genes that play a crucial role in MDSC development and function. In conclusion, resveratrol treatment leading to activation of AhR, aids in the alleviation of disease by upregulating miRNA 155 and subsequently increasing MDSCs in the lungs.

PS 2322 MOLECULAR PATHWAYS OF PULMONARY INFLAMMATION FOLLOWING ASPIRATION AND INHALATION OF STAINLESS STEEL WELDING FUME IN MICE.

P. C. Zeidler-Erdely, A. Erdely, M. Kashon, S. Li and J. Antonini. *HELD, NIOSH, Morgantown, WV.*

Previously, at comparable doses, we observed a greater inflammatory potency of inhaled versus aspirated gas metal arc-stainless steel (GMA-SS) welding fume in C57BL/6J (B6) mice. Also, aspiration of GMA-SS fume provoked a transient inflammation which resolved by 7d while inhalation resulted in a mounting response that remained unresolved at 28d post-exposure. Furthermore, we found by 28d after aspiration, lung gene expression was down-regulated which confirmed that inflammation was resolved. Here, we examined the lung transcriptional response after inhalation of GMA-SS fume and used gene network-based analysis to compare with previous aspiration data. Mice were exposed to GMA-SS fume at 40mg/m3 x 3hr/d for 10d. Necropsy was done at 28d after the last exposure and whole lung microarray was performed. A core analysis in IPA 8.7 was done on the inhalation data ($p<0.05$; fold change >1.5) followed by a core comparison analysis of the inhalation and aspiration datasets. We found that inhalation of GMA-SS welding fume was associated with activation of complement (C2, C3, C1QA-C, C4B), type 1 interferon pathways and increased expression of monocyte and lymphocyte chemotactic genes such as CCL2, CCL7 and CCL8. In addition, genes encoding the expression of molecules involved in T lymphocyte and natural killer cell regulation were increased (CD86 and CD69). Upon comparison of the datasets, a greater number of genes were changed with inhalation versus aspiration exposure. Involvement of IL1B as a central mediator to the lung response was apparent between the different exposure regimes as well as increased expression of MMP12. Transcriptional regulation of the lung response to GMA-SS aspiration involved FOS, EGR1, FOSB. In contrast, IRF7 and 9 as well as STAT1 and 2 were involved with inhalation. Overall, gene expression was reflective of the unresolved inflammation at 28d after inhalation of GMA-SS fumes. With the exception of a few molecules, differences in gene network signatures are apparent between aspiration and inhalation of GMA-SS welding fume in B6 mice.

PS 2323 EFFECTS OF PARTICULATE AIR POLLUTION DURING BEIJING OLYMPIC GAMES IN A MOUSE MODEL.

K. Tzan[1], X. Xu[1], S. Jiang[1], J. Aronovsky[1], A. Wang[2], S. Rajagopalan[2, 3] and Q. Sun[1, 2, 3]. *[1]Public Health, The Ohio State University, Columbus, OH, [2]Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH and [3]Cardiology, The Ohio State University, Columbus, OH.*

Many studies have linked ambient particulate matter air pollution to increased morbidity and mortality of cardiovascular diseases in the general population, but the biological mechanisms of these associations have yet to be elucidated. This study intended to take advantage of drastic intervention in air quality improvement from local authorities during the 2008 Beijing Olympic Games and attempted to quantify the effects of ambient fine particulate matter (diameter < 2.5μm, PM2.5) on inflammatory responses in mice during and after the Games. C57BL/6 male mice at age week 8 were exposed to either ambient PM2.5 or filtered air (FA) at an exposure location 4 miles from the Olympic Center during and after the Games for 2 months, respectively. During the 2-month Olympic Games, the average PM2.5 was 60.79 μg/m3. The PM2.5 rose to an average of 70.21 μg/m3 during the 2-month time period after the Games. During the Games, circulating monocyte chemoattractant protein (MCP-1) and interleukin-6 were remarkably increased by PM2.5 exposure when compared to the FA group. Additionally, macrophage count in the lung and adipose tissue (epididymal) was significantly higher in the PM2.5 group. After the Olympic Games, neutrophils were markedly higher in the spleen in the PM2.5 group. The macrophage count was also significantly elevated in the lung and adipose tissue. In a comparison of PM2.5 exposure between the two time periods, macrophage, neutrophil, and lymphocyte infiltrations in the lung were significantly increased in the groups after the Olympic Games, along with significant increase of macrophage in the adipose tissue. These data show that particulate air pollution induced a significant increase of inflammatory cell infiltration in pulmonary and adipose tissues, suggesting that air quality improvement can reduce inflammatory response systemically and can be beneficial to inflammation-associated diseases.

PS 2324 OVER-EXPRESSION OF THE NF-κB MEMBER RELB DAMPENS THE PRO-INFLAMMATORY EFFECTS OF LONG-TERM CIGARETTE SMOKE EXPOSURE.

