

## Anne Mette Zenner Boisen - DTU Orbit (07/08/2016)

Anne Mette Zenner Boisen

### Organisations

#### PhD Student, National Food Institute

14/11/2008 → 03/09/2013 Former  
amzb@food.dtu.dk  
VIP

#### Division of Toxicology and Risk Assessment

25/02/2012 → 02/09/2013 Former  
VIP

### Publications:

#### Daily sperm production: Application in studies of prenatal exposure to nanoparticles in mice

We investigated the influence of maternal airway exposure to nanoparticulate titanium dioxide (TiO<sub>2</sub>, UV-Titan) and carbon black (CB, Printex90), on male reproductive function in the two following generations. Time-mated C57BL/6J mice were exposed by inhalation to UV-Titan, or by intratracheal instillation with Printex90. Body and testicle weight, sperm content per g testicular parenchyma and daily sperm production (DSP) were assessed. The protocol for assessment of DSP was optimized for application in mice (C57BL/6J) and the influence of different parameters was studied. Maternal particulate exposure did not affect DSP statistically significantly in the F1 generation, although TiO<sub>2</sub> tended to reduce sperm counts. Overall, time-to-first F2 litter increased with decreasing sperm production. There was no effect on sperm production in the F2 generation originating after TiO<sub>2</sub> exposure. F2 offspring, whose fathers were prenatally exposed to Printex90, showed lowered sperm production. Furthermore, we report statistically significant differences in sperm production between mouse strains.

#### General information

State: Published

Organisations: National Food Institute, Division of Toxicology and Risk Assessment, Department of Micro- and Nanotechnology, National Research Center for Working Environment

Authors: Kyjovska, Z. O. (Ekstern), Boisen, A. M. Z. (Intern), Jackson, P. (Ekstern), Wallin, H. (Ekstern), Vogel, U. B. (Intern), Hougaard, K. S. (Ekstern)

Keywords: (Developmental toxicity, Prenatal exposure, Male reproduction, Spermatogenesis, Daily sperm production, Nanoparticles, Titanium dioxide, Carbon black, Fertility, Nanotoxicology)

Pages: 88-97

Publication date: 2013

Main Research Area: Technical/natural sciences

#### Publication information

Journal: Reproductive Toxicology

Volume: 36

ISSN (Print): 0890-6238

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 1.263 1.057

BFI (2014): BFI-level 2

Scopus rating (2014): 1.247 1.083

BFI (2013): BFI-level 2

Scopus rating (2013): 1.011 1.06

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 1.184 1.075

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 1.109 1.201

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 2

Scopus rating (2010): 1.293 1.348

BFI (2009): BFI-level 2  
Scopus rating (2009): 0.913 1.105  
BFI (2008): BFI-level 1  
Scopus rating (2008): 1.025 1.055  
Scopus rating (2007): 0.658 0.817  
Scopus rating (2006): 0.751 1.04  
Scopus rating (2005): 0.611 0.913  
Scopus rating (2004): 0.643 0.948  
Scopus rating (2003): 0.589 0.997  
Scopus rating (2002): 0.557 0.767  
Scopus rating (2001): 0.522 0.968  
Scopus rating (2000): 0.431 0.735  
Scopus rating (1999): 0.452 0.88  
Original language: English  
DOIs:  
10.1016/j.reprotox.2012.12.005  
Source: dtu  
Source-ID: n::oai:DTIC-ART:elsevier/380827013::27019  
Publication: Research - peer-review › Journal article – Annual report year: 2013

### **In utero exposure to nanosized carbon black (Printex90) does not induce tandem repeat mutations in female murine germ cells**

