

## CURRICULUM VITAE

Name: David M. Wilson III, Ph.D.

Contact Information:

Email: dmwilson3@outlook.com

Company: www.boostscientific.com

ResearchGate: www.researchgate.net/profile/David\_Wilson\_Iii

LinkedIn: www.linkedin.com/in/david-wilson-26401ba8/

Skype: dmwiii

ORCID: orcid.org/0000-0002-8945-0395

Education:

- 1993 Ph.D. in Molecular Biology  
Loyola University of Chicago, Stritch School of Medicine, Maywood, IL
- 1989 B.A. in Biology; B.A. in Political Science  
Bucknell University, Lewisburg, PA

Employment:

- 2019-Present Founder & CEO, Boost Scientific, Belgium
- 2019-Present Guest Professor, Biomedical Research Institute, Hasselt University, Belgium
- 2008-2019 Senior Investigator (Tenured); Chief, Repair of Endogenous DNA Damage Section, Laboratory of Molecular Gerontology, National Institute on Aging, Intramural Research Program, National Institutes of Health
- 2002-2008 Investigator (Tenure-track), Unit of Structure and Function in Base Excision Repair, Laboratory of Molecular Gerontology, National Institute on Aging, Intramural Research Program, National Institutes of Health
- 2001-2002 Associate Adjunct Professor, Department of Radiation Oncology, University of California Davis Cancer Center
- 1997-2002 Senior Biomedical Scientist (Careered), Biology and Biotechnology Research Program, Lawrence Livermore National Laboratory
- 1993-1996 Post-doctoral Research Fellow, Department of Molecular and Cellular Toxicology, Harvard University School of Public Health, under the direction of Dr. Bruce Demple
- 1989-1993 Ph.D. Student, Program in Molecular Biology, Loyola University of Chicago – Stritch School of Medicine, under the direction of Dr. Mark R. Kelley

Sabbatical:

- August, 2015 to January, 2016: Dr. Thierry Voet, Department of Human Genetics, KU Leuven, Belgium
- January, 2016 to May, 2016: Dr. Björn Schumacher, Cologne Cluster of Excellence in Cellular Stress Responses in Aging-associated Diseases (CECAD), Germany

Honors, Awards and Recognition:

- 2018 National Institute of Aging Director's Award: Group recognition for implementation and development of the Diversity in Aging Research Pipeline Program (DARPP)
- 2011-2014 Elected Councilor for the Environmental Mutagenesis and Genomics Society
- Other Service to the Society:
- Endowment Fund Board (2015)
  - Membership Recruitment and Retention Taskforce (2014)
  - Executive Board (2012-2014)
  - Membership Reimbursement Taskforce (2012-2014)
  - Endowment Fund Taskforce (2011-2014)

2001 Lawrence Livermore National Laboratory Representative for a Department of Energy/Office of Science Early Career Scientist and Engineer Award  
1996 Harvard University Representative for a Burroughs Wellcome Career Award in the Biological Sciences  
1994-1996 National Research Service Award from National Cancer Institute  
1992-1993 Arthur J. Schmitt Doctoral Fellowship  
1989-1992 Loyola University of Chicago Basic Science Fellowship

PI or co-PI Funded Projects:

NIA IRP. PI. Base excision DNA repair in disease susceptibility and treatment. Time period: 2008-2019. Support: \$5,586,380 (all amounts represent total, i.e., directs and indirects).  
NIA IRP. PI. Oxidative DNA damage repair in premature aging and neurodegeneration. Time period 2008-2019. Support: \$5,543,695.  
NIA IRP (PI, Mark Cookson). Co-Investigator. Molecular damage in aging models of Parkinson disease. Time Period: 2017-2019. Support: \$140,000.  
NIA IRP. PI. Role of base excision DNA repair in skeletal muscle integrity. Time Period: 2015-2016. Support: \$126,840.  
NIA IRP. PI. Repair mechanisms for oxidative DNA damage. Time period: 2002-2015. Support: \$5,739,010.  
NIH R03. PI. High throughput screening to identify inhibitors of the human endonuclease FEN1. Time Period: 2010-2012. Support: \$50,000.  
NIH R03. PI. High throughput screening to identify inhibitors of the human abasic endonuclease. Time Period: 2009-2010. Support: \$12,000.  
NIA IRP. Co-PI with Kenneth R. Boheler. Role of DNA damage responses in embryonic stem cell robustness. Time Period: 2005-2006. Support: \$20,000.  
Department of Energy. PI. Damage recognition, protein signaling, and fidelity in base excision repair. Time Period: 2000-2003. Support: \$450,000. Note: this project was part of a collaborative effort with scientists at Pacific Northwest National Laboratory.  
Department of Energy (PI, Larry Thompson). Co-Investigator. Assessing biological function of DNA-damage response genes. Time Period: 1998-2004. Support: \$4,400,000.  
Department of the Army. PI. Repair machinery for radiation-induced DNA damage. Time Period: 1999-2002. Support: \$388,000.  
NIH R01. PI. DNA repair activities of human abasic endonuclease. Time Period: 1998-2002. Support: \$1,225,000.  
NIH R01 (PI, Michael Thelen). Co-Investigator. Function of the human XRCC1 protein in DNA repair and recombination. Time Period: 1997-2001. Support: \$1,400,000.  
Department of Energy (PI, Harvey Mohrenweiser). Co-Investigator. DNA repair gene variants: understanding mechanisms of cellular response and estimating individual health risk from low-dose radiation exposure. Time Period: 1998-2001. Support: \$2,400,000.  
LLNL, Lab Directed Research and Development. PI. An automated approach for the identification of functionally-relevant small molecule inhibitors. Time Period: 1999. Support: \$45,000.  
LLNL, Lab Directed Research and Development. PI. Characterization of the interactions and enzymatic activities of DNA repair proteins. Time Period: 1996-1999. Support: \$570,000.  
Department of Energy: high return on investment pollution prevention project proposal. 1997. Support: \$98,000 for a Molecular Dynamics Storm Phosphorimager.  
NIEHS Center Grant. Co-PI with Richard A.O. Bennett. Protein interactions of the major human abasic endonuclease (Ape1). Time Period: 1995-1996. Support: \$5475.

Gifts:

Luke O'Brien Foundation. Elucidating the Molecular Pathways Defective in Cockayne Syndrome. 2014. Support: \$45,000.

Patents:

Title: Inhibitors of human apurinic/apyrimidinic endonuclease 1. U.S. Provisional Patent Application No. 61/480,145 (filed April 28, 2011).

Invited Conference Presentations/Chairmanships:

7 <sup>th</sup> EU-US Conference on Repair of Endogenous DNA Damage, <i>Conference Organizing Committee</i>	October, 2021
International Aging Symposium (Belgium), <i>Speaker</i>	June, 2019
Genome Maintenance, DNA Repair and Cancer (Turkey), <i>Speaker</i>	April, 2018
6 <sup>th</sup> EU-US Conference on Repair of Endogenous DNA Damage, (Italy), <i>Speaker</i>	September, 2017
41 <sup>st</sup> Federation of European Biochemical Societies (FEBS) Congress (Turkey), <i>Speaker (Cancelled Due to Country Unrest)</i>	September, 2016
61 <sup>st</sup> Annual Meeting Radiation Research Society, <i>Speaker</i> ( <i>Substitute, Daniel R. McNeill</i> )	September, 2015
Zing Conferences, Genome Integrity (Australia), <i>Speaker</i>	August, 2015
5 <sup>th</sup> US-EU Conference on Repair of Endogenous DNA Damage, <i>Co-Organizer</i>	November, 2014
Cockayne Syndrome Network Conference, <i>Speaker</i>	July, 2014
5 <sup>th</sup> Genome Dynamics in Neuroscience Meeting (Denmark), <i>Speaker</i>	June, 2014
APPICON 13 (Association of Physiologists and Pharmacologists in India) meeting, <i>Speaker</i> (videoconference)	November, 2013
11 <sup>th</sup> International Conference on Environmental Mutagens (Brazil), <i>Speaker</i>	November, 2013
5 <sup>th</sup> Meeting of Fundamental Aspects of DNA Repair and Mutagenesis (Brazil), <i>Speaker</i>	November, 2013
Environmental Mutagenesis and Genomics Society, <i>Session</i> <i>Co-Organizer</i>	September, 2013
4 <sup>th</sup> Genome Dynamics in Neuroscience Meeting (Norway), <i>Speaker</i>	September, 2012
Gordon Research Conference, Mutagenesis, <i>Speaker</i>	August, 2012
3 <sup>rd</sup> Erling Seeberg Symposium (Norway), <i>Speaker</i>	June, 2012
2 <sup>nd</sup> International Workshop on HIV & Aging, <i>Speaker</i>	October, 2011
4 <sup>th</sup> EU-US Endogenous Genome Damage Conference (Norway), <i>Speaker &amp; Organizing Committee</i>	May, 2011
Indo-US Workshop on Base Excision DNA Repair, Brain Function, and Aging (India), <i>Speaker</i>	January, 2011
Xeroderma Pigmentosum and Other Diseases of Human Premature Aging and DNA Repair: Molecules to Patients, <i>Speaker</i>	September, 2010
3 <sup>rd</sup> Genome Dynamics in Neuroscience Meeting (United Kingdom), <i>Speaker</i>	July, 2010
XI <sup>th</sup> International Workshop on Radiation Damage to DNA, <i>Speaker</i>	May, 2010
4 <sup>th</sup> Baltimore Area DNA Repair Symposium, <i>Speaker</i>	March, 2010
Cockayne Syndrome: Molecular Mechanisms and Translational Implications, <i>Speaker</i>	September, 2009
3 <sup>rd</sup> EU-US DNA Repair Conference: Repair of Endogenous Genome Damage, <i>Speaker</i>	February, 2009
Environmental Mutagen Society, <i>Speaker</i>	October, 2008
2 <sup>nd</sup> Genome Dynamics in Neuroscience Meeting, <i>Session Co-Chair</i>	June, 2008
3 <sup>rd</sup> Baltimore Area DNA Repair Symposium, <i>Speaker</i>	March, 2008
Gordon Research Conference, DNA Damage, Mutation & Cancer, <i>Speaker</i>	March, 2008

