



European School of  
Molecular Medicine

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## PhD in Molecular Medicine / Computational Biology / Courses

### Courses 1st year

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#### [Scientific Methodologies](#)

Organizer: R. Visintin - Dates: 31 Jan - 3 Feb 2011  
last update: 12/01/11

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#### [Molecular and Cellular Biology](#)

Organizers: Lanfrancone/d'Adda - Dates: 14-21 February 2011  
last update: 03/02/11

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#### [Molecular Oncology](#)

Organizer: Chiocca/Cavallaro - Dates: 21-28 March 2011  
last update: 15/03/11

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#### [Computational Analysis of Molecular Networks](#)

Organizers: Ciccarelli/Ciliberto - Dates: 6-10 June 2011 (compulsory for Computational Biology program)  
last update: 06/06/11

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#### [Statistics](#)

Organizer: L. Lusa - Dates: 19-23 September 2011  
last update: 29/08/11

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#### [Bioinformatics](#)

Organizer: L. Luzi / A. De Grassi - Dates: 17-21 October 2011  
last update: 14/10/11

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### Optional Courses

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#### [Computational Analysis of Molecular Networks](#)

Organizers: Ciccarelli/Ciliberto - Dates: 6-10 June 2011 (compulsory for Computational Biology program)  
last update: 06/06/11

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#### [Ethical Issues](#)

Organizer: G. Boniolo - Dates: 13-15 September 2011  
last update: 05/09/11

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#### [Immunology](#)

Organizer: M. Rescigno - Dates: 14-16 December 2011  
last update: 22/11/11

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#### [History of Biomedicine](#)

Teachers: M. Morange / C. Scazzocchio - Dates: 2-4 May 2011; 6-8 September 2011  
last update: 02/05/11

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## Course detail

### History of Biomedicine

Teachers: **M. Morange** / **C. Scazzocchio** - Dates: **2-4 May 2011**; **6-8 September 2011**

#### **MICHEL MORANGE SESSION**

##### **Format**

3 days' session

##### **Location**

Gold Room

##### **Monday, 2 May 2011**

15.00-17.30 - A long tradition of interactions between biological research and medicine (From Antiquity to Bichat; The rise of microbiology; The cell theory)

##### **Tuesday, 3 May 2011**

15.00-17.30 - The rise of the molecular vision (Genetics and Eugenics; The molecular revolution)

##### **Wednesday, 4 May 2011**

15.00-17.30 - Molecular Medicine (From molecular diagnosis to molecular therapies; The significance of postgenomics and epigenetics; Evolutionary theory and its importance in biomedicine)

#### **CLAUDIO SCAZZOCCHIO SESSION (not compulsory for the Folsatec students)**

##### **Format**

3 days' session

##### **Location**

Silver Room

\* Gold Room

##### **\* Tuesday, 6 September 2011**

10.00-13.00 - Introduction. Analysis of S. Benzer "The elementary units of heredity"

##### **Wednesday, 7 September 2011**

10.00-13.00 - Analysis of Crick et al. "General Nature of the Genetic Code"

##### **Thursday, 8 September 2011**

10.00-13.00 - Analysis of Sarabahi et al "Co-linearity of the gene with the polypeptide chain". General discussion: where is co-linearity today?

#### **BACKGROUND READING**

- Brenner, Colinearity and the genetic code, Proc. Royal Society Lond. B. 164, 170-180, 1966
- Yanofski, Establishing the triplet nature of the genetic code, Cell, 128, 815-818, 2007

last update: 02/05/11



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## Course detail

### Immunology

**Organizer: M. Rescigno - Dates: 14-16 December 2011**

#### Format

3-day course

#### Wednesday, 14 December 2011

9.15 - Introduction (*M. Rescigno, IFOM-IEO Campus*)

#### *Innate Immunity*

9.30-10.45 - Macrophages/Innate immunity (*M. Locati, Humanitas*)

10.45-12.00 - Natural killer cells (*D. Mavilio, Humanitas*)

12.00-13.15 - Dendritic cells (*M. Rescigno*)

**Location: Gold Room**

#### Thursday, 15 December 2011

#### *Adaptive Immunity*

9.30-10.45 - B Cells (*S. Casola, IFOM-IEO Campus*)

10.45-12.00 - T Cells (*A. Mondino, San Raffaele Institute*)

12.00-13.15 - NKT cells (*G. Casorati, San Raffaele Institute*)

**Location: Silver Room**

#### Friday, 16 December 2011

#### *Immune system and tumors*

15.15-16.30 - Mechanisms of Immuno-evasion (*A. Anichini, Istituto Nazionale Tumori*)

16.30-17.45 - Tumor microenvironment (*S. Sangaletti, Istituto Nazionale Tumori*)

**Location: Platinum Room**

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## Course detail

### Ethical Issues

**Organizer: G. Boniolo - Dates: 13-15 September 2011**

#### Format

One lecture + 3 round-table discussions on ethical sensitive issues

#### Location

Meeting room 1-2

#### Tuesday, 13 September 2011

9.30-12.00 - Introduction to the course (*G. Boniolo*)

