



**UNIMORE**  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA



Doctor of Philosophy (Ph.D.) Program in  
Clinical and Experimental Medicine

PhD Program in Molecular  
and Regenerative Medicine

Ph.D. Program in  
Neuroscience

In collaborazione con



**Fondazione  
Marco Biagi**

Dipartimento di Scienze Biomediche,  
Metaboliche e Neuroscienze

SPRING SCHOOL

# Principles of Biomedical Research Methods

**APRIL 28 - MAY 2, 2025**  
**MAROLA ABBEY, REGGIO EMILIA**

## **MONDAY, APRIL 28**

- 9:00 AM - 11:00 AM Study design. Measures of disease frequency. Measures of association (relative and absolute measures) - Prof. Lauren Wise
- 11.00 AM - 11.15 AM *Coffee break*
- 11:15 AM - 1:00 PM Validity and efficiency + Sources of bias and misclassification + Introduction to confounding (tips for predicting direction and magnitude of confounding) - Prof. Lauren Wise
- 1:00 PM - 2:30 PM *Lunch*
- 2:30 PM - 4:30 PM Statistics vs Epidemiology. Methodology in data analysis in biomedical research: descriptive and inferential statistics - Prof. Dario Consonni
- 4.30 PM - 4:45 PM *Coffee Break*
- 4.45 PM - 6.30 PM Data analysis methodology in biomedical research: Directed acyclic graphs (DAGs) and role of variables: confounders, effect modifiers, mediators, synergistic factors, colliders - Prof. Dario Consonni

## **TUESDAY, APRIL 29**

- 9:00 AM - 11:00 AM Data analysis methodology. Regression models. Linear regression - Prof. Dario Consonni
- 11.00 AM - 11.15 AM *Coffee break*
- 11:15 AM - 1:00 PM Data analysis methodology in biomedical research: Poisson, logistic, and log-binomial regression - Prof. Dario Consonni
- 1:00 PM - 2:30 PM *Lunch*
- 2:30 PM - 4:30 PM How to critique a peer-reviewed journal article: read the article while addressing critique questions - Prof. Lauren Wise  
*Come to class the next day prepared to discuss (no need to submit written responses)*
- 4.30 PM - 4:45 PM *Coffee Break*
- 4.45 PM - 6.00 PM Small group discussions about assigned reading - Prof. Lauren Wise
- 6:00 PM - 7:00 PM Epidemiology in practice: the example of Pregnancy Study Online (PRESTO)

## WEDNESDAY, APRIL 30

- 9:00 AM - 11:00 AM Special topics (Part I): How to write a scientific paper – Ken Rothman’s recommendations - Prof. Lauren Wise
- 11.00 AM - 11.15 AM *Coffee break*
- 11:15 AM - 1:00 PM Special topics (Part II): Principles of peer review recommendations; Immortal person-time bias (and in-class exercise) - Prof. Lauren Wise
- 1:00 PM - 2:30 PM *Lunch*
- 2:30 PM - 4:30 PM Data analysis methodology. Survival analysis and Cox model - Prof. Dario Consonni
- 4.30 PM - 4:45 PM *Coffee Break*
- 4.45 PM - 6.30 PM Methodology in data analysis in biomedical research: Time-varying counfounders. G-models. Models for correlated outcomes (GEE and mixed models) - Prof. Dario Consonni

## THURSDAY, MAY 1

- 9:00 AM - 5:00 PM **Guided hiking tour at Pietra di Bismantova**
- 6:00 PM - 7:00 PM Methodology in result reporting and interpretation and assessment of causal relations: the 2016 ASA revolution - Prof. Marco Vinceti

## FRIDAY, MAY 2

- 8:45 AM - 1:00 PM *Data analysis in biomedical research***
- 8:45 AM - 10:00 AM Principles for data analysis in laboratory, public health and clinical settings: how to select the appropriate tests and models - Prof. Dario Consonni
- 10:00 AM - 11:15 AM Data analysis in biomedical research: experimental and nonexperimental design, and confounding bias - Prof. Dimitris Mavridis
- 11:15 AM - 11:30 AM *Coffee Break*
- 11:30 AM - 1:00 PM Data analysis in biomedical research: principles and applications - Proff. Roberto D’Amico, Cinzia Del Giovane & Tommaso Filippini
- 1.00 PM - 2:30 PM *Lunch*
- 2:30 PM - 5:00 PM Systematic reviews and meta-analysis in biomedical research from design to publication: purposes, protocol, implementation, appraisal, limitations, software - Proff. Roberto D’Amico, Cinzia Del Giovane, Tommaso Filippini, Dimitris Mavridis



**Dario Consonni** Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy  
**Roberto D’Amico** University of Modena and Reggio Emilia, Italy  
**Cinzia Del Giovane** University of Modena and Reggio Emilia, Italy  
**Cinzia Gentile** University of Modena and Reggio Emilia, Italy  
**Tommaso Filippini** University of Modena and Reggio Emilia, Italy  
**Dimitris Mavridis** University of Ioannina, Greece  
**Marco Vinceti** University of Modena and Reggio Emilia, Italy  
**Lauren Wise** Boston University School of Public Health Epidemiology, Boston (MA), USA