

PRESENT POSITION AND ADDRESS

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Professor

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EDUCATION

| | | | |
|--------------------------------------|-------|---------------|--------------|
| Calcutta University, Calcutta, India | B.S. | June 25, 1982 | Chemistry |
| Calcutta University, Calcutta, India | M.S. | May 30, 1985 | Biochemistry |
| Jadavpur University, India | Ph.D. | Nov 23, 1992 | Biochemistry |

PROFESSIONAL AND TEACHING EXPERIENCE

Sept 1, 2013-Present: Professor, Internal Medicine; Scientist, Sealy Center for Molecular Medicine, UTMB, Galveston

Sept 1, 2008-Aug 31, 2013: Associate Professor, Internal Medicine; Scientist, Sealy Center for Molecular Medicine, UTMB, Galveston

Sept 1, 2007- Aug 31, 2008: Associate Professor, Biochemistry and Molecular Biology; Scientist, Sealy Center for Molecular Medicine, UTMB, Galveston

Sept 1, 2001- Aug 31, 2007: Assistant Professor, Biochemistry and Molecular Biology; Scientist, Sealy Center for Molecular Medicine, UTMB, Galveston

Sept 1, 1998- Aug 31, 2001: Instructor, Biochemistry and Molecular Biology; Scientist, Sealy Center for Molecular Science, UTMB, Galveston

July 22, 1994- Aug 31, 1998: Postdoctoral fellow with Sankar Mitra, Department of Biochemistry and Molecular Biology, UTMB, Galveston

June 22, 1992-July 20, 1994: Research Associate with Hemanta Majumder, Indian Institute of Chemical Biology, Calcutta, India

June 20, 1986- June 21, 1992: Research Fellow with Ramnarayan Mukherjea, Jadavpur

University, Calcutta, India

RESEARCH ACTIVITIES

Area of research: Oxidative damage repair in mammalian genomes: Enzyme kinetics, biochemical and cellular characterization of protein-protein and protein-DNA interactions; post-translational modification of DNA repair proteins, SNP analysis, mutation analysis, transcription-coupled repair of oxidized bases, DNA repair and inflammation: linkage to disease susceptibility.

Research highlights/Key scientific discoveries

1. The discovery of a new family of mammalian enzymes for repair of oxidatively damaged DNA (Hazra *et al.* 2002, *PNAS*, **99**: 3523-3528; Hazra *et al.* 2002, *J.Biol.Chem*, **277**:30417-30420)
2. Discovery of a new pathway for oxidative damage repair in mammalian genomes (Wiederhold *et al.*, 2004. *Mol Cell*; **15**:209-220;. Das *et al.*, 2006. *DNA Repair* **5**: 1439-48)
3. Transcription coupled repair of oxidized bases in mammalian genomes (Dou *et al.* 2003, *J Biol Chem*. **278**:49679-49684; Banerjee *et al.*, 2011, *J Biol Chem*. **286**: 6006-16)
4. Oxidative DNA damage and single-strand break repair in mitochondrial genome (Mandal *et al.*, 2012, *J Biol Chem*. **287**: 2819-29)
5. Etiologic role of NEIL2 in lung cancer (Dey *et al.*, 2012, *DNA Repair* **11**: 570-8)
6. Single-strand DNA break repair and neurodegenerative diseases (Manuscript in preparation)

Grant support:

Current:

R01 NS073976 (T. Hazra, PI)

NIH/NINDS

07/01/12-06/30/17

Effort; 33%; \$1,673,440.00

“Preferential single-strand break repair in the active genes of mammalian cells”

The major focus of the project is to determine the mechanistic basis for the development of Ataxia and to develop new strategies for the prevention or treatment of MJD/SCA3 in the human population. The Specific Aims of this project are to test the hypotheses that: **1.** ATXN3-Q72 blocks PNKP-mediated nuclear TC-SSBR; **2.** ATXN3-Q72 blocks PNKP-mediated mtTC-SSBR; and **3.** Ectopic expression of PNKP will rescue ATXN3-Q72-mediated cellular toxicity.

R01 ES018948 (I. Boldogh, PI, Hazra, Co-I)

NIH/NIEHS

04/15/10-4/14/15

Effort: 7.5%, \$1,125,000.00

“Linkage of lung inflammation to 8-oxoguanine and OGG1”

Our hypothesis is that 8-oxoguanine liberated from DNA by OGG1 functions as a signaling molecule by virtue of its ability to increase levels of activated small GTPases, thereby initiating cascades of cellular activation events leading to increased pro-inflammatory mediator expression and exacerbation of allergic inflammation. In this project we investigate whether: a) deficiency in 8-oxoG repair renders mice refractory to inflammation; b) OGG1's glycosylase activity is post-translationally modulated for release of ^{EG}8-oxoG from DNA during inflammation, and c) exogenous 8-oxoguanine enhances expression of pro-inflammatory mediators via NF-κB, activated via the Ras-Raf-MEK/ERK-MSK1 pathway.