15.00-17.30 - The ethics of research on animals (*P. Maugeri*)

#### Wednesday, 14 September 2011

15.00-17.30 - Ethical and policy implications of enhancement technologies (*C. Wareham*)

#### Thursday, 15 September 2011

15.00-17.30 - Ethical issues in stem cell research (*A. Blasimme*)

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## Course detail

### Bioinformatics

**Organizer:** L. Luzi / A. De Grassi - **Dates:** 17-21 October 2011

#### Format

Lectures and Practicals

#### Location

Library

### Classical Sequence Analysis

#### Monday, 17 October 2011

9.00-9.30 - Course Introduction: description and objectives (L. Luzi / A. De Grassi)

9.30-10.30 - Sequence Databases & Alignment (F. Iannelli, IFOM-IEO Campus)

10.45-12.45 - Practicals

14.30-15.30 - Genome Browsers (L. Luzi, IFOM-IEO Campus)

15.45-17.45 - Practicals

#### Tuesday, 18 October 2011

9.00-10.00 - Multiple Sequence Alignment and Molecular Phylogenetics (A. De Grassi, IFOM-IEO Campus)

10.00-12.00 - Practicals

12.15-13.00 - Seminar to the Campus by A. Valencia, CNIO Madrid, Silver Room

14.30-15.30 - Protein Sequence Analysis and Molecular Modeling (CL Pierri, University of Bari)

15.45-17.45 - Practicals

### Large Scale Analysis: Expression Microarrays

#### Wednesday, 19 October 2011

9.30-11.00 - Introduction to the Shell + Practicals (I. Barozzi, IFOM-IEO Campus)

11.15-12.45 - Gene Expression Analysis (M. Pelizzola, IFOM-IEO Campus)

15.30-17.30 - Practicals

### Large Scale Analysis: NGS

#### Thursday, 20 October 2011

9.30-11.00 - Introduction to Next Generation Sequencing (L. Riva, IFOM-IEO Campus)

11.15-12.15 - Chip-Seq Analysis (L. Riva)

14.30-16.30 - Practicals

### Data Integration: Motif analysis

#### Friday, 21 October 2011

9.30-10.30 - Transcription Factor Binding Sites: Discovery and Analysis (G. Pavesi, University of Milan)

10.45-12.45 - Practicals

15.30-16.30 - Discussion and home work assignment

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## Course detail

### Statistics

**Organizer:** L. Lusa - **Dates:** 19-23 September 2011

#### Format

Lectures in the morning, practicals in the afternoon

#### Location

Meeting room 1-2

Library (*practical session*)

#### Monday, 19 September 2011

9.30-11.00 - Introduction to the use of statistics in biomedical research and descriptive statistics (*L. Lusa, University of Ljubljana*)

11.30-13.00 - Introduction to probability and statistical inference (*L. Lusa*)

14.00-14.30 - Practical data analysis (*A. Brozzi, University of Perugia*)

14.30-17.00 - Practicals

#### Tuesday, 20 September 2011

9.30-11.00 - Testing statistical significance and building confidence intervals (*L. Lusa*)

11.30-13.00 - Comparing Means (*L. Lusa*)

14.00-17.00 - Practicals

#### Wednesday, 21 September 2011

9.30-11.00 - Comparing proportions (*L. Lusa*)

11.15-12.45 - Analysis of repeated measurements (*A. Brozzi*)

14.00-17.00 - Practicals

#### Thursday, 22 September 2011

9.30-11.00 - Planning of experiments (*L. Lusa*)

11.30-13.00 - Linear and logistic regression (*J. Stare, University of Ljubljana*)

14.00-17.00 - Practicals

#### Friday, 23 September 2011

9.30-11.00 - Statistical methods for the analysis of survival data (*J. Stare*)

11.30-13.00 - Summary (*L. Lusa*)

15.00-17.00 - Final Test

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## Course detail

### Computational Analysis of Molecular Networks

**Organizers:** Ciccarelli/Ciliberto - **Dates:** 6-10 June 2011 (compulsory for Computational Biology program)

#### Format

4-day course

**Location:** Meeting Room 1-2

#### Tuesday, 7 June 2011

9.30-11.15 - Comparison of check point models (*A. Ciliberto - IFOM-IEO Campus*)

#### Wednesday, 8 June 2011

9.00-10.45 - Systems levels properties of the MAPK pathway, models and experiments (*N. Bluethgen, Charite, Universitaetsmedizin Berlin*)

11.00-12.45 - Negative feedback and robustness in MAPK signaling (*N. Bluethgen*)

#### Thursday, 9 June 2011

9.00-10.45 - Predicting the phenotypes of individuals (*B. Lehner, CRG - Barcelona*)

11.00-12.45 - Journal Club (*B. Lehner*)

#### Friday, 10 June 2011

9.00-10.45 - Network motifs in regulatory networks (*M. Caselle - University of Turin*)

11.00-12.45 - Evolution of biological networks (*F. Ciccarelli - IFOM-IEO Campus*)

