

#2692 Translation elongation factor 1A2 (TEF1A2) is a tumor marker and an inhibitor of cadmium-induced apoptosis. Pius Joseph, Christina M. O'Kernick, Sreekumar Othumpangat. *NIOSH, Morgantown, WV.*

Translation factors are essential for cells to synthesize proteins, and their aberrant expression may result in pathological conditions including cancer. Certain translation factors, for example translation elongation factor-1A2 (TEF1A2), have been found overexpressed in cancer samples compared to normal control samples. It is also known that TEF1A2 is oncogenic and its overexpression can result in cell transformation and tumorigenesis. Presently, we have investigated the expression profile of TEF1A2 using a panel of human cancer cell lines and tumor tissues. Up to a 2000-fold overexpression of TEF1A2 was detected in 90% (nine out of 10) of the cancer cell lines derived from various human tissues compared to their corresponding controls. Similarly, at least a two-fold overexpression of TEF1A2 was noticed in approximately 30% of the human cancer tissue samples (colon, lungs, ovary, kidney and rectum) that were represented on a cancer profiling array (BD Biosciences, Palo Alto, CA) consisting of 241 paired cDNA samples generated from cancer/non-cancer tissues. Since TEF1A2 overexpression has previously been shown to be oncogenic, we have further investigated its role in apoptosis as a potential mechanism responsible for its oncogenic function. Transgenic CHO cells permanently overexpressing TEF1A2 were developed and used to investigate the role of TEF1A2 in apoptosis induced by cadmium – a well-known human chemical carcinogen. Exposure of CHO cells to 2.5 and 10 μM cadmium chloride for 24-hours resulted in significant apoptosis in all cell lines at 24- and 48-hours following the exposure. However, the cadmium-induced apoptosis was significantly lower in the transgenic CHO cells permanently overexpressing TEF1A2 compared with the vector-alone transfected control cells. Collectively, these results indicated that: 1) TEF1A2 is significantly overexpressed in human tumor cell lines and tumor tissue samples, 2) the cellular expression level of TEF1A2 may be used as a tumor marker, and 3) the anti-apoptotic role of TEF1A2 may potentially be responsible for its oncogenic function.

