

## NCBS Mouse Genome Engineering Facility Third Mouse Cryobiology / IVF workshop

August 16<sup>th</sup> – 22<sup>nd</sup> 2019

National Center for Biological Sciences (NCBS), Tata Institute of Fundamental Research, GKVK PO,  
Bellary Road, Bengaluru 560065, INDIA

### COURSE SCHEDULE

#### **Thursday, August 15<sup>th</sup>**

**Travel – Arrival – guest house Check In.**

*Campus NCBS Guest House or Mandara Guest Hostel- Yelahanka New Town.*

#### **Day 1 - Friday, August 16<sup>th</sup>**

- |                  |  |
|------------------|--|
| 7.30 or 8.30 am  | Shuttle from Mandara Hostel to NCBS Campus (25 minute ride)  |
| 8.15 - 9.15 am   | Breakfast at NCBS Canteen  |
| 9.00 - 9.30 am   | <b>Workshop Registration</b> - (venue: RASPURI)  |
| 9.30 - 10 am     | <b>Course overview / Introductions</b> (venue: RASPURI)<br><i>Lily, NCBS-</i>  |
| 10 - 11 am       | <b>Cryo-biology &amp; assisted reproductive technologies (ARTs)</b><br>(venue: RASPURI) course - <i>Robert Taft, JAX</i>   |
| 11 – 11.30 am    | Tea/Coffee Break - (venue: RASPURI)  |
| 11.30 - 12.45 am | <b>Mouse Sperm Cryopreservation and Recovery: main protocols and variants – Reproductive Anatomy and Biology</b><br>(venue: RASPURI) - courses - <i>Robert Taft, JAX</i> |

- 12.45 - 1.45 pm Lunch at Campus Canteen
- 1.45 – 2.15 pm Short Sponsor talk: **James Hoffman / Suresh Poosala Jackson Laboratories (JAX)**. (venue: RASPURI)
- 2.15 – 4.15pm **Mouse Sperm cryopreservation** (JAX protocol) demonstrations and lab practicals - (**Lily, & MGEF staff**) (venue: MGEF Lab)
- 4.15 - 4.45 pm Tea/Coffee Break - (RASPURI)
- 4.45 - 6 pm **Embryo Transfer & handling Pipette design and embryo handling - pulling - forging of pipettes / loading embryos, media and air bubble- mini lecture and lab practical - Lily, MGEF staff** (venue: MGEF offices & Lab)
- 6 pm Daily wrap up / discussion - (venue: MGEF offices)
- 7.30 - 8.30 pm Diner at Campus Canteen
- 8.30 pm Return Shuttle to Mandara Hostel

### **Day 2 - Saturday, August 17<sup>th</sup>**

- 7.30 am Shuttle from Mandara Hostel to NCBS Campus
- 8.15 - 8.45 am Breakfast at NCBS Canteen
- 8.45 - 9.45 am **International Strain Nomenclature Standards** & record keeping and strain sharing implications  
Lecture - **Robert Taft, JAX** (venue: RASPURI)
- 9.45 – 10.45 AM** **Cryo-repositories / Data management** / Quality Control / record keeping & stock sharing policies- (venue: RASPURI) lecture & discussions - **Lily**
- 10.45 – 11.15 am Tea/Coffee Break (venue: RASPURI)

- 11.15 – 12.45**      **Germplasm Refrigerated/Cold transportation part1** - refrigerated and room temperature transportation of mouse germplasm and organs  
 demos & discussions – 4C storage/transportation of Caudas- **Lily and MGEF Staff**- (venue: MGEF Lab)
- 12.45 - 2 pm Lunch at Campus Canteen
- 2pm – 4pm**      **Mouse Sperm cryopreservation** (MGEF/EMMA protocol) demonstrations and lab practicals - (**Lily, & MGEF staff**) - (venue: MGEF Lab)
- 4 – 4.30 pm      Tea/Coffee Break (venue: RASPURI)
- 4.30 - 5.30pm**      **Introduction to In Vitro Fertilisation (IVF) -**  
 (venue: RASPURI) - course - **Robert Taft, JAX** (& **Lily**)
- 5.30 pm      Daily wrap up / discussion –
- 7.30 - 8.30 pm      Diner at Campus Canteen
- 8.30 pm      Return Shuttle to Mandara Hostel

