


Philip C. Hanawalt

Dr. Morris Herzstein Professor in Biology, Emeritus

 NIH Biosketch available Online

 Curriculum Vitae available Online

CONTACT INFORMATION

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Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Biology
- Member, Bio-X
- Member, Stanford Cancer Institute

ADMINISTRATIVE APPOINTMENTS

- International Advisory Board, Chulabhorn Research Institute, (2005-2010)
- Consultant, Achaogen, (2005-2006)
- External Advisory Comm, MD Anderson Cancer Center, (2004-2007)
- Senior Editor, Cancer Research, American Association for Cancer Research, (2003-2010)
- Abbott-ASM Lifetime Ach Selection Committee, American Academy of Microbiology, (2003-2006)
- Chair, External Advisory Board, Program on Structural Biology of DNA Repair, Lawrence Berkeley National Laboratory, (2001- present)
- Editorial Board, Proceedings of the National Academy of Sciences USA, (2000- present)
- Board of Trustees, Oberlin College, (1998-2007)
- Council for Extramural Grants, American Cancer Society, (1998-2001)
- Council for Extramural Grants, American Cancer Society, (1998-2001)
- NRC Committee, BEIR VII Phase I, (1997-1998)
- External Advisory comm, City of Hope Cancer Center, (1995-2007)
- Toxicology Advisory Board, The Burroughs Wellcome Fund, (1995-2004)
- Scientific Advisory Board, Forgarty International Center, NIH, (1995-1999)
- Carcinogen Carcinogen Identification Committee and Advisory Board, CA-EPA, (1994-1998)
- Board of Directors, American Association for Cancer Research, (1994-1997)
- Chair, External Advisory Brd, University of Texas Medical Branch, (1994-1997)
- Member, School Planning Group, Humanities and Sciences, Stanford University, (1991-1993)

- Member, 23rd Senate of the Academic Council, Stanford University, (1990-1992)
- Chair, Second Senate ad hoc Committee on the Professoriate, Stanford University, (1988-1990)
- Pre-doctoral Fellowship Review Panel, National Science Foundation, (1985-1986)
- Chair, Department of Biological Sciences, Stanford University, (1982-1989)
- Chemical Pathology Study Section, National Institutes of Health, (1981-1984)
- Chair, Administrative Panel on Radiological Hazards, Stanford University, (1978-1980)
- Chair, US National Committee, International Union of Pure and Applied Biophysics, (1969-1975)
- Director, Biophysics Graduate Program, Stanford University, (1968-1985)
- Physiological Chemistry Study Section, National Institutes of Health, (1966-1970)

HONORS AND AWARDS

- AACR-Princess Takamatsu Lectureship, American Association for Cancer Research (April 2011)
- Keynote Lecture, 10th International Conference on Environmental Mutagens, Florence, Italy (2009)
- The Dr. Morris Herzstein Professorship in Biology, Stanford University (2008 -)
- Doctor Honoris Causa, University of Seville, Seville, Spain (2008)
- Fellow, American Academy of Arts and Sciences (2008)
- Doctor Honoris Causa, University of Bio Bio, Concepcion, Chile (2006)
- Keynote Lecture, ASM International Conference on DNA repair and mutagenesis, Bermuda (2004)
- Rothschild-Yvette Mayent- Institute Curie Award/Lectureship, Curie Institute. Paris, France (2003)
- John B Little Award in Radiation Health Sciences, Harvard School of Public Health (2002)
- Senior Scholar Research Award, Ellison Medical Foundation (2001- 2005)
- Foreign Associate, European Molecular Biology Organization (2001)
- Chair, Gordon Conference on Mammalian DNA Repair (1999)
- Howard H. and Jessie T. Watkins University Professor, Stanford University (1997 - 2002)
- Honorary Doctor of Science, Oberlin College (1997)
- International Mutation Research Achievement Award, Elsevier (1997)
- Annual Research Award, American Society for Photobiology (1996)
- Chair, Gordon Conference on Mutagenesis (1996)
- President, Environmental Mutagen Society (1994)
- Fellow, American Academy of Microbiology (1993)
- Annual Award for Excellence in Basic Science, Environmental Mutagen Society (1992)
- Peter and Helen Bing Award for Distinguished Teaching, Stanford University (1992)
- Excellence in Teaching Award, Northern California Chapter, Phi Beta Kappa (1991)
- Member, National Academy of Sciences, USA (1989)
- Outstanding Investigator Research Award, National Cancer Institute, NIH (1987 - 2001)
- Inaugural Annual Lecture, Lord Dowding Fund for Humane Research (1982)
- Lectureship, Spanish Academy of Science & Catalan Society (1982)
- Fellow, American Association for Advancement of Sciences (1981)

