

**Table S1.** Overview of in vitro and in vivo models for CIDEB.

Experimental Model	Specifications	Pros	Cons
Immortalized human cell culture:	CIDEB KO [19,45–48,55,58,73,94] CIDEB overexpression [30] Cell lines: HEK293T, Huh7.5.1, Huh7-sgHCV1b, Huh7.5.1-sgJFH2a, HepG2, Hep3B, C3A, SK-HEP-1, PLC/PRF/5, Huh6, HeLa, SNU-182, SNU-387, LX-2, HLE, Caco-2 cells	Human High reproducibility	Contain genetic modifications Do not mimic in vivo conditions
Primary human cell culture		Human No genetic modifications	Restricted culture time Less reproducibility due to heterogeneity
Hepatocytes like cells from iPSCs/ESC	[46]	Human Isogenic differentiated cells Reproducibility	Lacking cell–cell interactions Unphysiological cell morphology
Human 2D Co-culture		Human Mimic cell cell-interactions of the liver	Unphysiological culture conditions
Human Organoids		Human Represent complex interaction of cells Mimic 3D architecture	Difficult culture conditions
Human Liver-on-a-chip		Human Mimic complex in vivo liver conditions	Very difficult culture conditions Low reproducibility
Non-human cell culture	Primary hepatocytes of large yellow croaker [95] Primary murine hepatocytes [33,44] KO in primary murine hepatocytes [45]	Accessibility Reproducibility	Limited translatability to humans No cell–cell interactions
Rodent models	Mice [33,55] CIDEB-KO mice in nutritional model [29,30,32,44,45,48] Rats [3]	Mimic human in vivo conditions Reproducibility In vivo genetic modifications possible	Limited translatability to humans
Other animal models	Juvenile large yellow croaker [95]	Represent metabolic complexity and partially histological features of human liver	Limited translatability to humans
	Yellow catfish [23]	Representing metabolic complexity and partially histological features of human liver	Limited translatability to humans
	Pig [96,97]	Partially nearer to human lipid profile [98]	Limited translatability to humans
	White rabbits	Partially longer in prepubertal stage [99]	Limited translatability to humans

	Tree shrew	Develop MAFLD without obesity [100]	Limited translatability to humans
Human tissue samples	Liver tissue samples [101,102] Pancreatic tissue samples [31] Kidney tissue samples [103]	Human	No in vitro or in vivo experiments