## FONDAZIONE DiaSorin

# Mad for Science the second edition

2017/18 EDITION



# Second edition **novelties**

Given the great success of the first edition of the **Mad for Science** Competition, in 2017-2018 DiaSorin has decided to renew its project and increase the prize money to provide winning schools with the opportunity to implement their science laboratories. What are the major novelties of the second edition? Working out innovative, educational experiences about a specific theme to experience science first-hand and working with a local scientific body supporting the school in designing some of its projects.



# Second edition theme



Students and teachers taking part in the second edition of the project will reflect upon food education and will **apply science and the scientific method to food safety and quality**, given their major impact on our daily life. Competing schools will prepare a list of **5 educational experiences on food** to be run in the school laboratory dedicated to Life Sciences learning.

At least one of these 5 educational experiences shall be designed with an external scientific body, with the aim of maximizing its innovative reach and helping students meet the professional scientific world. Experiences shall be consistent with the ministerial guidelines for the development of laboratory learning along with the implementation of the Italian National Plan for Digital Education, the European new challenges in the STEM area (Science, Technology, Engineering and Mathematics) and the Guidelines for Food Education that have been drafted and sent to schools by the General Directorate for Students, the Integration and Participation of the Ministry of Education, University and Research. Specifically, the Guidelines for Food Education give ample space to school in promoting a proper food awareness.

Schools may also propose experiences investigating Food Education issues, such as **food processing, packaging, labeling, conservation and preparation** in addition to the effects of **food handling** and **hygiene-related issues**. A scientific and laboratory-based approach in tackling these issues provide knowledge and tools for a careful, conscious and responsible food consumption.





# **Competition** Timeline

- Launch of the project
  19 January 2018
- Application
  by 16 February 2018
- Project submission deadline by 16 April 2018
- Second phase: selection of the 6 finalists by 4 May 2018
- Mad for science Challenge
  16 May 2018





# Prize

#### 1° Prize

The winning High school of the Mad for Science Challenge 2018 is awarded a prize of 60,000 thousand euros for the implementation of its biolaboratory and 5,000 thousand euros per year for the following 5 years (for a total of 25,000 thousand euros over the five-year period) for the supply of consumables required for the implementation of the proposed laboratory experiences.

#### **Special communication Prize**

The Finalist High School chosen for its project presentation, public speaking skills and ability to disseminate Science will be awarded a **Special Prize for Communication**, amounting to **10,000 thousand euros** for **the purchase of laboratory items** chosen by the winning High School.



# **ID** of the 6 Finalist High Schools





High School name: High School Albert Einstein - Turin

#### Team members:

**TEACHER** Laura Massaglia **STUDENTS** Safaa Jerdouj, Marco Laudato, Federica Loperfido, Junjian Qiu, Edoardo Bernardi

Years: third, fourth and fifth

**Theme:** La sicurezza alimentare e le caratteristiche nutrizionali degli alimenti, con esperienze didattiche che valutano anche la presenza di patogeni negli alimenti

Abstract: The project focuses on food security - one of the most significant areas in terms of health education activities of our Schooland involves a strong collaboration with the local Zooprophylactic Institute. We have designed five experiences which may provide adequate laboratory support to an educational path covering the last three years of the high school classes, helping students be more aware about the theme concerned. We will deal with the nutrition facts label (comprehension of nutrient and allergen information, calories, expiry date and date of minimum durability), the definition of allergens and we will conduct experiments on the presence of allergens in food. A special focus will be on the emerging issue about antibiotic resistance and food security, analyzing the presence of pathogenic microorganisms in food through molecular biology techniques.





High School name: High School Curie-Vittorini - Grugliasco (TO)

#### Team members:

**TEACHER** Simonetta Righini **STUDENTS** Luca Corsino, Tobia Glorio, Davide Pace, Fabio Maldarella, Erica Spoletti

Years: fifth

**Theme:** Exploration of food theme starting from the analysis of Piedmont's outstanding features, like Peppermint

Abstract: in our imagination the word food links with other terms: culture, tradition, innovation, food security, sustainability, public health, taste and flavor. The analysis of the literature of food raised questions, doubts and curiosity that prompted us to investigate some topics through experimental procedure and measures. This belief is the thread linking all our experiences. We used volumetric and instrumental techniques for our analyses and we often suggested the use of tablets to produce feedback documents and the use of school platforms to share them. On our website we published explanatory material illustrating the procedures used in the educational experience. At first, we were overawed to work with an external Company (the Martin Bauer SpA) to draft the protocol for the essential oil isolated from peppermint but then it turned out to be exciting and as we have been given the opportunity to work with professionals who shared with us concrete suggestions and important information.