Environmental Mutagen Society, <i>Session Chair</i>	October, 2007
Xeroderma Pigmentosum and Other Diseases of Human Premature Aging and DNA Repair: Molecules to Patients, <i>Speaker</i>	September, 2006
1 <sup>st</sup> Genomic Dynamics in Neuroscience Meeting (Norway), <i>Speaker</i>	April, 2006
2 <sup>nd</sup> Baltimore Area DNA Repair Symposium, <i>Organizing Committee &amp; Speaker</i>	March, 2006
2 <sup>nd</sup> EU-US DNA Repair Meeting: Endogenous Stress, Base Excision Repair and Related Processes (Italy), <i>Speaker</i>	November, 2005
Gordon Research Conference, Genetic Toxicology, <i>Session Chair &amp; Speaker</i>	August, 2005
2 <sup>nd</sup> US-Japan DNA Repair Meeting, <i>Speaker</i>	June, 2004
1 <sup>st</sup> Baltimore Area DNA Repair Symposium, <i>Co-Founder &amp; Speaker</i>	March, 2004
1 <sup>st</sup> EU-US DNA Repair Meeting: Endogenous Stress, <i>Speaker</i>	October, 2003
Gordon Research Conference, Oxygen Radicals, <i>Speaker</i>	February, 2002
Cancer Research Symposium, University of California Davis Cancer Center, <i>Speaker</i>	October, 2001
Cancer Research Symposium, University of California Davis Cancer Center, <i>Speaker</i>	October, 2000
Environmental Mutagen Society, <i>Session Chair &amp; Speaker</i>	March, 1999
 <u>Invited Seminars:</u>	
University of Kansas Medical Center, Bohan Research Seminar Series	April, 2018
University of South Alabama Mitchell Cancer Institute, Distinguished Scientist Seminar	April, 2017
Korea-NIH Joint Program	October, 2016
Cologne Cluster of Excellence in Cellular Stress Responses in Aging-associated Diseases (CECAD, Germany)	March, 2016
KU Leuven (Belgium)	October, 2015
University of Sydney (Australia)	July, 2015
University of Stavanger (Norway)	June, 2015
University of Alberta (Canada)	May, 2015
University of Maryland School of Medicine	March, 2015
University of New Mexico	November, 2014
Winship Cancer Institute of Emory University, Elkin Lecture	August, 2014
Johns Hopkins School of Medicine	April, 2014
Washington State University	November, 2013
Wright State University	October, 2013
Rutgers, the State University of New Jersey	November, 2012
National Cancer Institute	May, 2012
University of Copenhagen (Denmark)	May, 2011
International Centre for Genetic Engineering and Biotechnology (India)	January, 2011
University of Maryland School of Medicine	October, 2010
University of Nottingham (United Kingdom)	July, 2010
Johns Hopkins Medical Institute	April, 2009
University of South Carolina	March, 2008
University of Aarhus (Denmark)	February, 2008
University of Oslo Rikshospitalet Medical Centre (Norway)	February, 2008
Centre National de la Recherche Scientifique (France)	October, 2007
University of South Alabama	September, 2007
Norwegian University of Science and Technology (Norway)	April, 2006
University of Maryland Medical Center	December, 2004
Harvard School of Public Health	October, 2004

National Institutes of Health, DNA Repair Interest Group (videoconference)	April, 2004
Brock University, Ontario	March, 2004
State University of New York, Stony Brook	March, 2003
Brookhaven National Laboratory	March, 2003
Johns Hopkins University Bloomberg School of Public Health	February, 2003
Virginia Commonwealth University/Medical College of Virginia	October, 2002
Wake Forest University School of Medicine	September, 2002
University of Texas Health Science Center at San Antonio	September, 2002
National Institute of Environmental Health Sciences	August, 2002
National Institute on Aging	October, 2001
University of Maryland Medical Center	August, 2001
University of California, Davis	November, 2000
Massachusetts Institute of Technology	July, 2000
City of Hope National Medical Center	February, 2000
National Ataxia Foundation (Northern California)	January, 2000
University of Maryland Medical Center	October, 1999
Pacific Northwest Laboratory	September, 1999
National Ataxia Foundation (Northern California)	January, 1999
Indiana University Medical Center	March, 1998
Lawrence Berkeley National Laboratory	October, 1997
Fox Chase Cancer Center	December, 1996
Lawrence Livermore National Laboratory	May, 1996
Eppley Cancer Center	May, 1996

Invited Service on Advisory Boards:

Grant Reviewer, Netherlands Organisation for Scientific Research (NWO)	2019
Grant Reviewer, National Science Foundation (NSF)	2018
Grant Reviewer, University of Maryland, Baltimore	2018
Grant Reviewer, Human Frontier Science Program, France	2017
Grant Reviewer, Agence Nationale de la Recherche, France	2017
Grant Reviewer, Fonds Wetenschappelijk Onderzoek, Belgium	2017
Grant Reviewer, The Wellcome Trust, United Kingdom	2016
Grant Reviewer, Dutch Cancer Society (KWF Kankerbestrijding)	2016
Grant Reviewer, Agence Nationale de la Recherche, France	2016
Grant Reviewer, National Science Foundation (NSF)	2014
Grant Reviewer, Czech Science Foundation	2013
Grant Reviewer, CROET Pilot Project Program	2013
Grant Reviewer, National Science Foundation (NSF)	2013
Grant Reviewer, Cancer Research UK	2012
Grant Reviewer, The Wellcome Trust, United Kingdom	2012
Grant Reviewer, Czech Science Foundation	2012
Program Project Review Panel, National Cancer Institute, NIH	2011
Grant Reviewer, NCI Career Development Subcommittee I	2011
Grant Reviewer, Netherlands Organization for Scientific Research	2010
Grant Reviewer, Molecular Genetics C Study Section, NIH	2010
Program Project Review Panel, National Cancer Institute, NIH (on two occasions)	2010
Grant Reviewer, The Wellcome Trust, United Kingdom	2009
Program Project Review Panel, National Cancer Institute, NIH	2009
Grant Reviewer, Fundação para a Ciência ea Tecnologia (FCT), Portugese Government	2009
Grant Reviewer, Medical Research Council UK	2009

Adhoc Grant Reviewer, National Institutes of Health (on two occasions)	2008
Grant Reviewer, Cancer Research UK	2008
Grant Reviewer, The Wellcome Trust, United Kingdom	2008
Grant Reviewer, Molecular Genetics C Study Section, NIH	2008
Grant Reviewer, University of Maryland School of Medicine	2006
Grant Reviewer, Philip Morris External Research Program	2005
Grant Reviewer, Research into Ageing	2004
Program Project Review Panel, National Cancer Institute, NIH	2004
Grant Reviewer, Philip Morris External Research Program	2003
Program Project Review Panel, National Cancer Institute of Canada	2003
Grant Reviewer, Philip Morris External Research Program	2002
Program Project Review Panel, National Institute of Environmental Health Science, NIH	2001
Grant Review Panel, National Institute of Environmental Health Science, NIH	2000
Grant Review Panel, Department of Energy	1998

