



Telomere

[Kovács Árpád Ferenc]

-2012-

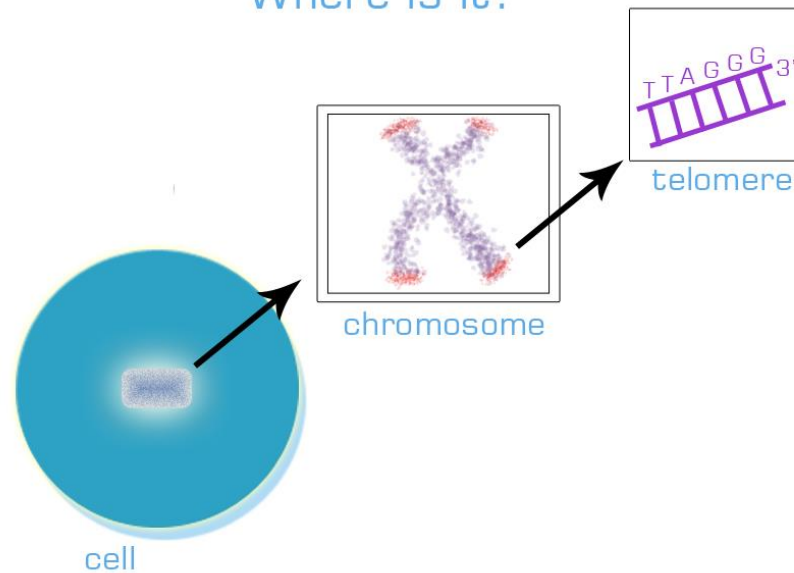
-5015-

Telomere

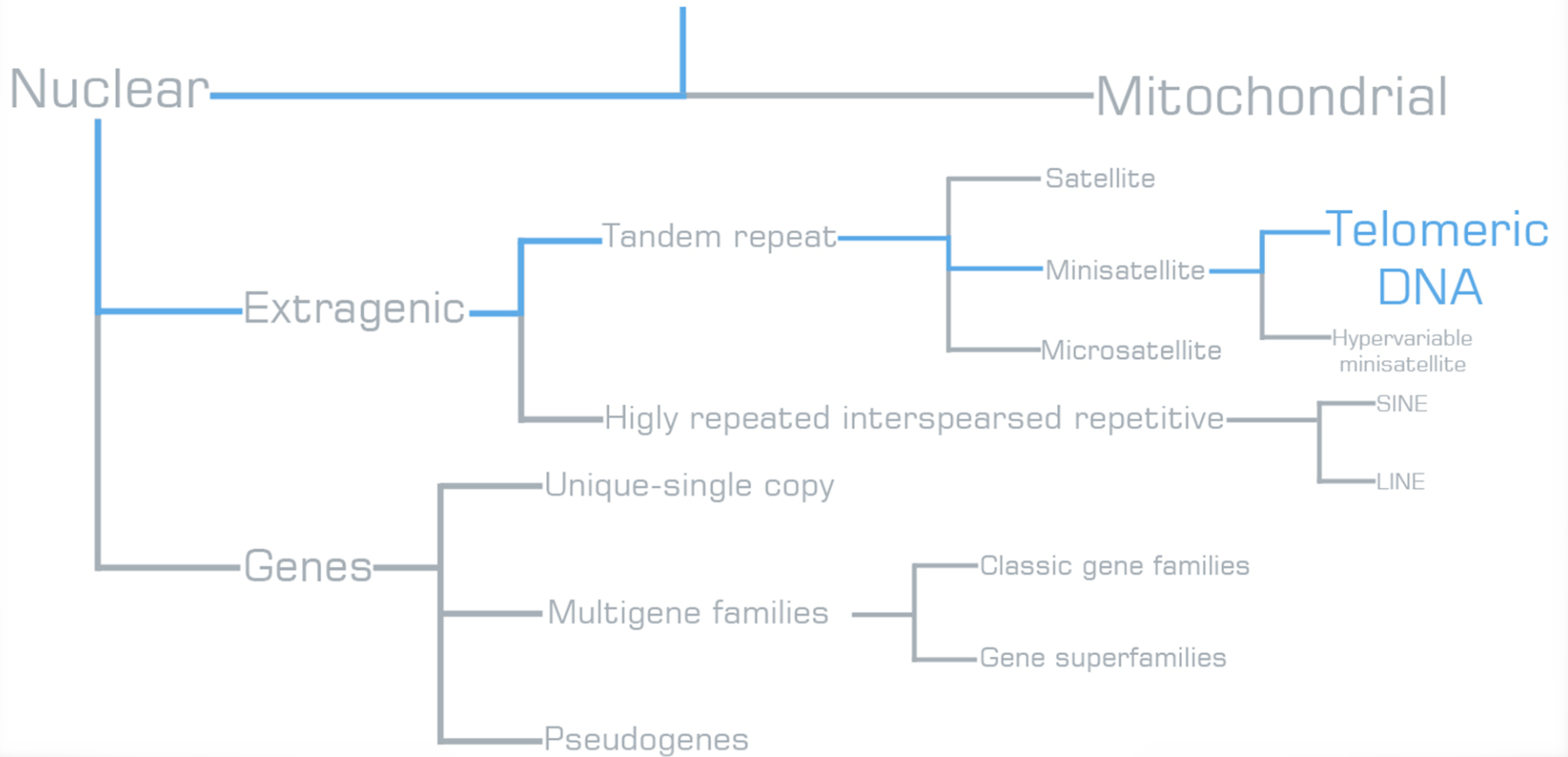
[special nucleoprotein structure]

