µg, 100 µg
Stat2 Antibody	3468R	30 µg, 100 µg
Phospho-Stat2 Antibody	3469	100 µg
Stat3 Antibody	3470R	30 µg, 100 µg
Phospho-Stat3 Antibody	3474	100 µg
Stat4 Antibody	3471R	30 µg, 100 µg
Stat5 Antibody	3472	30 µg, 100 µg
Phospho-Stat5 Antibody	3475	100 µg
Stat6 Antibody	3473R	30 µg, 100 µg
Phospho-Stat6 Antibody	3476	100 µg
TPO Antibody	5352	30 µg, 100 µg
TPO Antibody	5351R	30 µg, 100 µg

Proteins/Enzymes

Product Name	Cat. No.	Size
Human CellExp™ B7-2 /CD86, human recombinant	7496	10 µg, 50 µg
BMP-11/GDF-11, human recombinant	7155	10 µg, 50 µg
BMP-9/GDF-2, human recombinant	7154	10 µg, 50 µg
Cardiotrophin-1, Murine Recombinant	7121	10 µg, 50 µg
Human CellExp™ CD85J/LILRB1, human recombinant	7491	10 µg, 50 µg
EPO-alpha, human recombinant	4763	10 µg, 50 µg, 1 mg
EPO-alpha, human recombinant	4764	500 IU

Product Name	Cat. No.	Size
GASP-1, human recombinant	7152	10 µg, 50 µg
GM-CSF, human recombinant	4100	10 µg, 100 µg, 1 mg
GM-CSF, murine recombinant	4101	10 µg, 100 µg, 1 mg
GM-CSF, rat recombinant	4102	10 µg, 100 µg, 1 mg
Gremlin-1, human recombinant	7159	10 µg, 50 µg
Growth Hormone, chicken recombinant	4771	50 µg, 500 µg
Growth Hormone, human recombinant	4769	100 µg, 500 µg, 1 mg, 5 mg
Growth Hormone, murine recombinant	4770	50 µg, 1 mg
IFN-alpha 1, human recombinant	4596	10 µg, 100 µg, 1 mg
IFN-alpha 2a, human recombinant	4594	20 µg, 100 µg, 1 mg
Human CellExp™ IFN-alpha 2a, Human Recombinant	6458	10 µg, 50 µg
IFN-alpha 2b, human recombinant	4595	20 µg, 100 µg, 1 mg
Human CellExp™ IFN-alpha 2b, Human Recombinant	6459	10 µg, 50 µg
IFN-beta, human recombinant	4860	10 µg, 50 µg, 1 mg
IFN-gamma, human recombinant	4116	20 µg, 100 µg, 1 mg
Human CellExp™ IFN-gamma, human recombinant	7271	10 µg
IFN-gamma, murine recombinant	4117	20 µg, 100 µg, 1 mg
IFN-gamma, rat recombinant	4118	20 µg, 100 µg, 1 mg
Human CellExp™ IGF1R/CD221, human recombinant	7490	10 µg, 50 µg
Human CellExp™ IL-1 Alpha, human recombinant	7275	10 µg
Human CellExp™ IL-10, Human Recombinant	6466	10 µg, 50 µg
IL-11, human recombinant	4158	10 µg, 50 µg, 1 mg
IL-11, murine recombinant	4159	10 µg, 50 µg, 1 mg
IL-12, human recombinant	4161	10 µg, 100 µg
Human CellExp™ IL-12, Human Recombinant	6467	10 µg, 50 µg
IL-12, rat recombinant	4163	10 µg, 100 µg
IL-12p40, human recombinant	4732	10 µg, 50 µg, 1 mg
IL-12p80, Human Recombinant	7104	10 µg, 50 µg
IL-13, human recombinant	4164	10 µg, 50 µg, 1 mg
IL-13, murine recombinant	4165	10 µg, 50 µg, 1 mg
IL-13, rat recombinant	4166	10 µg, 1 mg
Human CellExp™ IL13RA2/CD213, human recombinant	7489	20 µg, 100 µg
Human CellExp™ IL-15, human recombinant	7273	10 µg
IL-16, murine recombinant	4174	10 µg, 50 µg, 1 mg
Human CellExp™ IL-17A, Human Recombinant	6468	10 µg, 50 µg
IL-17A, Mouse Recombinant	7105	10 µg, 50 µg
IL-17B, Human Recombinant	7106	10 µg, 50 µg
IL-17D, Human Recombinant	7107	10 µg, 50 µg
IL-17F, human recombinant	4176F	25 µg, 100 µg, 1 mg
Human CellExp™ IL-17F, Human Recombinant	6469	10 µg, 50 µg
Human CellExp™ IL-1beta, Human Recombinant	6460	10 µg, 50 µg
IL-2 Receptor α, Human Recombinant	7100	10 µg, 50 µg

