TRANSFAC Knowledge Graph in Action: PD-L1 Regulation in Cancer Immunotherapy

Manually curated transcriptional regulation connected to signaling pathways and clinical context

TRANSFAC

Transcription factors & binding sites

Who binds where to regulate genes

TRANSPATH

Causal signaling reactions

How molecules interact and signal

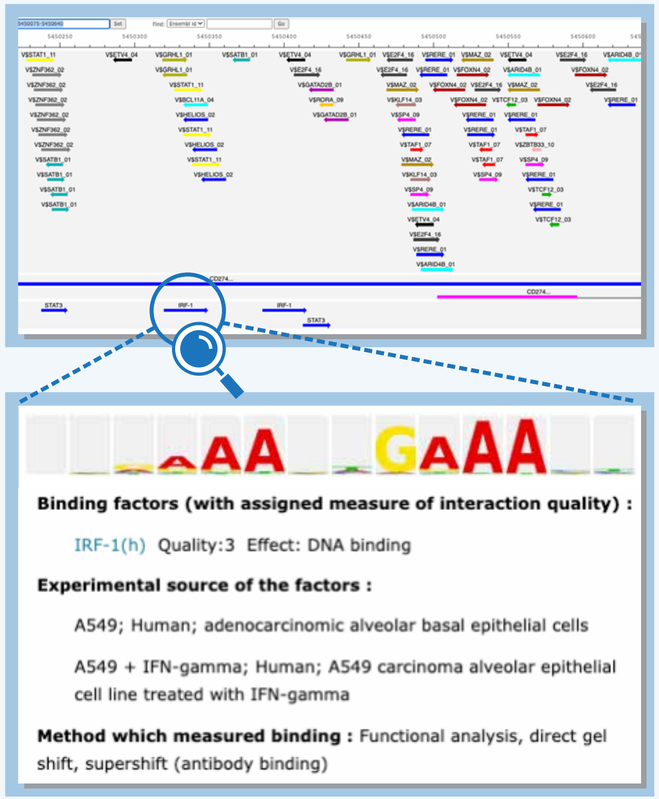
HUMAN PSD

Diseases, biomarkers, drugs & clinical trials

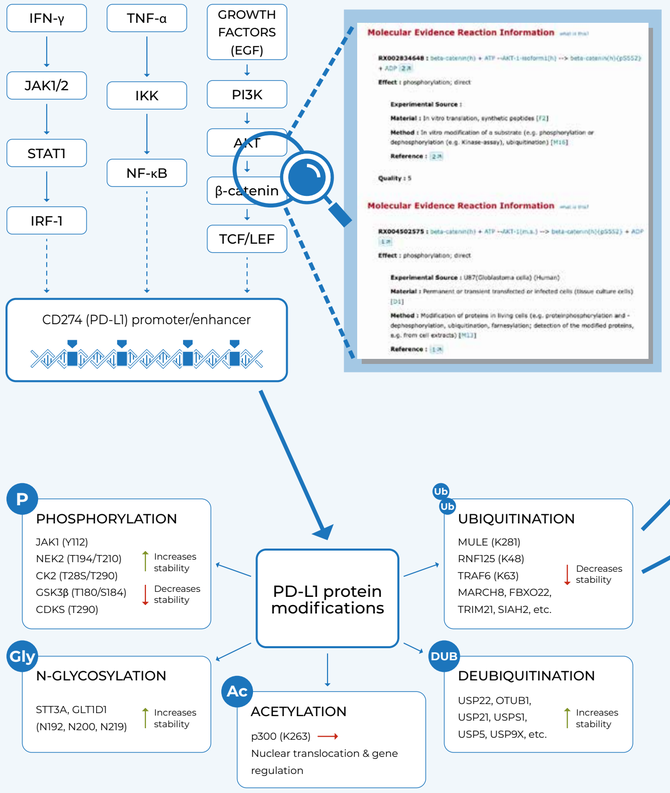
What it means for human health & therapy

1 TRANSFAC®: Transcriptional Regulation of CD274 (PD-L1)

Curated TF binding sites in the CD274 promoter/enhancer



2 TRANSPATH®: Upstream Signaling Regulating PD-L1 Expression & Post-Translational Modifications



3 HumanPSD™: Clinical & Biomedical Connections

Diseases with PD-L1 Overexpression

- Ovarian cancer
- Hepatocellular carcinoma
- Colorectal neoplasms
- Lung neoplasms
- Oesophageal cancer
- Glioblastoma
- Myeloma
- ...

Evidence: Poor clinical outcomes

PMIDs: 27574444, 38762484

Biomarkers

- PD-L1 (CD274) overexpression
- Phospho-PD-L1 (T194, T210, Y112)
- PD-L1 N-glycosylation status
- PD-L1 ubiquitination status

Use in prognosis & patient stratification

Drugs & Therapeutic Targets

- JAK1 inhibitors
- PI3K/AKT/mTOR inhibitors
- MEK/ERK inhibitors
- CK2 inhibitors
- GSK3β inhibitors
- BET inhibitors
- HDAC/p300 inhibitors
- PD-1/PD-L1 blocking antibodies

Supports precision immunotherapy strategies

Clinical Trials

NCT ID	Title (example)
NCT04769430	Anti–PD-1 + JAK inhibitor in solid tumors
NCT05012631	Anti–PD-L1 + PI3K inhibitor in NSCLC
NCT04188121	Anti–PD-1 + mTOR inhibitor in HCC
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