Telomeric structure { DNA component
Protein component

Where is it?

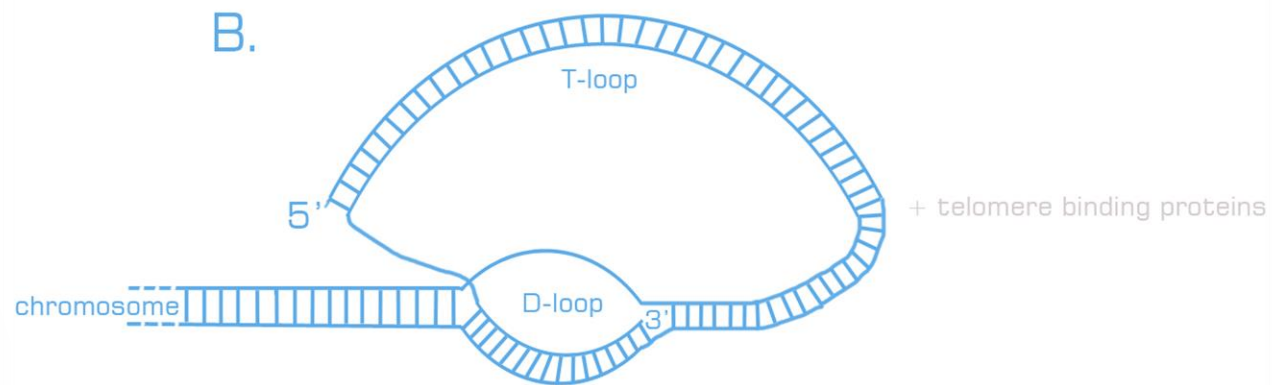


DNA



DNA component structure

