

## **LABORATORY ANIMAL SERVICES DIVISION**

Research Scientist & Head	...	Dr. Aye Win Oo BVS(IAHVS, Yezin), MVMedSc (Rep of Korea)							
Research Officer	...	Daw Mu Mu Win BSc(Zoology)(RASU) ...	Daw Kyi Kyi Win Zaw BA(Myanmar)(UDE), Dip Global English(YU)						
Research Assistant (2)	...	Daw Than Myat Htay BA(Philosophy)(WC) ...	Daw Khin Hnin Yi BSc(Zoology)(WC) ...	Daw Mya Mya Sein BA(Psychology)(UDE)					
Research Assistant (3)	...	Daw Thandar Win BA(Geography)(UDE) ...	U Aung Kyaw Zaw BA(Myanmar)(UDE) ...	Daw Hnin Ohnmar Oo BSc(Physics)(YU), Dip. Global English(YU)					
Research Assistant (4)	...	U Myint Oo ...	U Tint Zaw Maung						
Laboratory Attendant	...	U Mahazan ...	Daw Hla Hla Win ...	Daw San San Myint ...	U Myo Htat ...	U Wanna Htun ...	U Aung Myat BA(Geography)(UDE) ...	Daw Yi Yi Win ...	U Aung Thu Myat

The responsibilities of the Laboratory Animal Services Division are: to produce and maintain good quality laboratory animals, to maintain and build up research facilities for experimental animal models, and to provide various strains of laboratory animals to various divisions from Department of Medical Research and other Institutes for their research purposes and to conduct research works on experimental animals.

### **SERVICES PROVIDED**

#### **1. RESEARCH CAPACITY STRENGTHENING**

##### **1.1 . ROUTINE SERVICES**

###### **1.1.1. Breeding, Supply and Care of Laboratory Animals**

These services are major responsibilities of the division.

###### **1.1.1.1. Breeding of Laboratory Animals**

Routine breeding of the following experimental animals were carried out during the period under report.

Types of Animal	In		Out		Total (Balance)
	Previous	Born	Issued	Dead/Disposed	
Rabbit	51	17	7	9	52
Guinea pig	61	18	28	4	47
Rat	248	186	127	11	296
Mouse (icr)	703	683	617	-	769
Mouse (ddy)	430	631	568	22	471
Mouse (AKR)	342	30	-	5	367
Mouse (BALB/c)- Japan	134	20	-	4	150
Mouse (BALB/c) - Thai	654	180	70	34	730

#### 1.1.1.2. Routine Supply of Laboratory Animals

During the period under report, the following types and numbers of experimental animals were issued to the various divisions of DMR and other institutions.

No	Name of Divisions and Institutions	Types & numbers of animals supplied			
		Rabbits	Guinea pigs	Rats	Mice
1.	DMR				
1.1.	Entomology	-	-	-	30
1.2.	Pharmacology	4	8	112	880
1.3.	Vaccine Quality Control	3	-	-	195
1.4.	Pyin Oo Lwin Branch	-	-	-	50
2.	University of Medicine (2)	-	6	15	40
3.	FDA	-	14	-	-
	Total	7	28	127	1195

#### 1.1.1.3 Care of laboratory animals

Regular works of division were carried out according to the following schedules.

Monday	- change of bedding
Tuesday	- cleaning of corridors and building
Wednesday	- making of animal pellet food
Thursday	- cleaning the animal cages, water bottles and utensils
Friday	- room cleaning and check the conditions of animals, making of animal pellet food

#### 1.1.2 Incineration of waste disposal

Laboratory animal services division is responsible for incineration of waste disposal such as blood bags, infectious syringes and needles, dead animals' bodies and other biological product by using the incinerator. The waste disposal from Technology Development Division, Vaccine Quality Control Division, Biological Toxicology Research Division, Pharmaceutical Toxicology Research Division, Pathology Research Division, Parasitology Research Division, Immunology Research Division, Virology Research Division and Experimental Research Division were received. During the year under report, a total of 24 incineration works were performed.