PROFESSIONAL EDUCATION

- Ph.D., Yale University , Biophysics (1959)
- M.S., Yale University , Physics (1955)
- B.A., Oberlin College , Physics (1954)

LINKS

- My Lab Site: <https://web.stanford.edu/~hanawalt>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Hanawalt was a productive researcher in the field of DNA repair since his pioneering discovery of repair replication and co-discovery of nucleotide excision repair in *E. coli* in 1963. In 1982 Hanawalt and his colleagues reported the first example of intragenomic DNA repair heterogeneity: chemical adducts in alpha DNA in African green monkey kidney cells were not as efficiently repaired as in the genome overall. Hanawalt and his colleagues then discovered that repair of some types of damage is selective; active genes are preferentially repaired, and in fact a special repair pathway, termed transcription-coupled repair (TCR), operates on the transcribed strands of expressed genes. TCR was documented in mammalian cells, in *E. coli*, and in yeast chromosomal and plasmid borne genes. The discovery of TCR in Hanawalt's laboratory has had profound implications for the fields of mutagenesis, environmental carcinogenesis, aging, and risk assessment.

The prototype recQ gene was discovered in *E. coli* in Hanawalt's laboratory, and we now know of five homologues in humans including the genes mutated in the cancer prone hereditary diseases: Bloom's syndrome, Werner's syndrome, and Rothman Thompson syndrome.

More recent studies focused upon the regulation of TCR and the global genomic nucleotide excision repair (GGR) pathway. Features of the TCR pathway (defective in Cockayne syndrome) include the possibility of "gratuitous TCR" at transcription pause sites in undamaged DNA. The GGR pathway was shown to be controlled through the SOS stress response in *E. coli* and through the activated product of the p53 tumor suppressor gene in human cells. These regulatory systems particularly affect the efficiency of repair of the predominant UV-induced photoproduct, the cyclobutane pyrimidine dimer, as well as that of chemical carcinogen DNA adducts, such as benzo(a)pyrene diol-epoxide and benzo(g)chrysene. Rodent cells (typically lacking the p53-controlled GGR pathway) are unable to carry out efficient GGR of some lesions. Therefore, caution should be exercised in the interpretation of results from such systems for risk assessment in genetic toxicology.

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)
- Biophysics (Phd Program)
- Cancer Biology (Phd Program)
- Dermatology (Fellowship Program)

Publications

PUBLICATIONS

- **Growing up with DNA repair and joining the EMS.** *Environmental and molecular mutagenesis*
Hanawalt, P.
; 51 (8-9): 890–96
- **Transcription Inhibition by PNA-Induced R-Loops.** *Methods in molecular biology (Clifton, N.J.)*
Belotserkovskii, B. P., Ng, S. Y., Hanawalt, P. C.
2020; 2105: 141–55
- **Mechanistic understanding of cellular responses to genomic stress.** *Environmental and molecular mutagenesis*

