Benu Brata Das *PhD, FAScT, FNASc*

Professor

Former Wellcome Trust/DBT IA Intermediate fellow

School of Biological Sciences

Indian Association For the Cultivation Of Science, Jadavpur, Kolkata, INDIA

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Total Citations: 5678, h-index: 30.

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Work experience (in chronological order):

Position	Division/ Department	University/Institution	From	To
Postdoctoral Fellow	Molecular Pharmacology	National Cancer Institute, CCR, NIH, USA.	July, 06	July, 11
FTE (Research fellow)	Molecular Pharmacology	National Cancer Institute, CCR, NIH, USA.	July,11	Dec, 12
Assistant Professor	School of biological Sciences	Indian Association for the Cultivation of Science	Dec,12	Sep, 17
Associate Professor	School of biological Sciences	Indian Association for the Cultivation of Science	Sep,17	Apr'2021
Professor	School of biological Sciences	Indian Association for the Cultivation of Science	Apr,2021	Ongoing

Professional Recognition/ Award/ Prize/ Certificate, Fellowship:

S.No	**Name of Award**	**Awarding Agency**	**Year**
1	SREENIVASAYA MEMORIAL AWARD 2023	Society of Biological Chemistry, India	2023
2.	Elected fellow of National Academyof Science & Technology (*FNASc)*	National Academy of Science (NASI), India	2020
3.	ICMR-*Prem Nath Wah Award* (Basic/clinical Oncology)	Indian Council of Medical Research, Govt. ofIndia	2020
4.	National Bioscience Award, DBT	Department of Biotechnology, Govt. India	2019
5.	Elected member of GRC	Guha Research Conference, India	2019
6.	Elected member FAScT	West Bengal Academy of Science andTechnology	2019
7.	Selected speaker, Gordon conference	Gordon conference, USA	2018
8.	ISA-Senior Visiting Fellow-2016	University of Bologna, Italy	2016
9.	Wellcome Trust/ DBT India Alliance Intermediate Fellow	Wellcome Trust/ DBT India Alliance	2013
10.	Ramanujan Fellowship	DST, GOI	2013
11.	Ramaligaswami Fellowship	DBT, GOI	2013
12.	NCI outstanding Postdoctoral Fellow award (among top five)	National Cancer Institute, NIH, USA	2012
13.	Gordon Conference Travel Awardand selected speaker	Gordon Conference, USA	2012

14.	Cold Spring Harbor Meeting Travel award and selected speaker	Cold Spring Harbor meeting, USA	2011
15.	Fellows Award for Research Excellence	NIH, USA	2011
16.	Fellows Award for Research Excellence	NIH, USA	2010
17.	NDDO Honorary Award Lecture	8th International Symposium on Targeted Anticancer Therapies 2010, March 4-6. Washington DC, USA.	2010
18.	Postdoctoral visiting fellowship award	National Cancer Institute, NIH, USA	2006

Ph.D thesis title: Molecular Characterization of the structure of DNA Topoisomerase 1 gene of *Leishmania donovani*
Guide Name: **Dr. Hemanta K. Majumder**, *Ph.D, FNA, FASc., FNASc., FAScT, FTWAS,*
NASI- Senior Scientist Platinum Jubilee Fellow, Sir J.C. Bose National Fellow (DST)
CSIR-Indian Institute of Chemical Biology, Kolkata
Year of Award.: **2006**

Details about no of Ph.D. and Postdoctoral fellows trained:
Postdoctoral fellows: 6 (completed): Ongoing 1 (DBT-RA and Project RA)
Ph.D awarded: 3 (Completed)
Ph.D students: 8 (ongoing)
Int MSc-Phd thesis: 13 (completed), Ongoing 2.

Detail of patents.

US Patent: Bicycle topoisomerase i inhibiting compounds, process for preparation and use thereofApplication number# 17059289 Date: 2021/8/12,

Indian Patent filed on dated 29.05.2018 with application No. 201811020003. Title: Bicyclic compounds as topoisomerase I inhibitors

Publications (List of papers published in SCI Journals, in year wise descending order).

(*Corresponding authors, #Joint first authors)

Key Publication of PI (Prof. Benu Brata Das)

57. Paul Chowdhuri S and ***Das, B. B.**** TDP1 phosphorylation by CDK1 in mitosis promotes MUS81-dependent repair of trapped Top1-DNA covalent complexes, ***EMBO Journal*** ; 2024 Jul 16. doi: 10.1038/s44318-024-00169-3.

