„ALEXANDRU IOAN CUZA“ UNIVERSITY of IASI
FACULTY OF BIOLOGY

“ANASTASIE FĂTU”
BOTANICAL GARDEN

Faculty of Biology Annual Scientific Meeting

The Students Scientific Session
Prut River Project Exhibition
Biodiversity without frontiers Symposium

24-26 October 2013, Iași, Romania

„ALEXANDRU IOAN CUZA“ UNIVERSITY of IASI

http://www.bio.uaic.ro/sesiune/2013/index.html

ORGANIZER:

Faculty of Biology
,,Alexandru Ioan Cuza'' University of Iaşi

SCIENTIC COMMITTE:

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- **Acad. Prof. univ. dr. Constantin Toma**, member of Romanian Academy, "Alexandru Ioan Cuza" University of Iaşi
- **Acad. Prof. Univ. dr. hab. Ion Toderaș**, Institut of Zoology, Chișinău, Republic of Moldova
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- **Prof. dr. Omer Munzuroglu,** Biology Department, Faculty of Science, University Firat, Elazig, Turcia
- **Dr. Wilhellm Windhorst**, Christian-Albrecht University, Kiel, Germany
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- **Prof. univ. dr. Anca Miron**, University of Medicine and Pharmacy "Grigore T. Popa" Iasi
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- **Prof. dr. Ryszard Gołdyn**, Adam Mickiewicz University, Poznań, Poland
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- **Prof. dr. hab. Elena Zubcov**, Institut of Zoology, Chișinău, Republic of Moldova
- **Prof. univ. dr. Anca Sarbu** - University of Bucharest, President of Botanical Garden Association from Romania

ORGANISING COMMITTEE:

- **Conf. dr. Ştefan Zamfirescu**
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- **Şef lucr. dr. Ciprian Mânzu**
- **Şef lucr. dr. Lăcrămioara Oprică**
- **Şef lucr. dr. Iulia Băra**
- **Şef Lucr. dr. Marius Mihasan**
- **dr. Ana Davideanu**

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- Molecular interactions of life: , Drd. Mitică Ciorpac ✉, Drd. Radu Druică ✉

Faculty of Biology Annual Scientific Meeting

SESSION PROGRAM

THURSDAY, OCTOBER 24, 2013

$10^{00} – 16^{00}$ **The Students Scientific Session**

$16^{00} – 17^{00}$ **The Botanical Gardens Association meeting** - "Anastasie Fătu" Botanical Garden, Iasi

$17^{00} – 19^{00}$ **Participants registration** - Faculty of Biology, 1st floor, Amphitheater B2

FRIDAY, OCTOBER 25, 2013

$08^{30} – 9^{00}$ **Participants registration** - Faculty of Biology, 1st floor, Amphitheater B2

$09^{00} – 11^{00}$ **Scientific session opening** - Faculty of Biology, 1st floor, Amphitheater B2

Plenary lectures - Faculty of Biology, 1st floor, Amphitheater B2

Prof. univ. dr. Constantin TOMA, Member of the Romanian Academy
BOTANIST PHD ION SÂRBU AT THE 80TH ANNIVERSARY
PROFESSOR GOGU GHIORGHIȚĂ AT THE 70TH ANNIVERSARY

Prof. univ. dr. Constantin TOMA, Dr. Ion SÂRBU
BIODIVERSITY WITHOUT BORDERS

Prof. univ. dr. Vasile CRISTEA
ETHNOBOTANY AND ... „ETHNOBOTANICAL PLANTS"

Conf. univ. dr. Ion COJOCARU
THE THEORY OF SPONTANEOUS GENERATION, BETWEEN IDEOLOGY AND SCIENCE

$11^{00} - 11^{30}$ Break

11^{30} - 13^{30} **Parallel Symposia**

13^{30}-15^{30} **Visit of the "Autum flowers" Exhibition –** "Anastasie Fătu" Botanical Garden, Iasi

15^{30} - 16^{00} Break
Poster session

16^{00} - 19^{00} **Parallel Symposia**

19^{00} - 20^{00} **Closing ceremony**

20^{00} **Gala dinner**

SATURDAY, OCTOBER 26, 2013

09^{00} - **Field trip –Vânători - Neamț National Park**

SECTION OF ANIMAL BIOLOGY

ORAL PRESENTATIONS
Hall B460: 11^{30}-13^{30}; 16^{00}-19^{00}

MODERATORS:
Conf. dr. Dorel URECHE
Conf. dr. Ștefan ZAMFIRESCU

Mircea-Dan MITROIU, Thibaut De MEULEMEESTER
A NEW GENUS AND SPECIES OF *PTEROMALIDAE* (*HYMENOPTERA: CHALCIDOIDEA*) FROM THE LATE EOCENE

Mircea-Dan MITROIU, Ovidiu Alin POPOVICI, Lucian FUSU, Maria-Magdalena DASCĂLU
PARASITOIDS OF SYNANTHROPIC FLIES: SAMPLING METHODS FOR OBTAINING GOOD-QUALITY DNA

Roxana IPATE, Ioan MOGLAN
BREEDING *BOMBUS TERRESTRIS* L. (HYMENOPTERA, APIDAE) IN LABORATORY CONDITIONS

Elena-Daniela PRELIPCEAN (BOSOVICI)
PRELIMINARY DATA REGARDING THE ENTOMOFAUNA IN RYE CULTURES FROM RĂDĂUȚI (SUCEAVA COUNTY)

Ion COJOCARU
DATA CONCERNING DIVERSITY OF AQUATIC COLEOPTERANS FROM ARONEANU LAKE (IAȘI COUNTY)

Tomasz JONIAK, Elżbieta SZELĄG-WASIELEWSKA, Wanda ROMANOWICZ-BRZOZOWSKA, Ryszard GOŁDYN, Katarzyna KOWALCZEWSKA-MADURA, Renata DONDAJEWSKA, Piotr DOMEK
LONG-TERM CHANGES OF PHYTO- AND ZOOPLANKTON BIODIVERSITY AND WATER TROPHIC STATE IN SHALLOW POST-GRAVEL PIT POND

Alexandru SOTEK, Iulian GHERGHEL, Alexandru STRUGARIU, Lucian FUSU
OVERWHINTERING HABITATS OF EUROPEAN SCORPIONS (*EUSCORPIUS CARPATHICUS*) IN ROMANIA

Beata MESSYASZ, Mircea NICOARĂ, Ryszard GOŁDYN, Piotr DOMEK, Piotr KLIMASZYK, Gabriel PLAVAN, Wilhelm WINDHORST, Naicheng WU
DID RESTORATION MEASURES IMPROVE BIODIVERSITY IN THE EUTROPHIC LAKE?

Piotr KLIMASZYK, Jacek ŁAWNICZAK, Gabriel PLAVAN

HUMAN IMPACT ON BIODIVERSITY OF FISH ASSEMBLAGES AND ECOLOGICAL STATE OF LOWLAND RIVER WEŁNA ON THE EXAMPLE OF TWO NATURE RESERVES

Gabriel PLAVAN, Ștefan-Adrian STRUNGARU, Oana JITAR, Carmen TEODOSIU, Mircea NICOARĂ

RISK ASSESSMENT OF FISH CONSUMPTION AND HEAVY METAL CONCENTRATIONS (CD, CR, CU, NI, PB) IN FIVE SPECIES FROMROMANIAN'S BLACK SEACOASTLINE

Oxana MUNJIU, Ion TODERAS, Elena ZUBCOV, Lucia BILETCHI, Igor SUBERNETKII

COMPOSITION AND DISTRIBUITION OF BENTHIC MACROINVERTEBRATES IN THE PRUT RIVER (2012-2013)

Alexandru STRUGARIU, Iulian GHERGHEL, Tiberiu SĂHLEAN, Paul DINCĂ, Ștefan ZAMFIRESCU

SEXUAL SIZE DIMORPHISM IN THE MEADOW VIPER (*VIPERA URSINII*): A LOWLAND PERSPECTIVE

Ștefan ZAMFIRESCU, Alexandru STRUGARIU, Paul DINCĂ, Oana ZAMFIRESCU, Ștefănică ANIȚEI

NEW SITES FOR THE CRITICALLY ENDANGERED MOLDAVIAN MEADOW VIPER (*VIPERA URSINII MOLDAVICA* NILSON, ANDRÉN & JOGER 1993) IN ROMANIAN MOLDAVIA

Laurenţiu PETRENCU

LONG TERM STUDY OF WADERS IN THE DANUBE DELTA BIOSPHERE RESERVE

Piotr KLIMASZYK, Ryszard PIOTROWICZ

LONG-LASTING IMPACT OF THE CORMORANTS (*PHALACROCORAX CARBO* SINENSIS) COLONY ON SOIL CHEMISTRY AND PLANT BIODIVERSITY

Dan Laurentiu STOICA, Galea TEMNEANU

IMPLEMENTING THE EUROPEAN LEGISLATION ON THE NATURA 2000 SITES IN THE COUNTY OF IASI

Doina Simona GRECU (MĂTIUŢ), Lucian GORGAN, Radu DRUICĂ, Ioan MOGLAN

PCR IDENTIFICATION OF ISOLATES OF *BLASTOCYSTIS HOMINIS* TO DETERMINE GENOTYPES CIRCULATING IN IASI COUNTY

POSTERS

Central hall, 1st floor: $15^{30} – 16^{00}$

Mircea NICOARĂ, Gabriel PLAVAN, Marius Andrei RĂU, Ștefan Adrian STRUNGARU, Gimi George DÂSCĂ

SEASONAL DYNAMICS OF BENTHIC MACROINVERTEBRATES FROM BĂDĂRĂU LAKE – IAŞI

Raluca MELENCIUC, Luminţa BEJENARU

ARCHAEOZOOLOGICAL STUDY OF A SAMPLE DISCOVERED IN THE PREHISTORIC SITE (CUCUTENI A CULTURE) OF PODURI-DEALUL GHINDARU (BACĂU COUNTY, ROMANIA)

Vitalie AJDER, Emanuel Ștefan BALTAG

IMPORTANT BIRD AREA NETWORK IN REPUBLIC OF MOLDOVA

Camelia URECHE, Roxana Elena VOICU, Adam Doru BOBEI

COMPARATIVE STUDY OF EPIGEAN INVERTEBRATE FAUNA IN TWO DIFFERENT TYPES OF FOREST FROM BACĂU COUNTY IN 2012

Dorel URECHE, Camelia URECHE, Roxana Elena VOICU

CURRENT STATE OF FISH COMMUNITIES IN NEHOIU-PÂRSCOV SECTION OF THE RIVER BUZĂU (ROMANIA)

Nicolae CRĂCIUN

STUDY OF HERPETOFAUNA POPULATIONS FROM THE "MEHEDINTI PLATEAU"GEOPARK

Nicolae CRĂCIUN

RESEARCHES ON HERPETOFAUNA BIODIVERSITY FROM THE UPPER BASIN OF DÂMBOVIȚA VALLEY

SECTION OF PLANT BIOLOGY

ORAL PRESENTATIONS
Amphitheater B2**:** $11^{30} – 13^{30}$; $16^{00} – 19^{00}$

MODERATORS:
Prof. univ. dr. Vasile CRISTEA
Prof. univ. dr. Anca SÂRBU
Conf. univ. dr. Paulina ANASTASIU

Daniel – Ioan MAFTEI, Diana – Elena MAFTEI, Constantin TOMA
A HISTO-ANATOMICAL COMPARATIVE STUDY ON *RHODIOLA ROSEA* L. IN CONVENTIONAL AND IN VITRO CULTURES

Daniela NICUȚĂ, Diana-Elena MAFTEI, Roxana-Elena VOICU
STUDIES ON IN VITRO BEHAVIOUR OF *OCIMUM SANCTUM* L.

Emilia STOIANOV, Alexandra ȘUTEU, Inge PAULINI, Monica BELDEAN
GERMINATION DYNAMICS AND SEEDLING GROWTH OF *SANGUISORBA OFFICINALIS* L. IN RELATION TO MEADOW MANAGEMENT

Aykut TOPDEMIR, Nazmi GUR
EFFECTS OF SOME PESTICIDES ON IN VITRO MALE GAMETHOPHYTE PERFORMANCE OF *PRUNUS ARMENIACA* L. (APRICOT) AND *PERSICA VULGARIS* (PEACH) PLANTS

Omer Munzuroglu, Nazmi GUR, Aykut TOPDEMIR
EFFECTS OF SOME PESTICIDES ON IN-VITRO POLLEN GERMINATION AND TUBE ELONGATION OF *MALUS SYLVESTRIS MILLER* (APPLE) AND *PRUNUS DOMESTICA L.* (PEARS)

Mihai LEȘANU, Ludmila PERCIULEAC
APPLICATIONS OF THE PLANT BIOTECHNOLOGIES IN AGRICULTURE

Tiberius BALAEȘ, Cătălin TĂNASE
LIGNICOLYTIC ENZYMES OF THE BASIDIOMYCETES FOR THE DECOLOURISATION OF THE SYNTHETIC DYES

Cristiana Virginia PETRE, Cătălin TĂNASE
CULTURE CHARACTERISTICS OF SOME LIGNICOLOUS BASIDIOMYCETES SPECIES THAT SYNTHETIZE VOLATILE ORGANIC COMPOUNDS

Vasilică Claudiu CHINAN
XYLARIA OXYACANTHAE AND *DALDINIA FISSA*, TWO RARE XYLARIACEOUS FUNGI IN ROMANIA

Culiță SÎRBU, Adrian OPREA
A NEW CONTRIBUTION ON THE VASCULAR FLORA OF ROMANIA

Paulina ANASTASIU, Gavril NEGREAN, Eugenia NAGODĂ, Petronela COMĂNESCU, Sanda LIȚESCU
PRELIMINARY STUDY OF THE FLORA OF BALTA VĂCĂREȘTI (BUCHAREST)

Eugenia NAGODĂ, Petronela COMĂNESCU, Paulina ANASTASIU
PHEMERANTHUS CONFERTIFLORUS: NEW ALIEN SPECIES TO EUROPE

Vasile CIOCÂRLAN
THE DEFINITION OF ADVENTIVE PLANTS

Irina GOIA, Adrian OPREA
AQUATIC VEGETATION FROM "PORȚILE DE FIER" NATURAL PARK

Oana ZAMFIRESCU, Irina IRIMIA, Ștefan R. ZAMFIRESCU, Toader CHIFU, Ciprian C. MÂNZU
ANALYSIS OF THE ALLIANCE *LEMNION MINORIS* (R. TX. 1955) DE BOLÓS ET MASCLANS 1955 IN ROMANIA

Erzsébet DOMOKOS
THE QUALITATIVE STRUCTURE OF THE FORESTRY ASSOCIATIONS FROM THE MIDDLE STREAM OF THE NIRAJ VALLEY (ROMANIA, MUREȘ COUNTY)

Ewa ARCZYŃSKA-CHUDY, Sofia CELEWICZ-GOŁDYN, Hanna GOŁDYN, Piotr PIŃSKWAR
DIVERSITY OF SMALL FIELD PONDS FLORA

Anca SÂRBU, Ion SÂRBU, Anca Monica PARASCHIV, Daniela Clara MIHAI
PLANTS AND HABITATS WITH CONSERVATION VALUE FROM THE PERIMETER OF ARCUDA DRINKING WATER TREATMENT PLANT

Simona MIHAILESCU, Florian BODESCU
THE STATUS OF CONSERVATION IN ROMANIA FOR THE PRIORITY NATURA 2000 HABITAT: PANNONIC AND PONTO-SARMATIC SALT-STEPPES AND SALT-MARSHES

POSTERS
Central hall, 1st floor: $15^{30} – 16^{00}$

Camelia IFRIM, Constantin MARDARI
ANATOMICAL PECULIARITIES OF THE VEGETATIVE ORGANS FROM TWO SPECIES OF THE *GENTIANACEAE* FAMILY

Diana BATÎR RUSU

THE INFLUENCE OF THE CONSERVATION PERIOD ON THE ACTIVITY OF MYCOLOGICAL FLORA ON *ZEA MAYS* SEEDS FROM SUCEAVA GENEBANK'S COLLECTION

Messyasz BEATA, Pikosz MARTA

DIAGNOSTIC FEATURES OF FILAMENTOUS GREEN ALGAE - DIFFICULTIES AND SIMPLIFY IN THE SPECIES IDENTIFICATION

Pikosz MARTA, Messyasz BEATA

SPACE DISTRIBUTION OF METAPHYTON SPECIES AGAINST A BACKGROUND OF ENVIRONMENTAL FACTORS IN WATER RESERVOIRS IN POLAND

Irina IRIMIA

THE REVISION OF THE GENUS *AJUGA* L. FROM THE HERBARIUM OF "ALEXANDRU IOAN CUZA" UNIVERSITY OF IAŞI

Mihaela DANU

DIVERSITY AND ENVIRONMENTAL INDICATOR VALUE OF NON-POLLEN PALYNOMORPHS FROM PEAT SEDIMENTS OF THE HAUTES FAGNES PLATEAU (BELGIUM)

SECTION OF MOLECULAR INTERACTIONS IN THE LIVING WORLD

ORAL PRESENTATIONS
Hall B339: 11^{30} - 13^{30}; 16^{00} – 19^{00}

MODERATORS:
Prof. univ. dr. Liliana FOIA
Prof. univ. dr. Anca MIRON

Viorica E.UNGUREANU
INTERDEPENDENCE BETWEEN HUMAN BEINGS' HEALTH AND BIODIVERSITY

Diana-Elena MAFTEI, Daniela NICUȚĂ, Gogu GHIORGHIȚĂ
CYTOGENETIC ANALYSES ON SEVERAL IN VITRO REGENERANTS OF *MELISSA OFFICINALIS* L.

