FONDAZIONE CASSA DI RISPARMIO IN BOLOGNA

GENUS BONONIAE

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

FESTIVAL DELLA SCIENZA MEDICA

Third Edition – Innovation and Tradition

20 – 23 April 2017 – Bologna

The Festival della Scienza Medica is here again. It has become a traditional appointment and the porticoes, the palaces, the historical rooms and the halls of Bologna will be crowded with the leading figures of biomedical research, with scholars, businessmen, and students to talk about the professions of tomorrow. There will be meetings for school students, visits to the Anatomical Theater, the successful open days in the city hospitals, once again the visits to the wards and an encore performance, by popular demand, of the happening/lecture on Beethoven's deafness. Germany will be the guest country this year, within the framework of a comparison with Italy on research models and institutions and on the sustainability of national health systems. All aspects of innovation, from neuroesthetics to medical apps, to current bionics and future robotics will be on stage.
The appraisal of the best in Italian research, together with the daily appointment with Nobel prize winners: Jules Hoffmann, Edvard Moser, Louis Ignarro, Tomas Lindhal, and a final surprise. On Monday, May 22, again in Bologna for a meeting with Amartya Sen, Nobel prize winner for the economic sciences in 1998: "Universal Health and Welfare: a still achievable goal?".

WWW.BOLOGNAMEDICINA.IT

DOCTOR-PATIENT RELATIONSHIP: A PATH FOR CHANGE, BETWEEN INNOVATION AND TRADITION

Between Innovation and Tradition is the third leg of the long journey undertaken by the Festival della Scienza Medica.

A long journey indeed, because the warm welcome we received and the great commitment by Scholars, Institutions, Companies, Teachers and Students allow us, I believe, to plan a long-term engagement.

Innovation goes fast while tradition, far from being merely outlined by time, is linked to our history: the history of mankind, of women and men who, since the dawn of civilization, and for their whole life, felt the need to believe that some people were able to work for the wellbeing of others, to ensure their health and keep them safe.

Tradition shaped the role of shamans, healers, and medicine men over many centuries. Then, at a quite faster pace, they all merged into the actual figure of the doctor. It all took place in an advanced environment where the selfless concern and the commitment on which the charisma of such figures was based within increasingly complex social groups, found its own definition, as it has been known and shared in the last few centuries, up to the latest advent of scientific medicine.

As it was highlighted by Eric Kandel in Bologna, the new biology science of mind is important not only because it gives a deeper comprehension of what makes us what we are, but also because it makes possible an important series of dialogues between brain science and other areas of knowledge.[1]

The process of development of medicine was long and discontinuous, it combined with an almost prodigious ability to gather pieces of knowledge and with the incessant evolution of its process of transformation into a proper science.

Within this framework, tradition was nevertheless respected and perhaps even enhanced, but the predominant (and I believe overwhelming) aim was to provide a meaning for the medicine of the future that may thus proceed in agreement with the medicine of today and tomorrow.

Medicine somewhat still feels like tradition. But, under many more aspects, it comes as innovation and technology and, at least in some branches, it widely conveys the need for a mutual understanding in the doctor-patient relationship. The latter is based today on the global nature of diagnoses and on the interaction between the doctor's and the patient's minds. Such an interaction seemed to be seen as obsolete, while now it is once again praised, almost paradoxically, as an innovative attitude.

Technological innovation makes it necessary to modify the once interpersonal relationships of the past that are now influenced by technology, which is invasive and powerful and can be transformed from a functional tool into a prevailing item.

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[1] *Lectio magistralis* given during the Second Edition of the Festival della Scienza Medica: *The Age of Insight: The Quest to Understand the Unconscious in Art, Mind, and Brain From Vienna 1900 to the Present* (Bologna, May 19th, 2016).

However, the use of a tool, as complex as it may be, cannot be the final goal, either for the doctor or for the patient.

It is not only necessary to make a tool work, but it is important to heal and cure in order to achieve results denoting increased certainties, exactness, duration, naturalness, and the possibility to support the costs weighing on society as a benefit for society itself, so that it would be correct to foresee the need for an "extraordinary maintenance" for the National Health Service (Pelissero)[2].

Which major worries could be aroused by this scenario in the making? Doctors, being satisfied with the potential performance by the machines, and frequently rewarded by evident instant outcomes, might neglect the personal approach to patients taken as a whole, thus forgetting the still obvious limits to a full understanding of numerous problem issues that, despite all achievements, are far from being solved. Also, given the situation, patients might be tempted to adopt self-treatments.

At any rate, a full integration between medicine based on traditional principles and sophisticated and constantly evolving technologies would be so costly for society that unavoidable problems concerning the economic and social sustainability would arise.
The doctor-patient relationship is changing at a fast pace, as it is also a "product of the evolution of the behavioral nervous system that could be investigated through a scientific and evolutionistic approach" (Benedetti)[3].

Scientific medicine was considered at its onset and in its fast development, including many branches and many specialties of medicine. As renowned authors pointed out, the transition from shamans to modern doctors and from shamanism (based on a spiritual concept of diseases) to scientific medicine (where the anatomical-physiological outline of diseases prevail) was a centuries-old process that appears completed by now. (Benedetti)

However, the whole process was accompanied by a fragmentation of medicine that might hinder a medical activity meant for the individual as a whole, thus widening the gap between patients and doctors.

The recent developments in neurosciences could provide a sound support for improving knowledge on the behavior of patients and on the psychological and social factors affecting diseases, and would thus be extremely relevant for doctors to carry out their mission.

All this could possibly lead to a well-founded optimism, stemming from a more refined knowledge, on the part of doctors, of their own functions. A knowledge requiring a strong commitment in terms of skills as well as the adoption of behavioral modes fit to grant patients an overall situation of trust and confidence in their doctors, thus generating mutual positive results.

Today this confidence cannot just involve people. It must go hand in hand with an as trustful attitude towards the structures where doctors must work, in order to grant anyway a medical care that fully exploits the advancements of research.

Many think that the overall economic needs of a wider, albeit definitely hierarchical, Europe require a rigidity leaving no room for the flexibility and tolerance necessary to ensure the development of medicine.

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[2] Gabriele Pelissero, *14° Rapporto annuale 'Ospedali & Salute 2016'*.
[3] Fabrizio Benedetti, *Il cervello del paziente*, Giovanni Fioriti Editore, 2016.

The problems of public expenditure come to the fore and it becomes quite difficult to work constantly in view of a greater social justice and of the struggle against the increase in inequalities.

The development of innovation and, in spite of everything, the respect for tradition must face innumerable varieties of institutions and individuals, who cannot be denied a social response to diseases, based on hope, empathy, social trust and interpersonal doctor-patient confidence.

Fabio Roversi Monaco
President Genus Bononiae. Musei nella Città

INNOVATION AND TRADITION IN BIO-MEDICAL SCIENCE. AN ESSENTIAL CONFRONTATION

Medicine is a "ensemble of developing applied sciences", according to a famous definition of the historian and epistemologist of the biomedical sciences George Canguilhem, shared by Mirko Grmek and by the most qualified philosophers of medicine of the 20th century. This idea entails that the transformation of medicine into something dealing with science started only from the second half of the 19th century. Previously, medicine was no more than a practice. This definition, however, goes beyond the usual clichés about its nature: whether it is an art/techné - as the clinicians used to think with reference to the importance of the experience and diagnostic creativity of the single doctor - or a science, as supposed by the physiopathologists, claiming that the use of the basic sciences and experimental research was essential to discover the causes of diseases.

