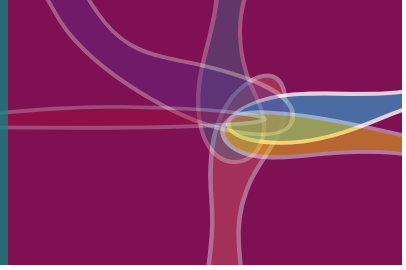
AGRARIAN SCIENCES AND VETERINARY

MULTI-USER EQUIPMENT

ADVANCED TECHNOLOGY TO REACH OF RESEARCHERS

Agrarian Sciences and Veterinary

FAPESP
SÃO PAULO
RESEARCH FOUNDATION



Multi-user Equipment

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AGRARIAN AND VETERINARY

ACQUISITION OF EQUIPMENT FOR THE CENTRAL LABORATORY OF THE UNESP SCHOOL OF AGRONOMIC SCIENCES AT BOTUCATU

Carlos Alexandre Costa Crusciol
School of Agronomic Sciences at Botucatu
São Paulo State University (Unesp)
FAPESP Grant 2009/54070-4

Among the various schools of Unesp, the School of Agronomic Sciences (FCA), in the city of Botucatu (state of São Paulo), stands out as an advanced center for research in the field of agribusiness. Within this broad theme, two lines of research have received special attention from FCA researchers and have been focal points of their efforts: the exploitation of plant biomass, with special emphasis on the study of nutrient cycling and of materials with the potential for energy production; and the qualification of the forest biomass, with the objective of aggregating the value of the products originating therein. The rapid advances in the equipment and techniques employed in these lines of research have underscored the need for the development, organization and transfer to the technical sector, at the national level, of new methodologies that are more powerful, more rapid, and of higher quality. Such methodologies should be made available when the equipment in use is designed for image analysis, for the analysis of thermodynamic properties, for infrared or near-infrared spectrometry, for plasma spectrometry, or for chromatography (liquid or gas) in conjunction with mass spectrometry, whether for creating a more detailed profile of the plant biomass and certain of its cycles or for better qualifying the forest biomass. In view of the economic, social, and environmental importance of these two lines of research, the FCA intends to continue upgrading its Central Laboratory, equipping it with new machinery and incorporating the latest methodologies (such as those mentioned above), in order to provide answers to the questions that are under analysis in the various projects developed at the FCA.

EQUIPMENT GRANTED

- DSC 8500 differential scanning calorimeter (PerkinElmer Inc.)
- Spectrum 400 FT MIR/NIR spectrometer with DTGS detectors for mid and near-infrared spectroscopy (PerkinElmer Inc.)

ASSOCIATED PROJECTS

School of Agronomic Sciences at Botucatu/Unesp

Ground cover plants and sources of nitrogen for rice at upper elevations in the no-till planting system
Carlos Alexandre Costa Crusciol
FAPESP Grant 2008/05641-6

*Efficacy of foliar application of a blend of growth promoters and of the boron-silicon combination in the cultivation of sugarcane (*Saccharum officinarum L.*)*
Carlos Alexandre Costa Crusciol
FAPESP Grant 2007/00034-1

Hevea brasiliensis – *technological study of its timber and products, obtained from plantings in the state of São Paulo*
Adriano Wagner Ballarin
FAPESP Grant 2009/08666-2

Effect of thermal treatment on the physical properties of wood from juvenile and adult individuals of Pinus elliottii var. elliottii
Elias Taylor Durgante Severo
FAPESP Grant 2007/57065-6

Nutrient cycling and uptake in agricultural production systems
Ciro Antonio Rosolem
FAPESP Grant 2007/00603-6

Forms of preparation and sources of nitrogen for bean plants giving way to forage grasses in the no-till planting system
Rogério Peres Soratto
FAPESP Grant 2007/07536-2

*Spatial distribution and comparative genotypic variability in populations of the barbatimao caterpillar (*Stryphnodendron adstringens Mart.*) as indicators of the need for interventions to maintain the sustainability of extractivist activities and conservation of the Cerrado (Brazilian Savannah)*
Edson Seizo Mori
FAPESP Grant 2007/00599-9

Biosciences Institute at Botucatu/Unesp

Selected genotypes of the forage peanut Arachis pintoi *for consortium-owned pasture lands, hay production, and alternative sources of resveratrol and isoflavones*
Catalina Romero Lopes
FAPESP Grant 2006/52406-7

Contacts for instructions for the use of the equipment

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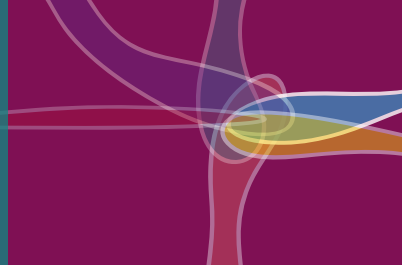

Multi-user Equipment

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ACQUISITION OF EQUIPMENT FOR SETTING UP A CENTRALIZED MULTI-USER LABORATORY (FACILITY) FOR LARGE-SCALE DNA SEQUENCING AND ANALYSIS OF GENE EXPRESSION

Eliana Gertrudes de Macedo Lemos
School of Agricultural and Veterinary Sciences at Jaboticabal
São Paulo State University (Unesp)
FAPESP Grant 2009/53984-2

