Results: Relevant air flows passing over our location were as follows: (1) second week of March - from three areas to the SW; (2) fourth week of March - from two areas to the SW & two areas to the SE; (3) second week of April — from one area to the SW & two areas to the SE. Our Burkard spore trap samples contained the same tree pollen varieties reported by a local NAB station or those native to the area.
Conclusions: NOAA HYSPLIT air current projections strongly suggest that pollen from sources 309 to 544 air miles distant found their way here and contributed to a local "pre-pollen" season.

Aerobiology, Allergens, Allergen Extracts

P020

GLOBAL WARMING EXTENDS THE RAGWEED SEASON AND DURATION OF ELEVATED RAGWEED POLLEN LEVELS IN UKRAINE

V. Rodinkova[1], O. Palamarchuk[1], M. Yasniuk[1], O. Kaminska[1], M. Bortnyk[1], T. Kuchenko[2], L. DuBuske*[3], *1. Vinnytsya, Ukraine; 2. Vinnytsia, Ukraine; 3. Gardner, MA*

Introduction: Global warming impacts invasive and potentially health-threatening species such as Ambrosia. This study assesses long-term trends of ragweed pollen season indicators to assess patterns of change.

Method: This study was performed at the National Pirogov Memorial Medical University, Vinnytsya, Ukraine (VNMU), in 2009-2020. Ragweed pollen was collected using Burkard impact pollen trap Hirst type located on the roof of the VNMU at 25 m altitude. Slides were read by 3 horizontal transects in the years 2009-2011 and by 12 vertical transects in the years 2012-2020 under magnification of 400X. Long-term season trends were assessed in the Excel 2019 Program.
Results: The season of Ambrosia currently starts significantly earlier than in 2009, and further trends proved this tendency for the next 2 years. In 2009 the season started at the end of the first-ten-day period of August, while in the last years Ambrosia season start occurred in mid-July. Peak values did not change, reflecting attempts of the local authorities to eliminate Ambrosia in Ukraine. Peak daily counts did not change either indicating photoperiodism as a main factor which regulates timing of ragweed flowering. However, seasonal Pollen Index, length of the season, and number of days with the clinically important ragweed pollen concentrations of 10 pollen grains/m-1 all have increased.
Conclusion: These changes in the last decade concurrent with global warming trends indicate worsening of the seasonal conditions important for ragweed pollination.

P021

LUNG ACE2 AND TMPRSS2 GENE EXPRESSION VARIES WITH ALLERGEN EXPOSURES IN MURINE MODELS OF ASTHMA

D. Bravo Solarte*, K. Stelzig, S. Chiarella, *Rochester, MN*

Introduction: The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) requires angiotensin-converting enzyme 2 (ACE2) and the transmembrane protease, serine 2 (TMPRSS2) for cell entry. Prior studies have reported that allergen exposure can downregulate ACE2 expression. Here, we sought to determine if exposure to distinct combinations of allergens results in the differential expression of ACE2 and TMPRSS2 in the mouse lung.
Methods: We utilized three established murine models of asthma: 1. Alum/Ovalbumin (OVA) model; 2. House dust mite (HDM)/OVA model; 3. Mixed-allergen (MA) model using OVA, HDM, *Aspergillus fumigatus* and *Alternaria alternata*. Phosphate-buffered saline (PBS) treated mice were used as controls. Lung RNA was extracted using the RNeasy Mini Kit (Qiagen) according to the manufacturer's protocol, and complementary DNA was synthesized. Quantitative PCR (qPCR) was performed 24 hours after the last challenge utilizing validated primers for ACE2 and TMPRSS2. Analysis was performed using one-way ANOVA.
Results: Here we report that ACE2 mRNA expression was lower in the MA and Alum/OVA-treated mice compared to the controls (p-value < 0.0001). No difference was seen in the ACE2 mRNA expression between HDM/OVA and PBS-treated mice. Furthermore, HDM/OVA-treated mice expressed higher levels of TMPRSS2 mRNA compared to controls (p-value < 0.01). No difference was seen in the TMPRSS2 mRNA expression between the MA or Alum/OVA, and the PBS-treated mice.
Conclusion: The exposure to distinct combinations of allergens results in unique patterns of ACE2 and TMPRSS2 gene expression in the mouse lung. Further studies are required to evaluate the effects of allergen exposure with the susceptibility to SARS-CoV-2 infection.

P022

NO INCREASE IN INHALANT ALLERGEN SENSITIZATION AMONG LOS ANGELES ASTHMATIC CHILDREN OVER 12 YEARS

P. Mohyi*[1], Y. Lu[2], C. Nguyen[1], L. Scott[1], K. Kwong[1], *1. Los Angeles, CA; 2. Long beach, CA*

Introduction: Increased frequency and severity of symptoms due to atopic disease has been postulated to be due in part to global warming; Wherein increased pollen seasons results in increased sensitization of atopic patients to more inhalant allergens. This study endevors to determine whether sensitizations to seasonal and pernnial allergens among asthmatic children has increased from 1999 to 2014.
Methods: This is a retrospective study examiing cohort of asthmatic children residing in the greater Los Angeles area treated by an asthma specific disease management program. All patients received skin prick tests to dust mites, cat, dog, cockroach, tree pollen, grass pollen and weed pollen. Percent positivity was determined for these allergens each year from 1999 until 2014.
Results: A total of 123,209 tests were performed over a 15 year period from 5874 unique patients. All patients were diagnosed with asthma by an asthma specialist using history and physical examination and spirometry when age appropriate. There were more patients sensitized to cockroach and dust mite compared to other allergens. There was no increase in prevalence of allergic sensitization to any specific perennial or seasonal allergen over this 15 year period. There was no increased prevalence of sensitization to any pollen or allergen over this 15 year period.
Conlcusion: There is no increase in allergic sensitization to inhalant allergens from 1999 to 2014 among inner city asthnatic children. Increased symptoms associated with climate change are likely independent of pathways associated with allergen sensitization.