D. McMillan[1, 3], T. H. Thatcher[3, 4], S. Maggirwar[2], P. J. Sime[1, 3, 4] and R. P. Phipps[1, 2, 3]. *[1]Environmental Medicine, University of Rochester, Rochester, NY, [2]Microbiology and Immunology, University of Rochester, Rochester, NY, [3]Lung Biology and Disease, University of Rochester, Rochester, NY and [4]Pulmonary and Critical Care Medicine, University of Rochester, Rochester, NY.*

Rationale: The NF-kB family member RelB attenuates cigarette smoke-induced inflammation in lung fibroblasts. RelB-deficient mice are more susceptible to inflammation than wild-type mice. We have recently demonstrated that RelB over-expression in mouse airways prior to acute cigarette smoke exposure dampens smoke-induced inflammation. We hypothesized that RelB over-expression would dampen pre-existing inflammation resulting from long-term smoke exposure.
Methods: Female C57BL/6 mice received long-term regimens of cigarette smoke to induce inflammation. Following this, mice were treated with two doses of a RelB recombinant adenovirus by intranasal aspiration over 24 hours to over-express RelB in mouse airway cells. Control mice received equal doses of filtered air and of a control adenovirus. Bronchoalveolar lavage (BAL) fluid was collected for ELISA and differential cell counts. Lungs were harvested for Western blot, immunohistochemistry, and detection of myeloperoxidase activity.
Results: RelB over-expression decreases cigarette smoke-induced neutrophil infiltration into the bronchoalveolar space. Production of prostaglandin E2 (PGE2) and pro-inflammatory cytokines, including IL-6, MIP-2 and KC, are also reduced following RelB over-expression. Cyclooxygenase-2 (Cox-2) expression and myeloperoxidase activity in the lung are also decreased.
Conclusions: Transient RelB over-expression decreases the pro-inflammatory effects of long-term cigarette smoke exposure. Thus, RelB appears to function as a "brake" for dampening pre-existing inflammation in the lung. Increased expression and/or activation of RelB would be a novel therapeutic strategy against COPD and other inflammation-associated lung diseases.
Research supported by National Institutes of Health grants HL088325, HL088325-02S1, ES01247 and T32ES07026.

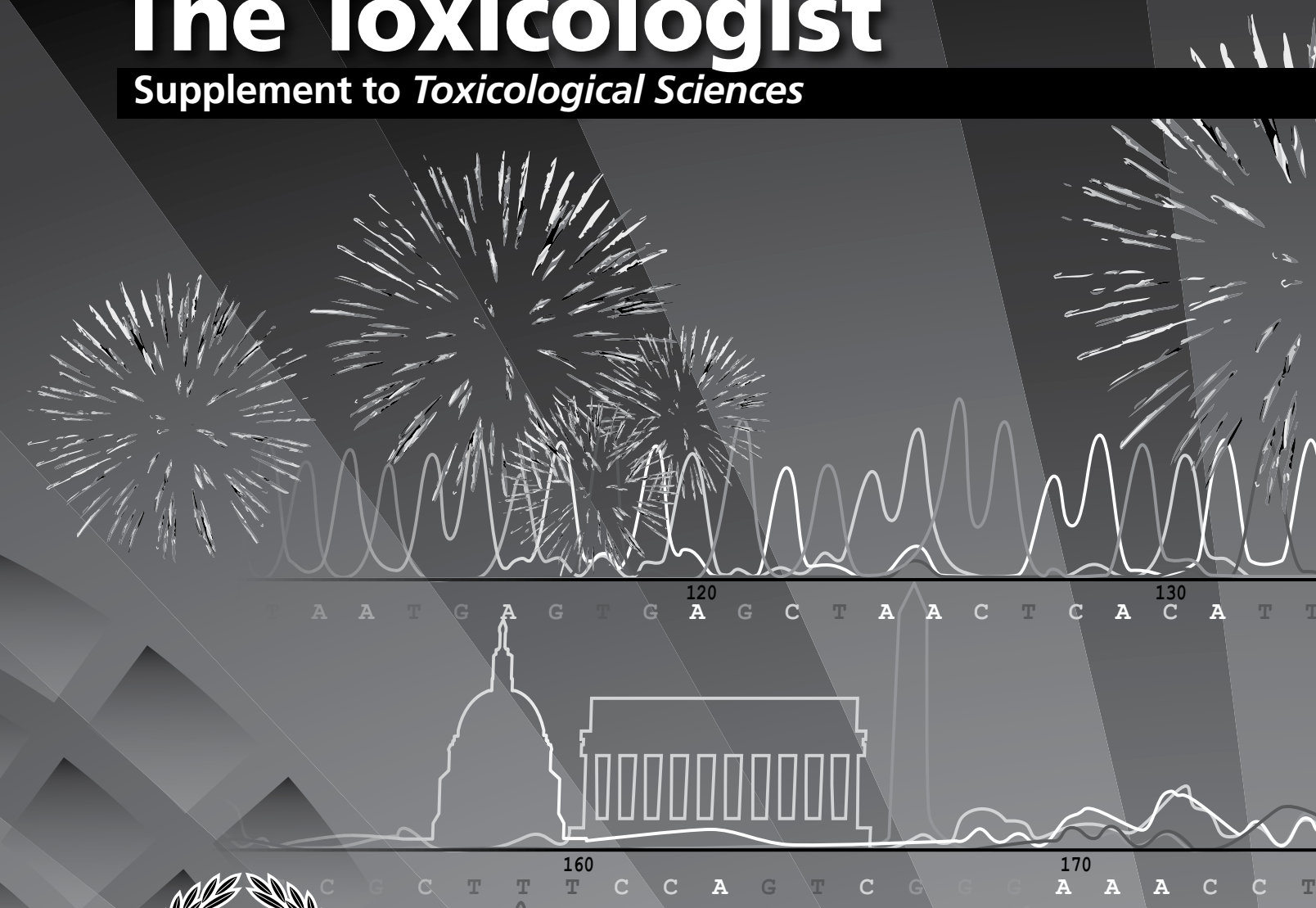
PS 2325 ADJUVANT EFFECT OF 1Ç3-β-GLUCAN (ZYMOSAN) EXPOSURE IN A MOUSE OVALBUMIN ALLERGY MODEL.

