

Robert Scott Williams, Ph.D.
Curriculum Vitae

CONTACT Tel: 984-287-3542
Email: williamsrs@niehs.nih.gov
Laboratory: <https://www.niehs.nih.gov/research/atniehs/labs/gisbl/pi/genome/>
Google Scholar: <https://scholar.google.com/citations?user=NXJBqRMAAAAJ&hl=en>
Web of science Researcher ID: <http://www.researcherid.com/rid/A-6059-2015>

PRESENT ADDRESS 111 TW Alexander Dr. Maildrop F3-03
NIEHS/NIH, Research Triangle Park, NC, USA

I. EDUCATIONAL HISTORY

2003 Ph.D. Department of Biochemistry
University of Alberta, Edmonton, Canada.
Advisor: Dr. J.N. Mark Glover

1996 B.Sc. Cellular, Molecular and Microbial Biology - First Class Honours
University of Calgary, Calgary, Canada

II. PROFESSIONAL RESEARCH EXPERIENCE

08/2016-present **Senior Investigator**
Head - Structural Cell Biology group
Deputy Laboratory Chief - Genome Integrity and Structural Biology Laboratory
National Institute of Environmental Health Sciences (NIEHS/NIH),
Research Triangle Park, NC. USA.

11/2009-07/2016 **Investigator, Tenure Track**
Head - Genome Stability Structural Biology group
National Institute of Environmental Health Sciences (NIEHS/NIH),
Research Triangle Park, NC. USA.

05/2004-10/2009 **Post-Doctoral Fellow**
Department of Molecular Biology and the Skaggs Institute for Chemical
Biology, The Scripps Research Institute, La Jolla, CA USA
Advisor: Dr. John A. Tainer
*Structural and functional dissection of the Mre11/Rad50/Nbs1 DNA double
strand break sensing and processing complex.*

05/03-05/04 **Post-Doctoral Fellow**
Department of Biochemistry, University of Alberta, Edmonton, Canada
Advisor: Dr. J.N. Mark Glover.
*Structural basis for recognition of phosphorylated protein targets by the
BRCA1-BRCT repeat domains; Structure and mechanism of mammalian
polynucleotide kinase.*

09/96-04/03 **Ph.D**

Department of Biochemistry, University of Alberta, Edmonton, Canada

Advisor: Dr. J.N. Mark Glover.

*Dissertation Title: Structural Consequences of Mutation on the BRCA1
BRCT Domain: Molecular Basis of Tumour Suppressor Inactivation.*

III. SCHOLARSHIPS, FELLOWSHIPS & AWARDS

2017	NIEHS Special Act Award - DIRA committee
2011	NIEHS Early Career Award
2005-2009	Skaggs Fellow- The Scripps Research Institute
2005-2008	Postdoctoral Fellowship - Alberta Heritage Foundation for Medical Research
2003	Madsen Biochemistry Thesis Prize -University of Alberta
2003	National Cancer Institute of Canada - Student Travel Award
2001	Marie Arnold Cancer Research Scholarship (University of Alberta)
1999-2001	MRC Doctoral Research Fellowship (Medical Research Council of Canada / CIHR)
1999-2001	Walter H Johns Fellowship (University of Alberta)
1997-2003	AHFMR Doctoral Studentship (Alberta Heritage Foundation for Medical Research)
1997,1998	Province of Alberta Graduate Scholarship (Government of Alberta)
1997	Faculty of Medicine and Oral Health Sciences - 75th Anniversary Graduate Student Award (University of Alberta)
1995-1996	Viscount Bennett Scholarship (University of Calgary)
1994,1996	Undergraduate Merit Award (University of Calgary)
1994-1996	Summer Studentship Award (Alberta Heritage Foundation for Medical Research)
1993	Alberta Heritage Scholarship - Louise McKinney (Alberta Heritage Foundation)
1992-1996	Canada Scholarship (Industry, Science and Technology Canada)

IV. DIVISION OF INTRAMURAL RESEARCH PROFESSIONAL SERVICE AND COMMITTEES

2017-present.	Cryo-EM Steering committee Chair
2016-present	Committee on Promotions IV (COPIV) committee member
2016-2017	NIH Stadtman (Structural Biology) search committee member
2016	Staff Scientist Search committee (X. Li lab)
2016-2017	Division of Intramural research Award (DIRA) Committee Chair
2015-present	Conference Support Committee
2015-2016	NIEHS Assembly of Scientists (AOS) (Council member)
2015-2016	DIR retreat organizing committee
2014	DIR faculty search committee
2012	DIR retreat organizing committee
2012	Organizer- Laboratory of Structural Biology annual retreat
2012	Panelist- NIEHS Grantsmanship workshop
2011-2015	Referee NIH FARE awards review panel
2011	Panelist - NIEHS Biomedical Career Fair
2010-2014	Organizer- Laboratory of Structural biology journal club
2010-present	Member-NIH DNA replication and repair interest group
2010-present	Poster Judge- NIEHS Science Day

