



COMPETITION FOR 60 POST-DOC TYPE A TWO YEARS FELLOWSHIPS, FOR A COLLABORATION TO RESEARCH ACTIVITIES

THE RECTOR

- CONSIDERING** Law May 9th 1989 no. 168;
- CONSIDERING** Statuto of Università degli Studi di Milano,
- CONSIDERING** paragraph 4 art. 22 Legge 240/2010 which establishes that subjects as from paragraph 1 of the same article rule by special regulations the assignment of Fellowships ;
- CONSIDERING** Regulations concerning the assignment of Fellowships for collaboration to research activities (hereinafter Regulations) issued by Rector's decree n. 272623 on February 24th 2011 in particular art. 2 of the Regulations which rules the institution of fellowships to be charged to University budget;
- CONSIDERING** Decreto del Ministro dell'Istruzione, dell'Università e della Ricerca which establishes the minimum amount;
- CONSIDERING** art 5 paragraph 2 of Regulations, which establishes the maximum amount assignable;
- CONSIDERING** Senato Accademico on November 15th 2011 approved the criteria and priorities for the preparation of the budget for the financial year of 2012
- AS** Consiglio d'Amministrazione on December 20th 2011 financed 90 new fellowships for year 2012 with approval of University budget;
- AS** Senato Accademico on November 15th 2011 decided to ban with this call 60 fellowships for a collaboration to research activities and has divided the 90 fellowships for research activity among scientific areas established at University; decided criteria for assessment of candidate's research projects, qualifications, scientific-professional curriculum; also decided the date of publication of the present Competition notice and the date within the candidate has to hold PHD degree or specialty health area and, in case of discrepancy between two evaluations, the Commissione di Garanzia can require a third assessment, and consider only the two evaluations from which there is the minimum arithmetic difference .
- CONSIDERING** Senato Accademico on June 14th 2011 has chosen the members of Commissione di Garanzia;
- CONSIDERING** Senato Accademico on February 17th 2010 and Consiglio di Amministrazione on 23rd February 2010 approved "Progetto Dote Ricercatore" financed by Regione Lombardia which establishes co-financing of Post Doc Type A Fellowships for the years 2010-12;

ORDAINS

Art. 1 - As from art. 22 law 240 on December 30th 2010 and of art. 2 of Regulations concerning fellowships for a collaboration to research activities, Università di Milano has launched a competition by qualifications



and interview to award 60 two years fellowships (possibly renewable) for a collaboration to research activities co-financed by Regione Lombardia within "Progetto Dote Ricercatori" restricted to doctorate graduates or graduated holding a diploma in the specialty health area. The 60 fellowships, divided among the scientific areas established at University, are the following:

SCIENTIFIC AREAS	N° ASSEGNI DI RICERCA
1. Mathematics	2
2. Physics	3
3. Chemistry	3
4. Geology	1
5. Biology	7
6. Information Sciences	2
7. Medicine	14
8. Agricultural Sciences	5
9. Veterinary Sciences	4
10. Pharmaceutical and pharmacological Sciences	3
11. Law	5
12. Humanities (ancient history, philology, letters, art history)	4
13. History, Philosophy, Pedagogy, Psychology	3
14. Economics and statistics	2
15. Political Sciences and Sociology	2
	60

Art. 2 - REQUIREMENTS AND INCOMPATIBILITIES

All those who have earned a PhD and graduated holding a diploma in the specialty health area can participate in the public competition; in both cases candidates must have proper scientific-professional curriculum to carry out research activity.

Both degrees must have been held after 16th Jan 2007, otherwise the candidate will be excluded from the competition. Candidates holding degrees earned abroad (PhD or specialty health area) must send together with the application form the degrees translated by an official translator into Italian and certified by the Authorities of the country releasing the degree (unless exempted according to International Agreements). Each degree must be brought with "Declaration of local value" released by Italian Diplomatic Office (Embassy or Consulate) in the country where the degree was earned. In case the degree was already declared equivalent, the candidate must enclose the related documents.

Candidates must send the application form and the description of a research project to be developed with reference to only one subject among those established in *Enclosure 2*, part of this competition notice. The candidates are asked to develop the project, the abstract and the curriculum in English.

Absence of criminal prosecution is required.

According to laws in force a maximum of four years among fellowships; only those who have not exceeded



such limit can participate in this competition and anyway who can still take advantage of a two years fellowship.

Relatives and in-laws within the fourth degree included of a professor member of the Department or the Structure requiring the institution of the Fellowship, or of the Rector, the General Director or a member of Consiglio di Amministrazione of the University cannot participate in the competitions for the assignment of fellowships.

Employed staff in University and in other bodies as from art. 22 paragraph 1, Legge 240 December 30th 2010 can participate in the competition, but must resign in case of winning the Fellowship.

Civil Servants in different bodies from those mentioned in the paragraph above can be awarded the fellowship but must be put on leave without salary for the duration of the Fellowship.

Fellows awarded other grants can participate but must renounce other grants in case of winning the fellowship.

The qualifications must be held within the deadline established for the presentation of the application form, except for what established for the PhD degree and the specialty health area, which, according to art. 2 paragraph 5 of Regulations and decision by Senato Accademico on 15th November 2011, can be hold within 15th June 2012 or within the stipulation date of the individual contract, if the date is before 15th June 2012.

Art. 3 - APPLICATION FORM AND DEADLINE

The candidates must fill in the application form available on-line at <http://surplus-unimi.cilea.it/ga/registrazione/esterno/index.htm>. This form, although required, does not substitute the paper form which is the result of the form on line. After filling in the application form and related enclosures, candidate will validate and by means of the form on line, print a file and send it to Magnifico Rettore dell'Università degli Studi di Milano by registered letter with return coupon attached (in this case the stamp and date of the post office will be considered) or bring it directly to Ufficio Archivio e Protocollo of Università degli Studi di Milano - Via Festa del Perdono, 7, 20122 Milano- Italy within **February 15th 2012**: otherwise he/she will be excluded from the competition.

The Administration is not responsible if communications get lost because the address written by the candidate is not correct or a change of address has been communicated lately or not communicated by the candidate or because of mistakes in delivery due to third parties, chance or force majeure.

Application forms without signature or incomplete or sent after the deadline established will not be accepted.

Forms on-line must contain the following information:

- RESEARCH PROJECT CONCERNING ONE SUBJECT AMONG THOSE ESTABLISHED BY THIS COMPETITION;
- DEGREES: (DEGREE AND FINAL MARK WITH DATE OF ACHIEVEMENT; PHD /SPECIALTY DATE AND PLACE OF ACHIEVEMENT)



- ABSTRACT OF PHD THESIS /SPECIALTY (ALSO IN TEMPORARY VERSION IF NOT DISCUSSED YET);
- SPECIALIZATION DEGREES AND MARKS;
- PUBLICATIONS WITH ALL REFERENCES USEFUL FOR A CORRECT IDENTIFICATION;
- SCHOLARSHIPS AND/OR RESEARCH CONTRACTS, ATTENDANCE OF POST-GRADUATE COURSES, RESEARCH ACTIVITY IN ITALY AND/OR ABROAD, FELLOWSHIPS, SCIENTIFIC-PROFESSIONAL CONTRACTS AND APPOINTMENTS, PARTICIPATION IN CONGRESSES, PATENTS;
- OTHER QUALIFICATIONS PROPERLY CERTIFIED.

The Administration could ask the candidates to bring or send the whole documentation of the publications specified in the list and of any other enclosure attached.

Art. 4 - ASSESSMENT

Application forms will be assessed by one Evaluation Commission (hereinafter called Commissione di Garanzia), made up of nine members selected among professors in this University, which will take avail itself of at least two external experts (for each application or for applications concerning the same subject). The list of examiners is established according to art. 2 paragraph 8 of Regulations and approved by Rector's decree.

Each examiner can use up to 12 points, to be divided as follows:

- assessment of the candidate's scientific-professional curriculum up to 6 points
- assessment of the project up to 6 points

The evaluation criteria for candidates' scientific qualifications and scientific-professional curriculum are the following:

- degree mark ;
- PhD thesis;
- specialization degrees and marks;
- attendance of post-graduate courses;
- research activity in Italy;
- research activity abroad;
- *fellowships*, scientific-professional contracts and appointments;
- participation in scientific congresses;
- scientific publications and qualification if available;
- monographic publications and chapters in books;
- patents.

Evaluation criteria for research projects are the following:

- relevance of the project to the subject suggested by the Department;
- originality of the research suggested;
- updating of the project with reference to knowledge acquired;
- appropriate bibliographic reference;
- potential achievement of the project in the space and time available;
- relevance of results potentially achievable.

In case of incomplete or insubstantial evaluation and in case of discrepancy between two evaluations, superior or equal to 6 points, Commissione di Garanzia can ask for a third assessment.

Commissione di Garanzia, on the basis of marks given by referees and after examining consistency and



relevance of procedure, forms a ranking for each area related to the posts. The marks given to qualifications will be given by summing up the two marks earned by each candidate. In case of three assessments, the mark will be given by the two evaluations from which there is the minimum arithmetic difference. The result of the assessment of the project and of the scientific qualifications of each candidate will be posted up and published in the University web-site.

Candidates who have not earned at least 7 points from at least two examiners are excluded from the ranking.

Candidates in the ranking and placed in position increased of 50% (to round up to the next integer) with reference to the number of posts indicated in the competition notice for the corresponding scientific area, can take part in the interview. The number of those who can take part in the interview can be higher in case more candidates occupy with equal marks the last position available.

The interview will take place with a Commission established by the Rector and suggested by Commissione di Garanzia and made up of a member of Commissione di Garanzia, who is the president, of the president or other member of Comitato d'Area and, as third member, of Director of the Department concerned or of a delegate.

Candidates living foreign can have an interview with electronic procedures that ensure them identification, with the authorization by Commissione di Garanzia. Candidates should contact the Divisione Stipendi e Carriere del Personale, at least one week before the date of the interview, to verify advance the feasibility and communicate whatever is necessary to provide for the interview. The dates of the telematic interviews are shown art. 8 of this call.

The Commission in charge of the interview can use up to 5 points for each candidate.

The candidates who have to sit for the interview will be called by e-mail at the address communicated by the candidate in the application form; in case of absence, candidates will be automatically excluded from the final ranking.

If the interview shows inconsistency and/or evident incapability in carrying out the project presented, examining commission can suggest Commissione di Garanzia to exclude the candidate by giving proper justification.

Commissione di Garanzia, at the end of the assessment of the candidate, the research project and the interview, will publish the result of the assessment for each candidate and will form a ranking of the candidates, with reference to the marks earned and to posts available for each area. Assessment must end within six months since the transmission, to the referees, of the subjects and the related projects.

If marks, gained in the same scientific area, end in a tie, the fellowship will be assigned to the younger candidate.

Art. 5 - FELLOWSHIP AWARDING

The Rector will communicate, by registered letter at the address in the application form, the awarding of the fellowship to the winners.

Within the deadline mentioned in the communication, the winner must send to the Rector the acceptance



declaration required by the Administration, otherwise he/she will lose the post; afterwards he/she will be called to stipulate a contract.

The contract conditions are ruled by Regulations concerning fellowships for collaboration to research activity of University of Milan.

The fellowship implies the achievement of the research project suggested by the candidate, under the supervision of the Scientist-in-charge and at the related structure. The Scientist-in-charge and the candidate will agree on the activities related to the research project which will be carried out during the fellowship and that will be verified periodically, according to modes established by the individual contract.

The awarding of the fellowship does not imply employed work and does not give rights to employment by Universities.

Fellows can participate in the University in commissions for examinations as experts in a specific subject and collaborate to tutoring activities.