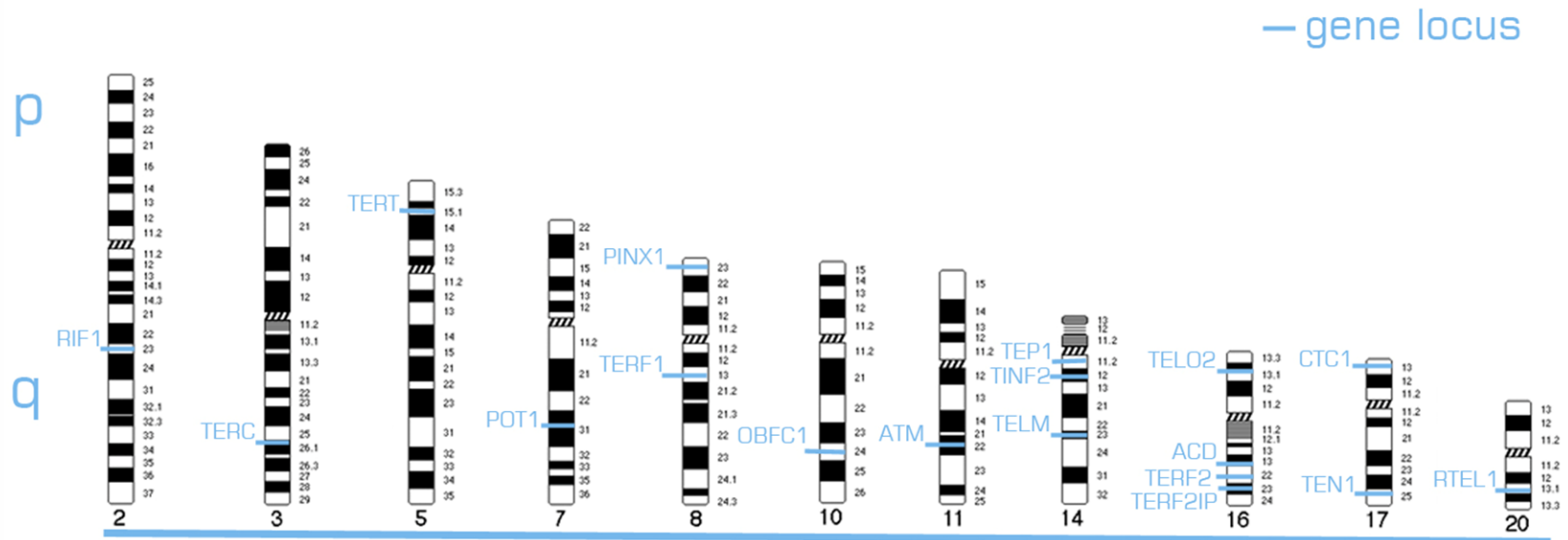
A. 5'-(TTAGGG)_n-3' n=1000-2000



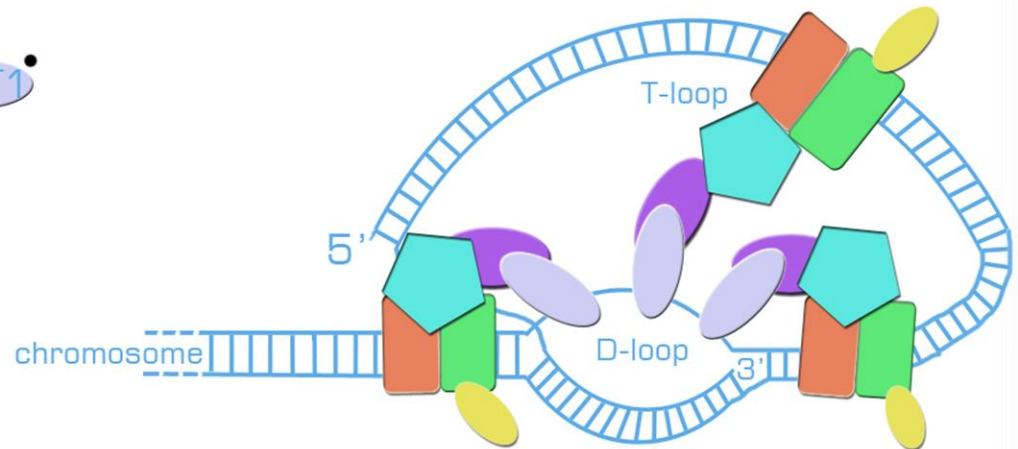
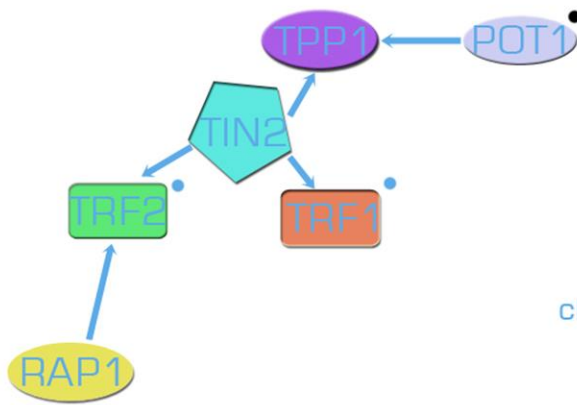
Telomere associated genes

