



## D7.9 Laboratory work programme report

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**D7.9**  
**(LABORATORY WORK PROGRAMME REPORT)**

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China Animal Health and Epidemiology Center



Beijing Chinese Center for Disease Control and Prevention



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## Acronyms

CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement
CAHEC	China Animal Health and Epidemiology Center
EIDs	Emerging Infectious Diseases
RVC	Royal veterinary College
SHVRI	Shanghai Veterinary Research Institute
TADs	Transboundary Animal Diseases



# 01.

## Introduction



## 1. Introduction

As part of the overall strategy of the LinkTADs project, WP7 focuses on facilitating short-term exchanges and training programmes between European and Chinese research organisations with the goal to raise awareness of cooperation opportunities and ultimately enhance existing collaborations and encourage new partnerships.

Several exchanges and training programmes have been implemented during the project, including an epidemiology exchange and training programme aimed specifically at reaching the overall objective of WP7 in the field of epidemiology: strengthening collaborations between Chinese and European epidemiologists.

We report here on the implementation of the epidemiology exchange programme and the epidemiology training programme that were linked to maximise collaborations between partners.





# 02.

## Specific activities

## 2. Overview of specific activities

### 2.1. Epidemiology exchange programme

The epidemiology exchange programme of the LinkTADs project has been implemented by the three main partners involved in epidemiology: CAHEC in China, and CIRAD and RVC in Europe. It was decided to implement the exchange programme through a collaboration based on a twinning between LinkTADs and the RiskSur project. RiskSur was an EU FP7 funded project running from 2012 to 2015, aimed to develop decision support tools for the design of cost-effective risk-based surveillance systems that integrate the most recent advances in epidemiological methodologies based on an interdisciplinary approach, and tailored to the needs of individual EU Members States (<http://www.fp7-risksur.eu/>). Under RiskSur WP5 (Evaluation of epidemiological and economic effectiveness of surveillance systems), European case studies were implemented in order to develop, evaluate and validate a set of tools dedicated to the evaluation of epidemiological and economic effectiveness of surveillance systems (EVAtools).

During the first meeting between partners to set up the epidemiology exchange programme, it was decided to base the programme on the implementation of a Chinese case study in the framework of the RiskSur project.

#### 2.1.1. Programme agenda

**Visit 1:** RVC and CIRAD scientists visited CAHEC and participated to the field epidemiology training and risk surveillance workshop planned in WP3 in Qingdao in July 2015. The objective was to initiate the exchange programme. European colleagues introduced the RiskSur project to CAHEC epidemiologists and it was decided to base the exchange programme on the implementation of a RiskSur Chinese case study.

**Visit 2:** CAHEC scientist had intended to participate in the final RISKSUR meeting in Paris, France, during October 2015, prior to the LinkTADs progress meeting in Vienna. The objective of the visit was to present a preliminary design on the Chinese case study and to identify a suitable topic. However, due to the travelling restrictions for Chinese partners, the

visit was cancelled and the discussions between partners were maintained through email exchanges.

**Visit 3:** CIRAD and RVC scientists met with CAHEC scientists when they participated in the analytical epidemiology training organized in Qingdao on 25-27 April 2016. Partners reviewed the potential disease model available for the implementation of the Chinese case study. In particular, a question on the availability of data was raised. It appeared that at that time, no available dataset on a particular disease was sufficient to implement a case study using EVA tools. Both CAHEC and CIRAD wanted to find another potential case in China or from another region.

**Visit 4:** CAHEC scientists will meet with CIRAD scientist in Bangkok during the advanced epidemiology training of the InterRisk master, which is available to LinkTADs partners through the epidemiology training program under W7. Partners will discuss the potential diseases available for the implementation of the case study and formulate a plan to implement this collaboration beyond the end of the LinkTADs project.

## **2.2. Epidemiology training programme**

In 2016, a new international master's programme named "InterRisk: assessment and management of health risks at the human, animal and ecosystem interface" opened in Thailand. This master's programme is organized jointly by Kasetsart University (Bangkok, Thailand), the Institut National Polytechnique de Toulouse (France), and CIRAD. The programme's curriculum has been designed to fit the key competencies identified during a regional web-survey carried out in 2011 across members of international organizations, as well as academic, public and private sectors in Southeast Asia. As some modules are also opened to professionals engaged in a continuing education program, it was proposed to some LinkTADs partners to attend the epidemiology and statistics module as part of the epidemiology training programme of LinkTADs WP7.

In particular, involving Chinese veterinarians in the master's programme is of interest given its focus and regional extent. The InterRisk programme has a double

accreditation from French and Thai universities which ensures education quality and diploma validity. Efforts to educate students in a “One Health” perspective and at a regional scale will be made, by making veterinary, medical and biosciences students work together on real cross-country problems. Also, special attention will be given during the courses to community-based participatory actions. Innovative pedagogical tools (active learning, real case problem-solving, field visits, and computer-based modules) will be promoted. Through teachings and internships, students will interact with professionals from the private agricultural sector, international organisations, governmental agencies, NGOs and research institutes. The degree will initiate the creation of professional social networks at a regional level. In the context of trade globalization and climate change, “InterRisk” graduates will be able to conceptualise and design holistic programs integrating epidemiological, ecological, and socio-economic approaches to tailor public health and animal diseases control policy decisions to the actual SEA situation.