The fellowship cannot be added to grants or other types of aid, except for those established for integration of stays abroad, neither with other contracts of collaboration nor with income coming from free lance activities performed with continuity. Extra-university activities as speaker in seminars, conferences or publishing activities and a limited activity of self-employed work are compatible with the fellowship, upon written communication and in agreement with the scientist-in-charge and upon the condition that such activity is declared compatible by the Structure where the fellow performs research activity and does not imply interest conflicts with the research activity performed for the University. Self-employed work cannot exceed the income limits established by Consiglio di Amministrazione equal to a gross yearly amount of 15.000 Euros, with exclusion of remuneration coming from copyright.

Art. 6 - REMUNERATION

The yearly gross amount of the fellowship is of 19.367,00 Euros. The amount does not include expenses for industrial accident insurance and public liability insurance which are charged to the University. The amount is tax free (Irpef exempt) according to art. 4 of Law August 13th 1984 no. 476 and subjected, for what concerns social insurance, to rules as from art. 2, paragraph 26 and following of Law August 8th 1995 no. 335. The amount is paid in monthly postponed instalments.

Art. 7 - ACCEPTANCE AND SIGNING OF THE CONTRACT

Declarations and certifications of acceptance sent by registered letter with reply coupon attached within ten days (the stamp and date of the post office will be considered) since the communication by the Rector or brought directly to the appropriate office will be taken into account.

Personal facts and qualities self-attested by the winner of the competition will be checked properly by the University, also by sample, in order to verify their truth.

The winners will be called to stipulate the contract of collaboration to research activity, which will start from the first day of the month following the signature, except justified request of exception by the candidate in agreement with the Scientist-in-charge and anyway for not more than 90 days.



For non-EC subjects the fellowship will start after obtaining the visa for self-employed work and the actual beginning of the research activity.

Art. 8 - LOSS OF THE RIGHT TO THE FELLOWSHIP AND CANCELLATION OF THE CONTRACT

If the contract is not signed within the deadline mentioned by the appropriate office or if the candidate does not achieve the PhD/specialty health area within June 15th 2012 or within the stipulation date of the individual contract (if the date is before June 15th 2012) the winner will lose every right to the fellowship. In case of loss of the right to the fellowship or of renounce by the winners, the fellowships are made available to candidates placed usefully in the ranking. The ranking is valid for 180 days since its approval. The winners of the fellowships who do not attain themselves to what established by this competition notice and to the Regulations mentioned above will lose every right to the fellowship by means of a Rector's Act upon written notification.

During collaboration activity, if the Fellow does not carry out regularly research activity, without justified reason, or is responsible of serious and continuous malpractice, the procedure of cancellation of the contract will be started, on request of the Scientist-in-charge.

Art. 9 - REFERENCE

For what is not established by this competition notice please refer to the Regulations concerning fellowships for research activity and the rules in force about the subject.

Art. 10 - PERSONAL INFORMATION

According to D.L. 196/03 University will commit itself to respect all confidential information provided by the candidate: "all information provided will be handled only for aims connected to the selection and to the stipulation and management of relationship with University".

Art. 11 - COMPETITION MANAGEMENT

According to Law August 7th 1990 no. 241, the Head of Office in charge of the competition is Mrs Alessandra Catellani, Divisione Stipendi e Carriere del Personale - Via S. Antonio n. 12, Milano. (email: assegni.postdoc@unimi.it)

THE RECTOR
(Enrico Decleva)

Reg. n. 276838 del 13/01/2012



Scientific Area	Id subject			Title	Description
MATHEMATICS	001	ALETTI GIACOMO	DIPARTIMENTO DI MATEMATICA	Computational and asymptotical analysis of population dynamics and interacting particles with Graphics Processing Unit (GPU)	Parallelizable processes have recently had a remarkable development through GPU, in both simulation and analysis. AIM: - to develop a GPU library for interacting particle systems and population dynamics, - computational and asymptotical analysis
MATHEMATICS	002	BARBIERI VIALE LUCA	DIPARTIMENTO DI MATEMATICA	Arithmetic geometry, motives and homotopy theory of schemes	Comparison theorems for cohomology theories. Motivic cohomology and its applications in arithmetic geometry. Galois representations, modular forms and families. Applications to the study of varieties and motives over local and global fields.
MATHEMATICS	003	BOTTAZZINI UMBERTO	DIPARTIMENTO DI MATEMATICA	History of mathematics	Aspects of the development of modern and contemporary mathematics and its relation with the physical sciences.
MATHEMATICS	004	GIORGILLI ANTONIO	DIPARTIMENTO DI MATEMATICA	Dynamics of many body systems	Dynamics of many body systems. Development of perturbation methods and search for a diabatic invariants. Investigation on the dynamics of non linear chains and lattices of Klein-Gordon and of Fermi-Pasta-Ulam type. Possible estensions to localization phenomena.
MATHEMATICS	005	RUF BERNHARD	DIPARTIMENTO DI MATEMATICA	Nonlinear partial differential equations	Nonlinear elliptic equations and systems of such equations: - existence, non-existence and multiplicity of solutions - critical growth, loss of compactness and concentration phenomena - qualitative properties of solutions; solutions with peaks
MATHEMATICS	006	VAN GEEMEN LAMBERTUS	DIPARTIMENTO DI MATEMATICA	Geometry and moduli of algebraic varieties.	Study and construction of holomorphic symplectic varieties and Calabi-Yau varieties. The study of curves, surfaces, abelian varieties and their moduli. Derived categories and automorphisms.



PHYSICS	007	BRACCO ANGELA	DIPARTIMENTO DI FISICA	Studies of Nuclear Structure and Nuclear Reactions in exotic nuclei and their astrophysical Applications	The activity is within nuclear physics and can be carried on in experiments or theory. The experimental activity concerns nuclear structure far from stability or measurements of nuclear reactions of astrophysical interest. Within theory, one develops and applies novel many-body techniques.
PHYSICS	008	CANTU' LAURA FRANCA	DIPARTIMENTO DI CHIMICA, BIOCHIMICA E BIOTECNOLOGIE PER LA MEDICINA	Experimental study of biological soft matter, complex fluids and systems of biomedical relevance	The research focuses on the study of supramolecular organization. The study could combine different techniques: scattering of light, neutrons or x-rays; microscopy; calorimetry; fluorescence; magnetic resonance; numerical simulation.
PHYSICS	009	CIALDI SIMONE	DIPARTIMENTO DI FISICA	Quantum optical phenomena for applications and experiments on foundations.	The research activity concerns the development of experimental apparatus for generating non-classical radiation for application in the field of quantum information and for fundamentals study in quantum mechanics.
PHYSICS	010	LASCIALFARI ALESSANDRO	DIPARTIMENTO DI SCIENZE MOLECOLARI APPLICATE AI BIOSISTEMI	Magnetic nanostructures : fundamental properties and applications	We will investigate the local spin dynamics and eventual quantum effects at low temperature in magnetic nanostructures, by means of magnetization, magnetic susceptibility and Magnetic Resonance experimental techniques.
PHYSICS	011	MANINI NICOLA	DIPARTIMENTO DI FISICA	Quantum theory of matter of matter and radiation	Single-particle and collective phenomena are being investigated using advanced analytical methods and quantum simulations. Several lines of research in the field of the theory of matter address novel problems relative to atoms, electrons, photons.
PHYSICS	012	MENNELLA ANIELLO	DIPARTIMENTO DI FISICA	Simulations and data analysis codes development for the Large Scale Polarisation Explorer experiment	The proposed activity aims at the development of simulations and data analysis codes for the Large Scale Polarization Explorer, a balloon-borne experiment for the measurement of the Cosmic Microwave Background polarization
PHYSICS	013	MIRAMONTI LINO	DIPARTIMENTO DI FISICA	Experimental Elementary Particle, Astroparticle, and Solar Neutrino Physics	ATLAS data analysis on photon, Higgs, top physics and supersymmetry; SUPER_B Standard Model and new physics in e+e-; BOREXINO solar neutrinos and their oscillations; AUGER UHE Cosmic Rays. http://www.fisica.unimi.it/postdoc2012/tematiche



PHYSICS	014	PODESTA' ALESSANDRO	DIPARTIMENTO DI FISICA	Nanoscience and nanotechnology	- Study of neural cell differentiation induced by nanostructured surfaces. - Investigation of the interaction of biomolecules with nanostructured systems by scanning probe microscopy techniques. http://www.fisica.unimi.it/postdoc2012/tematiche/
PHYSICS	015	POTENZA MARCO ALBERTO CARLO	DIPARTIMENTO DI FISICA	Applications and characterization of spatially coherent synchrotron and Free Electron Laser radiation	The activity concerns the development of experimental devices for 1) measuring spatial coherence of synchrotron and FEL radiation and 2) coherent imaging applications in fundamental studies of condensed matter physics
CHEMISTRY	016	ABBIATI GIORGIO	DIPARTIMENTO DI SCIENZE MOLECOLARI APPLICATE AI BIOSISTEMI	New domino and multicomponent approaches for the synthesis of heterocyclic and heteropolycyclic compounds.	Synthesis of valuable hetero(poly)cyclic compounds by using alkynyl building-blocks as privileged starting materials. Microwave promoted domino and multicomponent reactions, also mediated by metal catalysts.
CHEMISTRY	017	BENAGLIA MAURIZIO	DIPARTIMENTO DI CHIMICA ORGANICA E INDUSTRIALE	Enantiomerically pure tetrachlorosilane-based Lewis acids as catalysts for novel stereoselective synthetic methodologies.	Strategies to activate silicon for stereoselective catalysis are: incorporation into a strained cycle, connection to strongly electron-withdrawing groups or generation of new hypervalent trichlorosilyl cationic species of enhanced electrophilicity
CHEMISTRY	018	DALLAVALLE SABRINA	DIPARTIMENTO DI SCIENZE MOLECOLARI AGROALIMENTARI	Design and synthesis of novel dual anticancer drugs	Aim of the work will be the design and synthesis of anticancer hybrid agents obtained by incorporation of two active moieties in a single molecule to exert a dual drug action. The study of stable or in vivo labile linkers will be carried out.
CHEMISTRY	019	DI SILVESTRO GIUSEPPE	DIPARTIMENTO DI CHIMICA ORGANICA E INDUSTRIALE	Synthesis and functional modification of compostable polymers deriving from renewable sources for applications for food bags and agricultural films	Synthesis, modification of compostable polymers from renewable sources and modification of their properties for films for food bags and agricultural mulching with properties superior to the ones of standard compostable materials now on the market



CHEMISTRY	020	MARTINAZZO ROCCO	DIPARTIMENTO DI CHIMICA FISICA ED ELETTROCHIMICA	Theoretical study of the influence that defects and/or adsorbed species have on the chemical and physical properties of defective Carbon nanostructures	Study of the effects that "defects" (vacancies, adsorbed species) in graphene and nanographenes have on the reactivity and on the electronic properties of the substrates (magnetism, electronic transport). Of interest, in particular, the reaction energetics and dynamics at the most common defects introduced in the fabrication processes (hydrogen atoms and mono-vacancies).
CHEMISTRY	021	PRATI LAURA	DIPARTIMENTO DI CHIMICA INORGANICA, METALLORGANICA E ANALITICA "Lamberto Malatesta"	Renewable second generation feedstock as alternative energy source	Use of ligno-cellulosic material as renewable feedstock for biofuel production by catalytic processes.
CHEMISTRY	022	SELLI ELENA	DIPARTIMENTO DI CHIMICA FISICA ED ELETTROCHIMICA	Development of efficient and sensitive photocatalysts for solar energy conversion and environmental applications	Synthesis, characterization and activity tests of nanostructured photocatalytic materials, based on mixed, doped and/or surface-modified semiconductors, for solar into chemical energy conversion and for the abatement of water and air pollutants
GEOLOGY	023	BERETTA GIOVANNI PIETRO	DIPARTIMENTO DI SCIENZE DELLA TERRA "ARDITO DESIO"	Spatial temporal statistical analysis of gauge and remote measures for groundwater vulnerability assessment and non- point sources identification	The main aim of the research is to optimise statistical techniques for groundwater vulnerability assessment by integrating them with remote measures to define the temporal changes of potential non-point sources of contamination.
GEOLOGY	024	BERSEZIO RICCARDO	DIPARTIMENTO DI SCIENZE DELLA TERRA "ARDITO DESIO"	Improving the methodology for multidisciplinary characterization and simulation of alluvial aquifers' heterogeneity at different scales	Development of a multidisciplinary method for reliable 3-D, multi-scale simulation of aquifers' heterogeneity and preferential flow paths, in a dynamic GIS environment, by integration of stochastic and deterministic techniques.