Gabriela VOCHITA, Daniela GHERGHEL, Elena TRUTĂ, Evgeny Aleksandrovich KRASAVIN, Yulia KARACHUK, Pincu ROTINBERG, Cosmin-Teodor MIHAI
CELL CYCLE PROGRESSION IN NORMAL AND CANCEROUS CELLS EXPOSED TO X-RAYS CARRIED BY A PHOTON BEAM

Cosmin-Teodor MIHAI, Daniela GHERGHEL, Alla V BOREYKO, Pincu ROTINBERG, Gabriela VOCHIȚA
IN VITRO INVESTIGATION OF THE EFFECTS OF X-RAYS CARRIED BY A PHOTON BEAM UPON THE VIABILITY AND APOPTOTIC PROCESS IN NORMAL AND CANCEROUS CELLS

Daniela GHERGHEL, Cosmin Teodor MIHAI, Gabriela VOCHIȚA, Dorina IUREA, Pincu ROTINBERG
INTERFERENCE OF THE EXTREMELY LOW - FREQUENCY ELECTRO-MAGNETIC FIELD WITH HeLa TUMOR CELLS PROGRESSION

Marius MIHĂȘAN, Roderich BRANDSCH
pAO1 OF *ARTHROBACTER NICOTINOVORANS* AND THE SPREAD OF CATABOLIC TRAITS BY HORIZONTAL GENE TRANSFER IN GRAM-POSITIVE SOIL BACTERIA

Gabriela MIHALACHE, Marius MIHĂȘAN, Marius ȘTEFAN
MECHANISMS OF INORGANIC PHOSPHATE SOLUBILIZATION USED BY RUNNER BEAN RHIZOSPHERIC BACTERIA

Nazmi GÜR, Nida İZGİ, Seher GÜR
BIOSORPTION OF COPPER (II) IONS USING THE *RHIZOBIUM PHASEOLI*

POSTERS

Central hall, 1st floor: $15^{30} – 16^{00}$

Eduard CRAUCIUC, Mariana BRATU, Ovidiu TOMA, Dragoş CRAUCIUC

THE RELATIONSHIP BETWEEN HUMAN PAPILLOMA VIRUSES AND CERVICAL CARCINOMA

Elena MIHĂLCEANU, Eduard CRAUCIUC, Mariana BRATU, Ovidiu TOMA, Dragoş CRAUCIUC, Mircea ONOFRIESCU

PREECLAMPSIA AND MORPHOLOGICAL EVIDENCE OF ANATOMO-PATHOLOGICAL LESIONS

Irina Luciana DUMITRIU, Ruxandra Madalina OGHINICIUC, Luminita Gina VATA, Liliana FOIA, Lucian GORGAN, Bogdan GURZU

HIGH FAT DIET INDUCED - ALTERATIONS OF PULMONARY ARTERIES REACTIVITY ARE NOT DEPENDENT BY OBESITY

Corneliu TĂNASE, Valentin I. POPA

ACTIVITIES OF ENZYMATIC SYSTEMS INVOLVED IN THE METABOLISM OF CORN PLANTS DEVELOPED UNDER THE INFLUENCE OF SOME NATURAL PRODUCTS

Corneliu TĂNASE, Smaranda VÂNTU, Valentin I. POPA

IN VITRO EFFECT OF SOME BYPRODUCTS ON *LAVANDULA ANGUSTIFOLIA* MILL. EXPLANT GROWTH

Bogdan-Dorin ŞOLTUZU, Zenovia OLTEANU, Lăcrămioara IVĂNESCU, Constantin TOMA, Maria-Magdalena ZAMFIRACHE

MORPHOLOGICAL, BIOCHEMICAL AND PHYSIOLOGICAL CHANGES AT FOLIAR LEVEL INDUCED BY ATMOSPHERIC POLLUTANTS ON SAMPLES OF *AESCULUS HIPPOCASTANUM* L. FROM IAŞI CITY AREA

Mihaela Aurelia IVAN, Lăcrămioara OPRICĂ, Maria- Magdalena ZAMFIRACHE

SALINITY EFFECT ON TOTAL POLYPHENOLS AND FLAVONOIDS CONTENTS OF NINE HALOPHYTE SPECIES FROM DOBROGEA REGION

Smaranda VÂNTU

ASPECTS OF "IN VITRO" CULTIVATION OF *DIGITALIS PURPUREA* L.

Csilla Iuliana BĂRA, Mirela Mihaela CÎMPEANU, Sorin Cristian CÎMPEANU

MITHOSYS ANA-THELOPHASE CHROMOSOMAL ABERRATIONS INDUCED BY UV IRRADIATION UNDER ANTIOXIDATIVE PROTECTION OF VITAMIN C, BY *CALENDULA OFFICINALIS* L.

Cristian TUDOSE

GENETIC STUDIES REGARDING CONGENITAL CARDIOVASCULAR ANOMALIES

Ancuța GORIUC, Iuliu IVANOV, Eugen CARASEVICI, Lucian GORGAN, Ștefania RACOVIȚĂ, Liliana FOIA

MYELOPROLIFERATIVE SYNDROMES AND DETECTION OF JAK2 GENE MUTATION BY REAL-TIME PCR

Monica LUCA, Mitică CIORPAC, Marius-Andrei RĂU, Dragos Lucian GORGAN

PRELIMINARY DATA FOR ASSESSING THE THREAT STATUS OF THE INVASIVE SPECIES *PERCCOTTUS GLENII*

Radu DRUICĂ, Lucian GORGAN, Răzvan DEJU, Sebastian CĂTĂNOIU

GENETIC STATUS OF THE EUROPEAN BISON *BISON BONASUS* POPULATION FROM VÂNĂTORI-NEAMȚ AND NEAGRA-BUCȘANI NATIONAL PARKS

Ovidiu POPESCUL, Monica LUCA, Ștefan ZAMFIRESCU, Alexandru STRUGARIU, Dragoș Lucian GORGAN

VIPERA URSINII MOLDAVICA INTRASPECIFIC VARIABILITY IDENTIFICATION USING CYTOCHROME B GENE AND MICROSATELLITE DATA

Mitică CIORPAC, Constantin ION, Dragoș Lucian GORGAN

BIOGEOGRAPHY AND PHYLOGENY OF *ACROCEPHALUS* GENERA INFERRED BY mtDNA ANALYSIS

THE STUDENT SCIENTIFIC SESSION

ORAL PRESENTATIONS
Amphitheater B2: 10^{00}-14^{00}

ORGANIZING COMMITTEE:
Conf. Dr. Smaranda VÂNTU
Lect. Dr. Lucian GORGAN
Lect. Dr. Marius MIHĂȘAN
Drd. Ștefan Adrian STRUNGARU

Ionela PAVELIUC, Ovidiu POPOVICI
NEW DATA ABOUT *COPTERA* SAY 1836 (HYMENOPTERA, PROCTOTRUPOIDEA: DIAPRIIDAE)

Paula POSTU, Lucian HRIȚCU
COGNITIVE-ENHANCING EFFECTS OF THE METHANOLIC EXTRACT OF *PIPER NIGRUM L.* FRUITS IN AN aβ(1-42) RAT MODEL OF ALZHEIMER'S DISEASE

Andreea PARASCHIV, Lucian HRIȚCU
NEUROPROTECTIVE EFFECTS OF THE LAVENDER ESSENTIAL OIL IN A RAT MODEL OF DEMENTIA

Răzvan CALIGA, Călin Lucian MANIU, Marius MIHĂȘAN
THE EFFECT OF LOW FREQUENCY ELECTROMAGNETIC FIELD ON THE ACTIVITY OF HORSERADISH PEROXIDASE

Loredana SANDU, Lăcrămioara OPRICĂ
IMPACT OF INORGANIC SALT SOLUTIONS ON ANTIOXIDATIVE ENZYMES ACTIVITY AND PIGMENTS CONTENT IN Trigonella foenum-graecum SEEDLINGS

Andreea ANDREI, Marius MIHĂȘAN
ISOLATION AND CLONING OF NDH GENES FROM PAO1 MEGAPLASMID OF *ARTHROBACTER NICOTINOVORANS*

Oana CONSTANTIN, Marius MIHĂȘAN
ABC-TYPE TRANSPORTER SYSTEM FROM PAO1 OF *ARTHROBACTER NICOTINOVORANS*

Roxana-Maria AMĂRANDI, Călin Lucian MANIU
SUBSTRATE PREFERENCE OF SEROTONIN RECEPTORS THROUGH *IN SILICO* DOCKING EXPERIMENTS

SECTION OF ANIMAL BIOLOGY

ORAL PRESENTATIONS

HALL B460: 11^{30}-13^{30}; 16^{00}-19^{00}

MODERATORS:
Conf. dr. Dorel URECHE
Conf. dr. Ștefan ZAMFIRESCU

A NEW GENUS AND SPECIES OF PTEROMALIDAE (*HYMENOPTERA: CHALCIDOIDEA)* FROM THE LATE EOCENE

MIRCEA-DAN MITROIU[1*], THIBAUT DE MEULEMEESTER[2]
[1]Alexandru Ioan Cuza University of Iasi, Faculty of Biology, Bd. Carol I 11, 700506 Iasi, Romania, mircea.mitroiu@uaic.ro
[2]Naturalis Biodiversity Center, Darwinweg 2, Leiden, the Netherlands

Chalcidoidea (Hymenoptera) is one of the largest groups of insects, with more than 100,000 described species. Chalcids are relatively poorly known from fossils, and are mainly found in amber inclusions. Due to their very small size, and to the rapid degradation of the body, compression fossils of chalcids are very rare. A new genus and species of Pteromalidae are described from the Eocene Green River Formation shale, Utah, U.S.A. (about 47 myr). The fossil is placed in Chalcidoidea based on the presence of the longitudinal plate sensilla and the characteristic fore wing venation. The new genus has affinities with several subfamilies of Pteromalidae, its position being uncertain. The possible relations with the extant pteromalid taxa are discussed.

PARASITOIDS OF SYNANTHROPIC FLIES: SAMPLING METHODS FOR OBTAINING GOOD-QUALITY DNA

MIRCEA-DAN MITROIU[1*], OVIDIU ALIN POPOVICI[1], LUCIAN FUSU[1] AND MARIA-MAGDALENA DASCĂLU[1]
[1]Alexandru Ioan Cuza University of Iasi, Faculty of Biology, Bd. Carol I 11, 700506 Iasi, Romania, mircea.mitroiu@uaic.ro

The complex characterization of the parasitoid wasps (Hymenoptera: Pteromalidae, Diapriidae) associated with synanthropic flies required among others good-quality DNA for barcoding. The specimens stored in ethanol for several years didn't yield the expected results, probably because of the killing agents used, poor quality ethanol, or storing method. Consequently, we attempted to obtain fresh specimens using the following methods: direct collecting of host pupae, use of sentinel pupae, and carrion traps. After emergence from the host pupae, the parasitoids were directly transferred into 90% ethanol and stored in the freezer. The success of each method is discussed, based on preliminary results.

Acknowledgments: This study was funded by a grant of the Romanian National Authority for Scientific Research, CNCS–UEFISCDI, project number PN–II–RU–TE–2012–3–0057.

BREEDING *BOMBUS TERRESTRIS* L. (HYMENOPTERA, APIDAE) IN LABORATORY CONDITIONS

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The present paper presents a few aspects concerning the laboratory breeding of *Bombus terrestris* bumblebees, such as: the indicators prior to laying the first eggs, the emergence of adults and the colony's development. Seventeen queens belonging to the *Bombus terrestris* species were collected from nature and placed, in pairs of two, in plastic boxes of 15 x 9.5 x 7.5 cm, called initiation boxes, where food was administered to them. Their food consisted of fresh pollen and water and sugar syrup (2:1). The boxes were deposited in a dark place, at a temperature of 24 - 30ºC and a relative air humidity of 50 – 60%. The queens collected in 2012 were subjected to CO_2 narcosis, a gas that stimulates the ovarian development. The wax secreted and deposited on the bottom of the box and the construction of the honey cell were clear indicators that the moment of laying the first eggs was approaching. Out of the 17 queens, 8 managed to lay eggs, and only 3 of the latter formed colonies. The biggest colony was formed of 156 individuals, being released into the nature.

PRELIMINARY DATA REGARDING THE ENTOMOFAUNA IN RYE CULTURES FROM RĂDĂUȚI (SUCEAVA COUNTY)

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During April - July, 2013 we collected some biologic material from two rye crops (Horodnic de Jos, Marginea) in Suceava County. We made observations regarding main insect pests and auxiliary insects collected from rye stem and spikes. We havecollected 100 rye plants from the edgeandcenter of the crop,after wedissectedbothspikes,stemandroots. We have found insect pests only on leafs and spike.

DATA CONCERNING DIVERSITY OF AQUATIC COLEOPTERANS FROM ARONEANU LAKE (IASI COUNTY)

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This paper presents a qualitative and quantitative analysis of the community of aquatic coleopterans sampled from Aroneanu Lake (Iași) under the conditions of the year 2013. The samples were taken monthly between May and August and consist of a number of 312 individuals of aquatic beetles, adults and larvae, framed in 25 determined taxa, belonging to 9 families: Dytiscidae, Noteridae, Spercheidae, Scirtidae, Hydraenidae, Limnebiidae, Helophoridae, Hydrophilidae and Curculionidae. The ecological indices were calculated for

each taxon: the numerical abundance, the relative abundance, and is presented the ratio imagos/larvae for the sampling period.

LONG-TERM CHANGES OF PHYTO- AND ZOOPLANKTON BIODIVERSITY AND WATER TROPHIC STATE IN SHALLOW POST-GRAVEL PIT POND

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Long-term variability of biodiversity in phyto- and zooplankton biocenoses versus water quality and trophic state of shallow (max. depth 5.5 m), 13 ha post-gravel pit pond in the protection zone of potable ground water intake was analyzed. The reservoir was created in 1992 as one of several water bodies created in opencast mining area for gravel extraction, in Owińska near Poznań (Western Poland). The reservoir was used by anglers from the beginning of 1996. Until 2001the pond was intensive lystocked, mainly with planktivorous and herbivorous fish and used byalmost 700 anglers. Ecological implications of angler's pressure was fast eutrophication of water with cyanobacteria water blooms, very high content of chlorophyll-a, alkaline pH and low water transparency. Studies carried outfrom thechange ofthe pond management in 2002 with limitation ofstocking with planktivorous species and increase of piscivorous species (pike, catfish, and pikeperch), reduction of angler's number and gradual ban on fishingwith ground baits. The aim of the research was to analyse the temporal and spatial differentiation of phytoplankton and zooplankton diversity on the base of Shannon-Wiener Index and species Evenness Index. The analyzestake into account thedistribution of species and their abundance at two stations as well as in depth profile of the reservoir. Study was conducted in the period 2002-2012 once a year in summer, at the station No 1, inpartially isolated basin (connected through narrow isthmus) near potable water intake and at No 2 in the open part of reservoir. Samples from 3 layers (subsurface, centre, over-bottom) were taken. 12 parameters were used for assessment of the water quality. Trophic status was evaluated based onCarlson's Trophic State Index (TSI). An analysis of the trophic state confirmed that reservoir was eutrophic to 2003 and mesotrophic in the next years. The level of TSI was mainly influenced by the content of phosphorus and sometimes by chlorophyll. At station 1 trophic state of water was more stable than at station 2 where large range of values was noted – from typical for oligo-mesotrophic state to highly eutrophic.The domination of cyanobacteria (1 or 2 species) in the whole study period in phytoplankton were noted, and periodically a single taxa of Chlorophyceae and Haptophyceae. Zooplankton was represented mainly by Rotifera of the genera *Keratella*, *Polyarthra* and *Trichocerca*, small forms of Cladocera and juvenile Copepoda. Values of Shannon-Wiener Index of phytoplankton changed from 0.92 to 2.82, while of zooplankton its range of variation was smaller from 2.09 to 2.61. Positive influence of management changes on plankton species richness was noted, especially of zooplankton, which number of taxa during period without fish stoking increased by more than 10. Analysis of plankton diversity showed that in short-term period more important for phytoplankton than for zooplankton was frequency of stocking and species composition of fish introduced to the reservoir. Meanwhile, a delayed in time response of zooplankton diversity on management changes may suggest the influence of other variables on this group of organisms, both of biotic and abiotic origin.

OVERWHINTERING HABITATS OF EUROPEAN SCORPIONS (*EUSCORPIUS CARPATHICUS*) IN ROMANIA

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This is the first note on the ecology of *Euscorpius carpathicus* (Linnaeus), a species of scorpion endemic to South Romania, and the first data on the overwintering habitat selection of a species of *Euscorpius*. The field study was conducted in the foothills of the Curvature Carpathians (Curvature Subcarpathians). Three types of habitats from the studied area were used: forests, meadows and riparian habitats. We used First Sight Point (FSP) methodology in counting the habitat characteristics which act as variables used in generating our models. The independence of the variables was ensured by using Pearson Correlation coefficient for each combination of independent variables. To evaluate the relative support of the different hypotheses in explaining the overwintering habitat selection by the Carpathian Scorpion we used an information-theoretic approach. Subsequently, we selected three of the computed models using AIC (Akaike Information Criteria). Our results show that the overwintering strategy of *E. carpathicus* in the area of Curvature Carpathians foothills involves microhabitat selection with absolute preference for riverine clay banks. Contrarily to other species of the genus that inhabit cracks in stones or walls, the Carpathian Scorpion adapted to cracks in clay as a winter shelter.

DID RESTORATION MEASURES IMPROVE BIODIVERSITY IN THE EUTROPHIC LAKE?

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Lake Durowskie located in Wągrowiec (Wielkopolska Region, West Poland) with an area of 143.7 ha and a depth of14.6 m belonged to highly eutrophic, with strong cyanobacteria water blooms. Therefore, since 2009,it was restored using three methods:hypolimnion aeration, iron treatment and biomanipulation. This restoration had a clear impacton biodiversity of flora and fauna, studied for 5 consecutive years in July, by the members of the international summer school. Before the restoration (in 2008) 50 taxa in the phytoplankton was found, while in 2013 it was 71 and in the meantime 65-84 taxa were stated. Only about 36% of the existing phytoplankton species in 2008 survived to 2013. Most of them were replaced by taxa adapted to the new environmental conditions, and thus of a larger ecological scale or indicators of the better water quality. The phytoplankton species composition changed from the dominant

cyanobacteriatodiatoms, dinoflagellates and chrysophytes. This was also reflected in the gradually increasing biodiversity expressed in the Shannon-Weaver Index, from 0.56 (in 2008) to3.76 (2013). Submerged macrophytes in the lake increased their surface from 185 m^2 in 2009 up to 5155 m^2 in 2013 and nymphaeids increased the area over twice. Indicator of poor water quality, *Ceratophyllum demersum*, disappeared in 2010 and species indicating good ecological state like *Chara fragilis*, *Najas marina* and few *Potamogeton* species were present. Number of benthic macroinvertebrate taxa increased from 24in 2009 to 39 in 2013 and their total density increased from 691 to 2484specimens m^{-2} in the littoral zone near the forest, respectively. Its biomass was dominated by big mussels *Anodonta anatina* (L.), *A. cygnea* (L.), *Unio pictorum* (L.) and *U. tumidus* Phil., very active in improving water quality due to phytoplankton filtration. According to historical data (since 1954) 19 species of fish were inhabiting Lake Durowskie. Some of them were of human origin (grass and silver carps), the Asiatic species, which were stocked in 70', and 80' of XX century. According to the pollution and decrease of water quality of Durowske Lake transformation of ichtyocoenosis occurred. Pelagic species (vendace and common whitefish) characteristic for mesotrophic state totally disappeared while species from cyprinidae family rose in number (especially bleak which now predominate the lake). Among predatory fish the decrease of population of pike was observed while number of sander (adapted to turbid water) increased. Comparing to other water organisms fish are long living, so effect of restoration treatments on ichtiocoenoses are usually postponed. Observed increase of biodiversity in most groups of organisms in Durowskie Lake is consistent with the intermediate disturbance hypothesis. In this case, restoration brings intermediate disturbances to the ecosystem, which in response increase biodiversity, reflecting new ecological conditions.