Hanawalt, P., Sweasy, J.
2019

- **R-loop generation during transcription: Formation, processing and cellular outcomes.** *DNA repair*
Belotserkovskii, B. P., Tornaletti, S., D'Souza, A. D., Hanawalt, P. C.
2018
- **A novel mode for transcription inhibition mediated by PNA-induced R-loops with a model in vitro system** *BIOCHIMICA ET BIOPHYSICA ACTA-GENE REGULATORY MECHANISMS*
D'Souza, A. D., Belotserkovskii, B. P., Hanawalt, P. C.
2018; 1861 (2): 158-66
- **Strong transcription blockage mediated by R-loop formation within a G-rich homopurine-homopyrimidine sequence localized in the vicinity of the promoter.** *Nucleic acids research*
Belotserkovskii, B. P., Soo Shin, J. H., Hanawalt, P. C.
2017
- **Modulation of Cytotoxicity by Transcription-Coupled Nucleotide Excision Repair Is Independent of the Requirement for Bioactivation of Acylfulvene.** *Chemical research in toxicology*
Otto, C., Spivak, G., Aloisi, C. M., Menigatti, M., Naegeli, H., Hanawalt, P. C., Tanasova, M., Sturla, S. J.
2017
- **When transcription goes on Holliday: Double Holliday junctions block RNA polymerase II transcription in vitro.** *Biochimica et biophysica acta*
Pipathsouk, A., Belotserkovskii, B. P., Hanawalt, P. C.
2017; 1860 (2): 282-288
- **Photobiological Origins of the Field of Genomic Maintenance.** *Photochemistry and photobiology*
Ganesan, A., Hanawalt, P.
2016; 92 (1): 52-60
- **Mutational Strand Asymmetries in Cancer Genomes Reveal Mechanisms of DNA Damage and Repair.** *Cell*
Haradhvala, N. J., Polak, P., Stojanov, P., Covington, K. R., Shinbrot, E., Hess, J. M., Rheinbay, E., Kim, J., Maruvka, Y. E., Braunstein, L. Z., Kamburov, A., Hanawalt, P. C., Wheeler, et al
2016; 164 (3): 538-49
- **Historical perspective on the DNA damage response** *DNA REPAIR*
Hanawalt, P. C.
2015; 36: 2-7
- **PNA binding to the non-template DNA strand interferes with transcription, suggesting a blockage mechanism mediated by R-loop formation** *MOLECULAR CARCINOGENESIS*
Belotserkovskii, B. P., Hanawalt, P. C.
2015; 54 (11): 1508-1512
- **Transcription blockage by stable H-DNA analogs in vitro** *NUCLEIC ACIDS RESEARCH*
Pandey, S., Ogloblina, A. M., Belotserkovskii, B. P., Dolinnaya, N. G., Yakubovskaya, M. G., Mirkin, S. M., Hanawalt, P. C.
2015; 43 (14): 6994-7004
- **A balanced perspective on unbalanced growth and thymineless death** *FRONTIERS IN MICROBIOLOGY*
Hanawalt, P. C.
2015; 6
- **Photosensitive human syndromes** *MUTATION RESEARCH-FUNDAMENTAL AND MOLECULAR MECHANISMS OF MUTAGENESIS*
Spivak, G., Hanawalt, P. C.
2015; 776: 24-30
- **Altered Minor-Groove Hydrogen Bonds in DNA Block Transcription Elongation by T7 RNA Polymerase** *CHEMBIOCHEM*
Tanasova, M., Goeldi, S., Meyer, F., Hanawalt, P. C., Spivak, G., Sturla, S. J.
2015; 16 (8): 1212-1218
- **Historical perspective on the DNA damage response.** *DNA repair*

Hanawalt, P. C.

