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Correction

Correction: Orsi et al. Carbon Nanotubes under Scrutiny: Their Toxicity and Utility in Mesothelioma Research. *Appl. Sci.* 2020, *10*, 4513

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1. Incorrect Title

There is an error in the title [1]. The correct title of the article is "Carbon Nanotubes under Scrutiny: Their Toxicity and Utility in Mesothelioma Research". The editors and authors apologize for this error and state that the scientific conclusions are unaffected. The original article has been updated.

2. Figure Legend

In the original article, there were mistakes in the legends for Figures 1–4. The figure legends were not described comprehensively. The correct legends appear below. The editors and authors apologize for any inconvenience caused and state that the scientific conclusions are unaffected. The original article has been updated.

Figure 1. Historical progression of CNT-induced toxicity. Timeline summarizing the discoveries on CNT toxicity obtained by LTAP teams (UCLouvain, Brussels, Belgium) and their scientific collaborators from around the world. For this collective work, we used diverse and relevant in vivo and in vitro models and CNT possessing diverse morphological and physico-chemical properties.

Figure 2. A new pathological pathway governs carcinogenesis induced by mesotheliomagenic needled CNT-N. Persistent inflammation and immunosuppression orchestrate carcinogenesis and mesothelioma. Toxic CNT-N induce an inflammatory cascade (in blue) resulting in the influx of inflammatory macrophages and neutrophils. Sustained production of free radicals by these activated immune cells induces irreversible DNA damage. Pro-inflammatory cytokines are also considered as potent polypeptide growth factors for transformed mesothelial cells and angiogenesis. An unexpected conjoint immunosuppression (in red) is induced by mesotheliomagenic CNT. These early responses to CNT-N are characterized by persistent accumulation of immunosuppressive macrophages and monocytes and a sustained production of regulatory cytokines (i.e., IL-10 and TGF-β). These immunoregulatory components are incriminated in carcinogenesis by preventing host immune responses directed against transformed cells and favoring tumor growth.

Figure 3. Mesotheliomagenic CNT-N and non-mesotheliomagenic CNT-T induce early comparable peritoneal lesions and macrophage accumulation in rats. Wistar rats untreated or injected (i.p) with CNT-N or CNT-T (2 mg) were sacrificed (day 15) and peritoneal tissues (diaphragm) were harvested, fixed in paraformaldehyde and embedded in paraffin. 5 µm sections were stained with classical H&E coloration (A-D-G for controls, B-E-H for CNT-N and C-F-I for CNT-T, magnification ×4 first line, ×40 other lines). The red arrows indicate granulomas containing CNT crystalline structures within the connective tissue (selected from the frame of A-B-C panels). Granulomas mainly comprise macrophages around nanotube aggregates (G-H-I). For macrophage identification, 5 µm sections were incubated

Citation: Orsi, M.; Al Hatem, C.; Leinardi, R.; Huaux, F. Correction: Orsi et al. Carbon Nanotubes under Scrutiny: Their Toxicity and Utility in Mesothelioma Research. *Appl. Sci.* 2020, *10*, 4513. *Appl. Sci.* **2021**, *11*, 8307. https://doi.org/10.3390/app11188307

Received: 15 June 2021
Accepted: 17 June 2021
Published: 7 September 2021

with mouse anti-rat CD68 antibody (Abcam monoclonal) and secondary antibody donkey anti-mouse (Jackson ImmunoReserch) coupled with HRP. After incubation with AlexaFluor Tyramide 488, a counterstaining with Hoechst44432 dye was performed. Stained slides were digitalized using a Panoramic 250 FlashIII scanner (3DHistech) at ×20 magnification.

Figure 4. New opportunities to use CNT for delineating specific macrophage immune pathways specifically associated with malignant mesothelioma. Cellular and molecular characterization of macrophage subpopulations by using next-generation sequencing (NGS) technologies. Peritoneal macrophages from CNT-N or CNT-T-treated rats (day 15) were isolated from peritoneal cell suspensions using flow cytometry cell sorting (FACSAria III, BD Biosciences) and APC-antibodies specific for CD68 (mouse anti-rat CD68 antibody, Abcam monoclonal). Cytocentrifuge preparations of purified macrophages were stained with Diff-Quick. RNA was isolated using Qiagen kits and libraries were prepared and sequenced using the Illumina platform. The gene count matrix was transformed in fold-change-related tables or barcode plots.