Inhalation of particles has been shown to induce mutations in the male germline in mice following both prenatal and adult exposures in several experiments. In contrast, the effects of particles on female germ cell mutagenesis are not well established. Germline mutations are induced during active cell division, which occurs during fetal development in females. We investigated the effects of prenatal exposure to carbon black nanoparticles (CB) on induction of mutations in the female mouse germline during fetal development, spanning the critical developmental stages of oogenesis. Pregnant C57BL/6J mice were exposed four times during gestation by intratracheal instillation of 67µg/animal of nanosized carbon black Printex90 or vehicle (gestation days 7, 10, 15 and 18). Female offspring were raised to maturity and mated with unexposed CBA males. Expanded simple tandem repeat (ESTR) germline mutation rates in the resulting F2 generation were determined from full pedigrees (mother, father, offspring) of F1 female mice (178 CB-exposed and 258 control F2 offspring). ESTR mutation rates in CB-exposed F2 female offspring were not statistically different from those of F2 female control offspring.

#### **General information**

State: Published  
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Health Canada, National Research Center for Working Environment  
Authors: Boisen, A. M. Z. (Intern), Shipley, T. (Ekstern), Jackson, P. (Ekstern), Wallin, H. (Ekstern), Nellesmann, C. L. (Intern), Vogel, U. (Ekstern), Yauk, C. L. (Ekstern), Hougaard, K. S. (Ekstern)  
Keywords: (CB - carbon black Printex90, ESTR - expanded simple tandem repeat, F1 - first generation, F2 - second generation, GD - gestation day, P - parental generation, PND - postnatal day, ROS - reactive oxygen species)  
Pages: 45-48  
Publication date: 2013  
Conference: 41st Annual Conference of the European Teratology Society, Stresa, Italy, 08/09/2013 - 08/09/2013  
Main Research Area: Technical/natural sciences

#### **Publication information**

Journal: Reproductive Toxicology  
Volume: 41  
Issue number: S1  
ISSN (Print): 0890-6238  
Ratings:  
BFI (2015): BFI-level 2  
Scopus rating (2015): 1.263 1.057  
BFI (2014): BFI-level 2  
Scopus rating (2014): 1.247 1.083  
BFI (2013): BFI-level 2  
Scopus rating (2013): 1.011 1.06  
ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2  
Scopus rating (2012): 1.184 1.075  
ISI indexed (2012): ISI indexed yes  
BFI (2011): BFI-level 2  
Scopus rating (2011): 1.109 1.201  
ISI indexed (2011): ISI indexed yes  
BFI (2010): BFI-level 2  
Scopus rating (2010): 1.293 1.348  
BFI (2009): BFI-level 2  
Scopus rating (2009): 0.913 1.105  
BFI (2008): BFI-level 1  
Scopus rating (2008): 1.025 1.055  
Scopus rating (2007): 0.658 0.817  
Scopus rating (2006): 0.751 1.04  
Scopus rating (2005): 0.611 0.913  
Scopus rating (2004): 0.643 0.948  
Scopus rating (2003): 0.589 0.997  
Scopus rating (2002): 0.557 0.767  
Scopus rating (2001): 0.522 0.968  
Scopus rating (2000): 0.431 0.735  
Scopus rating (1999): 0.452 0.88  
Original language: English  
DOIs:  
10.1016/j.reprotox.2013.06.068  
Source: dtu  
Source-ID: n::oai:DTIC-ART:elsevier/390793952::31331  
Publication: Research - peer-review › Conference article – Annual report year: 2013

### **Effects of prenatal exposure to nanoparticles titanium dioxide and carbon black on female germline DNA stability**

Particulate air pollution has been associated with an increased risk of cardiovascular disease and cancer in humans. Air pollution may also adversely affect pregnancy outcome and the integrity of sperm cells DNA. Animal studies have shown that inhalation of air particulates can induce mutations in premeiotic sperm cells. The investigation of potential mutagenic risk is of utmost importance, as it may lead to cancer. Furthermore, heritable mutations may be passed on to descendents and thereby pose a permanent genetic risk to the population.