Through acquisition of equipment to establish a centralized laboratory facility, this project aims to allow researchers from associated and complementary projects to have optimal access to state-of-the-art molecular technology for genomic analysis and rapid conclusion of their research. This facility will make the following available: small and large scale sequencing techniques, development of high density SNP panels, SNP and fragment restriction genotyping and the varied methods of approaching gene expression analysis, through microarrangements or epigenetic regulation. Ten affiliated and 18 complementary projects will utilize these methods, involving animal and vegetal improvements, conservation of genetic resources, biotechnology, genome sequencing, metagenomics and functional genomics of phytopathogens. The utilization of these methodologies will allow for significant qualitative and quantitative advances in these projects, which will make these projects more competitive and afford greater international exposure. Furthermore, this will increase the interaction of these researchers with other groups, both in Brazil and abroad. In effect, adapting the country's equipment to that in the major research centers will allow for development of experiments that could not previously be conducted in the country.

EQUIPMENT GRANTED

- Sequencer and accessories – iSCAN Array Scanning System, Sequencing Module, Early Access cBot Cluster Generation System (Illumina Inc., USA)
- Sequencer and accessories – Genome Sequencer FLX System, Titanium Shotgun DNA library Preparation, TissueLyser2 (QIAGEN, USA)
- BR MagMax Express 96 Magnetic Particle Processor (Applied Biosystems, USA)
- Bioanalyzer and accessories – Compaq laptop, printer, vortex mixer (unlicensed, USA)
- Particle counter – Z1 Dual Threshold and accessories (Beckman Coulter, USA)

ASSOCIATED PROJECTS

School of Agricultural and Veterinary Sciences at Jaboticabal/Unesp

Growth promoting bacteria: isolation, biochemical and physiological characterization for use on grasses
Eliana Gertrudes de Macedo Lemos
FAPESP Grant 2007/54070-9

Relationship between gene/protein expression of myosin heavy chain isoforms in the L. dorsi *muscle and meat quality in two separate groups of cows*
Henrique Nunes de Oliveira
FAPESP Grant 2009/03650-0

Polymorphisms in the enzyme promoter region: isolation, characterization, and analysis in dairy buffaloes
Humberto Tonhati
FAPESP Grant 2005/58111-6

Genome sequencing of the endosymbiotic nitrogen-fixing bacterium Bradyrhizobium elkanii *in soybean plants*
Jackson Antônio Marcondes de Souza
FAPESP Grant 2006/603292

Genome sequencing of the bacterium Xanthomonas Axonopodis pv citri
Jesus Aparecido Ferro
FAPESP Grant 1999/05956-6

Genetic, morphological, behavioral and ecological differentiation: comparisons among three cytotypes of Manzana americana deer
José Maurício Barbanti Duarte
FAPESP Grant 2003/07904-0

Study of polymorphisms in the DGAT1 and leptin genes and their relationship with the thickness of the outside layer of fat in female Nelore calves
Lucia Galvão de Albuquerque
FAPESP Grant 2006/51321-8

Managing pests through the use of cry genes of Bacillus thuringiensis
Manoel Victor Franco Lemos
FAPESP Grant 2003/09539-8

Analysis of overall gene expression in avirulent mutants of Xanthomonas axonopodis pv. citri
Maria Inês Tiraboschi Ferro
FAPESP Grant 2007/06682-5

Impact of management practices on soil CO_2 emission in sugarcane production areas, southern Brazil
Newton La Scala Junior
FAPESP Grant 2008/58187-0

Contacts for instructions for the use of the equipment

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ACQUISITION OF A TRANSMISSION ELECTRON MICROSCOPE AND A TABLETOP SCANNING ELECTRON MICROSCOPE, TOGETHER WITH A STABILIZER, SCROLL VACUUM PUMPS, AND GLASS KNIFEMAKER FOR THE ELECTRON MICROSCOPY CENTER

Elliot Watanabe Kitajima

Luiz de Queiroz School of Agriculture (Esalq)

University of São Paulo (USP)

FAPESP Grant 2009/53832-8

EQUIPMENT GRANTED

- EM KMR3 glass knifemaker (Leica Microsystems)
- Edwards XDS scroll pumps (Edwards Vacuum Ltd.)
- JEM-1011 transmission electron microscope (JEOL Ltd.)
- Phenom tabletop scanning electron microscope (Phenom-World BV)

The acquisition of a new transmission electron microscope (TEM) is a necessary step in order to meet the needs of the users of the ESALQ, Center for the Support of Research in Electron Microscopy (NAP/Mepa), which serves users in the ESALQ community as well as those at other institutions. The TEM that is currently in use is more than 20 years old and, albeit still operational, has maintenance problems. The 10 kVA stabilizer will serve to avoid fluctuations in the electrical current feeding the TEM. The tabletop scanning electron microscope (TT-SEM) will be used for research that is less demanding. Given its portability, the TT-SEM will also be employed in the projects undertaken during ESALQ mini-courses (at conferences, institutions of higher learning, and research institutes), as well as and in high schools, in order to bring science to our youth. The three scroll vacuum pumps are needed in order to replace the 15-year-old pumps currently in operation. Similarly, the glass knifemaker would replace the current one, which is quite worn out. The NAP/Mepa was inaugurated in 1995 and has always operated in a multi-user, multidisciplinary, multi-institutional manner. Since 1995, the NAP/Mepa has sponsored 120 courses (introductory courses and special courses), in which approximately 2,500 users, at various institutions (in Brazil and abroad), have received training. By availing themselves of the NAP/Mepa facilities, those users have, to date, generated approximately 1,060 published articles. Because of its multidisciplinary nature, the center encompasses various fields of study, including agricultural sciences, odontology, medicine, biology, physics, chemistry, paleontology, metallurgy, and wood/paper technology. This request for acquisitions is aimed at improving the service provided to these users, who, once trained, have unrestricted access to the equipment at the center. Access is provided at no cost, unless the user is a privately-owned company. In the *modus operandi* of the NAP/Mepa, users not only operate the equipment but also go through all of the steps involved in the electron microscopy process, the staff at the center offering guidance and support. Over the last 15 years, the NAP/Mepa administration has secured the maintenance contracts. However, the current ESALQ Board of Directors has recommended that new contracts be sought and that extra funds be set aside for the maintenance of the equipment to be acquired. This proposal is founded in a number of associated and complementary projects underway at various institutions, all users of the NAP/Mepa, and in diverse areas of knowledge.

