

EMB Core Publications with SBDR: EMB staff highlighted in blue text

1. Kim M, Kim HS, D'Souza A, Gallagher K, Jeong E, Topolska-Wós A, Ogorodnik Le Meur K, Tsai CL, **Tsai MS**, Kee M, Tainer JA, Yeo JE, Chazin WJ, Schärer OD. Two interaction surfaces between XPA and RPA organize the preincision complex in nucleotide excision repair. *Proc Natl Acad Sci U S A.* 2022 Aug 23;119(34):e2207408119. doi: 10.1073/pnas.2207408119. Epub 2022 Aug 15. PMID: 35969784; PMCID: PMC9407234.
2. Rashid I, **Tsai MS**, Sverzhinsky A, **Hlaing AS**, **Shih B**, **Thwin AC**, **Lin JG**, **Maw SS**, Pascal JM, Tomkinson AE. Purification and Characterization of Human DNA Ligase III α Complexes After Expression in Insect Cells. *Methods Mol Biol.* 2022;2444:243-269. doi: 10.1007/978-1-0716-2063-2_15. PMID: 35290642; PMCID: PMC9278544.
3. Crossley MP, Brickner JR, Song C, **Zar SMT**, **Maw SS**, Chédin F, **Tsai MS**, Cimprich KA. Catalytically inactive, purified RNase H1: A specific and sensitive probe for RNA-DNA hybrid imaging. *J Cell Biol.* 2021 Sep 6;220(9):e202101092. doi: 10.1083/jcb.202101092. Epub 2021 Jul 7. PMID: 34232287; PMCID: PMC8266564.
4. Rashid I, Hammel M, Sverzhinsky A, **Tsai MS**, Pascal JM, Tainer JA, Tomkinson AE. Direct interaction of DNA repair protein tyrosyl DNA phosphodiesterase 1 and the DNA ligase III catalytic domain is regulated by phosphorylation of its flexible N-terminus. *J Biol Chem.* 2021 Aug;297(2):100921. doi: 10.1016/j.jbc.2021.100921. Epub 2021 Jun 25. PMID: 34181949; PMCID: PMC8318918.
5. Thapar R, Wang JL, Hammel M, Ye R, Liang K, Sun C, Hnizda A, Liang S, **Maw SS**, Lee L, Villarreal H, Forrester I, Fang S, **Tsai MS**, Blundell TL, Davis AJ, Lin C, Lees-Miller SP, Strick TR, Tainer JA. Mechanism of efficient double-strand break repair by a long non-coding RNA. *Nucleic Acids Res.* 2021 Jan 25;49(2):1199-1200. doi: 10.1093/nar/gkaa1233. Erratum for: *Nucleic Acids Res.* 2020 Nov 4;48(19):10953-10972. PMID: 33337499; PMCID: PMC7826246.
6. Hammel M, Rashid I, Sverzhinsky A, Pourfarjam Y, **Tsai MS**, Ellenberger T, Pascal JM, Kim IK, Tainer JA, Tomkinson AE. An atypical BRCT-BRCT interaction with the XRCC1 scaffold protein compacts human DNA Ligase III α within a flexible DNA repair complex. *Nucleic Acids Res.* 2021 Jan 11;49(1):306-321. doi: 10.1093/nar/gkaa1188. PMID: 33330937; PMCID: PMC7797052.
7. Tsutakawa SE, Sarker AH, Ng C, Arvai AS, Shin DS, **Shih B**, **Jiang S**, **Thwin AC**, **Tsai MS**, Willcox A, Her MZ, Trego KS, Raetz AG, Rosenberg D, Bacolla A, Hammel M, Griffith JD, Cooper PK, Tainer JA. Human XPG nuclease structure, assembly, and activities with insights for neurodegeneration and cancer from pathogenic mutations. *Proc Natl Acad Sci U S A.* 2020 Jun 23;117(25):14127-14138. doi: 10.1073/pnas.1921311117. Epub 2020 Jun 10. PMID: 32522879; PMCID: PMC7321962.