The nanosized fraction of particulate air pollution has recently come into focus. Inhaled nanoparticles are cleared very slowly from the lungs and a small fraction may translocate into the bloodstream and compartments of the body. In the airways nanoparticles can induce a high degree of pulmonary inflammation and oxidative stress. Nanoparticles are more reactive than larger sized particles and may have unique properties as a result of their size. The exposure to nanoparticles in the occupational setting and from consumer products will most likely increase greatly in the near future and thorough investigations of their potentially hazardous effects are needed.

Expanded simple tandem repeat (ESTR) loci in mice are sensitive markers of mutagenic effects resulting from environmental exposures; Studies on adult mice have revealed that while particulate air pollution induced ESTR mutations in premeiotic sperm cells, the female germline was not affected. Unlike sperm cells that are continuously developed in adulthood, the majority of oocytes are in a dormant state during long periods of adult life and may therefore be less sensitive to mutations. However, female germ cells may be vulnerable during pregnancy when the female germ cells of the fetus when are actively dividing.

The aim of this PhD study was to determine if two widely used nanoparticles titanium dioxide UV-Titan and carbon black Printex 90 induce ESTR mutations in the germ cells of prenatally exposed females. Pregnant generation P mice were exposed to ~42 mg UV-Titan/m<sup>3</sup>/1 h/d during gestation days 8-18 or carbon black Printex 90 at gestation days (7,10,15 and 18) (total dose of 268 µg/animal) by intratracheal instillation. Maternal inflammation and DNA damage were assessed in order to assess the potential for indirect effects on offspring during pregnancy. Prenatally exposed F1 females were grown to maturity and mated with unexposed males. The ESTR mutation rate in F2 offspring was estimated from full pedigrees (mother, father, offspring). ESTR mutation rates of 0.029/0.0025 (maternal allele) and 0.047/0.053 (paternal allele) in UV-Titan/Printex 90-exposed F2 offspring were not statistically different from those of F2 controls: 0.037/0.024 (maternal allele) and 0.061/0.038 (paternal allele). UV-Titan and Printex 90 exposure induced pulmonary inflammation in pregnant generation P mothers as well as changes in hepatic gene expression in the F1 prenatally exposed females. However, ESTR mutation rates were not increased by UV-Titan or Printex 90 in prenatally exposed F1 females.

### **General information**

State: Published

Organisations: National Food Institute, National Research Center for Working Environment  
Authors: Boisen, A. M. Z. (Intern), Nellemann, C. L. (Intern), Vogel, U. B. (Intern), Wallin, H. (Ekstern)  
Number of pages: 123  
Publication date: 2012

#### Publication information

Place of publication: Kgs. Lyngby  
Publisher: Technical University of Denmark  
Original language: English  
Main Research Area: Technical/natural sciences  
Electronic versions:

Anne\_Mette\_Zenner\_Boisen\_Afhandling..PDF

Publication: Research › Ph.D. thesis – Annual report year: 2012

#### NanoTiO<sub>2</sub> (UV-Titan) does not induce ESTR mutations in the germline of prenatally exposed female mice

Particulate air pollution has been linked to an increased risk of cardiovascular disease and cancer. Animal studies have shown that inhalation of air particulates induces mutations in the male germline. Expanded simple tandem repeat (ESTR) loci in mice are sensitive markers of mutagenic effects on male germ cells resulting from environmental exposures; however, female germ cells have received little attention. Oocytes may be vulnerable during stages of active cell division (e.g., during fetal development). Accordingly, an increase in germline ESTR mutations in female mice prenatally exposed to radiation has previously been reported. Here we investigate the effects of nanoparticles on the female germline. Since pulmonary exposure to nanosized titanium dioxide (nanoTiO<sub>2</sub>) produces a long-lasting inflammatory response in mice, it was chosen for the present study. Pregnant C57BL/6 mice were exposed by whole-body inhalation to the nanoTiO<sub>2</sub> UV-Titan L181 (~42.4 mg UV-Titan/m<sup>3</sup>) or filtered clean air on gestation days (GD) 8–18. Female C57BL/6 F1 offspring were raised to maturity and mated with unexposed CBA males. The F2 descendents were collected and ESTR germline mutation rates in this generation were estimated from full pedigrees (mother, father, offspring) of F1 female mice (192 UV-Titanexposed F2 offspring and 164 F2 controls). ESTR mutation rates of 0.029 (maternal allele) and 0.047 (paternal allele) in UV-Titan-exposed F2 offspring were not statistically different from those of F2 controls: 0.037 (maternal allele) and 0.061 (paternal allele). Conclusions We found no evidence for increased ESTR mutation rates in F1 females exposed in utero to UV-Titan nanoparticles from GD8-18 relative to control females.