#### Editorial/Advisory Boards:

##### *Present*

Reviews Co-Editor, Cellular and Molecular Life Sciences	2019
Advisory Board (Biochemistry), Cambridge Scholars Publishing	2017
Associate Editor, Environmental and Molecular Mutagenesis	2012
Editorial Board, Cellular and Molecular Life Sciences	2010

##### *Past*

Editorial Board, Carcinogenesis	2014-2016
Associate Editor, Mechanisms of Aging and Development	2006-2014
Editorial Board, Environmental and Molecular Mutagenesis	2006-2011
Advisory Board, Cellular and Molecular Life Sciences	2008-2010
Editorial Board, Current Aging Science	2007-2008

## **BIBLIOGRAPHY**

#### Research Articles:

1. Wilson III, D.M., Emanuele, N.V., Jurgens, J.K., and Kelley, M.R. Adult male rat brain prolactin is identical to pituitary prolactin: PCR cloning and sequencing of hypothalamic prolactin from intact and hypophysectomized adult male rats. *Endocrinology*. 131:2488-2490, 1992.
2. Wilson III, D.M., Deutsch, W.A., and Kelley, M.R. Cloning of the Drosophila ribosomal protein S3: another multifunctional ribosomal protein with AP endonuclease DNA repair activity. *Nucleic Acids Res*. 21:2516, 1993.
3. Wilson III, D.M., Tentler, J.J., Carney, J.P., Wilson, T.M., and Kelley, M.R. Acute ethanol exposure suppresses the repair of O<sup>6</sup>-methylguanine DNA lesions in castrated adult male rats. *Alcoholism: Clinical Exp. Res*. 18:1267-1271, 1994.
4. Wilson III, D.M., Deutsch, W.A., and Kelley, M.R. Drosophila ribosomal protein S3 contains an activity that cleaves DNA at apurinic/apyrimidinic sites. *J. Biol. Chem*. 269:25359-25364, 1994.
5. Harrison, L., Ascione A.G., Wilson III, D.M., and Demple, B. Characterization of the promoter region of the human apurinic endonuclease gene (*APE*). *J. Biol. Chem*. 270:5556-5564, 1995.
6. Wilson III, D.M., Takeshita, M., Grollman, A.P., and Demple, B. Incision activity of human apurinic endonuclease (*Ape*) at abasic site analogs in DNA. *J. Biol. Chem*. 270:16002-16007, 1995.

7. Wilson III, D.M., Bennett, R.A.O., Marquis, J.C., Ansari, P., and Demple, B. Trans-complementation by human apurinic endonuclease (Ape) of hypersensitivity to DNA damage and spontaneous mutator phenotype in *apn1*- yeast. *Nucleic Acids Res.* 23:5027-5033, 1995.
8. Wilson III, D.M., Takeshita, M., and Demple, B. Abasic site binding by the human apurinic endonuclease, Ape, and determination of DNA contact sites. *Nucleic Acids Res.* 25:933-939, 1997.
9. Suh, D., Wilson III, D.M., and Povirk, L. 3'-Phosphodiesterase activity of human apurinic/apyrimidinic endonuclease at DNA double-strand break ends. *Nucleic Acids Res.* 25:2495-2500, 1997.
10. Bennett\*, R.A.O., Wilson III\*, D.M., Wong, D., and Demple, B. Interaction of apurinic endonuclease and DNA polymerase  $\beta$  in the human base excision repair pathway. *Proc. Natl. Acad. Sci. USA.* 94:7166-7169, 1997. \*contributed equally to manuscript
11. Harrison, L., Ascione, A.G., Takiguchi, Y., Wilson III, D.M., Chen, D. J., and Demple, B. Comparison of the promoters of the mouse (*APEX*) and human (*APE*) apurinic endonuclease genes. *Mutation Res.* 385:159-172, 1997.
12. Erzberger, J.P., Barsky, D., Scharer, O.D., Colvin, M.E., and Wilson III, D.M. Elements in abasic site recognition by the major human and *Escherichia coli* apurinic/apyrimidinic endonucleases. *Nucleic Acids Res.* 26:2771-2778, 1998.
13. Wilson III, D. M., Carney, J.P., Coleman, M.A., Adamson, A.W., Christensen, M., and Lamerdin, J.E.. *HEX1*: a new human *RAD2* nuclease family member with homology to yeast Exonuclease 1. *Nucleic Acids Res.* 26:3762-3768, 1998. \*cover featured article
14. Chaudhry, A., Dedon, P., Wilson III, D.M., Demple, B., and Weinfeld, M. Removal of 3'-phosphoglycolates from neocarzinostatin, calicheamicin and  $\gamma$ -radiation treated DNA by human apurinic/apyrimidinic endonuclease (Ape) and *Escherichia coli* exonuclease III. *Biochem. Pharm.* 57:531-538, 1999.
15. Wilson III, D.M., and Bianchi, C. Improved immunodetection of nuclear antigens after sodium dodecyl sulfate treatment of paraformaldehyde fixed cells. *J. Histochem. Cytochem.* 47:1095-1100, 1999.
16. Erzberger, J.P., and Wilson III, D.M. The role of  $Mg^{2+}$  and specific amino acid residues in the catalytic reaction of the major human abasic endonuclease: new insights from EDTA-resistant incision of acyclic abasic site analogs and site-directed mutagenesis. *J. Mol. Biol.* 290:447-457, 1999.
17. Lee, B.-I., Shannon, M., Chen, X., Stubbs, L., and Wilson III, D.M. Expression specificity of the mouse exonuclease 1 (*mExo1*) gene. *Nucleic Acids Res.* 27:4114-4120, 1999.
18. Lee, B.-I., and Wilson III, D.M. The RAD2 domain of human exonuclease 1 exhibits 5' to 3' exonuclease and flap structure-specific endonuclease activities. *J. Biol. Chem.* 274:37763-37769, 1999.
19. Kelley, M.R., Xu, Y., Wilson III, D.M., and Deutsch, W.A. Genomic structure and characterization of the *Drosophila* S3 ribosomal/DNA repair gene and mutant alleles. *DNA & Cell Biol.* 19:149-156, 2000.
20. Nguyen, L.H., Barsky, D., Erzberger, J.P., and Wilson III, D.M.. Mapping the protein-DNA interface and metal binding site of the major human apurinic/apyrimidinic endonuclease. *J. Mol. Biol.* 298:447-459, 2000.
21. Barsky, D., Foloppe, N., Ahmadi, S., Wilson III, D.M., and MacKerell Jr., A. New insights into the structure of abasic DNA from molecular dynamic simulations. *Nucleic Acids Res.* 28:2613-2626, 2000.
22. Rasmussen, L.J., Rasmussen, M., Lee, B.-I., Rasmussen, A.K., Wilson III, D.M., Nielsen, F.C., and Bisgaard, H.C. Identification of factors interacting with hMSH2 in the fetal liver utilizing the yeast two-hybrid system: In vivo interaction through the C-