V. REVIEW AND REFEREE ACTIVITIES

Ad hoc reviewer - journals:

Nature
Nature Structural and Molecular Biology
Molecular Cell
Nucleic acids research
FEBS
Mechanisms of Ageing and Development
Journal of Biological Chemistry
Structure
Methods
Journal of Molecular Biology
Biology Open
DNA Repair
EMBO Journal
Progress in Biophysics and Molecular Biology
Biochemie
Scientific Reports
Biochemical Journal
Molecular and Cellular Biology
Journal of Molecular biology
Molecular and Cellular Biology
Oncogene
Elife

Ad hoc reviewer – Grants:

Francis Crick Institute
NIMR-UK
Association for International Cancer Research (AICR)
Medical Research Council (UK)
Wellcome Trust (UK)
Wellcome Trust – India Alliance
National Science Foundation

Editorial Boards:

Journal of Biological Chemistry (Dec 2017-present)
Cell Molecular Life Sciences (2019) Guest editor: Multi author review on "Structural Biology of DNA repair"
Faculty member, Faculty of 1000 Medicine (2011-2017)

Meeting organizer/chair activities

2018 Co-organizer: FASEB nucleic acids/machines on genes, Snowmass CO
2015 NIEHS- Division of Intramural Research retreat organizing committee
2014 Session chair: FASEB Machines on genes/nucleic acids
2012 Laboratory of Structural Biology annual retreat

VI. INVITED LECTURES

58. **Williams, R.S.** Fusion conferences, 4th DNA Repair/Replication Structures and Cancer Conference, 2020
57. **Williams, R.S.** Triangle Genome Stability group seminar series, Duke/UNC/NIEHS, 2019

56. **Williams, R.S.** GRC Nucleic Acids - DNA and RNA Transactions at Atomic to Organismal Scale, 2019
55. **Williams, R.S.** EMBO Workshop on “DNA topology and topoisomerases in genome dynamics” 2019
54. **Williams, R.S.** NIEHS Genomics Day 2019
53. **Williams, R.S.** Cornell University, Department of Molecular Medicine seminar series, 2019
52. **Williams, R.S.** University of Texas San Antonio, Department of Biochemistry lecture series, 2019
51. **Williams, R.S.** GRC Mammalian DNA repair, 2019
47. **Williams, R.S.** Repare Therapeutics - 2018
46. **Williams, R.S.** GRC Topoisomerases in Chromatin, Transcription and Replication Regulation, and Their Importance in the Origin and Treatment of Human Diseases, 2018

45. **Williams, R.S.** Yale Department of Molecular Biophysics and Biochemistry seminar series, 2018

44. **Williams, R.S.** 42nd Annual UNC Lineberger Cancer Center Symposium, University of North Carolina, Chapel Hill, 2018
43. **Williams, R.S.** Lunenfeld-Tanenbaum Research Institute (LTRI) Seminar Series - University of Toronto, 2018
42. **Williams, R.S.** Dynamic Structures in DNA damage Fusion conferences– Cancun, Mexico, 2018
42. **Williams, R.S.** NIH DNA replication and repair interest group, 2017.
41. **Williams, R.S.** EMGS Raleigh, 2017
40. **Williams, R.S.** US-Japan DNA repair meeting Berkeley 2017
39. **Williams, R.S.** GRC Mammalian DNA Repair, Feb. 2017
38. **Williams, R.S.** University of Michigan Dept. of Biochemistry seminar series, Nov. 2016
37. **Williams, R.S.** GRC mutagenesis and Genome Alteration, Girona, Spain, June 2016
36. **Williams, R.S.** EMBO workshop - DNA topoisomerases, DNA topology and human health (short talk), Les Diablerets, Switzerland, Sept, 2015
35. **Williams, R.S.** Albany 2015 Conversation 19 – State University of New York at Albany, June 2015
34. **Williams, R.S.** University of North Carolina Biochemistry and Biophysics seminar series, April 2015
33. **Williams, R.S.** Conference on Repair of Endogenous DNA Damage – Santa Fe, NM, Nov 2014
32. **Williams, R.S.** FASEB Machines on Genes (session chair and speaker) Jun 2014
31. **Williams, R.S.** University of Calgary Southern Alberta Cancer Research Institute May 2014
30. **Williams, R.S.** Mayo clinic Biochemistry and Molecular Biology Seminar series April 2014
29. **Williams, R.S.** Dynamic Structures in DNA damage Fusion conferences– Cancun, Mexico Feb 2014
28. **Williams, R.S.** NIEHS LST seminar series, RTP, NC Jan 2014
27. **Williams, R.S.** UNC-charlotte Biology department seminar series Nov 2013
26. **Williams, R.S.** International A-T Workshops -UK, July 2013
25. **Williams, R.S.** 43rd Mid-Atlantic Macromolecular Crystallography Meeting, May 2013
24. **Williams, R.S.** NIH DNA replication and repair interest group, Jan 2013.
23. **Williams, R.S.** Zing nucleic acids conference. Xcaret, Mexico, Nov 2012.
22. **Williams, R.S.** NIEHS LST seminar series, RTP, NC Oct 2012
21. **Williams, R.S.** US-Japan DNA repair meeting, Virginia, 2012
20. **Williams, R.S.** University of Manitoba Dept. of Chemistry seminar series. Winnipeg, Canada 2012.
19. **Williams, R.S.** NIEHS LN seminar series, RTP, NC Dec 2011.
18. **Williams, R.S.** Lawrence Berkeley National Laboratory - Life sciences division seminar series, Nov 2011,
17. **Williams, R.S.** NC State- Dept. of Molecular and structural biochemistry seminar series, Nov 2011,
16. **Williams, R.S.** Nov. 2011 NIEHS Early Career Award lecture

