Press Book example:

Technical Summary of Research Activities: Our laboratory is interested in understanding how gonadal hormones, particularly estrogens, progestins and androgens, regulate brain function and influence the trajectory of brain aging or the development of age-associated neurodegenerative diseases. More specifically, we investigate the cellular and molecular mechanisms by which these hormones regulate the survival of brain cells (neurons and glia). Using cellular, molecular, biochemical and morphometric (microscopy) tools, the goal is to advance our understanding of how hormones function in the adult and aging brain so that we may be in a better position to identify safer and more effective therapeutic strategies for the prevention of age-related disorders like Alzheimer's disease and certain brain cancers (like glioblastoma multiforme). In addition, this research aims to identify biomarkers that predict disease risk as well as the success of a hormone-based intervention, and support the development and application of precision (personalized) medicine.

Non-Technical Summary: Our laboratory is interested in understanding how hormones, particularly estrogen, progesterone and testosterone, regulate brain function, in both health and disease states. Using complementary methods that allow the exploration of which elements of the brain cell’s machinery, including DNA and RNA, are altered, we expect to advance our understanding of how hormones function in the adult and aging brain, and why men and women differ in their risks for various brain disorders that include Alzheimer's disease, stroke and cancer. We expect that the knowledge gained will help lead to safer and more effective treatments for the prevention of such age-related disorders. In addition, our research will yield insight into how we might use the measurement of certain proteins in blood to gauge the risk for a particular disease, in addition to predicting the effectiveness of a hormone in treating brain dysfunction.

Training Opportunities in the Singh Lab: Students, fellows or residents who join Dr. Singh’s lab can expect to receive training in experimental methods in cellular and molecular neuroscience, in addition to developing heightened knowledge/expertise within the broader area of estrogen, progesterone and/or androgen function in the adult and aging brain.