

# CTKs: Promising Targets in Chronic Disease Treatment

## Background

Cytoplasmic tyrosine kinases (CTKs) are essential regulators of cell growth, differentiation, and survival, playing critical roles in both normal physiology and disease. Dysregulation of CTK activity is linked to various cancers and chronic disorders, highlighting their importance in targeted therapies. Clinical trials assessing inhibitors for CTKs such as JAK, ABL, SYK, and SRC show promise for treating autoimmune diseases and cancer. SignalChem Biotech, now part of Sino Biological, supports research on CTKs by providing a vast selection of CTKs across different species.

## Bench to Beside

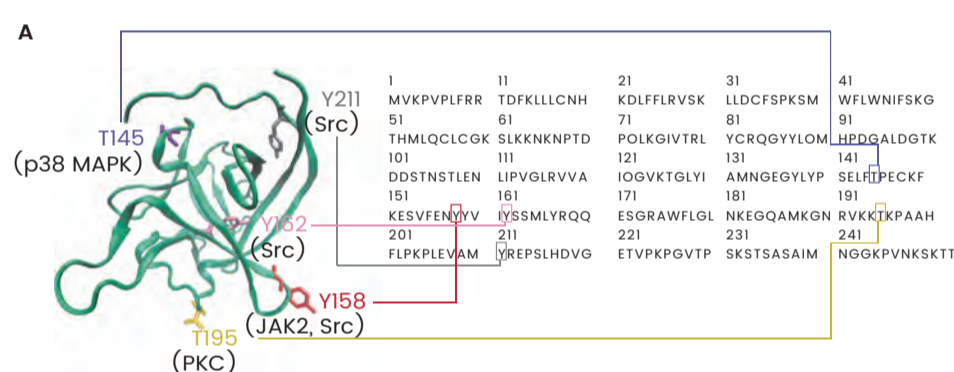
Clinical trials play a crucial role in evaluating the efficacy and safety of new inhibitors targeting CTKs, such as JAK, ABL, SYK, FAK, SRC, CSK, ACK, and TEC. These inhibitors for CTKs show promise for treating various cancers and chronic diseases.

Target	Condition
JAK	Rheumatoid Arthritis, Dermatitis, Psoriasis, Inflammation, Alopecia Areata
ABL	BCR-ABL Negative Atypical Chronic Myeloid Leukemia, Chronic phase chronic myeloid leukemia, Chronic Myelogenous Leukemia, Parkinson Disease
SYK	Thrombocytopenia, Acute Myeloid Leukemia, Inflammatory Skin Diseases, Diffuse Large B-Cell Lymphoma, Autoimmune Diseases
FAK	Ovarian Cancer, Non-Small Cell Lung Cancer, Gastric Cancer, Melanoma, Triple Negative Breast Cancer
Src	Breast Cancer, Osteoporosis, Hematologic Neoplasms, Glioma, Dystrophy, Metastatic Prostate Cancer
CSK	Acute Lymphoblastic Leukemia, Neurodegenerative Diseases, Chronic Myelomonocytic Leukemia, Arrhythmias
ACK	Non-Small Cell Lung Cancer, Prostate Cancer
TEC	Ulcerative Colitis, Alopecia Areata, Crohn Disease, Keloid, Mycosis Fungoides, Cutaneous T-Cell Lymphoma

## Application in Research

### Utilized active JAK2 kinase to phosphorylate FGFI4 protein *in vitro*

**Cited Product:**  
Human JAK2 Protein (SignalChem)

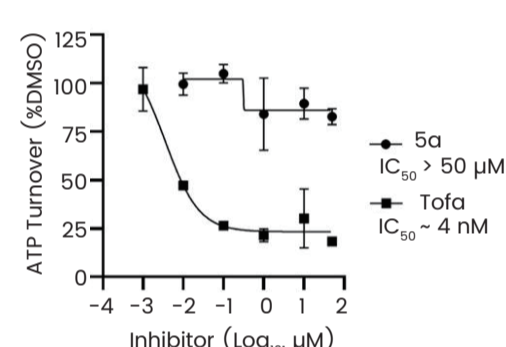


JAK2 phosphorylation of Y158 on FGFI4. Homology model of FGFI4 monomer showing potential phosphorylation sites and motifs in the FGFI4-1b sequence (NP\_787125). Y158 (red), Y162 (purple), and other predicted sites (T145, T195, Y211) are highlighted.

