Faculty of Biology Annual Scientific Meeting

October 22 – 24, 2015

BOOK OF ABSTRACTS

SCIENTIC COMMITTE:

- **Prof. univ. dr. Mircea Nicoară**, dean, Faculty of Biology, ,,Alexandru Ioan Cuza" University of Iași
- **Acad. Prof. univ. dr. Constantin Toma**, member of the Romanian Academy, ,,Alexandru Ioan Cuza" University of Iaşi
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- **Prof. dr. Zeliha Selamoğlu**, Nigde University, Turkey
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- **Prof. univ. dr. Liliana Foia**, Gr. T. Popa University of Medicine and Pharmacy, Iași
- **Prof. dr. Doina Jităreanu**, Agricultural Scieneces and Veterinary Medicine University, Iași
- **Prof. univ. dr. Benone Păsărin**, Agricultural Scieneces and Veterinary Medicine University, Iași
- **Conf. dr. Lacramioara IVĂNESCU**, Faculty of Biology, ,,Alexandru Ioan Cuza" University of Iași
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- **Associate prof. dr. Lucian Gorgan**, vice-dean, Biology Faculty, ,,Alexandru Ioan Cuza" University of Iaşi
- **Associate prof. dr. Smaranda Vântu**, Vice-dean, Biology Faculty, ,,Alexandru Ioan Cuza" University of Iaşi
- **Lecturer. dr. Ciprian Mânzu**, Head of Biology Department, Biology Faculty, ,,Alexandru Ioan Cuza" University of Iaşi
- **Lecturer. dr. Lăcrămioara Oprică**, Faculty of Biology, ,,Alexandru Ioan Cuza" University of Iaşi
- **Lecturer. dr. Iulia Băra**, Faculty of Biology, ,,Alexandru Ioan Cuza" University of Iaşi
- **Lecturer dr. Gabriel Plăvan**, Faculty of Biology, ,,Alexandru Ioan Cuza" University of Iaşi
- **Sci. Researcher dr. Cosmin Teodor Mihai –** Interdisciplinary Research Department, "Alexandru Ioan Cuza" University of Iași

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- Molecular interactions in the living world:
  ACS dr. Stud. Mitică Ciorpac: ciorpac.mitica@gmail.com
  PhD Stud. Ovidiu Alexandru Popescul: popescul.ovidiu.alex@gmail.com

VOLUNTEERS:

- **Stud. Laura Ciornodolea**
- **Stud. Emanuela Paduraru**
- **Stud. Catalina Tirziman**
- **Stud. Eliza Prisacariu**

Faculty of Biology Annual Scientific Meeting

SESSION PROGRAM

THURSDAY 22.10.2015

10:00 - 16:00 **The Students Scientific Session (SSSB)** – B2 amphitheatre

FRIDAY 23.10.2015

8:00 - 9:00 Participants registration – Faculty of Biology, first floor, B2 amphitheatre
9:00 - 12:05 Opening ceremony, B2 amphitheatre

Prof. dr. Mircea Nicoară, Faculty of Biology Dean

9:00 – 9:30	Opening ceremony
9:30 – 10:00	François KRIER, François COU TTE, Philippe JACQUES - *Lipopeptides produced by Bacillus sp., a new family of biopesticides*
10:00 – 10:30	Mariia Fedoriak, Volodymyr Voloshyn - *The research on scientific heritage of Romanian arachnologist Alexandru Roşca*
10:30 – 10:45	Coffee Brake
10:45 – 11:05	Acad. Constantin Toma - Book Release "*A gândi despre apă din apă*", author Ionel Miron
11:05 – 11:25	Prof. dr. Gheorghe Mustață - Book Release "*Evoluția nu-și șterge urmele, ci le păstrează funcționale*", author Gheorghe Mustață
11:25 – 11:45	Prof. dr. Ionel Andriescu - Book Release *"Biologi de altădată și de azi*", author Constantin Toma
11:45 – 12:05	Lecturer. dr. Ciprian MÂNZU - Book Release: "*Diversitatea fitocenologică a României*", authors: Toader CHIFU (coord.), Irina IRIMIA, Oana ZAMFIRESCU

12:05-12:20 Coffee Brake; Photo Exhibition "*Uimitoarea lume microscopică*" – Șef lucr. dr. Anca Neagu
12:20-14:30 Parallel symposia
14:30-15:00 Coffee Brake
15:00-16:00 Poster session
16:00-19:00 Parallel symposia
19:00-19:30 Closing ceremony
19:30- Gala dinner – *Vânătorul Restaurant*

SATURDAY 24.10.2015

11:00 Visit to the "Anastasie Fătu " Botanical Garden, Iași

PLENARY LECTURES

AMPHITHEATER B2: 9^{00}-12^{05}

François KRIER, François COUTTE, Philippe JACQUES
Lipopeptides produced by Bacillus sp., a new family of biopesticides

Mariia FEDORIAK, Volodymyr VOLOSHYN
Book review: *"Scientific heritage of Aleksandru Roshka as a basis for retrospective analysis of araneofauna of Bukovyna"*

