

## Curriculum Vitae

### **IRA MICHAEL LEFFAK**

Office: Department of Biochemistry and Molecular Biology

Room 165 Diggs Laboratory

Boonshoft School of Medicine, and the College of Science and Mathematics, Wright  
State University

3640 Colonel Glenn Highway

Dayton, OH 45435

tel: (937) 775-3125 fax: (937) 775-3730

E-mail: MICHAEL.LEFFAK@WRIGHT.EDU

Home: 6522 Stillcrest Way, Dayton, OH 45414

(937) 898-3618 (937) 422-0801 (mobile)

Personal:

Birthplace: New York City, N.Y. Citizenship: U.S.

Marital status: Married, two children

Education:

1965-1969 City College of New York, N.Y.C.; B.S. Biology

1971-1976 City University of New York, N.Y.C.; Ph.D. Biochemistry  
(Mentor: Dr. Hsueh-jei Li)

1976-1979 Princeton University, Princeton, N.J.; Postdoctoral (Mentor: Dr. H.  
Weintraub)

Employment History:

1976 - 1979 Postdoctoral Fellow, Department of Biochemistry, Princeton University

1979 - 1985 Assistant Professor, Biochemistry & Molecular Biology, WSU

1985 - 1993 Associate Professor, Biochemistry & Molecular Biology, WSU

1992 - 1994 Director, Kettering Medical Cntr. - WSU Clinical Molecular Genetics  
Laboratory

1993 -present Professor, Biochemistry & Molecular Biology, WSU

2000 -2005 Vice Chair, Department of Biochemistry & Molecular Biology, WSU

2007 -2013 Vice Chair, Department of Biochemistry & Molecular Biology, WSU

2013-2014 Interim Chair, Department of Biochemistry & Molecular Biology, WSU

2014-present Vice Chair (Research), Department of Biochemistry & Molecular  
Biology, WSU

Awards/Honors:

- NIH Postdoctoral Fellowship (1977-1978)
- WSU Faculty Research Fellowship (1979)
- WSU School of Medicine Postdoctoral Fellowship Award (1984)
- Dean's Award for Teaching Excellence, WSU School of Medicine (1992)

- Outstanding Senior Research Award, WSU SOM Academy of Medicine (2002)
- Faculty Mentor Award, WSU Boonshoft School of Medicine (2011)
- Elected Fellow of the American Association for the Advancement of Science (2008)
- Brage Golding Distinguished Professor of Research award (2009-2011)
- Editorial Board- Journal of Biological Chemistry (2014- present)
- Editorial Board- DNA Repair (2014-present)
- Session Chair- 18th Annual Buffalo DNA Replication & Repair Symposium (2014)
- Organizer- 19<sup>th</sup> Annual Midwest DNA Repair Symposium, Dayton, OH (2017)
- Outstanding Senior Research Award, WSU BSOM Academy of Medicine (2017)

#### Research Interests:

Molecular and cell biological analysis of eucaryotic DNA replication origins; structure of DNA and proteins linking the cell cycle to the initiation of DNA replication; the relationship between chromatin structure, transcription and replication. Replication-dependent instability of disease-related microsatellite DNA sequences.

#### Invited Plenary Presentations

- Gordon Research Conference on Chromosomal Proteins (1984).
- Cold Spring Harbor Conference on DNA Replication (1988).
- Workshop on DNA Replication, Les Arcs, France (1991) (funded).
- Medical Grand Rounds, Miami Valley Hospital, Dayton, OH, Clinical Application of Molecular Genetics (1992).
- Medical Grand Rounds, Kettering Medical Center, Dayton, OH, Clinical Application of Molecular Genetics (1992).
- McGill Symposium on the Regulation of Eucaryotic DNA Replication (Montreal) (1990, 1992, 1994, 1996, 1998, 2001)
- Salk Conference on Eucaryotic DNA Replication (2000)
- Drug and Gene-Based Therapeutics (Crete) (2006)
- Human Microsatellite Instability (Guanacaste, 2009)
- Cold Spring Harbor Meeting on DNA Replication (N.Y.C., 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2015)
- International Conference on Molecular Biology & Nucleic Acids (2018, Toronto, Canada, funded)