### **Day 3 - Sunday, August 18<sup>th</sup>**

#### **JAX IVF day**

- 7.30 am      Shuttle from Mandara Hostel to NCBS Campus
- 8.00 - 8.30 am      EARLY breakfast at Campus Canteen
- 8.30 - 11.45 am      **Sperm Cryorecovery & IVF lab practicals (JAX protocols)-**  
 (**Lily, & MGEF staff**) - (venue: MGEF Lab)
- 10 am      Tea/Coffee Break - (RASPURI)
- 11.45 - 12.45 pm      **IVF - implementation and troubleshooting** – discussion with **course faculty & MGEF staff** on equipment / reagent details / course on assessment of sperm & oocyte /embryo quality. (venue: MGEF lab and offices)
- 12.45 - 2 pm      Lunch at Campus Canteen

- 2 - 3 pm **MGEF staff short talk** on their Cryo/IVF/ET experience, data and results.  
(venue: RASPURI)
- 3 - 4 pm **IVF (JAX) lab practical - *continued*** - (venue: MGEF Lab)  
washes and o/n incubation (*Lily, & MGEF staff*)
- 4 – 4.30 pm Tea/Coffee Break - (venue: RASPURI)
- 4.30 – 5.30 pm **Cold transportation part2** – flushing of 2cell embryos and 2cell cold M2 storage/transportation-  
demos & discussions - **Lily and MGEF Staff** - (venue: MGEF Lab)
- 5.30 pm Daily wrap up / discussion - (venue: RASPURI)
- 7.30 - 8.30 pm Diner at Campus Canteen
- 8.30 pm Shuttle (workshop specific transportation) to Mandara Hostel

### **Day 4 - Monday, August 19<sup>th</sup>**

#### **MGEF/EMMA IVF day**

- 7.30 am Shuttle from Mandara Hostel to NCBS Campus
- 8.00 - 8.30 am EARLY breakfast at Campus Canteen
- 8.30 - 11.45 am **Sperm Cryorecovery & IVF lab practicals (MGEF/EMMA protocols)-**  
**+ Cold transport Cauda/sperm recovery from day 2 & IVF**  
(EMMA/MGEF protocols) (venue: **MGEF Lab**) (*Lily, & MGEF staff*)
- 10 am Tea/Coffee Break - (venue RASPURI)
- 11.45am- 12.45pm **JAX IVF -2cell assessment – washes and o/n culture (KSOM)**  
Lab practical- (*with Lily, & MGEF staff*) - (venue: MGEF Lab)
- 12.45 - 2 pm Lunch at Campus Canteen
- 2 - 3 pm *Lily* lecture: **Introduction to Mouse Genetics and latest trends in Mouse genome Engineering part1** (venue: RASPURI)
- 3 - 4 pm **IVF (EMMA/MGEF) lab practical - *continued*** - (venue: MGEF Lab)  
washes and o/n incubation (*Lily, & MGEF staff*)
- 4 – 4.30 pm Tea/Coffee Break - (venue: RASPURI)

- 4.30 -5.30 presentation/demo of different stages of embryos – morphological defects and phenotypes of healthy and unhealthy embryos and sperm / germplasm quality assessment / proper implantation requirements – demos, discussions and practicals (with Lily , & MGEF staff) - (venue: MGEF Lab)
- 5.30 pm Daily wrap up / discussion - (venue: RASPURI)
- 7.30 - 8.30 pm Diner at Campus Canteen
- 8.30 pm Shuttle (workshop specific transportation) to Mandara Hostel

