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<td>Minna, John D. M.D.</td>
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<tr>
<td>PI Email:</td>
<td><a href="mailto:john.minna@utsouthwestern.edu">john.minna@utsouthwestern.edu</a></td>
<td>Fax:</td>
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<td>Phone:</td>
<td>214 648-4900</td>
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<tr>
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<td>PI Address 1:</td>
<td>Hamon Center for Therapeutic Oncology Research</td>
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<tr>
<td>PI Address 2:</td>
<td>6000 Harry Hines Boulevard, NB8.206</td>
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<td>PI Web Page:</td>
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<td>Contact Phone:</td>
<td>281-483-0968</td>
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<td><a href="mailto:noaccess@nasa.gov">noaccess@nasa.gov</a></td>
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<td>Asaithamby, Aroumougame (The University of Texas Southwestern Medical Center)</td>
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The UT Southwestern Medical Center proposal focuses on the determination and quantitation of risk factors from key genetic, epigenetic and cellular functional changes in the multi-step pathogenesis of lung cancer following space radiation exposure in both human lung epithelial cells in 2D and 3D (organotypic) culture and transgenic mouse models of lung cancer. These assessments are designed to measure events of both radiation-induced cancer promotion (of already-initiated cells) as well as radiation-induced initiation (mutational and epigenetic) events, and include effects on stem cells. 3D culture and animal models will measure risk factors in both tissue surrogates and in vivo lung tissues. These individual risk factors can then be used to develop hypotheses that will permit modeling for overall risk of developing increases in fatal lung cancer from exposure to irradiation that are likely to be experienced by astronauts on deep-space missions. We specifically address Radiation Carcinogenesis Gap 1 (experimental models of tumor development to be extrapolated to human risk projections); and Gaps 3-6 (models of cancer risk to reduce uncertainties in radiation quality effects, dose-rate dependencies, individual radiation sensitivity including genetic and epigenetic factors, age and gender). The new data from this research will be applied in addressing how system biology approaches (Gap 7) can be used to integrate the results so that modeling will improve the prediction of the risk of fatal cancers from exposure to space radiation.

This proposal has 4 Projects:

1. HZE Particle Exposure and the Risk for Human Lung Carcinogenesis;
2. Mouse Models of Lung Cancer after HZE Particle Irradiation;
3. Organotypic (3D) Human and Mouse In vivo Models of Genomic Instability for HZE Particle Induced Lung Carcinogenesis; and
4. Integrating Biomarkers of Lung Cancer Pathogenesis for Risk Assessment after HZE Particle Irradiation.

Projects are supported by Administrative and Bioinformatics, Biostatistics and Database Cores.

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