

# History of DNA Repair: Four decades of studies of DNA Repair at NIH and The first twenty-five years of the DNA Repair Interest Group

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**Update of: Bohr, V.A. and Kraemer, K.H.: The DNA Repair Interest Group: a global village DNA Repair 4: 405-406 (2005) (editorial)**

# DNA REPAIR INTEREST GROUP



*Illustration by R.J. Kaufman*

- **Group began 1985  
(Building 37 – Bohr/Kraemer)**
- **Videoconferences began  
1995**
- **Monthly videoconferences**
- **14 linked sites across US**
- **140+ lectures archived at  
<http://videocast.nih.gov>**
- **e-mail list: >1500  
subscribers worldwide**
- **website**

**To join send a request to  
[kraemer@nih.gov](mailto:kraemer@nih.gov)**

# 14 Linked Sites in DNA Repair Interest Group Videoconferences - 2010

- **NIH** – Bethesda, MD; NIA, Baltimore, MD; NCI, Frederick, MD; NIEHS, Research Triangle Park, NC
- **National Labs** – Lawrence Livermore, Livermore, CA; Brookhaven, Upton, NY
- **Universities**- State University of New York, Stony Brook, NY; Univ of Kentucky, Lexington, KY; Univ of Michigan, Ann Arbor, MI; Univ of North Carolina, Chapel Hill, NC; Wake Forest Univ, Winston-Salem, NC; Oregon Health & Science Univ, Portland, OR; Georgetown Univ, Washington, DC; M.D. Anderson, Smithville, TX

**May 18, 2010** - Young Investigator Talks:

1. Circadian Control of Nucleotide Excision Repair . Speaker: Dr. Tae-Hong Kang (Dr. Aziz Sancar lab . UNC)
2. A Genome Wide Model for the Normal Eukaryotic DNA Replication Fork. Speaker: Dr. Scott Lujan (Dr. Tom Kunkel lab)
3. Balanced 9p22q translocation in a patient with melanoma, deafness and DNA repair deficiency disrupts p14arf and down-regulates TBX1 Speaker: Dr. Xiaohui (Jane) Tan . (Dr. Ken Kraemer lab)

**April 20, 2010** . Dr Xuetong Shen . MD Anderson, Smithville . Chromatin responses to DNA damage. [Origin: Smithville]

**Mar 16, 2010** . Dr. Weidong Wang . NIA . A multiprotein complex involved in the DNA damage response network of Fanconi anemia, breast cancer, and Bloom syndrome [Origin: Baltimore]

**Feb 16, 2010** - Dr. David Levens . NCI - How to Control Transcriptional Noise: Insights from XP, TFIIH, and DNA Structure [Origin: Natcher] )

**Jan 19, 2010** . Blanche Alter . NCI - Molecular and Clinical Aspects of Fanconi Anemia, Dyskeratosis Congenita, and Related Disorders (Origin: Natcher)

**Dec 15, 2009** . Patricia Gearhart . NIA - Balancing Somatic Hypermutation and DNA Repair in Immunoglobulin Genes (Origin: NIA)

**Nov 17, 2009** . Dr. Bruce Demple . SUNY Stony Brook . A Base Excision DNA repair Protein Functioning in Both Genetic and Genomic Stability (Origin: SUNY)

**Oct 20, 2009** - Dr. Randy Legerski . MD Anderson . Role of Artemis in the regulation of the mammalian cell cycle. (Origin: Smithville, TX)

**Sept 15, 2009** - Dr Dmitry Gordenin, NIEHS, Research Triangle Park, NC .Damage induced localized hypermutability

**June 9, 2009** Young Investigator Talk: Dr Yun Wang, NCI . The role of UV in melanoma induction in xeroderma pigmentosum patients (Origin: NIH, Bethesda, MD)

**June 9, 2009** - Young Investigator Talk: Dr Steve Yannone, Lawrence Berkeley Labs . Artemis function in DNA repair and immunogenesis; (Origin: Liver more Labs)

**June 9, 2009** - Young Investigator Talk: Dr. Brian Berquist, NIA - A novel cofactor and diverse nucleic acid interactions of CSB, a human Swi/Snf2 protein (Origin: NIA, Baltimore, MD) [