- terminal domain of hExo1 and hMsh2 and comparative expression analysis. *Mutat. Res.* 460:41-52, 2000.
23. Nguyen, L.H., Erzberger, J.P., Root, J., and Wilson III, D.M. The human homolog of *E. coli* Orn degrades small single stranded RNA and DNA oligomers. *J. Biol. Chem.* 275:25900-25906, 2000.
  24. Hadi, M.Z., Coleman, M.A., Fidelis, K., Mohrenweiser, H.W., and Wilson III, D.M. Functional characterization of Ape1 variants identified in the human population. *Nucleic Acids Res.* 28:3871-3879, 2000.
  25. Hadi, M.Z., and Wilson III, D.M. A second human protein with homology to the *Escherichia coli* abasic endonuclease exonuclease III. *Environ. Mol. Mutagen.* 36:312-324, 2000.
  26. Beernink, P.T., Segelke, B.W., Hadi, M.Z., Erzberger, J.P., Wilson III\*, D.M., and Rupp\*, B. Two Divalent Metal Ions in the Active Site of a New Crystal Form of Human Apurinic/Apyrimidinic Endonuclease, Ape1: Implications for the Catalytic Mechanism. *J. Mol. Biol.* 307:1023-1034, 2001. \*co-corresponding authors
  27. Nguyen, L.H., Espert, L., Mechti, N., and Wilson III, D.M.. The human inteferon and estrogen-regulated *ISG20/HEM45* gene product degrades single stranded RNA and DNA in vitro. *Biochemistry.* 40:7174-7179, 2001.
  28. Lee, B.-I., Nguyen, L.H., Barsky, D., Fernandes, M., and Wilson III, D.M. Molecular interactions of human Exo1 with DNA. *Nucleic Acids Research.* 30:942-949, 2002.
  29. Hadi, M.Z., Ginalski, K., Nguyen, L.H., and Wilson III, D.M. Determinants in nuclease specificity of Ape1 and Ape2, human homologues of *Escherchia coli* exonuclease III. *J. Mol. Biol.* 316:853-866, 2002.
  30. Sokhansanj, B., Rodrique, G.R., Fitch, J.P., and Wilson III, D.M. A quantitative model of human DNA base excision repair: I. Mechanistic insights. *Nucleic Acids Res.* 30:1817-1825, 2002.
  31. Schild, L.J., Brookman, K.W., Thompson, L.H., and Wilson III, D.M.. Effects of Ape1 Overexpression on cellular resistance to DNA-damaging and anti-cancer agents. *Som. Cell & Mol. Genet.* 25:253-262, 2002.
  32. Ladd, P.D., Wilson III, D.M., Kelley, M.R., and Skalnik, D.G. Identification of the human HEX1/hEXO1 gene promoter and characterization of elements responsible for promoter activity. *DNA Repair.* 2:187-198, 2003.
  33. Lowry, D.F., Hoyt, D.W., Khazi, F.A., Bagu, J., Lindsey, A.G., and Wilson III, D.M. Investigation of the role of the histidine-aspartate pair in the human exonuclease III-like abasic endonuclease, Ape1. *J. Mol. Biol.* 329:311-322, 2003.
  34. Wilson III, D.M. Properties of and substrate determinants for the exonuclease activity of human apurinic endonuclease Ape1. *J. Mol. Biol.* 330:1027-1037, 2003.
  35. Sun, X., Thrower, D., Wu, P., Zheng, L., Qiu, J., Bachant, J., Wilson III, D.M., and Shen, B. Complementary functions of the *Saccharomyces cerevisiae* Rad2 family nucleases in Okazaki fragment maturation, mutation avoidance, and chromosome stability. *DNA Repair.* 2:925-940, 2003.
  36. Marenstein, D.R., Wilson III, D.M., and Teebor, G.W. Human AP endonuclease (APE1) demonstrates endonucleolytic activity against AP sites in single-stranded DNA. *DNA Repair.* 3:527-533, 2004.
  37. Stuart, J.A., Hashiguchi, K., Wilson III, D.M., Copeland, W.C., Souza-Pinto, N.C., and Bohr, V.A. DNA base excision repair activities and pathway function in mitochondrial and cellular lysates from cells lacking mitochondrial DNA. *Nucleic Acids Res.* 32:2181-2192, 2004.
  38. Fan, J., Otterlei, M., Wong, H.-K., Tomkinson, A.E., and Wilson III, D.M. XRCC1 co-localizes and physically interacts with PCNA. *Nucleic Acids Res.* 32:2193-2201, 2004.



39. McNeill, D.R., Narayana, A., Wong, H.-K., and Wilson III, D.M. Inhibition of Ape1 nuclease activity by lead, iron, and cadmium. *Environ. Health Perspect.* 112:799-804, 2004.
40. Sokhansanj, B., and Wilson III, D.M. Use of a quantitative system model of human DNA base excision repair to estimate steady state oxidative DNA damage levels. *Free Radic. Biol. Med.* 37:422-427, 2004.
41. Bohr, V.A., Metter, J., Harrigan, J.A., Von Kobbe, C., Majumdar, A., Wilson III, D.M., and Seidman, M.M. Werner syndrome protein 1367 variants and disposition towards coronary artery disease in caucasian patients. *Mech. Ageing Dev.* 125:491-496, 2004.
42. Georgakilas, A.G., Bennett, P.V., Wilson III, D.M., and Sutherland, B.M. Processing of bistranded abasic DNA clusters in  $\gamma$ -irradiated human hematopoietic cells. *Nucleic Acids Res.* 32:5609-5620, 2004.
43. Ahn, B., Harrigan, J.A., Indig, F.E., Wilson III, D.M., and Bohr, V.A. Regulation of WRN helicase activity in human base excision repair. *J. Biol. Chem.* 279:53465-53474, 2004.
44. Wilson III, D.M. Ape1 abasic endonuclease activity is regulated by magnesium and potassium concentrations and is robust on alternative DNA structures. *J. Mol. Biol.* 345:1003-1014, 2005.
45. Opresko, P.L., Fan, J., Danzy, S., Wilson III, D.M., and Bohr V.A. Oxidative damage in telomere DNA disrupts recognition by TRF1 and TRF2. *Nucleic Acids Res.* 33:1230-1239, 2005.
46. Wong, H.-K., and Wilson III, D.M. XRCC1 and DNA polymerase  $\beta$  interaction contributes to cellular alkylating-agent resistance and single-strand break repair. *J. Cell. Biochem.* 95:794-804, 2005.
47. Wong, H.-K., Kim, D., Hogue, B.A., McNeill, D.R., and Wilson III, D.M. DNA damage levels and biochemical repair capacities associated with XRCC1 deficiency. *Biochemistry.* 44:14335-14343, 2005.
48. Sen, S., Paraggio, N.A., Gearheart, L.A., Connor, E.E., Issa, A., Coleman, R.S., Wilson III, D.M., Wyatt, M.D., and Berg, M.A. Effect of protein binding on ultrafast DNA dynamics: characterization of a DNA:APE1 complex. *Biophys. J.* 89:4129-4138, 2005.
49. Muftuoglu, M., Wong, H.-K., Imam, S. Wilson III, D.M., Bohr, V.A., and Opresko, P.L. Telomeric protein TRF2 interactions with base excision repair proteins and stimulates DNA synthesis by DNA polymerase  $\beta$ . *Cancer Res.* 66:113-124, 2006.
50. Harrigan, J.A., Wilson III, D.M., Prasad, R., Opresko, P.L., Beck, G., May, A., Wilson, S.H., and Bohr, V.A. The Werner syndrome protein operates in base excision repair and cooperates with DNA polymerase  $\beta$ . *Nucleic Acids Res.* 34:745-754, 2006.
51. Fan, J., Matsumoto, Y., and Wilson III, D.M. Nucleotide sequence and DNA secondary structure, as well as replication protein A, modulate the single-stranded abasic endonuclease activity of Ape1. *J. Biol. Chem.* 281:3889-3898, 2006.
52. Sokhansanj, B.A., and Wilson III, D.M. Estimating the impact of human base excision repair protein variants on the repair of oxidative DNA base damage. *Cancer Epidemiol. Biomarkers Prev.* 15:1000-1008, 2006. \*editorial featured
53. McNeill, D.R., Wong, H.-K., Narayana, A., and Wilson III, D.M. Lead promotes abasic site accumulation and co-mutagenesis in mammalian cells by inhibiting the major abasic endonuclease Ape1. *Mol. Carcinog.* 46:91-99, 2007.
54. Harrigan, J.A., Fan, J., Momand, J., Perrino, F.W., Bohr, V.A., and Wilson III, D.M. Wrn exonuclease activity is blocked by DNA termini harboring 3' obstructive groups. *Mech. Ageing Dev.* 128:259-266, 2007.
55. McNeill, D.R., and Wilson III, D.M. A dominant-negative form of the major human abasic endonuclease enhances cellular sensitivity to laboratory and clinical DNA-damaging agents. *Mol. Cancer Res.* 5:61-70, 2007.

