Report on participation of the ICMR International fellow (ICMR-IF) in Training/Research Abroad

1.	Name and Designation of ICMR-IF:	**Deepa Bhartiya** Scientist E
2.	Address	Stem Cell Biology Department National Inst for Research in Reproductive Health Jehangir Merwanji Street, Parel, Mumbai 400 012 INDIA
3.	Frontline area of research in which training/research was carried out	Reproductive biology, FSHRKO mice & ovarian cancers
4.	Name and Address of Professor and address of Host Institute	**Ayman Al-Hendy** MD PhD FRCSC FACOG CCRP Professor and Vice Chair Department of Obstetrics and Gynecology Scientific Director Center for Women Health Research Meharry Medical College 1005 Dr. D.B. Todd Jr. Blvd. Nashville, Tennessee 37208 Tel. 615-327-6531 Fax. 615-963-3125 Ahendy@MMC.edu
5.	Duration of Fellowship	14-26 October 2013

6. Highlights of the work conducted

(i) Techniques and expertise acquired

It was a wonderful experience spending time with prof Al-Hendy and provided me a great opportunity to grow in my profession. The main objectives of my visit were (i) to discuss about ovarian stem cell biology with a focus on ovarian cancers and appropriate training on how to expand FSHRKO mice colony.

We have discussed ovarian stem cells in details and also how they may be implicated in ovarian cancers along with Prof GM Saeed [Director, Ovarian Cancer Biology Research, Wayne State Univ, Detroit] and discussed the possibility of writing a combined NIH grant on ovarian cancers in humans as all of us can contribute significantly. Our hypothesis is that a novel population of stem cells (VSELs) residing in the ovary surface epithelium undergo uncontrolled proliferation resulting in ovarian tumors. Thus we decided to generate preliminary data together on 5 samples of ovarian tumors and ascites fluid collected from women with ovarian cancer and then develop the NIH grant proposal. Besides we will write a separate grant using FORKO mice as a model for ovarian cancers.

Establishing a colony of FSHRKO mice at NIRRH will be useful as they are an excellent model of ovarian cancer and other reproductive health issues associated with increased FSH and reduced estradiol levels (status similar to menopause). These mice also show increased incidence of uterine hypertrophy, obesity and bone defects (osteoporosis). They spontaneously develop ovarian tumors by 1 year of age despite no ovulation and suggest gonadotropin theory of ovarian cancer. They will be an excellent system to study various reproductive health issues. I had discussions and was updated by Prof Al-Hendy's staff as to how to maintain FSHRKO mice.

Besides I was also exposed to uterine fibroid biology, importance of Vitamid D on reproductive health and concept of gene therapy since these form major research thrust in Prof Al-Hendy's lab.

(ii) Research results including any papers prepared/submitted Not applicable

(iii) Proposed utilization of the experience in India

Reproductive health issues especially ovarian cancers is a major health burden. Despite several years of research, we still do not understand how ovarian cancers originate. Mostly accepted concept is that repeated ovulations and associated inflammations etc result in cancer in adult life. But FSHRKO with increased FSH and no ovulations exhibit high incidence of cancers at 1 year of age. We will transport these mice to NIRRH for conducting research on various reproductive health related issues. Also we will submit research proposal for funding on human ovarian cancers. Our hypothesis is that the ovarian stem cells (VSELs) whose function (to undergo postnatal oogenesis and primordial follicle assembly) is modulated by FSH get stimulated under conditions of increased FSH and low estradiol (menopause status) resulting in cancers. We will try to demonstrate this and the results may provide better understanding, treatment and management of ovarian cancers and thus improve woman's reproductive health.

ICMR sanction order number: **No. INDO/FRC/452(S-11)/2013-14-IHD**

Date 1st November 2013

Deepa Bhartiya
Scientist E and Head
Stem Cell Biology Dept
NIRRH, Mumbai 400 012