ASSOCIATED PROJECTS

Luiz de Queiroz School of Agriculture/USP

Management of citrus leprosis
Elliot Watanabe Kitajima
FAPESP Grant 2008/51926-1

Functional genomics of ratoon stunting disease in sugarcane
Luis Eduardo Aranha Camargo
FAPESP Grant 2008/56260-2

Molecular epidemiology and integrated management of Huanglongbing *(citrus greening) disease*
Armando Bergamin Filho
FAPESP Grant 2007/55013-9

National Institute of Science and Technology of Semiochemicals in Agriculture
José Roberto Postali Parra
FAPESP Grant 2008/57701-2

Epidemiology and management of postbloom fruit drop of citrus in areas of expanding cultivation in the state of São Paulo
Lilian Amorim
FAPESP Grant 2008/54176-4

Contacts for instructions for the use of the equipment

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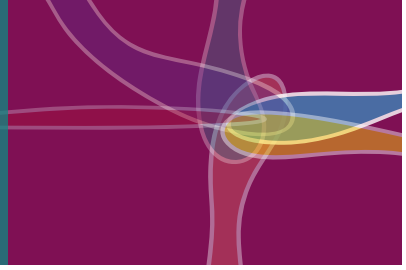

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ACQUISITION OF TECHNOLOGICAL EQUIPMENT FOR ENVIRONMENTAL MONITORING AND AGRICULTURAL PLANNING, WITH AN EMPHASIS ON SOIL SCIENCE

José Alexandre Melo Demattê
Luiz de Queiroz School of Agriculture (Esalq)
University of São Paulo (USP)
FAPESP Grant 2009/54144-8

The objective of this proposal is to acquire a set of sensors for use in the laboratory and in the field, as well as a basic laboratory stipend, in order to carry out a multi-user, multidisciplinary project in the area of agricultural and environmental science. A single set of sensors can be used in a number of research settings: in soil; in plants; and in water. From an agricultural perspective, special attention is given to the development of the area of biofuels, as evidenced in recent years in the articles, in various lines of research, authored by the ESALQ Department of Soil Science research group. In terms of the environmental emphasis, the research is aimed at the investigation of agricultural recycling of organic residue.

EQUIPMENT GRANTED

- Lambda 1050 UV/Vis/NIR spectrophotometer (PerkinElmer Inc.)
- FieldSpec 3 spectroradiometer, 350-2500 nm (ASD Inc.)
- DM 200 PI disc mill (Adventix Technologies)

ASSOCIATED PROJECTS

Luiz de Queiroz School of Agriculture/USP

Development of tools for environmental monitoring of soil: investigation of industrial and sanitary contaminants through VIS-NIR-MIR reflectance spectroscopy
José Alexandre Melo Demattê
FAPESP Grant 2009/09060-0

Detection of meatpacker byproducts by spectral remote sensing in the UV, visible and infrared regions
José Alexandre Melo Demattê
FAPESP Grant 2005/59691-6

Spectral soil library of agricultural regions (north, midwest, south and southwest) and its implication with chemical and granulometric aspects
José Alexandre Melo Demattê
FAPESP Grant 2007/54976-8

Integration of multiple techniques of soil mapping
José Alexandre Melo Demattê
Process FAPESP 2007/55241-1

Vegetal biodiversity and edaphic organisms in natural and impacted araucária angustifolia ecosystems in São Paulo State
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2001/05146-6

Activity, microbial density and metabolic diversity in irrigated pasture areas with increasing laminae effluents treated with biological processes
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2006/06658-4

Bioindicators of soil quality in a chronosequence of environmental restoration
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2009/07354-7

Actinomycetes of the araucaria forest (Campos do Jordão, SP): characterization of the effect on the growth of mycorrhizal and pathogenic fungi
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2007/02074-0

Biodiversity of edaphic microfauna and other explicative variables such as soil quality indicators in araucaria forest
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2007/06981-2

Microbial ecological attributes of soil under disposal of tannery sludge
Elke Jurandy Bran Nogueira Cardoso
FAPESP Grant 2007/08197-7

Center for Nuclear Energy in Agriculture/USP

Modelling of the dynamics of organic soil matter in the agricultural expansion area in Southern Amazonia: basis for research on global climate change
Carlos Eduardo Pellegrino Cerri
FAPESP Grant 2005/60255-6