15. **Williams, R.S.** Current Opinion in Structural Biology & DNA Repair Conference - Amsterdam, Oct 2011 - Invited lecture
14. **Williams, R.S.** Washington University St. Louis DNA Repair Lecture Series, May 2011
13. **Williams, R.S.** Smaller eukaryotes consortium, RTP, NC April 2011
12. **Williams, R.S.** Triangle crystallography consortium, RTP, NC April 2011
11. **Williams, R.S.** SER-CAT symposia - Raleigh, NC, March 2011
10. **Williams, R.S.** Gordon conference - Ventura CA, Mammalian DNA repair, Feb, 2011
9. **Williams, R.S.** NIEHS LTP seminar series, RTP, NC Jan 2011
8. **Williams, R.S.** UNC DNA Repair and Replication Focus Group, May 2010
7. **Williams, R.S.** NIEHS LST seminar series, March 2010
6. **Williams, R.S.** NIEHS LMC seminar series, Sept 2010
5. **Williams, R.S.** NIH DNA replication and repair interest group, Dec 2010
4. **Williams, R.S.** NIH Structural biology interest group, Oct 2010
3. **Williams, R.S.** Keystone symposia - Genome Instability and DNA repair. Taos, USA, 2009
2. **Williams, R.S.** Albany 2007: Conversation 15. Albany, NY USA, 2007.
1. **Williams, R.S.** Salk Institute - DNA replication and genome integrity meeting, August 2006.

VII. BIBLIOGRAPHY

51. Tumbale PP, Jurkiw TJ, Schellenberg MJ, Riccio AA, O'Brien PJ, **Williams RS.** Two-tiered enforcement of high-fidelity DNA ligation. **Nature Communications.** Nov 28;10(1):5431. (2019)
50. Riccio AA, Schellenberg MJ, **Williams RS.** Molecular mechanisms of topoisomerase 2 DNA-protein crosslink resolution. **Cell Mol Life Sci.** Nov 15;. doi: 10.1007/s00018-019-03367-z. [Epub ahead of print] Review. (2019).
49. **Williams RS.** Introduction to the multi-author-review: emerging advances in the structural chemistry of DNA strand break repair. **Cell Mol Life Sci.** 2019 Nov 11;. doi: 10.1007/s00018-019-03364-2. [Epub ahead of print] (2019).
48. Andres SN, Li ZM, Erie DA, **Williams RS.** Ctp1 protein-DNA filaments promote DNA bridging and DNA double-strand break repair. **J Biol Chem.** 2019 Mar 1;294(9):3312-3320. (2019).
47. Cannavo E, Johnson D, Andres SN, Kissling VM, Reinert JK, Garcia V, Erie DA, Hess D, Thomä NH, Enchev RI, Peter M, **Williams RS,** Neale MJ, Cejka P. Regulatory control of DNA end resection by Sae2 phosphorylation. **Nature Communications.** Oct 1;9(1):4016 (2018).
46. Kaminski, A., Tumbale, P., Schellenberg, M.J., **Williams, R.S.,** Williams, J.S., Kunkel, T.A., Pedersen, L.C., and Bebenek, K. Structures of DNA-bound human Ligase IV catalytic core reveal insights into substrate binding and catalysis. **Nature Communications,** Jul 6;9(1):2642 (2018).
45. Tumbale, P., Schellenberg, M.J., Mueller, G.A., Fairweather, E., Watson, M., Little, J.N., Krahn, J., Waddell, I., London, R.E., and **Williams, R.S.** Mechanism of APTX Nicked DNA Sensing and Pleiotropic Inactivation in Neurodegenerative Disease. **EMBO J,** Jul 13;37(14) (2018)
44. Schellenberg MJ, Petrovich RM, Malone CC, **Williams R.S.** Selectable high-yield recombinant protein production in human cells using a GFP/YFP nanobody affinity support. **Protein Sci.** Mar 25. (2018).