**May 12, 2009** . History of DNA Repair: Four decades of DNA repair at NIH and The first twenty-four years of the DNA Repair Interest Group . Will Bohr, NIA, and Ken Kraemer, NCI

<b>DNA Repair Interest Group 2009 Seminar Series</b>		
Tom Misteli	March 17	Spatial Genome Organization in the Formation of Translocations and DNA Repair
Dan Yarosh, AGI Dermatics	January 27	Intercellular Communication of DNA Damage its Repair
<b>DNA Repair Interest Group 2008 Seminar Series</b>		
David Ferguson, U of Michigan	November 18	Roles of Mammalian Mre11 in Genomic Stability and Development
Kyungjae Myung, NHGRI	October 28	Evolutionary Conserved Pathways Suppress Genomic Instability
Stephanie McElhinny, NIEHS	June 17	Division of Labor at the Eukaryotic Replication Fork
Claudia Wiese, LBNL	June 17	Promotion of Homologous Recombination and Genomic Stability by RAD51AP1
Sankar Mitra U of Texas Galveston	May 20	Condensed History of DNA Repair with Emphasis on Small Lesion Repair
Patricia Opresko, U Pitt	April 15	Roles for RecQ Helicases in Telomere Preservation
David Johnson, U of Texas	March 18	E2F1, a Chromatin Accessibility Factor for DNA Repair
Nancy Thomas, UNC	February 19	Molecular Epidemiology of BRAF and NRAS Mutations in Melanomas
<b>DNA Repair Interest Group 2007 Seminar Series</b>		
Guo-Min Li, Univ of Kentucky	November 20	Mechanism of DNA Mismatch Repair
Wolf Heyer, UC Davis	October 16	Roles of the Snf2-Like Motor Protein Rad54
Sam Wilson, NIEHS	June 19	History of DNA Repair
R. Stephen Lloyd Portland, Oregon	May 15	Crossing Oxidative DNA Damage Threshold - Loss of NEIL1 DNA Glycosylase
Masaaki Moriya, SUNY	April 17	DNA Repair and Mutagenesis of ROS-Generated Lesions
Zac Pursell, NIEHS, Paul Wilson, Livermore Karin Scarpinato, WFU	March 20	DNA Repair - Young Investigator Showcase
Laura J. Niedernhofer Univ of Pittsburgh	February 20	Accelerated Aging and Cancer in ERCC1-XPF-Deficient Mouse Models
Dan Camerini-Ortero, NIDDK	January 16	Meiotic DNA Double-Strand Break Repair in Mice and Humans

**DNA Repair Interest Group 2006 Seminar Series**

Stephen Meyn, Toronto	December 19	Human Telomeric Proteins TRF1, TRF2 and TIN2 Participate in Novel Cellular Response to DNA Damage
William Kaufmann, UNC	November 21	Human Intra-S Checkpoint Response to UV-induced DNA Damage
Betsy Sutherland, Brookhaven	October 17	Endogenous and Radiation-Induced DNA Damage Clusters and Their Repair
Yie Liu, NIA	September 19	Repair and Maintenance of Eroded Telomeres in Mice
Stuart Linn Univ of California at Berkeley	June 20	History of DNA Repair - Life in the Serendipitous Lane: Excitement and Gratification in Studying DNA Repair
<a href="#">Yossi Shiloh, Tel Aviv University</a>	<a href="#">May 23</a>	<a href="#">ATM: A Sentry at the Gate of Genome Stability</a>
DNA Repair Interest Group	April 18	Young Investigator Showcase - Short Talks at Different Sites
<a href="#">Ian Hickson, Oxford University</a>	<a href="#">March 21</a>	<a href="#">Genomic Instability and Cancer: Insights from Bloom Syndrome</a>
Ben van Houten, NIEHS	February 21	In Search of Damage: Structure-Function Studies of Bacterial Nucleotide Excision Repair Proteins
Ken Kraemer, Vilhelm Bohr, Ben van Houten	January 17	Tribute to Larry Grossman Ph.D. 1924 - 2006
Vesna Rasic-Otrin, U of Pittsburgh	January 17	The UV-DDB-Based Ubiquit E3 Ligases and NER