Cellular, Molecular, and Tumor Biology 53

Molecular Markers I

Hall B4-D, Orange County Convention Center, Section 7

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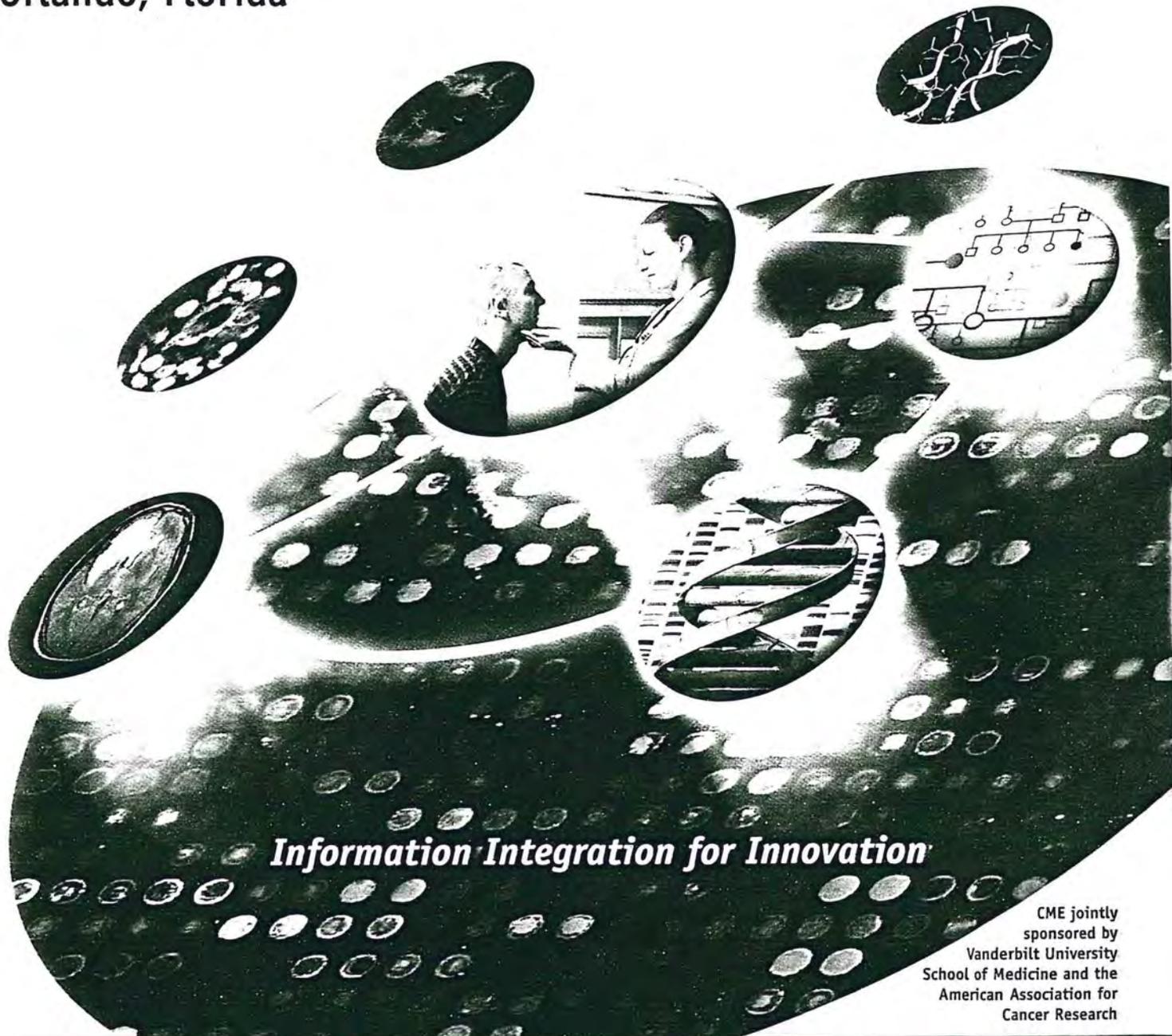
1. **2687** Quantitative assay of human telomerase reverse transcriptase (hTERT) in cervical scraping samples-differentiate invasive cervical cancer from pre-invasive lesion. Angie Tang, Wai Lin Florence Au, Mei Yung Yu, Joanna Tong, So Fun Yim, Wing Kit Lo, Tak Hong Cheung, Ka Fai To.
2. **2688** RAPidTRAP and hTERT mRNA quantification assay for HTS of tumor cells. John Jakupciak, Wendy Wang, Donald Artha.
3. **2689** Telomere length is associated with survival in uterine sarcoma (US). Marie-Anne Marrière, Luc Morat, Ken André Olausen, Patricia Pautier, Annie Rey, Catherine Genestie, Catherine Lhomme, Laure Sabatier, Jean-Charles Soria.
4. **2690** Differential analysis of laser capture microdissected breast cancer sub-proteomes using ProteoTope. Hans Neubauer, Wojciech Wozny, Susan E. Clare, Gerhard Schwall, Karl Sotlar, André Schratzenholz, Michael A. Cahill, Diethelm Wallwiener, Raffael Kurek.
5. **2691** Identification of the mouse cytoskeleton-associated protein, CKAP2, which has a property of microtubule stabilizer. Yi Jin, Yoshiaki Murakumo, Kaoru Ueno, Mizuo Hashimoto, Tsuyoshi Watanabe, Masatoshi Ichihara, Masahide Takahashi.
6. **2692** Translation elongation factor 1A2 (TEF1A2) is a tumor marker and an inhibitor of cadmium-induced apoptosis. Pius Joseph, Christina M. O'Kernick, Sreekumar Othumpangant.
7. **2693** Detection of *bel-2* gene rearrangement in MALT lymphomas from HCV-infected patients. Massimo Libra, Valli De Re, Annunziata Gloghini, Patrick M. Navolanic, Manuela Indelicato, Maria C. Mazzarino, Anna L. Zignego, Franca Stivala, Antonino Carbone, Mauro Biocchi.
8. **2694** Association of common RASSF1A polymorphisms with breast cancer. Undraga Schagdarsurengin, Juergen Dittmer, Heinz Koelbl, Reinhard Dammann.
9. **2695** Quantitative RASSF1A promoter hypermethylation analysis in cervical scrapings from patients with cervical cancer and pre-cancerous lesion. Joanna H. Tong, Wing K. Lo, So F. Yim, Florence W. Au, Ching Y. So, Michael W. Chan, Tak H. Cheung, Mei Y. Yu, Ka F. To.
10. **2696** Frequent loss of methylthioadenosin phosphorylase (MTAP) expression in hepatocellular carcinoma. Claus Hellerbrand, Marion Schuierer, Marcus Mühlbauer, Susanne Wallner, Iris Behrmann, Frauke Bataille, Jürgen Schölmerich, Anja K. Bosserhoff.
11. **2697** A novel non-coding RNA implicated in liver cancer. Heimo M. Strohmaier, Katrin Panzitt, Tarek Moustafa, Martin Stradner, Christian Güllly, Charles R. Buck, Kurt Zatloukal.
12. **2698** Mutation analysis of the zinc finger protein *MIZ-1* (*ZNF151*), a potential candidate gene at chromosome 1p36 in pheochromocytomas. Diana E. Benn, Leigh Delbridge, Bruce G. Robinson, Deborah J. Marsh.
13. **2699** Real-time allele-specific amplification for the sensitive detection of BRAF mutation V600E in colorectal carcinoma. Damien Masson, Anne Jarry, Elisabeth Cassagnau, Sigrid Parois, Christian Laboisse, Marc G. Denis.
