



PhD in Molecular Medicine / Molecular Oncology / Courses - Milan

Courses 1st year

Scientific Methodologies

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

last update: 12/01/11

Molecular and Cellular Biology

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

last update: 03/02/11

Molecular Oncology

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

last update: 15/03/11

Animal Models

Organizer: M. Mione/T. Vaccari - Dates: 2-6 May 2011

last update: 02/05/11

Statistics

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

last update: 29/08/11

Bioinformatics

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

last update: 14/10/11

Courses 2nd year

Genomics and Proteomics

Organizer: M. Alcalay - Dates: 9-11 March 2011

last update: 28/02/11

Imaging Technologies

Organizers: Parazzoli/Faretta - Dates: 11-14 April 2011

last update: 28/03/11

Structural Biology

Organizer: M. Mapelli - Dates: 20-22 June 2011

last update: 16/06/11

Cancer Genetics

Organizer: S. Casola - Dates: 4-7 October 2011

last update: 03/10/11

Courses 3rd year

From Target to Drug Discovery

Organizer: A. Migliazza - Dates: 4-19 July 2011

last update: 05/07/11

Scientific Writing

Organizer: P. Romano - Dates: 22-23 September 2011

last update: 19/09/11

Optional Courses

Computational Analysis of Molecular Networks

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

last update: 06/06/11

Ethical Issues

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

last update: 05/09/11

Immunology

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

last update: 22/11/11

[History of Biomedicine](#)

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

last update: 02/05/11



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)



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



Course detail

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



Course detail

Animal Models

Organizer: M. Mione/T. Vaccari - Dates: 2-6 May 2011

Format

Lectures and Practicals

Location

Meeting Room 1-2

* Gold Room

Monday, 2 May 2011

- * 9.30 - Introduction (*T. Vaccari, IFOM-IEO Campus*)
- * 9.45-11.45 - Yeast (*R. Visintin & P. De Wulf, IFOM-IEO Campus*)
- * 12.00-13.00 - Yeast Practicals (*tutors: C. Lucca - E. Ferrari*)

Tuesday, 3 May 2011

- 9.30-10.45 - *C. elegans* (*J. Solinger, University of Basel, Switzerland*)
- 11.00-12.30 - *C. elegans* Practicals (*tutor: MG Malabarba*)

Wednesday, 4 May 2011

- 9.30-10.45 - *Drosophila* (*T. Vaccari, IFOM-IEO Campus*)
- 11.00-12.30 - *Drosophila* Practicals (*tutor: T. Vaccari*)

Thursday, 5 May 2011

- 9.30-10.15 - Zebrafish (*M. Santoro, University of Turin*)
- 10.30-11.15 - Zebrafish AS A MODEL system for biomedical research (*M. Santoro*)
- 11.30-12.30 - Zebrafish Practicals (*tutor: G. Deflorian*)

Friday, 6 May 2011

- 9.30-10.45 - Mouse (*S. Casola, IFOM-IEO Campus*)
- 11.00-12.30 - Mouse Practicals (*tutor: E. Allievi*)
- 14.00-15.00 - Exam



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



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



Course detail

Genomics and Proteomics

Organizer: M. Alcalay - Dates: 9-11 March 2011

Format

2 lectures each day and 1 practical

Location

Meeting Room 1-2

Wednesday, 9 March 2011

9.30-10.45 - Introduction to Genomics approaches (*M. Alcalay, IFOM-IEO Campus*)

11.00-12.15 - Epigenomics and High-Throughput Applications (*G. Natoli, IFOM-IEO Campus*)

Thursday, 10 March 2011

9.30-10.45 - Introduction to Proteomics (*G. Grigorean, IFOM-IEO Campus*)

11.00-12.15 - Applying proteomics to cancer biology (*T. Bonaldi, IFOM-IEO Campus*)

14.00-16.00 - Practicals on proteomics (*tutor: P. Soffientini, IFOM-IEO Campus*)