**DNA Repair Interest Group 2005 Seminar Series**

Orlando Scharrer, SUNY	December 20	Mechanisms of Damage Recognition and Dual Incision in Human Nucleotide Excision Repair
Susan Lees Miller, U of Calgary	November 15	The Role of Protein Phosphorylation in Nonhomologous End Joining
Joanne Sweasy, Yale	October 18	Is There a Link Between DNA Polymerase Beta and Cancer?
Jonathan Eisen, TIGR	September 20	More Questions Than Answers: Insights into DNA Repair Processes from Genome Sequencing Projects
<a href="#">Kurt W. Kohn, NCI</a>	<a href="#">June 14</a>	<a href="#">Personal History of DNA Damage and Repair Research 1960-2005</a>
Steve West, Oxford	May 17	Introduction to New Insights into Mechanisms of BRCA2 Regulated Double Strand Break Repair (Entire Lecture Will be Posted Later)
Kyungjae Myung, NHGRI	April 19	Suppression and Formation of Gross Chromosomal Rearrangements: Cross Talk in DNA Metabolism
Miguel Garcia-Diaz, Kyungjae Myung & John Hinz	April 19	DNA Repair - Short Talks by Young Investigators
John Hinz, LLNL	April 19	Distinct Genomic Instabilities Associated with Deficiencies in Homologous Recombination or FANCD2 Monoubiquitination
<a href="#">Wei Yang, NIDDK</a>	<a href="#">March 15</a>	<a href="#">DNA Repair in 3D</a>
<a href="#">Judy Campisi, UC Berkeley</a>	<a href="#">February 15</a>	<a href="#">Genome Maintenance Systems, Cancer and Aging</a>
Michael Seidman, NIA	January 18	Repair & Mutagenesis of Triplex Targeted Interstrand Crosslinks

**DNA Repair Interest Group 2004 Seminar Series**

Thomas Wilson, U of Michigan	December 21	Nonhomologous End-Joining: Lessons from Yeast
Vilhelm Bohr, NIA	December 21	DNA Repair Interest Group Tribute to Erling Christen Seeberg, Ph.D., 1946-2004
Susan Olson Oregon Health Sci Univ	November 16	Exploring Cellular and Molecular Aspects of Fanconi Anemia from a Cytogenetic Perspective
Roel Schaaper, NIEHS	October 19	Novel Mutators and Correction of Replication Errors in E Coli
Kenneth H. Kraemer, NCI	September 21	Clinical, Molecular & Epidemiologic Studies of Xeroderma Pigmentosum & Related Disorders of DNA Repair
Sikandar Khan, NCI	June 15	Two Essential Splice Lariat Branchpoint Sequences in one Intron in a Xeroderma Pigmentosum DNA Repair Gene
Diane Cabelof	June 15	The Ability of a Cell to Repair DNA Damage Influences Aging and Cancer
Francesca Storici, NIEHS	June 15	Mechanisms of Recombination and Double Strand Break Repair in Yeast with Targeted Oligonucleotides and the Delitto Perfetto Approach
Larry Thompson, LLNL	May 18	History of DNA Repair: CHO Cells and DNA Repair - a Long-Lasting Affair
David Wilson, NIA	April 20	Regulation of Central Steps in Human Base Excision Repair
Alan Lehmann, Sussex Univ	March 16	Translesion Synthesis and Polymerase Switching in Human Cells
Tom Kunkel, NIEHS	March 16	DNA Repair Interest Group Tribute to Dale W. Mosbaugh, Ph.D., 1953-2004
Dmitry Gordenin, NIEHS,	February 17	Inhibition of Mismatch Repair by Cadmium
Steve Kowalczykowski, UC Davis	January 20	Biochemistry of Recombinational DNA Repair: Common Themes