GEOLOGY	025	FUMAGALLI PATRIZIA	DIPARTIMENTO DI SCIENZE DELLA TERRA "ARDITO DESIO"	The effect of mantle rocks chemical compositional heterogeneity on phase relations at divergent margins: an experimental study	The Earth's Mantle heterogeneity controls phase relations. High pressure experiments allow to define petrological markers to depict the baric evolution of mafic-ultramafic rocks at divergent margins
GEOLOGY	026	PELFINI MANUELA	DIPARTIMENTO DI SCIENZE DELLA TERRA "ARDITO DESIO"	Upper Holocene climatic changes and environmental responses in temperature- and precipitation-limited areas: impacts and future perspectives	Climatic trends and geomorphic processes analyses from dendrochronologic proxy data in the Upper Holocene: reconstruction of environmental changes and of the transition from natural to anthropic systems in the Alpine, subalpine and arid environments
GEOLOGY	027	PETRIZZO MARIA ROSE	DIPARTIMENTO DI SCIENZE DELLA TERRA "ARDITO DESIO"	Late Cretaceous calcareous plankton evolutionary history, paleoecology and critical evaluation of bioevents and biozonations	Analysis of taxonomic problems at species level. Identification of bioevents useful to implement biostratigraphic correlations. Morphometric analysis to reconstruct the evolutionary history. Stable isotope analysis to gain paleoecological information
BIOLOGY	028	BARBUTI ANDREA FRANCESCO	DIPARTIMENTO DI SCIENZE BIOMOLECOLARI E BIOTECNOLOGIE	Human fibroblast reprogramming into pluripotent stem cells by cell fusion with murine spermatogonial stem cells.	The project is aimed at reprogramming human fibroblast toward a pluripotent state through cell fusion with murine spermatogonial stem cells, which express high levels of oct-4 a fundamental factor for initiating reprogramming
BIOLOGY	029	BONOMI FRANCESCO	DIPARTIMENTO DI SCIENZE MOLECOLARI AGROALIMENTARI	Protein folding and unfolding at biological and non-biological interfaces	To verify whether hydrophobic surface of appropriate composition and size may affect the folding/unfolding behavior (and therefore function) of proteins and cofactor-containing proteins



BIOLOGY	030	CIGHETTI GIULIANA MARIA	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	Collagen cross-links evaluation in obese subjects to study possible relationships between pathological conditions and bone resorption.	Evaluate urinary collagen cross-link excretion using a reference method and correlate their levels with anthropometric and biochemical parameters characteristic of obesity to establish a possible relationship between fat mass and bone loss.
BIOLOGY	031	CIUFFREDA PIERANGELA	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	N6- isopentenyladenosin e analogues: structure-activity relationships and biological evaluation as antineoplastic agents.	The goal of this research is to investigate which structural modifications were possible to obtain iPA analogues maintaining biological activity as antineoplastic agents in vitro and in vivo.
BIOLOGY	032	COTELLI FRANCO	DIPARTIMENTO DI BIOLOGIA	Zebrafish as model system to study genes involved in vertebrates embryonic development and human pathologies	Zebrafish is a powerful model system to study genes involved in Central Nervous System development and human pathologies like huntingtin/others using functional/genetics approaches and cellular/molecular biology techniques
BIOLOGY	033	DEHO' GIOVANNI	DIPARTIMENTO DI SCIENZE BIOMOLECOLARI E BIOTECNOLOGIE	NOVEL MOLECULAR TARGETS FOR THE DEVELOPMENT OF NEXT-GENERATION ANTIBACTERIAL DRUGS	Identification of novel molecular targets (proteins and/or small RNAs) essential for viability, pathogenicity, or biofilm formation in different model bacteria; design and screening of inhibitory molecules as new antibacterial drug leads
BIOLOGY	034	DEL GIACCO LUCA PASQUALE CARMELO	DIPARTIMENTO DI BIOLOGIA	Zebrafish: an in vivo model for the study of the neuronal development and neurodegenerative diseases	- Elucidation of the gene pathways involved in the proper differentiation of specific neuronal populations in vertebrate.- Analysis of the cellular and molecular events leading to neurodegeneration



BIOLOGY	035	DI FRANCESCO DARIO	DIPARTIMENTO DI SCIENZE BIOMOLECOLARI E BIOTECNOLOGIE	Assessing the genetic and molecular mechanisms associated to inheritable disfunctions of cardiac and neuronal electrical activity	The aim of this project is to identify and functional characterize in vitro mutations of HCN and/or modulatory protein- coding genes associated with familial forms of cardiac rhythm disturbances and/or epilepsy.
BIOLOGY	036	DUGA STEFANO	DIPARTIMENTO DI BIOLOGIA E GENETICA PER LE SCIENZE MEDICHE	Hunting phantom determinants of Multiple Sclerosis: beyond protein-coding genes	Determinants of multiple sclerosis are largely unknown. Unexplored fields concern the role of alternative splicing, noncoding RNAs and epigenetics. The aim of the project will be to investigate these neglected players by whole-genome approaches
BIOLOGY	037	FORMENTI ALESSANDRO	DIPARTIMENTO DI FISILOGIA UMANA	Kinetic energy recovery systems (KERS, hybrid locomotion) in human powered vehicles.	Human powered locomotion on wheels in the city often needs muscles to provide kinetic energy that has been dissipated during braking. As in hybrid cars, that extra metabolic cost might be reduced via a mechanical energy transformation and storage.
BIOLOGY	038	MASIERO SIMONA	DIPARTIMENTO DI BIOLOGIA	Molecular dissection of floral variation	Unifying feature of angiosperms is the flower. The genetics of floral traits have long been of interest and much is known about the genetic control of specific features in Arabidopsis. The project intend to exploit flower formation in non model species
BIOLOGY	039	MINETTI ALBERTO ENRICO	DIPARTIMENTO DI FISILOGIA UMANA	Complex Motor Acts: Energetics and Skills of Accelerated Learning	The process of accelerated learning of complex motor acts, obtained via real-time feedback systems, will be investigated in terms of entropy minimization, metabolic energy saving and motor skills improvements.
BIOLOGY	040	PELLICIOLI ACHILLE	DIPARTIMENTO DI SCIENZE BIOMOLECOLARI E BIOTECNOLOGIE	Functional roles of Polo Kinases in controlling chromosomes stability and cells proliferation.	Polo kinases (PLKs) are fundamental regulators of cell cycle in all eukaryotes and are frequently overexpressed in tumors. Through genetic and biochemical approaches, we aim to study their regulation and function in cell responding to DNA damage.



BIOLOGY	041	PEREGO CARLA	DIPARTIMENTO DI SCIENZE MOLECOLARI APPLICATE AI BIOSISTEMI	Identification of new paracrine and autocrine signals modulating hormone secretion and endocrine cell survival in islets of Langerhans	Endocrine cells release different signals to coordinate hormone secretion and to regulate cell survival within the islet. Identification of the signalling molecules and characterization of the molecular targets responsible for the cellular responses
BIOLOGY	042	POLETTI ANGELO	DIPARTIMENTO DI ENDOCRINOLOGIA, FISIOPATOLOGIA E BIOLOGIA APPLICATA	Protective effects of the "small heat shock proteins" HSPBs in motor neuron diseases: molecular aspect of the mechanisms of action	In this project we will evaluate the efficiency of the "small heat shock proteins" HSPBs to stimulate the degradation of mutant proteins responsible for the motor neuronal death in motor neuron diseases
BIOLOGY	043	RIVA PAOLA VANDA	DIPARTIMENTO DI BIOLOGIA E GENETICA PER LE SCIENZE MEDICHE	GENOTYPE-PHENOTYPE CORRELATION IN GENETIC DISEASES CAUSED BY THE RAS-PATHWAY DYSFUNCTIONS	Mutations of RAS and upstream/downstream effector genes will be identified and functionally validated in patients with Noonan/Noonan-like syndromes. Genotype-phenotype correlation will be studied also evaluating dysfunctions of associated pathways.
BIOLOGY	044	RONCHETTI FIAMMA CLELIA VIRGINIA	DIPARTIMENTO DI CHIMICA, BIOCHIMICA E BIOTECNOLOGIE PER LA MEDICINA	Role of glycolipids in modulating membrane functional properties	Research activities will be associated to the preparation and use of glycolipids and glycolipid derivatives to investigate cell signaling processes in which they are involved
BIOLOGY	045	SAMAJA MICHELE	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Prostate cancer as a model to assess the role of various forms of hypoxia and hyperoxia on tumor development in a murine model	Use an in vivo xenograft model of prostate cancer cells in mice to evaluate the effects of chronic and intermittent hypoxia, as well as hyperoxia, and assess the signaling paths leading to tumorigenesis.



BIOLOGY	046	SANTANIELLO ENZO	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Serine palmitoyl transferase (SPT) inhibitors for retinitis pigmentosa treatment: synthesis and molecular modeling studies of myriocin analogues	Synthesis of structural analogues of myriocin for the treatment of retinitis pigmentosa; inhibitory activity evaluation of synthetic compounds against serine palmitoyl transferase (SPT); molecular modeling studies for result rationalization and drug design optimization
BIOLOGY	047	SIGNORELLI PAOLA	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	TARGETING SPHINGOLIPID METABOLISM IN GENETIC HUMAN DISEASE	Cystic Fibrosis cells and mice lungs will be studied for their sphingolipid metabolism and inflammatory response. Pharmacological inhibition of sphingolipid metabolism will be used and cell inflammatory response and survival will be evaluated.
BIOLOGY	048	TONELLI CHIARA	DIPARTIMENTO DI SCIENZE BIOMOLECOLARI E BIOTECNOLOGIE	Role of flowering time genes in drought-stress avoidance	The project focus on the analysis of flowering time genes involved in the regulation of the drought-induced flower transition, employing a multidisciplinary approach including molecular biology, plant physiology, genetics and genomic.
INFORMATION SCIENCES	049	AGUZZOLI STEFANO	DIPARTIMENTO DI SCIENZE DELL'INFORMAZIONE	Many-Valued Description Logics: a tool for the representation of vague knowledge and for reasoning about vague concepts	The project aims at merging Description Logics, widely used in Knowledge Representation, and Many-Valued Logics, used to model vague concepts, to develop a logical formalism to represent knowledge and reason about it in the presence of vagueness
INFORMATION SCIENCES	050	APOLLONI BRUNO	DIPARTIMENTO DI SCIENZE DELL'INFORMAZIONE	A new artificial neural network paradigm based on mobile neurons.	The research will concern a neural network where neurons autonomously search for the best reciprocal position in a topological space so as to exchange information. Main threads are: 1) training of the network, 2) analysis of the evolving morphology.
INFORMATION SCIENCES	051	CAMPADELLI PAOLA	DIPARTIMENTO DI SCIENZE DELL'INFORMAZIONE	Development of efficient algorithms for the intrinsic dimensionality estimation in high dimensional spaces.	In the field of pattern recognition a great deal of research work is devoted to the development of intrinsic dimensionality estimation methods dealing with high dimensional data since it is an important information for several algorithms.