56. Ghosh A, Ghosh A, Bhattacharyya A, Mitra R, **Das, B.B*.,** Bhaumik A*. Mitochondrial topoisomerase 1 targeted anticancer therapy using irinotecan encapsulated mesoporous MIL-101(Fe) synthesized via a vapour assisted method. ***Dalton Trans***. **2024,** 53(7):3010-3019

55. Bhattacharjee S, Richardson J., ***Das, B.B*.*** FRET-based assay to estimate modulation of TDP1 activity through arginine methylation. ***STAR protocol***, 2023, 4, (2), 102218.

54. Chowdhuri SP, Dhiman S, Das SK, Meena N, Das S, Kumar A, ***Das, B.B*.*** Novel Pyrido[2',1':2,3]imidazo[4,5- c]quinoline Derivative Selectively Poisons Leishmania donovani Bisubunit Topoisomerase 1 to Inhibit the Antimony-Resistant Leishmania Infection *in Vivo*. ***J. Med. Chem***, **2023**, 66(5):3411-3430.

53. Bhattacharjee S, Rehman I, Basu, S., Nandy S, Richardson J., ***Das, B.B*.*** The interplay between symmetric arginine dimethylation and ubiquitylation regulates TDP1 proteostasis for the repair of topoisomerase I-DNA adducts. ***Cell Reports***, **2022**,**39**, 110940

52. Roy Chowdhury S., Das SK., Banerjee B., Paul Chowdhuri S., Majumder H.K., and ***Das, B.B****. TDP1 knockout *Leishmania donovani* accumulate Topoisomerase1-linked DNA damage and are hypersensitive to clinically used antileishmanial drugs. ***The FASEB Journal***, **2022**, 36(4): e22265.

51. Bhattacharjee S, Rehman I, Nandy S, ***Das, B.B****. Post-translational regulation of Tyrosyl-DNA phosphodiesterase (TDP1and TDP2) for the repair of the trapped topoisomerase-DNA covalent complex. ***DNA Repair (Amst).*** **2022**; 111:103277.

40. S Saha, KS Das, T Sharma, S Bala, A Adhikary, GZ Huang, ML Tong, Ghosh A**,** ***Das BB*****,** Rajaraman G, Mondal R. Synergistic Experimental and Theoretical Studies of Luminescent–Magnetic Ln2Zn6 Clusters. ***Inorganic Chemistry***, 2022, 61, 4, 2141–2153

49. ***Das B.B*.*.,*** Ghosh A., Bhattacharjee, S., Bhattachrya A**.** Trapped topoisomerase-DNA covalent complexes in the mitochondria and their role in human diseases. ***Mitochondrion,*** 2021 Sep;60:234-24.

48. Biswas S, Das B, Alam P, Ghatak A, Ghorai A, Ghosh A, ***Das BB***, Acharya S. Supramolecular Design Strategies for Color Tuning of Iridium (III) Complexes Using a Common Framework of Cyclometalating Ligands. ***The Journal of Physical Chemistry C***, **2021**, 125 (8), 4730-4742

47. Chowdhuri, S. P., and ***Das, B.B***.* **2021** Top1-PARP1 association and beyond: from DNA topology to break repair**.** ***NAR Cancer*****, 3(1): zcab003.**

46. De A, Bala S, Saha S, Das KS, Akhtar S, Adhikary A, Ghosh A, Huang GZ, Chowdhuri SP, ***Das BB,*** Tong ML, Mondal R. Lanthanide clusters of phenanthroline containing a pyridine-pyrazole based ligand: magnetism and cell imaging. ***Dalton Trans.*** 2021, 10:3593-3609.

45. Saha S, De A, Ghosh A, Ghosh A, Bera K, Das KS, Akhtar S, Maiti NC, Das AK, ***Das BB***, Mondal R. Pyridine-pyrazole based Al(iii) 'turn on' sensor for MCF7 cancer cell imaging and detection of picric acid. ***RSC Adv.*** **2021**. 11(17):10094-10109.