Role: Co-investigator

PO1 AI062885 (**Brasier, PI; Boldogh, PI; Hazra, Co-I**)

09/01/12-08/31/17

NIH/NIAID

Effort: 10%, \$8,000,000.00

Signaling in Airway Epithelium

P3: "Role of the DNA glycosylase OGG1 in oxidative stress-induced innate inflammation".

This project seeks to establish a novel paradigm in which OGG1-initiated DNA base excision repair is etiologically linked to proinflammatory gene expression in oxidative stress-induced innate inflammation. This will be done by pursuing three Specific Aims, 1) to establish the role of OGG1-initiated DNA damage-repair in inflammatory cell accumulation after oxidative stress exposure in the lungs; 2) define the role of OGG1.8-oxoG complex (OGG1^{GRF}) in activation of the NF-κB/RelA pathway; and 3) identify the OGG1^{GRF}-induced signaling pathway(s) that trigger proinflammatory gene expression and inflammation in oxidatively exposed mouse lungs.

Past

R01 CA102271; NIH/NCI, "Repair of Oxidative Damage in Mammalian Genomes" (**T. Hazra, PI**), Jan 2005-Dec 2012

1 R21 ES017353 NIH/NIEHS "Polymorphic variants of human DNA glycosylase NEIL2 and lung cancer susceptibility" (**T. Hazra, PI**) June 2009-Sept 2012

1R01 CA53791; NIH, "Repair of endogenous damage in mammalian genomes". (Mitra, PI; **Hazra, Co-I**), June 2006-May 2011

ES06676, NIEHS Pilot project grant, "Characterization of NEIL2 polymorphic variants in lung cancer". (**Hazra, PI**), June 2008-May 2009

P01 AG021830, NIA, "Oxidative Stress, Mitochondrial Dysfunction and Aging". (Boldogh, P.I; **Hazra, Co-I.**), August 2004 – July 2009

P01 AI062885, NIAID, "Mitochondrial ROS: Role in Allergen-Induced Inflammation". (Boldogh, P.I; **Hazra, Co-I**) January 2005 – April 2010

R01CA53791, NIH, "Repair of mutagenic 8-oxoguanine in mammalian cells". (Mitra, PI; **Hazra, Co-I**), May 2002-March 2006

NIEHS pilot project grant: Functional characterization of NEIL2 polymorphism. Sherif Abdel-Rahman and **Hazra, Co-PI**; 2004-2005

COMMITTEE RESPONSIBILITIES

UTMB: 2007: IACUC user group

2009-Present: Graduate School Admission Committee

Departmental: 2007- 2009: Safety and emergency management committee

(BMB) 2007- 2009: Faculty compensation pay plan and evaluation appeals committee

Others: Organized Biochemistry & Molecular Biology (BMB) Mini symposium, 2011

Session chair, Gall bladder stone: Etiopathogenesis, surgical complication and remedy, India, 2011

Session chair, 4th International Conference on Stem Cells and Cancer. Mumbai, India.
October 19-22, 2013

TEACHING RESPONSIBILITIES AT UTMB

School of Medicine (SOM)

Problem Based Learning

2005: Molecules, Cells and Tissues (MCT)

2008-Present: Cardiovascular and Pulmonary course (CVP)

SOM applicant (medical students) interview

2003: 10 applicants

2004: 12 applicants

2006: 16 applicants

2007: 17 applicants

2008: 16 applicants

2009: 8 applicants

2010: 1 applicant, MD/PhD student

2012: 8 applicants

2013: 20 applicants

Graduate School (GSBS)

2006- 2009: Biochemistry (BBSC 6401)

2010: Cell Biology (BBSC 6402) Small group discussion

2007-Present: DNA repair: Replication and environmental toxicology (HBCG 6209);

Students/Mentees/Advisees/Trainees

Post-doctoral fellows

2003-2007, Aditi Das, PNKP-dependent repair of oxidized bases

2002-2003, Hong Dou, Effect of DNA structure on DNA glycosylase activity

2005-2007, Soumita Das, NEIL2-YB-1 interaction during oxidative stress

2005-2008, Amit Maiti, SNP analysis of NEIL2

2007-2010, Dibyendu Banerjee, Characterization of mitochondrial NEIL2

2009- 2010, Santi Mandal, TC-BER involving PNKP

2009- 2011, Sanjib Dey, BER and inflammation

2009- Present, Arpita Chatterjee, PNKP and neurodegenerative diseases

2011- Present, Saikat Saha, Oxidative DNA damage and neuropathogenesis

2012- Present, Tatiana Venkova, Single-strand break repair in mammalian genomes

2013- Present, Anirban Chakraborty, DNA strand-break repair in the active genes

Ph.D. students (Co-supervisor)