S. Young, M. Wolfarth, J. R. Roberts, M. L. Kashon and J. M. Antonini. *NIOSH, Morgantown, WV.*

A strong association has been observed between indoor mold contamination and the development of lung allergy and asthma. However, the relationship is still not fully understood. 1→3-β-Glucan is the major cell wall component of fungi, and has been shown to be a good marker of fungi exposure. The objective of the study was to evaluate the adjuvant effect of 1→3-β-glucan exposure during ovalbumin (OVA) sensitization in a mouse allergy model. BALB/c mice were sensitized by pharyngeal aspiration with saline (vehicle control), 50 μg OVA, or OVA with various doses of zymosan (1, 10, 50, or 75 μg) at days 0, 7, and 14. One week after sensitization, each sensitized animal group was challenged with aspiration dose of OVA 50 μg once a week for two weeks. At 24 hrs after the last aspiration, bronchoalveolar lavage (BAL) was done, and the following inflammatory and lung injury markers were measured in recovered BAL fluid: (1) leukocytes infiltration, (2) albumin and lactate dehydrogenase levels, and (3) inflammatory cytokines levels. An additional set of non-lavaged mice from each group was sent for lung pathology evaluation. The results indicated that co-exposure of zymosan and OVA during sensitization induced a synergistic inflammatory/allergic response that was greater than the response of the individual exposures when combined together. The optimum adjuvant dose of zymosan was 10 μg, inducing a significant eosinophil infiltration in the lungs and blood as analyzed by flow cytometry. This was consistent with the pathological findings of significant increases in perivascular lymphocyte, alveolar macrophage, neutrophil, and eosinophil infiltration when compared to the OVA-OVA group. Furthermore, a significant elevation in cytokines (IL-5, IL-13, IL-6, and TNF-α) in BAL fluid and increased OVA-specific IgE in blood were observed indicating an allergic inflammation. This study demonstrated an adjuvant effect of 1→3-β-glucan (zymosan) when exposed during the sensitization phase in an OVA-induced allergy model in BALB/c mice.

The Toxicologist

Supplement to *Toxicological Sciences*



SOCIETY OF TOXICOLOGY
50th Anniversary
1961–2011

Celebrating 50 Years of Service in Science

50th Anniversary Annual Meeting and ToxExpo™ Washington, D.C.

An Official Journal of the Society of Toxicology

OXFORD UNIVERSITY PRESS

ISSN 1096-6080
Volume 120, Supplement 2
March 2011

www.toxsci.oxfordjournals.org

SOT | Society of Toxicology

Creating a Safer and Healthier World by Advancing the Science of Toxicology

www.toxicology.org

Preface

This issue of *The Toxicologist* is devoted to the abstracts of the presentations for the Continuing Education courses and scientific sessions of the 50th Annual Meeting of the Society of Toxicology, held at the Walter E. Washington Convention Center, March 6–10, 2011.

An alphabetical Author Index, cross referencing the corresponding abstract number(s), begins on page 578.

The issue also contains a Key Word Index (by subject or chemical) of all the presentations, beginning on page 606.

The abstracts are reproduced as accepted by the Scientific Program Committee of the Society of Toxicology and appear in numerical sequence.

Copies of *The Toxicologist* are available at $45 each plus $5 postage and handling (U.S. funds) from:

Society of Toxicology
1821 Michael Faraday Drive, Suite 300
Reston, VA 20190

www.toxicology.org