44.Kundu, B., Sarkar, D., *Chowdhuri, S. P*., Pal, S., *Ghosh, A.*, *Das, S. K.*, Mukherjee, A., Bhattacharya, D., ***Das, B.B***.* Talukdar, A.* **2020**. Development of a metabolically stable topoisomerase I poison as anticancer agent. ***Eur J Med Chem.; 202:112551.***

43. Bej R, Ghosh A, Sarkar J, ***Das, B.B***., Ghosh S. ***2020***, Thiol-Disulfide Exchange Reaction Promoted Highly EfficientCellular Uptake of Pyridyl Disulfide Appended Nonionic Polymers. ***Chembiochem,*** *21(20):2921-2926.*

42.Gain, C., Malik, S., Bhattacharjee, S., Ghosh, A., Robertson, ES., ***Das, B.B***., Saha, A. **2020.** Proteasomal inhibition triggers viral oncoprotein degradation via autophagy-lysosomal pathway**.** ***PLoS Pathog*****.** Feb 24;16(2): e1008105.

41.Ghosh, A., Bhattacharjee, S., Paul Chowdhuri, S., Mallick, A, Rehman, I., Basu, S., and ***Das, B.B*.*** 2019. SCAN1- TDP1 trapping on mitochondrial DNA promotes mitochondrial dysfunction and mitophagy. ***SCIENCE ADVANCES, 2019, 5, eaax9778****.*

40. Halder, D., Saha, S., Singh, R., Ghosh, I., Mallick, D., Dey, S., *Ghosh. A*., ***Das, B.B.,*** Ghosh S and Jana SS. **2019.** Non- muscle myosin IIA and IIB differentially modulate migration and alter gene expression in primary mouse tumorigenic cells,***Mol Biol Cell.*** 30 (12): 1463-1476.

39. Rehman, I.; Basu, S.; Das, S.K.; Bhattacharjee, S.; Ghosh, A.; Pommier, Y.; and ***Das, B.B****. **2018.** PRMT5-mediated arginine methylation of TDP1 for the repair of topoisomerase I covalent complexes. ***Nucleic. Acids Research***., **46**: 5601- 5617.

38. Kundu, B., *Das, S. K.*, *Chowdhuri, S. P*., Pal, S., Sarkar, D., *Ghosh, A.*, Mukherjee, A., Bhattacharya, D., ***Das, B.B***.* Talukdar, A. **2019**. Discovery and Mechanistic Study of Tailor-Made Quinoline Derivatives as Topoisomerase 1 Poison with Potent Anticancer Activity. ***Journal of Medicinal Chemistry (ACS)***., **62**: 3428-3446.

37. Mallick, A., Kuman, M.M., *Ghosh A*, ***Das, B.B.,*** and Basu, S. **2018**. Cerberus Nanoparticles: Co targeting of Mitochondrial DNA and Mitochondrial Topoisomerase I in Breast Cancer Cells. ***ACS Applied Nano Materials***, 1 (5), 2195-2205.

36. S Bhowal*, A Ghosh, SP Chowdhuri, R Mondal*, ***BB Das #*.*** **2018.** A Novel Metallogel Based Approach to Synthesize(Mn, Cu) Doped ZnS Quantum Dots and Labeling of MCF-7 Cancer Cells. ***Dalton Transactions,*** **47**, 6557.

35. Das SK, Ghosh A, Paul Chowdhuri S, Halder N, Rehman I, Sengupta S, Sahoo KC, Rath H*, ***Das BB*** #*. **2018** Neutral Porphyrin Derivative Exerts Anticancer Activity by Targeting Cellular Topoisomerase I (Top1) and Promotes Apoptotic Cell Death without Stabilizing Top1-DNA Cleavage Complexes. ***J. Med. Chem***., 61 (3), 804–817.

34. Maji S, Alam P, Kumar GS, Biswas S, Sarkar PK, Das B, Rehman I, ***Das BB*** #, Jana NR, Laskar IR, Acharya S. **2017** Induced Aggregation of AIE-Active Mono-Cyclometalated Ir(III) Complex into Supramolecular Branched Wires for Light- Emitting Diodes. ***Small.*** 13, 1603780. 2017.

33. Das, S.K., Rehman, I., Ghosh, A., Sengupta, S., Majumder, P., Jana, B and ***Das BB*****.** Poly(ADP-ribose) polymers regulate DNA topoisomerase I (Top1) nuclear dynamics and camptothecin sensitivity in living cells. ***Nucleic. Acids Res.*** 44, 8363-75. 2016.

31. Majumdar, P, Bathula C, *Basu S.M., Das, S.K.,* Agarwal R, Hati S, Singh A, Sen, S*, ***Das, B.B.****. 2015. Design, synthesis and evaluation of thiohydantoin derivatives as potent topoisomerase I (Top1) inhibitors with anticancer activity. ***Eur J Med Chem.;***102: 540-5.