1998-2001: Jeff Hill: Activation of OGG1 by APE1

2001-2004: Lee Wiederhold: APE-independent repair pathway in mammalian cells

2005-2009: Corey Theriot: Role of NEIL1 in replication-associated repair

Master's students: (lab rotation)

2001: Scott Larson; Repair of 8-oxoguanine
2002: Lavanya Rajagopalan; Characterization of Zn-finger domain of NEIL2
2003: Santa Maria Guerra, Sergio R; Domain analysis of NEIL1
2004: Corey Theriot; NEIL1-initiated base excision repair
2005: Erica Schwartz; Oxidative DNA damage repair in mammalian cells
2007: Abhijnan Chattopadhyay; Role of NEIL2 in mitochondrial DNA damage

Undergraduate/high school students

2003: Jonathan Boyd, Identification of Zn-finger motif in NEIL2
2004: Angela Mao, Interaction studies of NEIL2 and nucleolin
2006: Lu Yang, Mutation analysis of NEIL2. Clear Lake High school, Poster presentation, 1st place in the State Competition
2006: Tenile Harris, Teacher Ball High School, NEIL2-protein interactions
2010: Jason George, SURP student
2012: Jake Goldman, SURP student
2013, Anna Sliz, SURP student
2013-14, Ashley Schwab, Ball High student

Chair/Member of Ph.D. Supervisory Committee for:

2004-2008: Carla Kinslow, Neuroscience and Cell Biology
2006- 2009: Corey Theriot, Biochemistry and Molecular Biology
2006- 2010: David Saenz, Microbiology
2009- 2011: Larry Bellot, Biochemistry and Molecular Biology
2010-2011: Abhijnan Chattopadhyay, Biochemistry and Molecular Biology
2011-2014: Ling Fang, Biochemistry and Molecular Biology
2012: Juan Conde, Biochemistry and Molecular Biology
2012: Leon Bae, Biochemistry and Molecular Biology
2012-Present: Arijit Dutta, Biochemistry and Molecular Biology
2014-Present: Michaela Huynh, Pharmacology

TEACHING RESPONSIBILITIES AT OTHER UNIVERSITIES

Lecture for the Master students: "DNA damage repair in mammalian cells". Institute of Postgraduate Medical Education and Research. Calcutta, India. Aug 13, 2011

External Reviewer for PhD Dissertation of Mr. Rajiv Kumar, Dept of Pathology, All India Institute of Medical Science, India

MEMBERSHIP IN SCIENTIFIC SOCIETIES/PROFESSIONAL ORGANIZATIONS

1999-Present: American Society for Biochemistry and Molecular Biology (Nominated)

2000- Present: American Association for Cancer Research

HONORS:

National Student Talent Search, West Bengal Board of Secondary Education, 1976

Junior Research Fellowship, Process Engineering Design and Development Inst, India, 1986

Senior Research Fellowship, Indian Council of Medical Research, Govt. of India, 1990

Postdoctoral Fellowship, Dept. of Science and Technology, Govt. of India, 1992

ADDITIONAL INFORMATION**National and International Recognitions**

Editorial Board Member

2009-Present: Journal of Nucleic Acid

Journal Reviewer for

2001-Present: Biochemistry

2001-Present: Cancer Research

2001-Present: Carcinogenesis

2001-Present: DNA Repair

2001-Present: Oncogene

2002-Present: Nucleic Acids Research

2003-Present: Journal of Biological Chemistry

2009-Present: PNAS

Grant Reviewer:

2005, 2006: National Institute of Health, RIBT study section

2006- Present: Sealy Center Grant, UTMB

2006: Medical Research Council, United Kingdom

2011- Present: CTSA grant, UTMB

2011- Present, Italian Ministry of Health (NIH equivalent)

2012: French National Research Agency (NIH equivalent)

Professional Skills (i.e. Faculty mentor, professional development endeavors)

I have a long standing collaboration with Drs. Sankar Mitra, Houston Methodist Research Institute; Istvan Boldogh, Dept of Microbiology; Sanjiv Sur, Internal Medicine; and Partha Sarkar, Dept of Neurology, because of our mutual interest in oxidative biology, inflammation and DNA repair. We have published many papers together and most of the results have been useful as preliminary studies in grant applications. We already received several (3 R01s and 1 R21) NIH grants (R01: Hazra, PI, Sarkar, Co-I; Boldogh, PI; Hazra, Co-I; and Mitra, PI and Hazra, Co-I; R21, Hazra PI; Cardenas, Co-I). We are developing our R21 to a larger program. Dr. Partha Sarkar, Assistant Professor in the Dept of Neurology; is studying RNA-protein interaction to investigate the molecular mechanism of muscle degeneration. We made a surprising observation that DNA damage response pathway plays a major role in the pathogenesis. We will submit a Multi-PI R01 soon.