HUMAN IMPACT ON BIODIVERSITY OF FISH ASSEMBLAGES AND ECOLOGICAL STATE OF LOWLAND RIVER WEŁNA ON THE EXAMPLE OF TWO NATURE RESERVES

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Welna River is a right tributary of the Warta River. It flows out from Wierzbiczańskie Lake (Gniezno Lakeland) at an altitude of 155 m asl. and flows into Warta at elevation of 45 m asl. The length of its course is 117,8 km. The drainage basin covers an area of 2621 km^2, which is approximately 5% of Warta drainage basin. Average flow at the mouth is approximately 6.5 m^3/s^{-1}, but the river is characterized by significant fluctuations of water level - up to 2 meters. Course of the river can be divided into three natural sections: - Upper course, where the river flows through eight lakes - is characterized by a small river gradient of 0.12 ‰ and a flow rate of 0.4 m/s^{-1}, - Middle course, where the river flows through the Łęgowskie Lake, river gradient of 0.5 ‰, average flow velocity greater than 0.5 m/s^{-1}, -Lower course, where the river does not flow through the lake but collects several tributaries. The average river gradient is 0.75 ‰. The river in this section is characterized by numerous rifles.Both studied natural reserves were created in the 60s of the twentieth century and are located in the lower section of the river. Reserve "Welna" was created as a landscape reserve for protection of the ecosystem of the river with mountain character. Reserve covers the river on a length of 3.5 km. On this section, almost the entire length of the river flows in the forest, riverbed has a width of about 12 m and the average depth is 0.7 m. The lower boundary of the reserve is the dam of the water mill

without the fish ladder. The consequence of dam existence is backwater area, which covers almost one third of the Reserve length - the water there has a depth up to 2 m, water flow significantly decreases, which results in the accumulation of organic deposits. In addition, the negative impact on the biocenosis of the Reserve has the water incoming from the upper and middle river course, containing a lot of organic matter (algae blooms from lakes) and biogenic elements.The natural reserve "Slonawy" is a ichtiologic reserve. It was created for the protection of spawnig areas of salmon (*Salmon salar*), trout (*Salmo trutta m. trutta*) graylng (*Thymallus thymallus*), vimba (*Vimba vimba*) and common nase (*Chondrostoma nasus*). Unfortunately, within a one decade after the creation of the reserve, the populations of these fish completely extinct - due to the strong water pollution (Mastyński 1999). The reserve covers the lower part of the river with a length of 1km. The upper boundary of the reserve is a dam of the hydro power plant (with a modern fish ladder). River in the reserve is characterized by rapid flow (over 1 m s^{-1}), a small depth of 0.7 and mineral substrate: stone, pebble, gravel and sand. The significant part of the reserve goes through the center of the city Oborniki, in its surroundings high level of traffic and noise are observed. In the study the evaluation of the structure of ichtiofauna inhabiting the reserves was conducted.The ecological status of Reserves was determined based on River Habitat Survey (RHS) (Raven et al. 2000), Macrophyte Index for River (Szoszkiewicz et al. 2006), macroinvertebtates BMWP index (Cota et al.2003) and EFI + Fish index (Consortium of Fame 2005).According to investigations it was found that on the area of "Słonawy" Reserve 19 species of fish belonging to six families (Cyprynidae, Balitoridae Cobitidae, Percidae, Cottidae, Esocidae) occurs. Fishes valuable in the context of Natura 2000 sites have been reported: barbell, spinned loach and bullhead - which are rheophilic species. Based on the European Fish Index (EFI +) it was found that this analyzed section of the river has an EFI + index = 0.59 which is 3rd class of ecological status which means unsatisfying state (U1). An macrophyte index showed II class which means habitat in good state. The RHS due to the significant transformation of the river banks (urban development, river banks strengthening in the area of hydroelectric power plant) shows the unsatisfactory state (U1), while the benthic invertebrates living in this part of the river indicates (BMWP index) a good state (FV).In the Welna River on the area of "Wełna" Reserve 15 species of fish belonging to four families (Cyprinidae, Esocidae, Percidae, Gasterosteidae) has been recorded.Most strongly represented was the family Cyprinidae - 12 species. Based on the European Fish Index (EFI +) it was found that the analyzed section of the river has an EFI + index = 0.59 which is 5^{th} class of ecological status which means bad state (U2). An macrophytes index showed III class which shows habitat in unsatisfying state. The RHS due to only slight changes in the river banks (river flows through the forested area), shows good condition (FV). However, based on the benthic invertebrates index - BMWP ecological status of rivers was identified as unsatisfactory U1.Natural Reserve "Slonawy", despite of its location in the center of the city is characterized by better ecological state and diversity of fishes, in comparison to section of the river flowing through the forest areas covered by Natural Reserve "Wełna". In case of "Wełna" Reserve, the cause of bad ecological status and low fishes diversity is the impact of the dam which is the lower boundary the reserve. Dam prevents migration of fishes and other animals, causes that large amount of water in reservoir almost stagnates, its temperature increase and organic sediments accumulate.

RISK ASSESSMENT OF FISH CONSUMPTION AND HEAVY METAL CONCENTRATIONS (CD, CR, CU, NI, PB) IN FIVE SPECIES FROMROMANIAN'S BLACK SEACOASTLINE

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The aim of this study is analyzing and measurement of some heavy metal concentrations (cadmium, copper, chromium, nickel and lead) in fish samples (*Mullus barbatus ponticus*, *Sprattus sprattus*, *Atherina boyeri*, *Merlangius merlangus euxinus*, *Alosa caspia nordmani*) from Romanian's Black Sea coastline. Some of this species can be easily founded in the local fish markets or at the local fishermen. Heavy metals contamination of the marine fish meat is a worldwide problem. Many products are worthless if the human health is threatened. The only way to protect the consumers is the Food Safety Authorities (FSA).For the samples preparation were collected muscular tissue and other tissues samples using specific protocols, dried, grinded, weighted and digested. The analysis for each metal was done using a GF - AAS GBC Avanta. The heavy metal concentrations for each species were compared with other studies and food safety regulations in EU.

COMPOSITION AND DISTRIBUITION OF BENTHIC MACROINVERTEBRATES IN THE PRUT RIVER (2012-2013)

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The diversity and state of the benthic invertebrate communities from the Prut River (within the borders of the Republic of Moldova) has been investigated during May of 2012 - August of 2013. Twelve sampling stations have been chosen along the river, including Costesti-Stinca reservoir. During the given period 159 taxa of the benthic macroinvertebrates have been identified. The alive individuals of *Theodoxus transversalis* (Pfeiffer, 1828) - rare species included in the IUCN Red List - have been registered. Also, in 2012 for the first time for Moldova was reported *Pisidium moitesserianum* (Paladilhe, 1866). The Prutecosystem supports a higher human impact in those river sectors, which correspond to Duruitoarea Noua, Costesti-Stinca and Giurgiulesti sampling stations, thus reflecting the impact of environmental conditions upstream the Costesti-Stinca dam and in area of Giurgiulesti port, correspondingly. The most favourable conditions for development of benthic invertebrate communities are in the area of Braniste station, which is proved by biodiversity, the number of pollution-sensitive species and saprobity indexes.

SEXUAL SIZE DIMORPHISM IN THE MEADOW VIPER (*VIPERA URSINII*): A LOWLAND PERSPECTIVE

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The degree and direction of sexual size dimorphism (SSD) vary greatly throughout the Animal Kingdom and have been topics of interest for evolutionary biologists for centuries. Snakes represent a monophyletic group of vertebrates that display a wide range of SSD types, arisen from natural, sexual or fecundity selection and/or phylogenetic constraints. SSD in adult European vipers has been studied in depth and intraspecific (inter-populational) variation concerning the degree and direction of SSD has been previously observed in at least one species: the meadow viper (*Vipera ursinii* complex). Here we investigate the ontogenetic and inter-populational differences in SSD by recording and comparing 11 morphometric variables in neonate, subadult and adult vipers from several lowland populations of the meadow viper (*Vipera ursinii moldavica* – a critically endangered subspecies endemic to eastern Romania). The results are compared to a previously published similar study on mountain populations of the same species in order to gain a better understanding of the proximal factors which dictate variations in SSD.

NEW SITES FOR THE CRITICALLY ENDANGERED MOLDAVIAN MEADOW VIPER (*VIPERA URSINII MOLDAVICA* NILSON, ANDRÉN & JOGER 1993) IN ROMANIAN MOLDAVIA

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One fifth of the European reptile species are threatened because of fragmentation, degradation, and loss of habitats. *Vipera ursinii*, probably the most threatened snake in Europe,inhabits high montane areas of Italy, France, and the Balkan Peninsula, and low areas of Hungary and Romania, and is considered extinct from Bulgaria, the Republic of Moldova and Austria. It was classed as vulnerable in the IUCN Red List and included in Annex II of the European Habitat Directive. In Eastern Romania,the endemic *V. u. moldavica* inhabits steppe and deltaic habitats in Moldavia and the Danube Delta, respectively. This study aims to provide an update of the current distribution of this viper in Romanian Moldavia. Field investigations have been carried out form spring to autumn of 2013 in the grassland near the SCIs Dealul lui Dumnezeu, Valea lui David, and Pădurea și pajiștle de la Mârzești. We found two new sites in the study area, one in the perimeter of Dealul lui Dumnezeu and another one in the vicinity of the same SCI. Both are separated from the nearest populations by agricultural fields. These new records provide evidence that unknown meadow viper populations might exist in grasslands hill slopes spared from ploughing.

LONG TERM STUDY OF WADERS IN THE DANUBE DELTA BIOSPHERE RESERVE

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The Danube Delta Biosphere Reserve is situated in the south-east of Romania, in the region of Dobrudja and has a total surface of 5.800 km^2 which covers the territory of two counties: Tulcea and Constanţa. This area is a very important place for nesting, migration and wintering of a great number of water birds. Between 2003 – 2012 we have made a study for the monitoring of wader species which nest or pass trough the territory of the Danube Delta. During the study there have been identified 37 species, from a total of 48 species registered in Romania. From this, 8 species nest in the territory of the studied area, 37 can be seen in the passage period and 8 can use this wetland for wintering. The number of birds and individuals has varied from season to season and from one year to the other (all $p < 0,001$). In conclusion this area is very important for wader birds in Romania.

LONG-LASTING IMPACT OF THE CORMORANTS *(PHALACROCORAX CARBO SINENSIS)* COLONYON SOIL CHEMISTRY AND PLANT BIODIVERSITY.

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The growing population of several species of cormorants i.a. black cormorant (*Phalacrocorax carbo sinensis* L.) in Europe and the situation of colonies in new areas have raised concerns as to the consequences of their presence in the environment. Water birds, like the cormorant, are a very important intermediate link in some food chains and a factor that facilitates the dislocation of matter between aquatic and terrestrial ecosystems (Marion et al. 1994). From one point of view the cormorants exclude biogenic elements (together with fishes) from water ecosystems (Ligęza & Smal 2003). However praying on many water ecosystems simultaneously, within a radius of 30 km from colony (Cramp & Simmons 1977, Przybysz 1997), cormorants deposit faeces on a relatively small area under the colony (Kameda et al. 2006) and near the lake shore. Breeding colonies of piscivorous birds influence the habitats and phytocoenoses they occupy in different ways (Smith 1978). During the breeding season, cormorants feeding in the aquatic environment transport a large amount of biomass and chemical substances to colonies situated on land (Gere & Andrikovics 1992, Kameda et al. 2006). The consequences of the delivery of loads of allochtonic matter to the land ecosystem may be the significant enrichment of soil and plants with nitrogen (N), available phosphorus (P) and potassium (Anderson and Polis 1999, Mulder and Keall 2001), factors that usually limit primary production (Vitousek and Howwarth 1991). Increased concentrations of N and P provided by birds on the area of the colony may be cumulated in soils, transferred together with groundwater or by surface runoffs to lakes (Klimaszyk et al. 2008). Range and rate of undergoing changes depends mainly on species of nesting bird, density and age of the colony (Garcia et al. 2002, Żółkoś & Meissner 2008). Moreover cormorants during nest building break braches and in that way defoliate the trees beneath colony (Przybysz 1997). In areas with high density of birds the droppings cover herbaceous vegetation that limits photosynthesis and finally leads to plant disappearance. it is worth to notice that the initial impact of colonization

of land by piscivorous birds leads to increase of plant biodiversity (Żółkoś & Meissner 2008).The aim of this work was to estimate the changes of loads of nutrients accumulated in soils and groundwater and changes in floristic composition of the forest phytocoenosis that took place 5 years after abandonment of the colony by birds. The colony located on small (0,6 ha) island on LakeWielkie was inhabited by cormorant since 80' of XX century. Maximal noted density was about 200 breeding pairs. Studies on the influence of former cormorant breeding colony on the ecosystem of island and surrounding lake were carried out between 2009-2010. Considerably increased concentrations of nitrogen, phosphorous and potassium were found in soils beneath the colony in comparison with the control station. The greatest concentrations of nitrogen, were determined in the surface - organic - layer of soils under the colony. Organic nitrogen dominated amongst the various nitrogen forms with ammonium nitrogen and nitrates present in the surface layer in considerably lower concentrations approximately 200 mg $N\text{-}NH_4$ kg^{-1} and 40 mg $N\text{-}NO_3$ $kg\text{-}^{1}$, respectively). In case of phosphorus the greatest load were found in deeper-lying soil layers under the colony. Statistically, concentrations of chemical elements in soil profiles located at stations beneath the colony differed significantly from those at control stations (ANOVA, $p < 0.005$). What is more, increased concentrations of nutrients and other chemical elements were found in groundwater beneath the roosting colony of cormorants in comparison with control stations. Groundwater under the colony contained substantially higher amounts of dissolved mineral salts- electrolytic conductivity was almost 5 times higher than at the control station. Also, nitrogen and phosphorus concentrations in groundwater were considerably greater than at the control station. Comparing abandoned colony with control station (island unaffected by cormorants) we stated that floristic composition of the forest phytocoenosis is very poor. All trees were destroyed by birds and island is covered by nitrofilous black elder (*Sambucus nigra).* Dense canopy of elder are shading ground so herbs are generally absent. Only in transition zone between land (colony) and lake ecosystem some herbs: nettle (*Urtica dioica*) reed (*Phragmites australis*) occur. Biodiversity of plants noted on control island is significantly higher – 6 species of trees and shrubs and 17 species of herbs.

IMPLEMENTING THE EUROPEAN LEGISLATION ON THE NATURA 2000 SITES IN THE COUNTY OF IASI

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The Natura 2000 sites of Iasi County as designated via European Directives shelter very important habitats and species, some of them very peculiar and unique. Should we only bring into attention the *Vipera ursinii ssp. moldavica*, the *Pulsatila grandis* or the *Prunus tenella*, from a list of tens of species in the Second Annex of the Directive ? The role of the Environmental Protection Agency in Iaşi is to implement the legislation concerning the protection of theese specie. The task is very complex if one considers the variety of factors concerned in this matter. There are the stakeholders, the decision makers, the various institusions with direct or indirect implication, the public, the small entrepreneurs, all with pertinent and justified interests. All theese pertinent interests have to be mediated for the achivement of sustainable development.

PCR IDENTIFICATION OF ISOLATES OF *BLASTOCYSTIS HOMINIS* TO DETERMINE GENOTYPES CIRCULATING IN IAȘI COUNTY

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Blastocystis hominis is an enteric parasite, common in humans and animals, with widespread across the world. The aimed of this study is to identify the genotypes isolated from Iasi county population and their epidemiological importance. In this study we used specific primers for genotypes I, II, III and IV; were investigated 69 adults and children; we used the PCR technique on two types of isolates, from culture - Group 1 and from faeces - Group 2. For the Group 1 (24 strains), we identified 15 isolates – 11 isolates belonging to genotype II, 2 isolates to genotype IV and 2 mixed infections with genotipes II-IV and II-III. From the Group 2 (45 strains) we identified 35 strains of which 32 belonged to genotype II; in 2 cases mixed infection with genotype I-II and 1 case only genotype IV. From the total isolates, were identified 50 (72.46%): 43 (62.31%) belonging to genotype II, 4 (5.79%) to genotype IV, 2 (2.89%) genotype I and 1 (1.45%) to genotype III. The remaining strains (27.54%) were not identified, them belonging to other genotypes than those for which primers were acquired. The investigated patients had SCI type events, colitis or intestinal discomfort of moderate or low level. Was revealed that in infections dominant is genotype II, zoonotic and eco-infectious.

POSTERS

CENTRAL HALL, 1ST FLOOR: $15^{30} – 16^{00}$

SEASONAL DYNAMICS OF BENTHIC MACROINVERTEBRATES FROM BĂDĂRĂU LAKE – IAȘI

MIRCEA NICOARĂ[1], GABRIEL PLAVAN[1], MARIUS ANDREI RĂU[1], ȘTEFAN ADRIAN STRUNGARU[1], GIMI GEORGE DÂSCĂ[1]

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In the investigations carried out on Bădărău Lake during 2011-2012, three sampling siteswere established as follows: First Sampling Site (Inflow), Second Sampling Site (The forest) and Third Sampling Site (Dam - outflow). A total number of 30taxa were recorded.*Gammarus pulex* and chironomids were most abundant at all three sampling sites.The biological analyses carried out for Bădărău Lake indicated chironomids and *Gammarus pulex* as eudominant, and *Baetis* spp. as dominant species.Based on the Dzuba Index of ecological significance, macroinvertebrate species from Bădărău Lake fall into the following categories: accessories taxa (*Asellus aquaticus*, *Baetis* spp.); characteristic taxa (chironomids); accidental taxa (*Valvata naticina, Dytiscus* spp., *Limnephilus* spp., *Ranatra linearis*, Family Psychodidae).

ARCHAEOZOOLOGICAL STUDY OF A SAMPLE DISCOVERED IN THE PREHISTORIC SITE (CUCUTENI *A* CULTURE) OF PODURI-DEALUL GHINDARU (BACĂU COUNTY, ROMANIA)

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This research represents a preliminary study concerning an archeozoological sample recovered during the 2008 archaeological campaign on the prehistoric sit of Poduri-Dealul Ghindaru (Bacău County, Romania). By identifying the faunal remains is trying to establish the main animal resources obtained by human community through farming and hunting. The study was made on a sample with a total count of 1415 remains, all belonging to mammals. Mammal remains are described in terms of their frequencies (based on the number of identified specimens – NISP, and the minimum number of individuals – MNI), of osteometrics, and in terms of selections based on age. The species discussed are cattle (*Bos taurus*), sheep/goat (*Ovis aries/Capra hircus*), pig (*Sus scrofa domesticus*), dog (*Canis familiaris*), horse (*Equus caballus*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa ferus*), beaver (*Castor fiber*), hare (*Lepus europaeus*), and wolf (*Canis lupus*). Animal husbandry was an important subsistence activity in the Cucuteni settlement from Poduri-Dealul Ghindaru (domestic mammals: 95.57% NISP; 76.47% MNI), but wild mammals are also present (4.42% NISP; 23.53% MNI). Cattle dominate the assemblage (45.42% NISP; 23.53% MNI), sheep/goat come on the second place (28.15% NISP; 23.53% MNI), and pig on the third (19.76% NISP; 20.58% MNI). Concerning the herd management, age profiles indicate an efficient exploitation of the animal resources, both in order to obtain primary products (especially meat) and secondary ones (milk and cartage probably from cattle, milk and wool probably from sheep/goat).