### **Day 5 - Tuesday, August 20<sup>th</sup>**

- 7.30 am Shuttle from Mandara Hostel to NCBS Campus
- 8.00 - 8.30 am EARLY breakfast at Campus Canteen
- 8.30 - 9.45 am RAT IVF and cryopreservation procedures  
SKYPE lecture - **Barbara Stone, Paratechs**  
(venue: RASPURI)
- 9.45 - 10.30 am **Introduction to embryo cryobiology and discussions on the different embryo cryo protocols** = two step freezing vs. vitrification / straws vs. vials course/discussion (**Lily**) (venue: RASPURI)
- 10.30-11 am Tea/Coffee Break (RASPURI)
- 11-11.30 Assessment of EMMA/MGEF IVF results and embryo culture development – screening of 2cell embryos from MGEF/EMMA IVf & 4 cell embryos from JAX IVF. (with Lily , & MGEF staff) - (venue: MGEF Lab)
- 11.30 – 12.45 Embryo (2 & 4 cell) vitrification** in straws (Mo Guan / EMMA method). Demo & lab practical- (with Lily , & MGEF staff) - (venue: MGEF Lab)
- 12.45 - 2 pm Lunch at Campus Canteen
- 2pm - 3 pm **Lily** lecture: **Introduction to Mouse Genetics and latest trends in Mouse genome Engineering part2** (venue: RASPURI)  
  
+ general open discussions on Mouse Transgenesis ethical & legal considerations - production and sharing of mouse stocks in India.
- 3pm – 4pm discussions on breeding and maintenance of Pseudo-pregnant foster females for Embryo Transfers/ rederiavtion purposes. Short demo film on oviduct embryo transfer. (**Lily**) (venue: RASPURI)
- 4pm- 4.30pm Tea/Coffee Break (RASPURI)

- 4.30-5.30pm mouse male Vasectomy- demos and practicals (with Lily, & MGEF staff) - (venue: MGEF Lab)
- 5.30 pm Daily wrap up / discussion -
- 7.30 - 8.30 pm Diner at Campus Canteen
- 8.30 pm Shuttle (workshop specific transportation) to Mandara Hostel

### **Day 6 - Wednesday, August 21<sup>st</sup>**

- 7.30 am Workshop Shuttle from Mandara Hostel to NCBS Campus
- 8.00 - 8.30 am EARLY breakfast at Campus Canteen
- 8.30 -9.45 am Non Surgical Embryo Transfer (NSET)  
SKYPE lecture - Barbara Stone, Paratechs  
(venue: RASPURI)
- 9.45 - 10.45 am **Genetic monitoring & genetic drift** in breeding facilities- backcrossing or reviving cryo stocks and other strategies to maintain mouse strain genetic quality. Importance and implications of the strain genetic background  
**lecture Robert Taft, JAX** –(venue: RASPURI)
- 10.15 – 10.45 am Tea/Coffee Break (venue: RASPURI)
- 10.45 – 11.45 am 2-4 cell Embryo Cryorecovery– lab Practical - Lily and MGEF Staff  
(venue: MGEF Lab)
- 11.45 – 12.30 embryo culture assessment from days 3,4 & 5 (8 cell/morulae/ blasto) – short course on embryo transfer requirements (stage of embryos vs stage of pseudo-pregnant females / and type of embryo transfer) Lily and MGEF Staff  
(venue: MGEF Lab).
- 12.30 - 2 pm Lunch at Campus Canteen
- 2 – 6 pm oviduct and uterine **Embryo Transfers (surgical and non surgical with NSET device)**  
lab practical - (venue: MGEF Lab) (Lily, & MGEF staff)
- 4- 4.30 pm Tea/Coffee Break / distribution of feed-back forms (RASPURI)

6pm Daily wrap up (venue: MGEF offices)

*COURSE DINER – outside campus (course faculty + participants + ACRC support staff + IAUC members) - (workshop specific transportation)*