I also mentored several postdoctoral fellows in the last few years; five of them are now independently pursuing their career either in the academia or in biotech companies. I am thus involved in a variety of collaborations at UTMB and helping develop careers of the junior members in my capacity.

BIBLIOGRAPHY

A. Selected Articles in Peer-Reviewed Journals: Total Citations (~3000; h-index: 33)

1. **Hazra TK**, Mukherjea, M, Mukherjea RN. 1991. Bioleaching of low grade copper ores using *Thiobacillus ferrooxidans*. *Applied Biochemistry and Biotechnology* **34**:377-383.
2. **Hazra TK**, Mukherjea M, Mukherjea RN. 1992. Role of rusticyanin in the electron transport process in *Thiobacillus ferrooxidans*. *Indian Journal of Biochemistry and Biophysics* **29**:77-81.
3. Bhattacharya R, Singh R, **Hazra TK**, Majumder HK. 1993. Application of polymerase chain reaction with specific and arbitrary primers in identification and differentiation of Leishmania parasites. *FEMS Microbiology Letters*, **114**:99-104
4. **Hazra TK**, Roy R, Biswas T, Grabowski DT, Pegg AE, Mitra S. Specific recognition of O⁶-methylguanine in DNA by active site mutants of human O⁶-methylguanine-DNA methyltransferase. *Biochemistry* **36**:5769-5776, 1997. PMID: 9153417
5. **Hazra TK**, Izumi T, Maitt L, Floyd R A, Mitra S. The presence of two distinct 8-oxoguanine repair enzymes in human cells: Their potential complementary roles in preventing mutation. *Nucleic Acids Res.* **26**:5116-5122, 1998. PMID: 9801308
6. Boldogh I, Ramana CV, Chen Z, Biswas T, **Hazra TK**, Grosch S, Grombacher T, Mitra S, Kaina, B. Regulation of expression of the DNA repair gene O⁶-methylguanine-DNA methyltransferase via protein kinase C-mediated signaling. *Cancer Research* **58**:3950-3956, 1998. PMID: 9731508
7. Bhattacharyya D, **Hazra TK**, Behnke WD, Chong P.-S, Kurosky A, Lee JC., Mitra, S. Reversible folding of ADA Protein (O⁶-methylguanine-DNA methyltransferase) of *Escherichia coli*. *Biochemistry*, **37**:1722-1730, 1998. PMID: 9484244
8. Roy R, Biswas T, **Hazra TK**, Roy G, Grabowski DT, Izumi T, Srinivasan G, Mitra, S. Specific interaction of wild type and truncated mouse N-methylpurine-DNA glycosylase with ethenoadenine-containing DNA. *Biochemistry*. **37**:580-589, 1998. PMID: 10433731
9. Biswas T, Ramana CV, Srinivasan G, Boldogh I, **Hazra TK**, Chen Z, Tano K, Thompson EB, Mitra S. Activation of human O⁶-methylguanine-DNA methyltransferase gene by glucocorticoid hormone. *Oncogene* **18**:525-532, 1999. PMID: 9927209
10. Srivenugopal KS, Mullapudi SRS, Shou J, **Hazra TK**, Ali-Osman F. Protein phosphorylation is a regulatory mechanism for O⁶-alkylguanine-DNA alkyltransferase in human brain tumor cells. *Cancer Res.* **60**:282-287, 2000. PMID: 10667577
11. **Hazra TK**, Izumi T, Venkataraman R, Kow YK, Dizdaroglu M, Mitra S. Characterization of a novel 8-oxoguanine-DNA glycosylase activity in E. coli and identification of the enzyme as endonuclease VIII. *J. Biol. Chem.* **275**:27762-27767, 2000. PMID: 10862773
12. Izumi T, **Hazra TK**, Boldogh I, Tomkinson AE, Park MS, Ikeda S, Mitra S. Requirement of human AP-endonuclease 1 for repair of 3'-blocking damage at DNA single-strand breaks induced by reactive oxygen species. *Carcinogenesis* **21**:1329-1334, 2000. PMID: 10874010
13. Hill JW, **Hazra TK**, Izumi T, Mitra S. Stimulation of human 8-oxoguanine-DNA glycosylase by AP-endonuclease: Potential co-ordination of the initial steps in base excision repair. *Nucl. Acids Res.* **29**:430-438, 2001. PMID: 11139613

