

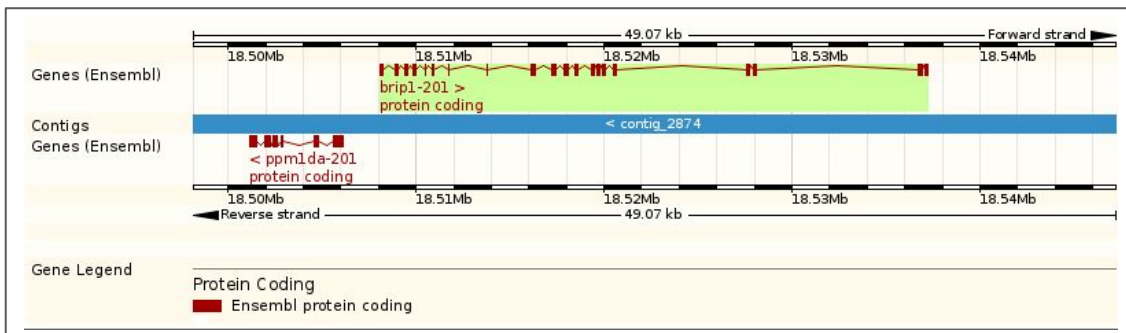
12 April, 2016:

Ensembl REST API, variant annotation and four-fold degenerate sites

How to use three-spined to study nine-spined?

Annotation lift-over

- Ensembl provides data for three-spined



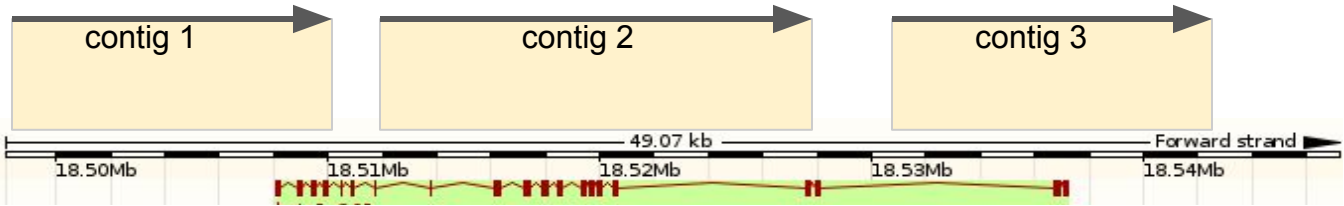
- data also available in computer-readable format

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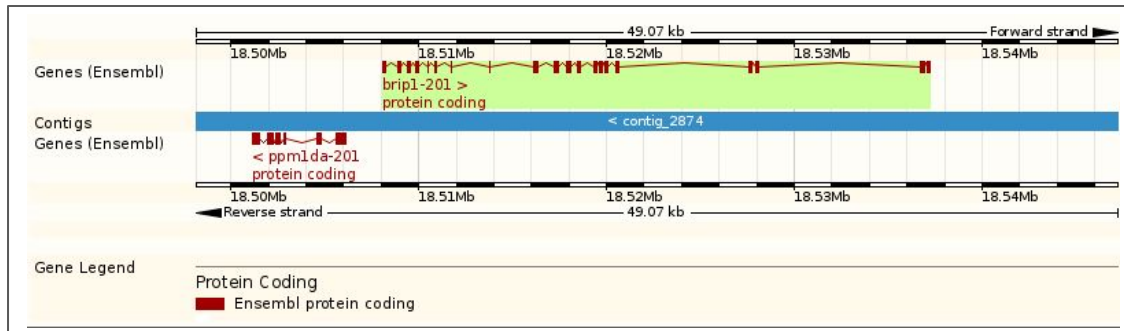
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Annotation lift-over

nine-spined

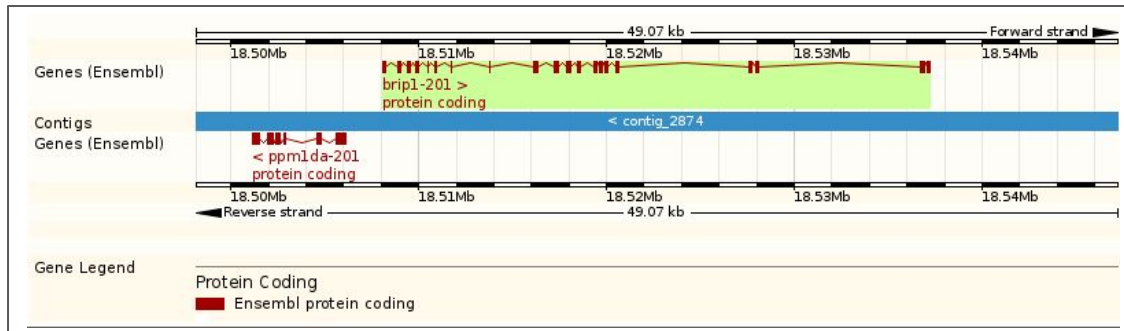
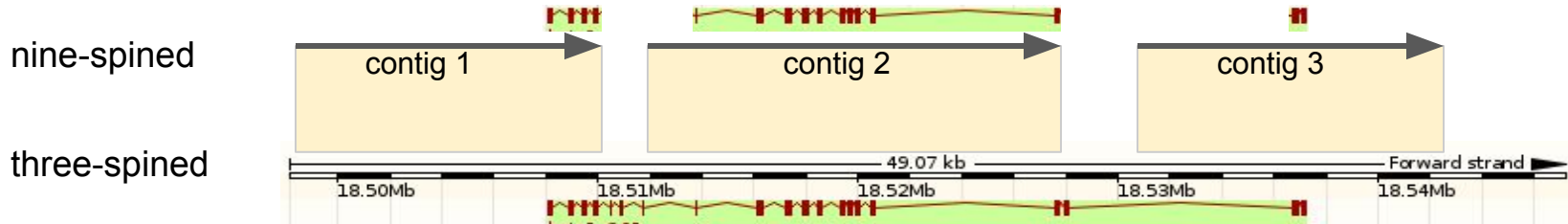


three-spined



How to use three-spined to study nine-spined?

Annotation lift-over



Four-fold degenerate sites

		Second letter				
		U	C	A	G	
U	UUU } Phe	UCU } Ser	UAU } Tyr	UGU } Cys	U	
	UUC } Leu	UCC } Ser	UAC } Tyr	UGC } Cys	C	
	UUA } Leu	UCA } Ser	UAA } Stop	UGA } Stop	A	
	UUG } Leu	UCG } Ser	UAG } Stop	UGG } Trp	G	
C	CUU } Leu	CCU } Pro	CAU } His	CGU } Arg	U	
	CUC } Leu	CCC } Pro	CAC } His	CGC } Arg	C	
	CUA } Leu	CCA } Pro	CAA } Gin	CGA } Arg	A	
	CUG } Leu	CCG } Pro	CAG } Gin	CGG } Arg	G	
A	AUU } Ile	ACU } Thr	AAU } Asn	AGU } Ser	U	
	AUC } Ile	ACC } Thr	AAC } Asn	AGC } Ser	C	
	AUA } Met	ACA } Thr	AAA } Lys	AGA } Arg	A	
	AUG } Met	ACG } Thr	AAG } Lys	AGG } Arg	G	
G	GUU } Val	GCU } Ala	GAU } Asp	GGU } Gly	U	
	GUC } Val	GCC } Ala	GAC } Asp	GGC } Gly	C	
	GUA } Val	GCA } Ala	GAA } Glu	GGA } Gly	A	
	GUG } Val	GCG } Ala	GAG } Glu	GGG } Gly	G	

1000 Genomes project