In the last fifty years, the history of medicine has been characterized by a collaborative confrontation between innovation and tradition. For decades this took place, almost naturally, throughout the different generations. However, recently, during our times, it has acquired strong intergenerational connotations. Innovation, driven by the continuous progress of the basic sciences and the application of these results within a clinical field, is happening increasingly quickly, thus transforming that essential confrontation into an almost conflictual relationship.

Enough to allow the diffusion of the idea, which has also developed in the medical world, that medicine has become too scientific or too technological; so much so, that medicine has lost sight of the patient as a person. In other words, it has lost its sense of humanity.

This is not true. Actually, the negative perception of this confrontation between innovation and tradition is misleading. What is happening today in medicine, thanks to scientific and technological progress, is a valorization and understanding of the best that had previously been acquired by medicine before its scientific transformation. A valorization and better understanding of tradition.

The third edition of the **Festival della Scienza Medica** of Bologna is dedicated to this essential confrontation between innovation and tradition. As in the previous editions, several contributions will aim to show how relevant scientific and technological progress is in establishing the values of the psychological aspects within the doctor-patient relationship, in the personalization of medical treatment, in non-authoritarian caring and in the educational role of the medical and health sector, etc.

Digging into the past, regarding the historical aspects, will not be left out, going through the more or less ancient discoveries and explanations concerning medicine and disease. The paths and events that have imposed the biomedical world to intellectually reorganize intervening strategies to help patients will be retraced, leading up to the current discoveries and innovations of today.

The theme of the third edition of the **Festival della Scienza Medica** is socially and culturally heart-felt and it is often subject to discussion. On one hand, pressure coming from basic research and the demand for healthcare generates specific market dynamics to constantly change and improve diagnostic technologies and medical treatment. On the other hand, we are witnessing the assertion of some traditional values, almost an attempt to protect oneself by defending

them; a typical example of this is the doctor-patient relationship, which is considered as being threatened by the possible dehumanizing dimensions of technological innovation.

With the third edition of the **Festival della Scienza Medica**, we would like to demonstrate that there is no substantial contradiction between innovation and tradition, if the problem is analyzed from a coherent cultural perspective. This is the stimulating perspective that **Bologna Medicina** would like to open for public debate.

Gilberto Corbellini and **Pino Donghi**

LOCATIONS

1.
PALAZZO PEPOLI. MUSEO DELLA STORIA DI BOLOGNA
Sala della Cultura
(via Castiglione, 8)

2.
CHIESA DI SANTA CRISTINA
(piazzetta Morandi, 2)

3.
AULA ABSIDALE DI SANTA LUCIA
(via de' Chiari, 25)

4.
PALAZZO DELL'ARCHIGINNASIO
Teatro Anatomico
Aula dello Stabat Mater
Aula delle Conferenze Società Medica Chirurgica di Bologna
(piazza Galvani, 1)

5.
PALAZZO RE ENZO
Salone del Podestà
Sala di Re Enzo
Sala degli Atti
Punto informazioni
(piazza del Nettuno, 1)

6.
SANTA MARIA DELLA VITA
(via Clavature, 10)

7.
ORATORIO DI SAN FILIPPO NERI
(via Manzoni, 5)

8.
PALAZZO POGGI
Museo di Palazzo Poggi
MEUS – Museo Europeo degli Studenti
Museo della Specola
(via Zamboni, 33)

9.
CASA SARACENI
(via Farini, 15)

10.
ACCADEMIA DI BELLE ARTI
Aula di Anatomia
Teatro
(via Belle Arti, 54)

11.
MUSEO DELLE CERE ANATOMICHE "LUIGI CATTANEO"
ISTITUTI ANATOMICI
(via Irnerio, 48)

12.
POLICLINICO DI S. ORSOLA
(viale Ercolani)

13.
OSPEDALE MAGGIORE
(largo Bartolo Nigrisoli, 2)

14.
OSPEDALE BELLARIA
(via Altura, 3)

15.
POLO MULTIFUNZIONALE PER LA DISABILITÀ "CORTE RONCATI"
(via S. Isaia, 90)

16.
MAST. MANIFATTURA DI ARTI, SPERIMENTAZIONE E TECNOLOGIA. ARTS, EXPERIENCE AND TECHNOLOGY
Auditorium
(via Speranza, 42)

17.
HOSPICE SERÀGNOLI
(via G. Marconi, 43 Bentivoglio – BO)

All Formats

FOR STUDENTS AND FAMILIES

The marvel of the human body explained through games and drawings. The magnificent Anatomical Theater, one of the jewels of Bologna, especially open for students and families. Guided tours along historical buildings and through the university life of the past. A court where high-school students will act as jurors on bioethics issues.

MADE IN GERMANY

The 2017 guest country is Germany. Drawing on scientific research and the organization of the national health systems, a comparison between Italy and Germany, with illustrious guests, to know more about the advances achieved by a European leading country, and to look for appropriate and possibly embraceable solutions to global problems.

SPECIAL EVENTS

Music, arts, cinema, shows. Medicine meets some leading figures of history and of current events, mixing issues, testing patterns of translation, trying to boost the richness of the philosophical-medical thought as compared to other disciplines.

VISIT TO THE WARD

Three beds, three patients, the same disease but different diagnoses and treatments in different historical periods. A format in between a lecture and a theatrical performance: the audience follows the "head physicians" - just like the morning "visit to the ward" in hospitals - as they interview patients/students who in turn report on the medical record of their times. The advancements of medicine during a journey in the ward of history with old and new patients.

FOCUS

A closer look at the social and bio-medical events, delimited topics in an effort to define even better the boundaries of the discipline while investigating its different levels of complexity.

CONTAMINATIONS

We are living in a new time where the boundaries between different disciplines are becoming less definite. Innovation requires medicine to deal with languages and branches of research and teaching that outline likely future developments. Aesthetics and ethics, IT and computer science, telecommunications - but also the languages of art and of movie and TV fiction.

EVOLUTION OF MEDICINE

As any other science, medicine, too, is constantly and positively evolving, and the discoveries of the past shape the supporting platform for future knowledge. The lectures on the agenda provide an overview on some recent developments of bio-medical research - but also on seemingly distant disciplines, such as IT and telecommunications - and draw the forthcoming outline of medicine and of the future relationship between doctors and patients.

EX CATHEDRA - A LECTURE BY A NOBEL PRIZE WINNER

Master lectures, in keeping with the tradition of the great Alma Mater clinicians and scholars and of the first modern medical school in the history of University.