14. **Hazra TK**, Muller JG, Manuel RC, Burrows CJ, Lloyd RC, Mitra S. Repair of hydantoins, one electron oxidation products of 8-oxoguanine, by DNA glycosylases of *Escherichia coli*. *Nucl. Acids Res.* **29**:1967-1974, 2001. PMID: 11328881
15. **Hazra TK**, Izumi T, Boldogh I, Imhoff B, Kow YW, Jaruga P, Dizdaroglu M, Mitra S. Identification and characterization of a human DNA glycosylase for repair in modified bases in oxidatively damaged DNA. *Proc. Natl. Acad. Sci.* **99**:3523-3528, 2002. PMID: 11904416 <http://www.pnas.org> (**Cover page article and special press release by PNAS**)
16. **Hazra TK**, Kow YW, Hatahet Z, Imhoff B, Boldogh I, Mokkaapati SK, Mitra S, Izumi T. Identification and characterization of a novel human DNA glycosylase for repair of cytosine-derived bases. *J. Biol. Chem.* **277**:30417-30420, 2002. PMID: 12097317. <http://www.jbc.org> (**Accelerated Publication**)
17. Thivyanathan V, Somasunderam A, **Hazra TK**, Mitra S, Gorenstein DG. Solution structure of a DNA duplex containing 8-hydroxy-2'-deoxyguanosine opposite deoxyguanosine. *J. Mol. Biol.* **325**, 433-442, 2003. PMID: 12498794
18. Dou H, Mitra, S, **Hazra TK**. Repair of oxidized bases from DNA bubble structures by human DNA glycosylases NEIL1 and NEIL2. *J. Biol. Chem.* **278**:49679-49684, 2003. PMID: 14522990 <http://www.jbc.org>
19. Bhakat KK, Izumi T, Yang SH, Boldogh I, **Hazra TK**, Mitra S. Acetylation of human AP-endonuclease 1 (APE1/Ref-1) and repression of the parathyroid hormone gene. *EMBO J.* **22**:6299-6309, 2003. PMID: 14633989
20. Szczesny B, **Hazra TK**, Papaconstantinou J, Mitra S, Boldogh I. Age-dependent deficiency in import of mitochondrial DNA glycosylases required for repair of oxidatively damaged bases. *Proc. Natl. Acad. Sci.* **100**:10670-10675, 2003. PMID: 12960370 (**Special press release by PNAS**)
21. Wiederhold L, Leppard JB, Kedar P, Karimi-Busheri F, Rasouli-Nia A, Weinfeld M, Tomkinson AE., Izumi T, Prasad R, Wilson SH, Mitra S, **Hazra TK**. AP Endonuclease-independent DNA base excision repair in human cells. *Mol Cell*, **15**:209-220, 2004. PMID: 15260972
22. Bhakat KK, **Hazra TK**, Mitra S. Acetylation of the Human DNA Glycosylase NEIL2 and Inhibition of Its Activity, *Nucleic Acids Research*, **32**:3033-9, 2004. PMID: 15175427
23. Das A, Rajagopalan L, Mathura VS, Rigby SJ, Mitra S, **Hazra TK**. Identification of a Zinc finger domain in the human NEIL2 (Nei-like-2) protein. *J. Biol. Chem.* **279**: 47132-8, 2004. PMID: **15339932**
24. Mokkaapati SK, Wiederhold L, **Hazra TK**, Mitra S. Stimulation of DNA glycosylase activity of OGG1 by NEIL1: functional collaboration between two human DNA glycosylases. *Biochemistry.* **43**:11596-604, 2004. PMID: 15350146
25. Ali MM, **Hazra TK**, Dou H, Kow YW. 2005. Action of human endonuclease III and VIII upon DNA-containing tandem dihydrouracil. *DNA Repair.* **4**: 679-86 PMID: 15907775
26. Boldogh I, Bacsı A, Choudhury BK, Dharajiya N, Alam R, **Hazra TK**, Mitra S, Goldblum RM, Sur S. 2005. ROS generated by pollen NADPH oxidase provide a signal that augments antigen-induced allergic airway inflammation. *J Clin Invest.* **115**:2169-79 PMID: 16075057