Institute of Geosciences/Unicamp

The tectonic and metalogenetic environment of gold and copper deposits
Carlos Roberto de Souza Filho
FAPESP Grant 2003/09916-6

Contacts for instructions for the use of the equipment

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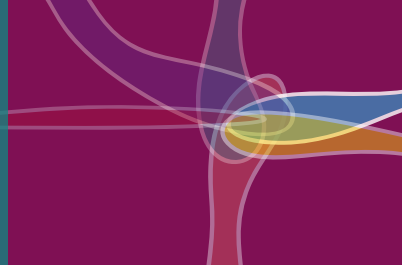

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ACQUISITION OF AUTOMATED DNA SEQUENCER FOR THE MOLECULAR DIAGNOSIS AND EPIDEMIOLOGY OF MAJOR PATHOGENS IN ANIMAL AND PUBLIC HEALTH

Leonardo José Richtzenhain
School of Veterinary Medicine and Animal Sciences (FMVZ)
University of São Paulo (USP)
FAPESP Grant 2009/54029-4

The FMVZ Laboratory of Applied Molecular Biology and Serology (Labmas) was created in the mid-1990s, under the leadership of Professor Leonardo Richtzenhain. Such a laboratory was needed because of the growing scientific demand for the application of molecular biology techniques in studies related to the diagnosis and epidemiological investigation of diseases of interest in animal and public health. The development of the Labmas was quite rapid, incorporating ever more sophisticated techniques, making it a point of reference in this field of research within the FMVZ, for the University of São Paulo, for other universities in Brazil, and, more recently, for Latin America as a whole. Since 2001, studies employing the DNA sequencing technique have been conducted at the Labmas, effectively transforming it into a "facility", where researchers from various institutions in Brazil and abroad find the appropriate infrastructure and human resources to conduct studies in molecular diagnostics and molecular epidemiology. The only automated sequencer currently available to support all of this research activity at the Labmas has fallen victim to the phenomenon of "technological obsolescence", parts, and consequently maintenance, no longer being available. In view of this, we are submitting the present request for the acquisition of a new automated DNA sequencer, so that this extremely important institutional facility can continue to offer researchers the opportunity to conduct scientific research in molecular diagnostics and molecular epidemiology of the major pathogens in animal and public health, at the national and international level.

EQUIPMENT GRANTED

- Model 3500 8-capillary Genetic Analyzer and accessories (Applied Biosystems)

ASSOCIATED PROJECTS

School of Veterinary Medicine and Animal Sciences/USP

Molecular characterization of Sarcocystis spp. *isolates obtained from the feces of marsupials of the genus Didelphis by analysis of DNA fragments containing sequences encoding surface antigens*
Rodrigo Martins Soraes
FAPESP Grant 2007/57113-0

Infectious bronchitis virus in chickens: genealogy, incidence, and molecular diversity in the organs of commercial layers, in matrices, and in chickens raised in various Brazilian states: Evaluation of the infection by detecting mRNA
Paulo Eduardo Brandão
FAPESP Grant 2008/58649-4

Research into ticks and pathogens in small mammals and birds in the Amazon Basin, at the Samuel Ecological Reserve, in the state of Rôndonia
Marcelo Bahia Labruna
FAPESP Grant 2007/53309-8

Contacts for instructions for the use of the equipment

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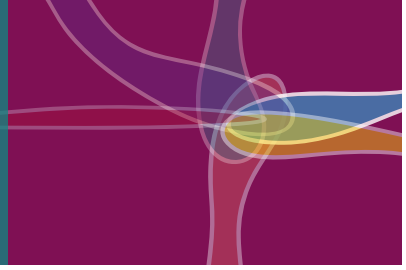

LABORATORY FOR MAGNETIC RESONANCE IMAGING IN VETERINARY MEDICINE

Luiz Carlos Vulcano

School of Veterinary Medicine and Animal Sciences at Botucatu

São Paulo State University (Unesp)

FAPESP Grant 2009/54028-8

The objective of this request is to equip the diagnostic imaging center of the Unesp School of Veterinary Medicine and Animal Sciences at Botucatu with a magnetic resonance imaging (MRI) scanner for large and small animals, thereby providing high quality diagnostic support to the research projects developed by the professors, graduate students, and young investigators at our institution and at other research institutes that use our diagnostic imaging facilities for the development of their studies. The progress made in diagnostic imaging is indisputable and MRI is currently the most modern diagnostic instrument, the speed of its development having surpassed that of any other imaging technique. Its intrinsic safety, together with its capacity for multiplanar imaging and contrast adjustment, has secured its place as an important diagnostic tool. It represents a major advance in diagnostic technology in that it facilitates a number of medical diagnoses and provides valuable data for follow-up evaluation of treatments. In addition, MRI creates high-definition images, with the advantage of offering greater safety, because it does not use ionizing radiation. Great advances continue to be achieved, from improved analyses of brain structure, with progressive refinement of spatial resolution, to better images of the breast, heart, abdomen, musculoskeletal system, blood vessels, etc., as well as the characterization of specific types of tissues (fat, blood and water) based on the intensity of the signal, which can differentiate among various pathologies.