30. Das, B.B*,* Huang S.N., Murai J., *Rehman I@*., Amé J.-C., *Sengupta S@*., *Das S.K.@.,Majumdar, P@.*, Zhang H., Biard D., Majumder H.K., Schreiber V., Pommier Y.*, 2014. PARP1-TDP1 coupling for the repair of topoisomerase I-induced DNA damage, ***Nucleic. Acids Res***., 42:4435-49. **2014.**

29. Pommier Y, Huang SY, Gao R, **Das BB**, Murai J, Marchand C. Tyrosyl-DNA-phosphodiesterases (TDP1 and TDP2). ***DNA Repair***; **19**:114-29. 2014

28. Das BB*, Huang S.N., Murai J., Rehman I., Amé J.-C., Sengupta S., Das S.K., Majumdar P., Zhang H., Biard D., Majumder H.K., Schreiber V., Pommier Y.*, PARP1-TDP1 coupling for the repair of topoisomerase I-induced DNA damage, ***Nucleic. Acids Res***., 42:4435-49. 2014.

27. Rui G¶., **Das BB¶**., Chatterjee R., Vinson C and Pommier Y., Epigenetic and genetic inactivation of tyrosyl- DNA-phosphodiesterase 1 (TDP1) in human lung cancer cells. ***DNA Repair***, 13:1-9. 2014 ¶ Joint first author.

26. Murai J., Huang SY., **Das BB,** Renaud A., Zhang Y., Doroshow JH., Ji J.,Takeda S and Pommier Y. Trapping of PARP1and PARP2 by Clinical PARP Inhibitors. ***Cancer Research,*** 72: 5588-99. 2012

25. Murai J., Huang SY., **Das BB,** Dexheimer TS., Takeda S and Pommier Y. Tyrosyl-DNA phosphodiesterase 1 (TDP1) repairs DNA damages induced by topoisomerases I and II, and base alkylation in vertebrate cells. ***J. Biol. Chem***, 287(16):12848-57. (2012)

24. Douarre C., Sourbier C., Dalla Rosa I., **Das BB.,** Redon CE., Zhang H., Neckers L and Pommier Y. Mitochondrial Topoisomerase I is Critical for Mitochondrial Integrity and Cellular Energy Metabolism. ***PLoS One*****.**;7(7):e41094. 2012.

23. Das, BB, Dexheimer TS, Maddali K and Pommier Y. Role of Tyrosyl DNA Phosphodiesterase (TDP1) in mitochondria. ***Proc Natl Acad Sci U S A***. 16;107(46):19790-19795. 2010.

22. Das, BB, Antony S, Gupta, S, Dexheimer TS, Redon CE, Garfield S, Shiloh Y and Pommier Y. Optimal function of theDNA repair enzyme TDP1 requires its phosphorylation by ATM and/or DNA-PK. ***EMBO J.*** **28**, 3667-3680. 2009.

21. Sordet, O., Redon, C, Guirouilh-Barbat J., Smith S, Solier, S, Douarre, C, Conti, C, Nakamura, A, **Das, BB**, Nicolas E, Kohn, KW, Bonner, WM, Pommier, Y. Ataxia telangiectasia mutated activation by transcription- and topoisomerase I- induced DNA double-strand breaks. *EMBO Rep* . **10**(8):887-93. 2009.

20. Das BB, Ganguly A, Majumder HK. DNA topoisomerases of Leishmania: the potential targets for anti-leishmanial therapy. Adv Exp Med Biol.; ***625***:103-15. Review. 2008.

19. Roy A, Ganguly A, BoseDasgupta S, **Das BB**, Pal C, Jaisankar P, Majumder HK. Mitochondria-dependentreactive oxygen species-mediated programmed cell death induced by 3,3'-diindolylmethane through inhibition of F0F1- ATP synthase in unicellular protozoan parasite Leishmania donovani. *Mol Pharmacol*. , **74**, 1292-307. 2008.

18. BoseDasgupta S, **Das BB**, Sengupta S, Ganguly A, Roy A, Dey S, Tripathi G, Dinda B, Majumder HK. The caspase-independent algorithm of programmed cell death in Leishmania induced by baicalein: the role of LdEndoG, LdFEN-1 and LdTatD as a DNA 'degradesome'. *Cell Death Differ*, **10**, 1629-40. 2008.