#### Professional Memberships:

- American Society of Biochemistry and Molecular Biology
- American Association for the Advancement of Science
- American Society for Microbiology

#### Patent:

US 7960115 (June, 2011) DNA Binding Protein DUE-B

Research Funding (direct costs):

- 1979-1982 NIH (NIGMS); "Chromatin Structure and Replication". \$137,500; M. Leffak, P.I.
- 1983-1984 American Cancer Society (Ohio)- "Chromatin Assembly". \$15,000; M. Leffak, P.I.
- 1984-1985 American Cancer Society (Ohio)- "Replication Polarity of the Histone H5 Gene". \$15,000; M. Leffak, P.I.
- 1983-1986 NSF; "Chromatin Assembly". \$199,000; M. Leffak, P.I.
- 1984-1985 WSU SOM; Equipment Grant; \$13,000; M. Leffak, P.I.
- 1986-1987 State of Ohio Academic Excellence - Research Challenge Award; \$35,000; M. Leffak, P.I.
- 1986-1989 NIH (NIGMS) "Replication Polarity of Eucaryotic Genes". \$270,330; M. Leffak, P.I.
- 1988-1989 NIH (NEI) Pilot Research Grant- "cDNA Clones Related to Retinal Function". \$15,000; M. Leffak, D.T. Organisciak, co-P.I.'s.
- 1988-1989 NIH (NIGMS) Small Instrumentation Grant; \$10,682.
- 1988-1989 State of Ohio Academic Excellence - Research Challenge Award (with G. Alter, P. Fink, J. Paietta, and L. Prochaska); \$82,000.
- 1988-1990 American Cancer Society Research Grant- "Analysis of the Human c-Myc Gene Replication Origin". \$149,000; M. Leffak, P.I.
- 1990-1992 State of Ohio Research Challenge Award - "Replication of a Cancer Gene in Human Cells; Analysis of the DNA Elements Involved". \$27,000; M. Leffak, P.I.
- 1990-1991 American Cancer Society (Ohio) "Identification of the Human c-myc Replication Origin". \$15,000; M. Leffak, P.I.
- 1992-1994 Kettering Medical Center - "Clinical Applications of Molecular Genetics". \$598,901; M. Leffak, Director.
- 1993-1995 American Heart Association (Ohio) "Regulation of the Human Apolipoprotein AI Gene". \$60,000; M. Leffak, P.I.
- 1994-1999 NIH (NEI) "Environmental Light and Retinal Membrane Development". \$756,450; co-PI with D.T. Organisciak.
- 1994-1995 WSU College of Science & Mathematics; "Viral Transduction of the Human c-myc Origin of Replication". \$7,500; ; M. Leffak, P.I.
- 1996-1997 American Cancer Society (Ohio); "Chromosome Replication of a Mutant c-myc Origin of Replication". \$20,000; M. Leffak, P.I.
- 1996-1999 NIH (NIGMS); Analysis of the Human c-myc Gene Replication Origin". \$422,827; M. Leffak, P.I.
- 1997-1998 WSU School of Graduate Studies; "Protein Binding to the c-myc Replication Origin". \$7,400; M. Leffak, P.I.
- 1999-2000 WSU School of Medicine; "Proposal for Postdoctoral Research in Biochemistry and Molecular Biology". \$450,000; M. Leffak (committee chair), with S. Berberich, B. Wilson, and L. Prochaska
- 1999-2000 State of Ohio Research Challenge Award - "Replication Origin Recognition Protein DUE-B". \$26,000; M. Leffak, P.I.