IMPORTANT BIRD AREA NETWORK IN REPUBLIC OF MOLDOVA

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The Republic of Moldova is an Eastern European Country which neighbours Romania and Ukraine. This area is a mosaic of agricultural land, anthropic areas, pastures, forests and wetlands. Like most of the other Eastern European Countries, the land is still managed in a traditional way, which ensures a high biodiversity. In 2000, 12 Important Bird Areas (IBA) were identified here, but the information for these sites is still far from complete. This type of areas are designated by BirdLife International, without a national protection plan, but with a highly scientific recommendation to be included in a national or international protected area network. From these 12 areas, at this moment, only 7 are protected by national laws, which means that only 33.87 % (210.45 km^2) from the total IBAs are National Protected Areas. In 2013 – 2014 we will conduct a national research programme to check the IBAs which were previously designated , but also to identify new sites which will contribute to the protection of our bird populations. Until now, we checked all the Republic of Moldova IBAs and also other

areas. We found another two sites which qualify for IBA criteria. One of this areas is highly important for the Saker Falcon (*Falco cherrug*), an endangered species (IUCN criteria). The other areas, which are designated, will require an extension and the borders should be establish according to the BirdLife International recommendation.

COMPARATIVE STUDY OF EPIGEAN INVERTEBRATE FAUNA IN TWO DIFFERENT TYPES OF FOREST FROM BACĂU COUNTY IN 2012

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Researches regarding the epigean invertebrate communities were carried out in four stages in the period May – July 2012 in two different types of forest from Bacau county (oak and black locust plantation). The aim of the present study is the assessment of the quantitative as well as the qualitative structure of the invertebrate communities in the epigean fauna, and also to highlight the representative taxa and the trophic categories characteristic for each type of the ecosystems. After processing and analysing the biological material, it was found the same dominating taxa in both types of forest (Insecta class, Coleoptera order, Carabidae family), as well as the dominance of the predator species. It can be observed an important share of the detritivore species in the oak forest (especially Entognatha), while in the black locust plantation the predators are followed by the omnivorous species. The prevalence of detritivorous species (31.72%) after the predators in the oak forest is justified by the emphasis of the decay processes in contrast with the black locust plantation. The trophic analysis has revealed a similar and well balanced structure of the epigean invertebrate communities in both of the forest ecosystems. Thus, the predators are dominant in both of the forest ecosystems and this fact suggests that the environmental conditions are suitable for the prey species.

CURRENT STATE OF FISH COMMUNITIES IN NEHOIU-PÂRSCOV SECTION OF THE RIVER BUZĂU (ROMANIA)

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The study was carried out in Nehoiu-Parscov section of the River Buzau, on the main course of the River, and on some of its tributaries during May 2012. Some of the physico-geographical and hydrochemical parameters were determined. The aim of the study was to assess the current state of fish communities in this region of the basin of River Buzău, and also to highlight significant changes in fish communities, such as biodiversity, stocks, and biological integrity. The biological material was collected by electrofishing from 24 sampling sites. In the year 2012, 13 fish species were found, with an amount of 3222 individuals and 38884,2 g. Only one of the 13 fish species is non-native while the rest of 12 fish species are native. We found that the numerical stock in sampling sites ranged between 5.00 and 344.77 ind./100 sqm meanwhile the weight stock was between 53.25 and 3389.67 g/100 sqm.

STUDY OF HERPETOFAUNA POPULATIONS FROM THE "MEHEDINTI PLATEAU"GEOPARK

NICOLAE CRĂCIUN[1]

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In "Mehedinti Plateau" Geopark there are many fragmented aquatic habitats and microhabitats, isolated by river basins. Biodiversity inventory of herpetofauna populations from the geopark and their current state of preservation. Methods used: visual transects method, the method of nocturnal monitoring,terrestrial traps method, aquatic traps method, bands method. We found anisland population of *Triturus dobrogicus* and populations of *Bufo bufo*, *Hyla arborea*, *Bufo viridis*, *Bombina variegata* and *Bombina bombina*. *Vipera ammodytes* was observed near Topolniţa cave, *Dolichophis caspius*in the Bahn riverbasin, *Podarcis muralis*, *Podarcis taurica*,*Testudo hermanni* - near Cireşu village, *Salamandra salamandra*, in Topolnita valley, Sfodea creek, Jupanesti village. Frogs are the favorite prey of the otter in the area, because fish populations are reduced. Frequency of*Rana dalmatina* is higher than that of *Rana temporaria*. There are large populations of *Salamandra salamandra*. *Hyla arborea* is also frequent. We mention the existence of an isolated population of *Triturus dobrogicus* that has a special chromatic. In this case, genetic studies are needed to precisely determine the differences between this population and other newt populations.

RESEARCHES ON HERPETOFAUNA BIODIVERSITY FROM THE UPPER BASIN OF DAMBOVITA VALLEY

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Herpetofauna and habitats inventory from the upper valley of Dambovita was realised for the first time. Knowledge and inventory of herpetology fauna species biodiversity from the upper basin of Dâmboviţa. We used the next methods: visual transects, photo method, biodiversity analysis throughsquares method. We achieved a herpetofauna list of species from the area, population size has been estimated, maps that include aquatic microhabitatsand sample collection stationswere drawn. *Lissotriton montandoni* population is slightly different in colour from the other populations of newts observed and further genetic studies are needed to determine genetic differences. Species populations from the genus *Rana* sp. and *Bufo* sp. were also inventoried and assessed. *Rana dalmatina* species, although it is present throughout the valley, is more rare. In the breeding habitats for newts we meet the next species: *Lissotriton montandoni*, *Triturus alpestris* and individuals of the species *Bombina variegata*. We observed isolated, especially in the rocky areas, on the roadside, near deforested areas, individuals of *Vipera berrus, Podarcis muralis*, and even an individual of *Anguis fragilis*.

SECTION OF PLANT BIOLOGY

ORAL PRESENTATIONS

AMPHITHEATER B2: $11^{30} – 13^{30}$; $16^{00} – 19^{00}$

MODERATORS:
Prof. univ. dr. Vasile CRISTEA
Prof. univ. dr. Anca SÂRBU
Conf. univ. dr. Paulina ANASTASIU

ETHNOBOTANY AND ... „ETHNOBOTANICAL PLANTS"

VASILE CRISTEA[1]
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Starting from the present-day reality of Romania on trade and consumption of so-called "ethnobotanical plants", our paper intents to be a new alarm. But, this time, in addition to analysis of psychoactive plants in this trade it makes an analysis of the plant used over time in Romanian traditional magic and witchcraft.This comparative analysis revealed the following conclusions: 1) in Romania there were never used herbs with certain psychotropic effects; 2) all of this type of plant species imported are characterized by increased aggressiveness effects, either by decreased ability to concentrate or by decreasing the discernment etc.; 3) the composition of the mixtures are difficult to identify, often being present various toxic substances; 4) association with alcohol and tobacco enhances the effects of these psychoactive herbs. At the end, a natural question arises: *what kind of children we bequeath to Earth?*

A HISTO-ANATOMICAL COMPARATIVE STUDY ON *RHODIOLA ROSEA* L. IN CONVENTIONAL AND *IN VITRO* CULTURES

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Rhodiola species are well-known and used by the traditional Tibetan medicine for over 1000 years (KYLIN, 2010). LINNÉ stated (in his works from 1748 and 1749) that *R. rosea* is used as an astringent and also to cure hernia, leuchorrea, hysteria and head aches.*Rhodiola rosea* L. was thoroughly studied from the pharmaceutical viewpoint, though the histo-anatomical research is scarce. This is the reason for the species was not included in the histo-anatomical treaties or specialty papers.In view of evincing the histo-anatomical structure of *Rhodiola rosea* L., cross sections were effected through roots, rhizomes, stems and leaves. The comparative research was effected on plants in their native habitat (Ceahlău mountains), and on

plantlets provided *in vitro*. The *Rhodiola rosea* L. plants regenerated *in vitro* displayed, after acclimatization and cultivation in their native environment, an anatomical structure similar to the plants from spontaneous flora, their physiological activity being normal.

STUDIES ON *IN VITRO* BEHAVIOUR OF *OCIMUM SANCTUM* L.

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Ocimum sanctum L. (Holy basil) is one of approx. 160 known species of the genus *Ocimum* (PÂRVU , 2000). They differ both in their morphological characters, but also in terms of their chemical composition (STĂNESCU et al., 2004). Depending on chemotypes, the volatile oil from leaves, flowers and young branches of the species belonging to genus *Ocimum* varies between 0.04 and 0.70%. Due to the volatile oil content some of them are of economic importance, being used in the pharmaceutical, food and cosmetics industries. To observe the behavior of *Ocimum sanctum* in *in vitro* conditions, explants (nodes, apexes, leaf fragments and roots) were used from new plantlets obtained from seeds grown *in vitro*. The reaction of phyto-inoculum's was tested on 14 nutritive variants of basal medium MS.Our observations led to the following conclusions: the morphogenetic response showed by most explants inoculated on nutrient media was caulogenesis followed by rhizogenesis and callusogenesis. The most effective formulas of medium on caulogenesis have been B_{02} (BAP – 0,2 mg/l), B_{05} (0,5- mg/l) and KA_1 (KIN – 1 mg/l + IAA- 0,5 mg/l). Hormonal variants wich have induced the generation of callus were BN_1 (BAP – 1mg/l + NAA -0,5 mg/l), BD_1 (BAP – 1mg/l + 2,4- D -0,5 mg/l şi KN_1 (KIN – 1mg/l + NAA – 0,5 mg/l). On most hormonal formulas rhizogenesis has been identified both in the new regenerated shoots and at the level of callus. Some shoots showed abnormal leaf size and chlorophyll deficiencies.

GERMINATION DYNAMICS AND SEEDLING GROWTH OF *SANGUISORBA OFFICINALIS* L. IN RELATION TO MEADOW MANAGEMENT

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[3]Bonn University, Department of Geobotany and Nature Conservation, Germany
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This paper presents the results of the physiological experiments conducted with the aim to capture some features related to reproductive and regeneration strategy of *Sanguisorba officinalis* (Rosaceae) populations, in correlation with the type of management applied to the studied meadows. These grasslands harbor populations of the rare butterflies *Maculinea nausithous* and *M. teleius* which have as the sole host plant *S. officinalis*. Because the investigated subpopulations of great burnet belong to a landscape subjected to anthropogenic disturbance, studying the effects of different types of land use on the life cycle of these plants (germination, seedling establishment, phenology, etc.) becomes highly important in order to develop appropriate conservation measures. Given the differences between the considered

meadows in terms of land use history and their current usage we expect to find differences between the studied subpopulations of *S. officinalis* regarding the germination dynamics, seedling growth and reproductive fitness of their individuals as a result of the action of different selection pressures (mowing vs. abandonment). The results indicate significant differences between them in terms of average weight of seeds, germination capacity, seed viability and plant survival rate. High values of these parameters were obtained for seeds collected from abandoned meadows, thus the reproductive fitness of *S. officinalis* individuals appears to be higher in the abandoned grasslands than in those regularly mowed.

EFFECTS OF SOME PESTICIDES ON IN VITRO MALE GAMETHOPHYTE PERFORMANCE OF *PRUNUS ARMENIACA* L. (APRICOT) AND *PERSICA VULGARIS* (PEACH) PLANTS

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The aim of this study is to investigate effects of pesticides on in-vitro polen germination and tube length of *Prunus armeniaca* L. and *Persica vulgaris* plants. *Prunus armeniaca* L. and *Persica vulgaris* flowers have been exposed 5 different solutions of Carbendazim and Thiodan pesticides which was diluted with distilled waterby half in a row one by one. Brawbaker Kwack medium was used for pollen germination. Apricot pollen germination percentage rate was decreased to % 39,51 and % 77,67 for tube length; % 44,27 *Persica vulgaris* pollen germination and % 60,94 for tube length with carbendazim pesticide solutions. Also Apricot pollen germination percentage rate was decreased to % 47,62 and % 92,42 for tube length; % 71,41 *Persica vulgaris* pollen germination and % 60,18 for tube length with thiodan pesticide.

EFFECTS OF SOME PESTICIDES ON IN-VITRO POLLEN GERMINATION AND TUBE ELONGATION OF *MALUS SYLVESTRIS* MILLER (APPLE) AND *PRUNUS DOMESTICA* L. (PEARS)

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The toxicity of pesticides was investigated by determining the effect of selected pesticides on pollen germination of *Malus sylvestris* Miller (Apple) and *Prunus domestica* L. (Pears), both *in vitro*. Among the pesticides tested, carbendazim and thiodan were much more toxic to apple and pears pollen germinated on Brewbaker-Kwack medium containing the test pesticides. Toxicity was greater when the pesticides were sprayed on the surface of germination medium. The fertilization of apple and pears were extremely sensitive to all pesticidal sprays when applied 2 hr before or 4 hr after hand pollination. Pollen tube growth and initial fruit set were influenced to a lesser degree when pesticides were applied to pollens on in-vitro germination.

APPLICATIONS OF THE PLANT BIOTECHNOLOGIES IN AGRICULTURE

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[2] State University of Medicine and Pharmacy "Nicolae Testemiţanu", Republic of Moldova

During recent years biotechnological methods and, particularly, techniques *in vitro* have acquired more and more significance in different fields of life. The aim of this study was to elaborate the *in vitro* technologies for different species of plants and analyze their application in horticulture and pharmaceutics. The effect of various component of nutritious medium, physical condition of cultivation, nature of explants on the biomass accumulation and regeneration of whole plant *in vitro* has been studied.The different species of the cultivated and medicinal plants, such as *Chrysantemum balsamita* L., *Dianthus caruophyllus* L.,*Vanilla planifolia* L., *Cattleya hybrida* Cdl., *Morus alba* L., *Mentha piperita* L., *Satureja montana* L., *Glycyrrhiza glabra* L., *Salvia officinalis* L., *Echinocea purpurea* L. Moench., were taken as an experimental material. The results obtained in our investigations showed a significant effect of medium composition, the nature and physiological state of the initial explants. On the basis of conducted research the optimal chemical and physical conditions of cultivation *in vitro* have been worked out. The possibility of the elaborated techniques application to producing new source vegetal material, preservation and micropropagation of valuable elite plants, obtaining virus free plants, producing biologically active substances in callus cultures of medicinal plants have been shown. These results may be used in various biotechnological programs in floriculture, horticulture and pharmaceutics.

LIGNICOLYTIC ENZYMES OF THE BASIDIOMYCETES FOR THE DECOLOURISATION OF THE SYNTHETIC DYES

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Lignicolous basidiomycetes present a remarkable potential in the degradation of different organic pollutants due to their enzyme system. The extracellular enzymes secreted by pure isolates of *Bjerkandera adusta* (Willd.) P. Karst, *Lenzites betulina* (L.) Fr. and *Trametes gibbosa* (Pers.) Fr., were assessed for their potential in the synthetic dyes biodegradation. In this respect, synthetic dyes with a different chemical structure have been used: Methyl blue, Acid fuchsine, Congo red, Toluidine blue and Reactofix N-Blue ME2GL.Colour reduction was quantified by UV-VIS spectroscopy. The crude enzyme extracts, obtained by cultivation of the mycelium in liquid nutrient media containing wheat bran as a nutrient source, under shaking conditions, were tested. The activity of some ligninolythic enzymes involved in this process was determined afterward, ABTS being used as a substrate for laccase. The obtained crude enzyme extracts discoloured the synthetic dyes in different proportions, demonstrating the existence of extracellular enzymes secreted by some macromycetes species, and the fastest discoloured dye was Methyl blue when enzyme extract of *Trametes gibbosa* was used. Laccase activity was very high in the case of *Lenzites betulina* and *Trametes gibbosa* isolates. The results highlight the role of extracellular enzymes in the synthetic dyes biodegradation and the possible use of lignicolous basidiomycetes in the mycoremediation processes.

CULTURE CHARACTERISTICS OF SOME LIGNICOLOUS BASIDIOMYCETES SPECIES THAT SYNTHETIZE VOLATILE ORGANIC COMPOUNDS

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This study aims to identify the lignicolous basidiomycetes species that synthetize volatile organic compounds with potential applications in various industries: food industry, cosmetics and perfumery or in agriculture. These species are among the very few organisms that thanks to their complex enzymatic system can degrade lignin, one of the most abundant and resistant biopolimers. With this purpose in mind, we have collected fruiting bodies from different phytocenoses which were identified by their macroscopic and microscopic characteristics. From the context of the fresh fruiting bodies small fragments of dikaryotic mycelium were extracted and inoculated on classic and adapted synthetic media and incubated in the dark at a temperature of 25°C. 20 species of lignicolous basidiomycetes, belonging to 8 families and 3 orders were isolated in pure culture. The isolates were analyzed *in vitro* and the main characteristics that were observed are: the general aspect of the surface and the reverse of the colonies, the changing in color and the growth rate of the mycelium and also the specific odor which indicates the presence of the organic volatile compounds.

XYLARIA OXYACANTHAE AND *DALDINIA FISSA*, TWO RARE XYLARIACEOUS FUNGI IN ROMANIA

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The order Xylariales Nannf. includes mostly wood inhabiting species, only a few growing on leaves, dung, fruits or are associated with ant and termite nests. *Xylaria oxyacanthae* Tul. & C. Tul. grows on buried and mummified fruits of *Crataegus*. It was found in Romania in 2013 on the fruits of *Crataegus monogyna*, near Breazu village, Iasi County. *Daldinia fissa* Lloyd grows on burnt wood. It is a lesser known species in Romania and was found in 2013 on a stump of *Juglans regia*, in Mironeasa village, Iasi County. Analyzed specimens are deposited in the Herbarium of Alexandru Ioan Cuza University, Faculty of Biology, Iaşi, Romania.

A NEW CONTRIBUTION ON THE VASCULAR FLORA OF ROMANIA

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As a result of our field floristic studies in the recent years (2012-2013), we recorded some new data on the occurrence and chorology of three vascular plant species in Romania. Two of these are alien plants, invasive in many geographic regions of the world,

namely: *Acroptilon repens* (an Asian species, reported as a newcomer in the flora of Romania, in this paper), and *Picris echioides* (a Mediterranean species, which is reported now in new localities). The third species, *Pedicularis sylvatica*, is a quite rare indigenous plant, critically threatened in Romania, reported here for the first time in the flora of Moldavia (eastern Romania).

