

SUMMARY OF PROPOSED RESEARCH
(Do not exceed the space provided)

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

Sperm processing is a fundamental step in assisted reproductive techniques (ART). Swim-up is most frequently used to process semen specimen as it selects a high number of progressively motile sperm with normal morphology. Cryopreserved (frozen) specimen are increasingly used in ART. Although advances have been made in freezing techniques, recovery of motile sperm after freezing remains poor. It therefore seems reasonable, that selection of good quality pre-freeze human spermatozoa could reduce the loss of motility and fertilizing capacity after cryopreservation.

The aims of this study are 1) to establish whether processing of human sperm by swim-up technique before freezing can reduce post-freeze loss of viability, motility, motion characteristics, and leakage of acrosomal contents, 2) to evaluate whether the hypoosmotic swelling test can be used as a test of viability in fresh and frozen specimens. This test then can be used in assessing the viability of non-motile sperm used in *in vitro* fertilization and in micromanipulation procedures such as intracytoplasmic sperm injection, 3) to analyze whether freezing affects the ability of these spermatozoa to undergo acrosome reaction, a pre-requisite for fertilization. Post-thaw stimulation by calcium ionophore, may also help understand the dynamic effects of freezing on the fertilizing ability of human spermatozoa. This study will enable us in detecting sperm dysfunction in infertile patients with idiopathic male-factor infertility.

Please provide five Key Words that best describe your project:

- (1) Acrosome reaction (2) Cryopreservation (3) Human spermatozoa
(4) Capacitation (5) Viability