Acad. Constantin TOMA
Book Release: *"A gândi despre apă din apă",* author ***Ionel MIRON***

Prof. dr. Gheorghe MUSTAȚĂ
Book Release: *"Evoluția nu-și șterge urmele, ci le păstrează funcționale"*, author ***Gheorghe MUSTAȚĂ***

Prof. dr. Ionel ANDRIESCU
Book Release: *"Biologi de altădată și de azi"*, author ***Constantin TOMA***

Lecturer. dr. Ciprian MÂNZU
Book Release: "*Diversitatea fitocenologică a României*", authors: Toader CHIFU (coord.), Irina IRIMIA, Oana ZAMFIRESCU

ABSTRACTS

AMPHITHEATER B2: 9^{00}-12^{05}

LIPOPEPTIDES PRODUCED BY *BACILLUS SP.*, A NEW FAMILY OF BIOPESTICIDES

FRANÇOIS KRIER, FRANÇOIS COUTTE, PHILIPPE JACQUES

Lille 1 University, Lille, France

Bacillus sp. strains are bacteria known to produce interesting molecules called lipopeptides. These amphiphilic molecules are produced by a non-typical mechanism called Non-Ribosomal-Peptide-Synthetases (NRPS). Some of the lipopeptides present antimicrobial activities and more specifically antifungal activities. In the context of reducing the use of chemical pesticides in agriculture, these molecules have been tested for their ability to be used as bio-pesticides. These lipopeptides have been first tested on different patho-systems in the laboratory level and then in greenhouse and in open field. In parallel, tests have been performed to evaluate their toxicological effects on the environment and different bio-process have been developed to increase the production and the purification of these molecules in order to reduce their costs.

Key-words: Bacillus, lipopeptides, bio-pesticide, ecotoxicity bioprocess

Acknowledgments: This work was partially supported by the Program Interreg IV Phytobio (http://phytobio.univ-lille1.fr).

BOOK RELEASE

Presentation: *Mariia FEDORIAK[1] *, Volodymyr VOLOSHYN[1,2]*

[1]Department of Ecology and Biomonitoring, Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine

[2]Department of Medical Biology and Genetics, Bukovinian State Medical University, Chernivtsi, Ukraine

Alexandru Roşca (2.10.1895 – 7.08.1969) studied spiders from almost the entire territory of Romania during the period of 1928-1968. His profound research was devoted to spiders of Bukovyna (Bucovina), with the results being published in the six papers including the thesis «Spider fauna of Bukovyna (Systematics, ecology and geographic distribution) » («Fauna Araneelor din Bucovina (Sistematica, ecologia şi răspândirea geografică)»).

Our research of A. Roşca's scientific activity started in 2009 and was supported by the project EMERGE (Erasmus Mundus European Mobility with Neighbouring ReGion in the East: Ukraine, Moldova, Belarus) which is an Erasmus Mundus mobility program. As the result we obtained comprehensive information on his scientific heritage, which includes 19 publications mostly written in the Romanian, German and French languages; described thespecies and spider collection deposited in the «Grigore Antipa» National Museum of Natural History (Bucharest).

Data derived from A. Roşca's publications were used as a basis for retrospective analysis of araneofauna of Bukovyna. Re-identification of the part of «AlexandruRoşca» collection allowed us to record 2 spider species previously unknown in Romania: *Pholcus ponticus* Thorell, 1875 and *Pisaura novicia* (L. Koch, 1878) (Fedoriak & Moscaliuc, 2013). This proved the importance of the mentioned spider collection and necessity of its further investigation.

SECTION OF PLANT BIOLOGY

PAPERS LIST

ORAL PRESENTATIONS

Hall B 467: $12^{20} – 14^{30}$

MODERATORS:
Conf. univ. dr. Paulina ANASTASIU
Conf. univ. dr. Lăcrămioara IVĂNESCU

Constantin TOMA, Lăcrămioara IVĂNESCU
FRITZ NETOLITZKY – A GREAT BOTANIST OF THE LAST CENTURY (1875 – 1945)

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CONTRIBUTIONS TO THE KNOWLEDGE OF THE VEGETAL COVER ON SOME ANTHROPOGENIC SOILS IN IAȘI CITY

Paulina ANASTASIU, Petronela COMĂNESCU, Eugenia NAGODĂ
RARE PLANTS FROM BUZĂU LAND GEOPARK

Petronela COMĂNESCU, Adela BOIERIU, Eugenia NAGODĂ, Maria RAICU, Eugenia NIȚĂ, Paulina ANASTASIU
PRELIMINARY STUDIES ABOUT THE GREENHOUSE WEEDS IN THE BOTANICAL GARDEN "D. BRANDZA"

Ciprian MÂNZU, Cristian STOLERIU, Alina CÎȘLARIU, Victor SURUGIU
GIS TECHNIQUES CAN EXPLAIN WHY A SPECIES HAS DISAPPEARED?

