Statistical Techniques & Tools in MS Research

MONDAY, 8 JUNE 2026

08.45 **Welcome & Introduction**
Maria Pia Sormani (Genoa, IT), Marcello Moccia (Naples, IT), Jaume Sastre - Garriga (Barcelona, ES)

09.00 - 10.30 **Session 1: Basic concepts - Statistics**
Chairs: Maria Pia Sormani (Genoa, IT), Bruno Stankoff (Paris, FR)

09.00 The hypothesis test: The meaning of p value, sample size and power. How to interpret statistical results of a study.
Maria Pia Sormani (Genoa, IT)

09.30 Statistical tests: non-parametric vs. parametric approaches, univariate and multivariate methods
tbc

10.00 Discussion

10.30 - 11.00 **Coffee Break**

11.00 - 12.30 **Session 1 (continued): Basic concepts - Study design**
Chairs: Matilde Inglese (Genoa, IT), Carmen Tur (Barcelona, ES)

11.00 Epidemiological studies
Raffaele Palladino (Naples, IT)

11.30 Clinical trials: From animal models to phase 3.
The standard designs in MS
Brian Healy (Boston, USA)

12.00 Discussion

12.30 - 14.00 **Lunch Break**

14.00 - 15.30	**Session 2: Observational studies: Study design and methods**
	Chairs: Mar Tintoré (Barcelona, ES), Elena Hernandez Martínez de Lapiscina (Amsterdam, NL)
14.00	Propensity scores and methods for adjusting baseline confounders
	Tomas Kalincik (Melbourne, Australia)
14.30	Impact of missing data and methods for missing data imputation
	Lisa Hofer (Basel, CH)
15.00	Discussion
15.30 - 16.00	**Coffee Break**
16.00 - 17.00	**Practical Session 1**
16.00	Practical Session 1 - Data collection with RedCap
	Irene Schiavetti (Genoa, IT)
17.00	**End of Day 1**
19.00	**Dinner**

TUESDAY, 9 JUNE 2026

09.00 - 10.30   **Session 3: Beyond conventional trial designs**
Chairs: Frauke Zipp (Mainz, GER),
Xavier Montalban (Barcelona, ES)

09.00   Adaptive designs
Jeremy Chataway (London, UK)

09.30   Meta - analyses and network meta - analyses
Konstantina Chalkou (Bern, CH)

10.00   Discussion

10.30 - 11.00   **Coffee Break**

11.00 - 12.30   **Session 4: Beyond conventional trial designs**
Chairs: Cristina Granziera (Basel, CH), Gabriel Bsteh (Vienna, AT)

11.00   Pragmatic trials
Lars Hemkens (Basel, CH)

11.30   Artificial intelligence methodology
Arman Eshaghi (London, UK)

12.00   Discussion

12.30 - 14.00   **Lunch Break**

14.00 - 15.30	**Session 5: Beyond clinical trials**
	Chairs: Jaume Sastre - Garriga (Barcelona, ES),
	Marcello Moccia (Naples, IT)
14.00	Synthetic data and federated learning
	Alessio Signori (Genoa, IT)
14.30	Handling safety data in clinical trial
	Elena Hernandez Martínez de Lapiscina (Amsterdam, NL)
15.00	Discussion
15.30 - 16.00	**Coffee Break**
16.00 - 18.00	**Practical Sessions 2 & 3**
16.00	Practical Session 2 - Statistics with R and ChatGPT
	Marta Ponzano (Genoa, IT), Alessio Signori (Genoa, IT)
17.00	Practical Session 3 - Imputing missing data
	Brian Healy (Boston, USA), Francesca Bovis (Genoa, IT)
18.00	**End of Day 2**
19.00	**Summer School Dinner**

WEDNESDAY, 10 JUNE 2026

08.30 - 10.30   **Practical Sessions 4 & 5**

08.30   Practical Session 4 - How to write the statistical section of a paper
Carmen Tur (Barcelona, ES)

09.30   Practical Session 5 - Calculation of CDW and PIRA
by a unified tool
Francesca Bovis (Genoa, IT), Noemi Montobbio (Genoa, IT)

10.30 - 11.00   **Coffee Break**

11.00 - 12.30   **Hands - on Sessions 1 & 2**
Chairs: Maria Pia Sormani (Genoa, IT), Olga Ciccarelli (London, UK)

Session 1: T-test, regression, logistic regression (with Jamovi)
Francesca Bovis (Genoa, IT), Alessio Signori (Genoa, IT)

Session 2: Cox with time dependent covariate,
mixed models (with R)
Marta Ponzano (Genoa, IT), Noemi Montobbio (Genoa, IT)

12.30 - 13.30   **Closing session**
Chairs: Bruno Stankoff (Paris, FR), Olga Ciccarelli (London, UK)

12.30   Future of statistics in MS Research
Maria Pia Sormani (Genoa, IT)

13.00   Discussion & Wrap-up
*Maria Pia Sormani (Genoa, IT), Marcello Moccia (Naples, IT),
Jaume Sastre - Garriga (Barcelona, ES)*

13.30   **Lunch and individual departure**