43. Schellenberg, M.J., Lieberman, J.A., Herrero-Ruiz, A., Butler, L.R., Williams, J.G., Muñoz-Cabello, A.M., Mueller, G.A., London, R.E., Cortés-Ledesma, F., and Williams, R.S. ZATT (ZNF451)-Mediated Resolution of Topoisomerase 2 DNA-Protein Crosslinks. **Science**, 357(6358):1412-1416 (2017).
42. Andres, S.N., and **Williams, R.S.** CtlP/Ctp1/Sae2, Molecular Form Fit For Function. **DNA Repair** Aug;56:109-117. doi: 10.1016/j.dnarep.2017.06.013. (2017)
41. Wallace, B.D, Berman, Z., Mueller, G.A., Lin, Y, Chang, T., Andres, S.N., Jessica L. Wojtaszek, J.L., DeRose, E.F, Appel, C.D, London, R.E., Yan, S., **Williams, R.S.** The APE2 Zf-GRF is a Structure Specific DNA-Binding Domain Facilitating 3'-5' Resection of DNA Damage Following Oxidative Stress. **Proc. Natl. Acad. Sci. USA**. 114(2):304-309 (2017).
40. Appel, C.D., Feld, G., Wallace, B.D., and **Williams, R.S.** Structure of the Sirtuin-linked Macrodomain SAV0325 from *Staphylococcus aureus*. **Protein Science**, Sep;25(9):1682-91. (2016)
39. Schellenberg, M.J., Perera, L., Strom C.N., Waters C.A, Monian, B., Appel, C.D., Vilas, C.K., Williams, J.G, Ramsden, D.A., **Williams, R.S.** Reversal of DNA damage induced Topoisomerase 2 DNA-protein crosslinks by Tdp2. **Nucleic Acids Research**, May 5;44(8):3829-44. (2016).
38. Andres, S.N., Appel, C.D., Westmoreland, J., Williams, J.S., Nguyen, Y., Robertson, P.D., Resnick, M.A., and **Williams, R.S.** Tetrameric Ctp1 coordinates DNA binding and bridging in DNA double strand break repair. **Nature Structural and Molecular Biology**, Feb (2):158-66 (2015).
37. Schellenberg, M.J., Tumbale, P., and **Williams, R.S.** Molecular Underpinnings of Aprataxin RNA/DNA Deadenylation Function and Dysfunction in Neurological Disease. **Prog Biophys Mol Biol**, 117(2-3):157-165 (2015).
36. Andres SN, Schellenberg, M.J., Wallace, B.D, Tumbale, P., **Williams, R.S.** Recognition and repair of chemically heterogeneous structures at DNA ends. **Environ Mol Mutagen**. 56(1):1-21 (2015).
35. Wallace, B.D., and **Williams, R.S.** Ribonucleotide-triggered DNA damage and RNA-DNA damage responses, **RNA Biology** 11(11):1340-1346 (2014).
34. Gao, R., Schellenberg, M.J., Huang, S.Y., Abdelmalak, M., Marchand, C., Nitiss, K.C., Nitiss, J.L., **Williams R.S.**, and Pommier, Y. Proteolytic degradation of topoisomerase II (Top2) enables the processing of Top2·DNA and Top2·RNA covalent complexes by tyrosyl-DNA-phosphodiesterase 2 (TDP2). **J. Biol. Chem.** 27;289(26):17960-79969 (2014).
- J. Biol. Chem. "Paper of the Week"
33. Deshpande, R., Williams, G.J., Limbo, O., **Williams, R.S.**, Kuhnlein, J., Lee, J-H., Classen, S., Guenther, G., Russell, P., Tainer, J.A., and Paull, T.T. Mre11-Rad50 Regulates DNA Tethering, End Resection, and ATM Checkpoint Signaling through ATP-driven RAD50 conformational changes. **EMBO J.**, 33(5):482-500, (2014).
32. Tumbale, P., Williams, J.S., Schellenberg, M.J., Kunkel T.A. and **Williams, R.S.** Aprataxin resolves adenylated RNA-DNA junctions to protect genome integrity. **Nature**, 506: 111-115 (2014).
31. Crown K.N., Savytsky O.P., Malik S.B., Logsdon J, **Williams R.S.**, Tainer J.A., Zolan M.E.

A Mutation in the FHA Domain of *Coprinus cinereus* Nbs1 Leads to Spo11-Independent Meiotic Recombination and Chromosome Segregation. **G3** 3(11): 1927-1943 , (2013).

30. Sharifi, R., Morra, R., Appel, C.D., Tallis, M., Chioza, B., Jankevicius, G., Simpson, M.A., Matic, I., Ozkan, E., Golia, B., Schellenberg, M.J., Weston, R., Williams, J.G., Rossi, M.N., Galehdari, H., Ahel, D., Hay, R., Ladurner, A.G. *, Timinszky, G, **Williams, R.S.**, and Ahel, I. Deficiency of terminal ADP-Ribose protein glycohydrolase TARG1/C6orf130 in neurodegenerative disease. **EMBO J.**, 32(9):1225-1237 (2013).