INFORMATION SCIENCES	052	CASTANO SILVANA	DIPARTIMENTO DI INFORMATICA E COMUNICAZIONE	Methods and techniques for exploratory, entity-driven search over the Webs	Goal of the research is the development of methods and techniques to build entity-centric collections of data from multiple webs, providing a smart organization for exploratory search according to prominence, proximity and other semantic relations.
INFORMATION SCIENCES	053	CAUMO ANDREA	DIPARTIMENTO DI SCIENZE DELLO SPORT, NUTRIZIONE E SALUTE	Association between indices of the glucose-insulin system and polymorphisms of ACE, MTHFR, MTRR, MTR enzymes in strength and endurance athletes.	Phenotypic indices of insulin sensitivity and beta-cell function obtained with mathematical models are studied in association with the genotyping of the ACE enzyme and other enzymes involved in DNA methylation in strength and endurance athletes.
INFORMATION SCIENCES	054	DAMIANI ERNESTO	DIPARTIMENTO DI TECNOLOGIE DELL'INFORMAZIONE (CREMA)	Information Technologies and Methodologies for Intelligent, Distributed and Cooperative Services	Semantics-aware design, development, composition and management of distributed intelligent adaptive service-oriented systems; compliance and quality of service of functional and non-functional attributes and business sustainability.
INFORMATION SCIENCES	055	DE CINDIO FIORELLA	DIPARTIMENTO DI INFORMATICA E COMUNICAZIONE	La deliberazione via rete: dalla teoria alla pratica	The research aims at enhancing the online deliberation discipline through the design of online dialogue and social networking environments and software tools, designed to support decision-making processes with people ideas
INFORMATION SCIENCES	056	RIZZI ALESSANDRO	DIPARTIMENTO DI INFORMATICA E COMUNICAZIONE	Calibration, processing and dynamic range in the photographic shoot: from luminance to the digit.	Automatic testing of photographic digital devices and achievement of simulation software. Investigation about dynamic range and embedded computations. Development of alternative rendering algorithms and image enhancement based on chromatic appearance
INFORMATION SCIENCES	057	SAMARATI PIERANGELA	DIPARTIMENTO DI TECNOLOGIE DELL'INFORMAZIONE (CREMA)	Information Technologies and Methodologies for Security and Privacy in Computer Systems and Networks	Techniques and methodologies for security, privacy, and data protection; access control policies, models and systems; networks and information system security; formal methods and models for security.



INFORMATION SCIENCES	058	SCARABOTTOLO NELLO	DIPARTIMENTO DI TECNOLOGIE DELL'INFORMAZIONE (CREMA)	Information Technologies and Methodologies for Industrial Applications	Innovation in modelling, monitoring, verification, control, signal/image processing and optimization, with information technologies for industrial, medical, bioinformatic, logistic, decision-support, and digital circuits applications
INFORMATION SCIENCES	059	VALENTINI GIORGIO	DIPARTIMENTO DI SCIENZE DELL'INFORMAZIONE	Neural and graph-based algorithms for the analysis of biomolecular networks	Design and development of novel neural or graph-based algorithms to extract meaningful biological knowledge from complex bio-molecular networks in the context of gene function prediction, or drug repositioning problems.
INFORMATION SCIENCES	060	VALTOLINA STEFANO	DIPARTIMENTO DI INFORMATICA E COMUNICAZIONE	Computer semiotic theories and techniques in Human-Computer Interaction	This theme focuses on the study of models, theories and practical applications for understanding and designing, from a computer semiotic point of view, innovative and collaborative approaches in Human-Computer Interaction
MEDICINE	061	BARLASSINA MARIA CRISTINA	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Definition of pathogenetic mechanisms of complex traits through Next Generation Sequencing.	Exome sequencing or target sequencing of regions validated in GWAS or candidate association studies, aimed at detecting causal variants associated to the phenotype. Post-genomic analysis of sequence/structural variants identified.
MEDICINE	062	BERTAZZI PIETRO ALBERTO	DIPARTIMENTO DI MEDICINA DEL LAVORO - "CLINICA DEL LAVORO L.DEVOTO"	In-vitro models to study the effects of nanoparticles exposure.	Study of biological mechanisms by which the environmental nanoparticles exposure acts on the human health; the DNA methylation and the Histone modifications represent the most relevant markers in the carcinogenesis processes.
MEDICINE	063	BORGHI ELISA	DIPARTIMENTO DI SANITA' PUBBLICA - MICROBIOLOGIA - VIROLOGIA	INVERTEBRATE EXPERIMENTAL MODELS FOR INVASIVE FUNGAL INFECTIONS	The use of invertebrates offers several advantages: good correlation in terms of mammal-invertebrate innate immunity, easy pathogenicity and antimicrobial therapy assays on a large number of strains
MEDICINE	064	CAPPELLINI MARIA DOMENICA	DIPARTIMENTO DI MEDICINA INTERNA	Molecular and functional characterization of the mechanisms involved in iron homeostasis and heme synthesis during erythropoiesis	This project links basic and clinical research on mechanisms involved in iron homeostasis and heme synthesis in pathological erythropoiesis. The study will be performed in erythroid cultures and in vivo in subjects with different iron loading anemias



MEDICINE	065	CATTANEO CRISTINA	DIPARTIMENTO DI MORFOLOGIA UMANA E SCIENZE BIOMEDICHE - CITTA' STUDI	Study of a semiquantitative algorithm for a reliable age progression of children's faces from photographs: an aid for missing children	Aim of the research is to gain knowledge on changes in volume and proportions of children's and adolescents' faces during growth in order to create prevision models of physiognomical changes in time.
MEDICINE	066	CATTANEO MARCO NATALE	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Regulation of platelet formation by the ADP receptor P2Y13: mechanisms and pathogenic role in quantitative platelet disorders	Megakaryocyte-derived ADP regulates platelet formation interacting with the P2Y13 receptor. Aims: 1) to identify the signal transduction pathways; 2) to study its pathogenic role in congenital and acquired quantitative platelet disorders
MEDICINE	067	CETIN IRENE	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	Characterization of placental stem cells in pregnancy pathologies with placental insufficiency	Stem cells will be isolated from normal and pathological placentas and characterized for immunological, mitochondrial and nutritional properties by biomolecular and immunohistochemical techniques
MEDICINE	068	CLERICI MARIO SALVATORE	DIPARTIMENTO DI SCIENZE E TECNOLOGIE BIOMEDICHE	Genetic diversity at endoplasmic reticulum aminopeptidases 2 (ERAP2) is coupled with resistance to HIV-1 infection	To verify if diverse ERAP2 alleles and other genes involved in presentation of peptides by MHC class I molecules to CD8+ cells may influence the susceptibility to HIV infection, possibly altering the quality/quantity of MHC class I-peptide complexes
MEDICINE	069	COLOMBO MASSIMO	DIPARTIMENTO DI SCIENZE MEDICHE	Genetic, immunological and virological predictors of progressive recurrent hepatitis C after liver transplantation.	To investigate the pathogenetic role of donor/recipient genetic, immunological and virological predictors of progressive recurrent hepatitis C after liver transplantation in patients transplanted for HCV- related cirrhosis/hepatocellular carcinoma.
MEDICINE	070	CORSI MASSIMILIANO MARCO	DIPARTIMENTO DI MORFOLOGIA UMANA E SCIENZE BIOMEDICHE - CITTA' STUDI	Lipidomic pathways in cardiovascular diseases	The team perform transcriptomic and lipidomic analyses from epicardial fat (EF) and subcutaneous adipose tissue (SAT). Biopsy samples from epicardial adipose tissue (EAT) will be obtained before cardiopulmonary bypass.



MEDICINE	071	FARRONATO GIAMPIETRO	DIPARTIMENTO DI SCIENZE CHIRURGICHE, RICOSTRUTTIVE E DIAGNOSTICHE	COMPUTERIZED 3D CEPHALOMETRIC ANALYSIS ON CONE CEAM COMPUTED TOMOGRAPHY (CBCT)	FROM THE DATA BASE OF THE ORTHODONTIC DEPARTMENT WHICH INCLUDE MORE THAN 1000 CBCT, CASES WILL BE SELECTED A THREE DIMENSIONAL CEPHALOMETRIC ANALYSIS. THE DIFFERENCE BETWEEN 3D E 2D VALUES WILL BE EVALUATED TO OBTAIN AN OPTIMAL DIAGNOSIS.
MEDICINE	072	FIORILLI AMELIA	DIPARTIMENTO DI CHIMICA, BIOCHIMICA E BIOTECNOLOGIE PER LA MEDICINA	Casein phosphopeptides- calcium aggregates as potential nutraceuticals for colon tumor	Calcium rich diets may exert different effects at healthy or pre cancerous intestinal cells. The aim is to demonstrate the possible nutraceutical properties of peptides coming from the casein digestion and of their complexes with calcium ions
MEDICINE	073	GATTINONI LUCIANO	DIPARTIMENTO DI ANESTESIOLOGIA, TERAPIA INTENSIVA E SCIENZE DERMATOLOGICHE	Efficacy of albumin administration in patients with severe sepsis or septic shock	Evaluation of the anti-inflammatory properties as well as properties of modulation of multiple organ failures of albumin during severe sepsis or septic shock, aimed at individuating therapeutic and clinically effective targets for its administration
MEDICINE	074	GERVASINI CRISTINA COSTANZA GIOVANNA	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Identification of novel genes responsible for the chromatin remodelling Rubinstein-Taybi syndrome	The research activity focus on the identification, by next-generation sequencing, of novel responsible genes of Rubinstein-Taybi syndrome, with attention on cognitive defects and tumors risk.
MEDICINE	075	IAPICHINO GAETANO	DIPARTIMENTO DI ANESTESIOLOGIA, TERAPIA INTENSIVA E SCIENZE DERMATOLOGICHE	Patophysiology and treatment strategies for lung ischemia- reperfusion injury	The research will focus on the metabolic adaptations and bioenergetic consequences of the process of ischemia-reperfusion in the lung, aiming to identify factors that allow a modulation of the response and a reduction of the injury.
MEDICINE	076	LA VECCHIA CARLO	DIPARTIMENTO DI MEDICINA DEL LAVORO - "CLINICA DEL LAVORO L.DEVOTO"	ENVIRONMENTAL, DIETARY AND GENETIC FACTORS AND THEIR INTERACTION ON CANCER RISK	The project combines various aspects of etiologic research, risk quantification and prevention, and is aimed at identifying the role of environmental, dietary, familial/genetic factors and their interaction on several cancers in Italian population



MEDICINE	077	LARIZZA LIDIA	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Unraveling new genes and pathways underlying cohesinopathies and chromosomal instability syndromes by exome deep sequencing	Exome deep sequencing on a cohort of patients with clinical diagnosis of cohesinopathies or chromosomal instability syndromes without mutations in known candidate genes
MEDICINE	078	LAVEZZI ANNA MARIA	DIPARTIMENTO DI SCIENZE CHIRURGICHE, RICOSTRUTTIVE E DIAGNOSTICHE	IMMUNOHISTOCHEMI CAL STUDY OF THE AUTONOMIC NERVOUS SYSTEM FUNCTIONAL ALTERATIONS IN THE UNEXPECTED FETAL AND INFANT DEATH	The aim of the project is the identification by immunohistochemical methods applied to histological sections of alterations of specific neurotransmitters and functional markers in the sudden unexplained intrauterine and infant death
MEDICINE	079	LOMBARDI FEDERICO	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Effects of adrenergic modulation on atrial electrical properties of patients with atrial fibrillation	To evaluate the effects of adrenergic stimulation induced by either isuprenaline infusion or transient hypotension, on atrial electrophysiological properties by measuring multisite atrial electrograms before and after pulmonary vein isolation.
MEDICINE	080	MAGNAGHI VALERIO	DIPARTIMENTO DI ENDOCRINOLOGIA, FISIOPATOLOGIA E BIOLOGIA APPLICATA	Characterisation of adult stem cells and polymeric hydrogels as scaffolds for nervous tissue regeneration	We propose to analyse the combination of adult stem cells from the adipose tissue, transdifferentiated into Schwann cell-like, and different polymeric hydrogels to promote the regeneration of injured nerves system
MEDICINE	081	MAIER JEANETTE ANNE MARIE	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	Multidrug resistance and magnesium channels: is there a link?	Hypomagnesemia complicates antineoplastic therapies and Mg levels affect the response to chemotherapy. The role of Mg channels TRPM6/7 and Mrs2 will be investigated in tumorigenesis and chemoresistance in drug resistant carcinoma cells and controls