Official symbol	Official full name	Gene locus	Gene type	MIM	NCBI code	Summary
POT1	protection of telomeres 1	7q31.33	protein coding	606478	25913	protein involved in telomere maintenance
TELM	telomere length	14q23.2	unknown	609113	550641	-
TERC	telomerase RNA component	3q26	miscRNA	602322	7012	encoding telomerase RNA component
RTEL1	regulator of telomere elongation helicase 1	20q13.3	protein coding	608833	51750	human ortholog of the mouse Rtel gene
TELO2	telomere maintenance 2	16p13.3	protein coding	611140	9894	protein that functions as an S-phase checkpoint in the cell cycle
CTC1	telomere maintenance complex component 1	17p13.1	protein coding	613129	80169	telomere-associated complex with OBFC1 and TEN1
ATM	ataxia telangiectasia mutated	11q22-23	protein coding	607585	472	protein is an important cell cycle checkpoint kinase
RIF1	RAP1 interacting factor	2q23.3	protein coding	608952	55183	protein localizes to aberrant telomeres
TEN1	telomerase capping complex subunit	17q25.1	protein coding	613130	100134934	function in a telomere-associated complex with STN1 and CTC1
OBFC1	oligonucleotide/saccharide-binding fold containing 1	10q24.33	protein coding	613128	79991	function in a telomere-associated complex
TERF2	telomeric repeat binding factor 2	16q22.1	protein coding	602027	7014	protein plays a key role in the protective activity of telomeres
TERF1	telomeric repeat binding factor 1	8q13	protein coding	600951	7013	encodes a telomere specific protein
TERF2IP	telomeric repeat binding factor 2, interacting protein	16q23.1	protein coding	605061	54386	protein involved in telomere length regulation
TINF2	TERF1-interacting nuclear factor 2	14q12	protein coding	604319	26277	gene encodes one of the proteins of the shelterin(telosome)
ACD	adrenocortical dysplasia	16q22.1	protein coding	609377	65057	protein is one of six core proteins in the telosome
TERT	telomerase reverse transcriptase	5p15.33	protein coding	187270	7015	encoding telomerase protein component with reverse transcriptase activity
PINX1	PIN2/TERF1 interacting, telomerase inhibitor 1	8p23	protein coding	606505	54984	-
TEP1	telomerase-associated protein 1	14q11.2	protein coding	601686	7011	component of the ribonucleoprotein complex responsible for telomerase activity