EMBO. J. "Have you seen" commentary feature, EMBO. J 32, 1205 – 1207 (2013).
29. Schellenberg, M.J., Appel, C.D., Adhikari, S., Robertson, P.D., Ramsden, D.A., **Williams, R.S.** Mechanism of repair of 5'-topoisomerase II-DNA adducts by mammalian tyrosyl-DNA phosphodiesterase 2. **Nature Structural and Molecular Biology**, 19(12):1363-1371 (2012)

Nature Structural and Molecular Biology, "News and Views" commentary feature (2012) 19(12):1212-3.
28. Schellenberg, M.J., and Williams, R.S. DNA end processing by polynucleotide kinase/phosphatase. **Proc. Natl. Acad. Sci. USA**. 108(52):20855-6. (2011)
27. **Williams, R.S.**, and Kunkel, T.A. Fen Nucleases: Bind, Bend, Fray, Cut. **Cell**, 145(2):171-172 (2011).
26. Tumbale, P., Appel, C.D., Kraehenbuehl, R., Robertson, P.D., Williams, J.S., Krahn, J., Ahel, I. and **Williams, R.S.*** Structure of an Aprataxin–DNA complex with insights into AOA1 Neurodegenerative Disease. **Nature Structural and Molecular Biology** 18(11):1189-95 (2011)
25. Adhikari S, Karmahapatra S.K., Elias H, Dhopeswarkar P, **Williams R.S.**, Byers S, Uren A, Roy R. Development of a novel assay for human tyrosyl DNA phosphodiesterase 2. **Anal Biochem**, 416(1):112-116 (2011).
24. Williams, G.J., **Williams, R.S.**, Williams, J.S., Moncalian, G., Arvai, A.S., Limbo, O., Guenther, G., SilDas, S., Hammel, M., Russell, P., and Tainer, J.A. ABC ATPase signature helices in Rad50 link nucleotide state to Mre11 interface for DNA repair. **Nature Structural and Molecular Biology** 18: 423-431 (2011).
- Nature Struct. and Mol. Biol. "paper of the month"
23. Rahal, E.A., Henricksen, L.A., Li, Y., **Williams, R.S.**, Tainer, J.A. and Dixon, K. ATM regulates Mre11-dependent DNA end-degradation and microhomology-mediated end joining. **Cell Cycle** 12(9):14 (2010).
22. Lee, M.S., Green, R., Marsillac S.M, **Williams, R.S.**, Coquelle, N. Yeung, T., Foo, D., Hau, D.D, Hui, B., Monteiro, A.N.A., and Glover, J.N.M. Comprehensive analysis of missense variations in the BRCT domain of BRCA1 by structural and functional assays. **Cancer Res.** 70(12): 4880-90 (2010).
21. Williams, J.S., **Williams, R.S.**, Dovey, C.L., Guenther, G., Tainer, J.A., and Russell, P. γ H2A binds Brc1 to maintain genome integrity during S-phase. **EMBO J.** 29(6): 1136-48 (2010).
20. **Williams, R.S.**, Dodson, G.E., Limbo, O., Yamada, Y., Williams, J.S., Guenther, G., Classen, S., Glover, J.N.M., Iwasaki, H., Russell, P., and Tainer, J.A. Nbs1 is an Extended Flexible Arm

Binding to Ctp1 and Mre11-Rad50 to Coordinate dsDNA Break Processing. **Cell**. 139(1): 87-99 (2009).

- Faculty of 1000 Must Read

- Cell preview feature - see Cell. 2009 Oct 2;139(1):25-7.