EQUIPMENT GRANTED

- VET-MR Grande magnetic resonance imaging scanner (Esaote Group)

ASSOCIATED PROJECTS

School of Veterinary Medicine and Animal Sciences at Botucatu/Unesp

Biometry and morphological characterization of cranium and hyoid bone of Alouatta fusca *(Étienne Geoffroy Saint-Hilaire, 1812): tomographic studies*
Luiz Carlos Vulcano
FAPESP Grant 2008/57729-4

Three-dimensional kinematic study in healthy dogs
Sheila Canevese Rahal
FAPESP Grant 2007/54518-0

Microincision phacoemulsification of cataracts in dogs
José Joaquim Titton Ranzani
FAPESP Grant 2008/54625-3

Clinical and biochemical evaluation of BoHV-5-induced meningoencephalitis and sulfur-induced polioencephalomalacia in beef cattle
Alexandre Secorun Borges
FAPESP Grant 2006/05836-6

Evaluation of experimental jugular thrombophlebitis in horses treated with heparin
Carlos Alberto Hussini
Foundation for the Development of Unesp (Fundunesp)

Effect of using autologous platelet-rich plasma (PRP) and mesenchymal stem cells in the repair of experimentally-induced chondral lesions in the joints of horses
Ana Liz Garcia Alves
FAPESP Grant 2009/06059-1

Contacts for instructions for the use of the equipment

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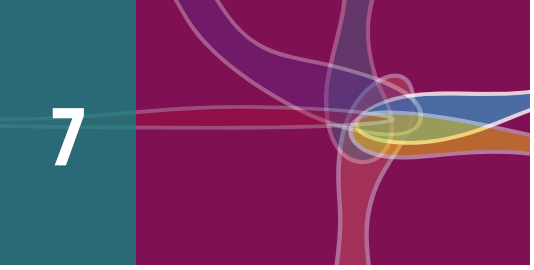

Multi-user Equipment

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CENTRALIZED MULTI-USER LABORATORY OF FUNCTIONAL GENOMICS APPLIED TO AGRICULTURE, ANIMAL HUSBANDRY AND AGROENERGY

Luiz Lehmann Coutinho

Luiz de Queiroz School of Agriculture (Esalq)

University of São Paulo (USP)

FAPESP Grant 2009/54037-7

The objective of this proposal is the acquisition of state-of-the-art equipment for the sequencing and genotyping of DNA; for the sequencing and quantification of proteins; for the identification of biomolecules; and for bioinformatics. The equipment would be employed in the ESALQ Centralized Multi-User Laboratory of Functional Genomics Applied to Agriculture, Animal Husbandry, and Agroenergy. This is a joint venture by a number of educational and research institutes, headed by the ESALQ, to construct a facility for the study of genomics and functional genomics. The facility will be open to researchers at various institutions of higher learning, USP, Unesp, Unicamp, Unifesp and UFSCar, research institutes (Embrapa, IAC), companies (Agroceres, Suzano), business incubators, and the Piracicaba Technology Hub, together with those at other institutions within the scientific community of the state of São Paulo. The Multi-User Laboratory project has already secured R$ 2 million in funding from the Finep – Financing Agency for Studies and Projects grant nº. 35 0655/05,41 1036/06, 0119/07,0114/08) for the construction of the building that will house the multi-user equipment, the researchers, and the support technicians. The Multi-User Laboratory will be a magnet for the development of research (basic and applied) and the training of personnel, as well as for the technological development of agriculture, forest management, animal husbandry, and agroenergy in the state of São Paulo. The ESALQ Multi-User Laboratory will also be charged with the important mission of supporting and providing services to the universities and to companies within the technology park, making it possible to disseminate knowledge and technologies, as well as to obtain additional resources for the maintenance of the equipment and the physical plant. The acquisition of the equipment listed below will initially benefit 29 associated research projects and 12 complementary projects, of which several are funded by FAPESP (5 Young Researchers in Emerging Centers Program projects; 8 Thematic Projects; 1 Research Partnership for Technological Innovation project; 1 Centers for Research, Innovation and Dissemination Program project; 5 Program for Research on Bioenergy projects) and one is funded by Embrapa.

EQUIPMENT GRANTED

- MALDI SYNAPT G2 MS mass spectrometer and accessories (Waters GmbH)
- Sequencer and accessories –iSCAN Array Scanning System, Sequencing Module, Early Access cBot Cluster Generation System (Illumina Inc., USA)

ASSOCIATED PROJECTS

Luiz de Queiroz School of Agriculture/USP

Identification of genes and microRNAs related to the quality of meat in Nelore cattle
Luiz Lehmann Coutinho
National Council for Scientific and Technological Development (CNPq)

Functional genomics applied to the discovery of eucalyptus rust resistance genes
Carlos Alberto Labate
FAPESP Grant 2008/50361-1

*Genetic studies in sweet passion fruit (*Passiflora alata*) and yellow passion fruit (*P. edulis flavicarpa*): construction of saturated molecular maps, with identification and mapping of quantitative loci*
Maria Lúcia Carneiro Vieira
FAPESP Grant 2007/52607-5

Understanding lysine metabolism in cereals
Ricardo Antunes de Azevedo
FAPESP Grant 2004/16039-4

Sugarcane genome sequence: plant transposable elements are active contributors to gene structure variation, regulation and function
Claudia Barros Monteiro Vitorello
FAPESP Grant 2008/52074-0

Development of a microarray based on the 16S rDNA sequence for the determination of bacterial diversity
Aline Aparecida Pizzirani Kleiner
FAPESP Grant 2006/57134-5