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### Molecular Oncology

**Organizer: Chiocca/Cavallaro - Dates: 21-28 March 2011**

#### Format

2 lectures per day and 3 Journal Clubs along the week

#### Location

Meeting Room 1-2

\* Gold Room

\*\* Conference Room

#### \* Monday, 21 March 2011

10.00-11.15 - Oncogenes and TSGs (*A. Bardelli, IFOM-IEO Campus*)

16.30-17.45 - Cancer Stem Cells (*PG. Pelicci, IFOM-IEO Campus*)

#### Tuesday, 22 March 2011

9.30-10.45 - Senescence and Cancer (*F. d'Adda di Fagagna, IFOM-IEO Campus*)

11.00-12.15 - Signaling in homeostasis and cancer (*R. Fodde, Erasmus Medical Center, the Netherlands*)

14.00-15.00 - Seminar to the Campus by Riccardo Fodde

#### Wednesday, 23 March 2011

9.30-10.45 - Mechanisms of cancer progression (*L. Lanfrancone, IFOM-IEO Campus*)

11.00-12.30 - Journal Club (*tutor: M. Mazza*)

#### Thursday, 24 March 2011

9.30-10.45 - Viral mechanisms in Oncogenesis (*S. Chiocca, IFOM-IEO Campus*)

11.00-12.30 - Journal Club (*tutor: M. Pozzebon*)

#### Friday, 25 March 2011

9.30-10.45 - Cancer-associated inflammation (*M. Mazzone, University of Leuven, Belgium*)

11.00-12.15 - Tumor Immunology (*M. Rescigno, IFOM-IEO Campus*)

14.00-15.30 - Journal Club (*tutor: F. Saccheri*)

#### \*\* Monday, 28 March 2011

14.00-15.15 - Tumor angiogenesis (*R. Giavazzi, Mario Negri Institute*)

15.30-16.45 - Cancer Translational Research (*F. Bertolini, European Institute of Oncology*)

17.00-17.45 - Examination

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## Course detail

### Molecular and Cellular Biology

**Organizers:** Lanfrancone/d'Adda - **Dates:** 14-21 February 2011

#### Format

Lectures in the morning, 3 Journal Clubs

#### Location

Meeting Room 1-2

\* Silver Room

#### Monday, 14 February 2011

\* 11.00-12.15 - Mitosis (*A. Musacchio, IFOM-IEO Campus*)

14.00-15.15 - Writing and Reading Chromatin Modifications (*D. Pasini, IFOM-IEO Campus*)

15.30-16.45 - Chromatin structure and gene silencing (*G. Testa, IFOM-IEO Campus*)

#### Tuesday, 15 February 2011

9.30-10.45 - Kinases and phosphatases: the yin and yang of the cell cycle (*R. Visintin, IFOM-IEO Campus*)

11.00-13.00 - Journal Club (*tutor: G. Varetti, IFOM-IEO Campus*)

#### Wednesday, 16 February 2011

9.30-10.45 - Cell motility (*G. Scita, IFOM-IEO Campus*)

11.00-12.15 - Cell-cell interaction and cell adhesion (*S. Cabodi, University of Turin*)

15.30-17.30 - Journal Club (*tutor: A. Disanza, IFOM-IEO Campus*)

#### Thursday, 17 February 2011

9.30-10.45 - Molecular mechanisms governing asymmetric cell division (*M. Mapelli, IFOM-IEO Campus*)

11.00-12.15 - Regulation of gene transcription (*G. Natoli, IFOM-IEO Campus*)

14.00-16.00 - Journal Club (*tutor: S. Ghisletti, IFOM-IEO Campus*)

#### Friday, 18 February 2011

10.00-11.15 - DNA replication (*M. Foiani, IFOM-IEO Campus*)

11.30-12.45 - DNA damage and repair (*D. Branzei, IFOM-IEO Campus*)

14.00-15.00 - Seminar to the Campus by Titia De Lange

#### Monday, 21 February 2011

10.00-11.30 - Examination

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## Course detail

### Scientific Methodologies

**Organizer:** R. Visintin - **Dates:** 31 Jan - 3 Feb 2011

#### Format

1 lecture in the morning and 1 practical activity in the afternoon

#### Location

Meeting Room 1-2

#### Monday, 31 January 2011

9.30-10.00 - Welcome

10.00-11.00 - Literature Analysis: How to Read a Paper (*R. Visintin*)

11.00-12.00 - Literature Analysis: How to prepare a Journal Club (*R. Visintin*)

15.00-17.00 - Scientific Writing (*R. Visintin*)

#### Tuesday, 1 February 2011

9.30-10.45 - How to talk about science: Oral presentations (*R. Visintin*)

11.00-12.30 - How to talk about science: Poster presentations (*R. Visintin*)

15.00-17.00 - Journal Club Exercise (*R. Visintin*)

#### Wednesday, 2 February 2011

9.30-12.00 - Experimental design (*R. Visintin*)

15.00-17.00 - Presentation exercise

#### Thursday, 3 February 2011

9.30-10.30 - Facilities Presentation (*M. Alcalay*)

11.00-13.00 - Examination (1st group)

15.00-17.00 - Examination (2nd group)

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