Supplementary Table S2: Functional grouping of genes in Xp22.33 duplicated region

Category	Genes	Potential Roles
Neurodevelopment	DHRSX, GTPBP6, ASMT, ASMTL, P2RY8, PLCXD1, ZBED1	CNS development, melatonin metabolism, synaptic signaling
Growth/Skeletal	SHOX, PPP2R3B	SHOX regulates growth plate function; PPP2R3B in cell cycle and skeletal pathways
Immune/Metabolic/ Hematologic	CSF2RA, CRLF2, IL3RA, P2RY8, SLC25A6, CD99, XG	Cytokine signaling, metabolic regulation, energy transport, cell adhesion
Regulatory (lncRNA)	LINC00102, LINC00106, LINC00685, LINC02968, LINC03112	Gene expression regulation, chromatin remodeling
Regulatory (miRNA)	MIR3690, MIR6089	Fine-tune gene expression post-transcriptionally
Pseudogenes	FABP5P13, KRT18P53, CD99P1, RNA5SP498, RPL14P5	Possible competing endogenous RNA activity; transcriptional modulation
Other	AKAP17A, DHRSX-IT1	Protein kinase anchoring, intronic transcripts with regulatory potential