Supplementary information S1 (table) : A partial list of the topoisomerase interactome

TOPOISOMERASE	PARTNER	SUGGESTED CELLULAR ROLE FOR INTERACTION	SYSTEM(S) OBSERVED	REFERENCE
COMPACTION				
Topo IV, Topo II	SMCs and MukB	Potential role in chromosome compaction and segregation	*E. coli, Drosophila*	1-3
DNA REPLICATION AND CHROMOSOME SEGREGATION				
Topo IV, Topo IIα	Clamp loader, PCNA	Localizes ParC subunit to replication factory, localizes Topo IIα to origin of replication	*E. coli,* Avian DT40 cell line	4,5
Topo II	Rrm3	Assists in permitting replication fork passage and replication termination at genomic pausing elements in eukaryotes	Yeast	6
Topo IV	SeqA	Stimulates Topo IV relaxation and decatenation activity through direct interaction	*E. coli*	7
Topo IV	MreB	Promotes chromosome segregation in bacteria	*E. coli*	8
Topo IV	Ftsk	Promotes chromosome segregation in bacteria	*E. coli*, *Caulobacter crescentus*	9,10
Topo IIα	RanBP2	Induces sumoylation of topo IIα to influence its localization and activity	Mice	11
Topo IIα	PIASγ	Catalyzes sumoylation of topo IIα to negatively regulate its activity	*Xenopus*	12
Topo IIα	Polo-like kinase (PLK)	Activates Topo IIα for chromosome decatenation	Human cell lines	13
Topo II	Auoroa B Kinase	May promote centromere resolution	*Drosophila*, Human HeLa cell line	14
Topo IIα/ Topo II	HMGB1/ HMO1	Chaperone topoisomerase to specific DNA structures	*S. cerevisiae*, human proteins reconstituted *in vitro*	15
Gyrase	MarR	Sequester the MarR repressor of the *marRAB* operon	*E. coli*	16
TopoII α/β	HDAC 1/HDAC2	May localize to specific chromosomal regions or influence activity of the enzyme; it was recently reported that Topo IIβ is acetylated[17]	Human	18
Topo IB	SR proteins	Topo IB dependent phosphorylation of SR protein RS domain	Human	19-21
Topo IB	Hrp	Chromatin remodeling	*S. pombe*	22
Topo II	CHRAC	Chromatin remodeling	*Drosophila*	23
Topo IIα/ Topo II	Sgs1/BLM/ RECQL5	Stimulates decatentation activity and may be important for proper cell cycle progression.	*S. cerevisiae*, Human cell lines	24-26
TRANSCRIPTION				
Topo IIβ	PARP	Promotes steroid receptor mediated transcription initiation	APL human cells, MCF cells	27,28
Topo IIβ	RARα	Promotes the negative transcriptional regulation of retinoic acid regulated genes	PML human cell lines	27
Topo IA	RNA polymerase	Physical interaction with the C-terminus of topo IA may stimulate Topo IA or localize it to supercoils produced by the RNA polymerase	*E. coli*	29
Topo IB	SR proteins	Leads to Topo IB dependent phosphorylation of SR proteins RS domain	*Drosophila*	30
POSTRANANSLATIONAL MODIFICATIONS				
Topo II	Pkc1	Possible role in thermal regulation pathway	*S. cerevisiae*	31
Topo II	Siz1/Siz2	Mediate Smt3 sumoylation of topo II to localize topo II to pericentric chromosome regions	*S. cerevisiae*	32

RECOMBINATION AND REPAIR				
Topo III	RecQ helicases (e.g., BLM, Sgs1, and RecQ)	Assists in homologous recombination to resolve Holliday junctions and hemicatenanes resulting during DNA replication	Yeast, PML human cell line, *E. coli*	33-35
Topo III	SSB,RPA,Rmi1 and Rmi2	Stablize RecQ helicase/topo III complex	HeLa human cell line, avian DT40 cell line, *E. coli*, yeast	36-38
Topo IB Topo II α/β	Ubc9, SUMO-1	SUMO conjugation in response to topoisomerase mediated DNA-damage	Human	39,40
Topo IB, Topo II	Tdp1 and Tdp2	Phosphodiesterases that remove topos covalently attached to DNA ends	*S. cerevisiae*, human cell extracts, avian DT40 cell line	41-44
PROTEINACEOUS INHIBITORS				
Gyrase	CcdB	F plasmid derived poison of gyrase that promotes F plasmid maintenance by killing cells that do not possess the CcdB inhibitor CcdA	*E. coli*	45
Gyrase and Topo IV	Qnr, Mfpa, and Albicidin	Qnr and Mfpa are structurally reminiscent of DNA and inhibit quinolone binding by gyrase/topo IV	*E. coli*, *M. tuberculosis, Xanthomonas albilineans*	46-49
Gyrase	GyrI	Chromosomally encoded bacterial gene that inhibits the activity of Ccdb and peptide microbicin B17	*E. coli*	50,51
Gyrase	Microcin B17	Peptide poison of gyrase	*E. coli*	52
Gyrase	MurI (Glutatmate racemase)	Negatively regulates gyrase function	*E. coli*, *M. smegmatis*, *M. tuberculosis*	53-55
Gyrase	LdACT	*Leishmania actin inhibits E. coli gyrase decatenation function through physical interaction*	*In vitro* assays	56
Gyrase	YacG	Endogenous inhibitor of GyrB in *E. coli*	*E. coli*	57
OTHER INTERACTIONS				
Topo IIα	14-3-3-e	Modulates topo IIα interaction with drugs and DNA	HeLa cell line	58

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