Friday, 11 March 2011

9.30-10.45 - Tissue Microarrays (*M. Capra, IFOM-IEO Campus*)

11.00-12.15 - Cell microarrays (*A. Zanardi, Tethis, s.r.l.*)



Course detail

Imaging Technologies

Organizers: Parazzoli/Faretta - **Dates:** 11-14 April 2011

Format

Lectures in the morning, practical sessions in the afternoon

Location

Meeting Room 1-2

Monday, 11 April 2011

9.00-13.00 Optical microscopy: an introduction (*M. Faretta, M. Garre'*)

- Introduction to the Course (goal, organization)
- Basic Optical and Confocal Microscopy
- Total Internal Reflection Fluorescence Microscopy

14.00-16.00 Practicals (*M. Garre', E. Montani, A. Oldani, D. Parazzoli, S. Barozzi, M. Faretta*)

- Practical demonstration: Hands on the Widefield and Confocal Fluorescence Microscope. How to acquire Fluorescence Images

Tuesday, 12 April 2011

9.00-13.00 Live Cell Imaging (*S. Barozzi, A. Oldani, D. Parazzoli*)

- Basic Techniques: Transmitted light observation
- Fluorescence tagging (fluorescent proteins overview, vital dyes)
- The mission of live cell imaging: keep your sample alive: free radicals production and phototoxicity
- High resolution versus high content imaging
- Applications: monitoring cell division, cell tracking, cellular activities
- Confocal Live-Cell Imaging: widefield, point-scanning confocal, spinning disk microscopy

15.00-17.00 Practicals (*M. Garre', E. Montani, A. Oldani, D. Parazzoli, S. Barozzi, M. Faretta*)

- Preparing images for publications: color merging, resizing, scale bars. Basic Image Analysis
- Open discussion: An imaging based research project (part I: multiparameter fluorescence analysis)

Wednesday, 13 April 2011

9.00-13.00 Flow Cytometry (*L. Raeli, S. Ronzoni, A. Sciallo*)

- Basic Flow Cytometry: Instrumentation and data interpretation
- Cell Sorting: basics and instrumentation
- Cell Sorting applications
- Flow Cytometry applications

15.00-17.00 Practicals (*M. Garre', E. Montani, A. Oldani, D. Parazzoli, S. Barozzi, M. Faretta*)

- Open discussion: An imaging based research project (part II: Live cell imaging analysis)

Thursday, 14 April 2011

9.00-13.00 Functional Microscopy (*E. Montani, M. Faretta, G. Ratto*)

- Understanding Molecular Mobility: Fluorescence Recovery After Photobleaching (FRAP) and Photoactivation
- Advanced Fluorescence Microscopy Applications in Cell Biology
- In-vivo Two-photon Microscopy

14.30-16.30 Evaluation Test (*only to the SEMM PhD students*)

Course detail

Cancer Genetics

Organizer: S. Casola - Dates: 4-7 October 2011

Format

2 lectures per day, seminars by the external speakers

Location

Meeting Room 1-2

Tuesday, 4 October 2011

11.00-12.45 Non-mammalian models for Cancer Research (*M. Vidal, Beatson Institute for Cancer Research, Glasgow*)

Wednesday, 5 October 2011

9.30-10.45 - Tools and methods to study cancer in mouse models (*S. Casola, IFOM-IEO Campus*)

11.00-12.30 - Murine models of leukemogenesis, and their use in molecular and pharmacological studies (*S. Minucci, IFOM-IEO Campus*)

Thursday, 6 October 2011

9.30-10.45 - Understanding biochemical mechanisms responsible for genome stability maintenance using a vertebrate cell free system (*V. Costanzo, London Research Institute, UK*)

Friday, 7 October 2011

9.00-10.45 - Genetics of acute leukemia: from human disease to animal modeling (*I. Aifantis, NYU School of Medicine, USA*)

last update: 03/10/11



Course detail

Structural Biology

Organizer: M. Mapelli - Dates: 20-22 June 2011

Format

Lectures in the morning and Practicals in the afternoon

Location

Meeting Room 1-2

Library (*Tutorials*)

