

## Allegato A PROGETTO Scienza senza Frontiere – Brasile

### Name of the doctoral program

Mathematical Engineering

Cotutelle X

### Title of the research activity

Biostatistical methods in clinical and drug development

### Short description of the research activity

Stepping up from preclinical to clinical research is a fundamental, challenging and interdisciplinary moment in biomedical research. Many scientific problems arise, like the identification of the chemical entities which promise efficacy and safety when administered to human beings, the research of their optimal dosing, the prediction of toxic and, more general, pharmacological effects of drugs, the approximate description of the PK/PD (pharmacokinetic and pharmacodynamic) in human beings, the arrangement of a series of experiments suitable to healthy volunteers or selected patient populations. In such a fundamental scientific exercise, statistics (biostatistics) plays a fundamental role. Many compounds in pharmaceutical research do not reach full development partly because they are inefficient, but partly due to poor or unwise experimentation. From the health service point of view, many therapies which seem promising in setups different from the ones originally conceived are killed for the very same reasons. In particular, appropriate PK/PD modeling, the design of carefully planned experiments, the optimal selection of dose, the design of innovative adaptive experiments and many other issues arising in clinical development are essentially statistical problems.

### Scientific responsible (name, surname, role)

Mauro Gasparini, Full professor of Statistics

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### Number of vacancies for XXVIII cycle (begin January 2013)

2

### Specific requirements (experiences, skills)

At least 6 credits of Probability and 6 credits of Statistics during the undergraduate career.

### Website of the research group (if any)

<http://calvino.polito.it/~gasparini/>