POSTERS

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

Carmen Nicoleta OANCEA, Andrei BIȚĂ, Maria-Viorica BUBULICĂ, George Dan MOGOȘANU, Johny NEAMȚU
PRELIMINARY PHYTOCHEMICAL RESEARCHES ON POLYPHENOLS IN THE AERIAL PART OF THE SPECIES OF *EUPHRASIA STRICTA* D. WOLFF EX J.F. LEHM (SCROPHULARIACEAE)

Daniela NICUȚĂ, Nicoleta BĂDĂLUȚĂ
ASPECTS OF THE MORPHOGENETIC REACTION OF SOME *ORIGANUM VULGARE* EXPLANTS CULTIVATED *IN VITRO*

ABSTRACTS

ORAL PRESENTATIONS
Hall B 467: $12^{30} – 14^{30}$

FRITZ NETOLITZKY – A GREAT BOTANIST OF THE LAST CENTURY (1875 – 1945)

CONSTANTIN TOMA[1]*, LĂCRĂMIOARA IVĂNESCU[1]
[1] „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania
**ctoma@uaic.ro*

It has been recently celebrated 140 years since the birth and 70 years since the death of the brilliant botanist (morphologist and anatomist) Fritz Netolitzky, who has honoured the Faculty of Sciences of the University of Chernivtsi for 30 years. Fritz Netolitzky was born in Zwickau (Bohemia) on 1st October 1875. He studied in Prague, Vienna and Strasbourg. He got the title of Ph.D. in medicine in 1899, at the age of 24. He started his teaching career as a graduate assistant at the University of Vienna (1896-1899), then it is appointed interim assistant at the University of Innsbruck (1899-1904) and full assistant at the University of Graz (1904-1910). From 1910 to 1940 he worked at the University of Chernivtsi. In 1910, he was appointed docent (lecturer) for Food Chemistry, then he was employed as Assistant Professor (1912-1919), and then, as Permanent Professor at the Faculty of Sciences – field of Botany, where he worked until 1940, the year of retirement. For one year (1940-1941), he worked at the University of Iasi, then he returned to Vienna, where he was employed again as Professor of Botany for the Pharmaceutical Medicine. In 1945, on 5th January, he died from a heart attack, after a prodigious educational and scientific work during the 48 years of academic career. The scientific and the publishing activity of Fritz Netolitzky is impressive for those times, between the First and Second World War, having as proof the 132 works published during 1910-1939 (according to the List drawn up by Radu Popovici in 1947): 116 original articles and 16 teaching and scientific treaties, in renowned journals in Austria, Germany, Switzerland, Spain and Romania; 8 of the articles are inserted in the pages of the Journal of the Faculty of Sciences within the Romanian University of Chernivtsi, during 1927 (volume I) and 1983 (volume XII, published in 1939); valuable articles from specialists in our country, Austria, Germany, Poland and elsewhere were published in the same journal.

HISTO-ANATOMICAL INVESTIGATIONS OF SOME *ACHILLEA* L. SPECIES FROM ROMANIAN FLORA

ROXANA CUIBARI[1]*, LĂCRĂMIOARA CARMEN IVĂNESCU[1]
[1] „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania
**cuibari_roxana@yahoo.com*

In this paper an anatomic study of the vegetative organs (root, stem and leaf) of three plant species belonging to the *Achillea* L. (Fam. Asteraceae) genus was made. The species investigated were collected from Marine Biological Station of Agigea, Constanta (*Achillea setacea* W. et K, *Achillea millefolium* L.) and from Capul Dolosman Nature Reserve, Tulcea (*Achillea coarctata* Poir.). In order to perform histo-anatomical investigation we made sections on material preserved in ethyl alcohol 70° using the hand microtome, comun elder marrow and botanical razor. Sections were then stained using the method of double staining with green iodine

– red ruthenium and observed at photon microscope. The general structure of the species investigated is similar to the structures of the other species of Asteraceae family. The three species present histo-anatomical characters that serve as a diagnostic criteria in all vegetative organs investigated.

CONTRIBUTIONS TO THE KNOWLEDGE OF THE VEGETAL COVER ON SOME ANTHROPOGENIC SOILS IN IAȘI CITY

COSTICĂ MIHAI[1*], SECU CRISTIAN VASILICĂ[2], BREABĂN IULIANA GABRIELA[2]

[1] „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania
[2] „Alexandru Ioan Cuza" University of Iași, Faculty of Geography and Geology, Department of Geography, Iași, Romania
**costicamihai13@yahoo.ro*

The urban vegetation is constantly under the anthropogenic influence, which consequently transforms this in a dynamic process in terms of floristic composition. The urban development came out with changes in the land- use and, furthermore, the extension of the living and the industrial areas. The soil changes its chemical composition, it tamps down and allows the ruderal species and soil algae which have role models of anthropogenic soils to install, even before the formation of the cormophyte phytocoenoses. Our concern is about knowing the floristic composition of phytocenoses and the composition of the edaphical algocenoses which vegetate on anthropogenic soils. Probably, this takes part in the role of bioaccumulation of the heavy metals. From the floristic inventory we have already made, there can be identified some species for the phytoremediation of the polluted soils with various substances. Therefore, we inventoried the ruderal cormophytes which covered about 65-95% of the sample units with the domination of specific ruderal species of the techno-soils and algae from the phylum Cyanophyta, Bacillariophyta, Xanthophyta and Chlorophyta. Some species of algae are bio-indicators of the soil quality.