PRELIMINARY STUDY OF THE FLORA OF BALTA VĂCĂREŞTI (BUCHAREST)

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The floristic research carried out at Balta Văcăreşti, Bucharest provides the scientific foundation for the future Balta Văcăreşti Natural Park. Between October 2012 and October 2013 a total of 279 species and subspecies were identified in the researched area. Around 80%of the plants identified are autochthonous, while 20%are allochthonous, some of them being recognised as invasive species (*Elodea nuttallii*, *Azolla filiculoides*, *Ailanthus altissima*, *Acer negundo*, *Ambrosia artemisiifolia*, *Fraxinus pennsylvanica*, *Parthenocissus inserta*, *Elaeagnus angustifolia* etc.). A large number of plants with LC and DD status in the IUCN Red List was noted, most of which are aquatic and palustre species currently threatened by the reduction or even loss of their habitat (*Cyperus fuscus*, *Cyperus glomeratus*, *Lemna trisulca*, *Hydrocharis morsus-ranae*, *Polygonum amphibium*, *Sparganium erectum*, *Typha laxmannii*, *Utricularia vulgaris*). As regards species threatened at national level, *Wolffia arrhiza*was found at Balta Văcăreşti both in 2012 and 2013. The floristic data recorded/collected so far supports the proposal to declare the area of 190 hectares known as „Balta Văcăreşti" a National Park.

PHEMERANTHUS CONFERTIFLORUS: NEW ALIEN SPECIES TO EUROPE

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Phemeranthus confertiflorus (Montiaceae) is reported as a new alien species to Europe. It is native to North America and used as decorative in rock gardens. The specimens of this species were collected in Bucharest (Romania) and deposited in BUC (voucher no. BUC 400625). We recorded a single population with about 175 individuals established on the north part of an area named "Balta Văcăreşti", on shallow soil pockets (3-8 cm) at the boundary (the angle) between the inclined concrete edge of the dam and the horizontal vegetation layer (grassland). The way of introduction of the plant is unknown, most likely escaped from cultivation. One of the species that accompany *Phemeranthus confertiflorus* is also an alien to Europe – *Portulaca pilosa* and this is the first record of this plant for Romania.

THE DEFINITION OF ADVENTIVE PLANTS

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The author analyzes the definition of adventive plants and proposes a new one in which the words ”deliberate release” are eliminated, and is clarified that adventive plants came naturally or accidentally, independently of the human will, and were not cultivated. The cultivated plants are not adventive and were deliberate introduced and cultivated by humans. This paper presents a new classification of alien plants and a definition of invasive plants.

AQUATIC VEGETATION FROM “PORŢILE DE FIER” NATURAL PARK

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The present study provides an updated inventory and classification of the aquatic vegetation along Danube, in the area of Natural Park Iron Gates (Mehedinți and Caraș Counties). The aquatic vegetation is represented by 23vascular plant association belonging to Lemnetea and Potamogetonetea classes. The study revealed new coenotaxa for the investigated area (eg. Lemno minoris-Azolletum filiculoides, Lemno-Utricullariteum vulgaris, Lemno-Salvinietum natantis, Potamogetonetum lucentis, Myriophyllo-Potamogetonetum lucentis vallisnerietosum, Najadetum marinae, Najadetum minoris, Potamogetonetum pectinati, Elodeetum nuttalii, Elodeetum canadensis, Potamogetonetum perfoliati, Ranunculetum (Batrachietum) trichophylli). The study provides phytosociological tables, analysses of life forms, geoelements, ecological and social behaviour. Two kinds of habitats of european interes have been identified 3150 - natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation and 3160 - natural dystrophic lakes and ponds.

ANALYSIS OF THE ALLIANCE *LEMNION MINORIS* (R. TX. 1955) DE BOLÓS ET MASCLANS 1955 IN ROMANIA

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Class Lemnetea minoris includes unrooted aquatic communities, commonly emergent and rarely submergent, that inhabit stagnant or slow-flowing waters, which are relatively rich in nutrients. Our study analyses all the literature data referring to Romania, concerning the alliance Lemnion minoris (Class Lemnetea minoris, Order Lemnetalia). After performing the floristic composition similarity analysis of 380 relevés, we found that the grouping of the communities do not entirely parallel the original phytosociological classification in the associations of the alliance or even in alliance. Consequently, we propose three hypotheses that focus on phytosociological method limitations, environmental factors variability, and researcher bias, respectively. Analysis of origins of the relevés that deviate from the initial classification will demonstrate the validity of our hypotheses.

THE QUALITATIVE STRUCTURE OF THE FORESTRY ASSOCIATIONS FROM THE MIDDLE STREAM OF THE NIRAJ VALLEY (ROMANIA, MUREŞ COUNTY)

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The aim of this study was the qualitative structure assessment of the forestry associations sustaining a large number of rare or declining bird species, reason that the Special Protection Area was established. These are the first steps in a long term conservation of species and their habitats. Number of vascular plants identified: 50-Salicetum triandrae, 98-Salici-Populetum, 59-Carpino-Fagetum, 118-Carpino-Quercetum petraeae, 75-Genisto tinctoriae-Quercetum petraeae subass. melicetosum uniflorae, 112-Pruno spinosae-Crataegetum. Phanerophytes are dominating, followed by hemicryptophytes. The calculated altitudinal indices show a moderate human impact, excepting riverine forests and willows with a strong anthropogenic pressure. From geographic point of view the Nordic elements dominate. The associations provide shelter for relicts (*Sanicula europaea*, *Cnidium dubium*), Carpathian Endemism (*Dentaria glandulosa*), Romanian Red List and Red Book species (*Neottia nidus-avis*, *Platanthera bifolia*, *Cephalanthera damasonium*, *Lilium martagon*), species with a restricted areal of distribution (*Lathyrus hallersteinii*, *Crocus vernus*, *Helleborus purpurascens*, *Centaurea indurata*), Carpathian endangered species (*Erythronium dens-canis*, *Adonis aestivalis*), IUCN red list specie (*Alnus glutinosa*). The ecologic indices reflect the general and local values of the environmental factors. The diploid index shows the pioneer stage of willow formations. All economic categories were revealed, melliferous plants having the highest values.

DIVERSITY OF SMALL FIELD PONDS FLORA

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The study was carried on 50 small field ponds located inWielkopolska Region. Forty plant communities were distinguished. They were most often represented by pleustonic plants of Lemnetea class. Most of investigated reservoirs with submerged vegetation formed hornwort phytocenoses (Ceratophylletum demersi from Potametea class) while stonewort communities (from Charetea class) were observed very rarely. Among the rush vegetation (class Phragmitetea) Phragmitetum australis and Typhetum latifoliae were dominating. In the studied ponds 180 species of vascular plants, 3 of stonewort and 1 moss were noted. The structure of phytoplankton assemblages in field ponds was very specific, dominated by species adopted for variable and often extreme environmental conditions, which was connected with huge fluctuations of environmental factors in these small-sized water ecosystems. The phytoplankton communities were dominated by Euglenophyta, Chlorophyta (mainly from the

orders Chlorococcales and Volvocales), Bacillariophyceae and Cryptophyceae, preffering high trophic levels and waters rich in organic matter.Examined ponds were frequently inhabited by rare species or being endangered or vulnerable in the local and country scale, for example diatom *Stauroneis phoenicentron* (Nitzsch) Ehrenberg. The analysis of identified plant communities showed that 38 of them are of native origin. Alien species are represented by Canadian waterweed (*Elodea canadensis*) and Sweet flag (*Acorus calamus*). Field ponds are marginal habitats in the agricultural landscape. Regardless of their small area they create conditions in which natural vegetation finds refuge, especially where the intensification of agricultural activities reduces ecological quality of landscape. Amongthe identified syntaxa the most valuable are: Lemnetum gibbae, Charetum fragilis, Charetum vulgaris, Ceratophylletum submersi, Nupharo-Nymphaeetum albae, The lypteridi-Phragmitetum, Cicuto-Caricetum pseudocyperi and Caricetum paniculatae.

PLANTS AND HABITATS WITH CONSERVATION VALUE FROM THE PERIMETER OF ARCUDA DRINKING WATER TREATMENT PLANT

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Preserving the environment and maintaining a balance between society's need for growth and the protection of biodiversity requires education and awareness-raising, but also concrete action. In this respect, the current paper presents an example of an area of economic importance, rich in flora and vegetation with national and European conservation value, where these elements of the natural environment are protected and preserved by users. Arcuda drinking water treatment plant provides a large amount of Bucharest's drinking water, using an area of 136 ha. All the elements required in the water treatment system are located here, the water being collected from the river Arges. Research conducted in 2011-2013 on the flora of the area of Arcuda water plant led to the identification of over 350 taxa – superior plants, six of which have conservation value: two plants threatened at European level, three rare plants and one plant endangered in the Romanian flora. Thanks to research conducted on vegetation in 2012-2013 three Natura 2000 habitats included in the EC Habitats Directive Annex 1 were recognised and described. This paper includes original data regarding flora and vegetation in the perimeter of Arcuda drinking water treatment plant and also a series of concrete initiatives, proposed and in progress, which can ensure the protection and preservation of plants and habitats, in an environment heavily affected by anthropogenic activities.

THE STATUS OF CONSERVATION IN ROMANIA FOR THE PRIORITY NATURA 2000 HABITAT: PANNONIC AND PONTO-SARMATIC SALT-STEPPES AND SALT-MARSHES

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In Romania is now designated the European Network Natura 2000 which include the characterization and distribution in Romania of the habitats of the community interest. One of them is Pannonic and ponto-sarmatic salt steppes and salt marshes.These habitat types are partly of natural origin and partly under a distinct influence of cattle grazing and was included in the Annex I of the Habitats Directive as a priority habitat. The habitat description included the characterization and inventory of habitat in relation with the protection into the Sites of Community Importance as part of the Natura 2000. The analysis was conducted in Romania for all four biogeographical regions in part (Continental, Pannonian, Pontic and Steppic). The reporting obligation under the Article 17 of the Habitats Directive indicates different conservation status, with variation across biogeographic regions. The reporting format uses three classes of Conservation Status and 'Unknown'. The unfavorable category has been split into two classes to allow improvements or deterioration to be reported.There are still significant gaps in knowledge of this priority habitat in Romania. The main scope of analyses is to provide of the appropriate basic management tools and required infrastructure required efficient and effective.

POSTERS

CENTRAL HALL, 1ST FLOOR: 15^{30} – 16^{00}

ANATOMICAL PECULIARITIES OF THE VEGETATIVE ORGANS FROM TWO SPECIES OF THE *GENTIANACEAE* FAMILY

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In this article, two species within the Gentianaceae family: *Gentiana cruciata* L. and *Gentianopsis ciliata* (L.) Ma (*Gentiana ciliata* L., *Gentianella ciliata* (L.) Borkh.) have been studied. Some anatomical features of the two species were highlighted, features which have theoretical value and contribute to the enrichment of the existing data on the anatomy of the Gentianaceae family. The results from the present study confirm the known characteristics from the classical works, but also bring new elements, highlighted in the root bark and leaf epidermis.

MORPHOLOGICAL, PHYSIOLOGICAL AND BIOCHEMICAL RESEARCH ON CULTIVATED SPECIES *SALVIA OFFICINALIS* L.

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The aim of this study is to investigate the morphology of the glandular hairs from the aerial parts of cultivated *Salvia officinalis* L. and the phytochemical profile of sage extracts and correlation with their antimicrobial activity.Histological observations from plant material at different physiological stages, the structure, and site of glandular hairs on the vegetative and reproductive parts of plants were investigated by light microscopy and by scanning electron microscopy (SEM). Five distinct types of glandular hair: one peltate and four capitate were identified in relation to function.Essential oils (EOs) were analysed by gas chromatography–mass spectrometry and 28constituents were identified. The major constituents of the oil of *S. officinalis* were α-thujone (15,64%), camphor(12.69%), sclareol (8.03%), carvacrol (7.14%), α-cariofilen (6.08%), β-cariofilen (3.25%).The present study was conducted also to evaluate „*in vitro*" antimicrobial activity of studied Eos, using the paper disc-diffusion method and broth microdilution test. The disc-diffusion method showed significant zone of lysis against all the pathogens studied (gram-negative and gram-positive bacteria). Results obtained may suggest that the EOs of *S. officinalis* possess antimicrobial activity and therefore, can be used in biotechnological fields and pharmaceutical industry.

NEW ASPECTS OF SEED GERMINATION AND FOLIAR GAS-EXCHANGE PARAMETERS IN *ALYSSUM BORZAEANUM* AND *SILENE THYMIFOLIA* OF AGIGEA MARINE SAND DUNES NATURAL RESERVE

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The aim of this paper consists in updating of ecophysiological studies in *Alyssum borzaeanum* and *Silene thymifolia*, psammophile plants at Agigea Marine Sand Dunes Natural Reserve. Previous researches were concerned in water regime indicators in certain psmmophile and steppe species (Jeanrenaud E., 1981). During the time, the ecological conditions of natural reserve have changed due to the past anthropic intervention; a process of steppe formation was setting up and psammophile species experienced the regression of habitat(Făgăraş, 2011). Foliar gas-exchange parameters (rate of photosynthesis, transpiration, stomatal conductance etc.) were analyzed *in situ* at *Alyssum borzaeanum* and *Silene thymifolia* in flowering phenophase in 2010 and 2011, in different plots. In laboratory, tests were performed on the capacity and speed of germination of seeds collected from the fieldto investigate their viability of endangered species. Based on data we calculated the coefficients of variation for foliar parameters. Coefficients of variations obtained for the studied species ranged depending with microhabitats conditions and phytocoenosis, but the higher values were obtained for the photosynthesis rate and smaller for the transpiration rate.

PINUS CEMBRA L. VOLATILE OILS: INVESTIGATION ON CHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITY

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Volatile oils from different *Pinus* species have different biological effects. However, only a few studies have been reported on *Pinus cembra* L. volatile oils. The purpose of this study was to investigate the composition of the essential oils obtained by hydrodistillation from the needles and twigs of *Pinus cembra* L. grown in Calimani Mountains. The major volatile components of needles oil as determined by GC techniques were α-pinene (69.14%), limonene±β-phellandrene (4.64%), α-cadinene (3.71%). On the other hand, limonene±β-phellandrene (40.97%), α-pinene (24.94%), β-pinene (10.38%) and camphene (5.55%) were the main constituents of twigs volatile oil. Agar-diffusion and broth microdilution assays were used for studying the antimicrobial activity against Gram-positive bacteria (*Staphylococcus aureus* ATCC 25923, *Sarcina lutea* ATCC 9341, *Bacillus cereus* ATCC 14579, *Bacillus subtilis*), Gram-negative bacteria (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853) and yeasts (*Candida albicans* ATCC 10231, *Candida glabrata, Candida sake*). Among all tested strains, *Sarcina lutea* ATCC 9341 showed the highest susceptibility to both volatile oils (MIC = 0.12 mg/mL, MBC = 0.24 mg/mL). The antioxidant activity of cembrane pine volatile oils was evaluated by DPPH and ABTS radicals scavenging assays. Both needles and twigs volatile oils were less active than the positive control, butylated hydroxyanisole.

PHYSIOLOGICAL RESEARCH ON TAXA OF THE *VIOLA* L. GENUS

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This paper aims the variation of the value of some biochemical and physiological foliar parameters for 3 Viola L. species, (*V. alba* Bess., *V. odorata* L., and *V. suavis* Bieb.) spontaneous in different areas of relief, with specific altitudes (plain, plateau, mountain area) in Moldova. Measurements were made during a full ontogenetic cycle of the test plant, in 2013. These were: spectrophotometric determination of the content of assimilating pigments, gravimetric determination of water content and dry matter, as well as the intensity determination of the photo-assimilation and perspiration process, alongside with the level of the substomatic CO2 and the amount of incident light on the leaf; the determinations were made in "in vivo" with the LCi Portable Analysis System. Simultaneously were measured, with the portable thermo-hygrometer TESTO 625, the atmospheric temperature and humidity values

in the immediate proximity of the analyzed leaves. The biochemical and physiological parameters showed more or less pronounced variations,eachinvestigated taxa presenting a specific adaptive response to environmental conditions at their disposal. It was noted that there is a direct correlation between the dynamics of photosynthetic processes and abiotic factors (the amount of incident light).

ESSENTIAL OILS OF *THYMUS COMOSUS* HEUFF. EX GRISEB. (LAMIACEAE) COLLECTED FROM DIFFERENT AREAS

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The factors that determine the composition of the essential oil are numerous and sometimes it is difficult to distinguish since many of them are interdependent. From the category of these factors we can mention seasonal variations, geographic area and growth stages. In the literature there are some data indicating changes in the chemical composition of the essential oil according to the geographical regions in which the plants grow. To highlight any changes that may occur in the chemical composition of volatile oil according to geographical areas, samples of *Thymus comosus* were collected from three different locations with different altitudes. The volatile oil was extracted by hydrodistillation according to the European Pharmacopoeia standards. The separation and the identification of the components have been carried out using GC-MS (gas chromatography coupled with massspectrometry). Our analysis led to the identification of a total of 54 chemical compounds, the largest number being found in *Th. comosus* collected from Brasov (49 compounds) and the lowest number in *Th. comosus* collected from Paltinis at 1400 m (11 compound). In conclusion, our studies reveal the fact that geographical area and the altitude can be contributing factors of the quality and quantity of volatile oil.

EVALUATION OF ANEUGENIC POTENTIAL OF THE FUNGICIDE RIDOMIL IN *ALLIUM CEPA* L.

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The cytogenetic effects exerted by the systemic fungicide Ridomil Gold Plus were studied in root tips of *Allium cepa* L. A progressive concentration- and time-related inhibition of the mitotic activity of meristematic cells was observed. The mitotic index reached a minimal value (0,35%) at highest concentration of Ridomil (1500 ppm). The genotoxicity of the fungicide was measured by analysis of the frequency of chromosomal aberrations. The highest percent of abnormal cells (5,56%) have been determined for the lowest concentration of 100

ppm of Ridomil. The high frequency of sticky chromosomes, c-mitosis and multipolarity indicated that the investigated fungicide caused abnormal DNA condensation, abnormal chromosome coiling and inactivation the spindles, having a major aneugenic potential.

RESEARCH ON THE INFLUENCE OF TWO INSECTICIDES ON THE GAMETOPHYTE OF SOME LEPTOSPORANGIATE PTERIDOPHYTES

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The aim of this research was to study the influence of two insecticides on spore germination and gametophyte differentiation in *Asplenium scolopendrium* and *Athyrium filix-femina*, non-target species of leptosporangiate pteridophytes. The insecticides used are from the neonicotinoids class and they contain thiametoxam 25% (T) and acetamiprid 20% (A). The experimental variants were T1 – 0.005%T, T2 – 0.01%T, T3 – 0.02%T, A1 – 0.005%A, A2 – 0.01%A, A3 – 0.02%A and the Control variant (C) – Knop solution. The spores were cultivated in 50 ml of experimental solutions. The culture vessels were kept in the growth room at controlled temperature, humidity and luminosity levels. The percentage of spore germination was determined after a week. Furthermore, microscopic observations were performed on gametophyte development after 3, 6 and 14 weeks, respectively from the initiation of cultures. Spore germination was influenced by both insecticides. In the case of thiametoxam, germination percentages decreased from 90% for the control variant to 81% in *Athyrium filix-femina* and 66% in *Asplenium scolopendrium* for the T3 variant. The acetamiprid reduces the germination percentages to 0% for the A3 variant in both species tested. The use of acetamiprid leads to delays in gametophyte differentiation. Of the two non-target species tested, *Asplenium scolopendrium* exhibited a more pronounced sensitivity to the effects of insecticides.

