# AMMRA:
# form communication to integration

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# History of AMMRA

- April 2006, Shanghai, AMMRA
  - Asian Mouse Mutagenesis and Resource Association
  - President: Kenichi Yamamura
- Mission
  - To promote the mouse mutagenesis projects and to facilitate access to mouse resources in Asia
- Goal
  - Use of mouse models for understanding the genome function and improvement of human health"

# Founding members of AMMRA
## key institutions for mouse resource/service

- Japan
  - CARD, Kumamoto University, Kumamoto
  - BioResource Center, REKIN, Tsukuba
- Korea
  - Bio-Evaluation Center, KRIBB, Daejeon
- China
  - MARC, Nanjing University, Nanjing
  - Shanghai Laboratory Animal Center, CAS, Shanghai
  - Inst. Laboratory Animal Science, CAMS, Beijing
  - Shanghai Research Center for Model Organisms, Shanghai
- Taiwan
  - National Laboratory Animal Center, Taipei
- Singapore
  - Biological Resource Center, Biopolis

# Annual Meetings of AMMRA

- 2007, Nanjing, China

  IDB, Fudan University

  - 2008, Daejeon, Korea
  - 2009, Kumamoto, Japan
  - 2010,Taibei, Taiwan, joint with AFLAS
  - 2011, Singapore, joint with SLAS
  - 2012, Nanjing, China, Joint with AMPC

    2nd President: Xiang Gao

# Communication among centers

- Resource center
  - BioRes Ctr, CARD, SLAC, MARC, NLAC, IDB, KRIBB, BRC
  - PB insertional mutants(>7000 lines): IDB
  - Trap mutants (>500 strains): CARD
  - KO mutant(>400 strains): MARC, SRCMO
  - Cryopreservation is required!
- Transgenic service center
  - MARC, SRCMO, CARD, BioRes Ctr, NLAC, KRIBB
- Research center
  - MARC, IDB, BioRes Ctr, KRIBB

# More consortium……

- AMPC
  - Asian Mouse Phenotyping Consortium
  - July 2010, Tsukuba, Japan
  - June 2011, Seoul, Korea
  - March 2012, Nanjing, China
- Memebers
  - JMC/BioRes Ctr (Wakana), KMMPC/SNU(Seong), BMRC/KRIBB(Nam), NLAC(Jiang) MARC/NJU(Gao), TMC/AC(Yan), IDB/FudanU(Wu),
- Promote the coordination and development of advanced strategies and service platforms for phenotyping and informatics.

# Opportunities, Challenges, and Solutions

O:

- Catch with the international trend
  - IKMC hub?
  - IMPC member: BioRes Ctr & MARC
- Promote the funding from national agency
  - ChCOMM grant, PB grant, Japan/Korea/Taiwan KO grants

C:

- Where is AU?
- Broad Communication vs. Integrated program

S (undergoing collaboration):

- Joint resource database
- Standard SOPs for phenotyping and other procedures
- Training courses (from colony management to phenotyping)

# Mouse Resource and Service in MARC

# History of mouse genetics in China

- *Before 2000*

  Fancy mice: paintings from Beijing Palace Museum

  Sporadic reports on spontaneous mutants with defects on eyes and fur color ;

- *From 2001 to 2006*

  National Resource Center for Mutant Mice

  Mutagenesis platform: ENU, KO and PB

- *2006 to 2009*

  Government sponsored mutagenesis programs in Nanjing, Shanghai and Beijing

- *Beyond 2009*

  Focus on development of disease models and new approaches for mutagenesis

## MARC (National Resource Center for Mutant Mice)

MOST of China initiated a 3-year project (50 mil RMB) to establish the NRCMM and called for applications in 2001. Our proposal from Nanjing University was funded. MARC was established for executing the program.

| | |
|---|---|
| 2002.5 | construction started |
| 2004.1 | mouse facility running,two labs moved in |
| 2006.4 | co-found AMMRA |
| 2006.10 | AAALACI accreditation |
| 2007.1 | initiation of ChCOMM |
| 2010.11 | initiation of expansion plan |
| 2011.9 | join IMPC |

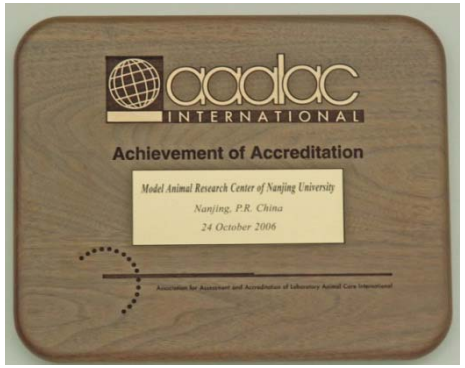
# MARC/NRCMM Services

- Strain Breeding and Distribution
- Cryopreservation / Rederivation
- Genome Modified Mice Establishment
- Mice Phenotyping Platform
- Training and Education