PROMOTED BY

A series of meetings promoted and organized by agencies, institutions, businesses, industrial

April 19th

21.00 – AULA ABSIDALE DI SANTA LUCIA

The sound of silence. Genius and suffering in Ludwig van Beethoven
Maurizio Giani
Antonio Pirodda
Fabio Regazzi
readings by: **Nicola Bortolotti**
chairperson: **Pino Donghi**

Most people know that Beethoven was able to express his musical genius despite his deafness. Which illness affected him, what did he suffer from? Which diseases, and how many pathological stages did he go through before composing his Ninth Symphony, and his last, world-famous string quartets, in the almost-total silence of his mind? "By popular demand", as the saying goes in show-business, and following the highly successful past edition, Beethoven's compositions – as he presumably heard them as his disease gradually worsened – are again on the agenda at the Festival della Scienza Medica in Bologna. A touching testimonial and a happening/lecture to appreciate the complex relationship that can occur between disease and creativity.

April 20th

09.00/10.30 – AULA DI ANATOMIA DELL'ACCADEMIA DI BELLE ARTI

Artistic anatomy school
Tour and workshop for primary school students
The aim of this educational activity is to introduce children to the special relationship between art and medical science typical of the study and the history of artistic anatomy. After a brief tour of the historic building of the Academy of Fine Arts, the students will take part in a workshop of anatomical design.
For 4th and 5th grade students. **By reservation only (please reserve by email:** festivaldellascienzamedica@genusbononiae.it**)**

09.00/11.00 – S. MARIA DELLA VITA

Between life and death: guided visit with stage drama thorough the famous "Portico della Vita" and "Portico della Morte"
An animated visit in the Sanctuary of Santa Maria della Vita to go through the places devoted to the study of medicine and the care of sick people, reaching the historic Palazzo of the Archiginnasio. A journey through the centre of Bologna accompanied by a weird student that will tell stories and anecdotes of the past university life.
Suitable for: lower secondary schools
By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it**)**

09.30 – TEATRO DELL'ACCADEMIA DI BELLE ARTI

The jury has the floor
Theater event and workshop
A medical case typified by a strong bioethical problematic aspect will be submitted to the students by way of a basic script. The ending of the story will be left "open" on purpose, in order to serve as the starting step for a workshop on the complex scientific, philosophical, and moral issues connected to the case. The students will work in groups, with the support of some expert coordinators, and will thus become the key players of a debate on bioethics. Just like a real jury, they will be summoned to choose the ending that they deem to be the "fairest" one, and will explain their decision to their schoolmates.
For high-school students. **By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it)**

11.00 – SALA DI RE ENZO

Genius on board
Eugenio Aringhieri
Sergio Pistoi
Andrea Vico
In collaboration with: **Farmindustria**
Innovation as the core of a special event that, following the activities suggested by Farmindustria during the Festival della Scienza Medica, offers a sound professional prospect to young generations. A report on the world of biotech drugs and the related job opportunities will open the event, to be followed by an experience shared with the students: a lively and witty investigation of frontiers and prospects of biotechnology and genetics, with the support of videos and simulated "genetic testings".
A true cross-media event that will involve the students and will help them reflect on their own future.

11.30 – ATTI HALL

Open Science and the data-revolution era

Federica Rosetta

Promoted by: **Elsevier**

Today 80% of the data produced by scientific research go lost, and the possibility to reproduce scientific results and generate new discoveries is lost as well. The advent of new technologies, together with a new consideration towards transparent and open practices, i.e. Open Science, in carrying out research studies, is deeply changing such a trend. It is no coincidence that some speak of a true data revolution! The present report aims at encouraging a debate on data management and publication (Open Data) and on the meaning and importance of Open Science.

16.00 – SALA DI RE ENZO

ASTER: a life science platform

Paolo Bonaretti

Promoted by: **Intesa Sanpaolo**

ASTER is a Consortium including universities and Italian research centers active in the area, Unioncamere, and the Regional Government of Emilia Romagna. The Consortium has been working for over thirty years for the enhancement of research and technological transfer. Since 2007, Aster coordinates the High Technology Network of Emilia-Romagna, which includes 82 labs devoted to industrial research in 6 primary sectors of the regional economy: mechanics and materials, agri-food, building, life sciences, ICT and design, energy and the environment. Recently, in the field of life sciences, a virtuous ecosystem of innovation set in that will promote research projects of great importance for the related industry, in view of improved quality and competitiveness of the regional production system, also through the implementation of deployment plans for strategic specialization in the field of public health.

17.00 – SALA DI RE ENZO

Nuclear medicine and breast cancer treatments: from sentinel lymph node biopsy to receptor chemotherapy

Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori S.r.l. IRCCS

Giovanni Paganelli

Promoted by: **Intesa Sanpaolo**

The Istituto Romagnolo per lo Studio e la Cura dei Tumori IRCCS (IRST) stems from a certainty: the battle against cancer can be won. The constant advances in the prevention of tumors, the effectiveness of treatments, that can be estimated on the basis of the increased survival indexes, and the continuous achievements in research, prove that what up to some time ago was just a hope is now a reality. The Center opened in 2007 in Meldola, and is now the main hub for a network of functional interconnected operating structures. It hosts highly complex technological research activities and innovative treatments. It is the core venue for clinical research in the region and promotes the implementation of caregiving activities in local oncological structures. Following the best qualified examples set by the Organization of European Cancer Institutes (OECI) and the Association of American Cancer Institutes (AACI), the Istituto aims at being considered as a new modern model of Comprehensive Cancer Care Network in the oncological scenario of the NHS structure of the Romagna region, strongly committed towards the local population. While providing the necessary services, IRST complies with its own social responsibility towards patients, while focusing actions and projects on the safety and respect of the individual.

18.00 – SALONE DEL PODESTÀ

Inauguration with the Authorities

19.00 – SALONE DEL PODESTÀ

Nobel Lecture

The Innate Immune Response: from Insects to Human

Jules Hoffmann

Chairperson: **Alberto Mantovani, Fabio Roversi Monaco**

Insects are a formidable zoological group, representing an estimated 80 % of extant species and putting one third of humanity at risk of severe morbidity or deaths through their vector capabilities for various types of microbes. For a long time, insects have been known to be themselves particularly resistant to infection. We and others have undertaken an in-depth analysis of the mechanism underlying this resistance, and essential results with be given in the presentation. Unexpectedly, it appeared that stringent similarities exist between Drosophila antimicrobial defenses and innate immune reactions in mammals – extending to such hallmark molecules as the Toll/ Toll-like receptors, the roles of which in immune defenses were first uncovered in Drosophila. The presentation will describe essential characteristics of innate immunity and trace their appearance back to the first multicellular organisms, probably a billion of years ago. Adaptive immune defenses however are absent from invertebrates (95 % of species to-day) and have appeared more recently, probably in cartilaginous fishes some 450 millions years ago. Studies from several laboratories have conclusively shown over the last two decades that innate immunity is required to activate adaptive immunity, leading to a paradigm shift in our global understanding of immune defences.