THE INFLUENCE OF ZINC ON SEEDS GERMINATION AND SEEDLINGS GROWTH OF *DIANTHUS CHINENSIS* L. SPECIES

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The paper presents the results of a study regarding the influence of treatment with zinc on the seeds germination and seedlings growth of *Dianthus chinensis* L. Zinc used were as sulfate solutions in a concentration of 50 mg/l; 100 mg/l; 200 mg/l; 400 mg/l ; 600 mg/l și 800mg/l. We analyzed the following indicators: the percentage of germinated seeds in different intervals (24 – 168 hours); the length of root and hypocotyl (at 168 hours). The results underline the specific variations of the analysed indicators, depending on the concentrations used for the seeds treatment.168 hours after assembling the experiment, the percentage of germinated seeds has value between 96,66 % and 100 % in the case of the variants of treatment. For the control variant, the percentage of germination registered an average value of 98,88 %.The treatment with zinc sulfate delay the growth of the root (concentrations of 100 mg/l; 200 mg/l; 400 mg/l; 600 mg/l și 800mg/l) and hypocotyl (all concentrations used). The delay effect on the hypocotyl and root length growth is very pronounced in the case of

variants treated with high zinc sulfate concentrations. The unfavourably influence is significant ($p < 0,001$).

EFFECTS OF FOLIAR AND SUBSTRATE APPLICATION OF SELENIUM ON FRUIT QUALITY OF STRAWBERRY

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The amount of selenium in plants is highly dependent upon both the amount and the availability of selenium in the soil and this can vary geographically. An experiment was carried out in Huelva University, Spain with a duration of seven months. 100 strawberry plants *(Fragaria* x *ananassa* Duch.) cv. 'Splendor' were cultivated in a soilless growing system, using polyethylene bags (100 cm x 18 cm x 30 cm) filled with coir fiber as substrate under natural light and temperature. A completely randomized block design (5 treatments x 2 replications) was used. Each replicate consisted of 10 plants. There were five test population: 1) control (non-treated); 2) Se (IV) in substrate; 3) Se(IV) foliar (sprayed on leaves); 4) Se(VI) in substrate; 5) Se(VI) foliar. We have analysed the content of chlorophyll, the number of leaves, crown diameter, weight, firmness, pH, ºBrix and titratable acidity. The aim of our study was to evaluate quantitatively the influence of foliar and substrate application of Se on fruit quality of strawberry plants in a soilless growing system. The results show that there are no statistically significant differences in average fruit weight and firmness among treatments and control. Treatments differed significantly in the content of chlorophyll and crown diameter: Se(IV) foliar had the highest values. Se(IV) in substrate had the highest number of leaves followed by Se (IV) foliar. Se(VI) in the substrate had the highest total soluble solid content.

EVALUATION OF THE ANTIOXIDANT ACTIVITY OF EIGHT DIFFERENT WILD MUSHROOM SPECIES

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The ethanolic extracts of *Russula xerampelina*, *Russula mustelina*, *Russula cyanoxantha*, *Ramaria largentii*, *Boletus edulis*, *Cantharellus cibarius, Lactarius salmonicolor* and *Armillaria mellea* were investigated for their antioxidant activities. The antioxidant activity was evaluated by several in vitro assays: 1,1-diphenyl-2-picrylhydrazyl (DPPH) and 2,2'-azinobis(3-ethylbenzthiazoline-6-sulfonic acid) diammonium salt (ABTS) radicals scavenging assays, reducing power assay, ferrous ions chelating assay and 15-lipoxygenase inhibition assay. Total phenol content was quantified by Folin-Ciocalteu method. The ethanolic extracts showed different antioxidant potentials. *Boletus edulis* extract had the highest DPPH radical

scavenging activity (EC_{50} = 410.97±0.25 μg/mL), ABTS radical cation scavenging activity (EC_{50} = 124.77±2.80 μg/mL) and reducing power (EC_{50} = 98.54±0.55 μg/mL). Russula mustelina extract showed the highest ferrous ions chelating ability (EC_{50} = 115.2±0.5 μg/mL) and 15-lipoxygenase inhibition (EC_{50} = 203.2±1.3 μg/mL). Among all tested extracts, Boletus edulis extract had the highest content in total phenolics (35.83±0.92 mg/g). These results suggest that *Boletus edulis* and *Russula mustelina* could be used as ingredients in functional foods due to their capacity to reduce oxidative stress.

ASSESSMENT OF DEPOSIT MYCOFLORA ACTION ON *TRITICUM AESTIVUM* SEEDS FROM SUCEAVA GENEBANK'S COLLECTION

DIANA BATÎR RUSU*

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This study consisted in a phytopathological evaluation of epiphyte and endophyte mycological flora which appeared on *Triticum aestivum* seeds placed on two types of substrates (CGA medium and blotting paper). The 30 populations of wheat resulted from the active collection of Suceava Genebank and conserved for different time intervals (8, 15 and 18 years), in controlled atmosphere storages (T=+4^{0}C; relative air humidity = 30 - 40%).Micromycets were evaluated by counting the infected seeds and the attack frequency was expressed as a percentage, by visual estimation of seeds surface. The target objectives of the study were to establish the influence of the conservation period on the activity of micromycets placed on stored seeds and to settle the influence of the substrate type - CGA medium (potato - dextrose - agar) and blotting paper - on the development of fungal pathogens. Seeds studied, placed on CGA medium and blotting paper substrate, after incubation, showed a different degree of infection by fungal pathogens, depending on the type of substrate and the age of seeds. The conservation period influenced fungal pathogens longevity, meaning that the more it's higher, the level of infection is reduced. On CGA medium, compared with blotting paper substrate, after incubation period, was isolated a greater diversity of fungal pathogens.

THE INFLUENCE OF THE CONSERVATION PERIOD ON THE ACTIVITY OF MYCOLOGICAL FLORA ON *ZEA MAYS* SEEDS FROM SUCEAVA GENEBANK'S COLLECTION

DIANA BATÎR RUSU*

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The purposes of the study were to establish the influence of the conservation period on the activity of micromycets placed on stored seeds and to settle the influence of the substrate type - CGA medium (potato - dextrose - agar) and blotting paper - on the development of fungal pathogens. This study consisted in a phytopathological evaluation of epiphyte and endophyte mycological flora which appeared on *Zea mays* seeds placed on two types of substrates (CGA medium and blotting paper). The 30 populations of corn resulted from the active collection of Suceava Genebank and conserved for different time intervals (8and 17 years), in controlled atmosphere storages (T=+4^{0}C; relative air humidity = 30 - 40%). Seeds studied, placed on CGA medium and blotting paper substrate, after incubation, showed a different degree of infection by fungal pathogens, depending on the type of substrate and the age of seeds. Micromycets were evaluated by counting the infected seeds and the attack frequency was expressed as a percentage, by visual estimation of seeds surface. The

conservation period influenced fungal pathogens longevity, meaning that the more it's higher, the level of infection is reduced. On CGA medium, compared with blotting paper substrate, after incubation period, was isolated a greater diversity of fungal pathogens. The experimental results of this study answered the following objectives: -identification of fungal microorganisms according to storage period of seeds; -identification of fungal genera depending on the type of substrate used; -setting of correlations between micromycets identified evolution, seed storage periods and the type of substrate used.

DIAGNOSTIC FEATURES OF FILAMENTOUS GREEN ALGAE - DIFFICULTIES AND SIMPLIFY IN THE SPECIES IDENTIFICATION

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Traditional systematic of green algae are based on features such as: morphology, life history, reproductive strategies and biosynthetic products. There is a lot of factors, which influence morphometric features of algae cells and thalli include individuality of species, stage of development, seasonality, nutrient contents in the water and presence of all sorts of particles (biotic, abiotic) on the surface. Due to morphological and phenotypical plasticity many of filamentous green algae are difficult to identification. The aim of this study was shown which feature of FGA are simple and which are difficult to taxonomical identification.Some genera of filamentous green algae (FGA) have specialized features, eg: branching is a characteristic of *Cladophora species*, *Oedogonium* divide have stacks of old cell walls (called apical caps) at the cell apex, whereas spiral chloroplasts is typical for Spirogyra. At genera level is rare make mistake, but it happens often, when we try to determine the species name of FGA. During the study samples of FGA were collected from different water ecosystems: lake (Malta reservoir), pond (Konojad village) and river (Mogilnica) in summer in the 2013 from Wielkopolska region. Species identification were examined using a light microscope with the built camera taking into account shape and composition of cells including number of pyrenoids (staining Lugol's solution) and nucleus (acetocarmine stain).Taxonomical analysis were based on morphological features: shape and length of thalli, branching, shape and size of cells (apical, basal) and thalli color. Results of this research show multinucleated (mean diameter 7 µm) with numerous of pyrenoids (9-12 µm diameter) *Cladophora* cells, and *Spirogyra* filaments with different number and shape of spiral chloroplasts. Also vegetative filaments of Oedogonium were observed and measured. We determined 3 taxa of *Cladophora*, 4 taxa of *Spirogyra* and 2 of *Oedogonium*, but only *Cladophora* species were taxonomical identified. It was concluded, that taxonomical diagnostic of filamentous green algae is difficult based only on the morphometrical characteristic of vegetative cells.

SPACE DISTRIBUTION OF METAPHYTON SPECIES AGAINST A BACKGROUND OF ENVIRONMENTAL FACTORS IN WATER RESERVOIRS IN POLAND

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Potential factors contributing to the formation of metaphyton include the water reservoir's morphometry, type of substratum and physicochemical conditions of the habitat. This work attempts to describe the geographical distribution of individual filamentous algae species in Poland taking into account the trophic and ecological characteristics based on the long-term of own research and available literature data. Filamentous algae attached to a substratum as well as forming free floated patches (loose or dense mats) and crusts were used to model the metaphyton occurrence in all types of water reservoirs, providing a basis for prepare maps of the individual species distribution. Of the representatives of the metaphyton species in the Wielkopolska region, *Cladophora* has the greatest time-spatial range for it grows luxuriantly in all types of water reservoirs. Elsewhere in Poland it grows most commonly in shallow lakes' locations. In the typical metaphyton mat, *Cladophora* and *Oedogonium* occur with a 70-100% frequency, *Spirogyra*, *Mougeotia* and *Rhizoclonium* are also present, but with smaller frequency.However, *Oedogonium* often occurs independently of *Cladophora*. Similarly, *Spirogyra* and *Mougeotia* may grow in communities independent of *Cladophora*, indicating their ecological differences. Highest metaphyton mats concentrations were occurred in summer (June - July) and decreased into autumn, with the lowest numbers in the spring. The early summer period provided more stable water conditions with the major filamentous algae growth situated between two periods of heavy precipitation (spring) and during warmest water temperature (August). According to our studies geographical tolerance of the filamentous green algae species is correlated with the seasonal variations in temperature that it can withstand and the duration of the growing season, while the nutrients concentration does not appear to limit their distribution in Poland. Furthermore, the occurrence of most species in any particular locality seems to be governed mainly by the variability of water depth rather than by the type of substratum.

THE REVISION OF THE GENUS *AJUGA* L. FROM THE HERBARIUM OF "ALEXANDRU IOAN CUZA" UNIVERSITY OF IAŞI

IRINA IRIMIA*

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On the basis of the material that is in the Herbarium of "Alexandru Ioan Cuza" University of Iaşi, this study presents the taxonomic and chorologic revision of the genus *Ajuga*. There were revised 276 herbarium sheets with specimens collected from different regions from Romania in the period 1890 – 2004. Every sheet of herbarium was reviewed (revised and / or determined) using the classical method of determination. In our collection there are 5 taxa (*A. chamaepytis, A. genevensis, A. laxmannii, A. reptans, A. salicifolia*).The chorological aspects included in this study will provide to specialists important data regarding the distribution of these species in Romania.Also, it was analyzed the dynamics of specimens

entry into the herbarium collection. The processed material was inserted into the herbarium database.

DIVERSITY AND ENVIRONMENTAL INDICATOR VALUE OF NON-POLLEN PALYNOMORPHS FROM PEAT SEDIMENTS OF THE HAUTES FAGNES PLATEAU (BELGIUM)

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Until present, hundreds of non-pollen palynomorphs (NPP) have been described, many of which being identified as being fungi spores, cyanobacteria, algae remains, as well as plant fragments (epidermis cells, leaf fragments) or invertebrate fragments. Other types are still indeterminate. NPP are omnipresent in all sorts of habitats and can be abundant in different types of deposits. Times and often, the NPP analysis constitutes an additional argument in favor of the palynological analysis, but complementary information is often pleaded, the even more detailed description of the palaeoenvironment and the anthropic influence exerted on it being thus possible. Here, we report the NPPassemblages recorded in a core which has been taken in the peat sediments of the Hautes-Fagnes Plateau (Belgium). 15 types of non-pollen palynomorphs were identified, majority of them being fungi spores. Fragments of other origin than vegetal have also been determined (for example crustacean fragments). The obtained results highlight the palaeoecological conditions and also aspects regarding possible human presence in the studied area.

SECTION OF MOLECULAR INTERACTIONS IN THE LIVING WORLD

ORAL PRESENTATIONS

HALL B 339: $11^{30} – 13^{30}$; $16^{00} – 19^{00}$

MODERATORS:
Prof. univ. dr. Liliana FOIA
Prof. univ. dr. Anca MIRON

INTERDEPENDENCE BETWEEN HUMAN BEINGS' HEALTH AND BIODIVERSITY

VIORICA E.UNGUREANU
President of International Association of Medicine and Travet "Ernest M.Ungureanu",
M.c.Academy of Scientists, Romania

"The nature of human beings imposes respect of Nature, of which the human being is an integrant part."

Viorica E. Ungureanu

Human Being and the Earth system are in a very strong connection at visible and invisible levels. The progress of human knowledge in time has determined the continuous evolution of human society. That has been accompanied both by benefits and by major negative effects on life, which are obvious at present at the planetary level. The reports of UNO and of WHO sound the alarm and call for the change of strategies both locally and globally. It is obvious at present that, through its activities, humankind pollutes the water, air, food, and soil. Not only the food but also the products used for body care and even the medicines contain polluting substances that affect human health and life. What the reports do not mentionis the profound spiritual pollution, through which the most precious human treasures are subminated: the soul, the heart, the mind.Informatic pollution, moral pollution, the immense amount of news with a negative impact, the magazines and books whose content is far from being moral, the exacerbation of senses, the rush for pleasures and for sensational experiences all represent the most serious pollution of the human being because they subminate from inside. Thus the future of humankind has become very problematic. It is time to set alarm bells ringing and to act for the salvation of humans from the negative impact of their spiritual choices, which are not always beneficial. It is time for humankind to remember that there is an ethics of living which acts at all levels. There is an order and and ethics of the Universe that have to be respected , by respecting them we respect life.

CYTOGENETIC ANALYSES ON SEVERAL *IN VITRO* REGENERANTS OFMELISSA OFFICINALIS L.

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Melissa officinalis (lemon balm) is a medicinal plant used by herbal medicine for more than 2000 years for its positive therapeutic actions, mostly on the nervous and digestive systems.There were analyzed several regenerants of lemon balm that were provided in vitro on hormone-free MS medium (control variant), and on its variants enriched with growth regulators (medium variants A2, KN1, BG1). Regarding the mitotic activity, it was ascertained that the regenerants registered a mitotic index that ranged between 39.73 to 43.12 for the variants comprising growth regulators, compared to 46.18 in control. There was noticed a moderate to high frequency of cells with chromosomal aberrations in the mitosis of regenerants' root meristems, that reached 12.12% in control, and exceeded 27 % in A2 variant. The distribution of cells on various phases of mitotic division does not alter compared to control plants; the highest frequency is held by prophases, followed by metaphases and telophases, and the lowest by anaphases.Among all the chromosomal aberrations identified in the *in vitro* regenerants, the highest frequency has been registered by ana-telophases (A-T) with bridges, followed by A-T with delayed chromosomes, and then A-T with fragments. The ratio of aberrations was influenced by the hormone formula of the regenerants. Microscopic observations have indicated A-T with complex aberrations Cytogenetic abnormalities have been frequently identified in other phases of mitosis: in metaphase and in interphase. The high percentage of cells with chromosomal aberrations in the root meristems of the *in vitro* regenerated plants confirms, once more, the fact that this culture method is accompanied by a high variability at the cytogenetic level, important for the practical valorization.

CELL CYCLE PROGRESSION IN NORMAL AND CANCEROUS CELLS EXPOSED TO X-RAYS CARRIED BY A PHOTON BEAM

GABRIELA VOCHITA[1*], DANIELA GHERGHEL[1], ELENA TRUTĂ[1],EVGENY ALEKSANDROVICH KRASAVIN[2], KARACHUKYULIA[2], PINCU ROTINBERG[1], COSMIN-TEODOR MIHAI[1]

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The effects of the X-rays generated by a medical linear particle accelerator on the progression of the cell cycle in cancerous HeLa cells and normal Vero cells were evaluated in order to asses the late consequences of the 1 and 3 Gy ionizing radiations on the progression of the cell cycle. The analysis of the cell cycle was performed by flow cytometric method, using DAPI for the staining. Exposure of the cancerous and normal cells to 1 Gy and 3 Gy determined after 96 hours, as compared with the control, a reduction of the frequency of the apoptotic and G1 phase cells concomitantly with increase of the frequency of the cells in S and G2/M phase. Analysis of 120 hours cells revealed an increased frequency of apoptotic and G1 cells, a reduction of the S and G2/M cells in the case of Vero cells, while the HeLa cells

presented a moderate block in G2 phase and an increase of the frequency of the apoptotic cells.The exposure of the normal and cancerous cells to the X-rays altered the progression of the cell cycle in both cell lines, a prolonged effect being registered in the case of the cancerous cells.

IN VITRO INVESTIGATION OF THE EFFECTS OF X-RAYS CARRIED BY A PHOTON BEAM UPON THE VIABILITY AND APOPTOTIC PROCESS IN NORMAL AND CANCEROUS CELLS

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Our lifestyle and the consistent presence of the radiation pollution in our environment (the use of nuclear energy, atomic tests, exposure to cosmic radiations along plane flights, natural radiation fund, radiological investigations etc.) have elevated in the last decades the risk of triggering different diseases and imposed the reevaluation of the long time effects. The effects of the X-rays carried out in a photon beam produced by a medical linear particle accelerator on the viability and apoptotic processes in cancerous HeLa cells and normal Vero cells were evaluated in order to asses the late consequences (after 96 and 120 hours after exposure) of the 1 and 3 Gy ionizing radiations on the viability and apoptosis of the exposed cells. The cell viability was assessed with 7AAD and the apoptosis with Annexin V - FITC by flow cytometry. Viability of the HeLa cells, after 96 and 120 hours from exposure, has significantly decreased, while the viability of the normal cells did not presented alterations in both treatment conditions (1 Gy and 3 Gy). The apoptosis process is not significantly present in both types of cells exposed to X rays carried by a photon beam (1 Gy and 3 Gy).