8. Dutta A, Eckelmann B, Adhikari S, Ahmed KM, Sengupta S, Pandey A, Hegde PM, **Tsai MS**, Tainer JA, Weinfeld M, Hegde ML, Mitra S. Microhomology-mediated end joining is activated in irradiated human cells due to phosphorylation-dependent formation of the XRCC1 repair complex. *Nucleic Acids Res.* 2017 Mar 17;45(5):2585-2599. doi: 10.1093/nar/gkw1262. PMID: 27994036; PMCID: PMC5389627.
9. Yang C, Sengupta S, Hegde PM, Mitra J, **Jiang S**, **Holey B**, Sarker AH, **Tsai MS**, Hegde ML, Mitra S. Regulation of oxidized base damage repair by chromatin assembly factor 1 subunit A. *Nucleic Acids Res.* 2017 Jan 25;45(2):739-748. doi: 10.1093/nar/gkw1024. Epub 2016 Oct 27. PMID: 27794043; PMCID: PMC5314755.
10. Gradia SD, Ishida JP, **Tsai MS**, Jeans C, Tainer JA, Fuss JO. MacroBac: New Technologies for Robust and Efficient Large-Scale Production of Recombinant Multiprotein Complexes. *Methods Enzymol.* 2017;592:1-26. doi: 10.1016/bs.mie.2017.03.008. Epub 2017 May 15. PMID: 28668116; PMCID: PMC6028233.
11. Hammel M, Yu Y, Radhakrishnan SK, Chokshi C, **Tsai MS**, Matsumoto Y, Kuzdovich M, Remesh SG, Fang S, Tomkinson AE, Lees-Miller SP, Tainer JA. An Intrinsically Disordered APLF Links Ku, DNA-PKcs, and XRCC4-DNA Ligase IV in an Extended Flexible Non-homologous End Joining Complex. *J Biol Chem.* 2016 Dec 30;291(53):26987-27006. doi: 10.1074/jbc.M116.751867. Epub 2016 Nov 14. PMID: 27875301; PMCID: PMC5207133.
12. Trego KS, Groesser T, Davalos AR, Parplys AC, Zhao W, Nelson MR, **Hlaing A**, **Shih B**, Rydberg B, Pluth JM, **Tsai MS**, Hoeijmakers JHJ, Sung P, Wiese C, Campisi J, Cooper PK. Non-catalytic Roles for XPG with BRCA1 and BRCA2 in Homologous Recombination and Genome Stability. *Mol Cell.* 2016 Feb 18;61(4):535-546. doi: 10.1016/j.molcel.2015.12.026. Epub 2016 Jan 28. PMID: 26833090; PMCID: PMC4761302.
13. Longerich S, Kwon Y, **Tsai MS**, **Hlaing AS**, Kupfer GM, Sung P. Regulation of FANCD2 and FANCI monoubiquitination by their interaction and by DNA. *Nucleic Acids Res.* 2014 May;42(9):5657-70. doi: 10.1093/nar/gku198. Epub 2014 Mar 12. PMID: 24623813; PMCID: PMC4027212.
14. Zhao Q, Saro D, Sachpatzidis A, Singh TR, Schlingman D, Zheng XF, Mack A, **Tsai MS**, Mochrie S, Regan L, Meetei AR, Sung P, Xiong Y. The MHF complex senses branched DNA by binding a pair of crossover DNA duplexes. *Nat Commun.* 2014;5:2987. doi: 10.1038/ncomms3987. PMID: 24390579; PMCID: PMC3967914.
15. Shell SM, Hawkins EK, **Tsai MS**, Hlaing AS, Rizzo CJ, Chazin WJ. Xeroderma pigmentosum complementation group C protein (XPC) serves as a general sensor of damaged DNA. *DNA Repair (Amst).* 2013 Nov;12(11):947-53. doi: 10.1016/j.dnarep.2013.08.013. Epub 2013 Sep 17. PMID: 24051049; PMCID: PMC3825762.