MEDICINE	082	MALESCI ALBERTO	DIPARTIMENTO DI MEDICINA TRASLAZIONALE	Caratterizzazione molecolare del cancro colon rettale: implicazioni terapeutiche e per lo screening dei familiari di primo grado dei pazienti affetti.	Management and characterization of consecutive retrospective and prospective series of colorectal cancer(CRC)patients. Diagnosis and Clinical Management of patients with hereditary CRC syndromes. Screening of first degree relatives. Data Analysis affetti.
MEDICINE	083	MANTOVANI ALBERTO	DIPARTIMENTO DI MEDICINA TRASLAZIONALE	Role of phagocytes in neoplastic progression	The project will evaluate molecular mechanisms involved in phagocyte recruitment and activation during tumor progression and their impact on the evolution of the disease.
MEDICINE	084	MERONI PIERLUIGI	DIPARTIMENTO DI MEDICINA INTERNA	ROLE OF TOLL-LIKE RECEPTOR 3 (TLR3) IN THE INDUCTION OF PRO-FIBROTIC PHENOTYPE IN FIBROBLASTS FROM SYSTEMIC SCLEROSIS (SSc)	Fibroblasts are involved in tissue fibrosis in SSc. The study will investigate the role of TLR3, an innate immunity receptor expressed in fibroblasts, in pro-fibrotic phenotype induction and in the pathogenesis of the disease.
MEDICINE	085	MOJA EGIDIO	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Difficult conversations in medicine	Study of the verbal doctor-patient communication in the case of difficult medical conversations, collected by VRM and analyzed qualitatively and/or quantitatively. The study should pay a particular attention to the relevant clinical implications.
MEDICINE	086	MOJA PASQUALE LORENZO	DIPARTIMENTO DI SANITA' PUBBLICA - MICROBIOLOGIA - VIROLOGIA	Systematic reviews and meta-analyses	Systematic reviews (SRs) synthesise broad evidence increasing the precision of estimates of treatment effects. SRs are key component of guidelines and health technology assessment reports.
MEDICINE	087	NERI ANTONINO	DIPARTIMENTO DI SCIENZE MEDICHE	The role of microRNA in the molecular classification of multiple myeloma.	Microarray study of global microRNA expression profiles in multiple myeloma and integration with gene expression and genomic profiling data for a molecular classification of the disease with clinico-prognostic implication.



MEDICINE	088	OTTOBRINI LUISA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE BIOMEDICHE	DEVELOPMENT AND EVALUATION OF PROCEDURES FOR CELL LABELING AND IN VIVO MULTIMODAL IMAGING	Development of cell labeling procedures using reporter genes and nanoparticles. Assessment of potential toxicity and cell-mediated treatment efficacy by multimodal imaging in animal models of disease.
MEDICINE	089	PERETTI GIUSEPPE	DIPARTIMENTO DI SCIENZE DELLO SPORT, NUTRIZIONE E SALUTE	Development of a biological meniscus substitute: a tissue engineering approach	This project aims to characterize the young and adult meniscus tissue in order to ultimately develop an engineered meniscus based on the association between dermal fibroblast, transdifferentiated into fibrochondrocytes, and a collagen scaffold
MEDICINE	090	PERSANI LUCA	DIPARTIMENTO DI SCIENZE MEDICHE	Genetic and molecular investigations on the role of BMP15 oocyte-derived growth factor in female fertility	BMP15 is a Xp chr. gene linked to premature ovarian failure (POF) and with a relevant role in female fertility. The project should then focus on the BMP15-dependent molecular events in order to obtain insights into the candidate mechanisms for POF.
MEDICINE	091	PICCININI ANDREA ARNALDO	DIPARTIMENTO DI MORFOLOGIA UMANA E SCIENZE BIOMEDICHE - CITTA' STUDI	Forensic and biomolecular aspects of sudden death. Operative protocols, autopsy and genetic database.	The project is aimed at creating an operative protocol and a genetic database in sudden death cases. This involves collecting data and family medical history, full autopsy, genetic analysis (exome sequencing), functional characterization of mutations
MEDICINE	092	PORRINI MARISA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Interaction among dietary bioactive compounds, intestinal microbiota and human host: probiotic, prebiotic and synbiotic effects	Bioactive food components (e.g. polyphenols, prebiotic molecules or probiotic microorganisms) affect human physiology, directly or through host oral-gastrointestinal microbiotas. The project aims to reveal the mechanisms underlying these interactions



MEDICINE	093	PRIORI ALBERTO	DIPARTIMENTO DI SCIENZE NEUROLOGICHE	Neuromodulation techniques as a tool for understanding the neural basis of emotions and for the treatment of affective and neurobehavioral disorders	Invasive and non-invasive neuromodulation techniques can be valuable tools for understanding the neural basis of emotions and behavior and for treating patients with affective or neurobehavioral disorders when drugs are not effective.
MEDICINE	094	RECALCATI STEFANIA	DIPARTIMENTO DI MORFOLOGIA UMANA E SCIENZE BIOMEDICHE - CITTA' STUDI	The hepcidin-ferroportin interaction as a key event in the regulation of macrophage iron metabolism	Hepcidin regulates iron homeostasis by binding ferroportin that exports iron from the cell. Aim of this project is to study such interaction in macrophages in which ferroportin expression is high and modulated by various conditions.
MEDICINE	095	ROMANO' LUISA	DIPARTIMENTO DI SANITA' PUBBLICA - MICROBIOLOGIA - VIROLOGIA	Prevention, surveillance and control of infections seriously impacting on Public Health.	Research areas: 1) Study of long-lasting immunological memory of hepatitis B vaccination; 2) Surveillance and evaluation of the epidemiological impact of sexually transmitted infections.
MEDICINE	096	ROMEO EUGENIO	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Prevention, diagnosis and therapy of peri-implant inflammatory disease in dentistry	Peri-implant disease in dentistry has a prevalence higher than 20%. This leads to an increased risk of implant failure and rise the necessity to identify a protocol of prevention, diagnosis and therapy.
MEDICINE	097	RUSCONI STEFANO	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	Analysis of the highly conserved regions in HIV-1 gp120 envelope glycoprotein, close to V3 loop, from patients failing treatment with maraviroc.	Characterization of genetic and non-genetic determinants within highly conserved region of the HIV-1 gp120 envelope glycoprotein, upstream V3 loop, from clinical isolates resistant to maraviroc: analysis of sequence and N-glycosylation pattern.
MEDICINE	098	SFONDRINI LUCIA	DIPARTIMENTO DI MORFOLOGIA UMANA E SCIENZE BIOMEDICHE - CITTA' STUDI	Evaluation of FoxP3 expression in mammary tumor cells and of its role in immune response	Evaluation of the role of FoxP3 in mammary carcinomas metastatic capabilities and revealing a possible immunosuppressive activity, analyzing the effects of its expression on the cytokines production and on the lymphocytes population



MEDICINE	099	SILANI VINCENZO	DIPARTIMENTO DI SCIENZE NEUROLOGICHE	Molecular mechanisms underlying neural dysfunction in neurodegenerative diseases caused by DNA repeat expansion	Many neurodegenerative diseases are caused by DNA repeat expansions both in coding and non coding regions. The project analyzes the molecular mechanisms leading to neural dysfunction both in cell culture and mouse models of disease.
MEDICINE	100	TRABATTONI DARIA LUCIA	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	Molecular Characterization and inhibition of DC-SIGN mediated infections	To verify if glycomimetic DC-SIGN ligands inhibit HIV and other sexually transmitted infections, with the aim of developing topical microbicide drugs. To investigate the molecular mechanisms by which the DC-SIGN ligands exert these activity.
AGRICULTURAL SCIENCES	101	AGOSTINI STELLA	DIPARTIMENTO DI PROTEZIONE DEI SISTEMI AGROALIMENTARE E URBANO E VALORIZZAZIONE DELLE BIODIVERSITA'	Rural System and farmland erosion. The value of goods through agriculture in strategies of rural sustainable development.	The methods applied to define the value of farmland will be analyzed. The purpose of the research is to examine risks and correction measures to assess role and importance of the rural system in policy strategies of sustainable development.
AGRICULTURAL SCIENCES	102	BIANCO PIERO ATTILIO	DIPARTIMENTO DI PRODUZIONE VEGETALE	Endophytic bacteria as biocontrol agents against phytoplasmas	Characterization of endophytic bacterial community associated with phytoplasma diseased and recovered plants. Identification of biocontrol agents. Development of a model plant for studying bacteria biocontrol activity against phytoplasma.
AGRICULTURAL SCIENCES	103	CONFALONIERI ROBERTO	DIPARTIMENTO DI PRODUZIONE VEGETALE	Improvement of the modelling techniques for the assessment of climate change impact on crop productions	Improvement of models for assessing the impact of climate change on agricultural productions. Adaptation strategies will be improved and models for the simulation of yield losses due to biotic/abiotic stresses and products quality will be developed.
AGRICULTURAL SCIENCES	104	CORTESI PAOLO	DIPARTIMENTO DI PROTEZIONE DEI SISTEMI AGROALIMENTARE E URBANO E VALORIZZAZIONE DELLE BIODIVERSITA'	Biological control of plant diseases	Development of Biological Control Agent (BCA) useful to manage plant disease epidemics is one of major importance within the frame of the Dir.2009/128/CEE. The aim of the project is to search bacterial and fungal strains to control root diseases.



AGRICULTURAL SCIENCES	105	COSIO MARIA STELLA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Development and validation of analytical methods for the determination of residues and contaminants in vegetable and animal foods.	The aim of research is to develop analytical methods based on the use of electrochemical sensors and biosensors and chromatographic methods (GC/MS) for the determination of residues and contaminants in different matrices for the food safety control.
AGRICULTURAL SCIENCES	106	DAFFONCHIO DANIELE GIUSEPPE	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Plant-microbe symbiotic interactions for sustaining agriculture in conventional and extreme environments	Investigation of plant-microbe symbiotic interactions for developing environmental-friendly approaches aimed to sustain plant growth under biotic and abiotic stress in conventional and extreme habitats
AGRICULTURAL SCIENCES	107	DE NONI IVANO	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Formation and fate of compounds with biological activities in relation to food composition and to technological and digestive processes	To evaluate the factors affecting occurrence and levels of bioactive compounds and advanced glycation end-products following processing and gastrointestinal digestion of dairy and cereal products
AGRICULTURAL SCIENCES	108	ESPEN LUCA	DIPARTIMENTO DI PRODUZIONE VEGETALE	Relationship between the physiological state of plant and the chemical traits of grape berry.	Genomic information of Vitis nowadays allow performing innovative approaches at the -omic level integrated by bioinformatics in order to understand biochemical and physiological processes involved in stress responses and during berry ripening.
AGRICULTURAL SCIENCES	109	FRISIO DARIO GIANFRANCO	DIPARTIMENTO DI ECONOMIA E POLITICA AGRARIA AGRO-ALIMENTARE E AMBIENTALE	Competitive frameworks of agriculture innovation in the gene revolution's era between public and private research.	Evaluation of the gene revolution's effects on agriculture innovation pathways in plant breeding and plant protection by the use of patent data statistics and corporate strategies analysis.
AGRICULTURAL SCIENCES	110	LUCISANO MARA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Exploitation of wine making co-products for innovative food production	-Recovery of wine-making co-products to be used as new food ingredients - Use of rheological, ultrastructural and spectroscopic methods, combined with advanced statistical procedures, for the optimization of enriched foods