INTERFERENCE OF THE EXTREMELY LOW-FREQUENCY ELECTROMAGNETIC FIELD WITH HELATUMORCELLSPROGRESSION

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The extremely low-frequency (ELF) waves are electromagnetic radiations with frequency between 3-300 Hz. Recently, some research has highlighted the possibility of using electromagnetic fields in the treatment of cancer. In this informational background, we decided to investigate the effects of an extremely low-frequency electromagnetic field (ELF-EF), applied either continuously (EFc) or discontinuously (EFdc), upon the tumor cell proliferation. The extremely low-frequency electromagnetic field was generated by a pair of Helmholtz coils, (100 Hz, 5.5 mT) and applied once, 45 minutes, to the HeLa neoplastic cells cultures, derived from a human cervix epitheloid carcinoma. The cell proliferation process was registered byflowcytometric assaywith CFSE. The results were statistically analyzed using Student's"t" test. In our experimental conditions, the fluorescence profile registered on the treated samples was similarly to that of the unirradiated control cultures, statistical differences being not recorded after the continuous and discontinuous electromagnetic treatment. Therefore, the

extremely low-frequency electromagnetic field did not significantly interfere with the proliferation process of HeLa tumor cells, the signaled cytostatic action of this physical agent being a probable consequence of another molecular mechanisms of action of the electromagnetic radiations, which will be studied by us in future investigations.

PAO1 OF *ARTHROBACTER NICOTINOVORANS* AND THE SPREAD OF CATABOLIC TRAITS BY HORIZONTAL GENE TRANSFER IN GRAM-POSITIVE SOIL BACTERIA

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The 165 kb megaplasmid pAO1 of *Arthrobacter nicotinovorans* carries two large gene-clusters, one involved in nicotine catabolism (*nic*-gene cluster) and one in carbohydrate utilization (*ch*-gene cluster). Here we propose that both gene clusters were acquired by *A. nicotinovorans* by horizontal gene transfer mediated by pAO1. Protein-protein Blast search showed that none of the published *Arthrobacter* genomes contains *nic*-genes, but *Rhodococcus opacus* carries on its chromosome a *nic*-gene cluster highly similar to that of pAO1. Analysis of the *nic*-genes in the two species suggested a recombination event between their *nic*-gene clusters. Apparently there was a gene exchange between pAO1, or a precursor plasmid, and a *nic*-gene cluster of an as yet unidentified *Arthrobacter* specie or other soil bacterium, possibly related to *Rhodococcus*, leading to the transfer by pAO1 of this catabolic trait to *A. nicotinovorans*. Analysis of the pAO1 *ch*-gene cluster revealed a virtually identical counterpart on the chromosome of *A. phenanthrenivorans*. Moreover, the sequence analysis of the genes flanking the *ch*-gene cluster suggested that it was acquired by pAO1 by Xer-related site directed recombination and transferred via the plasmid to *A. nicotinovorans*. The G + C content, the level of sequence identity, gene co-linearity of *nic*- and *ch*-gene clusters as well as the signs of recombination events clearly supports the notion of pAO1 and its precursor plasmids as vehicles in HGT among Gram + soil bacteria.

MECHANISMS OF INORGANIC PHOSPHATE SOLUBILIZATION USED BY RUNNER BEAN RHIZOSPHERIC BACTERIA

GABRIELA MIHALACHE*[1], MARIUS MIHĂŞAN[1], MARIUS ŞTEFAN[1]

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Soil microorganisms, especially rhizobacteria, play a key role in soil phosphorus (P) dynamics and subsequent availability of phosphate to plants. The main purpose was to assess the efficiency of bacterial strains, isolated from runner bean rhizosphere, to solubilize inorganic phosphates and to identify the mechanisms involved in this processes. Qualitative screening was performed on potato-dextrose yeast extract agar (PDYA) containing $CaHPO_4$ as insoluble inorganic source of P. Quantitative colorimetric estimation of mobilised phosphate were made in Pikovskaya liquid medium containing $Ca_3(PO_4)_2$ as insoluble inorganic form of P, using the method of Nautiyal (1999). The mechanisms used by rhizobacterial strains for phosphate

solubilization were detected by measuring the pH of the medium, by determining the acid and alkaline phosphatases activities using the method of (Juma and Tabatabai, 1988) and by identifying the organic acids released in the culture through HPLC analysis. From a total of 25 rhizobacterial isolates tested for P solubilisation, 10 formed visible dissolution haloes on PDYA. Among them, 4 strains had the highest capacity to solubilize tricalcium phosphate. Solubilization of tricalcium phosphate by all isolates coincided with a decrease in medium pH due to the production of organic acids produced by 3 out of 4 strains: izocitric, lactic and tartric acids and the synthesis of acid and alkaline phosphatase by one strain.

BIOSORPTION OF COPPER (II) IONSUSING THE *RHIZOBIUM PHASEOLI*

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Biosorption is a technique that can be used for the removal of pollutants from waters, especially those that are not easily biodegradable such as metals and dyes. A variety of biomaterials are known to bind these pollutants, including bacteria, fungi, algae, and industrial and agricultural wastes.In thıs study, two adsorptive isolates belonging to *Rhizobium phaseoli* and the strain adsorptive which is called as *Rhizobium phaseoli* CIAT 899 have been used in order to remove Cu^{2+} ion from equeous from solution. In biosorption study, the effect of the initial Cu^{2} ion concentration, pH and time parameters have been examined and the capacities of biosorption values have been measured. Experimental results showed the maximum uptake of Cu^{2+} (53.35 mg/lt) was obtained at pH 3.0 by *Rhizobium phaseoli* 23F at 90. minute. On the other hand, minimum metal uptake was determined at pH 4.0 by *Rhizobium phaseoli* 23F at 120. minute. Optimum biosorbtion pH value was determined as 3.0 for all bacteria.

POSTERS

CENTRAL HALL, 1ST FLOOR: 15^{30} – 16^{00}

THE RELATIONSHIP BETWEEN HUMAN PAPILLOMA VIRUSES AND CERVICAL CARCINOMA

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Cervical carcinoma with squamous cells has many of the characteristics of avenereal disease: high incidence (over 500.000 cases every year), an increased frequency for the women with multiple sex partners and the presence of one of the papillomavirus genotypes with a high carcinogenic risk (HPV 16, 18, 31 and 45) in 100% of the cases. Material and methods**.**In the period of time 2001-2012, in the Department of Obstetrics and Gynecology belonging to “Sf.

Apostol Andrei" EmergencyHospital in Galaţi, 5047 women were hospitalized under the suspicion of having cervical neoplasia.As part of the screening programme, the women belonging to the high risk group are tested for HPV by using Hybrid Capture 2 (HC2). Results and discussions**.**The seropositive women's risk of having a persistent HPV infection is 7 times higher than in the case of the seronegative ones, with the same age. This risk is double for the women with CD4 lymphocytes below 200/mmc.Infection with cancer-causing HPV types is limited to the epithelium of the uterine exocervix and it does not spread to other parts of the body. Conclusions**.** Cervical cancer is caused by the oncogenic types of HPV, types 16 and 18 being responsible for over 70% of the cases. It represents the second cause of mortality by cancer for the women between 15 and 44 years old. Anti-HPV vaccination comes as a partner of the screening programmes aiming to reduce the incidence and mortality by cervical cancer.

PREECLAMPSIA AND MORPHOLOGICAL EVIDENCE OF ANATOMOPATHOLOGICAL LESIONS

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Preeclampsia is an obstetric complication that is characterized through hypertension and proteinuria which appear after week 20 of pregnancy, more frequent in the last week before labour. The pregnancy can induce or worsen hypertension; the increase in systolic blood pressure with 30 mmHg and/or the diastolic blood pressure with 15 mmHg represents a risk factor in preeclampsia. The prediction of preeclampsia has a prognostic of over 75% if the data is correlated with the pulsatility index obtained by uterine artery Doppler procedure and is also correlated with the cranio-caudal length of the fetus.

HIGH FAT DIET INDUCED - ALTERATIONS OF PULMONARY ARTERIES REACTIVITY ARE NOT DEPENDENT BY OBESITY

IRINA LUCIANA DUMITRIU[1], RUXANDRA MĂDĂLINA OGHINICIUC[1], LUMINITA GINA VATA[1], LILIANA FOIA[2], LUCIAN GORGAN[3], BOGDAN GURZU[1]✶

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Our previous data revealed the inflammatory effects of high fat diet (HFD) in a pulmonary allergic disease experimental model. In the present study we assessed the angiotensin participation in pulmonary vessels reactivity disturbance from obese resistant (OR) and obesity prone (OP) rats fed with standard chow diet or HFD. The contractile response to

phenylephrine (Phe) were analyzed in order to assess the pulmonary arteries reactivity. Although Phe-induced contraction was enhanced by HFD in both OR and OP, pulmonary artery reactivity to Phe is significantly higher in OP. Pretreatment with angiotensinogen amplify the Phe - induced contraction only in OR rats. Losartan has inhibitory effects only in OP rats. After ovalbumin (OVA) - sensitization there were no differences between OP and OR rats from the point of view of the contractile response to Phe alone or after pretreatment with agiotensinogen/losartan. Our data indicate that HFD - induced functional alteration on pulmonary arteries are not totally related to obesity. Furthermore, taking into account the published data, we could suggest the possible involvement of angiotensin on the increased reactivity of pulmonary arteries associated to the inflammatory status induced by HFD.

ACTIVITIES OF ENZYMATIC SYSTEMS INVOLVED IN THE METABOLISM OF CORN PLANTS DEVELOPED UNDER THE INFLUENCE OF SOME NATURAL PRODUCTS

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In this experiment we studied the role of deuterium depleted water and spruce bark and hemp shives polyphenolic extract in activity of some enzymatic systems involved in the metabolism of plants of maize (*Zea mays* L.). Thus, we evaluated the activity of peroxidase, catalase and superoxide dismutase in the leaves and roots of maize, developed in the experimental variants. It was found that the peroxidase activity decreases in the roots treated with deuterium depleted water and increases when the plants are treated with the polyphenolic extract derived from hemp shives. Also, was a increase in catalase activity in maize plants treated with polyphenolic extract from spruce bark and hemp shives.

IN VITRO EFFECT OF SOME BYPRODUCTS ON *LAVANDULA ANGUSTIFOLIA*MILL. EXPLANT GROWTH

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After many studies, it was observed that lavender has many therapeutic effects, such as sedation, activities spasmolytic, antiviral, antibacterial. Thus, given the importance of lavender in different areas of human life, in the present study, we studied the influence of natural products bioregulatoare acting on some lavender stems explants. These explants were inoculated in vitro on MS nutrient media. In these culture media were added polyphenolic extracts obtained from spruce bark and hemp shives, and evaluated their influence on lavender stems explants. The results obtained were compared with those obtained for the control variant, where MS culture medium was used as standard. It was found that the addition of aqueous extract from spruce bark of concentration of 130 mg GAE / L, in the growth of explants of *Lavandula angustifolia* Mill, an increase in the elongation of the main stem, number of leaves

formed, the amount of photoassimilating pigments synthesized and causes the phenomenon of shoots formation. At a higher concentration of the extract (26 mgGAE/100g) values are lower.

MORPHOLOGICAL, BIOCHEMICAL AND PHYSIOLOGICAL CHANGES AT FOLIAR LEVEL INDUCED BY ATMOSPHERIC POLLUTANTS ON SAMPLES OF *AESCULUS HIPPOCASTANUM* L. FROM IAŞI CITY AREA

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We present in this paper some morphological changes (presence and size of the surface normal and necrotic) , biochemical (water content and dry matter content of photo-assimilating pigments) and physiological (photosynthetic and transpiration processes intensity) induced at foliar level by some pollutants in samples of Aesculus hippocastanum L. cultivated for ornamental purposes across the five air quality monitoring stations in Iasi city area . These stations monitor the presence of gaseous pollutants (sulfur dioxide, carbon dioxide, nitrogen dioxide, ozone) and solids (powders prone to sedimentation). Measurements were made in vivo", as well on fresh material covering vegetation periods of years 2012 and 2013. The results are supporting the fact that the increased values of dry matter content do not correlate directly with the degree of necrosis of the leaves , which entitles us to believe that the biochemical and physiological modifications made by pollutants at this level are fast followed by defoliation events. The most critical situation is found at the samples of Aesculus hippocastanum L. grown at the site of the traffic station Podul de Piatră, where SO_2 and particulate solids in suspension are the predominating pollutants.

SALINITY EFFECT ON TOTAL POLYPHENOLS AND FLAVONOIDS CONTENTS OF NINE HALOPHYTE SPECIES FROM DOBROGEA REGION

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Halophytes have been the subject of different studies about the mechanisms of salt tolerance at the biochemical level. Halophytes developed different mechanisms for adapting to abiotic stress action, by increasing antioxidant activity. In this paper are presented the results of a comparative study concerning the polyphenol and flavonoid contents from the following halophyte species: *Plantago lanceolata* L., *P. coronopus* L., *P. maritima* L., *Spergularia media* (L.) C. Presl., *Atriplex litoralis* L., *Suaeda maritima* (L.) Dumort., *Salicornia europeae* L., *Bassia sedoides* (Pall.) Asch. and *Limonium gmelinii* (Willd.) O. Kuntze. These halophytes belonging to different botanical families were collected in summer of 2013 from saline habitats located in Sulina, Murighiol and Histria (Tulcea country). The level of non-enzymatic antioxidant compounds studied show various responses according to species and collecting area.

ASPECTS OF "IN VITRO" CULTIVATION OF *DIGITALIS PURPUREA* L.

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Digitalis purpurea L (Scrophulariaceae) is a well-known medicinal plant. It is a source of digitoxin, a glycoside used in the drug digitalis, which has been used as a heart stimulant. The main compounds in *Digitalis purpurea* L. are cardiac glycosides, which are present in all parts of the plant. The initiation of "in vitro" cultures of *Digitalis purpurea* L aimed not only to assess the dedifferentiation capacity depending on explant origin and growth regulators, but also to develop a multiplication protocol based on direct regeneration from shoots explants, followed by roots development induction.The proliferative capacity was tested on leaf and shoots explants, cultivated on Murashige-Skoog basal medium, testing two auxins: 2.4 diclorphenoxiacetic acid (2,4D) and indolylacetic acid (IAA) in combination with a cytokinine: kinetine (K).The biomass accumulation was measured by regular weighing on analytical balance. Regenerative capacity was evaluated on shoots explants, cultivated on different inductive variants of MS medium. Benzylaminopurine (1mg/l) and in combination with 2.4 diclorphenoxiacetic acid (0,5 mg/l) stimulated growth and multiplication of shoots. Root system development was achieved on MS medium without growth regulators.

MITHOSYS ANA-THELOPHASE CHROMOSOMAL ABERRATIONS INDUCED BY UV IRRADIATION UNDER ANTIOXIDATIVE PROTECTION OF VITAMIN C, BY *CALENDULA OFFICINALIS* L.

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Due to the stratospheric ozone lay depletion, the researches focused in the last decades on the study of solar radiations reaching Earth. The target of the study was to establish the biological response of *Calendula officinalis*L. to UV irradiation, under the antioxidative protection of vitamin C, (which helps next to UV induced antioxidative enzymes, in the protection against a large variety of products capable to induce free radicals formation). Our investigations were focused on detecting chromosomal aberrations which occurs during cells in division in meristemal root tips, under UV irradiation for 15 or 30 minutes, in the presence or absence of vitamin C, reported to the non irradiated control samples. Regarding the mitotic index, it could be noticed an inhibition of cell division frequency under UV stress for all irradiated variants, not depending of presence or absence of vitamin C, positively correlated with the increase of irradiation period.Maximal chromosomal aberrations frequency, were induced by UV radiations in the root tips of seedlings germinated in the absence of vitamin C, decreasing in the presence of vitamin C, due to the antioxidant protective role of this. In the absence of UV irradiation, the chromosomal aberrations frequency was lower comparing with irradiated variants, for all seedlings, even if germinated in the presence or absence of vitamin C. Between chromosomal aberrations were detected: bridges, expulsed and retardate chromosomes, fragments.

GENETIC STUDIES REGARDING CONGENITAL CARDIOVASCULAR ANOMALIES

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Cardiovascular anomalies are the most frequent human congenital malformations and represent a dramatic situation at birth, which involves important functional, psychological and social impairment that motivates the necessity of a thorough genetic study in the view of genetic counselling. We have studied the families of 100 children with cardiovascular anomalies, both syndromic and unsyndromic, born during the years 1996-2005 in Iași County. After performing family inquiries, drawing pedigrees and analysing karyotypes, we determined the recurrence risks in accordance with the ethiology: monogenic, chromosomal syndromes or multifactorial inheritance; recurrence risks varied between 2 – 5% for the majority of cases (68%) which corresponds to a small risk degree; in 26% of cases the risk varied between 6 – 15% which corresponds to a medium risk degree and only in 6% of cases (all syndromic) the risks varied between 25 – 100% (big and major risk).

MYELOPROLIFERATIVE SYNDROMES AND DETECTION OF JAK2 GENE MUTATION BY REAL-TIME PCR

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Introduction: Mutations in JAK2 gene were first discovered in 2005 and since then were correlated with various pathological conditions such as polycythemia vera, essential thrombocythemia and other myeloproliferative disorders. Role of JAK2 mutation (V617F) is reflected in myeloproliferative neoplasms complications including thrombosis, myelofibrosis and leukemic transformation. Considering the significance of this mutation, we aimed six months monitorisation in patients addressed to Molecular Biology Laboratories within Regional Oncology Institute from Iași. Material and methods: To identify the mutations, DNA samples isolated from the blood of 106 patients presented to the clinic between February and July 2013 using Promega kit were analyzed. Furthermore, the assessment of JAK2 gene mutation consisted of RT PCR (real-time detection) protocol, using Clonit qualitative detection kit and Taqman probes. Results: Of the 106 patients note that, on 49 of the patients the mutation was identified on one allele (heterozygous phenotype), in 4 on both alleles (mutant phenotype) and 53 were mutation-free (wild-type). Conclusions: These results suggest a very high prevalence of Jak2 mutation (in approximately half of the subjects with myeloproliferative syndromes, polycythemia vera or essential thrombocythemia), and therefore Jak2 mutation detection could be considered an important molecular marker in the diagnosis and monitoring of these disorders.