27. Das A, **Hazra TK**, Boldogh I, Mitra S, Bhakat KK. 2005. Induction of the human oxidized base specific DNA glycosylase NEIL1 by reactive oxygen species. *J Biol Chem* **280**:35272-80. PMID: 16118226
28. Bacsı A, Kannan S, Lee MS, **Hazra TK**, Boldogh I. 2006. Modulation of DNA-dependent protein kinase activity in chlorambucil-treated cells. *Free Radic Biol Med* **38**: 1650-9. PMID: 16298690
29. Bhakat KK, Mokkaıpati SK, Boldogh I, **Hazra TK**, Mitra S. 2006. Acetylation of human 8-oxoguanine-DNA glycosylase by p300 and its role in 8-oxoguanine repair *in vivo*. *Mol Cell Biol* **26**: 1654-65. PMID: 16478987
30. Chattopadhyay R, Wiederhold L, Szczesny B, Boldogh I, **Hazra TK**, Izumi T, Mitra S. 2006 Identification and characterization of mitochondrial abasic (AP)-endonuclease in mammalian cells. *Nucleic Acids Res*:**34**(7):2067-76. PMID: 16617147
31. Das GC, Bacsı A, Shrivastava M, **Hazra TK**, Boldogh S. 2006 Enhanced gamma-glutamylcysteine synthetase activity decreases drug-induced oxidative stress levels and cytotoxicity. *Mol Carcinog*. **45**:635-47. PMID: 16491484
32. Das A, Wiederhold L, Leppard JB, Kedar P, Prasad R, Wang H, Boldogh I, Karimi-Busheri F, Weinfeld M, Tomkinson AE, Wilson SH, Mitra S, **Hazra TK**. 2006 NEIL2-initiated, APE-independent repair of oxidized bases in DNA: Evidence for repair complex in human cell. *DNA Repair*. **5**: 1439-48. PMID: 16982218
33. Guan X, Bai H, Shi G, Theriot CA, **Hazra TK**, Mitra S, Lu AL. 2007. The human checkpoint sensor Rad9-Rad1-Hus1 interacts with and stimulates NEIL1 glycosylase. *Nucleic Acids Res*. **35**: 2463-72 PMID: 17395641
34. Das A, Boldogh I, Lee JW, Harrigan, JA, Hegde ML, Piotrowski J, de Souza-Pinto N, Ramos W, Greenberg MM, **Hazra TK**, Mitra S, Bohr VA. 2007. The human werner syndrome protein stimulates repair of oxidative DNA base damage by the DNA glycosylase NEIL1. *J. Biol. Chem*. **282**: 26591-602 PMID: 17611195
35. Das S, Chattopadhyay R, Bhakat KK, Boldogh I, Kohno K, Prasad R, Wilson SH, **Hazra TK**. 2007. Stimulation of NEIL2-mediated oxidized base excision repair via YB-1 interaction during oxidative stress. *J. Biol. Chem*. **282**:28474-84 (PMID: 17686777). <http://www.jbc.org>
36. Bacsı A, chodaczek G, **Hazra TK**, Konkel D, Boldogh I. 2007. Increased ROS generation in subsets of OGG1 knockout fibroblast cells. *Mech Ageing Dev*. **128**: 637-49 (PMID: 18006041).
37. Dou H, Theriot CA, Das A, Hegde ML, Matsumoto Y, Boldogh I, **Hazra TK**, Bhakat KK, Mitra S. 2008. Interaction of the human DNA glycosylases NEIL1 with proliferating cell nuclear antigen: The potential for replication-associated repair of oxidized bases in mammalian genomes. *J. Biol. Chem*. **283**: 3130-40 (PMID: 18032376).
38. Maiti AK, Boldogh I, Spratt H, Mitra S, **Hazra TK**. 2008. Mutator phenotype of mammalian cells due to deficiency of NEIL1 DNA glycosylase, an oxidized base-specific repair enzyme. *DNA Repair* .**7**:1213-20 PMCID: PMC2567110
39. Thivyanathan V, Somasunderam A, Volk DE, **Hazra TK**, Mitra S, Gorenstein DG. 2008. Base-pairing properties of the oxidized cytosine derivative, 5-hydroxy uracil. *Biochem Biophys Res Commun*. **366**(3):752-7. PMCID: PMC2262052

40. Hegde ML, Theriot CA, Das A, Hegde PM, Guo Z, Gary RK, **Hazra TK**, Shen B, Mitra S. 2008. Physical and functional interaction between human oxidized base-specific DNA glycosylase neil1 and flap endonuclease 1. *J Biol Chem.* **283**: 27028-37. PMID: PMC2556012.
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45. White MC, Gao R, Xu W, Mandal SM, Lim JG, **Hazra TK**, Wakamiya M, Edwards SF, Raskin S, Teive HA, Zoghbi HY, Sarkar PS, Ashizawa T. 2010. Inactivation of hnRNP K by expanded intronic AUUCU repeat induces apoptosis via translocation of PKCdelta to mitochondria in spinocerebellar ataxia 10. *PLoS Genet.*; 6(6):e1000984. PMID: 20548952
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47. Ma H, Wang J, Abdel-Rahman SZ, **Hazra TK**, Boor PJ, Khan MF. 2011. Induction of NEIL1 and NEIL2 DNA glycosylases in aniline-induced splenic toxicity. *Toxicol Appl Pharmacol.* 251:1-7 PMID: 21145906
48. Banerjee D, Mandal SM, Das A, Hegde ML, Das S, Bhakat KK, Boldogh I, Sarkar PS, Mitra S, **Hazra TK**. 2011. Preferential repair of oxidized base damage in the transcribed genes of mammalian cells. *J Biol Chem.* **286**: 6006-16. PMID: 21169365. PMID: PMC3057786
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C. Others

Proceedings and Symposia

Hazra TK. 2013. Endogenous Genome Damage Repair Deficiencies in Humans: Potential Links to Diseases. Midwest DNA Repair Symposium. May 18-19. UK Markey Cancer Center

Dey S, Maiti AK, Hegde ML, Hegde PM, Shen B, Boldogh I, Xie J, Cardenas V, **Hazra TK**. 2011. Polymorphic variants of human DNA glycosylase NEIL2 and lung cancer susceptibility. ASBMB Annual Conference. April 9-13, Washington DC.