AGRICULTURAL SCIENCES	111	PESSINA DOMENICO	DIPARTIMENTO DI INGEGNERIA AGRARIA	Innovative solutions for the operators wellness and safety, related to the agricultural machinery mechanical risks	With reference to the dedicated Standards, innovative solutions should be pointed out of prevention and protection, to reduce the frequency and the severity of professional injuries and diseases occurred when using agricultural machinery
AGRICULTURAL SCIENCES	112	PIAGNANI MARIA CLAUDIA	DIPARTIMENTO DI PRODUZIONE VEGETALE	Breeding stone fruit by genomic tools	The use of available stone fruit genotypes and genomic information associated with robust phenotypic analysis of multiple traits of interest is a time and cost saving strategy to develop new cultivars with better field performance and fruit quality, and to understand the biological bases of such features.
AGRICULTURAL SCIENCES	113	PROVOLO GIORGIO MARIO	DIPARTIMENTO DI INGEGNERIA AGRARIA	Methodologies and technologies for automated monitoring of the behavioral activity of dairy cows	Development of suitable methods and automatic systems for monitoring of behavioral activity to provide indication on design criteria and management strategies of housing system in dairy cattle.
AGRICULTURAL SCIENCES	114	ROLLINI MANUELA SILVIA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE ALIMENTARI E MICROBIOLOGICHE	Innovation, parametrization and modelling of biotechnological performances evidenced in microbial populations involved in food fermentations	Progress in process biotechnology involves design of new processes in minimal time, efficiency optimization of existing processes and validation of bioprocesses reproducibility. Modelling and control are the most useful tools in achieving this goal
AGRICULTURAL SCIENCES	115	SPINARDI ANNA	DIPARTIMENTO DI PRODUZIONE VEGETALE	Quality traits in berries: improvement by biochemical and molecular biological techniques	Use of molecular, biological and biochemical techniques in order to develop berry fruit cultivars with high quality traits (nutritional quality, storability, stress tolerance, pests resistance, high productivity and climatic adaptability)
VETERINARY SCIENCES	116	BALZARETTI CLAUDIA MARIA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE VETERINARIE PER LA SICUREZZA ALIMENTARE	Assessment of food and water microbiological safety in conventional and innovative catering systems	Conventional and innovative catering systems: assessment of emerging microbiological risks in food and in water (both for drinking and food preparation), definition and application of control measures



VETERINARY SCIENCES	117	BANDI CLAUDIO	DIPARTIMENTO DI PATOLOGIA ANIMALE, IGIENE E SANITA' PUBBLICA VETERINARIA	Advanced technologies for the study and control of arthropod vectors and/or vector-borne infectious agents	Advanced methodologies (next generation sequencing, paratransgenesis, etc.) are uncovering novel aspects of the biology of vectors and vector-borne agents, and will eventually allow to develop novel control strategies.
VETERINARY SCIENCES	118	BONIZZI LUIGI	DIPARTIMENTO DI PATOLOGIA ANIMALE, IGIENE E SANITA' PUBBLICA VETERINARIA	Proteomics of microorganisms	Proteomic study of pathogen microorganisms and metaproteomics of intestinal microbiota of farm animals (ruminants) for the improvement of animal health, food safety and traceability
VETERINARY SCIENCES	119	BREVINI TIZIANA	DIPARTIMENTO DI SCIENZE ANIMALI	Epigenetic modifications for the direct conversion of fibroblasts into different cell types through an increased chromatin plasticity	Development of procedures for the conversion of adult somatic cells into different cell types acting on epigenetic mechanisms rather than using transgenes and with no need for the establishment of a stable pluripotent state
VETERINARY SCIENCES	120	DOMENEGHINI CINZIA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE VETERINARIE PER LA SICUREZZA ALIMENTARE	Morpho-functional aspects of the swine gut in commercial and local breeds.	An anatomical and micro-anatomical study will be conducted upon morpho-functional aspects of swine gut, comparing different dietary supplementations applied to genetically lean and obese breeds.
VETERINARY SCIENCES	121	GRIECO VALERIA	DIPARTIMENTO DI PATOLOGIA ANIMALE, IGIENE E SANITA' PUBBLICA VETERINARIA	ANIMAL MODELS FOR THE STUDY OF HUMAN TESTICULAR TUMORS	In human beings increased frequency of testicular tumors is observed, environmental endocrine disruptors substances are evoked among the possible causes. To study etiopathogenetical factors the identification of animal models is required.
VETERINARY SCIENCES	122	PALESTRINI CLARA	DIPARTIMENTO DI SCIENZE ANIMALI	DEFINE AND VALIDATE AN OBJECTIVE METHOD TO ASSESS THE DANGEROUSNESS OF SHELTERED DOGS	THE AIM IS TO DESIGN AN ASSESSMENT REPORT WITH BEHAVIOURAL AND PHYSICAL PARAMETERS IN ORDER TO PREDICT DANGEROUSNESS OF SHELTERED DOGS AND TO GIVE AN OBJECTIVE AND SCIENTIFIC EVALUATION OF BITE RISK



VETERINARY SCIENCES	123	PALTRINIERI SAVERIO	DIPARTIMENTO DI PATOLOGIA ANIMALE, IGIENE E SANITA' PUBBLICA VETERINARIA	Identification of prognostic markers for infectious and neoplastic diseases of domestic animals	Goal of this research is the identification of molecules able to early detect the progression (or the regression after treatment) of inflammatory or neoplastic conditions, with special emphasis to the possible prognostic role of acute phase proteins
VETERINARY SCIENCES	124	ROSI FABIA	DIPARTIMENTO DI SCIENZE ANIMALI	Study and improvement in the functional properties of animal foods	<ul style="list-style-type: none">• presence and concentration of bioactive and functional molecules• receptors in gastrointestinal mucosa and effects in animal models• strategies to modulate their levels in animal foods
VETERINARY SCIENCES	125	VIGO DANIELE	DIPARTIMENTO DI SCIENZE E TECNOLOGIE VETERINARIE PER LA SICUREZZA ALIMENTARE	Reproductive and productive physiology of dairy cows raised in Northern Italy from ancient selection with high biodiversity to produce milk and meat	Pivotal study of the Italian bovine biodiversity following "FAO Report 2050" indications, to produce milk and meat with an economically sustainable and efficient use of forage with low energy and water demand
VETERINARY SCIENCES	126	ZANI DAVIDE DANILO	DIPARTIMENTO DI SCIENZE CLINICHE VETERINARIE	Arthrocontrastographic and arthrodiastasis application techniques for the evaluation of cartilage defects using low field MRI	Evaluation of cartilage defects of equine metacarpophalangeal joint performing arthro-RM with a low field magnet (0,18 Tesla) and using intra-articular air injection and arthrodiastasis.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	127	ABBRACCHIO MARIA PIA	DIPARTIMENTO DI SCIENZE FARMACOLOGICHE	In silico modeling and identification of new ligands for GPR17, a new promising therapeutic target for neurodegenerative diseases	The GPR17 receptor is a novel pharmacological target for demyelinating diseases. Our project aims at designing in silico new and selective ligands for GPR17, and at validating them in in vitro and in vivo models



PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	128	BRINI ANNA TERESA	DIPARTIMENTO DI FARMACOLOGIA, CHEMIOTERAPIA E TOSSICOLOGIA MEDICA	Factors able to, either positively or negatively, affect precursors of osteogenic and chondrogenic cells considering possible future application	The use of mesenchymal progenitor cells for human musculoskeletal tissue regeneration: requirement of growth factors, drugs and physical stimuli to improve and understand cellular differentiation for future clinical applications
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	129	CALABRESI LAURA	DIPARTIMENTO DI SCIENZE FARMACOLOGICHE	Lecithin:cholesterol acyltransferase (LCAT) modulation to treat atherosclerotic cardiovascular disease	50% of the population in Europe dies of cardiovascular disease. Lowering of LDL-C can help 30% of these patients. For the remaining, new therapeutic targets need to be identified. LCAT, a key factor in HDL metabolism, represents a good candidate.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	130	CLEMENTI EMILIO GIUSEPPE IGNAZIO	DIPARTIMENTO DI SCIENZE CLINICHE "LUIGI SACCO"	AUTOPHAGY AS A NOVEL POTENTIAL DRUG TARGET IN DUCHENNE MUSCULAR DYSTROPHY: IDENTIFICATION OF THE PATHWAYS AND NEW PHARMACOLOGICAL STRATEGIES	This project is designed to investigate autophagy to discover novel therapeutic targets for Duchenne Muscular Dystrophy and to provide a first assessment of their validity in a preclinical model of dystrophy, the mdx mouse.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	131	FUMAGALLI FABIO	DIPARTIMENTO DI SCIENZE FARMACOLOGICHE	Long-term adaptive mechanisms following exposure to drugs of abuse during adolescence	Adolescence represents a window of vulnerability to drug abuse. The research will focus on the evaluation of synaptic plasticity mechanisms in animals exposed to drugs of abuse during adolescence.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	132	GAMBARO VENIERO	DIPARTIMENTO DI SCIENZE FARMACEUTICHE "PIETRO PRATESI"	Detection of drugs of abuse in human brain after acute intoxication	After acute intoxication, it may be important to investigate the distribution of drugs of abuse in brain tissue, in order to determine the perimortem concentration at their site of action.



PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	133	GORIO ALFREDO	DIPARTIMENTO DI MEDICINA, CHIRURGIA E ODONTOIATRIA	Translational Research Strategies for Treatment of Acute Neurodegenerative Disorders	Adult stem cells hold potential for treating spinal cord and brain injuries, and human adipose tissue may be an alternative source. hASCs are abundant, can be collected, differentiated into multiple cell lineages, and effectively transplanted
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	134	MAGGI ADRIANA CATERINA	DIPARTIMENTO DI SCIENZE FARMACOLOGICHE	Role of Estrogen receptors in energy Metabolism, Reproduction and Aging.	The short term objective of the study is a better comprehension of the physiological role of liver Estrogen Receptors for the identification of novel potential therapeutic means.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	135	MATTEOLI MICHELA	DIPARTIMENTO DI FARMACOLOGIA, CHEMIOTERAPIA E TOSSICOLOGIA MEDICA	MOLECULAR DETERMINANTS OF NEURONAL EXCITABILITY: ROLE OF SNAP-25 IN EPILEPSY AND PSYCHIATRIC DISORDERS	To define the mechanisms by which variations in the expression of the protein SNAP-25, described to occur in psychiatric diseases, alter neuronal excitability and synaptic transmission.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	136	MINGHETTI PAOLA	DIPARTIMENTO DI SCIENZE FARMACEUTICHE "PIETRO PRATESI"	Study of novel membrane for the development of in vitro methods for the technological and biopharmaceutical characterisation of TTS	The project aims to the study of membranes made of novel biopolymers suitable for the preliminary evaluation of transdermal permeation of active pharmaceutical ingredients contained in transdermal delivery system
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	137	SIBILIA VALERIA	DIPARTIMENTO DI FARMACOLOGIA, CHEMIOTERAPIA E TOSSICOLOGIA MEDICA	DEVELOPMENT OF NEW PHARMACOLOGICAL APPROACHES FOR THE TREATMENT OF BONE LOSS INDUCED BY RHEUMATOID ARTHRITIS.	In vivo and in vitro studies to examine the effects of new compounds on bone loss induced by rheumatoid arthritis.



PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	138	SPARATORE ANNA CONCETTINA	DIPARTIMENTO DI SCIENZE FARMACEUTICHE "PIETRO PRATESI"	Synthesis of novel gas-transmitters modulators and study of their therapeutic potential in redox imbalance processes.	Due to their important biological roles, gaseotransmitters offer many therapeutic opportunities in different pharmacological fields. The development of suitable gastransmitter-releasing drugs or codrugs may represent useful therapeutic tools.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	139	VILLA STEFANIA	DIPARTIMENTO DI SCIENZE FARMACEUTICHE "PIETRO PRATESI"	DESIGN, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF NEW STAT3-INHIBITORS, AS POTENTIAL ANTICANCER DRUGS	The research program herein presented proposes the synthesis, the structural analysis and the biological testing of novel antitumor agents, able to inhibit STAT3.
PHARMACEUTICAL AND PHARMACOLOGICAL SCIENCES	140	VIVIANI BARBARA	DIPARTIMENTO DI SCIENZE FARMACOLOGICHE	Early life neuroinflammation: role for a later onset of cognitive deficits and implications for therapeutic intervention	Evaluation of the biochemical alterations induced in neurons and glia by inflammation in prepubertal rats and through the use of an in vitro approach. Evaluation of the role of proinflammatory cytokines and the glutamatergic system.
LAW	141	BILANCIA PAOLA	DIPARTIMENTO GIURIDICO-POLITICO	JUDGE'S INTERPRETATION ACTIVITY IN THE CURRENT MULTILEVEL SYSTEM OF LAW	THE RESEARCH ANALYZES PROBLEMS CONCERNING JUDGE'S HERMENEUTIC ACTIVITY. IN THE CURRENT SYSTEM, JUDGES MUST DIRECT THE INTERPRETATION OF A NATIONAL RULE TOWARDS THE CONSTITUTION, THE LAWS OF THE EUROPEAN UNION AND THE INTERNATIONAL TREATIES.
LAW	142	BOSCHIERO NERINA	DIPARTIMENTO DI DIRITTO PUBBLICO, PROCESSUALE CIVILE , INTERNAZIONALE ED EUROPEO	The relevance of general principles of law in international criminal law	The project aims at analyzing the role of general principles of law in international criminal law, with special attention to the case-law of the UN ad hoc International Criminal Tribunals as well as to the Statute of the International Criminal Court
LAW	143	CUNIBERTI MARCO	DIPARTIMENTO DI DIRITTO PUBBLICO, PROCESSUALE CIVILE , INTERNAZIONALE ED EUROPEO	The right to education and the University autonomy: constitutional principles and legal system	The right to education and the constitutional principles of University autonomy: analysis of the constitutional, legal and statutory framework



LAW	144	D'AMICO MARIA ELISA	DIPARTIMENTO DI DIRITTO PUBBLICO, PROCESSUALE CIVILE , INTERNAZIONALE ED EUROPEO	Science and Law: Limits to the Legislator's Discretion	An Analysis of the Relation between Science and Law, with specific regard to the limits met by the legislator when dealing with issues where progressing science knowledge is highly relevant
LAW	145	DE NOVA GIORGIO	DIPARTIMENTO DI DIRITTO PRIVATO E STORIA DEL DIRITTO	Invalidity of the contract due to conflict with general clauses and material rules	When reviewing alien contracts, drafted pursuant to a Common Law system but with Italian law applicability, verify if the material rules, which forbid a result independently from any reference to the type of contract, may be an effective instruments
LAW	146	DI RENZO MARIA GIGLIOLA	DIPARTIMENTO DI DIRITTO PRIVATO E STORIA DEL DIRITTO	The public officer dismissal proceeding in Lombardo-Venetian Kingdom (1816-1848)	Public officer's dismissing proceedings researches in Lombardo-Venetian (1816-1848) in archival sources are still lacking: the aim is to fill the gap.
LAW	147	DUVIA PAOLO	DIPARTIMENTO DI DIRITTO PRIVATO E STORIA DEL DIRITTO	The interaction between Consumer law and «Law of Restitution»	The proposed research project shall lead to the comparison between Consumer Law (right of withdrawal, rules on unsolicited goods and services) and «general» Law of Restitution (action for restitution and/or action for unjustified enrichment).
LAW	148	FERRARI SILVIO	DIPARTIMENTO DI SCIENZE GIURIDICHE ECCLESIASTICISTICHE, FILOSOFICO-SOCIOLOGICHE E PENALISTICHE "Cesare Beccaria"	Dispute resolution procedures in religious legal systems and their influence on transitional justice	The research should analyze and compare conflict resolution mechanisms in Islamic, Jewish and Canon law and evaluate whether these mechanisms influence transitional justice and how.
LAW	149	FRIGO MANLIO	DIPARTIMENTO DI STUDI INTERNAZIONALI	Transnational Successions to the Estates of Deceased Persons in the European Harmonization Process.	From the variety of domestic laws imbued with different economic, social and cultural values, to a uniform model of supranational regulation as a new instrument of planning personal estate and of social integration.
LAW	150	GIUGGIOLI PIER FILIPPO	DIPARTIMENTO DI STUDI INTERNAZIONALI	Liability of the Courts: comparison of different legal experiences	The project aims to describe the liability of the Courts in the most important civil and common law legal systems, verifying differences and similarities and contributing to the current debate on the matter.



LAW	151	MARINO GIUSEPPE	DIPARTIMENTO GIURIDICO-POLITICO	Comparazione tra le legislazioni nazionali in materia di riscossione coattiva dei tributi e compatibilità della disciplina con principi europei	Si cercherà di indagare, in chiave comparativa, il miglior sistema di riscossione volontaria o coattiva dei tributi, nel raggiungimento degli obiettivi di massima efficienza ed economicità.
LAW	152	MERLIN ELENA	DIPARTIMENTO DI DIRITTO PUBBLICO, PROCESSUALE CIVILE , INTERNAZIONALE ED EUROPEO	Personal warranties and civil procedure questions.	Object of the research are the specific procedural problems concerning personal warranties. The positive rules about the guarantee per "fideiussione" (artt. 1936ss. civil code) have given occasion for the development of incoherent case law.
LAW	153	PANZARINI ELISABETTA	DIPARTIMENTO DI DIRITTO PRIVATO E STORIA DEL DIRITTO	Form and merger clauses in business to consumer contracts	The aim of the project is comparative analysis of form and merger clauses that, although different, share some typical goals. The research is relevant in order to achieve a high level of protection for the consumer in business to consumer contracts.
LAW	154	SALVANESCHI LAURA	DIPARTIMENTO DI DIRITTO PUBBLICO, PROCESSUALE CIVILE , INTERNAZIONALE ED EUROPEO	"Irrituale" arbitration	Article 808 ter c.p.c., introduced by legislative decree 40/06, provides, for the first time in general and expressed terms, a discipline of "irrituale" arbitration, resulting in the need for a research of the new features of the mentioned institute
LAW	155	VELLUZZI VITO	DIPARTIMENTO DI SCIENZE GIURIDICHE ECCLESIASTICISTICH E, FILOSOFICO-SOCIOLOGICHE E PENALISTICHE "Cesare Beccaria"	Law and Nature Between the Analysis of Legal Science and Legal Philosophy	Analysis of the scientific ideal of an accordance between law and the nature of things; notions of nature commonly held by lawyers: which facts and features do count as natural? Today's tendencies towards a Natural Law founded on social practices.
LAW	156	VIGANO' FRANCESCO	DIPARTIMENTO DI SCIENZE GIURIDICHE ECCLESIASTICISTICH E, FILOSOFICO-SOCIOLOGICHE E PENALISTICHE "Cesare Beccaria"	Preventive orders (ante and post delictum) and protection of personal liberty	The research should explore the relationship between the protection of personal liberty - in the light of both the Italian Constitution and the ECHR - and coercive measures (ante and post delictum) of mere preventive nature



HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	157	AGOSTI GIOVANNI	DIPARTIMENTO DI STORIA DELLE ARTI, DELLA MUSICA E DELLO SPETTACOLO	Toward an edition of art historical sources in Lombardy between XVIII and XIX centuries	Starting from dissertations and Ph. D. and from archival sources in the Centro Apice (Archivio Calvi) we would publish critical editions of texts known and unknown
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	158	BEJOR GIORGIO	DIPARTIMENTO DI SCIENZE DELL'ANTICHITA'	Italy between East and West: contacts and exchanges in ancient times	Italy as a center of trade and cultural contacts and exchanges in various historical periods of antiquity, from prehistory to late antiquity, through the archaeological researches
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	159	BENGOGLIO ALBERTO	DIPARTIMENTO DI STORIA DELLE ARTI, DELLA MUSICA E DELLO SPETTACOLO	Shapes, characters and organizational set up of the theatrical and musical sector in the 19th Century, related to Northern Italy.	The scientific research will deal with the study of the theatre in Northern Italy during the 19th Century and the analysis of any relevant issue concerning the organization of the performing system based on unknown and unedited archives.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	160	BERNARDINI LUCA	DIPARTIMENTO DI STUDI LINGUISTICI, LETTERARI E FILOGICI (EUROPA CENTRO-SETT. E ORIENT)	Forms and patterns of unofficial and underground circulation of literary texts in the USSR and in other countries of the Warsaw Pact (1955- 1989)	A sociological approach to literature: the case of reception of non official literature in Soviet and Warsaw Pact society according to the analysis of data about readership systematically gathered through oral history
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	161	BONFADINI GIOVANNI	DIPARTIMENTO DI SCIENZE DELL'ANTICHITA'	Variation as expression of relationship between languages and their users and as factor of linguistic change.	It is required that projects describe and explain, in synchronic and/or diachronic perspective, cases of linguistic variation, with reference to languages from ancient to modern times in their oral and written uses.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	162	BRAMATI ALBERTO GIORDANO	DIPARTIMENTO DI LINGUE E CULTURE CONTEMPORANEE	The idea of "Europe" and its multiple meanings in French debate during the 20th century	The project aims to investigate the multiple meanings of the idea of Europe, which caused in France in the 20th century a wide debate. The research will explore the argumentative and rhetorical strategies linked to the term's various meanings



HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	163	CALVI MARIA VITTORIA	DIPARTIMENTO DI LINGUE E CULTURE CONTEMPORANEE	Linguistic aspects of Hispanic immigration in Italy	The linguistic behaviour of Spanish speaking communities, in second generations above all, the language contact phenomena, and the role of language in social integration and in identity processes.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	164	ESPOSITO EDOARDO	DIPARTIMENTO DI FILOLOGIA MODERNA	Theory and history of European avant- gardes: the case of the novel	The research will concern the premises and implications, both historical and theoretical, dealing with a precise genre - that of the novel - in the European avant-gardes after second world war
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	165	LAVAGNINO ALESSANDRA	DIPARTIMENTO DI LINGUE E CULTURE CONTEMPORANEE	Linguistic and socio- political aspects of China's contemporary media (press/internet).	The research aims to examine the use of language in China's contemporary media with reference to the most important journalistic genres, and to discuss their social and political relevance in representing the contradictions of contemporary reality.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	166	MANERA DANILO	DIPARTIMENTO DI SCIENZE DEL LINGUAGGIO E LETTERATURE STRANIERE COMPARATE	The Italian reception of literatures in Spanish in the late 20th and early 21st century: critical, translation, publishing, and cultural trends.	The fortune of Spanish and Spanish- American literature of the last 30 years in Italy, from the perspective of historical and critical analysis, translation studies, intercultural exchanges, and the evolving images of the countries of origin.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	167	MEREGALLI ANDREA	DIPARTIMENTO DI STUDI LINGUISTICI, LETTERARI E FILOGICI (EUROPA CENTRO-SETT. E ORIENT)	Poetics of the Self: Autobiographical Writing in Scandinavian Literature (Danish, Norwegian, Swedish) from 1900 to the Present	The research project can concentrate on various genres of prose or verse (e.g. autobiographies, diaries, letters, poetry, drama) by one or more authors, with special focus on possible innovative critical and methodological approaches.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	168	MORGANA SILVIA	DIPARTIMENTO DI FILOLOGIA MODERNA	Language used by the Church during the Eighteenth century and hagiographie: communicational and linguistic strategies	The study purpose is to analyze the strategies and the linguistic models used by the Roman Church during the Eighteenth Century through the literary genre of devotional hagiographies.



HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	169	NISSIM LIANA	DIPARTIMENTO DI SCIENZE DEL LINGUAGGIO E LETTERATURE STRANIERE COMPARATE	The presence of myth, its elaborations, its transformations, its subversions in French literature and in Francophone literatures	The research group "Mythe à Milan" of this Departement, in collaboration with the University of Clermont- Ferrand, investigates the different trasformations and hybridizations the myth undergoes to in its literary rewritings
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	170	SEGENNI SIMONETTA	DIPARTIMENTO DI SCIENZE DELL'ANTICHITA'	The Mediterranean in Antiquity: ethnical identities, political and administrative organization in Greek or Roman Expansion in the Mediterranean	The research theme intend to promote careful investigation on the problems related to the Greek and Roman expansion in the Mediterranean in relation to 1)local communities and people and 2)political and administrative measures for the control
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	171	SPERA FRANCESCO	DIPARTIMENTO DI FILOLOGIA MODERNA	Genres, Models and Problems of the Seventeenth Century Italian Poetry	The research grant calls for the analysis of works and features of the seventeenth century Italian poetic society, focusing mainly on so far overlooked elements such as regional trends and diffusion, minor genres, and peculiar stylistic forms.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	172	ZANCHETTI GIORGIO	DIPARTIMENTO DI STORIA DELLE ARTI, DELLA MUSICA E DELLO SPETTACOLO	The artistic exchanges and the debate between Italy and United States in the Fifties and Sixties of Twentieth-Century	An analysis of artistic exchanges and debate in avant-garde art tendencies (Concretism, Abstract Expressionism, New Dada) through artists', art critics', poets', writers' and collectors' stances, in respect to the historical and cultural context.
HUMANITIES (ANCIENT HISTORY, PHILOLOGY, LETTERS, ART HISTORY)	173	ZANETTO GIUSEPPE	DIPARTIMENTO DI SCIENZE DELL'ANTICHITA'	Greek and Latin literary texts: editions, interpretations, history of transmission and Fortleben	Working at critical editions and commentaries; literary interpretations; intertextual researches on themes and genres; researches on the transmission of texts and their Fortleben; researches on local traditions and their literary elaboration



HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	174	BARTOLOMEI MARIA CRISTINA	DIPARTIMENTO DI FILOSOFIA	Messianism and secularization: the debate on political theology starting from the work of Walter Benjamin, Ernst Bloch, and Jacob Taubes.	Analysis of the concepts of messianism and secularization in Benjamin, Bloch, and Taubes. Comparison of these theologico-political proposals with their Hegelian and Marxian roots and the current debate on the foundation of the secular State.
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	175	BETRI MARIA LUISA	DIPARTIMENTO DI SCIENZE DELLA STORIA E DELLA DOCUMENTAZIONE STORICA	The Health policies in Italy from XIX to XX century: models, cultures, disciplines and practices from the Hygienists to the Welfare State.	The research aims the relations between the evolution of health concept in biomedical science with social-Health policies and with the legal, philosophical and sociological debate, comparing the Italian case with some European's from XIX to XX century
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	176	BONAZZI MAURO	DIPARTIMENTO DI FILOSOFIA	Plato's Realism and his Ancient Interpreters. Ontological and Epistemological Perspectives	Aim of the project is to investigate, from an ontological and epistemological perspective, the metaphysical status of the entities which, according to Plato, constitute the real being by considering the ancient debates from Aristotle to Platonists
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	177	CODELLA ROBERTO	DIPARTIMENTO DI SCIENZE DELLO SPORT, NUTRIZIONE E SALUTE	PHOSPHOROUS- AND HYDROGEN- NMR SPECTROSCOPY IN HYPERTROPHIC CARDIOMYOPATHY AND ATHLETE'S HEART	Non-randomized cross-sectional perspective study on myocardial metabolism by means of NMR- spectroscopy in healthy subjects, athletes, patients with hypertrophic cardiomyopathy, and hypertensive individuals.
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	178	FABBRICHESI ROSSELLA	DIPARTIMENTO DI FILOSOFIA	Analysis of the forms and the processes of subjectivation	The research will deal with the genealogy of the notions of Self, mind and consciousness related to the most recent contemporary studies, with particular attention to the relationship between subjectivity and power.
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	179	FRANCO REPELLINI FERRUCCIO	DIPARTIMENTO DI FILOSOFIA	Natural Kinds: Aristotle on the Classification of Animals	The research focuses on the theme of the classification of animals in Aristotle and on the relationship between this theme and Aristotle's logico-metaphysical thought. The arguments have to be developed with the aids of contemporary philosophy.



HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	180	FRANZINI ELIO	DIPARTIMENTO DI FILOSOFIA	AESTHETICS AND TELEOLOGY: PURPOSIVENESS IN KANTIAN THOUGHT	An investigation of purposiveness between aesthetics and teleology could open new prospects of study. The research will have to analyze concept of purposiveness, by paying attention to madness, shapeless, anomaly and Schwärmerei in Kantian thought
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	181	INGHILLERI DI VILLADAURO PAOLO MARIA	DIPARTIMENTO DI GEOGRAFIA E SCIENZE UMANE DELL'AMBIENTE	Monitoring and analysis of participatory processes in urban contexts: the role of psychosocial components.	Development of quali-quantitative evaluation methods to study new participative decision making in metropolitan contexts: the small group and its processes as mediation factors between institutions and active citizenship.
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	182	MINESSE MICHELA	DIPARTIMENTO DI STORIA DELLA SOCIETA' E DELLE ISTITUZIONI	Parliament and Welfare Policies in the Republican Italy	The relation between the initiative of the ruling class and the construction of Welfare in the republican Italy is one of the main cruxes of the recent history. The researcher is asked to focus the analysis on the activity of Parliament's members
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	183	OCCHIPINTI ELISA ESTER	DIPARTIMENTO DI SCIENZE DELLA STORIA E DELLA DOCUMENTAZIONE STORICA	State and local powers in the countryside of the Duchy of Milan (14th - 15th centuries).	The project focuses on the countryside of Lombardy from the 14th to the late 15th century, with special attention to the seignorial and ducal structures of government as well as to the main nucleus of local power (rural lordships, communities, factions, and kinships).
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	184	PRATO PREVIDE ALBRISI COLOMBAN EMANUELA	DIPARTIMENTO DI SCIENZE E TECNOLOGIE BIOMICHE	Evolution of social cognition and social competence in humans and other socially complex species	Experimental and observational study of cognitive abilities and social competence in preverbal children, and other socially complex species (non human primates, domestic dog) to investigate the origin and evolution of social cognition.
HISTORY, PHILOSOPHY, PEDAGOGY, PSYCHOLOGY	185	SARESELLA DANIELA	DIPARTIMENTO DI STORIA DELLA SOCIETA' E DELLE ISTITUZIONI	Religious Freedom and Secularism in Europe after the Second World War: the Italian Case and the International Context	After the Second World War Catholic parties played a fundamental role in European political context, but their policies about religious freedom were different. This project intends to analyze the Italian case related to the international situation.
ECONOMICS AND STATISTICS	186	CHECCHI DANIELE	DIPARTIMENTO DI SCIENZE ECONOMICHE, AZIENDALI E STATISTICHE	Educational inequalities and inequality of opportunities in European countries	Educational investment is not uniformly distributed in the population, due to differences in circumstances, in job opportunities and in labour market returns. Institutions matter in differentiating European countries.



ECONOMICS AND STATISTICS	187	FLORIO MASSIMO	DIPARTIMENTO DI SCIENZE ECONOMICHE, AZIENDALI E STATISTICHE	Social Innovation in the Public Sector: Services of General Interest and Public Enterprise	The aim is to examine, in the context of SGI, how the shift from a model of a traditional vertically integrated monopoly to a more complex market structure has had an impact on the definition and implementation of social policy objectives.
ECONOMICS AND STATISTICS	188	LA TORRE DAVIDE	DIPARTIMENTO DI SCIENZE ECONOMICHE, AZIENDALI E STATISTICHE	Dynamical systems and optimal control models with applications to economics and finance.	Many economic and financial decision making situations can be described in terms of dynamical systems and optimal control models. The research project will focus on the most recent theoretical and applied developments in these fields.
POLITICAL SCIENCES AND SOCIOLOGY	189	AMBROSINI MAURIZIO	DIPARTIMENTO DI STUDI SOCIALI E POLITICI	Migrations, multiethnic societies, inequalities, citizenship processes and development	<ul style="list-style-type: none">- Socio-cultural transformations linked to migrations- Migration policies- Path of migrants' integration- social inequalities- Ways of access and use of citizenship rights- Process of development: links between migrations and societies of origin
POLITICAL SCIENCES AND SOCIOLOGY	190	ANTONIELLI LIVIO LICINIO	DIPARTIMENTO DI SCIENZE DELLA STORIA E DELLA DOCUMENTAZIONE STORICA	Courses of the European Constitutionalism from the crisis of the Liberal State	The crisis of the political and constitutional liberal model leads to an intense constitutional debate both before and after the First World War. The researcher is demanded to focus, also comparatively, on courses and orientations of the constitutionalism in an European prospective starting from that stimuli
POLITICAL SCIENCES AND SOCIOLOGY	191	ARVIDSSON ADAM ERIK	DIPARTIMENTO DI STUDI SOCIALI E POLITICI	Culture, Media and Consumption: new lifestyles and new social identities	The theme of the research focuses on a sociological approach to the study of cross-cultural transformations of media-driven communication and marketing, consumption and life styles, symbols, identity formation, social distinction and participation.
POLITICAL SCIENCES AND SOCIOLOGY	192	BALLARINO GABRIELE	DIPARTIMENTO DI STUDI DEL LAVORO E DEL WELFARE	Migrations and social stratification: factors favoring integration on the long run	The integration of migrants, both national and international, is associated to their life paths. Quantitative comparisons of the life course of different kind of migrants in different countries allows to single out factors favoring their integration.
POLITICAL SCIENCES AND SOCIOLOGY	193	CARBONE GIOVANNI MARCO	DIPARTIMENTO DI STUDI SOCIALI E POLITICI	Democratization, political regimes and global politics	The research has to empirically address issues relating to democratic transitions, in particular the causes and/or consequences of such transitions and/or the institutional and political arrangements that emerged out of regime change processes



POLITICAL SCIENCES AND SOCIOLOGY	194	COLOMBO ALESSANDRO	DIPARTIMENTO DI STUDI INTERNAZIONALI	Continuity and change in the foreign and security policy of the People's Republic of China.	Moving from the theories developed in literature, the research will address the evolution of China's foreign and security policy as an outcome of changes in the domestic and international environment
POLITICAL SCIENCES AND SOCIOLOGY	195	CURINI LUIGI	DIPARTIMENTO DI STUDI SOCIALI E POLITICI	Transformation of societies, political and economic institutions, political culture, party competition	Comparative analysis on the processes of political legitimacy, on party organization and competition, on the relations among voters, political and economic institutions, according to the most novel methods for collection and analysis of data
POLITICAL SCIENCES AND SOCIOLOGY	196	FERRERA MAURIZIO	DIPARTIMENTO DI STUDI DEL LAVORO E DEL WELFARE	New Modes of Welfare Provision in Comparative Perspectives. Areas of interventions, Actors, Institutions, and Outcomes.	Local governments, enterprises, mutualities, private insurances, philanthropic associations are becoming prominent actors of welfare financing and provision, experimenting with new contractual arrangements and partnership affecting social outcomes.
POLITICAL SCIENCES AND SOCIOLOGY	197	FRANCHINO FABIO	DIPARTIMENTO DI STUDI SOCIALI E POLITICI	Actors, policy processes and multilevel governance	The study of how interactions between public, private actors and institutions affect policy change and accountability. The research has to be innovative, methodologically rigorous, and may rely on different paradigms.