- 1999-2001 The Kettering Foundation; "Essential DNA Elements at a Chromosomal origin of DNA Replication". \$150,000, M. Leffak, P.I.
- 1999-2004 NIH (NIGMS); "Analysis of the Human c-myc Gene Replication Origin". \$856,147; M. Leffak, P.I.
- 2002-2003 WSU School of Medicine; "DNA Replication and Disease". \$24,000, M. Leffak, P.I.
- 2003-2008 NIH (NIDDK); "DNA Replication Fork: Pausing, Recombination and Disease". \$803,700; J. Bissler, Children's Hosp. Cinti., P.I. (M. Leffak, 10% FTE, \$232,400 direct cost).
- 2004-2005 Elsa Pardee Foundation; "A Link Between DNA Replication, DNA Repair, and Ovarian Cancer: The Replication Origin Binding Protein DUE-B". \$93,000, M. Leffak, P.I.
- 2005-2009 NIH (NIGMS); "Analysis of the Human c-myc Gene Replication Origin". \$1,201,200; M. Leffak, P.I.
- 2010-2012 NIH (NIGMS) "The role of the DNA unwinding element binding protein, DUE-B, in DNA replication". \$594,000; M. Leffak, P.I.
- 2009-2013 NIH (NIGMS); "Analysis of the Human c-myc Gene Replication Origin". \$1,260,000; M. Leffak, P.I.
- 2012-2017 NIH (NIGMS) Second-site genetic modifiers of CTG/CAG microsatellite repeat instability. \$1,124,800; M. Leffak, P.I.
- 2017-2021 NIH (NIGMS) Mechanisms of Replication-Dependent Microsatellite Instability in Human Disease. \$1,124,800; M. Leffak, P.I.

Intramural Service:

Burroughs-Wellcome Visiting Professorship Award Author ([1984] Recipient: Dr. G. Cooper, Harvard University).

WSU Institutional Biohazard Safety Committee Member (1985-1995).

Chair, Promotion & Tenure Committee, Department of Biochemistry and Molecular Biology (1993-2000).

College of Science and Mathematics Assessment Planning Committee (1994).

Chair, Department of Biochemistry and Molecular Biology Assessment Planning Committee (1994-1995).

Dean's Appointee; Ad Hoc Promotion and Tenure Committee: A. Corbett (1996).

Chair of the FiveYear Review Committee for the Chair of the Department of Biochemistry and Molecular Biology (1996).

Dean Search Committee Member, College of Science and Mathematics (1996).

Chair, Faculty Development Committee, Department of Biochemistry and Molecular Biology.

Mentor, Visiting Scientist Dr. Michael Benton, Associate Professor, East Tennessee State University (1997).

College of Science and Mathematics, Dean's Three Year Review Committee (1998).

College of Science and Mathematics, Promotion and Tenure Committee (1998).

Biomedical Sciences Ph.D. Program Admissions Committee (2004-2006).

Boonshoft School of Medicine, Faculty Development Committee (2006-2007).

Interim Chair, WSU Department of Biochemistry and Molecular Biology (2013-2014).

### Extramural Service:

National Science Foundation External Reviewer.

National Institutes of Health External Reviewer.

American Cancer Society (Ohio Branch) Research Study Section Member (1985-1992).

Symposium Organizer- "Frontiers in Gene Therapy" Kettering Medical Center (1993).

American Heart Assn. (Ohio Affiliate) Research Study Section Member (1993-1998).

NIH Special Emphasis Panel ZRG3 Bio (1) (1997)

NIH Physiological Chemistry Study Section (ad hoc 1998)

Institutional Scientific Review Board – Dayton Heart Hospital (1999-2004)

NIH Molecular Genetics C Study Section (ad hoc 1999-2001; full member 2001-2005)

NIH Special Emphasis Study Section (ZRG1 BIO) 2002

Scientific Advisory Board – Replicor Corporation, Montreal, Can. (2002 - 2005)

Israel Cancer Research Fund reviewer (2005-2008)

NIH Cancer Etiology Study Section (2017)

Organizer, 19<sup>th</sup> Annual Midwest DNA Repair Symposium, Wright State University (2017)

### Publications (peer-reviewed; excluding abstracts):

Publications (peer-reviewed; excluding abstracts):