DOI: 10.1016/j.bbamer.2020.118786

### Employed active JAK1 to identify a potent and selective covalent JAK1 inhibitor

**Cited Product:**  
Human JAK1 Protein (Cat#: J01-11G, SignalChem)

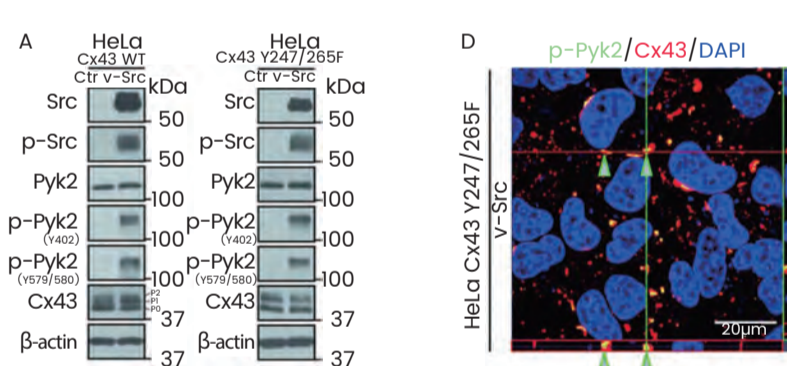


Mechanistic properties of allosteric JAK1 inhibitors. Substrate assay using recombinant JAK1 (Cat#: J01-11G, SignalChem) treated with DMSO, VVD-118313, or tofacitinib (Tofa) (0.001–50 μM, 30 min) before adding an IRS-1 peptide substrate (0.2 μg/mL) and ATP (50 μM, 1 h). Data represent mean ± s.d. from n = 2 independent experiments.

DOI: 10.1038/s41589-022-01098-0

### Utilized active Pyk2 to demonstrate that Pyk2 phosphorylation reduces Cx43 gap junction communication

**Cited Product:** Human Ptk2b Protein (Cat#: P92-11H, SignalChem)



Active Pyk2 (Cat#: P92-11H, SignalChem) interacts with Cx43 in HeLa cells. (A) Western blot of lysates from HeLa cells stably expressing Cx43 WT or Cx43 Y247/265F ± v-Src (24 h). Antibodies are labeled on the left, and Cx43 isoforms P0, P1, and P2 are marked. (D) Z-stack imaging of HeLa Cx43 Y247/265F cells after v-Src transfection. Arrows indicate Cx43 colocalization with active Pyk2.

DOI: 10.1016/j.yjmcc.2020.09.004

## Featured Cytoplasmic Tyrosine Kinases

High Purity

Validated activity

Broad coverage of CTKs

Highly cited in reputable journals

Customization options

Molecule	Cat#	Species	Tag	Activity
JAK3	J03-11G	Human	GST Tag	Active
ABL1	A03-11H	Mouse	His Tag	Active
Src	S19-18G	Human	GST Tag	Active
Src	S19-10G	Rous Sarcoma Virus	GST Tag	Active
ACK1	A05-11G	Human	GST Tag	Active
Brk	P94-10G	Human	GST Tag	Active
CSK	C63-10G	Human	GST Tag	Active
PTK2/FAK	P91-10G	Human	GST Tag	Active
FES	F03-10G	Human	GST Tag	Active
FRK	F14-11G	Human	GST Tag	Active
JAK1	J01-11G	Human	GST Tag	Active
MATK	M49-10G	Human	GST Tag	Active
SRMS	S20-11G	Human	GST Tag	Active
BLK	B02-10G	Human	GST Tag	Active
Syk	S52-10G	Human	GST Tag	Active
TEC	T03-10G	Human	GST Tag	Active