RARE PLANTS FROM BUZĂU LAND GEOPARK

PAULINA ANASTASIU[1]*, PETRONELA COMĂNESCU[2], EUGENIA NAGODĂ[2]

[1] University of Bucharest, Faculty of Biology & Botanic Garden „D. Brandza", Bucureşti, Romania
[2] University of Bucharest, Botanic Garden „D. Brandza", Bucureşti, Romania
**anastasiup@yahoo.com, paulina.anastasiu@bio.unibuc.ro*

Research conducted over the past few years in the basins of the rivers Slănicul de Buzău, Sărăţelul and Bălăneasa, located in the Buzău Land Geopark, has highlighted a rich flora with many rare elements which are included on national and European red lists. Approximately half of the rare plants identified in the geopark are present in the hydrographic basin of the creek Bălăneasa (in the past also known as Sărăţelul Pârscov), a basin largely unexplored from a botanical perspective until now. Among the rare plants identified there are 21 orchid taxa, some with a very limited spread at a national level (for example *Ophrys apifera*). Furthermore several species of community interest such as *Echium russicum* and *Crambe tataria*, have been identified and found to be in a favourable state of conservation in this area. Moreover a number of other taxa have been identified in the geopark: *Chartolepis glastifolia* – located at some distance from its previously known area, *Monotropa hypopitys* subsp. *hypophegea* – previously only recorded

in Penteleu, *Ranunculus flammula* – never previously recorded in Buzău County. Thus alongside the well-known geological elements (mud volcanoes, live fire, amber, salt mountains etc.), floristic elements are now enriching the inventory of the Buzău Land Geopark.

PRELIMINARY STUDIES ABOUT THE GREENHOUSE WEEDS IN THE BOTANICAL GARDEN „D. BRANDZA"

PETRONELA COMĂNESCU[1]*, ADELA BOIERIU[1], EUGENIA NAGODĂ[1], MARIA RAICU[1], EUGENIA NIȚĂ[1], PAULINA ANASTASIU[2]

[1] University of Bucharest, Botanic Garden „D. Brandza", Bucureşti, Romania
[2] University of Bucharest, Faculty of Biology & Botanic Garden „D. Brandza", Bucureşti, Romania
**vpetronela@yahoo.com*

The greenhouses of the botanical gardens play an important role sharing knowledge to the visitors about the great diversity of the plant world through the various collections of exotic plants. Their care becomes a problem when plants from outdoor spaces of the garden and some species from greenhouses flourish and autopropagate, tending to eliminate some taxa less adapted and also affecting the collections aesthetics. The following categories of weeds were recorded: (1) plants from the open spaces of the botanical garden (wild plants, subspontaneous, invasive) and (2) plants from greenhouses collections (escaped from collections, invasive introduced in collections). Taxa creating the greatest difficulties due to the speed of propagation are species escaped from the greenhouses collections of the botanical garden, such as: *Dorstenia contrajerva* L., *Ruellia caroliniensis* Steud., *Saxifraga stolonifera* Curtis, *Oxalis* spp., *Justicia scheidweileri* V.A.W. Graham. The survey done in the neighbourhood of greenhouses shows the presence of two taxa naturalized in the microclimate of courtyards of the Exhibition Greenhouse (*Saxifraga stolonifera* Curtis, *Oxalis rosea* Jacq.).

GIS TECHNIQUES CAN EXPLAIN WHY A SPECIES HAS DISAPPEARED?

CIPRIAN MÂNZU[1]*, CRISTIAN STOLERIU[2], ALINA CÎȘLARIU[1], VICTOR SURUGIU[1]

[1] „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania
[2] „Alexandru Ioan Cuza" University of Iași, Faculty of Geography and Geology, Department of Geography, Iași, Romania
**ciprian.manzu@uaic.ro*

The aim of this study is to use GIS techniques in an attempt to explain why *Zostera noltii* Hornem. has disappeared from some of the previously known locations.

POSTERS

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

PRELIMINARY PHYTOCHEMICAL RESEARCHES ON POLYPHENOLS IN THE AERIAL PART OF THE SPECIES OF *EUPHRASIA STRICTA* D. WOLFF EX J.F. LEHM (SCROPHULARIACEAE)

CARMEN NICOLETA OANCEA[1]*, ANDREI BIŢĂ[1], MARIA-VIORICA BUBULICĂ[1], GEORGE DAN MOGOŞANU[1], JOHNY NEAMŢU[1]