Functional genomics of photosynthetic genes in sugarcane
Helaine Carrer
FAPESP Grant 2008/52066-7

School of Pharmaceutical Sciences/USP

Evaluation of the effect that black and yellow sigatoka have on the quality of bananas grown in the state of São Paulo
Beatriz Rosana Cordenunsi
FAPESP Grant 2009/10414-1

Carbohydrate metabolism during the maturation of fruit: applications for functional genomics
Franco Maria Lajolo
FAPESP Grant 2002/12452-9

Gene expression in bananas of the cultivar Cavendish: identification of differentially expressed genes related to the development of attributes of fruit quality and the effects …
Eduardo Purgatto
CNPq

Differential analysis of expression during the maturation of bananas and papayas: comparison between the pre-climacteric and the climacteric stages proteomes
João Roberto Oliveirta Nascimento
FAPESP Grant 2008/52447-0

Institute of Chemistry/USP

Determination of the role of the protein kinase C (PKC) in the differentiation and proliferation of embryonic stem cells
Débora Schechtman
FAPESP Grant 2005/54188-4

Integrated Biotechnology Center/University of Mogi das Cruzes

Genetic diversity of microorganisms associated with terrestrial and aquatic species of the carnivorous plants in the genus utricularia *(family Lentibulariaceae)*
Welington Luiz Araújo
FAPESP Grant 2007/58277-7

Department of Genetics and Evolution/UFSCar

Differential proteomic analysis in Xanthomonas axonopodis*: proteins and genes of biotechnological interest*
Maria Teresa Marques Novo
FAPESP Grant 2007/50910-2

Sylvio Moreira Center for Citriculture/IAC

Study of the interaction of citrus with Alternaria alternata*, agent of alternaria brown spot*
Marcos Antônio Machado
FAPESP Grant 2007/08698-6

Center for Nuclear Energy in Agriculture/USP

Genetic analysis of the defense response of Theobroma cacao *to* Moniliophthora perniciosa*, causative agent of witches' broom*
Antônio Vargas de Oliveira Figueira
FAPESP Grant 2007/07175-0

School of Animal Sciences and Food Engineering/USP

Effect of the quantity of mitochondria and of mitochondrial DNA on bovine embryonic development: two original models
Flávio Vieira Meirelles
FAPESP Grant 2006/59074-0

Characterization of postmortem proteolysis in Nelore cattle with different genotype combinations for SNP molecular markers associated with calpain and calpastatin
Júlio Cesar de Carvalho Balieiro
CNPq

Evaluation of the role of the CAR receptor (constitutive androstane receptor, NR1I13) in lung cancer: emphasis on antitumor therapy
Heidge Fukumasu
FAPESP Grant no. 2008/56584-2

The follicle-stimulating hormone and the nitric oxide synthase pathway in the maturation of bovine oocytes
Cláudia Lima Verde Leal
FAPESP Grant 2008/09321-6

Polymorphisms in genes related to the synthesis and degradation of intracellular protein and their relationship with residual feed intake in Nelore cattle
José Bento Sterman Ferraz
FAPESP Grant 2008/11363-9

ASSOCIATED PROJECTS

Embrapa Southeast Livestock Production Agency

Genetic strategies for improving the efficiency of production and the quality of beef in Brazil
Luciana Correia de Almeida Regitano
Embrapa

Effect that polymorphisms and parental origin have on in vitro *cell differentiation and on epigenetic expression in genes of commercial interest in beef cattle*
Simone Cristian Meo Niciura
FAPESP Grant 2008/03916-8

School of Veterinary Medicine and Animal Sciences at Botucatu/Unesp

Fine mapping of a region associated with quantitative trait loci (QTLs) on chromosome 1 of Gallus gallus*: investigation of candidate gene polymorphisms*
Ana Silvia Alves Meira Tavares Moura
CNPq

School of Veterinary Medicine and Animal Sciences/USP

The yolk enigma
Maria Angélica Miglino
FAPESP Grant 2008/58811-6

Characterization of genes involved in the lignification of forage plants
Luiz Felipe Prada e Silva
FAPESP Grant 2004/10970-8

Institute of Biology/Unicamp

Coffee seed proteins and the quality of the drink
Paulo Mazzafera
Finep

São Carlos Institute of Physics/UFSCar

Center for structural molecular biotechnology
Heloisa Sobreiro Selistre de Araújo
FAPESP Grant 1998/14138-2

Biosciences Institute/USP

Embryogenesis studies as the bases for reproduction and conservation strategies in tree species
Eny Lochevet Segal Floh
FAPESP Grant 2004/03333-1

Contacts for instructions for the use of the equipment

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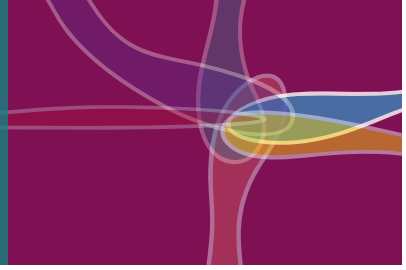

ACQUISITION OF A CONFOCAL LASER SCANNING MICROSCOPE AS A TOOL FOR FURTHERING MORPHOLOGICAL STUDIES OF BIOLOGICAL AND MINERAL MODELS

Maria Izabel Camargo Mathias

Rio Claro Biosciences Institute

São Paulo State University (Unesp)