2015; 36: 2–7

- **Thymineless Death Lives On: New Insights into a Classic Phenomenon** *ANNUAL REVIEW OF MICROBIOLOGY, VOL 69*
Khodursky, A., Guzman, E. C., Hanawalt, P. C.
2015; 69: 247-?
- **Transcription blockage by stable H-DNA analogs in vitro.** *Nucleic acids research*
Pandey, S., Ogloblina, A. M., Belotserkovskii, B. P., Dolinnaya, N. G., Yakubovskaya, M. G., Mirkin, S. M., Hanawalt, P. C.
2015; 43 (14): 6994–7004
- **Photosensitive human syndromes.** *Mutation research*
Spivak, G., Hanawalt, P. C.
2015; 776: 24–30
- **In memory of John Bruce Hays (1937-2014).** *DNA repair*
de Wind, N., Buermeyer, A. B., Hanawalt, P. C.
2014; 16: vi-vii
- **DNA Sequences That Interfere with Transcription: Implications for Genome Function and Stability** *CHEMICAL REVIEWS*
Belotserkovskii, B. P., Mirkin, S. M., Hanawalt, P. C.
2013; 113 (11): 8620-8637
- **Comet-FISH with strand-specific probes reveals transcription-coupled repair of 8-oxoGuanine in human cells** *NUCLEIC ACIDS RESEARCH*
Guo, J., Hanawalt, P. C., Spivak, G.
2013; 41 (16): 7700-7712
- **Building on the past, shaping the future: The environmental mutagenesis and genomics society** *ENVIRONMENTAL AND MOLECULAR MUTAGENESIS*
Wilson, T. E., DeMarini, D. M., Dertinger, S. D., Engelward, B. P., Hanawalt, P. C., MacGregor, J. T., Smith-Roe, S. L., Witt, K. L., Yauk, C. L., Ljungman, M., Schwartz, J. L., Klein, C. B.
2013; 54 (3): 153-157
- **Transcription blockage by homopurine DNA sequences: role of sequence composition and single-strand breaks** *NUCLEIC ACIDS RESEARCH*
Belotserkovskii, B. P., Neil, A. J., Saleh, S. S., Shin, J. H., Mirkin, S. M., Hanawalt, P. C.
2013; 41 (3): 1817-1828
- **The awakening of DNA repair at Yale.** *The Yale journal of biology and medicine*
Hanawalt, P. C.
2013; 86 (4): 517–23
- **Transcription blockage by single-strand breaks in various sequences and the general model for transcription blockage by R-loop formation**
Belotserkovskii, B. P., Neil, A. J., Saleh, S. S., Shin, J. H., Mirkin, S. M., Hanawalt, P. C.
TAYLOR & FRANCIS INC.2013: 83–84
- **Transcription Blockage by Bulky End Termini at Single-Strand Breaks in the DNA Template: Differential Effects of 5' and 3' Adducts** *BIOCHEMISTRY*
Neil, A. J., Belotserkovskii, B. P., Hanawalt, P. C.
2012; 51 (44): 8964-8970
- **Comet-FISH to Sensitively Assess Global and Transcription-Coupled Repair of DNA Lesions** *43rd Annual Meeting of the Environmental-Mutagen-Society (EMS)*
Guo, J., Spivak, G., Hanawalt, P.
WILEY-BLACKWELL.2012: S35–S35
- **A novel XPD mutation in a compound heterozygote; the mutation in the second allele is present in three homozygous patients with mild sun sensitivity** *ENVIRONMENTAL AND MOLECULAR MUTAGENESIS*
Falik-Zaccai, T. C., Erel-Segal, R., Horev, L., Bitterman-Deutsch, O., Koka, S., Chaim, S., Keren, Z., Kalfon, L., Gross, B., Segal, Z., Orgal, S., Shoval, Y., Slor, et al
2012; 53 (7): 505-514
- **Transcription-Coupled DNA Repair in Prokaryotes** *MECHANISMS OF DNA REPAIR*
Ganesan, A., Spivak, G., Hanawalt, P. C.