1. Leffak, I.M., Hwan, J.C., Li, H-j., and Shih, T.Y. (1974) Circular Dichroism and Thermal Denaturation Studies of Nucleohistone IIb2. *Biochemistry* 13, 1116-1120.
2. Hwan, J.C., Leffak, I.M., Li, H-j., Huang, P.C., and Mura, C. (1975) Studies on the Interaction between Histone V (f2C) and Deoxyribonucleic Acids. *Biochemistry* 14, 1390-1395.
3. Leffak, I.M., and Li, H-j. (1977) Thermal Denaturation and Circular Dichroism Studies of Histone-DNA Complexes. *Biochemistry* 16, 5869-5878.
4. Hwan, J.C., Leffak, I.M., Li, H-j., Huang, P.C., and Mura, C. (1975) Studies on the Interaction between Histone V (f2C) and Deoxyribonucleic Acids. *Biochemistry* 14, 1390-1395.
5. Leffak, I.M., and Li, H-j. (1977) Thermal Denaturation and Circular Dichroism Studies of Histone-DNA Complexes. *Biochemistry* 16, 5869-5878.
6. Leffak, I.M., Grainger, R.M., and Weintraub, H. (1977) Conservative Assembly of Nucleosomal Histones. *Cell* 12, 837-845.
7. Weintraub, H., Flint, S.J., Leffak, I.M., Groudine, M., and Grainger, R.M. (1978) The Generation and Propagation of Variegated Chromosome Structures. *Cold Spring Harbor Symp. Quant. Biol.* 42, 401-408.
8. Leffak, I.M., and Li, H-j. (1981) Sequence Sensitivity of Histone Binding. *Biochim. Biophys. Acta* 656, 86-92.
9. Trempe, J.P., and Leffak, I.M. (1982) Assembly of Semihistone A24. *Nucleic Acids Res.* 10, 5467-5481.
10. Leffak, I.M. (1983) Stability of the Conservative Mode of Nucleosome Assembly. *Nucleic Acids Res.* 11, 2717-2732.

11. Leffak, I.M. (1983) Chromatin Assembled in the Presence of Cytosine Arabinoside has a Short Nucleosome Repeat Length. *Nucleic Acids Res.* 11, 5451-5466.
12. Leffak, I.M. (1983) Decreased Protein Staining After Chemical Crosslinking. *Anal. Biochem.* 135, 95-101.
13. Leffak, I.M. (1984) Conservative Segregation of Nucleosome Core Histones. *Nature* 307, 82-85.
14. James, C.D., and Leffak, I.M. (1984) Replacement Synthesis Labeling of Recombinant DNA Molecules Using the E. Coli Exonuclease III/DNA Polymerase Enzyme Pair. *Anal. Biochem.* 141, 33-37.
15. Trempe, J.P., and Leffak, I.M. (1985) Histone H1 and HMG 14/17 are Deposited Nonrandomly in the Nucleus. *Nucleic Acids Res.* 13, 4853-4869.
16. James, C.D., and Leffak, I.M. (1986) Replication Polarity through the Avian Alpha-Globin Locus. *Mol. Cell. Biol.* 6, 976-984.
17. Kumar, S., and Leffak, I.M. (1986) Assembly of Active Chromatin. *Biochemistry* 25, 2055-2060.
18. Fink, P.C., Leffak, I.M., and Prochaska, L.J. (1987) Homology between the Gene Encoding Subunit III of Bovine Cytochrome C Oxidase and Bacterial Genomes. *FEBS Lett.* 214, 75-80.
19. Leffak, M. (1988) Nonrandom Assembly of Chromatin During Hydroxyurea Inhibition of DNA Synthesis. *Biochemistry* 27, 686-691.
20. Trempe, J.P., Lindstrom, Y.I., and Leffak, M. (1988) Opposite Replication Polarities of Transcribed and Nontranscribed Histone H5 Genes. *Mol. Cell. Biol.* 8, 1657-1663.
21. McWhinney, C.D., and Leffak, M. (1988) Episomal Persistence of a Plasmid Containing Human c-myc DNA. *Cancer Cells* 6, 467-472.
22. Leffak, M., and James, C.D. (1989) Opposite Replication Polarity of the Germ Line c-myc Gene in HeLa Cells Compared with that of Two Burkitt Lymphoma Cell Lines. *Mol. Cell. Biol.* 9, 586-593.
23. Kumar, S., and Leffak, M. (1989) DNA Topology of the Ordered Chromatin Domain 5' to the Human c-myc Gene. *Nucleic Acids Res.* 17, 2819-2833.
24. McWhinney, C., and Leffak, M. (1990) Autonomous Replication of a DNA Fragment Containing the Chromosomal Replication Origin of the Human c-myc Gene. *Nucleic Acids Res.* 18, 1233-1242.
25. Kumar, S., and Leffak, M. (1991) Conserved Chromatin Structure in c-myc 5' Flanking DNA After Viral Transduction. *J. Mol. Biol.* 222, 45-57.
26. Fink, P., Zhao, Y., Leffak, M. and Prochaska, L. (1991) Nucleotide Sequence of a 23S and a 5S-like rRNA Gene from the Thermophilic Bacillus Species Strain PS3. *Nucleic Acids Res.* 19, 6334.
27. Fink, P., Zhao, Y., Prochaska, L. and Leffak, M. (1991) Sequence of a tRNA Gene Cluster from the Thermophilic bacillus species strain PS3. *Nucleic Acids Res.* 19, 5437.
28. Berberich, S., and Leffak, M. (1993) DNase-Sensitive Chromatin Structure Near a Chromosomal Origin of Bidirectional Replication of the Avian Alpha Globin Locus. *DNA and Cell Biol.* 12, 703-714.