**DNA Repair Interest Group 2003 Seminar Series**

Andre Nussenzweig, NCI	December 16	The Role of DNA Breaks in Genomic Instability
Lei Li , M.D. Anderson	November 18	DNA Damage Cell Cycle Checkpoint: Beyond Buying Time for Repair
Alain Sarasin, Institut Gustave Roussy	October 14	Xeroderma Pigmentosum: Role of Pol ETA in UV-Induced Mutagenesis
Satya Prakash, U of Texas	September 16	Studies of Human DNA Repair Diseases in Yeast
Satya Prakash	September 16	Translesion Synthesis DNA Polymerases of Yeast and Humans
Karen Vasquez, MD Anderson	June 17	Processing Site-Specific DNA Lesions by DNA Repair and Recombination
Tom Rosenquist, SUNY	June 17	NEIL Proteins and Base Excision Repair in Mice
John Bradsher, NCI	June 17	Roles of the Cockayne Syndrome Proteins in Nucleotide Excision Repair and Transcription
Errol Friedberg, U of Texas	May 20	Honest Jim Revealed - The Writings of James D. Watson
Qingyi Wei, M.D. Anderson	April 15	DNA Repair Function, Polymorphisms and Cancer Risk in the General Population
Sankar Mitra, U of Texas	March 11	Co-ordination of Oxidative Damage Repair in the Mammalian Genome
Stephen J. Elledge, Baylor	March 05	Sensing and Responding to DNA Damage
John Taylor, NIEHS	January 21	DNA Repair Gene Polymorphisms and Cancer Risk

<b>DNA Repair Interest Group 2002 Seminar Series</b>		
John Tainer, UC Berkeley	December 17	Conformational Controls and DNA Repair Coordination
Rob Sobol, U of Pittsburgh	November 12	DNA Base Damage and Repair Intermediates: Out of the Pan and into the Fire
Al Fornace, NCI	October 15	Convergence of the p53 and MAP Kinase Stress Signaling Pathways after UV Radiation
Dale Ramsden, UNC	September 17	DNA Double Strand Break Repair
David Chen, LBNL	June 18	Role of DNA-PK in Cellular Responses to DNA Damage
Mark J. Schofield, NIH	May 21	DNA Mismatch Repair
Sunitha Yanamadala, U of Michigan	May 21	Role of Mismatch Repair Proteins in Signaling P53 and Apoptosis
Federica Marini - U of Pittsburgh	May 21	A Human DNA Helicase Homologous to the DNA Crosslink Sensitivity Protein MUS308
DNA Repair Interest Group	April 16	Tribute to Dr David Busch, Ph.D., M.D. July 25, 1953 to April 11
<a href="#">Philip Hanawalt, Stanford</a>	<a href="#">April 16</a>	<a href="#">Half a Century of DNA Repair: An Historical Perspective</a>
Alan Tomkinson, U of Texas	March 19	Mechanisms of DNA End Joining
Yves Pommier, NCI	February 19	Nucleotide Excision Repair-Dependent Cytotoxicity of a Novel Anticancer Agent, Ecteinascidin 743
Thomas Kunkel, NIEHS	January 15	Recent Studies of DNA Mismatch Repair
<b>DNA Repair Interest Group 2001 Seminar Series</b>		
Richard Wood, U of Pittsburgh	December 18	Tolerating Damaged DNA
J. C. States, U of Louisville	November 13	Cisplatin Regulation of XPA Expression in Ovarian Cancer Cells
Douglas E. Brash, Yale	October 24	UV, p53 and Skin Cancer Lecture Presented to the Royal College of Pathologists, London, England
Daniel Yarosh, Applied Genetics	October 16	Reduction of Skin Cancer in Xeroderma Pigmentosum Patients Treated Topically with DNA Repair Enzymes
<a href="#">James Cleaver, UCSF</a>	<a href="#">June 19</a>	<a href="#">History of DNA Repair: Mending Human Genes</a>
Bill Copeland, NIEHS	May 15	Mitochondrial DNA Replication Fidelity and Mitochondrial Diseases
Peter Beernink, LLNL	March 20	Crystal Structure of Human Apurinic/Apyridinimic Endonuclease I
Yong Hwan Jin, NIEHS	March 20	The 3'-5' Exonuclease of DNA Polymerase $\delta$ is Redundant with Rad27/Fen1 for Processing of Okazaki Fragments
Robert M. Brosh, NIA	March 20	Molecular Interactions of the Werner Syndrome Protein
Vilhelm Bohr, NIA	February 20	DNA Repair Defects in Premature Aging Disorders
Mats Ljungman U of Michigan	January 16	Stopped in its tracks - RNA pol II as a sensor for DNA damage



