

## Fighting Lung Cancer in the Laboratory of David R. Jones, M.D.

Each year, lung cancer kills more than 170,000 Americans. That's roughly 440 people every day. Lung cancer kills more Americans each year than prostate, breast, colorectal, and melanoma cancers combined.

Despite significant treatment advances in other cancers, the five-year survival for lung cancer remains a dismal 15%. Total spending in the United States for lung cancer diagnosis and treatment is over \$10 billion a year, yet research on the disease has lagged behind that of other cancers for a number of reasons, including insufficient funding. At the University of Virginia, a team of researchers is committed to changing the outcomes for this deadly disease.

### A Career in Treatment and Research

David R. Jones, M.D., the George R. Minor Professor of Surgery and Chief of Thoracic and Cardiovascular Surgery at UVA, leads the UVA Cancer Center's thoracic oncology program. Under his guidance, the thoracic surgery program has doubled in clinical volume, handling some 1,000 major surgical cases annually. In addition, he has an active lung cancer research program and has established UVA as a leader nationally in clinical trials for lung cancer. Jones is a recipient of the American Association of Cancer Research award for translational research in lung cancer and has received grants from the National Cancer Institute and other foundations and funding agencies.

### Research Programs with Promise

Investigators in the Jones laboratory are pursuing two primary research programs. The first project centers on identifying why most lung cancers are resistant to chemotherapy. Jones and his colleagues have identified a protein abundant in lung cancer cells called nuclear factor kappa B, which regulates chemoresistance in lung cancer. Inhibiting this protein dramatically increases the effectiveness of chemotherapy, resulting in a significant decrease in the size of tumors. Jones and his team have recently translated these laboratory findings into a Phase I clinical trial using two novel, molecularly-targeted drugs available only at UVA. This trial is nearly complete, and early results are promising. The ability to move the study into an expanded, phase II trial will depend on obtaining sufficient funding.



The second project focuses on understanding why lung cancers tend to metastasize (or spread) more than many other cancers. The major reason patients die from lung cancer is metastatic disease. Jones' team has identified a metastasis suppressor gene called BRMS1 that is lost early in the development of lung cancer. Loss of this gene appears to result from specific tobacco carcinogens and the ensuing inflammatory response in the lungs. While clinicians often think of metastases developing late in the course of the disease, experiments performed in the Jones laboratory indicate that lung cancer cells are primed to metastasize much earlier than current theories suggest. Experiments underway focus on how this gene is regulated at a molecular level, and investigate strategies that could be employed to restore it to normal levels in lung cancer cells, thereby decreasing the chance of patients developing metastatic disease.

### Funding Future Research

Lung cancer research in the Jones laboratory shows great promise for the hundreds of thousands of people who either have lung cancer now or will develop it in the future. The development of life-saving drugs depends upon the type of clinically-relevant, translational research taking place in the Jones laboratory. Moving this research forward in the shortest time possible requires a significant investment of resources, and Jones and his colleagues are seeking \$500,000 in private support per project. Gifts of any size make a difference, and support at all levels is welcomed and deeply appreciated.

For more information on joining this effort to fight lung cancer, please contact Jeff Moster at (434) 924-8432 or (800) 297-0102.