April 21st

09.00/10.30 – AULA DI ANATOMIA DELL'ACCADEMIA DI BELLE ARTI

Artistic anatomy school, for primary schools (see below)
For 4th and 5th grade students. **By reservation only (please reserve by email:** festivaldellascienzamedica@genusbononiae.it**)**

09.00/11.00 – S. MARIA DELLA VITA

Between life and death: guided visit with stage drama thorough the famous "Portico della Vita" and "Portico della Morte" (see below)
By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it**)**

09.30 – TEATRO DELL'ACCADEMIA DI BELLE ARTI

The jury has the floor (see below)
For high-school students. **By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it)**

10.00 – SALA DI RE ENZO

The DNA oracle: what can we discover reading the Genome?
Massimo Delledonne
The extraordinary advancements of genetics laid the foundations for reading and understanding the information contained in our DNA, the genome. I "read" my genome for the first time in 2011 and I have been constantly working to decode it since then. It is a difficult but exciting process that, besides allowing me some advantages for the prevention of certain diseases, helps me to know myself better and to explain some of my behavioral attitudes.

10.30 – STABAT MATER

Made in Germany
Physics helps Medicine
Herbert Welling
The laser is just a light source, but it turns out, that this light source can be a helpful tool in the discipline of medicine for diagnostics, surgery and research.
Back to the roots. Already some decades before, the laser allowed the direct observation of thrombus formation in veins and arteries and was further developed as a bloodless scalpel for heavily vascularized tissues, like in liver surgery. Later, the short laser pulses with femtosecond pulses were developed and applied for modern stent-fabrication or highly precise eye surgery.
For the future there are fascinating but realistic visions. In ophthalmology, the laser may be able to overcome presbyopia or age related macula degeneration. In generating artificial organs or hybrid implants, laser based techniques might be used for the generation of complex 3D tissues by laser printing of biological cells or even for optical control of basic cellular functions, like muscle excitation or insulin production.

11.00 – SALA DEGLI ATTI

Visit to the ward - Emergency Department
Simulated hospital rounds with: **Mario Cavazza**
As it is by now customary, the Sala degli Atti of Palazzo Re Enzo will host the "visit to the ward". A travel through time, from tradition to innovation, a tour guided by some leading figures of the Bologna Medical School, along the developments of the science of healing. An exclusive appointment by Bologna Medicina

11.30 – SALONE DEL PODESTÀ

Innovation and embryonic stem cells. Positive perspectives for neuro degenerative diseases

Elena Cattaneo

Embryonic stem cells have been opposed for years and were the object of (unreasonable) lively debates on their supposed "scientific ineffectiveness" meant to contrast their use on the basis of questionable ethical reasons. They are today an extraordinary, irreplaceable tool for understanding the events typifying human development. They also stand out as a unique paradigm of cell multipower, whence special conditions applicable to the latest induced multipower stem cells can be extracted. Last, but most certainly not least, they are at the heart of some sound and rational regenerative medicine strategies. Recently, amazing results were achieved (in research on Parkinson's disease as well) that represent a concrete necessary precondition to proceed towards future clinical trials. They also express the new ways of thinking constantly raised by cognitive challenges, so that new questions and new opportunities arise - and, sometimes, inexcusable impediments. All citizens, to whom the achievements of science are addressed, must be made aware of all this.

12.00 – AULA DELLE CONFERENZE SOCIETÀ MEDICA CHIRURGICA DI BOLOGNA

Innovation in orthodontics and surgery

Renato Cocconi

Mirco Raffaini

Chairperson: **Giovanni Zucchelli**

Is it possible to work on incorrect dental occlusions so as to obtain regular teeth, a pleasant smile and, whenever required, an overall re-balancing of the face? What can be done today, thanks to the new digital technologies, that could not be done in the past?

Thanks to the latest innovations, such as digital scanners, computerized tomography, and state-of-the-art software, it is now possible to carry out virtual simulations on patients, e.g. changing the position and shape of teeth, of jaw-bones and of the different parts of the face (nose, chin, cheekbones, etcetera) in order to achieve a functional and aesthetic normalization or even an imitation of what appears attractive in nature. The purpose is to attain highly balanced results that will not reveal any sign of the dental, orthodontic, or surgical treatments carried out.

12.00 – STABAT MATER

Surgery and pharmacological therapy in the transplant medicine

Antonio Pinna

Nas Undre

Transplant medicine is a most complex specialty, featuring the highest level of clinical and pharmaceutical research. A key problem in the transplant process is rejection, during which the recipient's immune system react against the transplanted organ, so that the operation proves unsuccessful and it might be necessary to remove the organ from the recipient. In addition to trying to reduce rejection risks by previously seeking to determine immunogenetic compatibility, a successful transplant depends on the immunosuppressant action of drugs fit to inhibit the activity of the immune system. Which roads is pharmaceutical research now exploring to develop new immunosoppressants?

12.30 – SALA DELLA CULTURA

The value of global health and the price for the new drugs

Mario Melazzini

Massimo Scaccabarozzi

Thanks to drugs and vaccines we live better and longer. Today, the 'Renaissance' of research makes innovative drugs, as well as targeted, more effective therapies, available to patients. It is

necessary for the governance, too, to innovate by enhancing therapeutic results and assessing the overall cost of the whole treatment, not just the cost of drugs, that often produces savings for other welfare items.

15.00 – SALONE DEL PODESTÀ

Science of beauty
Semir Zeki
The experience of beauty, whether derived from sensory sources such as visual art or music, from moral sources or from highly cognitive ones such as mathematics, correlates with activity in the same part of the emotional brain, field A1 of medial orbito-frontal cortex (mOFC). Moreover the intensity of activity there during aesthetic experiences is directly related to the declared intensity of the aesthetic emotion. This raises important questions about the role and uses of beauty, not only in our daily experience but also in our efforts to understand the structure of the Universe in which our brains have evolved, through the experienced beauty of mathematical formulations.

15.00 – STABAT MATER

Made in Germany
Innovation in German biomedical science
Georg Bretthauer
Omid Majdani
Thomas Schmitz-Rode
Heiko Zimmermann
Chairperson : **Stefana Nava**
The great progress of the Institute of Applied Computer Science at the Karlsruhe Institute of Technology and the Ophthalmology Hospital of the University of Rostock; the promising innovation underlying the bio-hybrid approach for new-generation cardiovascular implants; the sound potential implied by the use of pluripotent stem cells in view of an increasingly accurate treatment customization, while the discovery and development of new drugs proceeds at an ever faster pace. German research with its best structures and prospects opening up to the future of medicine.

15.45 – SALA DI RE ENZO

Stem cells between science and (pseudo)ethics
Michele De Luca
Regenerative medicine based on the use of stem cells for the reconstruction of connective tissues is an important challenge for the treatment of incurable diseases. There is no lack of scientific excellence in Italy. However, in Italy, freedom of research with promising cells such as embryonic stem cells faces, more than anywhere else, scientifically unjustified obstacles and (pseudo)ethical barriers.

16.30 – ORATORIO DI SAN FILIPPO NERI

Back to the past
Salvatore Maria Aglioti
Mariano Bassi
Pierdante Piccioni
The last day of May 2013 Pierdante Piccioni, the young head physician of the hospital of Lodi, veered off the road with his car on the Pavia expressway. He was taken to the hospital in a coma but when he came out of the coma, six hours later, he had just taken his children to school … on October 25, 2001, twelve years before. A neurological lesion not only erased 12 years of his life, but also took him back in time, when Italy still used the lira and not the euro, and Facebook was

still far to come. Stories on the recovery of an identity threatened by the "erasure" of memories due to a brain injury, as told by an involuntary protagonist.