56. Fan, J., Wilson, P.F., Wong, H.-K., Thompson, L.H., and Wilson III, D.M. XRCC1 down-regulation in human cells leads to DNA-damaging agent hypersensitivity, elevated sister chromatid exchange, and reduced survival of *BRCA2* mutant cells. *Environ. Mol. Mutagen.* 48:491-500, 2007.
57. Wong, H.-K., Muftuoglu, M., Beck, G., Imam, S., Bohr, V.A., and Wilson III, D.M. Cockayne syndrome B protein protects against sensitivity to agents that introduce base excision repair intermediates and activates apurinic endonuclease 1 incision activity. *Nucleic Acids Res.* 35:4103-4113, 2007.
58. Paap, B., Wilson III, D.M., and Sutherland, B.M. Human abasic endonuclease action on multi-lesion abasic clusters: implications for radiation-induced biological damage. *Nucleic Acids Res.* 36:2717-2727, 2008.
59. Berquist, B.R., McNeill, D.R., and Wilson III, D.M. Characterization of abasic endonuclease activity of human Ape1 on alternative substrates, as well as effects of ATP and sequence context on AP site incision. *J. Mol. Biol.* 379:17-27, 2008.
60. Lipton, A.S., Heck, R.W., Primak, S., McNeill, D.R., Wilson III, D.M., and Ellis, P.D. Characterization of Mg<sup>2+</sup> binding to the DNA repair protein apurinic/aprimidinic endonuclease 1 (APE1) via solid-state <sup>25</sup>Mg NMR spectroscopy. *J. Amer. Chem. Soc.* 130:9332-9341, 2008.
61. Liu, P., Qian, L., Sung, J.-S., de Souza-Pinto, N.C., Zheng, L., Bogenhagen, D.F., Bohr, V.A., Wilson III, D.M., Shen, B., and Demple, B. Long-patch base excision DNA repair dependent on FEN1 in human cell mitochondria. *Mol. Cell. Biol.* 28:4975-4987, 2008.
62. Kulkarni, A., McNeill, D.R., Gleichmann, M., Mattson, M.P., and Wilson III, D.M. XRCC1 protects against the lethality of induced oxidative DNA damage in terminally differentiated neural cells. *Nucleic Acids Res.* 36:5111-5121, 2008.
63. McNeill, D.R., Lam, W., DeWeese, T.L., Cheng, Y.-C., and Wilson III, D.M. Impairment of APE1 function enhances cellular sensitivity to clinically relevant alkylators and antimetabolites. *Mol. Cancer Res.* 7:897-906, 2009.
64. Simeonov, A., Kulkarni, A., Dorjsuren, D., Jadhav, A., McNeill, D.R., Austin, C.P., and Wilson III, D.M. Identification and characterization of inhibitors of human apurinic/aprimidinic endonuclease APE1. *PLoS ONE.* 4:e5740, 2009.
65. Schurman, S.H., Hedayati, M., Singh, D.K., Speina, E., Wang, Z., Macris, M., Sung, P., Wilson III, D.M., Croteau, D.L., and Bohr, V.A. Direct and indirect roles of RECQL4 in modulating base excision repair capacity. *Hum. Mol. Genet.* 18:3470-3483, 2009.
66. Berquist, B.R., and Wilson III, D.M. Nucleic acid binding activity of human Cockayne syndrome B protein and identification of Ca<sup>2+</sup> as a novel metal cofactor. *J. Mol. Biol.* 391:820-832, 2009.
67. Dorjsuren, D., Wilson III, D.M., Beard, W.A., McDonald, J.P., Austin, C.P., Woodgate, R., Wilson, S.H., and Simeonov, A. A real-time fluorescence method for enzymatic characterization of specialized human DNA polymerases. *Nucleic Acids Res.* 37:e128, 2009.
68. Goula, A.-V., Berquist, B.R., Wilson III, D.M., Wheeler, V.C., Trottier, Y., and Merienne, K. Stoichiometry of base excision repair proteins correlates with increased somatic CAG instability in striatum over cerebellum in Huntington's disease transgenic mice. *PLoS Genet.* 5:e1000749, 2009.
69. Aamann, M.D., Sorensen, M.M., Hvitby, C., Berquist, B.R., Muftuoglu, M., Tian, J., de Souza-Pinto, N.C., Wilson III, D.M., Stevnsner, T., and Bohr, V.A. Cockayne syndrome group B protein promotes mtDNA stability by supporting the BER association with the mitochondrial membrane. *FASEB J.* 24:2334-2346, 2010.
70. Akbari, M., Solvang-Garten, K., Hanssen-Bauer, A., Lieske, N.V., Pettersen, H.S., Pettersen, G.K., Wilson III, D.M., Krokan, H.E., and Otterlei, M. Direct interaction between XRCC1 and UNG2 facilitates rapid repair of uracil in DNA by XRCC1 complexes. *DNA Repair.* 9:785-795, 2010.

71. Berquist, B.R., Singh, D.K., Fan, J., Kim, D., Gillenwater, E., Kulkarni, A., Bohr, V.A., Ackerman, E.J., Tomkinson, A.E., and Wilson III, D.M. Functional capacity of XRCC1 protein variants identified in DNA repair-deficient Chinese hamster ovary cell lines and the human population. *Nucleic Acids Res.* 38:5023-5035, 2010.
72. Maul, R.W., Saribasak, H., Martomo, S.A., McClure, R.L., Yang, W., Vaisman, A., Gramlich, H.S., Schatz, D.G., Woodgate, R., Wilson III, D.M., and Gearhart, P.J. AID-dependent uracils in immunoglobulin gene variable and switch regions. *Nat. Immunol.* 12:70-76, 2011.
73. Dorjsuren, D., Kim, D., Maloney, D.J, Wilson III, D.M., and Simeonov, A. Complementary non-radioactive assays for investigation of human flap endonuclease 1 activity. *Nucleic Acids Res.* 39:e11, 2011.
74. Mohammed, M.Z., Vyjayanti, V.N., Laughton, C.A., Dekker, L.V., Fischer, P.M., Wilson III, D.M., Abbotts, R., Shah, S., Patel, P.M., Hickson, I.D., and Madhusudan, S. Development and evaluation of human AP endonuclease (APE1) inhibitors in melanoma and glioma cell lines. *Brit. J. Cancer.* 104:653-663, 2011.
75. Sykora, P., Croteau, D.L., Bohr, V.A., and Wilson III, D.M. Aprataxin localizes to mitochondria and preserves mitochondrial function. *Proc. Natl. Acad. Sci. USA* 108:7437-7442, 2011.
76. Kim, W.-C., Berquist, B.R., Uy, C., Wilson III, D.M., and Lee, C.H. Characterization of endoribonuclease activity of human apurinic/apyrimidinic endonuclease 1. *J. Mol. Biol.* 411:960-971, 2011.
77. Naidu, M.D., Agarwal, R., Pena, L.A., Cunha, L., Mezei, M., Shen, M., Wilson III, D.M., Liu, Y., Sanchez, Z., Chaudhary, P., Wilson, S.H., and Waring, M.J. Lucanthone and its derivative hycanthone inhibit apurinic endonuclease 1 (APE1) by direct protein binding. *PLoS ONE.* 6:e23679, 2011.
78. McNeill, D.R., Lin P.-C., Miller, M.G., de Souza-Pinto, N.C., Pistell, P.J., Fishbein, K., Spencer, R., Liu, Y., Pettan-Brewer, C., Ladiges, W.C., and Wilson III, D.M. XRCC1 haploinsufficiency in mice has little effect on aging, but adversely modifies exposure-dependent susceptibility. *Nucleic Acids Res.* 39:7992-8004, 2011.
79. Hanssen-Bauer, A., Solvang-Garten, K., Sundheim, O., Peña-Diaz, J., Andersen, S., Slupphaug, G., Krokan, H.E., Wilson III, D.M., Akbari, M., and Otterlei, M. XRCC1 coordinates disparate responses and multi-protein repair complexes depending on the nature and context of the DNA damage. *Environ. Mol. Mutagen.* 52:623-635, 2011.
80. Saribasak, H., Maul, R.W., Cao, Z., McClure, R.L., Yang, W. McNeill, D.R., Wilson III, D.M., and Gearhart, P.J. XRCC1 suppresses somatic hypermutation and promotes alternative-nonhomologous end joining in IgH genes. *J. Exp. Med.* 208:2209-2216, 2011.
81. Kim, Y.-J., Kim, D., Bernier, M., Delaplane, S., Su, D., Gross, M.L., Georgiadis, M.M., and Wilson III, D.M. S-Glutathionylation of cysteine 99 in the APE1 protein impairs endonuclease activity. *J. Mol. Biol.* 414:313-326, 2011.
82. Hanssen-Bauer, A., Solvang-Garten, K., Gilljam, K.M., Torseth, K., Wilson III, D.M., Akbari, M., and Otterlei, M. The region of XRCC1 which harbors the three most common nonsynonymous polymorphic variants is essential for the scaffolding function of XRCC1. *DNA Repair.* 11:357-366, 2012.
83. Rai, G., Vyjayanti, V.N., Dorjsuren, D., Simeonov, A., Jadhav, A., Wilson III\*, D.M., and Maloney\*, D.J. Synthesis, biological evaluation, and structure-activity relationships of a novel class of APE1 inhibitors. *J. Med. Chem.* 55:3101-3112, 2012. \*co-corresponding authors
84. Scheibye-Knudsen, M., Ramamoorthy, M., Sykora, P., Maynard, S., Lin, P.-C., Minor, R.K., Wilson III, D.M., Cooper, M., Spencer, R., de Cabo, R., Croteau, D.L., and Bohr, V.A. Cockayne syndrome group B protein prevents mitochondrial stress and promotes autophagy. *J. Exp. Med.* 209:855-869, 2012.