Several modules were identified as key learning for LinkTADs partners: the basic epidemiology and biostatistics module (7 to 18 March 2016) during the 1<sup>st</sup> year of the programme, as well as the advanced statistics (19 to 30 September 2016) and advanced epidemiology (3 to 14 October 2016) modules during the 2<sup>nd</sup> year.

### **2.2.1. Participation in the basic epidemiology and biostatistics module (7 to 18 March 2016)**

A total of five Chinese scientists from CADIC, Fudan University and SHVRI participated in the basic epidemiology and biostatistics module. This module reviews basic biostatistics in epidemiology: different types of variables, graphical representations, indicators of position or dispersion, construction of confidence intervals, calculation of sample size and principles of statistical analysis. It introduces the discipline of epidemiology, its definition and its scope, with examples of issues that can be addressed. Large study schemes and measures in epidemiology were outlined (incidence, prevalence, value predictive tests, measures of associations). Later on, the chapter reviews in detail the sources of error in epidemiology and approaches that limit the preparation and the conduct of an investigation. Special attention is given to the process of interpreting results and critical reading.

Module detailed program:

First week (7-11 March 2016)

Date	Time	Duration	Contents
<b>Monday 7 March 2016</b>	09:00	3h	Lecture: concepts of epidemiology
	13:00	3h	Practical: introduction to R language
<b>Tuesday 8 March 2016</b>	09:00	3h	Lecture: descriptive epidemiology and disease frequency
	13:00	3h	Practical: data manipulation with R
<b>Wednesday 9 March 2016</b>	09:00	3h	Lecture: observational studies
	13:00	3h	Practical: graphics with R
<b>Thursday 10 March 2016</b>	09:00	3h	Lecture: probability distributions
	13:00	3h	Practical: probability distributions
<b>Friday 11 March 2016</b>	09:00	3h	Lecture: estimation and confidence intervals
	13:00	3h	Practical: estimation and confidence intervals

Second week (14-18 March 2016)

Date	Time	Duration	Contents
<b>Monday 14 March 2016</b>	09:00	3h	Lecture: hypothesis testing session I, principles, tests for differences between means
	13:00	3h	Practical: hypothesis testing session I
<b>Tuesday 15 March 2016</b>	09:00	3h	Lecture: hypothesis testing session II, tests of association
	13:00	3h	Practical: hypothesis testing session II
<b>Wednesday 16 March 2016</b>	09:00	3h	Lecture: sampling strategies, sample sizes and statistical power
	13:00	3h	Practical: sample size and statistical power
<b>Thursday 17 March 2016</b>	09:00	3h	Lecture: screening tests
	13:00	3h	Practical: screening tests
<b>Friday 18 March 2016</b>	09:00	3h	Lecture: critical reading of epidemiological articles
	13:00	3h	Group project on a data set

**2.2.2 .Participation in the advanced modules**

**Advanced Statistics: 19-30 September 2016 (2 weeks)**

During the training module students will learn how to analyse data from different type of studies in epidemiology, social sciences, etc. The course will provide theoretical and practical training in statistical modelling with particular emphasis on linear, multiple and logistic regression. Clustering effect on data will be approached.

**Advanced Epidemiology: 03-14 October 2016 (2 weeks)**

During this module, participants will learn how to implement observational and intervention studies in a One Health perspective, and methods of analysis and sources of bias will be presented. Specific attention will be given to interaction effects and statistical

power analysis. Review of questionnaire design will also be performed. Participants will learn how to interpret results, as well as how to use compare diagnostic tests and results.

Tentative list of participants supported by LinkTADs:

Participant Name	Institution	Module attended
Liu Ailing	CAHEC	Advanced Epidemiology
Yang Honglin	CAHEC	Advanced Epidemiology
ZengHeng	CAHEC	Advanced Epidemiology
Yao Li	Fudan University	Advanced Statistics + Advanced Epidemiology
Si Li	Fudan University	Advanced Statistics + Advanced Epidemiology
Wang Bin	Beijing Municipal Bureau of Agriculture	Advanced Epidemiology
Zhang Yue	Beijing Animal CDC	Advanced Epidemiology
Wang Lin	Beijing Animal CDC	Advanced Epidemiology
Du Juan	Beijing Animal CDC	Advanced Epidemiology



# 03.

## Achievements



### 3. Achievements

The exchange programme is contributing to strengthening the collaboration between Chinese and European epidemiologists, as well as facilitating knowledge sharing and the dissemination of novel methods contributing to the better management of animal diseases and zoonoses.

The training programme will result in improved epidemiological skills of veterinarians and researchers in China. It will also support the building of a network of Chinese, European and Southeast Asian epidemiologists and other scientists involved in health, which will contribute to a better regional and international collaboration on emerging infectious diseases (EIDs) and transboundary animal diseases (TADs).

Both programmes will improve the management of EIDs and TADs and strengthen the collaborations between Chinese and European epidemiologists in the long term, allowing for the sustainability of the LinkTADs project beyond its completion.



# 04.

## Appendix

## 4. Photos of epidemiology exchange and training

