



Universiteit
Leiden
The Netherlands

Nucleotide excision repair : complexes and complexities : a study of global genome repair in human cells

Volker, Marcel

Citation

Volker, M. (2006, May 15). *Nucleotide excision repair : complexes and complexities : a study of global genome repair in human cells*. Retrieved from <https://hdl.handle.net/1887/4390>

Version: Corrected Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4390>

Note: To cite this publication please use the final published version (if applicable).

Abbreviations

6-4PP	pyrimidine (6-4) pyrimidone photoproduct(s)
8-oxoguanine	7,8-dihydro-8-oxoguanine
ACF	ATP-utilising chromatin assembly and remodelling factor
ARR	access, repair, restore
Asf1	anti-silencing function 1
ATP	adenosine triphosphate
BER	base excision repair
bp	base pair(s)
CAF-1	chromatin assembly factor 1
CAK	CDK (cyclin-dependent kinase) activating kinase
CBP	CREB (cAMP-responsive element binding protein) binding protein
cisplatin	<i>cis</i> -diamminedichloroplatinum(II)
COP9	constitutively photomorphogenic 9
CPD	cyclobutane pyrimidine dimer
CS	Cockayne syndrome
DDB	damaged DNA binding
DNA	deoxyribonucleic acid
DNA-PKcs	DNA protein kinase catalytic subunit
DSBR	double strand break repair
dsDNA	double strand DNA
FEN	flap endonuclease
gadd	growth arrest after DNA damage
GFP	green fluorescent protein
GGR	global genome nucleotide excision repair
(h)HR23	(human) homolog of <i>S. cerevisiae</i> Rad23
hMLH	human homolog of <i>E. coli</i> MutL
HMGN	high mobility group N
hMSH	human homolog of <i>E. coli</i> MutS
ISWI	imitation SWI
MEFs	Mouse embryonic fibroblasts
MGMT	methylguanine DNA methyltransferase
NA-AAF	N-acetoxy-2-acetylaminofluorene
NER	nucleotide excision repair
nt	nucleotide(s)
PCNA	proliferating cell nuclear antigen
PH	pleckstrin homology
PMS	postmeiotic segregation
pol	DNA polymerase
RF-C	replication factor C
RNA	ribonucleic acid
RNA pol	RNA polymerase
RPA	replication protein A

RRS	recovery of RNA synthesis
ssDNA	single strand DNA
STAGA	SPT3-TAF(II)31-GCN5L acetylase
SUMO	small ubiquitin-like modifier
SWI/SNF	(activation of) mating switch and sucrose non-fermenting (genes)
TCR	transcription-coupled nucleotide excision repair
TFIIH	transcription (initiation) factor IIH
TFTC	TBP-free TAF(II)-containing
thymine glycol	5,6-dihydro-5,6-dihydroxythymine
TTD	trichothiodystrophy
UDS	unscheduled DNA synthesis
UV	ultraviolet light
UVB	medium wavelength component of ultraviolet (UV) light
UVC	shortwave component of ultraviolet (UV) light
UV-DDB	UV-damaged DNA binding protein
XP	xeroderma pigmentosum

Curriculum vitae

Naam	Marcel Volker
Geboren	18 januari 1976 te Leiderdorp
september 1988 – juni 1994	VWO aan het Pieter Groen College (later Andreas College geheten) te Katwijk
september 1994 – maart 1999	Scheikunde aan de Rijksuniversiteit Leiden; theoretische specialisaties organische chemie en moleculaire biologie/biochemie
september 1997 – januari 1999	Hoofdvakstage aan de afdeling Moleculaire Genetica o.l.v. Dr. J. Brouwer: Nucleotide excisie herstel in <i>S. cerevisiae</i>
februari 1999 – augustus 2003	Promotieonderzoek aan de afdeling Stralengenetica en Chemische Mutagenese (later Toxicogenetica geheten) o.l.v. promotores Prof. Dr. Ir. A.A. van Zeeland en Prof. Dr. L.H.F. Mullenders: Interplay between transcription and NER in intact human cells.
april 2004 – heden	Post-doctoral research fellow in het laboratorium van Prof. Dr. A.R. Lehmann, Brighton, Groot-Brittannië: genotype-phenotype relationship in XP-D and XP-D/CS cells

List of Publications

- Kannouche, P., Broughton, B.C., Volker, M., Hanaoka, F., Mullenders, L.H.F., and Lehmann, A. R. (2001). Domain structure, localization, and function of DNA polymerase η , defective in xeroderma pigmentosum variant cells. *Genes Dev* 15, 158-72.
- Mone, M.J., Volker, M., Nikaido, O., Mullenders, L.H.F., van Zeeland, A. A., Verschure, P.J., Manders, E.M., and van Driel, R. (2001). Local UV-induced DNA damage in cell nuclei results in local transcription inhibition. *EMBO Rep* 2, 1013-7.
- Volker, M., Mone, M.J., Karmakar, P., van Hoffen, A., Schul, W., Vermeulen, W., Hoeijmakers, J.H., van Driel, R., van Zeeland, A.A., and Mullenders, L.H.F. (2001). Sequential assembly of the nucleotide excision repair factors in vivo. *Mol Cell* 8, 213-24.
- Rademakers, S., Volker, M., Hoogstraten, D., Nigg, A.L., Mone, M.J., Van Zeeland, A.A., Hoeijmakers, J.H., Houtsmuller, A.B., and Vermeulen, W. (2003). Xeroderma pigmentosum group A protein loads as a separate factor onto DNA lesions. *Mol Cell Biol* 23, 5755-67.
- Mone, M.J., Bernas, T., Dinant, C., Goedvree, F.A., Manders, E.M., Volker, M., Houtsmuller, A.B., Hoeijmakers, J. H., Vermeulen, W., and van Driel, R. (2004). In vivo dynamics of chromatin-associated complex formation in mammalian nucleotide excision repair. *Proc Natl Acad Sci U S A* 101, 15933-7.
- Moser, J., Volker, M., Kool, H., Alekseev, S., Vrieling, H., Yasui, A., van Zeeland, A.A., and Mullenders, L.H.F. (2005). The UV-damaged DNA binding protein mediates efficient targeting of the nucleotide excision repair complex to UV-induced photo lesions. *DNA Repair (Amst)* 4, 571-82.
- Theron, T., Fousteri, M.I., Volker, M., Harries, L.W., Botta, E., Stefanini, M., Fujimoto, M., Andressoo, J.O., Mitchell, J., Jaspers, N.G., et al. (2005). Transcription-associated breaks in xeroderma pigmentosum group D cells from patients with combined features of xeroderma pigmentosum and Cockayne syndrome. *Mol Cell Biol* 25, 8368-78.
- Volker, M. and Mullenders, L.H.F. (2005). Global Genome Nucleotide Excision Repair: Key Players and Their Functions, in *From DNA Photolesions to Mutations, Skin Cancer and Cell Death*, E. Sage, R. Drouin and M. Rouabhia, eds. (Cambridge UK: RSC Publishing), pp. 149-66.