16.45 – SALA DI RE ENZO

The new frontiers of the public health system: Six startups meet face-to-face

Cellply, Stem Sel, Neuron Guard, CellDynamics, Wellmicro and Andremacon

Chairperson: **Fabrizio Landi**

Promoted by: **Intesa Sanpaolo**

Improving mutual relationships, knowledge, fusion of ideas. Six startups meet to assess their business and research activities. A good chance to update, an incentive to build new relations and create new cooperation between the various entities working in the field of life sciences, from biotech to medical devices, from Ict for the national health system to research services.

17.00 – SALA DEGLI ATTI

Call for speech

To give voice to future doctors, the Festival della Scienza Medica in Bologna will provide a "speaking corner" for students to take the floor on recent biomedical issues: lifestyles, so-called alternative medicines, the relationship between doctor and patient, the scientific statute of medicine.

17.00 – AULA DELLE CONFERENZE SOCIETÀ MEDICA CHIRURGICA DI BOLOGNA

Any given month: menstruation and discrimination against women

Renato Seracchioli

Menstruation is a natural phenomenon that has always accompanied women's fertile life. However, on cultural and historical grounds, it was sometimes seen as an unpleasant, mysterious, and shameful condition. It appears that such a negative attitude is not restricted to the most marginal social groups or to specific ethnic groups. To what extent do taboos connected to the menstrual cycle still survive? Cultural heritage cannot be easily overcome.

17.30 – SANTA MARIA DELLA VITA

Rare diseases

Laura Crippa

What are rare diseases, which challenges do they pose, but, also, which unforeseen opportunities do they open up in the so-called "personalized" treatments?

Over six thousands of the rare diseases acknowledged to date are often characterized by difficult diagnoses, by lack of information, assistance and scientific knowledge, and by disparity and difficulty in accessing treatments and care.

Thanks to research, companies now provide new treatment opportunities and drugs, thus allowing for an improvement in the quality of life as well as an increased life-expectancy.

18.00 – SALA DELLA CULTURA

A silent pandemic: the diabetes mellitus

Giorgio Sesti

Promoted by: **Società Italiana di Diabetologia and Fondazione Diabete Ricerca Onlus**

Diabetes mellitus is rampant. In Italy, known cases were approximately 1.5 million in 1985 and now are close to 4 million. In addition to known cases, it must be mentioned that there are almost one million people who are unaware of their disease. As a matter of fact, diabetes is often asymptomatic, sometimes for many years, and problems arise exactly because physical ailments are lacking, and no clinical flaws are detectable. Until something serious comes to the fore …

18.00 – SALA DI RE ENZO

The web baloney: coffee enema and other incredible stories...
Luigi Bolondi
The Internet is a formidable tool for spreading knowledge, but also for manipulating brains. Today 80% of patients look for information on their health in the Net, but search engines do not distinguish between scientifically correct information and "hoaxes" that anyone can load in the Net. True, charlatans have always existed but it is compulsory to warn people about the danger of hoaxes when it comes to treatments for cancer: from scorpion venom to shark cartilage, sodium bicarbonate, the Hamer method, Ashkar chickpeas up to coffee enemas, and an endless number of dietary and natural remedies. Why are web hoaxes so successful?

19.00 – SALONE DEL PODESTÀ

Nobel Lecture
Grid Cells and the Cortical Map of Space
Edvard Moser
Chairperson: **Rocco Liguori, Piergiorgio Strata**
The medial entorhinal cortex (MEC) is part of the brain's circuit for dynamic representation of self-location. A key component of this representation is the grid cell. Grid cells are active only when animals are at certain locations. These locations tile the environment in a periodic hexagonal pattern, like in a Chinese checkerboard, pointing to these cells as an internal coordinate system for the brain's map of space. The circuit contains also other functional cell types, such as direction-tuned cells and cells that are active only at boundaries. These are are intermingled among the grid cells. In this lecture, I will discuss how these cell types, all within the same neural circuit, form a rich representation of local space. I will discuss the putative mechanisms of the grid pattern and its developmental origins, as well as possible ways that grid cells could be used in the formation of daily-life memory.

21.00 – CHIESA DI SANTA CRISTINA

Concert held by Solisti dell'Orchestra Mozart
Accademia Filarmonica
L. van Beethoven, 3 String Trios, n. 3 op. 9 in C minor
W. A. Mozart Flute Quartet n. 1 D, K 285
In collaboration with: **Farmindustria**
Since from 2004 the chamber music repertoire is central in the artistic proposal of the Orchestra Mozart, following the original idea of M° Claudio Abbado, founder and artistic leader. In this actual new fase the Mozart Orchestra, together with the symphonic concerts, works to give value to the chamber Ensemble, from the trio to the octet.

April 22nd

09.00 – ISTITUTI ANATOMICI

Anatomy of a discovery that never took place. From wax to robotics
Anatomisti Bolognesi
A 1944 movie, "The Monster Maker", by S. Newfield, will be shown in the Main Hall of the Istituti Anatomici of the University of Bologna. It recounts the poignant story of a ruthless scientists who injects a human being with a draught that can cause acromegaly. The movie will provide a great opportunity to analyze the mistakes that, throughout history, made it possible to identify the correct clinical nature of the hypophysial disease. Walking through the halls of the L. Cattaneo Anatomical Museum, the observation of the anatomical wax model by Cesare Taruffi representing a man affected by acromegaly will thus allow to describe "a discovery that never took place". More in-depth historical and scientific details will be gathered in the Dissection Room of the Istituti Anatomici where human-corpse heads will be used to demonstrate, via a high resolution 3D endoscope, the modern transnasal access approaches to the pituitary gland, whose "malfunctioning" causes acromegaly.
Visitors, stepping back to a nineteenth-century atmosphere, will be the leading figures of a clinical investigation from wax to robotics. The project was jointly promoted by the Anatomists of the University of Bologna and the Neurosurgeons of the Istituto di Scienze Neurologiche di Bologna.

09.30 – TEATRO DELL'ACCADEMIA DI BELLE ARTI

The jury has the floor (see below)
For high-school students. **By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it)**

10.00 – SALA DELLA CULTURA

About Nature and what is artificial: between bionics and future robotics
Antonio Autiero
Andrea Stella
Giovanni Torsello
Today, the gradual replacement of vital parts of our body with artificial organs takes place within an ideal journey from the skin to the heart via the aorta, the main artery. A minimally invasive percutaneous endovascular technique was progressively developed which, through the femoral artery, allows to re-build heart valves, thoracic and abdominal aortas and the visceral arteries, i.e. hepatic, splenic, or renal. An unavoidable transformation that raises ethical questions about our condition as human beings, between bionics and future robotics.