[1] Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania

** paunescuacarmen@yahoo.com*

Introduction: *Euphrasia stricta*, silur (Scrophulariaceae) is an annual species common in the Romanian flora in meadows, glades, hayfields, wet locations, shrubs. In the Romanian ethnopharmacology, the decoction of the aerial parts of a Euphrasia species was administered internally in headaches, stomach pains and externally in eczema and leukorrhea. In some European, Asian or North American areas, *Euphrasia* sp. were used to treat eye diseases. Material and Methods: The Euphrasiae strictae herba (ESH) vegetal product was obtained in flowering, in August, from the areas surrounding Raşovița, in Gorj County. The preliminary phytochemical researches aimed at the qualitative and quantitative analysis of polyphenols (polyphenol-carboxylic acids, flavoinoids) in the ESH, both by thin layer chromatography and through spectrophotometric methods. Results: When analysing the polyphenols in 20% tincture and in the 5% methanolic extract from the ESH, as main components were identified the caffeic acid, rutoside and isoquercitrin. For the tincture 20% of ESH, the total content of phenolic compounds and flavonoids was determined with the Folin–Ciocâlteu reagent and respectively by reaction with the aluminium chloride. Conclusions: The content of polyphenol-carboxylic acids and flavoinoids justifies the use of the Euphrasiae strictae herba medical product for the choleretic-cholagogue, capillary protective, antioxidant, antiallergenic, anti-inflammatory, antispastic, neuroprotective action.

ASPECTS OF THE MORPHOGENETIC REACTION OF SOME *ORIGANUM VULGARE* EXPLANTS CULTIVATED IN VITRO

DANIELA NICUŢĂ[1]*, NICOLETA BĂDĂLUŢĂ[1]

[1] „Vasile Alecsandri" University of Bacău, Department of Biology, Bacău, Romania

**danan@ub.ro, dana_nicuta@yahoo.com*

Our research aims at testing the morphogenetic reaction of various oregano (*Origanum vulgare* L.) explants, cultured on 14 nutritive solutions, with a view to elaborating a technology of propagation of the species, and to exploring the possibility to obtaining somaclones with a high content of bioactive compounds. The best morphogenetic reaction of the apex and nod explants inoculated in vitro was caulogenesis, which was observed on the MS medium supplemented with BAP – 1mg/l in combination with IAA and IBA (1-2 mg/L). At the base of the shoots regenerated on some nutritive solutions, was observed the emergence of roots, and, in some cases, of the adventive roots. The calusogenesis was highlighted on a few variants of nutritive medium tested (NAA2, BN1, BD1, BD2), the callus was friable but with low proliferation. The accommodation of the vitroplants to the ex vitro medium was achieved through their transfer in hydroponic culture system. The acclimatisation was achieved in about ten days.

ASSESSING LIGHT AND NITROGEN SOURCE EFFECTS ON SOME GROWTH RELATED PARAMETERS IN *ARABIDOPSIS THALIANA* HEYNH. USING IMAGE-BASED PHENOTYPING TECHNIQUES

TOMA STOLERU[1*], ANDREI LOBIUC[1], MARIAN BURDUCEA[1], MARIA-MAGDALENA ZAMFIRACHE[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, Carol I Bd, 700505, Romania
** toma.stoleru@gmail.com*

Light and mineral nutrients play a major role in plant growth. Light is used both as a source of energy in the photosynthetic process and a signaling cue in the coordination of shoot architecture. Nitrogen is one important element for the plants, entering in the composition of proteins, nucleic acids and chlorophyll, its availability having a huge impact on plant growth. In this study we devised a series of experiments in which we analyzed the effects of switching plants from a combined source of nitrogen (nitrate ions + ammonium ions) to a unilateral source of nitrogen (only ammonium ions). Red (645 nm) or blue (461 nm) light supplementation on a white light background were also used in the experiments. The organism used was the model plant *Arabidopsis thaliana* Heynh., and the parameters assessed were projected rosette area, rosette relative growth rate, compactness and stockiness. Plants were grown in hydroponic systems placed in custom made boxes able to provide specific light compositions. Measurements were taken on a daily basis using a commercial image-based plant phenotyping system. Switching from a combined source of nitrogen (NO_3^- + NH_4^+) to a source of only ammonium ions has a powerful effect on the dynamics of projected rosette area and rosette relative growth rate. Light supplementation in some cases appears to alleviate the effect of this transition. Compactness and stockiness parameters are not markedly influenced by the nitrogen source, but appear to be affected by light composition.

Acknowledgements: Some of the infrastructure used in the experiment was provided by the CERNESIM (The Environmental Science Studies Center for the North-East Developing Region) project.

PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS OF *OCIMUM BASILICUM* L. UNDER CULTIVATION IN SLUDGE AMENDED SUBSTRATES

MARIAN BURDUCEA[1,*], ANDREI LOBIUC[1], TOMA STOLERU[1], ZENOVIA OLTEANU[1], MARIA-MAGDALENA ZAMFIRACHE[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, Carol I Bd, 700505, Romania
** marian.burducea@yahoo.com*