29. Itoh-Lindstrom, Y., and Leffak, M. Alteration of in vitro DNA synthesis in the alpha globin locus of chick embryo fibroblasts due to in vivo activity of Rous sarcoma virus pp60src. (1994) *Nucleic Acids Res.* 22, 498-505.
30. Messing, S.L., Darrow, R., Leffak, M., Fleischman, D., and Organisciak, D. (1994) Visible light induced damage to retinal DNA in vivo. *Invest. Ophthalmol. Vis. Sci.* 35, 2138.
31. Berberich, S., Trivedi, A., Daniel, D., Johnson, E. and Leffak, M. (1995) In vitro replication of plasmids containing human c-myc DNA. *J. Mol. Biol.* 245, 92-109.
32. McWhinney, C., Waltz, S.E. and Leffak, M. (1995) Cis-Acting Sequence Effects on Autonomous Replication of Plasmids Containing 5' Flanking DNA of the Human c-myc Gene. *DNA and Cell Biol.* 14, 565-579.
33. Organisciak, D., Kutty, R., Leffak, M., Wong, P., Messing, S., Wiggert, B., Darrow, R., and Chader, G. (1995) Oxidative Damage and Responses in Retinal Nuclei Arising from Intense Light Exposure. In: *Degenerative Diseases of the Retina*. R. Anderson, ed. New York: Plenum Press; 9-17.
34. Waltz, S.E., Trivedi, A. and Leffak, M. (1996) DNA Replication Initiates Nonrandomly at Multiple Sites Near the c-myc Gene in HeLa Cells. *Nucleic Acids Res.* 24, 1887-1894.
35. Khaira, P., James, C.D., and Leffak, M. (1998) Amplification of the Human c-myc Gene in Three Burkitt Lymphoma Cell Lines. *Gene* 211, 101-108.
36. Trivedi, A., Waltz, S., Kamath, S. and Leffak, M. (1998) Multiple Initiations in the c-myc Replication Origin Independent of Chromosomal Location. *DNA and Cell Biology* 17, 885-896.
37. Jones, D., and Leffak, M. (1999) A Bifunctional Regulatory Element of the Human ApoA-I Gene Responsive to a Distal Enhancer. *DNA and Cell Biology* 18, 107-119.
38. Specht, S., Leffak, M., Darrow, R.M. and Organisciak, D.T. (1999) Visible Light Induced Damage to Rat Retinal DNA. *Photochem. and Photobiol.* 69, 91-98.
39. Malott, M. and Leffak, M. (1999) Activity of the c-myc Replicator at an Ectopic Chromosomal Location. *Mol. Cell. Biol.* 19, 5685-5695.
40. Rein, T., Kobayashi, T., Malott, M., Leffak, M., and DePamphilis, M.L. (1999) DNA Methylation at Mammalian Replication Origins. *J. Biol. Chem.* 274, 25792-25800.
41. Tao, L., Dong, Z., Leffak, M., Zannis-Hadjopoulos, M., Price, G. (2000) Major DNA replication initiation sites in the c-myc locus in human cells. *J. Cell. Biochem.* 78, 442-457.
42. Specht, S., Darrow, R., Organisciak, D., and Leffak, M. (2000) DNA Damage to Photoreceptor Cells Following Intense Light Exposure. *Photochem. & Photobiol.* 71, 559-66.
43. Kamath, S., and Leffak, M. (2001) Multiple Sites of Replication Initiation in the Human  $\beta$ -Globin Gene Locus. *Nucleic Acids Res.* 29, 809-817.
44. Dhar, S., Yoshida, K., Machida, Y., Khaira, P., Chaudhuri, B., Wohlschlegel, J., Leffak, M., Yates, J., and Dutta, A. (2001) Replication from oriP of Epstein-Barr Virus Requires Human ORC and Is Inhibited by Geminin. *Cell* 106, 287-296.
45. Liu, G., Malott, M., and Leffak, M. (2003) Multiple Functional Elements Comprise a Mammalian Chromosomal Replicator. *Mol. Cell. Biol.* 23, 1832-1842.
46. Potaman, V.N., Bissler, J., Hashem, V.I., Oussatcheva, E.A., Lu, L., Shlyakhtenko, L.S., Lyubchenko, Y.L., Matsuura, T., Ashizawa, T., Leffak, M., Benham, C.J., and Sinden, R.R.