PRELIMINARY DATA FOR ASSESSING THE THREAT STATUS OF THE INVASIVE SPECIES *PERCCOTTUS GLENII*

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The human activity and natural hazards that took place in the last decade had a very high impact on the fresh-water ecosystems, transforming considerably the ichthyofauna and causing the emergence of many invasive fish species. *Perccottus glenii* is one of the species which became invasive after the middle of the XXth century in Eurasia and Europe. In our country was recorded as an invasive species since 2001.Among the main aspects which make *Perccottus glenii* a possible threat for many fresh water ecosystems can be mentioned its spread speed, the resistance to extreme environment conditions, and its feeding ecology. Little molecular data has been obtained so far for this species and the genetic variability is also a very important factor which has to be closely monitored for its great impact on the survival, proliferation and the spread of a species.

GENETIC STATUS OF THE EUROPEAN BISON *BISON BONASUS* POPULATION FROM VÂNĂTORI-NEAMȚ AND NEAGRA BUCȘANI NATIONAL PARKS

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The aim of this paper was to evaluate the inter- and intraspecific polymorphisms in the sample of European bison from Vânatori-Neamţ and Neagra Bucşani Romanian National Parks population in order to provide new information on the genetic diversity within the species. To describe genetic variability and population diversity we performed a phylogenetic analysis of representatives of those breeds by employing mitochondrial gene polymorphism.We used analysis of the mitochondrialcytochrome b, cytochrome oxidase subunit I and d-loop genes sequences, determined for a total of 16 individuals. The study includes also 4 NCBI reference sequences, used for inferring the phylogeny.The sampling process refers to blood samples loaded in Queen's lysis buffer and stored in 98% ethanol for DNA isolation and purification performed using the DNA IQ kit (Promega). The total DNA was resuspended in 50µl Tris-EDTA and was quantitatively and qualitatively determined by spectrophotometry and electrophoresis in 1% agarose gel, stained with ethidium bromide and visualised under UV light. PCR was performed in 25µl reaction volume containing GoTaq Green Master Mix (Promega), direct and reverse primers, DNA and nuclease free water to 25µl. The sequencing process was performed using the Beckman Coulter CEQ 8000 Genetic Analysis System.The genetic variability identified through the similarity percentage between the 20 sequences and the variability coefficients of the haplotype nucleotides are small but, on the other hand, the absence of a 100% similarity may point to a future rise in diversity of the populations. The presence of mutations associated with differentiation processes may indicate a future increase in the level of genetic diversity at this species. Phylogenetic analysis shows a total number of

11 haplotypes, two of them shared between populations. The Vânători Neamț individuals have a high level of variability, containing 8 haplotypes. This data is valuable for conservation strategies of this impressive species, especially for the control of breeding success of these animals.

VIPERA URSINII MOLDAVICA INTRASPECIFIC VARIABILITY IDENTIFICATION USING CYTOCHROME B GENE AND MICROSATELLITE DATA

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The meadow viper (*Vipera ursinii*) is a small, venomous snake. Although formerly thought to spread from Central Europe to Central Asia, latest scientific thought is that the meadow viper (*Vipera ursinii*) is found only in Italy and France (*V. u. ursinii*), Bosnia-Herzegovina, Macedonia, Montenegro and northern Albania (*V. u. macrops*), central Greece (*V. u. graeca*), Hungary (*V. u. rakosiensis*) (possibly extinct in Romania and Austria), Romania and possibly Bulgaria (*V. u. moldavica*). The meadow viper is classified as Vulnerable (VU) on the IUCN Red List and listed on Appendix I of CITES. *Vipera ursinii moldavica* distribution range could be delimited from the Eastern Carpathian Mountains to the Danube and to the Ukrainian steppes. But, the populations of these subspecies are often isolated on small areas. The aim of this study is to identify the intraspecific variability in *Vipera ursinii moldavica* subspecies by cytochrome b sequences and microsatellite data. Analysis revealed a low level of variability in Moldavian populations while Danube Delta populations have high variability.

BIOGEOGRAPHY AND PHYLOGENY OF *ACROCEPHALUS* GENERAINFERRED BY MTDNA ANALYSIS

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The reed warbler's genera, *Acrocephalus (Acrocephalidae* Family*)* numbers 37 species. The members of this family breed widely across the Old World and Australasia: in Eurasia - 17 spp., mainly Palearctic; Africa / Madagascar / Seychelles / Mascarene islands - 7 spp. and Australia/Polynesia - 13 spp. Previous studies of molecular phylogeny were focused on taxonomy of this genera and phylogenetic relationships with other genera. The divergence dating time of the reed warblers was not previously robust estimated. Fossil records and molecular data provide strong indications of higher taxa ages. In the present study, we used mitochondrial DNA sequence, data to infer the divergence dating time of all species of reed-warblers.Our phylogeny, which includes 35 taxa, permits us to infer the colonization patterns of all species of reed-warblers. We believe that the *Acrocephalus* genera ancestor was originated in Greater India subcontinent, and appeared in Late Cretaceous. While India is drifting north, *Acrocephalus* ancestor split in two forms, one with large body size and another with small body size; the ancestors of two primary lineages of reed warblers in terms of size. After that, those two forms had different courses across the world, the small size form remains in Greater India subcontinent and the large size form migrated in Africa through Madagascar.

ORAL PRESENTATIONS
Amphitheater B2: 10^{00}-14^{00}

ORGANIZING COMMITTEE:
Conf. Dr. Smaranda VÂNTU
Lect. Dr. Lucian GORGAN
Lect. Dr. Marius MIHĂȘAN
Drd. Ștefan Adrian STRUNGARU

NEW DATA ABOUT *COPTERA* SAY 1836 (HYMENOPTERA, PROCTOTRUPOIDEA: DIAPRIIDAE)

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The diapriids are endoparasitic on various Diptera (larval-pupal or pupal) (Masner, 1993), only the members of *Ismarus* attack cysts of dryinid wasps (Kozlov, 1978; Masner, 1993). They are small wasps, body size being, in most cases, 2 to 4 mm. Color, most often, is black, highly polished. There are about 4500 species of diapriids estimated to occur in the world, but less than half of these have been formally described (Masner, 1993). The species of *Coptera* are easily distinguishable by rest of diapriids because of the head strongly hypognathous**,** the two growths on the forehead and very long mandibles. The species of this genus are easily confused with those of *Psilus* Panzer1801, because of marked intraspecific variation in many structural features, as well as in the color of the antennae and legs (Muesebeck, 1980). In papers of Nixon (1980) and Kozlov (1978) there are not *Coptera*, but species belonging to this genus are described in *Psilus*. Muesebeck (1980) separated the females of *Coptera* and *Psilus* through following characters: forewing in *Psilus* with apical margin entire and with complete subcostal vein, while in *Coptera* forewing with apex always deeply and sharply incised and subcostal vein incomplete. Also, anterior rim of antennal sockets in *Coptera* usually not prominently elevated as in *Psilus*. At the moment, the genus *Coptera* is less studiedin Romania; therefore, some authors cited, from this area, next species:*Coptera merceti*(Kieffer), *Coptera inaequalifrons* (Jansson), *Coptera depressa* (Kieffer), and *Coptera gestroi*(Kieffer). The purpose of my work is to deepen the knowledge of what is described above and add information regarding the two genera: *Coptera* and *Psilus*. In this moment, in Romania I found species of *Coptera* in different places (Barnova forest, Calimani Mts., Sendriceni, Dobrogea, etc).

COGNITIVE-ENHANCING EFFECTS OF THE METHANOLIC EXTRACT OF *PIPER NIGRUM L.* FRUITS IN AN AB(1-42) RAT MODEL OF ALZHEIMER'S DISEASE

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Piper nigrum L. commonly known as black pepper and belonging to the Piperaceae family is one of the most popular spice products in oriental countries (mostly in Southeast Asia). In traditional medicine, black pepper is recommended for the treatment of malaria and epilepsy, and also as anti-inflammatory, anti-depressant, neuroprotective and antioxidant agent. In the present study, the effects of the methanolic extract of *Piper nigrum L.* fruits (50 and 100 mg/kg) on spatial memory performance were assessed in an Aβ(1-42) rat model of Alzheimer's disease. We used Y-maze and radial arm-maze tasks as animal models of spatial memory. The Aβ(1-42)-treated rats exhibited the following: decrease of spontaneous alternations percentage within Y-maze task and increase of working memory and reference memory errors within radial arm maze task. Administration of the methanolic extract significantly improved these parameters, suggesting positive effects on spatial memory formation. Our results suggest that the methanolic extract ameliorates behavioral deficits in Aβ(1-42)-induced spatial memory impairment.

NEUROPROTECTIVE EFFECTS OF THE LAVENDER ESSENTIAL OIL IN A RAT MODEL OF DEMENTIA

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Lavender is reported to be an effective medical plant in treating inflammation, depression, stress and headache. The present study was undertaken in order to investigate the antioxidant and antiapoptotic activities of the lavender essential oils from *Lavandula angustifolia ssp. angustifolia Mill.* and *Lavandula hybrida Rev.* using superoxide dismutase (SOD), glutathione peroxidase (GPX) and catalase (CAT) specific activities, total content of reduced glutathione (GSH), malondialdehyde (MDA) level (lipid peroxidation) and DNA fragmentation assays in male Wistar rats subjected to scopolamine-induced dementia rat model. In scopolamine-treated rats, lavender essential oils showed potent antioxidant and antiapoptotic activities. Subacute exposures (daily, for 7 continuous days) to lavender oils significantly increased antioxidant enzyme activities (SOD, GPX and CAT), total content of reduced GSH and reduced lipid peroxidation (MDA level) in rat temporal lobe homogenates, suggesting antioxidant potential. Also, DNA cleavage patterns were absent in the lavender groups, suggesting antiapoptotic activity. Taken together, our results suggest that antioxidant and antiapoptotic activities of the lavender essential oils are the major mechanisms for their potent neuroprotective effects against scopolamine-induced oxidative stress in the rat brain.

THE EFFECT OF LOW FREQUENCY ELECTROMAGNETIC FIELD ON THE ACTIVITY OF HORSERADISH PEROXIDASE

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The aim of this study is to investigate the effect of low electromagnetic field on metal-containing enzymes. At the start of the experiment, is used horseradish peroxidase (HRP), a glycoprotein with the molecular weight of 44 kDa, which contains heme as it's prosthetic group.HRP's function is relevant in the oxygen reduction reaction (ORR), in association with the cycle of plant and animal respiration process, in the cellular protection against oxidative stress caused by reactive oxygen species (ROS). HRP catalyses the oxidation of different substrates with the aid of hydrogen peroxide (H-O-O-H). In addition, the iron ion is involved directly in the catalytic process. Two extremily low electromagnetic fields (ELF-EMF), one of 50 Hz/2.7 mT and the other one of 100 Hz/5.5 mT are generated through the help of two Helmholtz bobbins. The HRP enzymatic activity is measured using the standard method with ortho-dianisidine as described by Vlad Artenie, Eugen Ungureanu, Anca Mihaela Negura in „Metode de investigare a metabolismului glucidic si lipidic". The time exposure to ELF-EMF was 5 minutes and the temperature is equal to 28°C. The kinetic parameters were calculated using Lineweaver-Burk plot and the statistical semnification is certified with the ANOVA univariate analysis. In conclusion to what I have said, the exposure to ELF-EMF does not cause structural allterations, but it affects the efficiency of the enzyme in the chemical dynamics. We can approve this using the results from the kinetic parameters's table:

IMPACT OF INORGANIC SALT SOLUTIONS ON ANTIOXIDATIVE ENZYMES ACTIVITY AND PIGMENTS CONTENT IN TRIGONELLA FOENUM-GRAECUM SEEDLINGS

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Fenugreek (*Trigonella foenum-graecum*) is known to have several pharmacological effects such as hypoglycemia, hypocholesterolemia, gastroprotective, chemopreventive, antioxidant, antiinflammatory, antipyretic and appetite stimulation attributes. This plant is known to contain many secondary metabolites like alkaloids, flavonoids, salicylate, and nicotinic acid. Present investigation was undertaken to study the effect of salinity on fenugreek antioxidative defense mechanism. The response of the superoxide dismutase (SOD), catalase (CAT) and peroxidase (POD) activities as well as the pigment content in fenugreekseedlings was investigated after 24 days of treatment with eleven inorganic salt solutions. Generally, all concentrations diminished the activity of antioxidant enzymes take in the study with two exceptions (150mM NaCl+10mM $CaCl_2$ in case of SOD and 100mM NaCl+20 $MgCl_2$ in case of CAT). Only a few concentrations increased the fenugreek protein content (50mM NaCl, 100mM NaCl, 50mM NaCl+10mM $CaCl_2$, 150mM NaCl+10mM $CaCl_2$, 100mM NaCl+20 $MgCl_2$). The inorganic salt solutions used showed a inhibition of pigments amounts (chlorophyll a, chlorophyll b, caroten). Thus, it was concluded that fenugreek at this age is not sensitive toward concentrations of inorganic salt used in this experiment.

ISOLATION AND CLONING OF NDH GENES FROM PAO1 MEGAPLASMID OF *ARTHROBACTER NICOTINOVORANS*

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Different species of *Arthrobacter* can metabolize a variety of toxic compounds to human or animals, which make them an interesting topic to investigate (Mihaşan M., 2010). *Arthrobacter nicotinovorans,* due to the presenceof pAO1 megaplasmid (Fig. 1), has an attractive metabolic characteristic: the ability to catabolize the alkaloid nicotine.In the pAO1 encoded pathway, nicotine is first hydroxylated in the sixth position by the trimeric enzyme-nicotine dehydrogenase (NDH). The purpose of this study is to clone the genes encoding the NDH enzyme in the pART2 plasmid, in order to purify the enzymeas a C-terminal His-tagged recombinant protein.*Escherichia coli* was used to isolate pART2 and also used in all recombinant DNA techniques. NDH genes (Fig.2) were isolated by Polymerase Chain Reaction (PCR). As a source of templateDNA, a cell suspension of *Arthrobacter nicotinovorans* pAO1 was used. Directional cloning of the fragment containing the NDH genes in thepART2 vector was performed using two different restriction enzymesand DNA Ligation Kit (Roche). The transformed *Escherichia coli*cells were selected on plates containing kanamycin, and the recombinant plasmid was verified for the presence of insert by restriction analysis. (Mihăşan M., 2010). A fragment of 3.7 kb containing the three NDH genes was successful amplified. Following the transformation, 11 colonies were obtained. Among them, four have been tested and one has been identified being positive.

ABC-TYPE TRANSPORTER SYSTEM FROM PAO1 OF *ARTHROBACTER NICOTINOVORANS*

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All living organisms present various transportation means by which they ensure the uptake of nutrients from the medium and the secretion of different catabolic products or residues. The ABC transporter or theATP-binding cassette is a primary active system of transportation, found in archaes, eubacteria and eukaryotes, that ensures the transfer of molecules from(exporters) or to(importers) the inside of the cell. It does this by coupling transport against a concentration gradient with the energy of ATP hydrolysis. Besides the transmembranar transport, the ABC system also has a role in other processes, such as DNA repair and translation. Structurally wise, all ABC systems present two ATP-binding domains or proteins(ABC, also called nucleotide binding domain-NBD), two hydrophobic integral membrane domains(IM), made out of six transmembranar alpha-helices and in the case of importers, a substrate binding protein. Depending on their function, ABC systems can be sorted into three categories. Class 1 consists of systems with fused ATP-binding and integral membrane domain and includes the majority of the exporters. Systems from class 2 do not present the integral membrane domain, thus having other roles rather than transport, such as DNA repair and RNA translation. Class 3 contains systems in which the IM and the ABC are independent peptide chains and it comprises of most importers. Class 3 ABC systems or importers are of special importance due to the fact that they are not present in eukaryotes, but only in archaes and prokaryotes. ABC importers usually depend on the presence of a

extracytoplasmatic protein which recognizes the substrates with great affinity and versatility. These binding proteins are located in the periplasmic space of the gram-negative bacteria or in the case of gram-positive bacteria, they are bound to the external face of the cytoplasmatic membrane, forming a lipoprotein. ABC systems are active transporters, using the energy from ATP hydrolysis to generate conformational changes in the transmembranar domain. Most ABC transporters that ensure the uptake of nutrients are dependent on a high-affinity binding protein. The mechanism of transport for importers proposes the alternating access model, in which during the resting state the NBD is closed to the cytoplasm and is facing the TMD which is closed to the extracellular space, creating a gated common space in between them. After the high-affinity binding protein interacts with the substrate, ATP binds to the NBD and the dimer closes, making the TMD to open to the external side on the cytoplasmic membrane, receiving the substrate from the BP. After the ATP is hydrolyzed, the NBD is opened, making the TMD to re-orient and thus releasing the substrate into the cytoplasm. After the release of ADP and Pi, the whole system regains its resting state conformation. Most soil bacteria present a significant number of ABC systems due to the highly competitive environment conditions and thus more diversified catabolic pathways. In the case in *Arthrobacter nicotinovorans*, a gram positive bacteria growing in the soil around tobacco plants, these metabolic pathways are insured also by the presence of the 165kb megaplasmid pAO1. This megaplasmid holds two gene clusters coding for a nicotine-catabolic pathway and a xylose-oxidative pathway. The genes for expressing this carbohydrate pathway form three distinctive groups on the pAO1 megaplasmid: the first two encoding different hydrolytic enzymes and transcriptional regulators, while the third and the largest containing 4 ORFs for an ABC transport system for xylose: an ATP binding protein, two transmembrane proteins forming the pore and a putative periplasmic substrate binding protein(*ppl* gene). The current work focuses on the *ppl* gene(ORF58) with the aim of cloning the gene and overexpressing, as well as purifying the encoded protein.

SUBSTRATE PREFERENCE OF SEROTONIN RECEPTORS THROUGH *IN SILICO* DOCKING EXPERIMENTS

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The difficulty in crystallizing membrane proteins such as the serotonin type 2A receptor (5-HT2AR) makes the study of molecular interactions between the receptor and its ligands very problematic. For this reason, a homology-based model of the 5-HT2AR was generated with MODELLER using the serotonin type 2B receptor (5-HT2BR) structure (PDB ID: 4IB4) as template. The modeled structure was validated using Procheck and Ramachandran Plot and refined by energy minimization, with results indicating an overall good model. The binding site of the receptor was chosen based on available literature data, and several docking experiments were carried out using AutoDock. Results included the ionic interaction between all protonated amine ligands and an aspartic acid in position 3.32 (as defined by the Ballesteros-Weinstein nomenclature), the formation of a hydrogen bond with serine residues in positions 5.46 and 3.36, the latter only in the case of unsubstituted tryptamines. Also, hydrophobic contacts with aromatic amino acids phenylalanine and tryptophan were observed near the binding site in the case of ligands with bulky substituents. Docking of the most selective agonist known so far for the 5-HT2AR revealed an unexpected hydrogen bond between a tyrosine residue and the

protonated amine group in the ligand structure, which could be a molecular determinant of its high selectivity.

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