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Towards RNAi based therapy of liver diseases : diversity and complexity of shRNA and miRNA processing and functions

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Towards RNAi based therapy
of liver diseases
Diversity and complexity of shRNA
and miRNA processing and functions

Piotr Maczuga

PhD Thesis, Leden University, May 2013

Towards RNAi-based therapy of liver diseases Diversity and complexity of shRNA and miRNA processing and functions

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3'UTR	3' untranslated region
A1AT	Alpha-1-antitrypsin
A1AD	Alpha-1-antitrypsin deficiency
AAV	Adeno-associated virus
Ago	Argonaute protein
ALP	Alkaline phosphatase
ALT	Alanine aminotransferase
APC	Antigen presenting cell
ApoB	Apolipoprotein B
APOBEC2	Apolipoprotein B mRNA editing enzyme, catalytic polypeptide-like 2
AST	Aspartate aminotransferase
bp	basepairs
BGN	Biglycan
CMV	Cytomegalovirus
CTL	Cytotoxic T lymphocyte
dsRNA	double-stranded RNA
DGAT2	Diglyceride acyltransferase 2
F.IX	Factor IX
FH	Familial hypercholesterolemia
GS	Gene Switch system
GFP	Green fluorescent protein
hAAT	human Alpha-1-antitrypsin
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HMG-CoA	3-hydroxy-3-methyl-glutaryl-CoA reductase
IFN	Interferon
INR	Initiator sequence
ITR	Inverted terminal repeat
JNK	c-Jun N-terminal kinase
LDL-C	Low density lipoprotein cholesterol
LDL-R	Low density lipoprotein receptor
LDLRAP1	Low density lipoprotein receptor adaptor protein 1
lhRNA	long-hairpin RNA
LNA	Locked nucleic acid
LPL	Lipoprotein lipase
MDR	Multi drug resistance
MFP	Mifiprestone
MHC	Major histocompatibility complex
mRNA	messenger RNA

miRNA	micro RNA
MTP	Microsomal triglyceride transfer protein
NHP	Non-human primate
NGS	Next generation sequencing
nt	nucleotide
ORF	Open reading frame
OVA	Ovalbumin
pA	polyadenylation signal
PAMP	Pathogen-associated molecular pattern
PKR	Protein kinase R
PCSK9	Proprotein convertase subtilisin/kexin type 9
p.i.	post injection
pre-miRNA	precursor micro RNA
pri-miRNA	primary micro RNA
RISC	RNA induced silencing complex
RNA	Ribonucleic acid
RNAi	RNA interference
shRNA	short-hairpin RNA
siRNA	small interfering RNA
SNALP	Stable nucleic acid lipid particle
ssRNA	single-stranded RNA
ss-siRNA	single-stranded siRNA
TA	Gene Switch transactivator
TATA	TATA box
TLR	Toll-like receptor
tRNA	transfer RNA
TSS	Transcription start site
TTS	Transcription termination signal
VLDL-C	Very low density lipoprotein cholesterol
wk	weeks

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