Telomere-associated genes



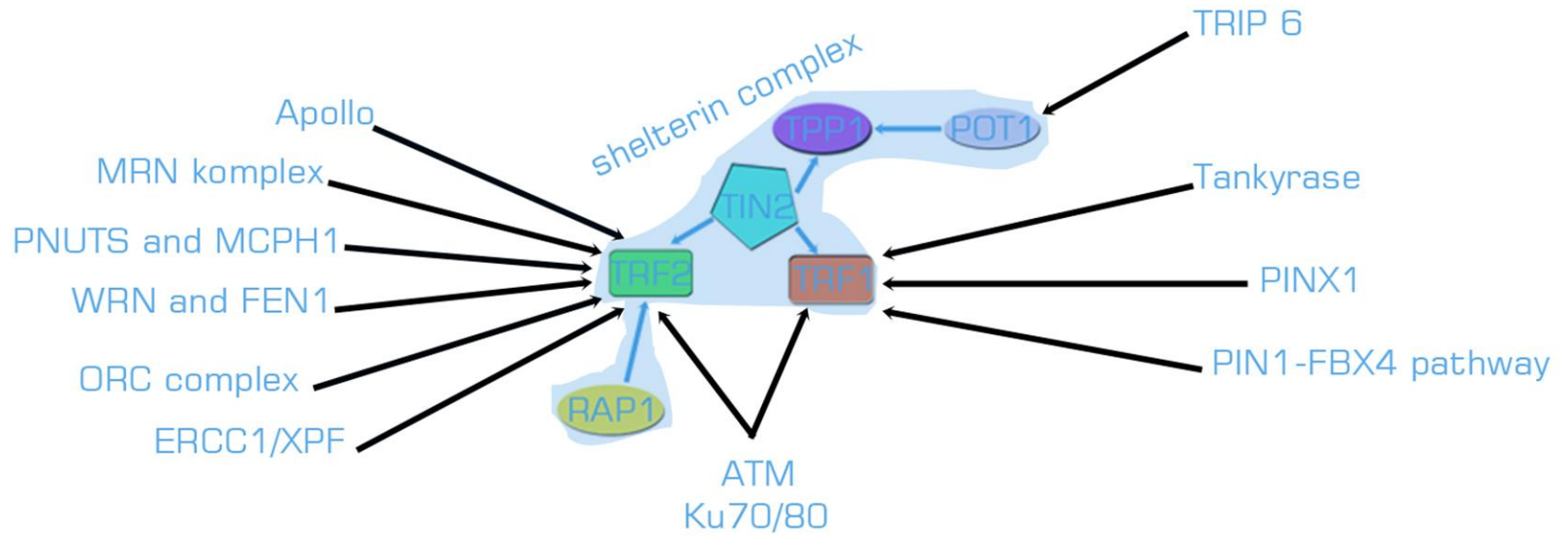
The shelterin complex



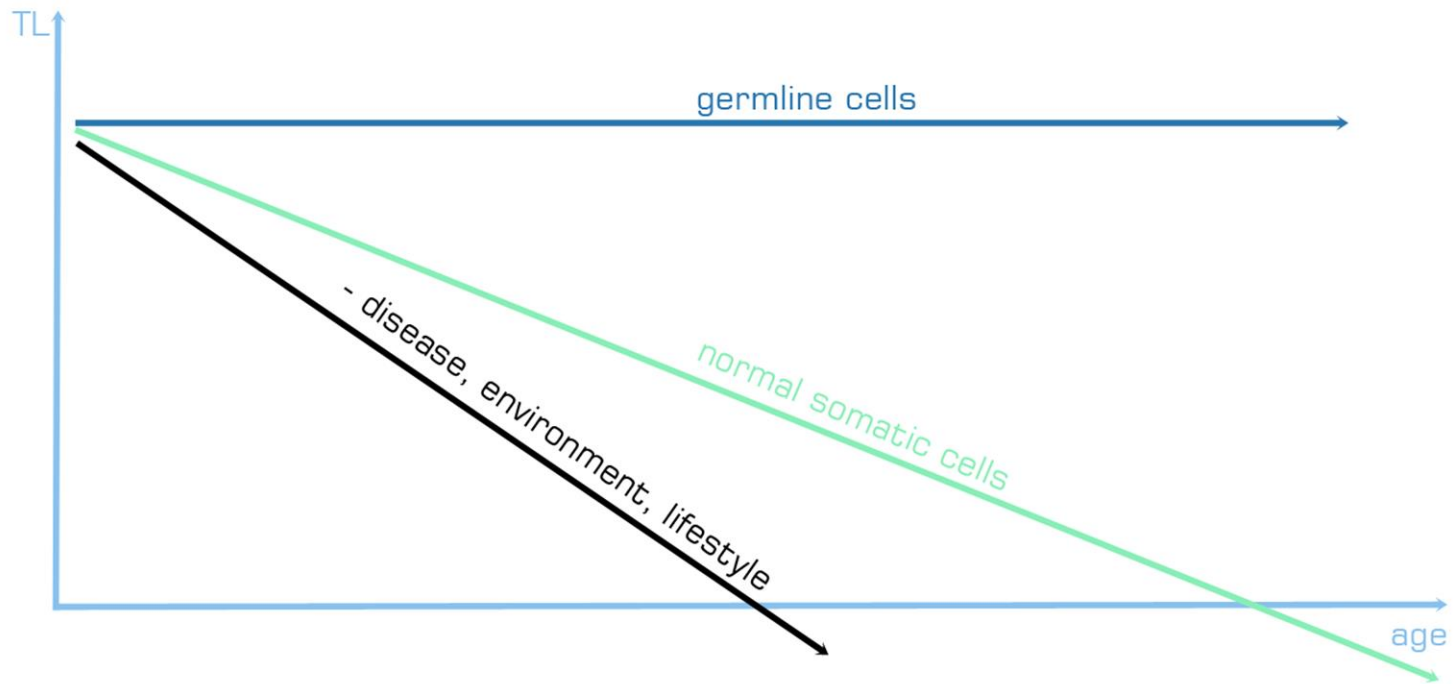