16. Della-Maria J, Hegde ML, McNeill DR, Matsumoto Y, **Tsai MS**, Ellenberger T, Wilson DM 3rd, Mitra S, Tomkinson AE. The interaction between polynucleotide kinase phosphatase and the DNA repair protein XRCC1 is critical for repair of DNA alkylation damage and stable association at DNA damage sites. *J Biol Chem*. 2012 Nov 9;287(46):39233-44. doi: 10.1074/jbc.M112.369975. Epub 2012 Sep 19. PMID: 22992732; PMCID: PMC3493963.
17. Querol-Audí J, Yan C, Xu X, Tsutakawa SE, **Tsai MS**, Tainer JA, Cooper PK, Nogales E, Ivanov I. Repair complexes of FEN1 endonuclease, DNA, and Rad9-Hus1-Rad1 are distinguished from their PCNA counterparts by functionally important stability. *Proc Natl Acad Sci U S A*. 2012 May 29;109(22):8528-33. doi: 10.1073/pnas.1121116109. Epub 2012 May 14. PMID: 22586102; PMCID: PMC3365210.
18. Dunlop MH, Dray E, Zhao W, San Filippo J, **Tsai MS**, Leung SG, Schild D, Wiese C, Sung P. Mechanistic insights into RAD51-associated protein 1 (RAD51AP1) action in homologous DNA repair. *J Biol Chem*. 2012 Apr 6;287(15):12343-7. doi: 10.1074/jbc.C112.352161. Epub 2012 Feb 27. PMID: 22375013; PMCID: PMC3320983.
19. Dunlop MH, Dray E, Zhao W, **Tsai MS**, Wiese C, Schild D, Sung P. RAD51-associated protein 1 (RAD51AP1) interacts with the meiotic recombinase DMC1 through a conserved motif. *J Biol Chem*. 2011 Oct 28;286(43):37328-34. doi: 10.1074/jbc.M111.290015. Epub 2011 Sep 8. PMID: 21903585; PMCID: PMC3199480.
20. Della-Maria J, Zhou Y, **Tsai MS**, Kuhnlein J, Carney JP, Paull TT, Tomkinson AE. Human Mre11/human Rad50/Nbs1 and DNA ligase IIIalpha/XRCC1 protein complexes act together in an alternative nonhomologous end joining pathway. *J Biol Chem*. 2011 Sep 30;286(39):33845-53. doi: 10.1074/jbc.M111.274159. Epub 2011 Aug 3. PMID: 21816818; PMCID: PMC3190819.
21. Trego KS, Chernikova SB, Davalos AR, Perry JJ, Finger LD, Ng C, **Tsai MS**, Yannone SM, Tainer JA, Campisi J, Cooper PK. The DNA repair endonuclease XPG interacts directly and functionally with the WRN helicase defective in Werner syndrome. *Cell Cycle*. 2011 Jun 15;10(12):1998-2007. doi: 10.4161/cc.10.12.15878. Epub 2011 Jun 15. PMID: 21558802; PMCID: PMC3154418.
22. Dray E, Dunlop MH, Kauppi L, San Filippo J, Wiese C, **Tsai MS**, Begovic S, Schild D, Jasin M, Keeney S, Sung P. Molecular basis for enhancement of the meiotic DMC1 recombinase by RAD51 associated protein 1 (RAD51AP1). *Proc Natl Acad Sci U S A*. 2011 Mar 1;108(9):3560-5. doi: 10.1073/pnas.1016454108. Epub 2011 Feb 9. PMID: 21307306; PMCID: PMC3048120.
23. Dray E, Etchin J, Wiese C, Saro D, Williams GJ, Hammel M, Yu X, Galkin VE, Liu D, **Tsai MS**, Sy SM, Schild D, Egelman E, Chen J, Sung P. Enhancement of RAD51 recombinase activity by the tumor suppressor PALB2. *Nat Struct Mol Biol*. 2010 Oct;17(10):1255-9. doi: 10.1038/nsmb.1916. Epub 2010 Sep 26. PMID: 20871616; PMCID: PMC2950913.

24. Iyer RR, Pluciennik A, Genschel J, **Tsai MS**, Beese LS, Modrich P. MutLalpha and proliferating cell nuclear antigen share binding sites on MutSbeta. *J Biol Chem*. 2010 Apr 9;285(15):11730-9. doi: 10.1074/jbc.M110.104125. Epub 2010 Feb 12. PMID: 20154325; PMCID: PMC2857047.
25. Chen X, Ballin JD, Della-Maria J, **Tsai MS**, White EJ, Tomkinson AE, Wilson GM. Distinct kinetics of human DNA ligases I, IIIalpha, IIIbeta, and IV reveal direct DNA sensing ability and differential physiological functions in DNA repair. *DNA Repair (Amst)*. 2009 Aug 6;8(8):961-8. doi: 10.1016/j.dnarep.2009.06.002. Epub 2009 Jul 8. PMID: 19589734; PMCID: PMC2734511.
26. Wiese C, Dray E, Groesser T, San Filippo J, Shi I, Collins DW, **Tsai MS**, Williams GJ, Rydberg B, Sung P, Schild D. Promotion of homologous recombination and genomic stability by RAD51AP1 via RAD51 recombinase enhancement. *Mol Cell*. 2007 Nov 9;28(3):482-90. doi: 10.1016/j.molcel.2007.08.027. PMID: 17996711; PMCID: PMC2169287.
27. Bugni JM, Han J, **Tsai MS**, Hunter DJ, Samson LD. Genetic association and functional studies of major polymorphic variants of MGMT. *DNA Repair (Amst)*. 2007 Aug 1;6(8):1116-26. doi: 10.1016/j.dnarep.2007.03.023. Epub 2007 Jun 13. PMID: 17569599.