11.00 – S. MARIA DELLA VITA

Between life and death: guided visit with stage drama thorough the famous "Portico della Vita" and "Portico della Morte"
An animated visit for families in the Sanctuary of Santa Maria della Vita to go through the places devoted to the study of medicine and the care of sick people, reaching the historic Palazzo of the Archiginnasio. A journey through the centre of Bologna accompanied by a weird student that will tell stories and anecdotes of the past university life.
By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it**)**

11.00 – SALA DEGLI ATTI

Visit to the ward - Dermatology Department

Simulated hospital rounds with: **Massimino Negosanti** and **Annalisa Patrizi**

As it is by now customary, the Sala degli Atti of Palazzo Re Enzo will host the "visit to the ward". A travel through time, from tradition to innovation, a tour guided by some leading figures of the Bologna Medical School, along the developments of the science of healing. An exclusive appointment by Bologna Medicina

11.00 – STABAT MATER

Enemy within – the nasal reservoir for invasive *Staphylococcus aureus* infections

Andreas Peschel

Chairperson: **Lucio Ildebrando Maria Cocco**

Staphylococcus aureus is a constituent of the nasal microbiota in 20-30% of the human population and also represents the most frequent cause of life-threatening invasive infections in the northern hemisphere. The individual predisposition to *S. aureus* colonization and the transition from commensal to pathogenic life-styles represent exciting examples of microbe-host coevolution and adaptation processes. Recent discoveries on the molecular mechanisms governing *S. aureus* interaction with nasal cells, interference with microbiota, and evasion of host defense shed new light on the life style of a major human pathogen and open new avenues for innovative preventive and therapeutic approaches.

11.00 – ORATORIO DI SAN FILIPPO NERI

Is Type 2 diabetes a viral disease?

Enzo Bonora

Promoted by: **Società Italiana di Diabetologia and Fondazione Diabete Ricerca Onlus**

The spreading of Type2 diabetes seems to be "viral". Human societies appear to be infected by a "virus" that is easily transmitted in situations of industrialization, mechanization, urbanization, pollution, psycho-physical stress, the need for food rewards, high-calorie food, incessant advertising on food. The vaccine against this pandemic is called "knowledge".

11.30 – SANTA MARIA DELLA VITA

The physician-patient relationship: a neuroscientific point of view

Fabrizio Benedetti

The relationship between physician and patient is one of the oldest traditional founding elements of medicine. Modern neurosciences allow to describe what happens in the patients' brain when they interact with their doctor. It is now coming out that this unique, very special interaction, within which patients believe and hope, activates the same mechanisms that are activated by drugs.

11.30 – AULA DELLE CONFERENZE SOCIETÀ MEDICA CHIRURGICA DI BOLOGNA

Not just drugs: clinical trials and efficacy assessment

Pietro Grossi

Patrizia Popoli

Promoted by: **Alfasigma**

The last three decades saw a huge progress in scientific studies aimed at proving the important role of nutraceutical products (medical food, dietary supplements) in preventing or reducing risks in chronic diseases. Consumers/patients often apply to doctors to be reassured about the potential benefits of these products, which are supported by dedicated studies and advertised by the media. Doctors are therefore asked to carefully assess the related scientific and clinical evidence in order to add such products to diets and medical treatments. We will analyze, together with industry regulators and industrial pharmaceutical researchers, the importance of

studies on the innovative use of special-purpose foods (medical food) for the prevention and treatment of illnesses.

11.45 – SALA DELLA CULTURA

Presentation of the Position Paper "I vaccini e le vaccinazioni"
Giorgio Cantelli Forti
Fausto Francia

12.00 – SALA DELLA CULTURA

On vaccines and antibiotic resistance. Old and new emergencies in global health
Roberto Burioni
Nicoletta Luppi
Giovanni Rezza
Angela Santoni
Sometimes they come back! The great plagues of the past that during the twentieth century were gradually defeated thanks to vaccines, and the unavoidable deaths caused by bacterial infections that antibiotics prevented thanks to their increasing efficacy, are again coming to the fore in the medical world. The infamous campaigns against vaccines are reducing the so-called herd immunity for several infections, while the misuse of antibiotics, the population shifts, and the normal developmental mechanisms are spreading bacterial resistance to antibiotics. It is thus compelling to develop new strategies to enhance the effectiveness of vaccination campaigns and to plan new, improved antibiotics.

12.00 – SALA DI RE ENZO

Autopsy, genetic foot-print and crime: from fiction to reality
Gianfranco Bangone
Andrea Del Ferraro
Susi Pelotti
Claudio Rapezzi
How can death reveal the nature of a crime? By means of examples taken from fictions featuring an ideal situation in order to reach a frequently quite complex reality, and going back to the past, more specifically to the very first forensic autopsy, which was performed in Bologna in 1302, it will be shown how the body can "speak" after death. And how it can be listened to via a traditional autopsy, but also via a virtual, molecular, or psychological autopsy. A working process based on methods that somehow assimilate doctors to detectives.

12.00 – STABAT MATER

The world of ultrasound: learning from nature
Peter Burns
Chairperson: **Luigi Bolondi**
It is well known that creatures such as bats and dolphins 'see' by detecting echoes from pulses of sound they emit. Pulse-echo ultrasound imaging in medicine has become an invaluable tool to see into the human body. But animals teach us more: dolphins detect the speed of their prey by the Doppler effect, which we use to image blood flow; owls form an aural scene by unscrambling reflections from ambient structures, which we use to make ultrafast images. Most surprisingly, shrimp stun their prey by means of sound and tiny bubbles, which we now use to break the seal protecting the human brain in order to deliver drugs to treat cancer.

15.00 – STABAT MATER

The impact of ICT, big data and AI on medicine
Enrico Bucci
Andreas Hoeft
Today, Big Data is an almost magical formula, a most quoted concept in debates on the future and on innovation in all fields of technology. It is not just a matter of numbers, quantities, great amounts of data. It is rather a matter of interrelation, methods of analysis, algorithms, speed, parallel processing of billions of terabytes. And it is a matter, too, of models through which those data can be read, while highlighting their most significant or most useful aspects for any single research project and practical goal./ According to Moore's law complexity and speed of processors as well as storage will double every 12 to 24 month. Indeed, this law from 1965 has hold true until today. Simultaneously, IP traffic in the internet grows at a rate of 20-25% per year. However, the most disruptive technology in ICT will be cognitive computing and artificial intelligence (AI). AI has been hyped for more than four decades, but it went through several cycles of enthusiasm as well as so called "AI winters". The coincidence of availability of big data and new tools for big data analysis, new technologies for semantic analysis of unstructured data, cloud computing and machine learning facilitate a leap in AI, which will also impact medicine. Cloud based systems will soon easily pass the Turing test, i.e. for users it will be indiscernible whether they communicate with a human being or a machine, including emulation of empathy and emotions. Personal health consultation by machines might endanger many disciplines in medicine, offering definitely chances to areas in the world, which are medically underserved, but also threads to physicians in developed countries. On the other hand, AI and cloud computing will add significantly to quality of patient care and patient safety in hospitals, by interfacing super-intelligent decision support systems with hospital information systems. The crucial question remains to be, how long it will take: 5, 15 or 50 years? "Prediction is very difficult, especially about the future" (Niels Bohr)

15.30 – ORATORIO DI SAN FILIPPO NERI

The return of Lombroso? Genetics and Neuroscience of antisocial behavior
Pietro Pietrini
To what extent is human behavior determined by genetic factors or influenced by the environment? Which relationship is there between the brain and free will, that is the ability to understand the meaning of one's own actions and therefore acting in one way or another? Thanks to the acquisition of new notions in neuroscience, the never-ending "nature vs nurture" debate, that is whether the role of (neuro)biological factors prevails over the role of cultural factors or viceversa, appears now outdated. Today we know that several genetic constellations shape the extent to which individuals are affected by environmental features, thus making them more or less vulnerable to the presence of negative factors, such as abuse and violence in childhood. Starting with plasticity genes, the recent progresses in neuroscience yield more general implications, e.g. in the forensic, ethical and rehabilitation fields.