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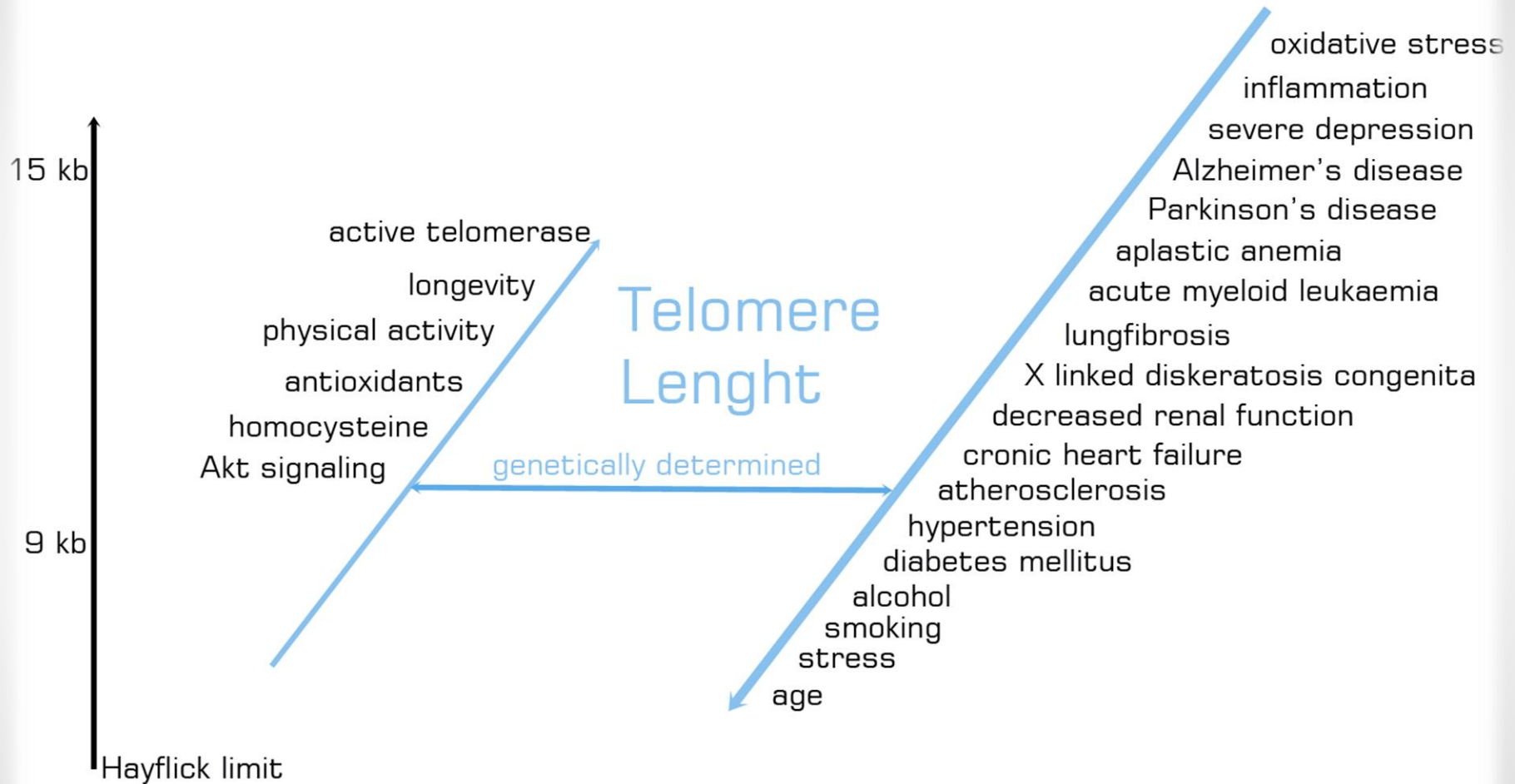
- dsDNA
- ssDNA

