

International training course on

# Rodents and Rodent-born disease

**6-10 October 2018**

**Akanlu, Kabudar Ahang, Hamadan, Iran**

## **Organizers**

- Research Centre for Emerging and Reemerging infectious diseases, Pasteur Institute of Iran, Tehran, Iran
- Centre for Communicable Diseases Control and Prevention, Ministry of Health and Medical Education, Tehran, Iran

## **Partners**

- World Health Organization, Geneva, Switzerland
- World Health Organization, EMRO, Egypt
- National Museum of Natural History, Paris, France
- Slovenian Museum of Natural History, Slovenia
- Swedish University of Agricultural Sciences, UMEÅ, Sweden
- Ferdowsi University of Mashhad, Mashhad, Iran

## **Venue**

The course will be held in the Research Centre for Emerging and Reemerging infectious diseases which is the national reference center for diagnosis and research on Plague, Tularemia and Q fever in Iran. It is a branch of Pasteur Institute of Iran located in Western Iran.

## **Duration**

The course will take place in five working days (6-10 October 2018).

## **Target Audience**

Health care professionals in charge of hygiene and rodents.

## Introduction

Rodents are the largest order of living mammals, comprising approximately 42% of global mammalian biodiversity. With almost 2277 known species in 33 families, rodents have nearly a worldwide distribution.

The majority (60.3%) of emerging infectious disease (EID) events are caused by zoonotic pathogens. Furthermore, >70% of these zoonotic EID events were caused by pathogens with a wildlife origin. Rodents can cause significant economic losses (primarily through feeding on stored food) and increase health risk by transmitting various infectious agents to human. Rodents are well-known reservoirs and hosts for a number of infectious diseases (e.g. Plague, Leptospirosis, Leishmaniasis, Lass Fever, and other viral hemorrhagic fevers) and play an important role in their transmission and spreading.

In last 50 years, more than 1300 novel human pathogen species have been identified in different categories. Mammals are the main source of these findings (>70%), and rodents are one of those groups with high number of new pathogen species (>15%). Rodent borne diseases have always been a public health concern over the world. Urbanization and Global climate change has also created greater awareness with regards to the importance of rodent control.

Due to great importance of rodent-borne diseases effects on public health burden, this workshop is designed to provide the necessary knowledge on rodent ecology and behaviour for both ground staff and policy planners to plan and implement appropriate programs to mitigate damage and control disease transmission.

It is expected that the participants improve their knowledge and practice regarding surveillance, diagnosis, and clinical management of rodent born disease and enhance their abilities to investigate the impact of these disease on public health burden in their countries.

## Outlines of the Course

- **Rodents**
  - An overview of rodent diversity (systematics, cryptic diversity)
  - Population dynamic of rodent (outbreaks, cyclicity, seasonal variations, spatial synchrony etc.)
  - Synanthropy of small rodents
  - How can we detect and sample rodents in the field?
  - Monitoring techniques for rodents
  - Ethical issues
  - Human and rodent interactions: positive and negative (public health, crop problems) interactions
- **Rodents and zoonotic diseases**
  - Leishmaniasis
  - Leptospirosis

- Plague
- Tularemia
- Lassa Fever
- Toxoplasmosis
- Hantaviruses
  - o Ecology of hantaviruses (in particular Puumala hantavirus)
- Arenavirus
- **Factors affecting the distribution of rodents and rodent borne diseases**
  - Urbanization
  - Climate change
- **Ecologically-based rodent management**
  - Rodenticides
  - Physical control
  - Ecological Management
  - Biological Control
  - Urban rodent control
- **Surveying for rodent disease**
  - International experiences
  - Iran Experiences

### **Team of Instructors**

- **Dr. Mohammad Mehdi Gouya**, Infectious disease specialist, Director of center for communicable disease control, Ministry of Health, Tehran, Iran ([More information](#)).
- **Dr. Eric Bertherat**, Specialist in Public Health and Tropical medicine, World health Organization, Geneva ([More information](#)).
- **Dr. Ehsan Mostafavi**, Epidemiologist, Director of Research centre of Emerging and Reemerging Infectious Diseases, Pasteur Institute of Iran, Tehran, Iran ([More information](#)).
- **Dr. Peter Mala**, Epidemiologist, World health Organization, EMRO, Cairo.
- **Dr. Aude Lalis**, Institut de Systématique, Évolution, Biodiversité, National Museum of Natural History in Paris, France ([More information](#)).
- **Dr. Violaine Nicolas**, Institut de Systématique, Évolution, Biodiversité, National Museum of Natural History in Paris, France ([More information](#)).
- **Dr. Frauke Ecke**, Landscape ecologist, Department of Wildlife, Fish and Environmental Studies, Swedish University of Agricultural Sciences, UMEÅ, Sweden ([More information](#)).
- **Dr. Jean-Pierre Hugot**, Parasitologist, National Museum of Natural History in Paris, France ([More information](#)).
- **Dr. Boris Krystufek**, Rodentologist, The head of Vertebrate department of the Slovenian Natural History, Slovenia ([More information](#)).