Das S, Chattopadhyay R, Bhakat KK, Boldogh I, Kohno K, Prasad R, Wilson SH, **Hazra TK**. 2007. Functional collaboration between NEIL2 and YB-1 under oxidative stress in mammalian cells. Gordon Research Conference: Mammalian DNA repair mechanism, February 4-9, Ventura, CA

Hazra TK, Das A, Sarker AH, Weinfeld M, Tomkinson AE, Wilson SH, Cooper P, Mitra S. 2005. NEIL2-

initiated, APE-independent Repair of oxidized bases: Evidence for a repair complex. 2nd EU-US DNA Repair Meeting, Nov 28-Dec 3, Erice, Italy

Hazra TK, Sarker A¹, Das A, Boldogh S*, Theriot C, Kostek S¹, Bhakat K, Berardini M¹, Nogales E¹, Cooper C¹, Mitra S. (2005) Physical and functional interaction of human NEIL2 with RNA polymerase II and hnRNP-U: Potential involvement of NEIL2 in transcription coupled repair of oxidized bases. Gordon Research Conference: Mammalian DNA repair mechanism, January 16- 21, Ventura, CA

Hazra, TK, Izumi, T., Kow, Y.W., Boldogh, I., Hatahet, Z., Mokkaapati, S., Dizdaroglu' M., and Mitra, S. 2002; Identification and characterization of newly discovered human DNA glycosylases for repair of oxidatively damaged DNA bases. 55th Annual Symposium on Maintenance of Genomic Integrity, October 15-18, Houston, Texas

Hazra, TK, Izumi, T., Kow, Y.W., Boldogh, I., Hatahet, Z., Mokkaapati, S., Dizdaroglu' M., and Mitra, S. Characterization of newly discovered family of human DNA glycosylases for repair of oxidatively damaged DNA bases. 9th Annual Meeting of the Oxygen Society. Nov 20-24. San Antonio, Texas

Hazra, TK, Muller, J.G., Manuel, R.C., Roy, R., Lloyd, R.S., Burrows, C.J., and Mitra, S. 2001. Repair of hydantoins, one electron oxidation products of 8-oxoguanine by DNA glycosylases. 2nd International conference on oxidative stress and aging, April 2-5, Maui, Hawaii

Hazra, TK., Izumi T., Venkataraman R., Kow YW., Dizdaroglu M., Mitra S. 2000. 8-Oxoguanine-DNA glycosylase/AP lyase activity in *E.coli* endonuclease VIII. BER 2000 workshop at Galveston, March 10-13

Hazra, TK., Izumi, T., Maitt, L., Floyd, R.A., and Mitra, S. (1998) The presence of two distinct 8-oxoguanine repair enzymes in human cells: Their potential complementary roles in preventing mutation. American Association for Cancer Research, March 28-April 1, New Orleans, LA

Hazra, TK., Izumi, T., and Mitra, S. (1997) Repair of 8-oxo-guanine in DNA by HeLa cell extract. American Association for Cancer Research, April 12-16, San Diego, CA, 38. Abst. No 521

Hazra, TK., Roy, R., Grabowski, D. T., and Mitra, S. (1996) Minimum size of active human O⁶-methylguanine-DNA methyl transferase (MGMT); Substrate binding parallels MGMT activity. American Society for Biochemistry and Molecular Biology, June 2-6 New Orleans, Louisiana. Abst. No D44

Hazra, TK., Roy, G., Grabowski, D. T., Roy, R., and Mitra, S., (1995). Size minimization of N-methylpurine DNA glycosylase. Gordon Research Conference: Mammalian DNA repair mechanism, January 29- February 3, Ventura, CA

INVITED LECTURES AT SYMPOSIA AND CONFERENCES

Oxidative DNA Damage Repair: Linkage to Mutation and Disease Susceptibility. International Symposium on Chromosome Instability and Cancer. Srinagar, India: July 22-26, 2007

Novel DNA repair pathways and clinical outcome in pancreatic cancer. Radiation Therapy Oncology Group Meeting. San Diego. Jan 17-20, 2008

Characterization of NEIL2-repairsome and its role in processing oxidized bases. 3rd US-EU International symposium on Repair of Endogenous Genome Damage. Galveston. February 21-25, 2009

Preferential repair of oxidative damage in the transcribing regions of mammalian genomes. 4th EU-USA conference on *DNA base damage and repair*. Oslo, May 18–21, 2011.