Reutilization of municipal sludge waste resulting in large amounts from urban wastewater treatment is part of the European Union strategy for its sustainable development. Sewage sludge is used for soil fertilization of major agricultural crops, some studies indicating a positive effect for medicinal plants also. The present paper assesses some physiological and biochemical stress markers as well as total phenolic contents, in *Ocimum* basilicum L. cv. "Aromat de Buzau", grown in laboratory conditions on different soils (commercial, degraded and sludge amended). Photosynthetic performance, as µmols/m²/s, was highest in commercial soil (2,96), followed by sludge amended degraded soil (2,55) and by degraded soil and sludge. The content of assimilatory pigments was however increased with up to 280% in sludge and sludge amended soil. Chlorophyll fluorescence (F_v/F_m, F_0 and $F_{m)}$ had higher values in degraded soil and sludge

amended soil as compared to commercial soil. Assessment of superoxide dismutase revealed higher activity in sludge grown plants while peroxidase activity was increased in sludge, sludge amended and degraded soil grown plants. Phenolic content accumulation was highest in commercial soil grown plants, followed by sludge and sludge amended treatments, as was the antioxidant activity of alcoholic extracts of basil plants. Flavonoid contents had high values in sludge (up to 5,4 mg/g quercetin equivalents fresh weight) compared to commercial soil (4,3 mg/g) or degraded soil (3,5 mg/g) grown plants. Although a level of stress was observed in sludge amended substrates, as revealed by physiological and biochemical markers, the synthesis of phenolic bioactive compounds was comparable or higher than regular soil, indicating a potential use of municipal sludge for amending cultivation substrates for basil.

Acknowledgements: Some of the infrastructure used in the experiment was provided by the CERNESIM (The Environmental Science Studies Center for the North-East Developing Region) project.

SECTION OF ANIMAL BIOLOGY

PAPERS LIST

ORALPRESENTATIONS
Hall B460: 12^{20}-14^{30}; 16^{00}-19^{00}

MODERATORS:
Prof. dr. Ioan MOGLAN
Conf. dr. Dorel URECHE

Veronica ANTONE
FORECASTING REGARDING MOUFLON POPULATIONS FROM ROMANIA

Ștefan-Adrian STRUNGARU, Gabriel PLĂVAN, Mircea NICOARĂ, Alexandrina CRUCEANU
MYTH OR REALITY - IS THE ENVIRONMENT CONTAMINATED WITH HIGH LEVELS OF GAMMA RADIATIONS BY THE CRUCEA URANIUM EXPLOITATION, ROMANIA?

Anca-Narcisa NEAGU, Ionel MIRON
TISSUE BIOACCUMULATION OF CONTAMINANTS PRESENT IN OUR ENVIRONMENT

Ionel MIRON, Anca-Narcisa NEAGU
„BIO-EDUCATION" THROUGH BREATH, NUTRITION, FITNESS, STRESS RELEASE AND REST AWARENESS (RAMEO)

Elena-Daniela PRELIPCEAN (BOSOVICI), Ioan MOGLAN
THE DIVERSITY OF THE AUXILIARY ENTOMOFAUNA IN SOME CROPS OF RYE IN SUCEAVA COUNTY

Elena-Daniela PRELIPCEAN (BOSOVICI), Ioan MOGLAN
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Angelica Liliana CHIRILIUC, Ionel D. ANDRIESCU
SPECIES OF *PSOCOPTERA* (INSECTA, PSOCOPTERA) ASSOCIATED WITH THE PLANT *TANACETUM VULGARE* (Z.) ASTERALES, ASTERACEAE) IN THE NORTH-EAST OF ROMANIA

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FAUNA (ANNELIDA,OLIGOCHAETA) OF RIVER PRUT

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POSTERS

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

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Marius Andrei RĂU, Gabriel PLAVAN, Mircea NICOARĂ, Dorel URECHE
FEEDING ECOLOGY OF BROWN TROUT (*SALMO TRUTTA* L.) IN TROTUȘ RIVER, ROMANIA

ABSTRACTS

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

FORECASTING REGARDING MOUFLON POPULATIONS FROM ROMANIA

VERONICA ANTONE*
Museum Complex of Natural Sciences of Constanta, Romania

Present work describes specific estimation of Mouflon *Ovisammon mussimon* effectives' evolution in Romania,by using VORTEX 10 application. This helps for understanding the influence of different demographic, environment or genetic factors upon the populations' dynamics. The study is based on previous data acquired by researching the evolution of Mouflon populations from Romania. Simulations were started with existing Mouflon effectives at December 31, 2013,for a period of 100 years and using 500 iterations. The estimations considered selections or extractions needed by hunting funds and the fact that the initial effectiveswere supplemented. The results shows the importance of the initial size (number of individuals) for an area colonization and also the necessity of supplementation in the first 10 years.

MYTH OR REALITY - IS THE ENVIRONMENT CONTAMINATED WITH HIGH LEVELS OF GAMMA RADIATIONS BY THE CRUCEA URANIUM EXPLOITATION, ROMANIA?