16.00 – SALONE DEL PODESTÀ

Parasomnias and the Release of Primitive Instincts During Sleep: are dreams always wishes?
Carlos H. Schenck
Chairperson: **Giuseppe Plazzi**
Parasomnias are defined as the behavioral, emotional and autonomic nervous system disorders that accompany sleep, and can emerge during any stage of sleep, including Rapid Eye Movement (REM) sleep and Non-REM sleep, and during wake-sleep or sleep-wake transitional

states. Thus, all of sleep carries a vulnerability for parasomnias. Instinctual behaviors and experiences can emerge pathologically with the parasomnias, such as aggression (as found in REM sleep behavior disorder [RBD], with violent dream-enacting behaviors), eating (as found in Sleep Related Eating Disorder [SRED]), sex (as found in Sexsomnia), locomotion (as found in Somnambulism, and less commonly in RBD), and terror states (as found in Sleep Terrors). Sleep itself is an instinctual behavior, and so with the parasomnias two or more instinctual behaviors can become pathologically intertwined in a self-perpetuating manner, as parasomnias are often chronic conditions. Parasomnias reflect abnormal brain-mind states during sleep, and can include disturbed dreaming. Central pattern generators in the brainstem are presumed to become abnormally activated with the parasomnias. Gender often plays a role with the manifestation of parasomnias, with RBD and Sexsomnia being male-predominant, and SRED being female-predominant. A notable psychiatric parasomnia involves Sleep Related Dissociative Disorder, which is female-predominant. Fortunately, most parasomnias can be effectively managed with behavioral and/or pharmacologic interventions. A series of video examples of the range of parasomnias will be shown and discussed, along with the presentation of illustrative clinical vignettes. Finally, the important scientific discovery and current research on RBD with dream-enactment and its strong link with parkinsonian disorders and dementia will be discussed.

16.00 – TEATRO ANATOMICO DELL'ARCHIGINNASIO

Show and tell at the anatomical Theatre, for families

Two events dedicated to families. Children and their parents are invited to take part to an "anatomical lesson" in the suggestive Anatomical Theatre of the Archiginnasio. A show where professional entertainers will tell the wonders of the human body in a funny and engaging way.

By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it)

16.00 – SALA DI RE ENZO

"*Hello? Cough please!*" Is telemedicine the future?

Giuseppe Boriani
Federico Lombardi
Manlio Nicoletti
Claudio Rapezzi
Marco Pozzi
Studio Pacinotti-Telbios, Gruppo ABMedica

Promoted by: **Intesa Sanpaolo**

The future of Medicine is already here: medical-surgical remote consultation between different medical centers thanks to telemedicine; virtual teaching; remote monitoring of patients with implanted electrical devices; medical use of smartphone apps to measure the heart rate, heartbeat and to gather information on prognosis, cardiac risk stratification, drug monitoring, monitoring of cognitive functions, dietary norms, fitness, etc. Medicine still has a great future.

16.30 – AULA DELLE CONFERENZE SOCIETÀ MEDICA CHIRURGICA DI BOLOGNA

How to start the startup. Experiences and proposals.

Fabrizio Landi

Promoted by: **Intesa Sanpaolo**

17.00 – SALA DELLA CULTURA

Driving out Cancer

Patrizia Paterlini-Bréchot

The molecular oncologist Patrizia Paterlini-Bréchot, professor at the University of Paris Descartes, in 2000 developed, and then commercialized, a technique to isolate and characterize fetal and

tumor cells circulating in the blood (Test ISET). The device, invented to detect and identify the tumoral cells, consists of a blood test and it's based on the cells dimension, allowing to diagnose cancer even in early states. In the book Patrizia Paterlini-Bréchot tells firsthand her path and the steps they took to build a promising invention. A history of science and humanity.

17.30 – STABAT MATER

Made in Germany
Large-scale facilities: present and future of scientific research. A comparison between Italy and Germany
Thomas Hirth
Massimo Inguscio
Jörg Vienken
Chairperson: **Horst Klinkmann**
Co-chairperson: **Claudio Franceschi**
Since the advent of Big Science, that is after WW2, scientific research and innovation models faced the need for increasingly larger-scale equipments and organizational structures. Thus, the so-called Large Scale Facilities came into being, as infrastructures making it possible for groups to access services that they would be unable to use individually, and also allowing the development of local, national, or international cooperation, which is indispensable in order to carry out research and to provide innovative components in the frontier sections of science and technology. While Italy, with a great delay, wonders how to fill the gap that developed in past decades as compared to other European countries, the comparison with similar experiences in a country at the forefront such as Germany, with her world-famous institutes, such as Max Planck and Frauenhofer, provides quite interesting issues for debate.

17.30 – SANTA MARIA DELLA VITA

Not only brains! Italy can also export useful and effective models for the management of health systems
Bruno Biagi
Promoted by**: Gruppo Villa Maria**
The social surveys carried out in recent years reveal a situation that contradicts some commonplaces. In Italy the national health system works better than in England, and comes out quite well also when compared with the German system. Obviously, an overall look at the Italian situation cannot conceal some differences - sometimes quite remarkable ones - between the various areas of the country. In the private sector, too, a number of excellencies are being appraised by foreign countries that feature similar socio-demographic general conditions. As absurd as it may seem to many, the balance of Italian exports can rely on the health and wellbeing industry.

18.00 – SALA DI RE ENZO

In Conscience. What is conscience and why we risk to lose it
Marcello Massimini
Usually we assess the level of conscience of other individuals on the basis of their ability to interact with the surrounding environment. However, we perfectly know that conscience can be generated as a whole inside the brain, even when all communication with the external world is lacking. It happens almost every night, when we dream. Due to such an incongruity, the presence of conscience could be unrecognized in people with brain injuries who come out of a

coma but do not communicate. The development of an objective and reliable measurement of conscience skills is a great challenge for medical sciences.