**DNA Repair Interest Group 2000 Seminar Series**

Patrick Sung Univ of Texas	December 19	Functional Interactions Among RAD52 Group Proteins in Recombination and Repair
Zhigang Wang, Univ of KY	November 21	Translesion Synthesis by the UmuC Family of DNA Polymerases
Yoshihiro Matsumoto, Fox Chase	October 17	Functions of PCNA in Base Excision Repair
Kenneth Kraemer, NCI	September 19	Clinical and Molecular Features of Xeroderma Pigmentosum and Related Disorders of DNA Repair
<a href="#">Richard Setlow, Brookhaven</a>	<a href="#">June 20</a>	<a href="#">Reflections On How I Was Led Into and Onto DNA Repair.</a>
Peter Glazer, Yale Univ	April 18	Targeted genome modification via DNA triple helix formation
Robert Levine	March 21	Mutagenesis Induced by Endogenous DNA Adducts in Human Cells
Robert Sobol, NIEHS	March 21	Mutagenesis and dRP Lyase Activity in DNA $\beta$ -Polymerase Dependent Base Excision Repair in Mouse Cells
Steffen Emmert, NCI	March 21	The xeroderma pigmentosum group C gene leads to selective repair of cyclobutane pyrimidine dimers rather than 6-4 photoproducts.
Steve Matson, UNC	February 15	Two E. Coli Mismatch Repair Enzymes, DNA Helicase II and MUTL, Interact to Catalyze Efficient Unwinding of Duplex DNA
John Essigman, MIT	January 18	Cellular responses to the DNA damaging agent Cisplatin
Miral Dizdaroglu	January 14	Mechanisms of Oxidative DNA Damage and the Processing by BER

**DNA Repair Interest Group 1999 Seminar Series**

Gilbert Chu Stanford	December 14	Recognizing DNA damage.
Rodney Nairn, Moderator	November 16	Meeting Report: DNA Repair and Mutagenesis
Larry Thompson, LLNL	October 19	Homologous recombinational repair and its role in cancer.
Roger Woodgate	September 14	Translesion DNA synthesis: From mutations in bacteria to the xeroderma pigmentosum variant phenotype in humans
Jim George & Nan Liu – LLNL	June 15	NER Activity in the XPD mutant, V-H1 Role of XRCC2 in homologous recombinational repair
<a href="#">Lawrence Grossman - JHU</a>	<a href="#">May 25</a>	<a href="#">Four decades of DNA Repair: From populations of molecules to populations of people</a>
Karin Drotschmann- NIEHS	March 23	Mutator phenotype of yeast strains heterozygous for mutations in the Msh2 gene
Bruce McKay - Univ of Michigan	March 23	The role of p53 in DNA repair and recovery of RNA synthesis following UV-irradiation
P.J. Brooks- NIAAA	March 23	Repair of a cyclopurine lesion in DNA by nucleotide excision repair: Implications for neurodegeneration in xeroderma pigmentosum.
<a href="#">Steven A. Leadon, UNC</a>	<a href="#">February 16</a>	<a href="#">Transcription - Coupled Repair of Oxidative DNA Damage</a>
Carl Anderson, Brookhaven	January 19	DNA Damage Activates P53 via Phosphorylation-Acetylation