Monday, 20 June 2011

9.30-12.00 - From genes to crystals: preparing and crystallizing protein samples (*M. Mapelli, IFOM-IEO Campus*)

14.00-17.00 - Pymol Tutorial I (*tutors: M. Mapelli, S. Pasqualato, F. Villa*)

Tuesday, 21 June 2011

9.30-12.00 - Protein kinase from a structural perspective (*A. Musacchio, IFOM-IEO Campus*)

14.00-17.00 - Pymol Tutorial II (*tutors: M. Mapelli, S. Pasqualato, F. Villa*)

Wednesday, 22 June 2011

9.30-12.00 - Determination of macromolecular structures by X-ray crystallography (*A. Musacchio*)

15.30-18.30 - Crystallization Tutorial (*tutors: S. Pasqualato, V. Cecatiello*)



Course detail

From Target to Drug Discovery

Organizer: A. Migliazza - Dates: 4-19 July 2011

Format

Lectures in the afternoon, one visit at the Nerviano Medical Sciences

Location

Meeting Room 1-2

Monday, 4 July 2011

9.15-18.30 Journey through the Research & Development process "dal vivo" at Nerviano Medical Sciences (viale Pasteur 10, 20014 Nerviano - Milano)

9.30-10.45 Intro on the drug discovery and development process (facts and figures) (*A. Migliazza*)

10.45-11.30 Target identification/ validation (*L. Gianellini/F. Gasparri*)

11.30-12.00 Protein production (*C. Perrera*)

12.00-12.30 Assay set up, development (*N. Avanzi*)

12.30-13.15 LUNCH in the cafeteria with the guests

13.30-14.30 Chemical collections and compound handling - Visit to facility (*M. Monti*)

14.30-15.30 High throughput screening - Visit to facility (*A. Leone*)

15.30-16.30 Drug-target interactions - Visit to the "virtual room" (*C. Orrenius/J. Bertrand*)

16.30- 17.30 Cell based mechanism of action validation/ screening - Cell-based screenings and Cellomics tour (*D. Ballinari/F. Gasparri*)

17.30-18.15 Efficacy testing in animal tumor models (*E. Pesenti*)

Wednesday, 6 July 2011

14.00-16.15 Application of Pharmacokinetic/ Pharmacodynamic Modelling (PK/PD) in drug discovery (*D. Montanari, Aptuit, Verona*)

16.30-18.00 Notions and examples of in vivo drug behavior (*A. Genazzani, Universita' Piemonte Orientale Novara*)

Friday, 8 July 2011

11.00-13.15 Complex cell-based assays for high-content RNAi and compound screening (*E. Krausz, Janssen R&D, Janssen Pharmaceutica NV, Beerse, Belgium*)

14.00-16.15 Notions of toxicology, including studies required before and during human testing of a new drug (*P. Marinelli, Harlan Laboratories, Basel, Switzerland*)

16.30-18.30 Diagnostic and predictive markers for targeted therapies (*A. Sartore Bianchi, Dipartimento Oncologico, Ospedale Niguarda Ca' Granda, Milan*)

Tuesday, 19 July 2011

15.00-17.00 New drugs for breast cancer subtypes: targeting driver pathways to overcome resistance (*G. Curigliano, European Institute of Oncology*)



Course detail

Scientific Writing

Organizer: P. Romano - Dates: 22-23 September 2011

Format

2 interactive lectures in the morning

Thursday, 22 September 2011

10.00-13.00 - What's in a paper (Interactive session)

Location: Silver room

Friday, 23 September 2011

10.00-13.00 - Writing style (Instructor led session):

- How to start
- Writing the various parts of the paper

14.00-15.00 - Copyrights and Plagiarism - old problems and the new technologies (*S. Petersen-Mahrt*)

Location: Gold room



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. Blüthgen, Charité, Universitätsmedizin Berlin*)

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

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*)



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



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*)



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