# PhD opportunities through the VUB–CSC Scholarship Programme
# Evolutionary Genomics of Sex Lab,
# Vrije Universiteit Brussel, Belgium

The **Evolutionary Genomics of Sex Lab**, led by **Prof. Wen-Juan Ma** at Vrije Universiteit Brussel (VUB), is recruiting PhD candidates through the **VUB–CSC Scholarship Programme**.

Our research focuses on the genetic and genomic mechanisms underlying **sex determination and sex chromosome evolution**, and their broader consequences for genome evolution, reproduction, speciation, and host–symbiont interactions. We combine comparative and population genomics, transcriptomics, epigenomics, long-read sequencing, molecular genetics, cytogenetics, functional experiments, and field sampling. The group is supported by **ERC, FWO, startup grants**, and our work has been published in journals including *Genome Biology, Nature Communications, Current Biology, Molecular Biology and Evolution,* and *Molecular Ecology*.

## Available PhD Projects

**1. From Genes to Species: Sex Determination, Sex Chromosome Evolution and Speciation in Frogs**

Frogs show exceptional diversity in sex-determining mechanisms, frequent transitions between XY and ZW systems, and striking variation in sex-chromosome differentiation. This project will investigate the genetic, epigenetic and evolutionary mechanisms shaping sex determination and sex chromosome evolution, and ask how these processes may contribute to population divergence and early speciation. Depending on the student's interests, approaches may include field sampling, molecular genetics, DNA/RNA sequencing, long-read sequencing, epigenomics, population genomics, comparative genomics and bioinformatics.

**2. Microbes, Sex and Genome Evolution: How Symbionts Reshape Reproduction Across Insects**

Reproductive symbionts such as *Wolbachia* can manipulate host reproduction through male killing, feminization, parthenogenesis and cytoplasmic incompatibility. This project will investigate how symbionts alter host sex-determination and reproductive pathways, how hosts evolve resistance or compensation, and whether these conflicts can reshape reproductive systems and sex chromosomes. The project may combine field sampling, experimental crosses and infections, transcriptomics, comparative genomics, RNAi and CRISPR–Cas9.

**3. Why Do Males and Females Recombine Differently? Evolution and Molecular Biology of Recombination Across Frogs**

Many frogs show extreme sex differences in meiotic recombination. This project will investigate why sex-specific recombination evolves, what molecular mechanisms generate these differences, and how recombination landscapes influence genome evolution, sex chromosomes and species divergence. Potential approaches include cytology, histology, chromosome biology, comparative and population genomics, long-read sequencing, chromatin profiling and gene-expression analyses, with particular interest in chromosome structure and recombination regulators such as **PRDM9**.

## Candidate Profile

We welcome applicants with backgrounds in **genetics, genomics, evolutionary biology, molecular biology, bioinformatics** or related fields. Candidates should have strong scientific curiosity and an interest in combining evolutionary questions with genomic and/or experimental approaches.

## Application

Interested candidates should contact:

**Prof. Wen-Juan Ma**
Department of Biology, Vrije Universiteit Brussel
**wen-juan.ma@vub.be**

Please send:

- CV
- A brief motivation letter describing your research background, interests and preferred PhD topic
- Contact details of two referees

**Recommended application deadline: 30 November 2026.**
The final list of VUB–CSC candidates needs to be confirmed by **31 January 2027**.
Applications will therefore be reviewed on a **rolling basis**, and suitable candidates may be invited for an interview as soon as their materials are received. Recruitment will continue until appropriate candidates have been identified, so early applications are strongly encouraged.

**Lab website:**
http://www.wmalab.com/
**Research and publications:**
http://www.wmalab.com/Publications/

Please feel free to share this opportunity with suitable students and colleagues.