14. **2700** A novel tumor antigen, KU-GB-1, in colorectal cancer. Hiroki Ochiai, Masahiko Watanabe, Hirotooshi Hasegawa, Hideki Nishibori, Yoshiyuki Ishii, Seishi Aoki, Jae-Hoon Ryu, Nobushige Yabe, Koji Okabayashi, Shouta Takano, Tetsuro Kubota, Masaki Kitajima, Yutaka Kawakami, Masahiro Toda.
15. **2701** Characterization of candidate tumor suppressor genes within a minimal region of loss-of-heterozygosity at 22q13.31 in sporadic human breast and colorectal tumors. Cameron N. Johnstone, Laura A. Chang, Raphael K. Sung, Sergi Castellvi-Bel, Antoni Castells, Anil K. Rustgi.
16. **2702** Identification of an estrogen-responsive novel *BRHF1* gene in human breast cancer. Kamalshwar P. Singh and Deodutta Roy.
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18. **2704** Analysis of *c-kit* exon 11 and *PDGFR* exon 12 and 18 activating mutations in human cancer. Herman Burger, Michael A. Den Bakker, Hans Van Tol, Maria Debiec-Rychter, Gerrit Storer, Jaap Verweij, Kees Noorer.
19. **2705** Functional isolation of pancreatic cancer tumor suppressor activity at 12q21-23. Young Mi Park, Ryan D. George, Julie A. Mackey, Katherine L. Pogue-Geile.
20. **2706** p53-dependent and independent expression of MIC-1 in cell lines and cancer tissues. Hong Yang, Holly Hilton, Binh T. Vu, Daisy Carvajal, Lyubomir T. Vassilev.
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22. **2708** GPCR-PCa: A novel putative G-protein-coupled receptor overexpressed in prostate cancer. Bernd Weigle, Reinhard Ebner, Sandra Schwind, Peter Rieber.
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24. **2710** A member of the TGF- β superfamily is involved in the progression of normal to early human prostate carcinoma. Peter K. Cheung, Bruce Woolcock, Margaret Sutcliffe, Terry Bainbridge, Doug Webber, Hans Adomat, Marianne Sadar, Martin Gleave, Juergen Vielkind.
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26. **2712** A candidate tumor suppressor *HtrA1* down-regulated in ovarian cancer is a microtubule associated serine protease. Jeremy R. Chien, Julie Staub, Shou-Ih Hu, Robert Crowl, David Smith, Kaufmann Scott, Viji Shridhar.
27. **2713** Expression of *Drop1*, a gene encoding a 350 kDa protein, is downregulated in epithelial malignancies. Alexander Marme, Hans P. Zimmermann, Gerhard Moldenhauer, Marina Schorpp-Kistner, Claudia Dallner, Matthias Lindner, Antje Koppe, Juergen Kretschmer, Brigitte Seib, Eberhard Spiess, Gunther Bastert, Diethelm Wallwiener, Herwig Ponstingl.
28. **2714** Altered expression of the *ZBRK1* gene in human breast carcinomas. Vanesa García, Gemma Domínguez, José M. García, Javier Silva, Cristina Peña, Antonio Sánchez, Enric Carcereny, Ruth Espinosa, Constanza Maximiano, Felix Bonilla.
29. **2715** Microsatellite instability associated with grading and staging of endometrial cancer and inversely correlated with methylation index. Ka Wai Cheung, Angie Tang, Florence W. L. Au, Joanna H. M. Tong, May M. Y. Yu, Ka Fai To.

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