- (2003) Unwound structures in SCA10 (ATTCT) $n$ •(AGAAT) $n$  repeats. *J. Mol. Biol.* 326, 1095-1111.
47. Ghosh, M., Liu, G., Randall, G., Bevington, J. and Leffak, M. (2004) Transcription Factor Binding and Induced Transcription Alter Chromosomal c-myc Replicator Activity (2004) *Mol. Cell. Biol.* 24, 10193-10207.
  48. Kemp, M.G., Ghosh, M., Liu, G., and Leffak, M. The Histone Deacetylase Inhibitor Trichostatin A Alters the Pattern of DNA Replication Origin Activity in Human Cells (2005) *Nucleic Acids Res.* 33; 325-336.
  49. Casper, J., Kemp, M., Ghosh, M., Randall, G., Vaillant, A., and Leffak, M. (2005) The c-myc DNA Unwinding Element Binding Protein Modulates the Assembly of DNA Replication Complexes In Vitro. *J. Biol. Chem.* 280; 13071-13083.
  50. Moaddel, R., Price, G.B., Juteau, J., Leffak, M., and Wainer, I.W. (2005) The synthesis and initial characterization of an immobilized DNA unwinding element binding protein chromatographic stationary phase. *J. Chromatogr.* 820:197-203.
  51. Potaman, V.N. Pytlos, M.J., Hashem, V.I., Bissler, J.J., Leffak, M., and Sinden, R.R. (2006) DNA Structures and Genetic Instabilities Associated with SCA10 (ATTCT) $n$ •(AGAAT) $n$  Repeats Suggests a DNA Amplification Model for Repeat Expansion, ppg. 460-477. In *Genetic Instabilities and Neurological Diseases* (Eds. R.D. Wells and T. Ashizawa), Academic Press, Boston, MA.
  52. Ghosh, M., Kemp, M., Liu, G., Ritzi, M., Schepers, A., Leffak, M. (2006) Differential binding of replication proteins across the human c-myc replicator. *Mol. Cell. Biol.* 26, 5270-5283.
  53. Kemp, M., Bae, B., Yu, J.P., Ghosh, M., Leffak, M. and Nair, S. (2007) Structure and Function of the c-myc DNA-unwinding Element-binding Protein DUE-B. (2007) *J. Biol. Chem.* 282: 10441-10448.
  54. Liu, G., Bissler, J., Sinden, R. and Leffak, M. (2007) Unstable Spinocerebellar Ataxia Type 10 (ATTCT) $n$ •(AGAAT) $n$  Repeats Are Associated with Aberrant Replication at the ATX10 Locus and Replication Origin-Dependent Expansion at an Ectopic Site in Human Cells. *Mol. Cell. Biol.* 27, 7828-7838.
  55. Chowdhury, A., Liu, G., Kemp, M., Chen, X., Katrangi, N., Myers, S., Yao, J., Bubulya, P., and Leffak, M. (2010) The DNA Unwinding Element Binding Protein DUE-B Interacts with Cdc45 in Preinitiation Complex Formation. *Mol. Cell. Biol.* 30, 1495–1507.
  56. Liu, G., Chen, X., Bissler, J., Sinden, R., and Leffak, M. (2010) Replication dependent DNA hairpin formation at CTG/CAG repeats in human cells. *Nature Chem. Biol.* 6, 652-659.
  57. Xu, Y., and Leffak, M. (2010) ATRIP from TopBP1 to ATR - in vitro activation of a DNA damage checkpoint. *Proc Natl Acad Sci U S A* 107, 13561-2.
  58. Liu, G., Leffak, M. (2012) Instability of (CTG) $n$ •(CAG) $n$  trinucleotide repeats and DNA synthesis. *Cell Biosci* 2:7-19.
  59. Liu, G., Chen, X., Gao, Y., Lewis, T., Barthelemy, J., and Leffak, M. (2012) Altered replication promotes instability of DMPK (CTG) $n$ •(CAG) $n$  repeats. *Mol Cell Biol* 32, 1618-32.
  60. Wang, Z., Kim, E. Leffak, M. Xu, Y.J. (2012) Treslin, DUE-B, and GEMC1 cannot complement Sld3 mutants in fission yeast. *FEMS Yeast Research* 12, 486-90.