85. Goula, A.-V., Pearson, C.E., Maria, J.D., Tomkinson, A.E., Wilson III, D.M., and Merienne, K. Nucleotide sequence, DNA damage location, and protein stoichiometry influence base excision repair outcome at CAG/CTG repeats. *Biochemistry*. 51:3919-3932, 2012.
86. Sultana, R., McNeill, D.R., Abbotts, R., Mohammed, M.Z., Zdzienicka, M.Z., Qutob, H., Seedhouse, C., Laughton, C.A., Fischer, P.M., Patel, P.M., Wilson III, D.M., and Madhusudan, S. Synthetic lethality targeting of DNA double strand break repair deficient cells by human apurinic/apyrimidinic endonuclease (APE1) inhibitors. *Int. J. Cancer*. 131:2433-2444, 2012. \*editor's choice article
87. Berquist, B.R., Canugovi, C., Sykora, P., Wilson III\*, D.M., and Bohr\*, V.A. Human Cockayne syndrome B protein reciprocally communicates with mitochondrial proteins and promotes transcriptional elongation. *Nucleic Acids Res*. 40:8392-8405, 2012.  
\*contributed equally to manuscript
88. Møllersen, L., Rowe, A.D., Illuzzi, J.L., Hildrestrand, G.A., Gerhold, K.J., Tveterås, L., Bjølgerud, A., Wilson III, D.M., Bjørås, M., and Klungland, A. Neil1 is a genetic modifier of somatic and germline CAG trinucleotide repeat instability in R6/1 mice. *Hum. Mol. Genet*. 21:4939-4947, 2012.
89. Tadokoro, T., Ramamoorthy, M., Popuri, V., May, A., Tian, J., Sykora, P., Rybanska, I., Wilson III, D.M., Croteau, D.L., and Bohr, V.A. Distinct roles for human RECQL5 during single strand break repair and base excision repair. *Mol. Biol. Cell*. 23:4273-4285, 2012.
90. Dorjsuren, D., Kim, D., Vyjayanti, V.N., Maloney, D.J., Jadhav, A., Wilson III\*, D.M., and Simeonov\*, A. Diverse small molecule inhibitors of human apurinic/apyrimidinic endonuclease APE1 identified from a screen of a large public collection. *PLoS ONE*. 7:e47974, 2012. \*co-corresponding authors
91. Della-Maria, J.D., Hegde, M., McNeill, D.R., Tsai, M.S., Ellenberger, T., Wilson III, D.M., Mitra, S., and Tomkinson, A.E. 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*. 287:39233-39244, 2012.
92. Sykora, P., Yang, J.-L., Ferrarelli, L.K., Tian, J., Kulkarni, A., Weissman, L., Keijzers, G., Wilson III, D.M., Mattson, M.P., and Bohr, V.A. Downregulation of DNA base excision repair during neuronal differentiation increases sensitivity to oxidative stress. *Neurobiol of Aging*. 34:1717-1727, 2013.
93. McNeill, D.R., Paramasivam, M., Baldwin, J., Huang, J., Vyjayanti, V.N., Seidman, M.M., and Wilson III, D.M. NEIL1 responds and binds to psoralen-induced DNA interstrand crosslinks. *J. Biol. Chem*. 288:12426-12436, 2013.
94. Illuzzi, J.L., Harris, N.A., Manvilla, B.A., Kim, D., Li, M., Drohat, A.C., and Wilson III, D.M. Functional assessment of population and tumor-associated APE1 protein variants. *PLoS ONE*. 8:e65922, 2013.
95. Kirkali, G., Jaruga, P., Reddy, P.T., Tona, A., Li, M., Wilson III, D.M., and Dizdaroglu, M. Identification and quantification of DNA repair protein apurinic/apyrimidinic endonuclease 1 (APE1) in human cells by liquid chromatography/isotope-dilution tandem mass spectrometry. *PLoS ONE*. 8:e69894, 2013.
96. Kim, W.-C., Ma, C., Kim, S.-E., Li, W.M., Wilson III, D.M., and Lee, C.H. Distinct endoribonuclease function of apurinic/apyrimidinic endonuclease 1 variants identified in the human population. *PLoS ONE*. 9:e90837, 2014.
97. Poletto, M., Lirussi, L., Wilson III, D.M., and Tell, G. Nucleophosmin modulates the stability, activity and nucleolar accumulation of base excision repair proteins. *Mol. Biol. Cell*. 25:1641-1652, 2014.
98. Li, M., Völker, J., Breslauer, K.J., and Wilson III, D.M. APE1 incision activity at abasic sites in tandem repeat sequences. *J. Mol. Biol*. 426:2183-2198, 2014.

99. Abbotts, R., Jewell, R., Nsengimana, J., Maloney, D.J., Simeonov, A., Seedhouse, C., Elliott, F., Laye, J., Walker, C., Jadhav, A., Grabowska, A., Ball, G., Patel, P.M., Newton-Bishop, J., Wilson III, D.M., and Madhusudan, S. Targeting human apurinic/apyrimidinic endonuclease 1 (APE1) in phosphatase and tensin homolog (PTEN) deficient melanoma cells for personalized therapy. *Oncotarget*. 30:3273-3286, 2014.
100. Abdel-Fatah, T., Russell, R., Albarakati, N., Maloney, D.J., Dorjsuren, D., Rueda, O.M., Moseley, P., Mohan, V., Sun, H., Abbotts, R., Mukherjee, A., Agarwal, D., Illuzzi, J.L., Jadhav, A., Simeonov, A., Ball, G., Chan, S., Caldas, C., Ellis, I.O., Wilson III, D.M., and Madhusudan, S. Genomic and protein expression analysis reveals flap endonuclease 1 (FEN1) as a key biomarker in breast and ovarian cancer. *Mol. Oncol.* 8:1326-1338, 2014.
101. Scheibye-Knudsen, M., Mitchell, S.J., Fang, E.F., Iyama, T., Ward, T., Wang, J., Dunn, C.A., Singh, N., Veith, S., Hasan, M.M., Mangerich, A., Wilson, M.A., Mattson, M.P., Bergersen, L.H., Cogger, V.C., Warren, A., Le Couteur, D.G., Moaddel, R., Wilson III, D.M., Croteau, D.L., de Cabo, R., and Bohr, V.A. A high fat diet rescues the aging phenotypes of Cockayne syndrome mice via ketone mediated SIRT1 activation. *Cell Metab.* 20:840-855, 2014.
102. Iyama, T., Lee, S.Y., Berquist, B.R., Gileadi, O., Bohr, V.A., Seidman, M.M., McHugh, P.J., and Wilson III, D.M. CSB interacts with SNM1A and promotes DNA interstrand crosslink processing. *Nucleic Acids Res.* 43:247-258, 2015.
103. Sykora, P., Misiak, M.M., Wang, Y., Ghosh, S., Leandro, G., Liu, D., Tian, J., Baptiste, B., Cong, W., Brennerman, B., Fang, E., Becker, K.G., Hamilton, R., Chigurupati, S., Zhang, Y., Egan, J., Croteau, D., Wilson III, D.M., Mattson, M.P., and Bohr, V.A. DNA polymerase  $\beta$  deficiency leads to neurodegeneration and exacerbates Alzheimer disease phenotypes. *Nucleic Acids Res.* 43:943-959, 2015.
104. Ghosh, S., Canugovi, C., Yoon, J.S., Wilson III, D.M., Croteau, D.L., Mattson, M.P., and Bohr, V.A. Partial loss of the DNA repair scaffold protein, Xrcc1, results in increased brain damage and reduced recovery from ischemic stroke in mice. *Neurobiol of Aging*. 36:2319-2330, 2015.
105. Hinz, J.M., Mao, P., McNeill, D.R., and Wilson III, D.M. Reduced nuclease activity of apurinic/apyrimidinic endonuclease (APE1) variants on nucleosomes: identification of access residues. *J. Biol. Chem.* 290:21067-21075, 2015.
106. Poletto, M., Dorjsuren, D., Malfatti, M.C., Scognamiglio, P.L., Marasco, D., Jadhav, A., Maloney, D.J., Wilson III, D.M., Simeonov, A., and Tell, G. Inhibitors of the apurinic/apyrimidinic endonuclease 1 (APE1)/nucleophosmin (NPM1) interaction that display anti-tumor properties. *Mol. Carcinog.* 55:688-704, 2016.
107. Iyama, T., and Wilson III, D.M. Elements that regulate the DNA damage response of proteins defective in Cockayne syndrome. *J. Mol. Biol.* 428:62-78, 2016.
108. Scheibye-Knudsen, M., Tseng, A.H.-H., Jensen, M.B., Scheibye-Alsing, K., Fang, E.F., Iyama, T., Bharti, S.K., Marosi, K., Froetscher, L., Kassahun, H., Eckley, D.M., Maul, R., Bastian, P., De, S., Ghosh, S., Nilsen, H., Goldberg, I., Mattson, M.P., Wilson III, D.M., Brosh Jr., R.M., Gorospe, M., and Bohr, V.A. Cockayne syndrome group A and B proteins converge on transcription-linked resolution of non-B DNA. *Proc. Natl. Acad. Sci. USA* 113:12502-12507, 2016.
109. Zhang, S., He, L., Dai, N., Shan, J., Yang, X., Zhong, Z., Qing, Y., Jin, F., Chen, C., Yang, Y., Wang, H., Baugh, L., Tell, G., Wilson III, D.M., Li, M., and Wang, D. Serum APE1 as a predictive marker for platinum-based chemotherapy of non-small cell lung cancer patients. *Oncotarget*. 7:77482-77494, 2016.
110. Illuzzi, J.L., McNeill, D.R., Bastian, P., Brennerman, B., Wersto, R., Russel, H.R., Bunz, F., McKinnon, P.J., Becker, K.G., and Wilson III, D.M. Tumor-associated APE1 variant