## 1.2 SPECIAL SERVICES

### 1.2.1 Care of experimental laboratory animals from other research divisions of DMR

Laboratory animal services division is taking care of two goats from Experimental Medicine Research Division and five geese from Virology Research Division for their research purposes.

### 1.2.2 Breeding and maintenance of BALB/c strain of mice from Thailand

BALB/c strain inbred mice (2 males and 3 females) were imported from National Laboratory Animal Centre, Mahidol University, Thailand in 1999 and have been bred in special mice house. There are 730 numbers of BALB/c strain mice in the division now.

### 1.2.3 Breeding and maintenance of icr strain from Republic of Korea

Mice of icr strain (20 males and 60 females) were imported from CJ Co., Republic of Korea in 2006 and have been kept under special care. To date, a total of 769 icr strain mice have been bred in the Division.

## 1.3.ACADEMIC

Sr.	Name	Course	Responsibility
1.	Dr. Aye Win Oo	Research Methodology Workshop(2015)	Facilitator
		Training on handling and breeding of laboratory animals in DMR (Yangon)	Trainer

## RESEARCH PROJECTS

### 1. ENVIRONMENTAL HEALTH

#### 1.1 Effect of different lighting conditions on breeding performance of ddy strain mouse (*Mus musculus*) husbandry in DMR

Circadian physiology and behavior are the harmonized consequence of the endogenous clock and the environmental L/D cycle. Interestingly, interaction affected the life span resulting increased mortality of wild type mice in a shortened L/D cycle. Ninety day old 15 males and 45 females of laboratory mouse ddy strain from DMR (mean body weight of male or female = 25-28g) were selected and divided into three groups. 1:3 (one male with three females in one cage) mating ratio was performed and there were five cages for each group. Different lighting condition for each group in separated room was created and performed. Over first, second and third consecutive gestations, the following variables were monitored: litter size, number of animals born alive on 21 days, number of animals weaned per litter at 21 days. The reproductive performance was then evaluated using the inclusion of these variables in their gestation and birth, viability, lactation, survival success, mating success and production. See table below.

Compared reproductive performance of ddy strain mice among three different lighting conditions

No.	Indicators	8:16 hours (control)	12:12 hours	8:16 hours (low light)
1	Fertility	100 %	100 %	100 %
2	Delivery	100 %	100 %	100 %
3	Litter Size	438 (Mean=9.73)	435 (Mean=9.67)	361 (Mean=8.02)
4	Mortality	Nil (0%)	Nil (0.0%)	8 (2.22%)
5	Weaning	438 (100%;438/438)	435 (100%;435/435)	353 (97.78%;353/361)

Reproductive performance of ddy strain mice among three different lighting conditions were observed in first, second and third gestation of this study. The results showed that intensity of lighting and provision of lighting in the environment slightly influenced in breeding nature of mice, in a significant way through, the evaluated parameters above. However, suitable light intensity and daily good light/dark condition must be provided for physiological and psychological requirement of laboratory mice breeding and essential to their health and well-being.

1.2 Determination of biochemical and haematological parameters in mice (icr strain) of Department of Medical Research

Clinical pathology data of animal models used in various researches play an important part in non-clinical toxicity studies and safety evaluations of new drugs, food additives, and chemicals. An important reason for some haematological parameters in laboratory animals before blood collection is to be variability of some clinical chemistry parameters among their age and sex conditions. This study detected the haematological and biochemical activities of albino mice, as indicated by haemoglobin content, the number of blood platelets, and WBC count as well as serum triglyceride, cholesterol, total protein, albumin and creatinine levels by using haematology analyzer and blood chemistry analyzer. Reference values of haematology and biochemistry parameters collected were described in the tables as follow.