# Mouse Facility current Standing

- Facilities in two buildings (˜2000 $m^2$ )
  Research facility
  Production facility

- > 850 strains of mutant mice
  live : 600 strains
  cryopreserved : 533 strains




- SPF barrier with >25,000 IVC cages

# NEW MARC

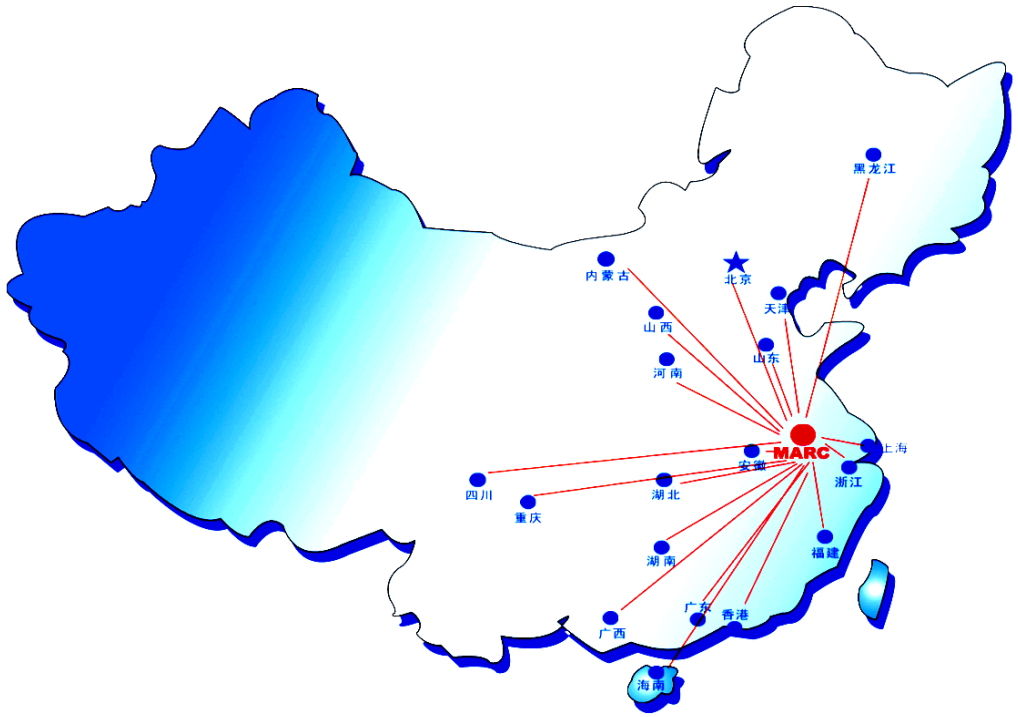
- *From 2013*

  Generating more KOs: ES to mouse phenotyping and disease model development

New facility with 65,000 IVCs

TOTAL 90,000 IVCs

# Collaboration and Service Region in China and abroad




More than 200 laboratories in over 20 provinces

---UK

- MRC/Sanger/Beatson…

---US

- UC Davis/Jackson/Harvard …

---Asia (AMMRA)

- RIKEN/NLAC…

---other regions

- Western Australia University (Australia)

# Mutant strains in China：2001-2010

| | 2001 | 2010 |
|---|---|---|
| transgenic | < 3 | > 500 |
| gene targeting | 0 | > 400 |
| other mutant | < 4 | ? |
| imported | < 20 | > 1000 |

# A Young Research Institute

**17 laboratories, 174 employees, 146 PhD students**

**Focuses:**

Cardiovascular research
Metabolic diseases
Tumor biology
Circadian clock regulation
Reproductive biology
Developmental regulation

**Models:**

Mouse / Zebrafish / Xenopus /Drosophila

Mission:

perform biomedical research

provide trainings in disease models

center for mouse mutagenesis and resource

Standing:

more than 200 employers

more than 100 graduate students/postdocs

over 800 strains of mice

17 research laboratories

publish more than 50 papers per year

capable of generating over 150 KO/year

# 17 PIs from oversea joined in

Just come out!

Cell

# Generation of Genetically Modified Mice by Oocyte Injection of Androgenetic Haploid Embryonic Stem Cells

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**SUMMARY**

Haploid cells are amenable for genetic analysis. Recent success in the derivation of mouse haploid

1978; Latham et al., 2002; Modliński, 1975; Tarkowski and Rossant, 1976), embryonic stem cells (ESCs) established from these haploid embryos have turned out to display a diploid karyotype (Kaufman et al., 1983). In humans, near-haploid cell lines have