ȘTEFAN-ADRIAN STRUNGARU*[1], GABRIEL PLĂVAN[1], MIRCEA NICOARĂ[1], ALEXANDRINA CRUCEANU[2]
[1]"Alexandru Ioan Cuza Univeristy" of Iasi, Department of Biology, Laboratory of Aquatic Ecology and Ecotoxicology , Romania
[2]"Alexandru Ioan Cuza University" of Iasi, Faculty of Geography and Geology, Department of Geography, Romania

In the year 1965 it started the geological research and exploration, for the future uranium mining exploitation called Crucea-Botusana in Romania. After 18 years of geological exploration, in 1983 two new mining sites were opened one in the Crucea Village and one in the village Botusana. In present time is one of the greatest uranium exploitation from Romania which supplies Cernavoda nuclear power plant which is only one located in Romania. The uranium path is crossing areas with inhabitants and the possibility of contamination is high. More than that the Crucea Village with the surrounding area is considered to have a negative impact because people from other villages and tourists belive that is high contaminated with radiations and some of them said that they had headaches and nausea during their visit. The measurements for gamma dose rate and water parameters were conducted on May 2015. These were recorded in situ as continues samples one after other during the sun light from 8 am till 5 pm because it was covered a large area and the cosmic radiation is same. The gamma dose was measured in the populated and surrounding area of the uranium exploitation in 9 major areas. For the drinking and spring water it was measured the pH, TDS (total dissolved solids), conductivity, dissolved oxygen and ORP (redox potential). The apparatus used for the measurements of these parameters it was HI 9828 from Hanna Instruments that was calibrated in the field using certificated reagents. The

water measurement was done in 10 repeate measurements for each sampling site. We collect the data from local medical offices and doctors from Panaci, Dorna Arini, Vatra Dornei City and Carlibaba about the cases recorded from 2010-2014 in order to observe any chronic exposure at the radiations for each studied area. The data were analyzed and plotted in OriginPro 8 software. The gamma dose from each site was compared with the maximum admitted value by the romanian laws.

TISSUE BIOACCUMULATION OF CONTAMINANTS PRESENT IN OUR ENVIRONMENT

ANCA-NARCISA NEAGU[1], IONEL MIRON[2]
[1]Faculty of Biology, „Alexandru Ioan Cuza" University of Iaşi, Romania
[2]Member of the Academy of Romanian Scientists, Iaşi, Romania

The paper analyzes the tissue bioaccumulation of a lot of harmful substances take in from the environment, disturbing the homeostasis and the health state of the tissues from the human body. It has been found that some food additives, disrupting hormones and heavy metals accumulate in the human tissues, inducing structural and functional changes.

„BIO-EDUCATION" THROUGH BREATH, NUTRITION, FITNESS, STRESS RELEASE AND REST AWARENESS (RAMEO)

IONEL MIRON[1], ANCA-NARCISA NEAGU[2]
[1]Faculty of Biology, „Alexandru Ioan Cuza" University of Iaşi, Romania
[2]Member of the Academy of Romanian Scientists, Iaşi, Romania

Assuming the hypothesis of Jacques Delors, in the UNESCO Report (1996) concerning the education in the 21st century, the self-knowledge could represent the "vertebral column" of the entire education system. This paper proposes a way to include the awareness of the human body structure and functioning in philosophy of self-knowledge, developing five daily practices as parts of the "bio- education" concept. Daily awareness of breath (R), alimentation (A), movement (M), release stress (E) and rest (O) could result in maintaining of the body homeostasis, the balance between the human body and the external environment, ensuring a long-life ecological comfort. To this end, the results of a survey on the perception of RAMEO practice, applied to a representative group of scholars from the gymnasium and high school from most counties were analyzed.

THE DIVERSITY OF THE AUXILIARY ENTOMOFAUNA IN SOME CROPS OF RYE IN SUCEAVA COUNTY

ELENA-DANIELA PRELIPCEAN (BOSOVICI) [1*], IOAN MOGLAN [1]
[1]Alexandru Ioan Cuza University of Iași, Faculty of Biology, Romania

The collection of biological material and the observations were conducted from May to June 2014 in the rye culture of villages: Rădăuți, Horodnic de Jos, Marginea and Poieni Solca. In every village has been investigated a single crop of rye. The collection was performed using the entomological net, 50 mowings with the entomological net from two areas of the rye crops:at the edge and in the middle.The auxiliary entomofauna in the investigated culture belonged to the order Hemiptera, suborder Heteroptera-families: Anthocoridae, Miridae, Nabidae and

Reduviidae; order Coleoptera -families Coccinellidae and Cantharidae; order Hymenoptera-families: Ichneumonidae, Aphidiidae, Braconidae, Cynipidae, Pteromalidae, Eulophidae, Encyrtidae, Aphelinidae, Mymaridae, Scelionidae, Diapriidae and Formicidae; order Neuroptera- family Chrysopidae; order Diptera- families: Tachinidae and Syrphidae.
The largest diversity was recorded in late May and early June on the outskirts of culture.

THE DIVERSITY OF THE HARMFUL ENTOMOFAUNA IN SOME CROPS OF RYE IN SUCEAVA COUNTY

ELENA-DANIELA PRELIPCEAN (BOSOVICI) [1*], IOAN MOGLAN [1]
[1]Alexandru Ioan Cuza University of Iași, Faculty of Biology, Romania

The collection of biological material and the observations were conducted from May to June 2014 in the rye culture of villages: Rădăuți, Horodnic de Jos, Marginea and Poieni Solca. In every village has been investigated a single crop of rye. The collection was performed using the entomological net, 50 mowings with the entomological net from two areas of the rye crops:at the edge and in the middle.The harmful entomofauna in the investigated culture belonged to the order Hemiptera, suborder Heteroptera- families: Scutelleridae and Pentatomidae; suborder Homoptera, -families: Aphididae and Cicadellidae;order Thysanoptera- families: Phloeothripidae and Aeolothripidae; order Hymenoptera- familyTenthredinidae .The maximum attack on corn plants in all of the cultures were recorded in the second half of May and early June.