3. Incorrect Affiliation

In the published article, there was an error in affiliation. Instead of "Louvain centre for Toxicology and Applied Pharmacology (LTAP), Institut de Recherche Experimentale et Clinique (IREC), Université catholique de Louvain (UCLouvain), 1200 Brussels, Belgium", the affiliation should be "Louvain Centre for Toxicology and Applied Pharmacology (LTAP), Institut de Recherche Experimentale et Clinique (IREC), Université catholique de Louvain (UCLouvain), 1348 Brussels, Belgium". The editors and authors apologize for any inconvenience caused and state that the scientific conclusions are unaffected. The original article has been updated.

4. Incorrect Reference

In the original article, the references # **1–39** were missing (Sections 1 and 2 in the text). We have cited references 1–39 in the updated main text, and added references 1–39 in the Reference part. The references 1–39 appear below.

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The previous references # 1–39 of the original version (Sections 3 and 4 in the text) were consequently renumbered. They now correspond to references # 40–116, accordingly.

In the original article, the reference 12 (old number) or 51 (new number) was incorrectly written as Grosse, Y.; Loomis, D.; Guyton, K.Z.; Lauby-Secretan, B.; El Ghissassi, F.; Bouvard, V.; Benbrahim-Tallaa, L.; Guha, N.; Scoccianti, C.; Mattock, H.; et al. International Agency for Research on Cancer Monograph Working, G. Carcinogenicity of fluoro-edenite, silicon carbide fibres and whiskers, and carbon nanotubes. *Lancet Oncol.* 2014, *15*, 1427–1428. It should be Grosse, Y.; Loomis, D.; Guyton, K.Z.; Lauby-Secretan, B.; El Ghissassi, F.; Bouvard, V.; Benbrahim-Tallaa, L.; Guha, N.; Scoccianti, C.; Mattock, H.; et al. Carcinogenicity of fluoro-edenite, silicon carbide fibres and whiskers, and carbon nanotubes. *Lancet Oncol.* 2014, *15*, 1427–1428, doi:10.1016/S1470-2045(14)71109-X.

In the original article, the reference 13 (old number) or 52 (new number) was incorrectly written as *Some Nanomaterials and Some Fibres*; World Health Organization: Lyon, France, 2017. It should be IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. *Some Nanomaterials and Some Fibres*; PMID: 31829532; International Agency for Research on Cancer: Lyon, France, 2017.

The editors and authors apologize for any inconvenience caused and state that the scientific conclusions are unaffected. The original article has been updated.

5. Text Correction

There were two errors in the original article. The name of the funder was incorrectly written. The abbreviation of one of the authors François Huaux was incorrectly written.

A correction has been made to Funding.

This work was funded by the Actions de Recherche Concertées, Fédération Wallonie-Bruxelles (ARC 19/24-098, CYTAID), Fondation Contre le Cancer (2019-219), Fonds de la Recherche Scientifique (FNRS, PDR T.0119.13), ANSES (Agence nationale française de sécurité sanitaire de l'alimentation, de l'environnement et du travail, MacFibOsis) and European Commission under H2020 project (Contract no. 874707, Eximious). F.H. is a Senior Research Associate with the FNRS, Belgium.

One sentence is now added to clarify a paragraph. A correction has been made to 3.1. Mesothelioma and Particles (beginning of last paragraph).

Some CNT have been incriminated as being responsible for MM because their physically similarity to asbestos fibers.

The authors apologize for any inconvenience caused and state that the scientific conclusions are unaffected. The original article has been updated.

Conflicts of Interest: The authors declare no conflict of interest.

Reference

1. Orsi, M.; Al Hatem, C.; Leinardi, R.; Huaux, F. Carbon nanotubes under scrutiny: Their toxicity and utility in mesothelioma research. *Appl. Sci.* **2020**, *10*, 4513. [CrossRef]