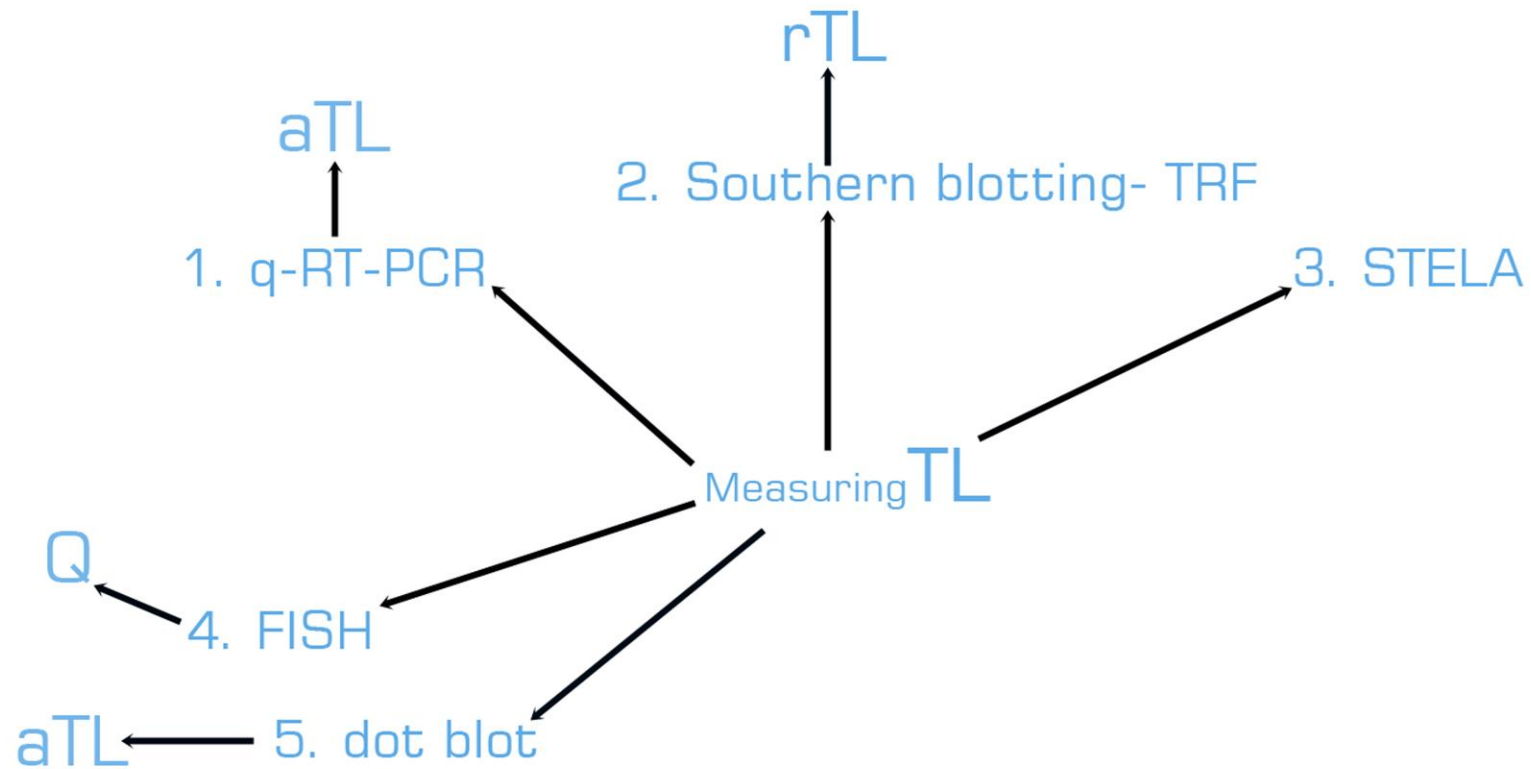
Accessory factors



Telomere length



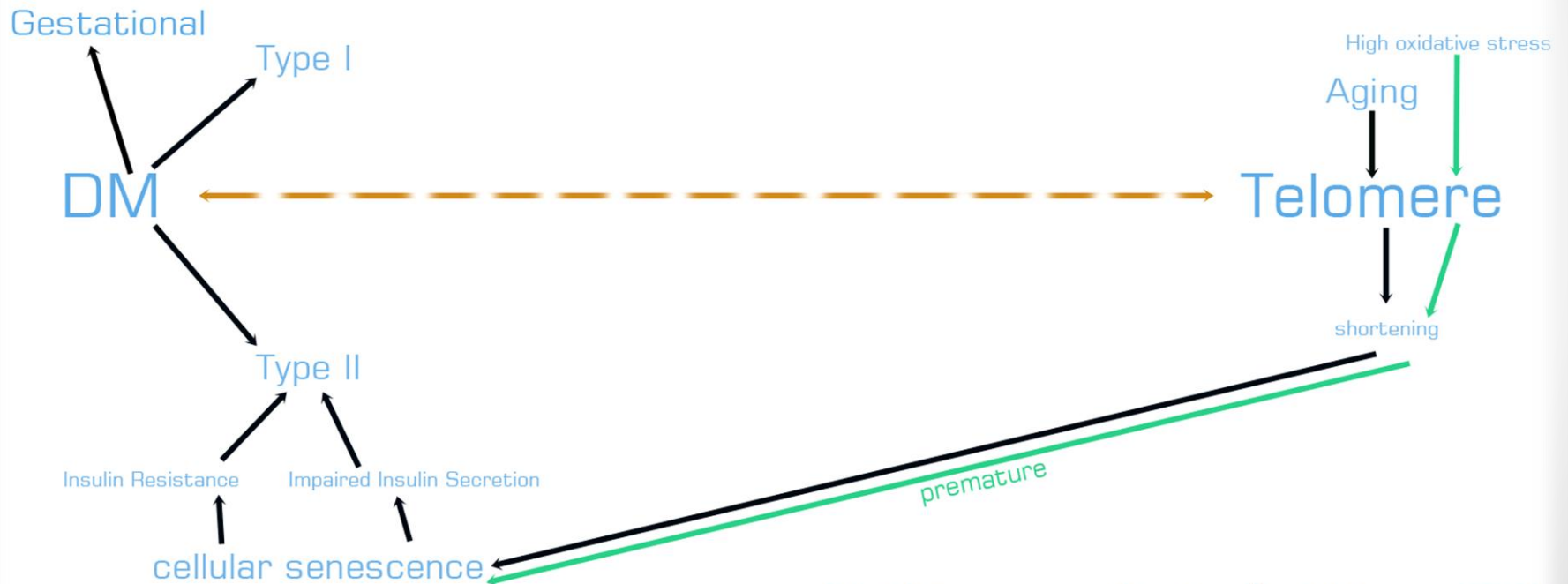




Diabetes mellitus types and telomere

Type	Genetic factors	Lifestyle	Telomere length
I A	+++ *	+	shorter ^[21] .
I B	++	++	shorter ^[21] .
II	++	+++	shorter ^[18,21] .
Gestational	++	++	shorter ^{**[20]} .
Other	+ / +++	+ / +++	no studies yet

Telomere and diabetes mellitus



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Questions?

Thank you for your attention