19. Acharya, S., Many, A.M., Schroeder, A., Kennedy, F., Savytsky, O.P., Grubb, J., Vincent, J., Friedle, E., Celerin, M., Maillet, D., Palmerini, H.J., Greischar, M.A., Moncalian, G., **Williams, R.S.**, Tainer, J.A., and Zolan, M.E. Coprinus Cinereus Rad50 Mutants Reveal an Essential Structural Role for Rad50 in Axial Element and Synaptonemal Complex Formation, Homolog Pairing, and Meiotic Recombination. **Genetics** 180(4): 1889-1907 (2008).
18. Edwards, R.A., Lee, M.S., Tsutakawa, S.E., **Williams, R.S.**, Tainer, J.A., and Glover, J.N.M. The Bard1 C-terminal domain structure and interactions with polyadenylation factor, CstF-50. **Biochemistry** 47(44): 11446-11456 (2008).
17. **Williams, R.S.**, Williams, G.J., and Tainer, J.A. A Charged Performance by gp17 in Viral Packaging. **Cell** 135 (7): 1169-1171 (2008).
16. Fan L, **Williams R.S.**, Shin D.S., Chapados B., and Tainer JA in Thermophiles: Biology and Technology at High Temperatures (F. Robb, G. Antranikian, D. Grogan, , A. Driessen editors), Chapter 15: Master keys to DNA Replication, Repair, and Recombination from the Structural Biology of Enzymes from Thermophiles pp. 239- 264. (2008)
15. **Williams, R.S.**, Moncalian, G., Williams, J.S., Yamada, Y, Limbo, O., Shin, D.S., Grocock, L.M., Cahill., D., Hitomi, C., Guenther, G., Moiani, D., Carney, J.P., Russell, P., and Tainer, J.A. Mre11 Dimers Coordinate DNA End Bridging and Nuclease Processing in DNA Double Strand Break Repair. **Cell** 135 (1): 97-109 (2008).
14. **Williams, R.S.**, Williams, J.S., and John A. Tainer: Mre11/Rad50/Nbs1 is a keystone complex connecting DNA repair machinery, double strand break signaling, and the chromatin template. **Biochem. Cell Biol.** 85 (4): 509-520 (2007).
13. **Williams, R.S.** and Tainer, J.A. Learning our ABCs: Rad50 directs MRN repair functions via Adenylate Kinase activity from the conserved ATP Binding Cassette. **Molecular Cell** 25 (6):789-791 (2007).
12. Simons, A.M., Horwitz, A.A., Starita, L.M., Griffin, K., **Williams, R.S.**, Glover, J.N., Parvin, J.D., BRCA1 DNA binding activity is stimulated by BARD1. **Cancer Research-** 66(4): 2012-2018 (2006).
11. Bernstein, N., **Williams, R.S.**, Rakovszky, M., Cui, D., Green, R., Karimi-Busheri, F., Mani, R., Galicia, S., Koch C.A., Cass, C., Durocher, D., Weinfeld, M., and Glover, J.N. The Molecular architecture of the mammalian DNA repair enzyme, polynucleotide kinase. **Molecular Cell** 17(5): 657-670 (2005).
10. **Williams, R.S.**, Bernstein, N., Lee, M.S., Rakovszky, M.L., Cui, D., Green, R., Weinfeld, M., and Glover, J.N.M. Structural basis for phosphorylation-dependent signaling in the DNA damage response. **Biochem Cell Biol** 83(6): 721-727 (2005).
9. **Williams, R.S.**, and Tainer, J.A. A Nanomachine for Making Ends Meet: MRN is a Flexing Scaffold for the Repair of DNA Double Strand Breaks. **Molecular Cell** 19 (6) 724-726 (2005).

8. **Williams, R.S.**, Lee, MS., Hau., D.D. and Glover, J.N.M. Structural basis of phospho-peptide recognition by the BRCA1 BRCT domain. **Nature Structural and Molecular Biology**. 11(6):519-525 (2004).
- Journal cover feature, See editorial comment in Nature Structural and Molecular Biology. 11(6):489 (2004)
7. Glover, J.N.M., **Williams, R.S.**, and Lee, MS. BRCT repeat-phosphoprotein interactions: tangled up in two. **Trends in Biochemical Sciences** 29(11) 579-585 (2004).
6. Dubin M.J., Stokes, P., Sum, E.Y.M, **Williams, R.S.**, Valova, V., Robinson, P., Glover, J.N.M., Visvader, J.E., and Matthews, J.M. Dimerization of CtIP, a BRCA1- and CtBP-interacting Protein, Is Mediated by an N-terminal Coiled-coil Motif. **Journal of Biological Chemistry**: 279(26):26932-26938 (2004).
5. **Williams, R.S.**, Hau, D, Chasman, D., Hui, B., and Glover, J.N.M. Detection of protein folding defects caused by BRCA1-BRCT missense and truncation mutations. **Journal of Biological Chemistry** 278(52): 53007-53016 (2003).
4. **Williams, R.S.** and Glover, J.N.M. Structural consequences of a cancer-causing BRCA1-BRCT missense mutation. **Journal of Biological Chemistry** 278(4): 2630-2635 (2003). - Journal cover feature.
3. Hamilton, K.S., Ellison, M.J., Barber, K.R., **Williams, R.S.**, Huzil, J.T., Mckenna, S., Ptak, C., Glover, M., Shaw, G.S. Structure of a Conjugating Enzyme-Ubiquitin Thiolester Intermediate Reveals a Novel Role for the Ubiquitin Tail. **Structure** 9: 897-904 (2001).
2. **Williams, R.S.**, Green, R., and Glover, J.N.M. Crystal structure of the BRCT repeat region from the breast cancer-associated protein BRCA1. **Nature Structural Biology** 8(10): 838-843 (2001).
1. Hoang, T.T., **Williams, S.**, Schweizer, H.P. and Lam, J.S. Molecular genetic analysis of the region containing the essential *Pseudomonas aeruginosa asd* gene encoding aspartate-b-semialdehyde dehydrogenase. **Microbiology** 143:899-907 (1997).