18.00 – SALA DELLA CULTURA

A silent pandemic: the diabetes mellitus
Enzo Bonora
Promoted by: **Società Italiana di Diabetologia and Fondazione Diabete Ricerca Onlus**
Diabetes mellitus is rampant. In Italy, known cases were approximately 1.5 million in 1985 and now are close to 4 million. In addition to known cases, it must be mentioned that there are almost one million people who are unaware of their disease. As a matter of fact, diabetes is often asymptomatic, sometimes for many years, and problems arise exactly because physical ailments are lacking, and no clinical flaws are detectable. Until something serious comes to the fore …

19.00 – SALONE DEL PODESTÀ

Nobel Lecture
The Unique Role of Nitric Oxide as a Widespread Signaling Molecule
Louis Ignarro
Chairperson: **Claudio Borghi**
Promoted by: **Fondazione Internazionale Menarini**
The field of nitric oxide (NO) research has developed in explosive proportions since the discovery of endogenous NO in 1986. The first biologically important actions of NO were that nitroglycerin and related nitrovasodilators elicit vascular smooth muscle relaxation by liberating NO in the smooth muscle. NO relaxes smooth muscle by activating cytosolic guanylate cyclase and elevating smooth muscle levels of cyclic GMP. Soon thereafter, NO was found to inhibit platelet aggregation by mechanisms also involving cyclic GMP. NO acts as a neurotransmitter in the central and peripheral nervous systems, where NO modulates memory, learning, recall and erectile function. NO may function in a similar manner in the GI tract, airways and bladder. Based on these properties of NO, new drugs can be developed to treat hypertension, atherosclerosis, stroke, angina pectoris, heart failure, vascular complications of diabetes, GI ulcers, impotency and other vascular disorders…and there is much more to explore!

April 23rd

10.00 – SALA DI RE ENZO

Medicine: female gender, singular number?
Flavia Franconi
"Gender medicine" studies and emphasizes how sex and gender, which is the social and cultural attributes attached to sex or sexuality, affects the risks of becoming ill as well as the clinical history of diseases. The fact that belonging to the female gender proved to be associated to different risks to become ill or to obtain less effective treatments, as a result of the fact that the effectiveness of medical treatments are mainly studied on males, led to "gender medicine" being today almost a synonym of "women's medicine". Which diseases affect women more frequently or are treated less effectively in women since gender perspective is not taken into account?

10.00 – STABAT MATER 

Made in Germany
The sustainability of the NHS's. A comparison between Italy and Germany
Emilia Grazia De Biasi
Steffen Flessa
Marek Zygmunt
Chairperson: **Horst Klinkmann**
Co-chairperson: **Emanuele Gatti**
The sustainability of "universalistic" national health systems is a very relevant and urgent political issue, on the same level as (or perhaps even more weighty than) the still ongoing debate on public welfare. An ageing population, new (and frequently very expensive) therapies, the increasing expectations by patients who understandably ask not only for treatments but also for improvements to their quality of life, require a widespread public debate. Since health is undoubtedly a basic right, the response from governments to the old and new needs of citizens seem to be far from simple and immediate.

10.30 – ORATORIO DI SAN FILIPPO NERI

Medicine on leash: animals and prevention in medicine
Claudio Borghi
Giorgio Cantelli Forti
Stefano Cinotti
Fabio Grizzi
Gianluigi Taverna
Lorenzo Tidu
The role of animals in traditional medicine has always been dependent on the needs of research rather than being a primary function in an active process of support to clinical studies and therapies. In recent times, the position of pets was greatly reconsidered, as it was proven that they play an active role for the prevention of a number of serious diseases, from cardiovascular to metabolic illnesses, and even neoplasms. More specifically, it appears that some species of pets (dogs above all) actively partake in the prevention process thanks to some of their physiological and behavioral features. A new approach to the medicine of the future that finally, after learning so much from animals, returns the role they deserve to them.

11.00 – SALA DEGLI ATTI
Visit to the ward - Department of Neurology
Simulated hospital rounds with: **Rocco Liguori** and **Giuseppe Plazzi**
As it is by now customary, the Sala degli Atti of Palazzo Re Enzo will host the "visit to the ward". A travel through time, from tradition to innovation, a tour guided by some leading figures of the Bologna Medical School, along the developments of the science of healing. An exclusive appointment by Bologna Medicina

11.00 – TEATRO ANATOMICO DELL'ARCHIGINNASIO
Show and tell at the anatomical Theatre, for families (see below)
By reservation only (please reserve by email: festivaldellascienzamedica@genusbononiae.it)

11.30 – SALA DELLA CULTURA
Why we lost our battle against Alzheimer?
Arnaldo Benini
Seventy years after its first description, we still do not know anything about the causes and processes that lead to the devastation of the brain in the Alzheimer disease, which is considered as the most widespread form of old-age dementia. Since 1992, biological and pharmacological research focused on Beta-amyloid plaques and on fibrillar degeneration, even though Alois Alzheimer had found, as early as 1911, that kind of lesions in the brain of healthy people. Drugs have not yielded any result and no specific prevention technique is known. So-called early diagnoses in healthy people are useless and create unprecedented ethical dilemmas. The story of how this condition came into being has no matches in the history of medicine.

12.00 – SALONE DEL PODESTÀ
Lettura di un Nobel
DNA instability and the role of TREX1
Tomas Lindahl
Chairperson: **Lucio Ildebrando Maria Cocco**
The covalent structure of DNA is less stable under physiological conditions than has been generally assumed. For this reason endogenous damage to DNA is continuously repaired under in vivo conditions. We have discovered and characterised several of the enzymes that account for these essential processes. The nuclear exonuclease TREX1 removes unwanted single stranded DNA fragments in mammalian cells and counteracts autoimmunity.

May 22nd

18.00 – MAST. AUDITORIUM
Nobel Lecture
Universal healthcare: still an achievable goal?
Amartya Sen
Chairperson: **Armando Massarenti**
A universalistic healthcare system is often considered as an ideal goal, a utopian and basically impossible dream. But the experiences of some countries, such as Rwanda, Thailand and Bangladesh, suggest a possible prospect and a less fatalistic outlook. Instead of heading towards an indiscriminate privatization of basic health services, the latter, at least in their early stage, could be taken in charge by the state, thus opening the way to processes leading to better developed and more complete systems, therefore fostering economic growth as well.

Simultaneous translation available

All Festival della Scienza Medica events are free and open to the public while seats last, unless otherwise indicated.

The program may suffer some minor variation. Please check on the website
www.bolognamedicina.it

Colophon

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Lucrezia Buganè

Management educational activities
Cristina Francucci
Giulia Quadrelli

Dramaturgy "Visit to the wards"
Giulia Frezza

Between life and death: guided visit with stage drama thorough the famous "Portico della Vita" and "Portico della Morte"
Actor: Roberto Giovenco
Guide: Giulia Zucchini

Show and tell at the anatomical Theatre
Actress: Giulia Quadrelli
Guide: Maria Vittoria Bucchi

The jury has the floor
Actress: Giulia Quadrelli
Animators: Luca Bosco, Serena Fabbrini, Chiara Faggiano, Silvia Garofalo, Luca Ielasi, Paola Panciroli.
Technical Assistance: Pietro Alex Marra
With thanks to Prof. Luigi Bolondi and Prof. Marco Ciardi

Artistic anatomy school
Artistic mediation: Sara Agostinelli
With thanks to Prof. Carlo Mauro

The sound of silence. Genius and suffering in Ludwig van Beethoven
Actor: Nicola Bortolotti

In the role of the newsboys
Lucia Gallina, Lucrezia Giovanardi, Riccardo Imperatore

With thanks to the Direction of the Accademia di Belle Arti di Bologna for the cooperation