2012; 110: 25-40

- **Comet-Fish to Sensitive Assess Global and Transcription-Coupled Repair of DNA Lesions.** *42nd Annual Meeting of the Environmental-Mutagen-Society*
Spivak, G., Guo, J., Hanawalt, P. C.
WILEY-BLACKWELL.2011: S37-S37
- **DNA slip-outs cause RNA polymerase II arrest in vitro: potential implications for genetic instability** *NUCLEIC ACIDS RESEARCH*
Salinas-Rios, V., Belotserkovskii, B. P., Hanawalt, P. C.
2011; 39 (17): 7444-7454
- **Anchoring Nascent RNA to the DNA Template Could Interfere with Transcription** *BIOPHYSICAL JOURNAL*
Belotserkovskii, B. P., Hanawalt, P. C.
2011; 100 (3): 675-684
- **Transcription-coupled nucleotide excision repair of a gene transcribed by bacteriophage T7 RNA polymerase in Escherichia coli** *DNA REPAIR*
Ganesan, A. K., Hanawalt, P. C.
2010; 9 (9): 958-963
- **Mechanisms and implications of transcription blockage by guanine-rich DNA sequences** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Belotserkovskii, B. P., Liu, R., Tornaletti, S., Krasilnikova, M. M., Mirkin, S. M., Hanawalt, P. C.
2010; 107 (29): 12816-12821
- **Thymineless death is associated with loss of essential genetic information from the replication origin** *MOLECULAR MICROBIOLOGY*
Sangurdekar, D. P., Hamann, B. L., Smirnov, D., Srienc, F., Hanawalt, P. C., Khodursky, A. B.
2010; 75 (6): 1455-1467
- **A UV-sensitive syndrome patient with a specific CSA mutation reveals separable roles for CSA in response to UV and oxidative DNA damage** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Nardo, T., Oneda, R., Spivak, G., Vaz, B., Mortier, L., Thomas, P., Orioli, D., Laugel, V., Stary, A., Hanawalt, P. C., Sarasin, A., Stefanini, M.
2009; 106 (15): 6209-6214
- **Peptide Nucleic Acid (PNA) Binding and Its Effect on In Vitro Transcription in Friedreich's Ataxia Triplet Repeats** *MOLECULAR CARCINOGENESIS*
Belotserkovskii, B. P., Liu, R., Hanawalt, P. C.
2009; 48 (4): 299-308
- **New applications of the Comet assay: Comet-FISH and transcription-coupled DNA repair** *MUTATION RESEARCH-REVIEWS IN MUTATION RESEARCH*
Spivak, G., Cox, R. A., Hanawalt, P. C.
2009; 681 (1): 44-50
- **Transcription-coupled DNA repair: two decades of progress and surprises** *NATURE REVIEWS MOLECULAR CELL BIOLOGY*
Hanawalt, P. C., Spivak, G.
2008; 9 (12): 958-970
- **Emerging links between premature ageing and defective DNA repair** *MECHANISMS OF AGEING AND DEVELOPMENT*
Hanawalt, P. C.
2008; 129 (7-8): 503-505
- **Inhibitory effect of a short Z-DNA forming sequence on transcription elongation by T7 RNA polymerase** *NUCLEIC ACIDS RESEARCH*
Ditlevson, J. V., Tornaletti, S., Belotserkovskii, B. P., Teijeiro, V., Wang, G., Vasquez, K. M., Hanawalt, P. C.
2008; 36 (10): 3163-3170
- **G4-forming sequences in the non-transcribed DNA strand pose blocks to T7 RNA polymerase and mammalian RNA polymerase II** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Tornaletti, S., Park-Snyder, S., Hanawalt, P. C.
2008; 283 (19): 12756-12762
- **Paradigms for the three Rs: DNA replication, recombination, and repair** *MOLECULAR CELL*
Hanawalt, P. C.
2007; 28 (5): 702-707