**Day 7 - Thursday August 22<sup>nd</sup>**

- 7.30 am Shuttle from Mandara Hostel to NCBS Campus
- 8.15 - 8.45 am Breakfast at NCBS Canteen
- 8.45 - 9.45 am **Colony management, record keeping and health monitoring at the NCBS Animal Care and Resource Centre** - lecture **Mohan** - (venue: RASPURI)
- 9.45 – 10.15 presenting the ISTT (International Society for Transgenic Technologies)-** (venue: RASPURI) **Lily**
- 10.15 – 10.45 am Tea/Coffee Break (venue: RASPURI) / Group photo
- 10.45 – 11.45 am Group1: demos and discussions on Media preparations and osmolarity checks (MGEF lab)**  
**Group2: V2 SPF Facility Tour**
- 11.45 – 12.45pm Group1: V2 SPF Facility Tour**  
**Group2: demos and discussions on Media preparations and osmolarity checks (MGEF lab)**
- 12.45 pm - 2 pm Lunch at Campus Canteen
- 2pm – 3.30pm Course wrap Up** - (venue: (MGEF lab)  
Feedback forms, & closing ceremony and certificate distribution.

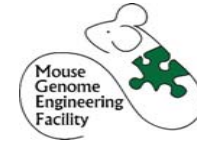
**END of COURSE**

Afternoon Buggies or evening Shuttle back to Mandara.

**Departures / Travel**



## Mouse Cryobiology & IVF Workshop #3



	DAY-1: Friday Aug 16th	DAY-2: Sat Aug 17th	DAY-3: Sun Aug 18th	DAY-4: Mon Aug 19th	DAY-5: Tues Aug 20th	DAY-6: Wed Aug 21st	DAY-7: Thur Aug 22nd
08:00							
09:00	Registration Course Overview - <b>Lily</b>	Strain Nomenclature - <b>Rob</b>	Sperm CryoRecovery & IVF [JAX]	Sperm CryoRecovery + Day2 Cold Cauda sperm harvest & IVF [MGEF/EMMA]	intro to RAT IVF - <b>Barbara Skype</b>	NonSurgical Embryo Transfer (NSET) lecture- <b>Barbara Skype</b>	Colony Management & Health Monitoring @ ACRC- <b>MOHAN</b>
10:00	Cryo & ARTs - <b>Rob</b>	Repositories & data Management - <b>Lily</b>			BREAK	BREAK	
11:00	BREAK	BREAK				BREAK	BREAK / Group PHOTO
12:00	Protocol Variants & Reproductive Biology - <b>Rob</b>	Germplasm Cold transport- part1 - course & practicals - prep of 4C Caudas	IVF discussions & troubleshooting	2 cell IVF assessment - washes & embryo culture KSOM [JAX]	2 cell IVF & 4cell culture assessment - Embryo Vittrification	Embryo Cryorecovery & culture	Media Preparations + V2 -SPF2 Facility TOUR in 2 alternative groups
13:00	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14:00	JAX - <b>James/Suresh</b>	Sperm Cryo [ MGEF/EMMA]	MGEF staff talk - MGEF results & Experience	<b>Lily</b> - Intro To mouse Gene editing & transgenesis- Part1	<b>Lily</b> - Intro To mouse Gene editing & transgenesis- Part2	Surgical and nonSurgical Embryo Transfer practicals	<b>COURSE wrap up, feed back &amp; closing ceremony</b>
15:00	Sperm Cryo [ JAX]		IVF washes & culture [ JAX]	IVF washes & culture [MGEF/EMMA]	<b>Lily</b> - setting up of Pseudo- pregnant females & ET movie		
16:00	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	
17:00	Pipette Design & Embryo Handling	Introduction to IVF - <b>Rob</b>	Germplasm Cold transport- part2 - course & practicals - 2 cell flush and M2/4C storage	embryo staging - sperm & embryo quality analysis	Male Vasectomy	[-> feed-back forms <-] Surgical and nonSurgical Embryo Transfer practicals	
18:00							

**Venue: lectures & coffee breaks at RASPURI / lab Practicals in MGEF labs**