17. Bosedasgupta S., **Das BB**. Ganguly A., Roy A., Majumder HK. Amino acids 39-456 of the large subunit and 210-262 of the small subunit constitute the minimal functionally interacting fragments of the unusual heterodimeric topoisomerase IB of Leishmania. *Biochem J*. **15**; 481-9. 2008.

16. Bosedasgupta S., Ganguly A., **Das BB**., Roy A., Majumder HK. The large subunit of Leishmania topoisomerase I functions as the 'molecular steer' in type IB topoisomerase. *Molecular Microbiology*. 67, 31-46. 2008.

15. Roy A., **Das BB**., Ganguly A., Bosedasgupta S., Khalko NV., Pal C., Dey S., Giri VS. and Majumder HK. An insight into the mechanism of inhibition of unusual bi-subunit topoisomerase I from Leishmania donovani by 3,3'- di- indolylmethane, a novel DNA topoisomerase I poison with a strong binding affinity to the enzyme. *Biochem J*. **409**, 611- 22. 2008.

14. Ganguly A., **Das BB**., Roy A., Sen N., Dasgupta SB., Mukhopadyay S., Majumder HK., Betulinic acid, a catalytic inhibitor of topoisomerase I, inhibits reactive oxygen species-mediated apoptotic topoisomerase I-DNA cleavable complex formation in prostate cancer cells but does not affect the process of cell death. *Cancer Res*. **24**: 11848-58. 2007.

13. **Das BB**., Bosedasgupta S., Ganguly A., Majumder S., Roy A and Majumder HK Leishmania donovani bisubunit topoisomerase I gene fusion leads to an active enzyme with conserved type IB enzyme function. *FEBS J*. **274**:150- 63. 2007.

12. Sen N., Banerjee B., **Das BB**., Ganguly A., Sen T., Pramanik S., Mukhopadhay S and Majumder HK Apoptosis is induced in leishmanial cells by a novel protein kinase inhibitor withaferin A and is facilitated by apoptotic topoisomerase I-DNA complex. *Cell Death Differ*. **2**. 358-67. 2007.

11. **Das BB**., Sengupta T., Ganguly A. and Majumder HK., Topoisomerases of kinetoplastid parasites: why so fascinating? *Molecular Microbiology*. **62**, 917-27. 2006.

10. Sen N, Banerjee B, Gupta SS, **Das BB**, Ganguly A, Majumder HK. Leishmania donovani: dyskinetoplastid cells survive and proliferate in the presence of pyruvate and uridine but do not undergo apoptosis after treatment with camptothecin. *Exp Parasitol*. **115**. 215-9. 2007.

9. Ganguly A**., Das BB**., Sen N., Roy A., Dasgupta SB and Majumder HK. LeishMan' topoisomerase I: an ideal chimerafor unraveling the role of the small subunit of unusual bi-subunit topoisomerase I from Leishmania donovani. *Nucleic Acids Res*. **34**, 6286-97. 2006.

8. Das BB, Sen N, Dasgupta SB, Ganguly A, Majumder HK. Differential induction of Leishmania donovani bi- subunit topoisomerase I-DNA cleavage complex by selected flavones and camptothecin: activity of flavones against camptothecin-

resistant topoisomerase I. *Nucleic Acids Res*. **34**, 1121-32. 2006.

7. Sen N, **Das BB**, Ganguly A, Banerjee B, Sen T and Majumder HK. Leishmania donovani: intracellular ATP levelregulates apoptosis-like death in luteolin induced dyskinetoplastid cells. *Exp Parasitol*. 114(3):204-14. 2006.

6. Das BB, Ganguly A, Majumder HK. Topoisomerase research of kinetoplasti parasite Leishmania, with special referenceto development of therapeutics. *Indian J Med Res*. 123(3):221-32. Review. 2006.

5. Gosh S, Bandyopadhyay S, Pal S, **Das BB**, Bhattacharya DK, Mandal C. Increased interferon gamma production by peripheral blood mononuclear cells in response to stimulation of overexpressed disease-specific 9-O-acetylatedsialoglycoconjugates in children suffering from acute lymphoblastic leukaemia. *Br J Haematol*. 128, 35- 41. 2005.