- **A triplex-forming sequence from the human c-MYC promoter interferes with DNA transcription** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Belotserkovskii, B. P., De Silva, E., Tornaletti, S., Wang, G., Vasquez, K. M., Hanawalt, P. C.
2007; 282 (44): 32433-32441
- **Transcription coupled nucleotide excision repair in Escherichia coli can be affected by changing the arginine at position 529 of the p subunit of RNA polymerase** *DNA REPAIR*
Ganesan, A. K., Smith, A. J., Savery, N. J., Zamos, P., Hanawalt, P. C.
2007; 6 (10): 1434-1440
- **Nucleotide excision repair phenotype of human acute myeloid leukemia cell lines at various stages of differentiation** *MUTATION RESEARCH-FUNDAMENTAL AND MOLECULAR MECHANISMS OF MUTAGENESIS*
Hsu, P., Hanawalt, P. C., Nospikel, T.
2007; 614 (1-2): 3-15
- **Transcription domain-associated repair in human cells** *MOLECULAR AND CELLULAR BIOLOGY*
Nospikel, T. P., Hyka-Nospikel, N., Hanawalt, P. C.
2006; 26 (23): 8722-8730
- **Impaired nucleotide excision repair upon macrophage differentiation is corrected by E1 ubiquitin-activating enzyme** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Nospikel, T., Hanawalt, P. C.
2006; 103 (44): 16188-16193
- **Transcription arrest at an abasic site in the transcribed strand of template DNA** *CHEMICAL RESEARCH IN TOXICOLOGY*
Tornaletti, S., Maeda, L. S., Hanawalt, P. C.
2006; 19 (9): 1215-1220
- **Research collaborations: Trial, trust, and truth** *CELL*
Hanawalt, P. C.
2006; 126 (5): 823-825
- **Role of DNA replication and repair in thymineless death in Escherichia coli** *JOURNAL OF BACTERIOLOGY*
Morganroth, P. A., Hanawalt, P. C.
2006; 188 (14): 5286-5288
- **Processing of non-canonical DNA structures by RNA polymerase.** *37th Annual Meeting of the Environmental-Mutagen-Society*
VanOverbelke, J. L., DeSilva, E., Wang, G., Vasquez, K. M., Tornaletti, S., Hanawalt, P. C.
WILEY-LISS.2006: 427-27
- **Topoisomerase deficiencies subtly enhance global genomic repair of ultraviolet-induced DNA damage in Saccharomyces cerevisiae** *DNA REPAIR*
Cline, S. D., Hanawalt, P. C.
2006; 5 (5): 611-617
- **Transcriptional inhibition by an oxidized abasic site in DNA** *CHEMICAL RESEARCH IN TOXICOLOGY*
Wang, Y. L., Sheppard, T. L., Tornaletti, S., Maeda, L. S., Hanawalt, P. C.
2006; 19 (2): 234-241
- **Host cell reactivation of plasmids containing oxidative DNA lesions is defective in Cockayne syndrome but normal in UV-sensitive syndrome fibroblasts** *DNA REPAIR*
Spivak, G., Hanawalt, P. C.
2006; 5 (1): 13-22
- **In vivo assays for transcription-coupled repair** *DNA REPAIR, PTA*
Spivak, G., Pfeifer, G. P., Hanawalt, P.
2006; 408: 223-?
- **Comparative TFIIIS-mediated transcript cleavage by mammalian RNA polymerase II arrested at a lesion in different transcription systems** *DNA REPAIR*
Kalogeraki, V. S., Tornaletti, S., Cooper, P. K., Hanawalt, P. C.
2005; 4 (10): 1075-1087

- **Nucleotide excision repair activity varies among murine spermatogenic cell types** *BIOLOGY OF REPRODUCTION*
Xu, G. G., Spivak, G., Mitchell, D. L., Mori, T., McCarrey, J. R., McMahan, C. A., Walter, R. B., Hanawalt, P. C., Walter, C. A.
2005; 73 (1): 123-130
- **Density matters: The semiconservative replication of DNA** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Hanawalt, P. C.
2004; 101 (52): 17889-17894
- **Malondialdehyde adducts in DNA arrest transcription by T7 RNA polymerase and mammalian RNA polymerase II** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Cline, S. D., Riggins, J. N., Tornaletti, S., Marnett, L. J., Hanawalt, P. C.
2004; 101 (19): 7275-7280
- **Effect of 8-oxoguanine on transcription elongation by T7 RNA polymerase and mammalian RNA polymerase II** *DNA REPAIR*
Silvia, T. A., Maeda, L. S., Kolodner, R. D., Hanawalt, P. C.
2004; 3 (5): 483-494
- **Functional characterization of global genomic DNA repair and its implications for cancer** *4th International Conference on Environmental Mutagens in Human Populations (ICEMHP)*
Hanawalt, P. C., Ford, J. A., Lloyd, D. R.
ELSEVIER SCIENCE BV.2003: 107-14
- **Four decades of DNA repair: from early insights to current perspectives** *BIOCHIMIE*
Hanawalt, P. C.
2003; 85 (11): 1043-1052
- **Behavior of T7 RNA polymerase and mammalian RNA polymerase II at site-specific cisplatin adducts in the template DNA** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Tornaletti, S., Patrick, S. M., Turchi, J. J., Hanawalt, P. C.
2003; 278 (37): 35791-35797
- **Transcription arrest at a lesion in the transcribed DNA strand in vitro is not affected by a nearby lesion in the opposite strand** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Kalogeraki, V. S., Tornaletti, S., Hanawalt, P. C.
2003; 278 (21): 19558-19564
- **Who's on first in the cellular response to DNA damage?** *NATURE REVIEWS MOLECULAR CELL BIOLOGY*
Cline, S. D., Hanawalt, P. C.
2003; 4 (5): 361-372
- **When parsimony backfires: neglecting DNA repair may doom neurons in Alzheimer's disease** *BIOESSAYS*
Nouspikel, T., Hanawalt, P. C.
2003; 25 (2): 168-173
- **RecA-dependent recovery of arrested DNA replication forks** *ANNUAL REVIEW OF GENETICS*
Courcelle, J., Hanawalt, P. C.
2003; 37: 611-646
- **Subpathways of nucleotide excision repair and their regulation** *ONCOGENE*
Hanawalt, P. C.
2002; 21 (58): 8949-8956
- **p53 controls global nucleotide excision repair of low levels of structurally diverse benzo(g)chrysene-DNA adducts in human fibroblasts** *CANCER RESEARCH*
Lloyd, D. R., Hanawalt, P. C.
2002; 62 (18): 5288-5294
- **Ultraviolet-sensitive syndrome cells are defective in transcription-coupled repair of cyclobutane pyrimidine dimers** *DNA REPAIR*
Spivak, G., Itoh, T., Matsunaga, T., Nikaido, O., Hanawalt, P., Yamaizumi, M.

