

Describe clearly and concisely, in language readily understandable to a biomedical scientist who may not be a specialist in the research project's field, the broad objectives, specific aims, general procedures, and the potential significance of the research.

### Project Summary

Testicular cancer and Hodgkin's disease are the most common cancers of men between 18 and 35, the peak reproductive years.<sup>1</sup> With current therapies, more than 70% of patients with these diseases will survive more than 5 years after diagnosis.<sup>2</sup> As a result, preserving the fertility of the survivors has become important. However, impaired sperm quality and sperm chromosomal abnormalities are a concern after cancer treatment.<sup>3</sup> Either the disease or the treatment may cause chromosomal abnormalities, possibly by affecting dividing spermatogonia or spermatocytes. Sperm karyotypes may return to normal after cancer treatment, although the time frame has not yet been established.<sup>3-5</sup> Standard karyotyping is cumbersome, labor-intensive, has low sensitivity, and has a limited use when sperm are not healthy, and has produced conflicting results.<sup>6</sup>

We propose using fluorescence in situ hybridization (FISH), an extremely sensitive technique, in a longitudinal study to determine rates of aneuploidy and diploidy in sperm from men with the testicular cancer and Hodgkin's disease. Comparing samples from before, during, and after treatment will show whether the abnormalities arise from the disease, the treatment, or any specific type of treatment. Samples collected at different intervals after treatment will show whether and when abnormalities return to normal, allowing us to judge how long a cancer survivor should wait after treatment before trying to father a child.

Please provide five Key Words that best describe your project:

- (1) Spermatozoa (2) Testicular cancer (3) Hodgkin's disease  
(4) Chromosomal abnormalities (5) FISH