- **Dr. Roohollah Siah sarvie**, Rodentologist, Ferdowsi University of Mashhad, Mashhad, Iran ([More information](#)).
- **Dr. Mahdi Rohani**, Microbiologist, Research centre of Emerging and Reemerging Infectious Diseases, Pasteur Institute of Iran, Tehran, Iran ([More information](#)).
- **Dr. Saied Reza Naddaf**, Entomologist, Department of Parasitology, Pasteur Institute of Iran, Tehran, Iran ([More information](#)).
- **Dr. Ahmad Mahmoudi**, Rodentologist, Department of Epidemiology and Biostatistics, Research centre of Emerging and Reemerging Infectious Diseases, Pasteur Institute of Iran, Tehran, Iran ([More information](#)).

### **Required documents for the primary registration**

- A short English CV of the activities over the past 10 years
- A motivation letter expressing why you are interested in the course topic

Based on the submitted CV and motivation letter applicants will be selected for participation in the course.

### **Registration fee**

The course fee is 350 EURO per participant which includes a set of course materials, accommodation, meal (breakfast, lunch and dinner), two coffee breaks during the course, bus transit from Tehran to the venue and vice versa; and a tour to Alisadr Cave.

The registration will be on site and it is not needed to transfer the registration fee online.

**Deadline for Registration: August 20, 2018**

### **Scholarships**

We have limited scholarships for participants to partially or fully meet travel and or registration fee.

If you would like to apply for the scholarship, please include in your application the scholarship request form as well.

### **Accommodation**

The accommodation will be in 4-6 bed rooms having free access to internet in the meeting venue.



### **Contact Person**

Dr Ahmad Mahmoudi, Department of Epidemiology and Biostatistics, Research centre of Emerging and Reemerging Infectious Diseases, Pasteur Institute of Iran, Tehran, Iran: ahmad.mahmoodi1985@gmail.com; 0098-9192791299

## **Some information about the Research Center for Emerging and Re-emerging infectious Diseases**

In 1946, together with the new program of activities of Pasteur Institute of Iran, the epidemiology department of Pasteur Institute of Iran started its activities under the supervision of Dr. Marcel Baltazard, the general director of the institute. Although Kurdistan had a history of plague, it was due to the plague epidemic in Kurdistan at that time that the research teams of Pasteur institute of Iran were dispatched to the plague epidemic centers to control the outbreak via quarantining the foci and epidemiologic procedures on the humans and rodents.

Studies of the plague foci in this region and the significance of this disease motivated the Pasteur institute team to conduct extensive scientific and epidemiologic studies in this region.

During the nine plague epidemics in Kurdistan and Azerbaijan between 1946 and 1965, many infected people survived from the disease by the efforts of the dispatched teams of Pasteur Institute of Iran; however, 156 died.

In 1952, the first laboratory was founded in Akanlu village, near the plague foci in Kurdistan. At this research center, currently called "The Research Center for Emerging and Reemerging infectious Diseases", Dr. Baltazard and his perseverant colleagues conducted extensive research on plague and established this center as one of the world reference laboratories and research centers for plague.

Since 1952, research teams could base themselves in the area for months at a time and conduct detailed research on rodents under more favorable conditions.

During that time, the integration of field and laboratory collaborations was a key to effective epidemiologic actions and led to great research hypotheses.

During the development of this research center, many international scientists visited the center, lecturing, studying and/or researching in their fields.

The achievements of Pasteur Institute of Iran regarding plague research attracted the global attention and such a success motivated them to assign Iranians international plague research. The experts and researchers of Pasteur Institute of Iran, known as WHO experts, continued to conduct related research in many neighboring countries such as Turkey, Syria, Iraq and Yemen, Southeast Asia (India, Indonesia, Thailand), Burma, Brazil, and Africa (Zaire, Tanzania); they published all of their research results to be used by others. Most of these researches were financially supported by WHO. In 1972, a WHO meeting on plague was held in this center with many participants from all over the world.



It is noteworthy that one of the main responsibilities assigned to Pasteur Institute of Iran and the Akanlu Research Center in the following years was to conduct research about diagnosis and epidemiology of plague.

Research Center for Emerging and Reemerging infectious Diseases can be regarded as the pioneer center for field epidemiology in Iran. This center is doing also important researches on tularemia in addition to plague studies.

The dedicated laboratories for rodentology, serology, molecular studies and culture, seminar halls and guest accommodation offer a suitable environment for research and education in this region.

The center is the national reference laboratory for plague, tularemia and Q fever.



Research Center for Emerging and Reemerging infectious Diseases has close international collaboration with Pasteur Institute of Madagascar, Pasteur institute of Paris, National Museum of Natural History in France, University of Oslo, Institute of pathology and biology in France, Veterinary Medical Research Institute in Hungary and Friedrich-Loeffler-Institut, Germany.

You can get more information about this centre form: <http://akanlu.pasteur.ac.ir/en>

After organizing several national and international courses on rodent-borne diseases, field epidemiology and emerging infectious diseases, now we are planning to hold an international training course on "Rodents and Rodent born disease".

