

## Ingenuity<sup>®</sup> Science Spotlight:

Articles featured in the Ingenuity Science Spotlight represent some of the best and most diverse examples of how IPA<sup>®</sup> has contributed to research across multiple platforms, research areas, and research goals.



### **Reduced Nicotinamide Adenine Dinucleotide Phosphate Oxidase-Independent Resistance to *Aspergillus fumigatus* in Alveolar Macrophages.**

Cornish EJ, Hurtgen BJ, McInerney K, Burritt NL, Taylor RM, Jarvis JN, Wang SY, Burritt JB. The Journal of Immunology, 2008, 180:6854-6867.

<http://www.ncbi.nlm.nih.gov/pubmed/18453606?dopt=Abstract>

Researchers from the Department of Microbiology, Montana State University and Oklahoma University Health Sciences Center used IPA to help characterize the responses of alveolar macrophages to the fungal pathogen, *Aspergillus fumigatus*. *Aspergillus fumigatus* has been responsible for a number of fatal infections in immune-compromised individuals. In this study, the team treated two strains of mice (a healthy strain, and an immune-compromised strain) with spores from *Aspergillus fumigatus*. After running microarrays on alveolar macrophages, they used the Networks created from a Core Analysis to identify relationships among genes involved in immune response, cell-to-cell signaling, cell interaction, and gene expression. IPA networks were able to identify some key regulatory genes (NF- $\kappa$ B, p38MAPK, and AP-1) that were not identified in their microarrays, but that mediate the early stages of the immune response in alveolar macrophages. Furthermore, the team chose three other genes that were identified in the IPA analysis (TNF $\alpha$ , IL1 $\alpha$ , and CXCL2) for validation by ELISA and EGR1 for knock-out studies. Ingenuity Pathways Analysis was thus able to suggest some new molecular mechanisms of alveolar macrophage response and new hypotheses to take back to the laboratory for investigation.