



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

**FLORE**  
Repository istituzionale dell'Università degli Studi di  
Firenze

**PARP ACTIVATION AFTER OXIDATIVE STRESS IN HUMAN FIBROBLASTS FROM  
YOUNG SUBJECTS AND CENTENARIANS**

Questa è la Versione finale referata (Post print/Accepted manuscript) della seguente pubblicazione:

*Original Citation:*

PARP ACTIVATION AFTER OXIDATIVE STRESS IN HUMAN FIBROBLASTS FROM YOUNG SUBJECTS AND CENTENARIANS / C. CALIA; R. CALDINI; S. ALBERTI; D. MONTI; C. FRANCESCHI; M. CHEVANNE. - In: EUROPEAN JOURNAL OF HISTOCHEMISTRY. - ISSN 1121-760X. - STAMPA. - 49(2005), pp. 399-399.

*Availability:*

This version is available at: 2158/26101 since: 2020-05-30T22:47:45Z

*Terms of use:*

Open Access

La pubblicazione è resa disponibile sotto le norme e i termini della licenza di deposito, secondo quanto stabilito dalla Policy per l'accesso aperto dell'Università degli Studi di Firenze (<https://www.sba.unifi.it/upload/policy-oa-2016-1.pdf>)

*Publisher copyright claim:*

(Article begins on next page)

European Journal of Histochemistry  
ISSN 1121-760X  
Volume 49/4  
2005

Microscopia - Spec. Abb. Nat. - 45% wt. 2, comma 208, Legge 662/96 - Italia di Pavia. Il materiale chiude la ristampa di fascicoli nei consuegni impaginati e pagati in base alle

ejh

under the auspices of  
the University of Pavia, Italy



Published by the Società Italiana di Istochimica

©Società Italiana di Istochimica

Editorial Office: Dipartimento di Biologia Animale  
Piazza Botta 10 - 27100 Pavia (Italy)  
Phone: +39.0382.986420 - Fax: +39.0382.986325  
E-mail: office@ejh.it

**Printed quarterly by:**

Tipografia PIME Editrice srl  
via Vigentina 136  
27100 PAVIA, Italy  
Phone: +39.0382.572169 - Fax +39.0382.572102  
E-mail: tipografia@pime-editrice.it  
VAT no. 00280810185

**Editing by:**

**AEDIT** editrice  
via A. Fogazzaro 5  
27058 Voghera, Italy  
E-mail: info@medit.it

**Annual Subscriptions**

Europe: Euro 160  
All other Countries: \$ 200

Subscriptions, cancellations, business correspondence and any enquiries must be sent to the Tipografia PIME Editrice srl, Pavia, Italy.  
Cancellations must be received before the end of September to take effect at the end of the same year.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means (electronic, electrostatic, magnetic type, mechanical, photocopying or otherwise) without written permission by the Publishers.

Reg. Tribunale di Pavia n. 289/23.2.1984.

Supported by the Ministero per i Beni e le Attività Culturali, Italy as a publication of high cultural value.



Associato all'USPI  
Unione Stampa Periodica Italiana

**Disclaimer:** Whilst every effort is made by the publishers and the editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles or advertisements herein are the responsibility of the contributor or advisor concerned. Accordingly, the publisher, the editorial board and their respective employees, officers and agents accept no liability whatsoever for the consequences of any inaccurate or misleading data, opinion or statement.

European Journal of Histochemistry

ISSN 1121-760X

Volume 49/4

2005

Editor-in-Chief

M.G. Manfredi Romanini  
Dipartimento di Biologia Animale, Università di Pavia

ejh

under the auspices of  
the University of Pavia, Italy



**XVIII CONVEGNO "I PROCESSI DI ADP-RIBOSILAZIONE"  
XVIII MEETING ON "ADP-RIBOSYLATION PROCESSES"**

Verona 3-4 ottobre 2005

UNIVERSITÀ DI VERONA

AULA C della LENTE DIDATTICA - POLICLINICO "G.B. ROSSI"

**PARP activation after oxidative stress in human fibroblasts from young subjects and centenarians**

Calia C,<sup>1</sup> Caldini R,<sup>1</sup> Alberti S,<sup>1</sup> Monti D,<sup>1</sup> Franceschi C,<sup>2</sup> Chevanne M<sup>1</sup>

<sup>1</sup>Dipartimento di Patologia e Oncologia Sperimentali, Università degli Studi di Firenze; <sup>2</sup>Dipartimento di Patologia Sperimentale, Università degli Studi di Bologna, Italy

At the cellular levels the aging process is associated with damage inflicted to all biological macromolecules such as lipids, proteins, nucleic acids. The stressors are a variety of different physical (UV, gamma radiation, heat), chemical (products of metabolism such as oxygen-free radicals) and biological (virus, bacteria) agents. Production of stress proteins, enzymatic and non enzymatic antioxidants, DNA repair and the activity of poly(ADP-ribose) polymerase (PARP), form a genetically controlled network of interconnected cellular defence mechanisms, whose global efficiency has been evolutionary set at different levels in different species and in different individuals of the same species (Franceschi C, *Exp Gerontol* 35:879-896;2000). Many studies indicate that alteration of redox status and a concomitant progressive increase of oxidative stress play a role in ageing. Recently we demonstrated that fibroblasts from centenarians (the best example of extreme longevity) showed to be less sensitive to H<sub>2</sub>O<sub>2</sub>-induced DNA damage than fibroblasts from young subjects. This feature did not account for higher efficiency of the antioxidant system, but seems to be related to either increased DNA repair activity or an intrinsic nuclear stability (Chevanne M, *Biogerontol* 4:97-104; 2003). Poly(ADP-ribosyl)ation emerges as a candidate mechanism, owing to its role in both DNA repair and genomic stability. By immunocytochemistry analysis, we studied the effect of sublethal oxidative stress on PARP activation in fibroblasts from young and centenarian donors. We actually observed an early activation of PARP in centenarian fibroblasts (about fifteen min after the beginning of the oxidative insult) compared to fibroblasts from young donors, where the PAR polymers appear about thirty min late. These preliminary data agree with the observations that PARP activation could be a possible longevity assurance factor.

*This work has been partially supported by the Ente Cassa di Risparmio di Firenze (RC) and by the University of Firenze (Fondo di Ateneo per la ricerca).*