Proteins/Enzymes

Product Name	Cat. No.	Size
IL-2, human recombinant	4131	10 µg, 50 µg, 1 mg
Human CellExp™ IL-2, Human Recombinant	6461	10 µg, 50 µg
IL-2, murine recombinant	4132	20 µg, 100 µg, 1 mg
IL-2, rat recombinant	4133	20 µg, 100 µg, 1 mg
Human CellExp™ IL-22, human recombinant	7272	10 µg
Human CellExp™ IL-23, Human Recombinant	6470	10 µg, 50 µg
Human CellExp™ IL-28A, Human Recombinant	6471	10 µg, 50 µg
Human CellExp™ IL-28B, Human Recombinant	6472	10 µg, 50 µg
Human CellExp™ IL-29, Human Recombinant	6473	10 µg, 50 µg
IL-3, human recombinant	4134	10 µg, 50 µg, 1 mg
Human CellExp™ IL-3, Human Recombinant	6462	10 µg, 50 µg
IL-3, murine recombinant	4135	10 µg, 50 µg, 1000 µg
IL-3, rat recombinant	4136	10 µg, 1 mg
IL-33, human recombinant	4193	10 µg, 50 µg, 1 mg
Human CellExp™ IL-34, Human Recombinant	7108	10 µg, 50 µg
IL-36RA, Human Recombinant	7109	10 µg, 50 µg
IL-36β, Human Recombinant	7110	10 µg, 50 µg
IL-36γ, Human Recombinant	7111	10 µg, 50 µg
Human CellExp™ IL-4 Rα, Human Recombinant	7101	10 µg, 50 µg
IL-4, human recombinant	4137	10 µg, 50 µg, 1 mg
Human CellExp™ IL-4, Human Recombinant	6463	10 µg, 50 µg
IL-4, murine recombinant	4138	10 µg, 50 µg, 1 mg
IL-4, rat recombinant	4139	10 µg, 50 µg, 1 mg
IL-5, human recombinant	4140	10 µg, 1 mg
IL-5, murine recombinant	4141	10 µg, 1 mg
Human CellExp™ IL-6 Rα, Human Recombinant	7102	10 µg, 50 µg
IL-6, human recombinant	4143	20 µg, 100 µg, 1 mg
IL-6, murine recombinant	4144	10 µg, 50 µg, 1 mg
IL-6, rat recombinant	4145	10 µg, 50 µg, 1 mg
IL-7, human recombinant	4146	10 µg, 50 µg, 1 mg
Human CellExp™ IL-7, human recombinant	7274	10 µg
IL-7, rat recombinant	4148	10 µg, 50 µg, 1 mg
Human CellExp™ IL7Ra/CD127, human recombinant	7492	10 µg, 50 µg
Human CellExp™ IL-9, Human Recombinant	6465	10 µg, 50 µg
IL-9, Rat Recombinant	7103	10 µg, 50 µg
IP-10, murine recombinant	4201	25 µg, 100 µg, 1 mg
Human CellExp™ LEPR/CD295, human recombinant	7497	10 µg, 50 µg
Leptin Receptor, human recombinant	4582	10 µg, 50 µg, 1000 µg
Leptin, human recombinant	4366	200 µg, 1 mg, 5 mg, 10 mg
Leptin, murine recombinant	4367	200 µg, 1 mg, 5 mg
Leptin, rat recombinant	4368	200 µg, 1 mg, 5 mg
Human CellExp™ LIF, human recombinant	7267	10 µg

Proteins/Enzymes

Product Name	Cat. No.	Size
Human CellExp™ LIF, mouse recombinant	7268	10 µg
Neuropoietin, murine recombinant	7180	10 µg, 50 µg
Human CellExp™ PDGF-BB, human recombinant	7276	10 µg
Human CellExp™ PDGFRb/CD140b, human recombinant	7493	10 µg, 50 µg
PHPT1, human recombinant	P1181	10 µg, 50 µg
Prolactin Receptor, human recombinant	4989	20 µg, 1 mg
Prolactin Receptor, rat recombinant	4991	10 µg, 50 µg, 1 mg
Prolactin, human recombinant	4687	10 µg, 50 µg, 1 mg
Prolactin, murine recombinant	4688	10 µg, 50 µg, 1 mg
Prolactin, rat recombinant	4689	10 µg, 50 µg, 1 mg
Human CellExp™ SCARB2 /CD36L2 /LIMP2, human recombinant	7509	10 µg, 50 µg
TPO, human recombinant	4351	10 µg, 50 µg, 1 mg
Human CellExp™ TPO, Human Recombinant	6483	10 µg, 50 µg
TPO, murine recombinant	4352	10 µg, 50 µg, 1 mg

Inhibitors

JAK Inhibitors

Product Name	Cat. No.	Size	CAS Number
BMS-911543	2630	1 mg, 5 mg	1271022-90-2
CP-690550	1622	5 mg, 25 mg	477600-75-2
CP-690550 citrate	9428	5 mg, 25 mg	540737-29-9
Decernotinib (VX-509)	B1260	5 mg, 25 mg	944842-54-0
JAK Inhibitor, Pyridone 6	2534	500 µg, 1 mg	457081-03-7
MS-1020	1911	1 mg	1255516-86-9
Ruxolitinib, Free base	2139	5 mg, 25 mg	941678-49-5
Tyrphostin AG 490	1570	5 mg	133550-30-8
WHI-P131	1853	5 mg, 25 mg	202475-60-3
WHI-P154	2659	5 mg, 25 mg	211555-04-3
WP1066	1809	5 mg, 25 mg	857064-38-1
EZSolution™ WP1066	2546	5 mg	857064-38-1

STAT Inhibitors

Product Name	Cat. No.	Size	CAS Number
PathwayReady™ JAK/STAT Signaling Inhibitor Panel	K864	8 inhibitors	Multiple
Galiellactone	2623	100 µg, 500 µg	133613-71-5
Lestaurtinib	1805	500 µg, 1 mg	111358-88-4
LLL12	1792	5 mg, 25 mg	N/A
Niclosamide	1826	100 mg, 500 mg	50-65-7
Pimozide	1887	50 mg, 250 mg	2062-78-4
STA-21	2626	250 µg, 1 mg	28882-53-3
Stat3 Activation Inhibitor, SPI	1813	2 mg	N/A
Stat3 Inhibitor I, S3I-201	1775	5 mg, 25 mg	501919-59-1
Stattic	2625	5 mg, 25 mg	19983-44-9