4. Das BB ., Sen N, Dasgupta SB, Ganguly A, Majumder HK. N-terminal region of the large subunit of *Leishmania donovani* bi-subunit topoisomerase I is involved in DNA relaxation and interaction with smaller subunit. *J Biol Chem*. 280, 16335-44. 2005.

3. Sen N, **Das BB**, Ganguly A, Mukherjee T, Bandyopadhyay S, Majumder HK. Camptothecin-induced imbalance in intracellular cation homeostasis regulates programmed cell death in unicellular hemoflagellate *Leishmania donovani. J Biol Chem*. **279**, 52366-75. 2004.

2. Sen N, **Das BB**, Ganguly A, Mukherjee T, Tripathi G, Bandyopadhyay S, Rakshit S, Sen T, Majumder HK. Camptothecin induced mitochondrial dysfunction leading to programmed cell death in unicellular hemoflagellate *Leishmania donovani. Cell Death Differ*. **8**, 924-36. 2004.

1. **Das BB**., Sen N, Ganguly A, Majumder HK. Reconstitution and functional characterization of the unusual bi-subunit type I DNA topoisomerase from *Leishmania donovani*. *FEBS Lett*. **565**, 81-8. 2004.

Reports/Chapters/General articles etc.

1. Leishmania, the causative agent of Kala Azar: DNA transaction enzymes as possible drug targets. Recent Advancesin Communicable and Non-communicable Diseases. Sengupta S, ***Das BB*** and Majumder HK. (ISBN 978-93-81891-31- 5), Book: Asis Datta and V.P. Sharma Eds., The National Academy of Sciences, India, Publisher: Capital Publishing Company, New Delhi pp. 227-243. **2016**

2. Tyrosyl-DNA phosphodiesterase 1. Dexhimer TS., Huang Shar-yin, ***Das BB*** and Pommier Y**.** Book: DNATopoisomerases and Cancer: Publisher: Springer, NY USA. **2011**

3. DNA topoisomerases of Leishmania: the potential targets for anti-leishmanial therapy. ***Das BB,*** Ganguly A,Majumder HK. Book: Drug Targets in Kinetoplastid Parasites; Publisher: Springer, NY USA. **2008**.

Synergistic Activities:

Project evaluation PAC Member: *DBT-Cancer biology TEC member, appointed by Department of Biotechnology, Govt. of India 2022*

Conference Organizer: Organized an International IABS-2018 Conference as the Coordinator on "DNA topology, chromatin structure, chromosome segregation and the dynamics of biopolymers" in IACS, Kolkata at 2018.
Co-Organizer for the National Conference "YIM-2019" at Presidency University, Kolkata, India

Grant Reviewer: Served as a member of 9-grant review includes Wellcome Trust/DBT India Alliance. Medical Research Council-UK. IUSSTF, Irish Research Council. Australian Research council grants. Also, served as grant reviewers of several Indian grants.

Outreach Activities: Delivered 37 research talks at the National and International conferences and universities/research institutes. Served as a judge for poster presentation at various conferences/meetings.

Journal Reviewer: Serves as a peer-reviewer for many scientific journals including *Nature Communications, Nucleic Acids Res.*, *Cancer letters, PLOS One, Molecular Pharmacology, ACS- J Med Chem, Eur J. Med Chem, Genetics, Nature Scientific Report, etc.*

Thesis Committee Member: Served/serving as thesis committee member of 10 Ph. D. and 5 M. S. students at IACS.

Invited Talks: 55 (International and National)

Invited speakers: EMBO DNA repair meeting and Workshop (2024); EMBO DNA topisomerase meeting 2023; Chromosome Stability 2022; 2018, 2016; Russian Academy of Sciences (ICG SB RAS) 2022; International Ataxia-Telangiectasia Workshop 2019 (ATW2019), Houston Methodist Hospital, Houston, USA. University of New Castle, Medical School, Newcastle upon Tyne, UK, 2019; Edinburgh, Wellcome Trust Cell Biology Division, Edinburgh, Scotland, US. 2019; Centre of Gene regulation in Health and Disease at Cleveland State University (CSU), Cleveland, OH, USA dated 28th August, 2018; DNA Topoisomerases in Biology and Medicine Gordon Research Conference July 29 - August 3, 2018; EMBO Topoisomerase meeting at Les Diablerets, Switzerland 2017; ISA visiting professor honorary lecture, Institute of Advances Sciences, University of Bologna, Scuola Superiore di Studi Umanistici, via Marsala 26, Bologna, Italy NOV 08, 2016.