2002; 1 (8): 629-643

- **DNA repair in terminally differentiated cells** *DNA REPAIR*
Nouspikel, T., Hanawalt, P. C.
2002; 1 (1): 59-75
- **Effect of thymine glycol on transcription elongation by T7 RNA polymerase and mammalian RNA polymerase II** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Tornaletti, S., Maeda, L. S., Lloyd, D. R., Reines, D., Hanawalt, P. C.
2001; 276 (48): 45367-45371
- **Spatially localized generation of nucleotide sequence-specific DNA damage** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Oh, D. H., King, B. A., Boxer, S. G., Hanawalt, P. C.
2001; 98 (20): 11271-11276
- **Participation of recombination proteins in rescue of arrested replication forks in UV-irradiated Escherichia coli need not involve recombination** *Colloquium on Links Between Recombination and Replication - Vital Roles of Recombination*
Courcelle, J., Hanawalt, P. C.
NATL ACAD SCIENCES.2001: 8196-8202
- **The SOS-dependent upregulation of uvrD is not required for efficient nucleotide excision repair of ultraviolet light induced DNA photoproducts in Escherichia coli** *MUTATION RESEARCH-DNA REPAIR*
Crowley, D. J., Hanawalt, P. C.
2001; 485 (4): 319-329
- **Comparative gene expression profiles following UV exposure in wild-type and SOS-deficient Escherichia coli** *GENETICS*
Courcelle, J., Khodursky, A., Peter, B., Brown, P. O., Hanawalt, P. C.
2001; 158 (1): 41-64
- **Therefore, what are recombination proteins there for?** *BIOESSAYS*
Courcelle, J., Ganesan, A. K., Hanawalt, P. C.
2001; 23 (5): 463-470
- **Controlling the efficiency of excision repair** *MUTATION RESEARCH-DNA REPAIR*
Hanawalt, P. C.
2001; 485 (1): 3-13
- **Revisiting the rodent repairadox** *ENVIRONMENTAL AND MOLECULAR MUTAGENESIS*
Hanawalt, P. C.
2001; 38 (2-3): 89-96
- **Binding and photoreactivity of psoralen linked to triple helix-forming oligonucleotides** *PHOTOCHEMISTRY AND PHOTOBIOLOGY*
Oh, D. H., Hanawalt, P. C.
2000; 72 (3): 298-307
- **Reduced global genomic repair of ultraviolet light-induced cyclobutane pyrimidine dimers in simian virus 40-transformed human cells** *MOLECULAR CARCINOGENESIS*
Bowman, K. K., Sicard, D. M., Ford, J. M., Hanawalt, P. C.
2000; 29 (1): 17-24
- **Histone H3 and heat shock protein GRP78 are selectively cross-linked to DNA by photoactivated gilvocarcin V in human fibroblasts** *CANCER RESEARCH*
Matsumoto, A., Hanawalt, P. C.
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