### **Recent courses and meetings in Research Center for Emerging and Re-emerging infectious Diseases, Akanlu, Hamadan**

In recent years several international courses and meetings were held in Research Center for Emerging and Reemerging infectious Diseases of Pasteur institute of Iran, including:

- International workshop of Tularemia by cooperation of Umeå University (Sweden), Grenoble Alpes University (France), and Kocaeli University (Turkey) ([More information](#)).
- Scientific Meeting on Taxonomy, Phylogeny, Molecular Epidemiology and Rodent-Borne Diseases by cooperation of National Museum of Natural History in Paris (France), Iranian CDC, Ferdowsi University of Mashhad ([More information](#)).
- International Summer School on Field Epidemiology by cooperation of Tehran University of Medical Sciences, Bernhard Nocht Institute for Tropical Medicine

(Germany), the University Clinics Hamburg-Eppendorf (Germany), and the University of Applied Sciences, Hamburg (Germany) ([More information](#)).

- The meeting of four Pasteur Institutes (Iran, France, Tunisia, and Morocco) on vector-borne diseases ([More information](#)).

### **Akanlu and its surrounding natural attractions**

"Akan" (Turkish) means cultivate' and the suffix "Lu" denotes a place. Accordingly Akanlu is a Turkish word meaning farmland.

Akanlu village is located 365 kilometers from Tehran, 138 km from the city of Hamadan and 73km from Kabudar-Ahang. It takes around 5 hours by bus and 4 hours by private car from Tehran.

Akanlu village has 536 households and a population of over 1,890. Taking advantage of the many water resources (aqueducts and springs) and the lush countryside with old-growth trees, vineyards and grasslands, most of the villagers are engaged in farming, animal husbandry, horticulture and forestry.



### **Tourist attractions near Akanlu**

Tourist attractions such as Alisadr and Katale Khor caves, the Shirin Su wetlands and the Lalejin pottery works are a short distance from the village.

### **Alisadr Cave**

The Alisadr Cave originally called Ali Sadr (meaning cold) is the world's largest water cave which attracts millions of visitors every year. The cave is located 75 kilometers northwest of Hamadan and 70 km from Akanlu village.

Because of the cave's proximity to large cities such as Hamadan, it is a highly recommended destination for tourists from all corners of the world. Tours of the cave are available by pedal boats.

The cave walls can extend up to 40 meters high, and it contains several large, deep lakes. The cave has a river flowing through it and most travel through the cave system is done by boat. More than 11 kilometers of the cave's water canals have been discovered so far. Some routes are 10 to 11 kilometers long and all lead to "The Island", a centrally located large atrium. Four kilometer of it is accessible to the public using a mix of walking paths and self-propelled boats.

The water inside the cave has no odor or taste as there are no living things in it.



### **Katale Khor cave**

Katale Khor cave was discovered around 1921. Katale Khor is 90 km from the village of Akanlu.

Katale Khor cave, in the terms of quality of crystals and icicles, beauty and diversity of classes, is the best-known limestone cave in the world. This cave is as old as Alisadr cave in Hamadan, but Alisadr cave is a water cave, whereas Katale Khor is almost dry. Another significant difference is that the limestone of Katale Khor cave is much purer than that of Alisadr cave and this purity leads to greater transparency and thus more light through its icicles.



It is believed that this cave has 7 levels, but so far only 3 have been explored. The presence of very clear springs around the cave and numerous natural holes are some of the unique features of this cave.

### **Lalejin**

Lalejin is one of the main centers of production of ceramic and pottery products in Iran, the Middle East and the world. Lalejin is about 100 km from Akanlu village.

Approximately 80% of the population of Lalejin is engaged in the pottery industry, including painting pottery, packaging, and the sale of pottery/ceramic products. Earthenware made in Lalejin is very diverse and includes a variety of decorative and household objects. In Lalejin there are over 680 workshops active in the production of pottery and ceramics, according to the union of pottery and ceramics. Recently the city developed a method of decorating pottery commonly called enamel.



### **Shirin Su wetlands**

Shirin Su is a manmade, or artificial, wetland area. Akanlu village is about 30 km away from the Shirin Su wetlands.

The area consists of about 300 hectares of wetlands and a lake area of 43 hectares. The exact dimensions depend on the amount of rainfall and vary annually. There are over 54 bird species in the Shirin Su wetlands, including rare and otherwise valuable birds.



## Hamadan

Hamadan (Old Persian: Haṅgmetana, Ecbatana) is the capital city of Hamadan Province of Iran. Hamadan is believed to be among the oldest Iranian cities and one of the oldest in the world. It is possible that it was occupied by the Assyrians in 1100 BCE; the Ancient Greek historian, Herodotus, states that it was the capital of the Medes, around 700 BCE.

Hamadan is home to many poets and cultural celebrities. Hamadan has always been well known for handicrafts like leather, ceramic, and carpets.

The special nature of this old city and its historic sites attract tourists during the summer to this city. Iran's Cultural Heritage Organization lists 207 sites of historical and cultural significance in the city of Hamadan alone.



The scientist and writer known in the west as Avicenna (Abu Ali Sina) is buried in Hamadan.

Akanlu is located 138 km from the city of Hamadan.