VIII. SELECTED ABSTRACTS

29. Schellenberg, M.J., Williams, J.G., and **Williams, R.S.** ZATT SUMO Ligase Licenses Direct Reversal of Topoisomerase 2 DNA-Protein Crosslinks by Tdp2. Poster presentation - Gordon Research Conference on Mammalian DNA repair 2017. Gordon Research Conference on Topoisomerases in Medicine 2016.
28. Appel C.D., Feld G.K., Wallace B.D., **Williams R.S.** Structure of the sirtuin-linked macrodomain SAV0325 from *Staphylococcus aureus*. – Gordon Research Conference on DNA Damage, Mutation, and Cancer February 2017.
27. Wallace, B.D., Berman, Z., Mueller, G.A., Lin, Y., Chang, T., Andres, S.N., Wojtaszek, J.L., DeRose, E.F., Appel, C.D., Segars, K., London, R.E., Yan, S., **Williams, R.S.** APE2 Zf-GRF facilitates 3'-5' resection of DNA damage following oxidative stress. Gordon Research Conference on Mammalian DNA Repair, Feb 2017. NIEHS Genome Instability and Structural Biology Laboratories Retreat, Mar 2017.
26. Tumbale, P., Williams, J.S., Schellenberg, M.J., Kunkel, T.A., and **Williams, R.S.** Molecular Basis of the Aprataxin-linked Cerebellar Degeneration, Ataxia with Oculomotor Apraxia Type 1

(AOA1). GISBL Retreat 2017, National Ataxia Foundation Ataxia Investigator Meeting 2016, NIEHS Science Day 2016.

25. Tumbale, P., Williams, J.S., Schellenberg, M.J., Kunkel T.A., and **Williams, R.S.** Aprataxin Resolves Adenylated RNA-DNA Junctions to Maintain Genome Integrity. NIEHS Laboratory of Structural Biology Retreat, Sept 2013, NIEHS Science Day, Nov 2013. Environmental Mutagenesis and Genomics Society Research Conference 2015, GISBL Retreat 2015, Gordon Conference on DNA damage, mutation, and cancer 2014.
24. Andres, S.N., Appel, C.D., Westmoreland, J., Nguyen, Y., Robertson, P.D., Resnick, M.A., and **Williams, R.S.** Ctp1 tetramers orchestrate DNA end binding and bridging in DNA double strand break repair. Poster Presentation - FASEB SRC Machines on Genes 2014.
23. Appel C.D., Sharifi, R., Morra, R., Tallis, M., Chioza, B., Jankevicius, G., Simpson, M.A., Matic, I., Ozkan, E., Golia, B., Schellenberg, M.J., Weston, R., Williams, J.G., Rossi, M.N., Galehdari, H., Krahn, J., Wan, A., Trembath, R.C., Crosby, A.H., Ahel, D., Hay, R., Ladurner, A.G., Timinszky, G., Ahel, I., and **Williams, R.S.** Deficiency of terminal ADP-ribose protein glycohydrolase TARG1/C6orf130 in neurodegenerative disease.– Gordon Research Conference on DNA Damage, Mutation, and Cancer 2014.
22. Appel, C.D., Morra, R., Matthew, T., Schellenberg, M.J., Weston, R., Williams, J.G., Rossi, M.N., Krahn, J., Ahel, D., Ahel, I. and **Williams, R.S.** Deficiency of terminal ADP-ribose protein glycohydrolase TARG1/C6orf130 in neurodegenerative disease. NIEHS Laboratory of Structural Biology Annual Retreat, September 12, 2013. NIEHS Science Day, November 8, 2013.
21. Schellenberg M.J., Appel, C.D., Mueller, G., Tumbale, P., London, R., and **Williams, R.S.** Structural Basis for Recognition of Post-Translational Modifications by Tdp2. LSB retreat, 2013
20. Schellenberg, M.J., Appel, C.D., Adhikari, S., Robertson, P.D., Ramsden, D.A., and **Williams, R.S.** Mechanism of 5' Topoisomerase II DNA adduct repair by mammalian Tyrosyl DNA phosphodiesterase 2 (Tdp2). 43rd Mid-Atlantic Macromolecular Crystallography Meeting, 2013, Gordon Mammalian DNA Repair Conference, 2013
19. Schellenberg, M.J., Appel, C.D., Robertson, P.D., and **Williams, R.S.** Insights into Topoisomerase2-DNA adduct repair from biophysical characterization of human tyrosyl-DNA phosphoesterase 2 (Tdp2). BSC review, 2012.
18. Andres, S.N., Appel, C.D., Roberston, P.D., and **Williams, R.S.** Interlocked Ctp1CtIP/Sae2 Tryptophan Hooks Coordinate DNA end Bridging in DNA Double Strand Break Repair. Mid-Atlantic Crystallography Consortium, May 2013.
17. Andres, S.N., Appel, C.D., Roberston, P.D., and **Williams, R.S.** Ctp1 Tetramers Coordinate DNA end Binding and Bridging in DNA Double Strand Break Repair. Laboratory of Structural Biology Annual Retreat, September 2013. NIEHS Science Day, November 2013.
16. Tumbale, P., Appel, C.D., Kraehenbuehl, R., Robertson, P.D., Williams, J.S., Krahn, J., Ahel, I. and **Williams, R.S.** Structure of an Aprataxin–DNA Complex, with Insights into AOA1 Neurodegenerative Disease. NIEHS Science Day, Nov 2011. NIEHS Board of Scientific Counselors Review, May 2012. Mid-Atlantic Protein Crystallography Workshop, June 2011.