Hematological parameters of icr mice		
	Male (mean)	Female (mean)
RBCs ( $\times 10^6/\text{mm}^3$ )	7-9	7-8.5
Hemoglobin (g/dL)	10.2-15.5	10.2-15.6
Total leucocyte count ( $\times 10^3/\text{mm}^3$ )	7-14	6-12
Neutrophils (%)	10-40	10-40
Eosinophils (%)	0-4	0-4
Basophils (%)	0-0.3	0-0.3
Lymphocytes (%)	55-95	55-95
Monocytes (%)	0.1-3.5	0.1-3.5
Platelets ( $\times 10^3/\text{mm}^3$ )	160-410	160-410

Biochemistry parameters of icr mice (n $\pm$ SD)		
	icr (male) Mean Value	icr (female) Mean Value
Glucose (mg/dL)	106-278	95-265
Creatinine (mg/dL)	0.5-0.8	0.5-0.8
ALT (IU/L)	99 $\pm$ 86.3	96 $\pm$ 81.5
AST (IU/L)	26-120	25-118
Total cholesterol (mg/dL)	63-174	60-170

## LABORATORY ANIMAL SERVICES DIVISION (POL)

Research Scientist & Head	...	Daw Sandar Lin BSc (Hons), MSc (Zoology) (YU)
Research Scientist	...	Daw Htay Yee BSc (Hons), MSc (Zoology) (MU), Postgraduate diploma (Aqua tech) (YTU), MS (Aqua tech) Biotechnology (YTU)
Research Assistant (3)	...	Daw San San Aye BA (Business Management) (UDE)
	...	Daw Su Myat Htway BSc (Zoology) (UDE)
	...	U Kyaw Kyaw Wai BA (Law) (UDE)
Research Assistant (4)	...	Daw Nyunt Nyunt BA (History) (Meikhtila University)
	...	Daw Aye Aye Myint
Laboratory Attendant	...	Daw Thet Htar Hlaing BSc (Zoology) (UDE)
	...	Daw Yoon Mi Mi BA (Philosophy) (UDE)
	...	Daw Than Tint
	...	Daw Aye Aye Shwe

The responsibilities of the Laboratory Animal Services Division are: to produce and maintain good quality laboratory animals, to maintain and build up research facilities for experimental animal models and to provide laboratory animals to various divisions of Department of Medical Research (Pyin Oo Lwin Branch).

### SERVICES PROVIDED

#### 1. RESEARCH CAPACITY STRENGTHENING

##### 1.1 ROUTINE SERVICES

##### 1.1.1 Breeding, Supply and Care of Laboratory Animals

These services are major responsibilities of the division.

##### 1.1.1.1 Breeding of Laboratory Animals

Routine breeding of the following experimental animals were carried out during the period under report.

Types of Animal	In			Out			Total (Balance) 31 <sup>st</sup> December 2015
	Previous	Born	Total	Issued	Dead/ Disposed	Total	
Rabbit	12	-	12	-	-	-	12
Guinea pig	4	-	4	-	2	2	2
Rat	155	87	242	132	64	196	46
Mouse (icr)	70	109	179	71	68	139	40

##### 1.1.1.2 Routine Supply of Laboratory Animals

During the period under report, the following types and numbers of experimental animals were issued to the various divisions of DMR (POLB).

No.	Name of Divisions	Types & numbers of animals supplied			
		Rabbit	Guinea pig	Rat	Mouse
1.	DMR (POLB)				
1.1	Pharmacology Reaearch Division	-	-	68	54
1.2	Entomology Reaearch Division	-	-	-	17
1.3	Biochemistry Reaearch Division	-	-	64	-
	Total	-	-	132	71

#### 1.1.1.3 Care of Laboratory Animals

Regular works of division were carried out according to the following schedules.

Monday	-	change of bedding
Tuesday	-	making animal pellet food
Wednesday	-	corridors and building cleaning
Thursday	-	cleaning the animal cages, water bottles and utensils
Friday	-	room cleaning and check the conditions of animals