61. Liu, G., Myers, S., Chen, X., Bissler, J., Sinden, R., Leffak, M. (2012) Replication Fork Stalling and Checkpoint Activation by a PKD1 Locus Mirror Repeat Polypurine-Polypyrimidine (Pu-Py) Tract. *J Biol Chem* 287, 33412-33423.
62. Liu, G., Chen, X., and Leffak, M. (2013) Oligodeoxynucleotide Binding to (CTG) $\times$ (CAG) Microsatellite Repeats Inhibits Replication Fork Stalling, Hairpin Formation, and Genome Instability. *Mol Cell Biol* 33, 571-581.
63. Chen, X., Liu, G., and Leffak, M. (2013). Activation of a human chromosomal replication origin by protein tethering. *Nucleic Acids Res* 41, 6460-6474.
64. Leffak, M. (2013) Hypothesis: Local dNTP depletion as the cause of microsatellite repeat instability during replication. *Bioessays* 35, 305.
65. Gao, Y., Yao, J., Poudel, S., Romer, E., Abu-Niaaj, L., and Leffak, M. (2014) Protein phosphatase 2A and Cdc7 kinase regulate the DNA unwinding element-binding protein in replication initiation. *J Biol Chem* 289, 35987-36000.
66. Virts, E., Jankowska, A., Mackay, C., Glaas, M., Wiek, C., Kelich, S., Lottmann, N., Kennedy, F., Marchal, C., Lehnert, E., Scharf, R., Dufour, C., Lanciotti, M., Farruggia, P., Santoro, A., Savasan, S., Scheckenbach, K., Schipper, J., Wagenmann, M., Lewis, T., Leffak, M., Hanenberg, H., et al. (2015). AluY-mediated germline deletion, duplication and somatic stem cell reversion in UBE2T defines a new subtype of Fanconi anemia. *Hum Mol Genet* 24:5093-108.
67. Barthelemy, J., Hanenberg, H. and Leffak, M. (2016) FANCI is essential to maintain microsatellite structure genome-wide during replication stress. *Nucleic Acids Res* 44:6803-6816.
68. Guo J, Gu L, Leffak M, Li GM. (2016) MutS beta promotes trinucleotide repeat expansion by recruiting DNA polymerase beta to nascent (CAG) $_n$  or (CTG) $_n$  hairpins for error-prone DNA synthesis. *Cell Res* 26:775-786.
69. Gadgil R, Barthelemy J, Lewis T, Leffak M. (2016). Replication stalling and DNA microsatellite instability. *Biophys Chem* 10.1016/j.bpc.2016.11.007.
70. Leffak, M. (2017) Break-induced replication links microsatellite expansion to complex genome rearrangements. *BioEssays* 10.1002/bies.201700025.
71. Poudel, S., Yao, J., Kemp, M.G. and Leffak, M. (2018) Interaction between DUE-B and Treslin is required to load Cdc45 on chromatin in human cells. *J Biol Chem*, 293, 14497-14506.
72. Lewis, T., Barthelemy, J., Virts, E., Kennedy, F. M., Wiek, C., Linka, R. M., Gadgil, R., Hanenberg, H., and Leffak, M. (2018) DNA double strand breaks trigger Alu-mediated reversion of a FANCT duplication in a model of homologous recombination. *Nucl. Acids Res.* 47, 3503-3520.
73. Gadgil, R. Y., Rider, S. D., Jr., Lewis, T., Barthelemy, J., and Leffak, M. (2020) Analysis of Trinucleotide Repeat Stability by Integration at a Chromosomal Ectopic Site. *Methods Mol Biol* 2056, 121-136.
74. Gadgil, R. Y., Romer, E. J., Goodman, C. C., Rider, S. D., Jr., Damewood, F. J. t., Barthelemy, J. R., Shin-Ya, K., Hanenberg, H., and Leffak, M. (2020) Replication stress at microsatellites causes DNA double strand breaks and break induced replication. *J Biol Chem.* (2020) doi: 10.1074/jbc.RA120.013495.

