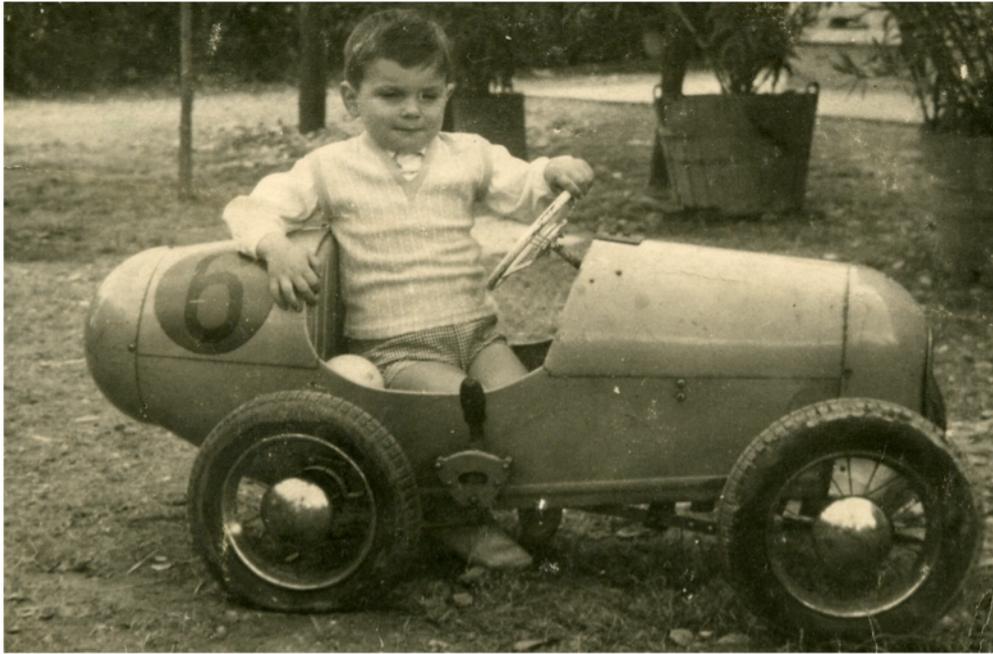




Welcome to the Virology course



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This course aims to provide students with an advanced knowledge of cell and molecular biology of animal viruses, of the interactions between viruses and cells in which they replicate, and of the applications of viruses to deliver and express either their own or foreign genes.

Specific learning objectives are:

- the repertoire of viral strategies to endure in host populations;*
- the principles of viral pathogenesis: from the infection of single cells to the interplay with their host organisms and spread in populations;*
- how to cultivate and assay viruses in the laboratory;*
- the principles involved in developing methods of treatment and control of viral infections;*
- how to engineer viral genomes to deliver and express specific genes.*

GENERAL VIROLOGY

- Cell and molecular biology of virus-host cell interactions.
- Mechanisms of viral pathogenesis
- Examples of DNA and RNA viruses infections.
- Prevention and control of viral infections and diseases. Antiviral drugs: mechanisms of action of approved molecules.
- Vaccines: a proven defense against viral infections.

APPLIED VIROLOGY

- Basic techniques for virus cultivation and assay. Principles of diagnostic virology.
- Examples of the design, discovery, and validation of candidate antiviral compounds.
- Examples of the discovery and development of candidate viral vaccine targets.
- Engineering viral genomes to deliver and express genes of interest. Rational design, development and applications of the most common viral vectors. Examples of viral vectors: AAV, Alphavirus, Adenovirus, Baculovirus, Poxvirus, Rabdovirus, Retrovirus, Lentivirus.
- Examples of applications of viral vectors for protein expression, gene delivery, gene therapy, and vaccine development.

- **Lessons notes**

- **Presentations available at the following link:**
<http://cmb.i-learn.unito.it/>

The following Virology textbook is recommended and available from the teacher or at the DBIOS library:

- Flint S.J., Enquist L.W., Racaniello V.R., Skalka A.M. – **Principles of Virology** – 4th ed. ASM Press, 2015

• Web sites of interest

- <http://viralzone.expasy.org/>
- <http://www.viprbrc.org/brc/home.do?decorator=vipr>
- <http://www.virology.net/garryfavwebindex.html>
- <http://jvi.asm.org/>

Virology A.Y. 17-18 Course Grade

Midterm Multidisciplinary Test (Optional)

Multidisciplinary Research Essay (Optional)

Final Exam

Virology A.Y. 17-18 Course Grade Determination

Midterm Multidisciplinary Test (MMT)

The MMT will be in common with the courses of Advanced Cell Biology and Biotechnology, Cell Physiology, and Oncology and Molecular Pathology. It will be a Moodle-based test of 32 questions (8 for each course): 28 with a variety of formats (multiple choice, true/false, filling in checklists) and 4 open questions. The optional MMT will give rise to additional points to the final grade of final exam of all courses, provided this will be passed in the first session (January-February 2018). Correspondence between Midterm Multidisciplinary Test vote and additional points for final exams is as follows: 22-23/32, 0.5 points; 24-25/32, 1 points; 26-27/32, 1.5 points; 28-32/32, 2 points. The MMT will be held on **November 2nd, 2017**.

Multidisciplinary Research Essay (MRE)

This at-home assignment will be in common with the courses of Advanced Cell Biology and Biotechnology, Cell Physiology, and Oncology and Molecular Pathology. It will refer to methodologies and technical approaches relevant to all courses. The essay (up to 2000 characters + figures, tables and references) will be prepared by groups of normally three students and orally presented for discussion with Teachers at the end of courses. The optional MRE will give rise to additional points to the final grade of final exam of all courses, provided this will be passed in the first exam session (January-February 2018). Correspondence between vote to the Multidisciplinary Research Essay and additional points for final exams is as follows: 22-23, 0.5 points; 24-25, 1 points; 26-27, 1.5 points; 28-30, 2 points.

Virology A.Y. 17-18 Course Grade Determination

Virology Final Exam

- *The final exam will be a Moodle-based test of 18 questions with different formats (multiple choice, true/false, filling in checklists) and 4 open questions for a maximum grade of 32/30.*
- *Grading 31 and 32 will give rise to “ 30 cum laude”.*
- *Any additional points obtained by MMT and MRE will be added to the final exam grade of the first exam session (January 29, 2018 - February 26, 2018; 2.00 pm).*