#### General information

State: Published

Organisations: National Food Institute, Division of Toxicology and Risk Assessment, Department of Micro- and Nanotechnology, Environmental Health Science and Research Bureau, National Research Center for Working Environment

Authors: Boisen, A. M. Z. (Intern), Shipley, T. (Ekstern), Hougaard, K. S. (Ekstern), Yauk, C. L. (Ekstern), Vogel, U. B. (Intern)

Pages: 19

Publication date: 2012

Main Research Area: Technical/natural sciences

#### Publication information

Journal: Particle and Fibre Toxicology

Volume: 9

ISSN (Print): 1743-8977

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.311 1.98

BFI (2014): BFI-level 2

Scopus rating (2014): 2.354 1.744

BFI (2013): BFI-level 2

Scopus rating (2013): 2.7 2.404

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.087 2.082

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 2.772 1.899

ISI indexed (2011): ISI indexed no  
BFI (2010): BFI-level 1  
Scopus rating (2010): 2.057 1.393  
BFI (2009): BFI-level 1  
Scopus rating (2009): 2.141 1.747  
BFI (2008): BFI-level 2  
Scopus rating (2008): 2.136 1.817  
Scopus rating (2007): 1.803 1.768  
Scopus rating (2006): 1.437 1.701  
Scopus rating (2005): 0.507 0.298  
Original language: English  
Electronic versions:  
TiO2\_TiO2\_paper\_PFT.pdf  
DOIs:  
10.1186/1743-8977-9-19  
Publication: Research - peer-review › Journal article – Annual report year: 2012

### **Effects of prenatal exposure to surface-coated nanosized titanium dioxide (UV-Titan). A study in mice (vol 7, 16, 2010)**

#### **General information**

State: Published

Organisations: Division of Food Chemistry, National Food Institute, Division of Toxicology and Risk Assessment, Roskilde Universitet, National Research Center for Working Environment, University of Copenhagen

Authors: Hougaard, K. S. (Ekstern), Jackson, P. (Ekstern), Jensen, K. A. (Ekstern), Sloth, J. J. (Intern), Löschner, K. (Intern), Larsen, E. H. (Intern), Birkedal, R. K. (Ekstern), Vibenholt, A. (Ekstern), Boisen, A. M. Z. (Intern), Wallin, H. (Ekstern), Vogel, U. (Ekstern)

Publication date: 2011

Main Research Area: Technical/natural sciences

#### **Publication information**

Journal: Particle and Fibre Toxicology

Volume: 8

ISSN (Print): 1743-8977

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.311 1.98

BFI (2014): BFI-level 2

Scopus rating (2014): 2.354 1.744

BFI (2013): BFI-level 2

Scopus rating (2013): 2.7 2.404

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.087 2.082

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 2.772 1.899

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Scopus rating (2010): 2.057 1.393

BFI (2009): BFI-level 1

Scopus rating (2009): 2.141 1.747

BFI (2008): BFI-level 2

Scopus rating (2008): 2.136 1.817

Scopus rating (2007): 1.803 1.768

Scopus rating (2006): 1.437 1.701

Scopus rating (2005): 0.507 0.298

Original language: English

Electronic versions:

62626d01.pdf

DOIs:

10.1186/1743-8977-8-14

Source: orbit

Source-ID: 277967

Publication: Research - peer-review › Journal article – Annual report year: 2011

### **Pulmonary exposure to carbon black by inhalation or instillation in pregnant mice: Effects on liver DNA strand breaks in dams and offspring**

Effects of maternal pulmonary exposure to carbon black (Printex 90) on gestation, lactation and DNA strand breaks were evaluated. Time-mated C57BL/6BomTac mice were exposed by inhalation to 42 mg/m<sup>3</sup> Printex 90 for 1 h/day on gestation days (GD) 8–18, or by four intratracheal instillations on GD 7, 10, 15 and 18, with total doses of 11, 54 and 268 mg/animal. Dams were monitored until weaning and some offspring until adolescence. Inflammation was assessed in maternal bronchoalveolar lavage (BAL) 3–5 days after exposure, and at weaning. Levels of DNA strand breaks were assessed in maternal BAL cells and liver, and in offspring liver. Persistent lung inflammation was observed in exposed mothers. Inhalation exposure induced more DNA strand breaks in the liver of mothers and their offspring, whereas intratracheal instillation did not. Neither inhalation nor instillation affected gestation and lactation. Maternal inhalation exposure to Printex 90-induced liver DNA damage in the mothers and the in utero exposed offspring.

#### **General information**

State: Published

Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Roskilde Universitet, National Research Center for Working Environment, Norwegian Institute of Public Health, University of Copenhagen

Authors: Jackson, P. (Ekstern), Hougaard, K. S. (Ekstern), Boisen, A. M. Z. (Intern), Raun Jacobsen, N. (Ekstern), Alstrup Jensen, K. (Ekstern), Møller, P. (Ekstern), Brunborg, G. (Ekstern), Bjerve Gutzkow, K. (Ekstern), Andersen, O. (Ekstern), Loft, S. (Ekstern), Vogel, U. (Ekstern), Wallin, H. (Ekstern)

Pages: 486-500

Publication date: 2011

Main Research Area: Technical/natural sciences

#### **Publication information**

Journal: Nanotoxicology

Volume: 6

Issue number: 5

ISSN (Print): 1743-5390

Ratings:

BFI (2015): BFI-level 2

BFI (2014): BFI-level 2

BFI (2013): BFI-level 2

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Original language: English

DOIs:

10.3109/17435390.2011.587902

Links:

<http://informahealthcare.com/doi/abs/10.3109/17435390.2011.587902>

Source: orbit

Source-ID: 314476

Publication: Research - peer-review › Journal article – Annual report year: 2011

### **Effects of prenatal exposure to surface-coated nanosized titanium dioxide (UV-Titan). A study in mice**

Background: Engineered nanoparticles are smaller than 100 nm and designed to improve or achieve new physicochemical properties. Consequently, also toxicological properties may change compared to the parent compound. We examined developmental and neurobehavioral effects following maternal exposure to a nanoparticulate UV-filter (UV-titan L181). Methods: Time-mated mice (C57BL/6BomTac) were exposed by inhalation 1h/day to 42 mg/m<sup>3</sup> aerosolized powder (1.7.10(6) n/cm<sup>3</sup>); peak-size: 97 nm) on gestation days 8-18. Endpoints included: maternal lung inflammation; gestational and litter parameters; offspring neurofunction and fertility. Physicochemical particle properties were determined to provide information on specific exposure and deposition. Results: Particles consisted of mainly elongated rutile titanium

dioxide (TiO<sub>2</sub>) with an average crystallite size of 21 nm, modified with Al, Si and Zr, and coated with polyalcohols. In exposed adult mice, 38 mg Ti/kg was detected in the lungs on day 5 and differential cell counts of bronchoalveolar lavage fluid revealed lung inflammation 5 and 26-27 days following exposure termination, relative to control mice. As young adults, prenatally exposed offspring tended to avoid the central zone of the open field and exposed female offspring displayed enhanced prepulse inhibition. Cognitive function was unaffected (Morris water maze test). Conclusion: Inhalation exposure to nano-sized UV Titan dusts induced long term lung inflammation in time-mated adult female mice. Gestationally exposed offspring displayed moderate neurobehavioral alterations. The results are discussed in the light of the observed particle size distribution in the exposure atmosphere and the potential pathways by which nanoparticles may impart changes in fetal development.