Oxidative DNA damage and single-strand break repair in mammalian cells: Potential linkage to disease susceptibility. 2nd International Conference on Molecular Medicine, Bose Institute, Kolkata, Jan 8-11, 2012

Oxidative DNA damage and single-strand break repair in mammalian cells: Potential linkage to disease susceptibility. Bidhannagar College, Kolkata, India, Jan 11-13, 2012

Single-strand DNA breaks and the pathogenesis of SCA3. 7th International Conference on Unstable Microsatellites and Human Disease. Strasbourg, France. June 9-14, 2012

Endogenous Genome Damage Repair Deficiencies in Human DNA Glycosylase NEIL2 Variants: Potential Links to lung Cancer. 4th International Conference on Stem Cells and Cancer. Mumbai, India. October 19-22, 2013

Oxidative Genome Damage Repair Deficiency in a Human DNA Glycosylase NEIL2 Variant: Potential Linkage to Lung Cancer Susceptibility. 9th International Conference of Anticancer Research, 6-10 October 2014, Sithonia, Greece.

INVITED LECTURES - OFF CAMPUS

August 4, 2005: Dept of Pediatrics, Indiana School of Medicine; New paradigms for repair of oxidized bases in mammalian genomes: Potential role of NEIL2 in transcription-coupled repair

April 19, 2006: University of Florida Shands Cancer Center, A new paradigm for repair of oxidized bases in mammalian genomes

May 31, 2007: Center for Environmental Health, Indiana University, Oxidative DNA damage repair in mammalian genomes: Linkage to mutation and disease susceptibility

July 17, 2007: National Institute of Cholera and Enteric Diseases, Kolkata, India. Repair of oxidative DNA damage: Linkage to mutation and human diseases

July 18, 2007: Department of Biotechnology, University of Calcutta, India. Repair of oxidative DNA damage: Linkage to mutation and human diseases

August 13, 2010: Indian Institute of Chemical Biology, Calcutta, India. Transcription-coupled repair of oxidative DNA damage in mammalian cells.

August 13, 2010: Bose Institute, Calcutta, India. Preferential repair of oxidative DNA damage in the active genes of mammalian cells.

January 8, 2012: Institute of Postgraduate Medical Education and Research, India. Oxidative DNA damage and single-strand break repair in mammalian cells: Potential linkage to disease susceptibility.

May 25, 2012: Stephenson Cancer Center at OUHSC. Preferential repair of oxidative base damage and single-strand breaks in mammalian genomes: Potential linkage to disease susceptibility.

June 7, 2012 : Institut de Cancérologie Gustave Roussy, Paris, France. Preferential repair of oxidative

base damage and single-strand breaks in mammalian genomes: Potential linkage to disease susceptibility.

September 16, 2013: University of Kentucky. Preferential repair of oxidative base damage and strand breaks in mammalian genomes: Potential linkage to disease susceptibility.

June 20, 2014. Houston Methodist. Human polynucleotide kinase 3'-phosphatase (PNKP)-mediated DNA double-strand break repair in mammalian cells

INVITED LECTURES - ON CAMPUS

October 11, 2000: Dept of HBC&G; Repair of guanine oxidation products in DNA by DNA glycosylases. A new insight into antimutagenic processing of 8-oxoguanine

February 22, 2005: Sealy Center for Cancer Cell Biology; New paradigms for repair of oxidized bases in mammalian genomes: Potential role of NEIL2 in transcription-coupled repair

April 11, 2006: NIEHS Center Seminar Series; Is transcription-coupled repair a specialized pathway in mammalian cells?

May 2, 2007: Internal Medicine; Role of oxidative DNA damage repair in allergic airway inflammation and lung cancer.

February 4, 2008: Dept of Biochemistry and Molecular Biology; Oxidative DNA damage repair: Potential linkage to disease prevention.

May 14, 2008: Sealy center of aging; Oxidative DNA damage repair: Potential linkage to aging

August 27, 2009: SCMM, Oxidative DNA damage repair: Potential linkage to disease prevention.

December 7, 2009: NIEHS center seminar series, Interplay of oxidative DNA damage repair and inflammation in oncogenesis.

May 4, 2011: Sealy Center for Molecular Medicine seminar series; Oxidative genome damage in the transcribed region: Linkage to mutation and human disease.

April 24, 2012: Pulmonary and Critical Care Medicine symposium; Oxidative DNA damage and single-strand break repair in mammalian cells: Potential linkage to disease susceptibility.

April 21, 2014: NIEHS Center Seminar Series. Preferential repair of oxidative base damage and strand breaks in mammalian genomes: Potential linkage to disease susceptibility.

June 4, 2014. Sealy Center for Molecular Medicine Seminar Series. Human polynucleotide kinase 3'-phosphatase (PNKP)-mediated DNA double-strand break repair in mammalian cells