**DNA Repair Interest Group  
1998 Seminar Series**

<b>Al Fornace</b>	<b>December 15</b>	<b>The role of the tumor suppressor p53 and its effector genes on DNA repair</b>
<b>Shyam Sharan &amp; Mikhail Kashlev, ABL-BRP</b>	<b>October 20</b>	<b>1) Functional Analysis of Murine Brca2: Role in DNA Repair - 2) Mechanism of Transcription Processivity: Comparative studies of Prokaryotic and Eukaryotic RNA Polymerases</b>
<b>Steve Matson, UNC</b>	<b>September 22</b>	<b>Protein-protein interactions that modulate the activity of DNA helicase II</b>
<b>Phil Hanawalt, Stanford</b>	<b>May 19</b>	<b>Parallels between P53 dependent excision-repair in mammalian cells and the SOS response in bacteria</b>
<b>Miria Stefanini</b>	<b>April 21</b>	<b>Nucleotide Excision Repair Defective Syndromes: Genotype-Phenotype Relationships.</b>
<b>Thomas Kunkel, NIEHS</b>	<b>March 17</b>	<b>Studies of Eukaryotic DNA Mismatch Repair</b>
<b>Betsy Sutherland, Bookhaven</b>	<b>February 17</b>	<b>The Case of the UV-sensitive rice: an international detective story.</b>
<b>Dan Bogenhagen, SUNY</b>	<b>January 20</b>	<b>Repair of Abasic Sites in DNA Using Mitochondrial Enzymes</b>

# **Selected DNA Repair Videos (2009)**

- **1960's Setlow demonstrates importance of CPD in DNA**
- **1960–70's Fighter pilot Grossman studies DNA repair enzymes in bacteria**
- **1968 Cleaver reports repair defect in xeroderma pigmentosum (XP)**
- **1980's Hanawalt describes transcription coupled repair**
- **Leadon – retracted work**

# **Selected DNA Repair Videos (2010)**

- **1990's Thompson identifies ERCC genes in UV sensitive CHO cells**
- **1986 Stefanini reports trichothiodystrophy (TTD) cells in XP-D complementation group**
- **1995 Shiloh clones ATM gene in ataxia telangiectasia**
- **2003 Sarasin – mutations in XP variant patients**
- **2005 Wei Yang – crystal structure of pol eta**
- **2005 Kurt Kohn - Personal History of DNA Damage and Repair Research 1960 - 2005**
- **2006 Ian Hickson – Genomic Stability and Cancer: Insights from Bloom Syndrome**
- **2005 Judy Campisi – Genome Maintenance Systems: Cancer and Aging**

**Larry Thompson, Ph.D.**

**Lawrence Livermore National  
Laboratory, Livermore, CA**

**Chinese hamster cells and  
DNA repair - a long lasting relationship  
May 18, 2004**



Thompson Lab

**2007**

**Miria Stefanini, Ph.D.**  
**Institute of Genetics, Pavia, Italy**

**Nucleotide excision repair:  
genotype phenotype relationships  
April 21, 1998**

**Alan Lehmann Ph.D.**



**Miria Stefanini Ph.D.**

**1994**

**Yossi Shiloh, Ph.D.**

**Tel Aviv University,  
Tel Aviv, Israel**

**ATM: A sentry at the gate of genome  
stability**

**May 29, 2006**



**Yossi Shiloh Ph.D.**

**Hanoch Slor Ph.D.**

**2008**

**Alain Sarasin, Ph.D.**  
**Institut Gustave Roussy,**  
**Villejuif, France**

**Xeroderma pigmentosum:  
Role of the XP variant pol eta gene in  
UV- induced mutagenesis  
Oct 14, 2003**

Alain Sarasin, Ph.D.



**2003**



**Wei Yang, Ph.D.**

**NIDDK, NIH,  
Bethesda, MD**

**DNA Repair in 3D  
Mar 15, 2005**

**Wei Yang, Ph.D.**



**2005**

**Kurt Kohn, M.D.**

**NCI, NIH,  
Bethesda, MD**

**Personal History of DNA Damage and  
Repair Research 1960 - 2005  
June 14, 2005**

**Ian Hickson, Ph.D.  
Oxford Univ, UK**

**Genomic Stability and Cancer:  
Insights from Bloom Syndrome  
Mar 21, 2006**

**Judy Campisi, Ph.D.**  
**Univ of California, Berkeley**  
**Berkeley, CA**

**Genome Maintenance Systems:  
Cancer and Aging  
Feb 15, 2005**