High School name: High School Lorenzo Cobianchi - Verbania (VB)

Team members: TEACHER Claudio Vicari STUDENTS Lorenzo Beggio, Fabio Motetta, Melania Alcide, Sophie Cavallini, Luca Cometti

Years: fourth and fifth

**Theme:** Eat healthy, safe and informed! An experimental approach to Food investigation

**Abstract:** In exploring food-related issue, which is a decisive but extremely complex factor for our life due to its cultural and symbolic meanings, we started from the idea that a scientific approach may help people become aware citizens. Our project covers various aspects of food by taking as a starting point our questions concerning foodrelated issues - from GMOs to producing food in a sustainable way. Eating healthy, safe and informed means to be aware of the need to control the microbiological quality of food, its nutritional quality and have the tools to make informed choices on sensitive subjects such as GMOs. From an educational point of view, the collaboration with the Department of Chemistry of the University of Turin has been extremely important, as it allowed us to gather significant data through chemometric investigations. This could not be possible in our school laboratory.





High School name: High School Giuseppe Peano - Turin (TO)

#### Team members:

**TEACHER** Federica Prinetto **STUDENTS** Madalina Cochior, Yassir Naanani, Nicole Agostino, Federica Schicchi e Paolo Marina

Years: third and fourth

**Theme:** Food and food education, with a special focus on chocolate - one of Piedmont's outstanding features

Abstract: the CioccolaTOmania project studies chocolate from a functional and experimental point of view. Chocolate is one of Piedmont's and Turin's outstanding features; the region is the top chocolate- producing area. Through a large number of documents and bibliographical research we discovered that chocolate has an incredible variety of chemical properties and has inspired us to develop innovative, educational and interdisciplinary activities. Experiences range from microbiological investigation to the identification of the main components of chocolate, from the analysis of allergens and chemicals, such as serotonin and theobromine, responsible for "chocoholism", to the study of polymorphism and polymorphismrelated alterations. The project came to life thanks to two important collaborations: a consolidated collaboration with the Department of Innovation- Materials Science and Technology of the University of Turin; and a new collaboration with Bioleader s.r.l., a consulting company with a test lab specialized in food security and analytical control for many sectors.





High School name: High School Augusto Monti - Asti (AT)

#### Team members:

**TEACHER** Giovanni Valente **STUDENTS** Mathieu Della Valle, Elena Agnella, Giulia Costa, Lorenzo Masera, Giuseppe Mastroianni

Years: third and fourth

**Theme:** Analysis of food security on products that may have been contaminated by mycotoxin-producing fungi.

**Abstract:** Fungi are organisms with peculiar morphological, physiological and genetic characteristics: they can colonize all the natural environments where they play a fundamental role to keep ecosystems balanced. Fungi also contaminate indoor environments and food and may be extremely dangerous as they produce mycotoxins - toxic secondary metabolites for vertebrata. Laboratory experiences investigate food security and food analysis. The project envisages the microbiological analysis of food which may be contaminated by mycotoxigenic fungi, such as dry fruit of different origin, organic and non-organic flour, to research filamentary fungi through selective plating and mycotoxins with rapid diagnostic kits. The isolated fungi will be identified through both morphological and molecular tests with the aim of drafting a handbook to be published on-line, describing the morphological characteristics and the iconographic representation of the fungal species.





High School name: Salesian Institute San Lorenzo - Novara (NO)

#### Team members: TEACHER Francesca Vandoni STUDENTS Giulia Bagnati, Lorenzo Brughera, Marta Ferrarini, Luca Lassandro, Luca Riva

Years: fourth

Theme: Integrating science and experiments with local food resources

**Abstract:** As students of the Applied Science Division of the Scientific High School in Novara, we focused our project on a typical food of our area: the gorgonzola cheese. Our decision was based on the promotion of a typical product of our territory learning, at the same time, more scientific notions about the Gorgonzola cheese and improving laboratory skills through lab experiences. We decided to develop 5 laboratory experiences according to 5 macroareas, analyzing the production and life of our product. We started from the raw material analysis, i.e. milk, and then we examined the Gorgonzola cheese nutritional values. We studied the ripening processes and mold growth. We analyzed the types of molds and their microbiological characteristics. Lastly, our project took into account also the final stage involving cheese production and the packaging of the final product.







#### **First Prize**

High School Augusto Monti **Asti** 



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# Winners

#### Special prize for communication

High School Albert Einstein **Turin** 



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