Texts:

1. Kmetec, E., Leffak, I.M., Organisciak, D.T., and Prochaska, L.J. (1983) Experiments in Biochemistry. (Leffak, I.M., and Prochaska, L.J., Eds.; Wright State University Press, Dayton, OH).
2. Fritz, H.I., Leffak, M., Minth, C.D., Organisciak, D.T., and Paietta, J.V. (1991) Medical Biochemistry (Wright State University Press, Dayton, OH).

Graduate Students Trained:

- |     |                    |                |
|-----|--------------------|----------------|
| 1.  | James Trempe       | Ph.D. (1985)   |
| 2.  | Joan Krakowsky     | Ph.D. (1988)   |
| 3.  | Jon Morris         | Ph.D. (1988)   |
| 4.  | Anthony Schmitz    | M.Sci. (1989)  |
| 5.  | David James        | Ph.D. (1989)   |
| 6.  | Steven Berberich   | Ph.D. (1990)   |
| 7.  | Charlene McWhinney | Ph.D. (1991)   |
| 8.  | Sanjay Kumar       | Ph.D. (1991)   |
| 9.  | Yoshie Lindstrom   | Ph.D. (1991)   |
| 10. | Alpa Trivedi       | Ph.D. (1993)   |
| 11. | Susan Waltz        | Ph.D. (1994)   |
| 12. | Daniel Jones       | Ph.D. (1998)   |
| 13. | Michelle Malott    | Ph.D. (1999)   |
| 14. | Sandra Specht      | Ph.D. (2000)   |
| 15. | Sohba Kamath       | M. Sci. (2000) |
| 16. | Poonam Khaira      | Ph.D. (2001)   |
| 17. | John Casper        | Ph.D. (2003)   |
| 18. | Daian J. Vaz       | M. Sci. (2005) |
| 19. | Michael Kemp       | Ph.D. (2006)   |
| 20. | Nadia Katrangi     | M. Sci. (2007) |
| 21. | Jianhong Yao       | M. Sci. (2008) |
| 22. | Shere' Myers       | Ph.D. (2010)   |
| 23. | Xiaomi Chen        | Ph.D. (2012)   |
| 24. | Yanzhe Gao         | Ph.D. (2012)   |
| 25. | Joanna Barthelemy  | Ph.D. 2015     |
| 26. | Tu Danh            | M. Sci (2015)  |
| 27. | Todd Lewis         | Ph.D. (2017)   |
| 28. | Sumeet Poudel      | Ph.D. (2016)   |
| 29. | Rujuta Gadgil      | M. Sci. (2016) |
| 30. | Caitlin Castagno   | M. Sci. (2018) |

Postdoctoral Students Trained:

- |    |                |                      |
|----|----------------|----------------------|
| 1. | Pamela Fink    | 1985-1987            |
| 2. | Maryann Bender | 1988-1990            |
| 3. | Xiangbing Meng | 2001-2003            |
| 4. | Guoqi Liu      | 2002-2005, 2007-2013 |

5.	Maloy Ghosh	2003-2007
6.	Asif Chowdhury	2009-2011
7.	Xiaomi Chen	2012-2013
8.	Lubna Abu-Niaaj	2012-2014
9.	Yanzhe Gao	2013-2014
10.	Eric Romer	2013-2015
11.	S. Dean Rider	2017-present