- exhibits reduced complementation efficiency but does not promote cancer cell phenotypes. *Environ. Mol. Mutagen.* 58:84-98, 2017. \*cover featured article
111. Chaim, I.A., Gardner, A., Wu, J., Iyama, T., Wilson III, D.M., and Samson, L.D. A novel role for transcription-coupled nucleotide excision repair for the *in vivo* repair of 3,*N*<sup>4</sup>-ethenocytosine. *Nucleic Acids Res.* 45:3242-3252, 2017.
  112. Wilson III<sup>\*,#</sup>, D.M., Rieckher<sup>\*</sup>, M., Williams, A.B., and Schumacher<sup>#</sup>, Björn. Systematic analysis of DNA crosslink repair pathways during development and aging in *C. elegans*. *Nucleic Acids Res.* 45:9467-9480, 2017. \*contributed equally to manuscript; <sup>#</sup>co-corresponding authors; cover featured article
  113. Golato, T.<sup>\*</sup>, Brennerman, B.<sup>\*</sup>, McNeill, D.R., Li, J., Sobol, R.W., and Wilson III, D.M. Development of a cell-based base excision repair assay. *Sci. Reports* 7:1307, 2017. \*contributed equally to manuscript
  114. Sykora, P., Kanno, S., Akbari, M., Kulikowicz, T., Leandro, G., Baptiste, B., Lu, H., May, A., Becker, K., Wilson III, D.M., Croteau, D., Yasui, A., and Bohr, V.A. DNA polymerase beta participates in mitochondrial DNA repair. *Mol. Cell. Biol.* 37:e00237-17, 2017.
  115. Li<sup>\*,#</sup>, M., Yang<sup>\*</sup>, X., Lu, X., Dai, N., Zhang, S., Cheng, Y., Zhang, L., Yang, Y., Liu, Y., Yang, Z., Wang<sup>#</sup>, D., and Wilson III<sup>#</sup>, D.M. APE1 deficiency promotes cellular senescence and premature aging features in mice. *Nucleic Acids Res.* 46:5664-5677, 2018. \*contributed equally to manuscript; <sup>#</sup>co-corresponding authors
  116. Li, J., Svilar, D., McClellan, S., Kim, J.-H., Ahn, E.-Y. E., Vens, C., Wilson III, D.M., and Sobol, R.W. DNA repair molecular beacon assay: a platform for real-time functional analysis of cellular DNA repair capacity. *Oncotarget* 9:31719-31743, 2018.
  117. Lee, J.S., Adler, L., Karathia, H., Carmel, N., Robinovich, S., Auslander, N., Keshet, R., Stettner, N., Silberman, A., Agemy, L., Helbling, D., Eilam, R., Sun, Q., Brandis, A., Malitsky, S., Itkin, M., Wiss, H., Pinto, S., Kalaora, S., Levy, R., Barnea, E., Admon, A., Dimmock, D., Ginossar, N.S., Scherz, A., Nagamani, S.C.S., Unda, M., Wilson III, D.M., Elhasid, R., Carracedo, A., Samuels, Y., Hannenhalli, S., Ruppin, E., and Erez, A. Urea cycle dyregulation in cancer results in a pyrimidine rich mutation bias associated with enhanced response to immune checkpoint therapies. *Cell* 174:1559-1570, 2018.
  118. Iyama, T., Golato, T., Lu, H., Hamilton, R., Raja, A., Bohr, V.A., and Wilson III, D.M. Regulation of the intranuclear distribution of the Cockayne syndrome proteins. *Sci. Reports* 8:17490, 2018.
  119. Dumitache, L.C., Shimada, M., Downing, S.M., Li, Y., Illuzzi, J.L., Russell, H.R., Wilson III, D.M., and McKinnon, P.J. Apurinic endonuclease-1 preserves genome integrity to maintain homeostasis, thermoregulation and prevent brain tumors. *Proc. Natl. Acad. Sci.* 115:E12285-E12294, 2018.
  120. Morova, T., McNeill, D.R., Lallous, N., Gönen, M., Dalal, K., Wilson III, D.M., Gursoy, A., Keskin, O., and Lack, N. Androgen receptor binding sites are highly mutated in prostate cancer. *Nat. Comm.* In Press.
  121. Flach, K.D., Periyasamy, M., Jadhav, A., Dorjsuren, D., Hickey, T.E., Opdam, M., Patel, H., Canisius, S., Wilson III, D.M., Nieuwland, M., Kluin, R., Zakharov, A.V., Wesseling, J., Wessels, L.F.A., Linn, S.C., Tilley, W.D., Simeonov, A., Ali, Simak, and Zwart, W. Endonuclease FEN1 coregulates ER $\alpha$  activity and provides a novel drug interface in tamoxifen resistance. Submitted.
  122. Mesquita, K.A., Ali, R., Doherty, R., Toss, M.S., Miligy, I., Alblihy, A., Dorjsuren, D., Simeonov, A., Jadhav, A., Wilson III, D.M., Hickson, I., Tatum, N.J., Rakha, E.A., Madhusudan, S. Flap endonuclease 1 blockade for platinum chemosensitization and synthetic lethality in epithelial ovarian cancers. Submitted.
  123. Somuncu, B., Keskin, S., Antmen, F.M., Saglican, Y., Ekmekcioglu, A., Ertuzun, T., Tuna, M.B., Obek, C., Wilson III, D.M., Ince, U., Kural, A.R., and Muftuoglu, M. Non-

muscle invasive bladder cancer tissues have increased base excision repair capacity.  
Submitted.

#### Research Articles/Reviews:

1. Wilson III, D.M., and McNeill, D.R. Base excision repair and the central nervous system. *Neurosci.* 145:1187-1200, 2007.
2. Wilson III, D.M., Kim, D., Berquist, B.R., and Sigurdson, A. Variation in base excision repair capacity. *Mutat. Res.* 711:100-112, 2011.
3. McNeill, D.R., Whitaker, A.M., Stark, W.J., Illuzzi, J.L., McKinnon, P.J., Freudenthal, B.D., and Wilson III, D.M. Functions of the major abasic endonuclease (APE1) in cell viability and genotoxin resistance. *Mutagenesis* 35:27-38, 2020.