FAPESP Grant 2009/54125-3

Morphology, which is an important tool for basic research studies in general, has recently come to demand the use of technologies that are more refined. In-depth morphological studies can be carried out only through the use of such new technologies, which can also make such studies more competitive at the international level. Although our research group, composed of 11 researchers (adjunct and full professors, at Unesp and at the University of São Paulo), has developed projects that present, among other objectives, that of studying biological and mineral models, also at the morphological level, we can no longer obtain new results with the tools currently in use (light and electron microscopes). Therefore, we are requesting, via the FAPESP Multi-user Equipment Program, the acquisition of a confocal laser scanning microscope, a tool that, pursuant to the philosophy of that program, will allow us not only to continue our own studies but also to establish better interdisciplinary relationships. In addition, the acquisition of a confocal laser scanning microscope will make it possible to expand upon the knowledge previously gained through research conducted in the various fields of study represented by the proponents: ticks, termites, ants, and other insects that are important in the area of forensic entomology; anuran vertebrates; ectoparasites, in terms of the host-parasite relationship; the relationships between symbiotic fungi and invertebrates; cell biology; exercise physiology; and geological analysis of the composition and structure of soil and terrain (stratigraphy). We again note that the technical resources currently available have been employed to their full extent, and that, to continue our morphological studies, we must now implement new technologies. To that end, we must acquire new tools, which will allow us to provide greater amounts of data to the interested parties within the academic community, as well as to increase the number of scientific papers published. Achieving these goals will contribute to raising Brazil to the status of developed country.

EQUIPMENT GRANTED

- FV1000 spectral confocal laser scanning microscope with Multi-Argon laser combiner – 559-nm and 405-nm lasers (Leica-TCS-SP5II)

ASSOCIATED PROJECTS

Rio Claro Biosciences Institute/Unesp

Study of the external and internal histomorphology (in the salivary system, reproductive system, and digestive tract) of three tick species of medical interest
Maria Izabel Camargo Mathias
FAPESP Grant 2007/59020-0

Speciation of anuran amphibians in high-altitude environments
Célio Fernando Baptista Haddad
FAPESP Grant 2008/50928-1

Control of leaf-cutting ants: integrated studies
Odair Corrêa Bueno
FAPESP Grant 2006/58043-3

School of Agricultural Sciences at Jaboticabal/Unesp

Host-tick interaction: development of resistance to Boophilus microplus *and* Amblyomma cajennense *(Acari: Ixodidae) in sheared sheep*
Gervásio Henrique Bechara
FAPESP Grant 2008/00732-3

Center for Environmental Sciences/University of Mogi das Cruzes

*Ants (*Hymenoptera: Formicidae*) of urban ecosystems and of underbrush ecosystems in areas of the Atlantic Forest within the hydrographic basin of the upper Tietê River*
Maria Santina de Castro Morini
FAPESP Grant 2005/58556-8

Institute of Geosciences and Exact Sciences at Rio Claro/ Unesp

Permo-carboniferous glacial sediment in the Paraná basin: stratigraphic relationships and depositional traits in the emergent portions of the Itararé group and of the Aquidauana formation in the state of São Paulo
José Alexandre de Jesus Perinotto
FAPESP Grant 2009/50876-4

Biosciences Institute/Unesp

Standardization and validation of aerobic and anaerobic tests under field and laboratory conditions, using free, tethered, and semi-tethered models, in long-distance runners and in cyclists
Claudio Alexandre Gobatto
FAPESP Grant 2009/08535-5

Contacts for instructions for the use of the equipment

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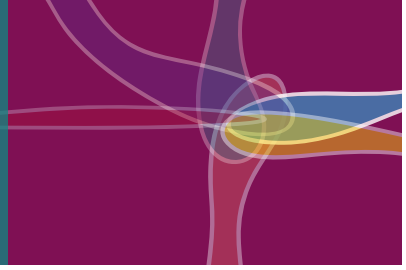

ACQUISITION OF A MICRODISSECTION SYSTEM FOR THE ISOLATION OF CELLS, ORGANELLE COMPONENTS, AND ORGANISMS

Renée Laufer Amorim

School of Veterinary Medicine and Animal Sciences of Botucatu

São Paulo State University (Unesp)

FAPESP Grant 2009/54026-5

The molecular characterization of altered cells and tissues has revolutionized the investigation and diagnosis of numerous diseases in humans and in animals. However, the heterogeneity inherent to abnormal primary tissues, because of the coexistence of various populations of reactive cells, can affect the results and the interpretation of the data obtained through various types of analyses. In recent years, the microdissection of histological sections or of cytological preparations has frequently been employed as an alternative for overcoming the obstacles imposed by the complexity of the tissues and for obtaining homogeneous populations of morphologically identified cells. Because of the ever-increasing sensitivity of molecular biology techniques (such as quantitative reverse-transcription polymerase chain reaction in real-time—real-time qRT-PCR—and microarray hybridization analysis), microdissection has become an indispensable tool in pathology research. The petitioning group is composed of 13 researchers active in diverse areas, such as veterinary pathology, clinical veterinary practice, veterinary surgery, genetics (basic and applied), morphology, the study of genetic markers, and molecular biology—four pathologists, four morphologists, two researchers working in clinical/surgical veterinary practice, and three molecular biologists. The composition of the group guarantees that the equipment requested will be used appropriately in all phases of the process, from the morphological characterization and microdissection of the samples to the analyses of gene expression, detection of mutations and epigenetic alterations, as well as being employed at various campuses and extensions of Unesp at São Jose do Rio Preto (Institute of Biosciences, Literature and Exact sciences) and of Unesp at Botucatu (Biosciences Institute; Department of Genetics; Department of Morphology; School of Veterinary Medicine and Animal Sciences; School of Veterinary and Agricultural Sciences; Department of Clinical Veterinary Medicine; Department of Veterinary Surgery; and Department of Veterinary Pathology). The group is considering studies involving tissues obtained from various species, including dogs, laboratory animals, humans, and arthropods.

