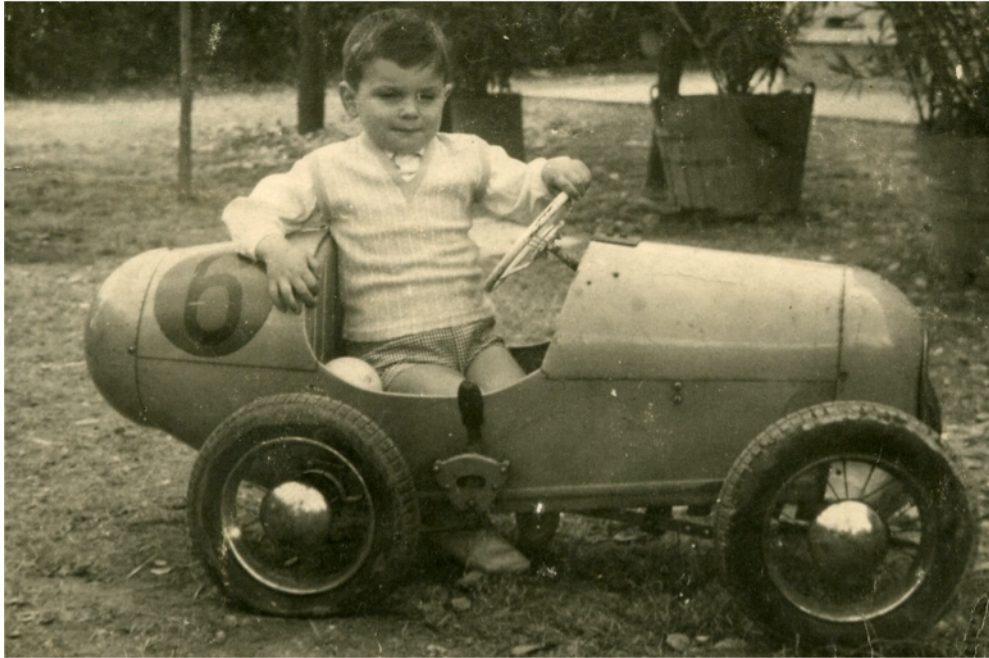




***Welcome to the Virology course***



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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 for genome replication and expression;*
- *the principles of viral pathogenesis: from the infection of single cells in the laboratory 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 animal viruses: the infectious cycle, the diversity of replicative strategies of DNA and RNA viruses,*
- *Virus-host cell interactions.*
- *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 textbooks are 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** – 4<sup>th</sup> ed. ASM Press, 2015
- Acheson, N.H.- **Fundamentals of Molecular Virology** – 2<sup>nd</sup> ed. John Wiley and Sons, 2011

**•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. 16-17 Course Grade Determination***

***Midterm Multidisciplinary Test (Optional)***

***Multidisciplinary Research Essay (Optional)***

***Final Exam***

# Virology A.Y. 16-17 Course Grade Determination

## **Midterm Multidisciplinary Test (MMT)**

*The MMT will be in common with the courses of Advanced Cell Biology and Biotechnology, and Cell Physiology. It will be a Moodle-based test of 30 questions (10 for each course): 27 with a variety of formats (multiple choice, true/false, filling in checklists) and three open questions. The optional MMT will give rise to additional points to the final grade of final exam of each of the three courses, provided this will be passed in the first session (January-February 2016). 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 14, 2016.*

## **Multidisciplinary Research Essay (MRE)**

*This at-home assignment will be in common with the courses of Advanced Cell Biology and Biotechnology, and Cell Physiology, and will refer to methodologies and technical approaches relevant to the three 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 each of the three courses, provided this will be passed in the first exam session (January-February 2016). 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. 16-17 Course Grade Determination

## *Final Exam*

- *This exam will be a Moodle-based test of 22 questions with different formats (multiple choice, true/false, filling in checklists) and two 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 27, 2017 – February 15, 2017; 2.00 pm).*