15. Wang, J., **Williams, R.S.**, Tomer, K.B. and Deterding, L.J. Structural Analysis of Neurodegenerative Disease Protein Aprataxin by Chemical surface mapping and Mass Spectrometry.
-Submitted for the 58th Annual American Society for Mass Spectrometry Conference, Salt Lake City, Utah, May, 2010.
14. **Williams, R.S.**, Williams, J.S., Guenther, G., and Tainer, J.A. Nbs1 is a flexible tether linking Mre11/Rad50 DNA end sensing and processing to the DNA Double Strand Break Repair Signaling apparatus.
- *Structural biology of DNA repair (SBDP) workshop. Berkeley USA, 2008.*
13. Williams, J.S., **Williams, R.S.**, Guenther, G., Tainer, J.A. and Russell, P. Brc1 is recruited to chromatin via direct interactions with the γ H2A tail. Fourth International Fission Yeast Meeting, Copenhagen, June 2007.
12. Bernstein, N.K. **Williams, R.S.**, Edwards, R.A., Rakovszky, M.L., Cui, D., Green, G., Karimi-Busheri, F.K., Mani, R.S., Weinfeld, M., and Glover, J.N.M. Molecular architecture of mammalian polynucleotide kinase, a DNA repair enzyme.
- *Joint EU-USA DNA repair workshop. Berkeley USA, April 2007.*
11. Bernstein, N., **Williams, R.S.**, Rakovszky, M., Cui, D., Green, R., Karimi-Busheri, F., Mani, R., Galicia, S., Koch C.A., Cass, C., Durocher, D., Weinfeld, M., and Glover, J.N. Structure and substrate binding of mammalian PNK.
- *Keystone symposia - Frontiers in Structural Biology, Feb 3, 2006*
10. **Williams, R.S.**, Moncalian, G., Shin, D.S., Grocock, L.M. Hura, G.L., Russell, P., Tainer., J.A. Assembled Structure of the Mre11/Rad50/DNA complex from X-ray Solution Scattering and Crystallography.
- *Keystone symposia - Frontiers in Structural Biology, Feb 3, 2006.*
9. **Williams, R.S.**, Lee, MS., Hau., D.D. and Glover, J.N.M. Structural basis of phospho-peptide recognition by the BRCT domain of BRCA1.
- *VIIIth International Workshop Radiation Damage to DNA, The Banff Centre, Banff, Alberta, May25-30, 2004.*
8. **Williams, R.S.**, Hau, D., Hui, B.K., and Glover, J.N.M. The Structural Consequences of Mutations on the BRCA1 BRCT Domain. 2004
- *Keystone Symposia Conference on : Frontiers in Structural Biology, Snowbird Utah, U.S.A. April 13-19, 2004.*
7. Lee, M.S., **Williams, S.**, and Glover, J.N.M. Isolation of New Structural Domains within the BRCA1-BARD1 Heterodimer.
- *Alberta Synchrotron Institute: Frontiers in Structural Biology, Banff, Alberta, November 20-23, 2003.*
6. **Williams, R.S.**, Hau, D., Hui, B.K., and Glover, J.N.M. Probing the structural consequences of mutation on the BRCA1 C-terminal domain.
-*Keystone Symposia - Molecular targets for cancer therapy, Banff, Canada (2003)*
5. **Williams, R.S.**, Green, R., and Glover, J.N.M. Structural characterization of the BRCT repeat region from the breast cancer associated protein BRCA1.
- *Alberta synchrotron Institute: High Throughput Protein Crystallography workshop- Banff, Canada (2001) & Keystone Symposia – Frontiers in Structural Biology, Breckenridge, CO, USA (2002).*

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4. **Williams, R.S.**, Green, R. and Glover, J.N.M. Probing the structural consequences of mutations in the BRCT repeat region from the breast cancer-associated protein, BRCA1.
- *Molecules for Life – 2001, Napier, New Zealand (2001)*.
3. **Williams, R.S.**, Green, R., and Glover, J.N.M. The crystal structure of the BRCT domain of BRCA1.
- *Canadian Breast Cancer Research Initiative – Reasons for Hope Conference (2001)*.
2. **Williams, R.S.**, Ellison, M.J., Green, R., Garen, G., and Glover, J.N.M. Crystal Structure of *S. cerevisiae* UBC1 – Conformational Freedom in a Ubiquitin Conjugating Enzyme Catalytic Domain.
- *XVIIIth IUCr Congress and General Assembly -Glasgow, Scotland (1998), Protein Society fourteenth Symposium- San Diego CA, USA (2000)*.
1. Hamilton, K.S. Shaw, G.S., Glover, M., **Williams, S.** and Ellison, M.J. A footprint of the protein-protein interactions in a ubiquitin-E2 thiol ester by NMR spectroscopy.
- *Biology of Proteolysis – Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA (1999)*.

IX. RESEARCH SUPPORT

NIH Intramural 1Z01ES102765 2009-2018