EQUIPMENT GRANTED

- Leica LMD Laser Microdissection (LMD6000)

ASSOCIATED PROJECTS

School of Veterinary Medicine and Animal Sciences at Botucatu/Unesp

Alterations in the number of genomic copies in preneoplastic and neoplastic lesions in the dog prostate
Renée Laufer Amorim
FAPESP Grant 2008/57221-0

Atypia of the canine prostatic epithelium: molecular and immunophenotypic aspects
Renée Laufer Amorim
FAPESP Grant 2006/61814-1

Nitric oxide, GSTP-1, and p53: role of these biomarkers and their correlations with prostate disease in dogs
Renée Laufer Amorim
FAPESP Grant 2007/57878-7

Biosciences Institute at Botucatu/Unesp

Elucidation of the mechanisms of sexual determination in fish: contributions obtained through physical chromosome mapping and genetic characterization of nucleotides
Cesar Martins
FAPESP Grant 2009/05234-4

Morphofunctional alterations in the rat prostate caused by exogenous and endogenous factors: effects of diabetes, insulin, cadmium, caffeine, finasteride, and doxazosin
Sérgio Luis Felisbino
FAPESP Grant 2006/60115-2

Identification of differential profiles of DNA methylation in endometriosis
Claudia Aparecida Rainho
FAPESP Grant 2008/53716-5

Epigenetic control of gene expression in breast carcinogenesis: investigation of candidate genes for tumor suppressors mapped to chromosome 3p21.3
Claudia Aparecida Rainho
FAPESP Grant 2007/59110-9

School of Agricultural and Veterinary Sciences at Jaboticabal/Unesp

Reactivity to the protein associated with multidrug resistance, glutathione-S-transferase enzyme and tumor protein P53 in neoplastic tissues in dogs
Mirela Tinucci Costa
FAPESP Grant 2006/52527-9

Use of the CD44 receptor in the detection of spontaneous micrometastases of breast tumors to the lymph nodes of female dogs
Antonio Carlos Alessi
FAPESP Grant 2008/02739-5

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ACQUISITION OF EQUIPMENT FOR SETTING UP A MULTI-USER CENTRALIZED LABORATORY (FACILITY) FOR METABOLIC STUDIES IN ANIMALS OF ECONOMIC INTEREST

Telma Teresinha Berchielli

School of Agricultural and Veterinary Sciences at Jaboticabal

São Paulo State University (Unesp)

FAPESP Grant 2009/53996-0

Knowledge of metabolic aspects is central to studies in animals of economic interest. This creates a demand on the part of researchers, undergraduate students, and graduate students for laboratories in which methodologies that involve aspects related to technological advances can be implemented, as well as for equipment that allows experimental advances. Concomitantly, the use of rapid, accurate methodologies that allow the research to be refined is extremely important in the quest for scientific advances. Therefore, the objective of this proposal is to equip a multi-user laboratory and create a facility for metabolic studies of animals of economic interest, which will benefit various departments at the Jaboticabal campus of Unesp. This facility will be the first in the state of São Paulo to focus on animals of economic interest and will create opportunities for other local research groups that are interested in deepening their knowledge of the energy metabolism in animals of economic interest. It is of note that the equipment requested is essential to the creation of the laboratory in question.

EQUIPMENT GRANTED

- K4b2 INT TX (mobile CPET) portable respirometer and accessories for use in horses (Cosmed srl)
- Model 6300 Automatic Isoperibol Calorimeter and model 1757 printer (Parr Instrument Company)
- Scientific cameras – Axiocam MRm monochrome digital camera for fluorescence and Axiocam MRc color digital camera for bright-field images – and accessories (Carl Zeiss MicroImaging)
- Camera of infrared FLIR SC660 High-performance infrared inspection system with 24° lens – for three-dimensional analysis of limb phase (Flir Systems Co. Ltd.)
- AXIO Imager Z2 upright motorized microscope (Carl Zeiss MicroImaging)
- Respirometry systems for large and small animals (Sable Systems International)

ASSOCIATED PROJECTS

School of Agricultural and Veterinary Sciences at Jaboticabal/Unesp

Influence of lipid sources in the post-weaning period and finishing systems in beef calves
Telma Teresinha Berchielli
FAPESP Grant 2009/06472-6

Models to estimate the lysine, methionine+cystine, and threonine requirements in broiler chickens and laying hens
Nilva Kazue Sakomura
FAPESP Grant 2008/50557-3

Influence of glutamine supplementation on the development of the intestinal mucosa in broiler chickens raised in environments with different temperatures
Renato Luís Furlan
FAPESP Grant 2009/50075-1

Determination of the anaerobic threshold in horses based on blood lactate concentration
Antonio de Queiroz Neto
FAPESP Grant 2007/04077-7

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