#### Reviews, Commentaries & Editorials:

1. Demple, B., Harrison, L., Wilson III, D.M., Bennett, R.A.O., Takagi, T., and Ascione, A.G. Regulation of eukaryotic abasic (AP) endonucleases and their role in genetic stability. *Environ. Health Perspect.* 105 (Supl. 4): 931-934, 1997.
2. Wilson III, D.M., and Thompson, L.H. Life without DNA repair. *Proc. Natl. Acad. Sci. USA.* 94: 12754-12757, 1997.
3. Wilson III, D.M., and Barsky, D. The major human abasic endonuclease Ape1: Formation, consequences and repair of abasic lesions in DNA. *Mutat. Res.* 484: 283-307, 2001.
4. Kelley, M.R., Kow, Y.W., and Wilson III, D.M. Disparity between DNA base excision repair in yeast and mammals: translational implications. *Cancer Res.* 63: 549-554, 2003.
5. Wilson III, D.M., Sofinowski, T.M., and McNeill, D.R. Repair mechanisms for oxidative DNA damage. *Front. in Biosci.* 8: d963-981, 2003.
6. Mohrenweiser, H.W., Wilson III, D.M., and Jones, I.M. Challenges and complexities in estimating both the functional impact and the disease risk associated with the extensive genetic variation in human DNA repair genes. *Mutat. Res.* 526: 93-125, 2003.
7. Fan, J., and Wilson III, D.M. Protein-protein interactions and post-translational modifications in mammalian base excision repair. *Free Radic. Biol. Med.* 38: 1121-1138, 2005.
8. Wilson III, D.M., and Bohr, V.A. The mechanics of base excision repair, and its relationship to aging and disease. *DNA Repair.* 6: 544-559, 2007.
9. Wilson III, D.M., and Thompson, L.H. Molecular mechanisms of sister-chromatid exchange. *Mutat. Res.* 616: 11-23, 2007.
10. Wilson III, D.M., and Mattson, M.P. Nicked to death: DNA single-strand breaks in neurodegeneration. *Curr. Biol.* 17: R55-R58, 2007.
11. Wilson III, D.M. Processing of non-conventional strand break ends. *Environ. Mol. Mutagen.* 48:772-782, 2007.
12. Kulkarni, A., and Wilson III, D.M. The involvement of DNA damage and repair defects in neurological dysfunction. *Amer. J. Hum. Genet.* 82:539-566, 2008.
13. Wilson III, D.M., Bohr, V.A, and McKinnon, P.J. Special Issue Preface: DNA damage, DNA repair, aging and age-related disease. *Mech. Ageing Dev.* 129:349-352, 2008.
14. de Souza-Pinto, N.C., Wilson III, D.M., Stevsner, T.V., and Bohr, V.A. Mitochondrial DNA base excision repair and neurodegeneration. *DNA Repair.* 7:1098-1109, 2008.
15. Wyatt, M.D., and Wilson III, D.M. Participation of DNA repair in the response to 5-fluorouracil. *Cell. Mol. Life Sci.* 66:788-799, 2009.
16. Tell\*, G., Wilson III\*, D.M., and Lee\*, C.H. Intrusion of a DNA-repair protein in the RNome world: Is this the beginning of a new era? *Mol. Cell. Biol.* 30:366-371, 2010.  
\*contributed equally to manuscript
17. Wilson III, D.M., and Seidman, M.M. A novel link to base excision repair. *Trends Biochem. Sci.* 35:247-252, 2010.

18. Wilson III, D.M., and Brooks, P.J. Special Issue Introduction: The Mitochondrial Genome: Dynamics, mechanisms of repair, and a target in disease and therapy. *Environ. Mol. Mutagen.* 51:349-351, 2010.
19. Tell, G, and Wilson III, D.M. Targeting DNA repair proteins for cancer treatment. *Cell. Mol. Life Sci.* 67:3569-3572, 2010.
20. Wilson III, D.M., and Simeonov, A. Small molecule inhibitors of DNA repair nuclease activities of APE1. *Cell. Mol. Life Sci.* 67:3621-3631, 2010.
21. Yang, J.-L., Sykora, P., Wilson III, D.M., Mattson, M.P., and Bohr, V.A. The excitatory neurotransmitter glutamate stimulates DNA repair to increase neuronal resiliency. *Mech. Ageing Dev.* 132:405-411, 2011.
22. Kim, Y.-J., and Wilson III, D.M. Overview of base excision repair biochemistry. *Curr. Mol. Pharm.* 5:3-13, 2012.
23. Sykora, P., Wilson III, D.M., and Bohr, V.A. Repair of persistent strand breaks in the mitochondrial genome. *Mech. Ageing Dev.* 133:169-175, 2012.
24. Berquist, B.R., and Wilson III, D.M. Pathways for repairing and tolerating the spectrum of oxidative DNA lesions. *Cancer Lett.* 327:61-72, 2012.
25. Illuzzi, J.L., and Wilson III, D.M. Base excision repair: contribution to tumorigenesis and target in anticancer treatment paradigms. *Curr. Med. Chem.* 19:3922-3936, 2012.
26. Karahalil, B., Bohr, V.A., and Wilson III, D.M. Impact of DNA polymorphisms in key DNA base excision repair proteins on cancer risk. *Hum. Exp. Tox.* 31:981-1005, 2012.
27. Iyama, T., and Wilson III, D.M. DNA repair mechanisms in dividing and non-dividing cells. *DNA Repair.* 12:620-636, 2013. \*most down-loaded and cited article
28. Wilson III, D.M., and Bohr, V.A. Special issue on the segmental progeria Cockayne syndrome. *Mech. Ageing Dev.* 134:159-160, 2013.
29. Sykora, P., Wilson III, D.M. and Bohr, V.A. Base excision repair in the mammalian brain: Implication for age-related neurodegeneration. *Mech. Ageing Dev.* 134:440-448, 2013.
30. Li, M., and Wilson III, D.M. Human apurinic/apyrimidinic endonuclease 1. *Antioxid. Redox Signaling.* 20:678-707, 2014.
31. Brennerman, B.M., Illuzzi, J.L., and Wilson III, D.M. Base excision repair capacity in informing healthspan. *Carcinogenesis.* 35:2643-2652, 2014.
32. Scheibye-Knudsen, M., Fang, E.F., Croteau, D.L., Wilson III, D.M., and Bohr, V.A. Protecting the mitochondrial powerhouse. *Trends Cell Biol.* 25:158-170, 2015.
33. Abbotts, R., and Wilson III, D.M. Coordination of DNA single strand break repair. *Free Radic. Biol. Med.* 107:228-244, 2017.
34. Tiwari, V., and Wilson III, D.M. DNA damage and associated DNA repair defects in disease and premature aging. *Amer. J. Hum. Genet.* 105:237-257, 2019.

#### Preprints:

1. Sinha, S., Guerra, K.B., Cheng, K., Leiserson, M.D.M., Wilson III, D.M., Ryan, B.M., Ronai, Z.A., Lee, J.S., Deshpande, A.J., and Ruppin, E. Integrated computational and experimental identification of *p53*, *KRAS* and *VHL* mutant selection associated with CRISPR-Cas9 editing. <https://doi.org/10.1101/407767>, 2019.

#### Books and Book Chapters:

1. Wilson III, D.M., Engleward, B. and Samson, L. Prokaryotic base excision repair. In: Nickoloff, J.A., and Hoekstra, M.F (Eds.): *DNA Damage and Repair*, Vol. 1. New Jersey, Humana Press Inc., 1998, pp. 29-64.
2. Kelley, M.R., Luo, M., Xu, Y., Zimmerman, E., Wilson III, D.M., and Robertson, K.A. Translational implications of Ape1 in germ cell tumors: Ape1 as a therapeutic target. In: Harnden, P., Joffe, J.K., and Jones, W.G. (Eds.): *Germ Cell Tumours V*. New York, Springer Verlag, 2002, pp. 85-94.



3. Wilson III, D.M., and Lowry, D.F. Recognition and repair of abasic sites. In: Siede, W., Kow, Y.W., and Doetsch, P.W. (Eds.): *DNA Damage Recognition*. New York, Marcel-Dekker, Inc., 2006, pp. 421-443.
4. Wilson III, D.M., Fan, J., Wong, H.-K., and McNeill, D.R. DNA repair. In: Laurent, G.J., and Shapiro, S.D. (Eds.): *Encyclopedia of Respiratory Medicine*. London, Academic Press Inc., 2006, pp. 30-37.
5. Bohr, V.A., Wilson III, D.M., de Souza Pinto, N., van der Pluijm, I., Hoeijmakers, J.H. DNA repair and aging. In: Guarente, L., Partridge, L., and Wallace, D. (Eds): *The Molecular Biology of Aging*. New York, Cold Spring Harbor Laboratory Press, 2008, pp. 309-346.
6. Madhusudan, S. and Wilson III, D.M. (Eds) *DNA Repair and Cancer: From Bench to Clinic*. Florida, CRC Press, 2013.
7. Wilson III, D.M. (Ed) *The Base Excision Repair Pathway: Molecular Mechanisms and Role in Disease Development and Therapeutic Design*. Singapore, World Scientific Publishing, 2017.
8. Abbotts, R., Golato, T., and Wilson III, D.M. Role of DNA repair in carcinogenesis and cancer therapeutics. In: Boffetta, P., Hainaut, P. (Eds.), *Encyclopedia of Cancer, 3<sup>rd</sup> Edition*. United Kingdom, Elsevier, Academic Press, 2019, pp. 363–385.