### General information

State: Published

Organisations: Division of Food Chemistry, Division of Toxicology and Risk Assessment, National Food Institute, Section for Indoor Environment, Department of Civil Engineering, National Research Center for Working Environment

Authors: Hougaard, K. S. (Ekstern), Jackson, P. (Intern), Jensen, K. A. (Ekstern), Sloth, J. J. (Intern), Löschner, K. (Intern), Larsen, E. H. (Intern), Birkedal, R. K. (Ekstern), Vibenholt, A. (Ekstern), Boisen, A. M. Z. (Intern), Wallin, H. (Ekstern), Vogel, U. B. (Intern)

Pages: 16

Publication date: 2010

Main Research Area: Technical/natural sciences

### Publication information

Journal: Particle and Fibre Toxicology

Volume: 7

ISSN (Print): 1743-8977

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.311 1.98

BFI (2014): BFI-level 2

Scopus rating (2014): 2.354 1.744

BFI (2013): BFI-level 2

Scopus rating (2013): 2.7 2.404

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.087 2.082

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 2.772 1.899

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Scopus rating (2010): 2.057 1.393

BFI (2009): BFI-level 1

Scopus rating (2009): 2.141 1.747

BFI (2008): BFI-level 2

Scopus rating (2008): 2.136 1.817

Scopus rating (2007): 1.803 1.768

Scopus rating (2006): 1.437 1.701

Scopus rating (2005): 0.507 0.298

Original language: English

Electronic versions:

5C181d01.pdf

DOIs:

10.1186/1743-8977-7-16

### Bibliographical note

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Source: orbit

Source-ID: 264747

Publication: Research - peer-review › Journal article – Annual report year: 2010

### **Lack of acute phase response in the livers of mice exposed to diesel exhaust particles or carbon black by inhalation**

**BACKGROUND:** Epidemiologic and animal studies have shown that particulate air pollution is associated with increased risk of lung and cardiovascular diseases. Although the exact mechanisms by which particles induce cardiovascular diseases are not known, studies suggest involvement of systemic acute phase responses, including C-reactive protein (CRP) and serum amyloid A (SAA) in humans. In this study we test the hypothesis that diesel exhaust particles (DEP) - or carbon black (CB)-induced lung inflammation initiates an acute phase response in the liver. **RESULTS:** Mice were exposed to filtered air, 20 mg/m<sup>3</sup> DEP or CB by inhalation for 90 minutes/day for four consecutive days; we have previously shown that these mice exhibit pulmonary inflammation (Saber AT, Bornholdt J, Dybdahl M, Sharma AK, Loft S, Vogel U, Wallin H. Tumor necrosis factor is not required for particle-induced genotoxicity and pulmonary inflammation., Arch. Toxicol. 79 (2005) 177-182). As a positive control for the induction of an acute phase response, mice were exposed to 12.5 mg/kg of lipopolysaccharide (LPS) intraperitoneally. Quantitative real time RT-PCR was used to examine the hepatic mRNA expression of acute phase proteins, serum amyloid P (Sap) (the murine homologue of Crp) and Saa1 and Saa3. While significant increases in the hepatic expression of Sap, Saa1 and Saa3 were observed in response to LPS, their levels did not change in response to DEP or CB. In a comprehensive search for markers of an acute phase response, we analyzed liver tissue from these mice using high density DNA microarrays. Globally, 28 genes were found to be significantly differentially expressed in response to DEP or CB. The mRNA expression of three of the genes (serine (or cysteine) proteinase inhibitor, clade A, member 3C, apolipoprotein E and transmembrane emp24 domain containing 3) responded to both exposures. However, these changes were very subtle and were not confirmed by real time RT-PCR. **CONCLUSION:** Our findings collectively suggest that Sap, Saa1 and Saa3 are not induced in livers of mice exposed to DEP or CB. Despite pulmonary inflammation in these mice, global transcriptional profiling of liver did not reveal any hepatic response following exposure by inhalation.

#### **General information**

State: Published

Organisations: Division of Toxicology and Risk Assessment, National Food Institute, National Research Center for Working Environment, Health Canada, University of Copenhagen

Authors: Saber, A. T. (Ekstern), Halappanavar, S. (Ekstern), Folkmann, J. K. (Ekstern), Bornholdt, J. (Ekstern), Boisen, A. M. Z. (Intern), Møller, P. (Ekstern), Williams, A. (Ekstern), Yauk, C. (Ekstern), Vogel, U. B. (Intern), Loft, S. (Ekstern), Håkan, W. (Ekstern)

Number of pages: 8

Publication date: 2009

Main Research Area: Technical/natural sciences

#### **Publication information**

Journal: Particle and Fibre Toxicology

Volume: 6

Issue number: 12

ISSN (Print): 1743-8977

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.311 1.98

BFI (2014): BFI-level 2

Scopus rating (2014): 2.354 1.744

BFI (2013): BFI-level 2

Scopus rating (2013): 2.7 2.404

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.087 2.082

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 2.772 1.899

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Scopus rating (2010): 2.057 1.393

BFI (2009): BFI-level 1

Scopus rating (2009): 2.141 1.747

BFI (2008): BFI-level 2

Scopus rating (2008): 2.136 1.817

Scopus rating (2007): 1.803 1.768



Scopus rating (2006): 1.437 1.701

Scopus rating (2005): 0.507 0.298

Original language: English

Electronic versions:

1743\_8977\_6\_12.pdf

DOIs:

10.1186/1743-8977-6-12

### **Bibliographical note**

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Source: orbit

Source-ID: 249938

Publication: Research - peer-review › Journal article – Annual report year: 2009

### **Projects:**

#### **Effect of prenatal exposure to carbon-based nanoparticles and diesel exhaust particles on germline DNA stability**

National Food Institute

Period: 01/11/2008 → 22/08/2012

Number of participants: 7

Phd Student:

Boisen, Anne Mette Zenner (Intern)

Supervisor:

Vogel, Ulla Birgitte (Intern)

Wallin, Håkan (Ekstern)

Main Supervisor:

Nellemann, Christine (Intern)

Examiner:

Binderup, Mona-Lise (Intern)

Guldberg, Per (Ekstern)

Olsen, Ann-Karin Hardie (Ekstern)

### **Financing sources**

Source: Internal funding (public)

Name of research programme: Institut, samfinansiering

Project: PhD

#### **Induction of inheritable DNA mutations by prenatal exposure to carbon-based nanoparticles**

Exposure to air pollution leads to induction of mutations in male germline cells in male mice and herring gulls. This indicates that exposure to air pollution gives inheritable DNA mutations, which may be linked to increased risk of cancer or malformation. It is not possible to assess the effect of particle exposure on germline DNA in adult females, because all the eggs are already established during fetal development in the mother. Thus, the effects of exposure on female germline cells have to be assessed with in utero exposure. Carbon nanotubes and other nanomaterials will gain widespread use in the near future, leading to a low-level, but widespread exposure to CNT containing materials as dust or food contaminants. In the present project we want to assess if in utero exposure to nanoparticles results in germline DNA instability in males and females.

Division of Toxicology and Risk Assessment

National Food Institute

National Research Center for Working Environment

Health Canada

Period: 01/11/2008 → 30/11/2011

Number of participants: 4

Project participant:

Boisen, Anne Mette Zenner (Intern)

Vogel, Ulla Birgitte (Intern)

Wallin, Håkan (Ekstern)  
Yauk, Carole (Ekstern)  
Project