AGATHIS NIGRA NEES (HYMENOPTERA, BRACONIDAE) AS PARASITOID OF THE SMALL BUTERFLY *DICHOMERIS MARGINELLA* (F.) (LEPIDOPTERA, GELECHIIDAE) ON *TANACETUM VULGARE* (L.) (ASTERALES, ASTERACEAE) IN ROMANIA WITH SOME CONSIDERATIONS ON THE SPECIES OF THE GENUS *AGATHIS* LATREILLE IN THE FAUNA OF ROMANIA AND THE REPUBLIC OF MOLDAVIA

IONEL D. ANDRIESCU [1]*, ANGELICA LILIANA CHIRILIUC [2]
[1]"Alexandru I. Cuza" University Iasi, Faculty of Biology, Romania
[2]Gymnasial School of Burla,(Suceava), Romania

The paper presents the establishment of the relationships of the parasitoid *Agathis nigra* Nees (Hymenoptera) with phytophagous insects associated with the plant *Tanacetum vulgare* (L.) in Romania as well as the carrying out of a synthesis of knowledge regarding the species of the genus Agathis Latreille existing in Romania and the Republic of Moldavia, a similar territory with that of Romania from an ecological point of view. Thus, through rearings in laboratory and observations in the field, The species *Agathis nigra* was obtained from the larvae of the small buterfly *Dichomeris marginella* (F.), a phytophagous species which develops in the stems of the host plant, the parasitoid host being new for Romania . There are also presented the values of some ecological parameters such as percentages of parasitation, the period of flight, the degree of damage, number of generations. Because in the "Fauna Europaea" it is mentioned only the species *Agathis breviseta* Ness, 1814, we have realized a synthesis on the basis of the Romanian consulted literature of speciality. Thus, it is pointed out for the catalogue of the "Fauna Europaea", the following species for the territory of Romania and the Republic of Moldavia: *Agatis anglica* Marsh., *A. assimilis* Kok., *A. breviseta* Nees, *A. glaucoptera* Nees, *A. griseifrons*

Thoms., *A.malvaceorum* Latr., *A. nigra* Nees, *A. rufipalpis* Nees, *A. semiaciculata* Ivan , *A. tibialis* Nees, and *A .umbellatorum* Nees (for Romania) and in addition *A. montana* Shest. together with other seven common species to both territories of those two countries.

SPECIES OF *PSOCOPTERA* (INSECTA, PSOCOPTERA) ASSOCIATED WITH THE PLANT *TANACETUM VULGARE* (Z.) ASTERALES, ASTERACEAE) IN THE NORTH-EAST OF ROMANIA

ANGELICA LILIANA CHIRILIUC [1], IONEL D. ANDRIESCU [2]*

[1] Gymnasial School of Burla, (Suceava) Romania

[2] "Alexandru I. Cuza" University Iasi, Faculty of Biology, , Romania

The paper presents the knowledge of species of Psocoptera lacking from the present catalogue of the species of Arthropoda associated with the plant *Tanacetum vulgare*. There was used the method of collecting of insects with the entomological net from the plant in vegetation and also methods of rearing in „Schmitz" tubes of the hibernant stems of the plant, collected from three sites at the distance of over one hundred kilometers from one another.Thus, there were obtained species belonging to three families: *Lepinotus reticulatus* End. (Family Trogidae), *Liposcelis sp*. (Family *Liposcellidae*) and *Lachesilla pedicularia* (L.) (Family *Lachesillidae*) as belonging to the fauna associated with *Tanacetum vulgare*, and as geographical distribution they are pointed out for the first time from the east of Romania. There are also presented data on the abundance of species in those three sites of study as well as the dynamics of their multiplication on the way of the season. Thus, it is established for the first time the quality of resource and support of diversity of the plant.

FAUNA (ANNELIDA,OLIGOCHAETA) OF RIVER PRUT

P. VITION

The Institute of Genetics, Physiology and Plant Protection of ASM, Republic of Moldova

There were identificated the following species in the river Prut in interior area of interference frontier bottling of Prut river in delta of Dunarea was inregistrated (*Annelida*) (*Oligochaeta*) fauna: *Ord. Haplotaxida, Sord. Haplotaxina, Suprafam. Tubificoidea, Fam. Tubificidae, Subfam. Tubifinae, Tubifex tubifex (Lamarck 1773), T .ignotus (Stole 1886),T. nevaensis (Last) 1924), Limnodrilus hoffmeisteri (Claparede, 1862), L . helveticus (Piguet 1913), L. profundcola (Verrill) Brinkhurst,1871), L. claparedeianus (Ratzel,1868), L. udekemianus (Claparede), 1862, L .newaensis (Michaelsen) 1902, Isochaeta virulenta (Piguet 1913), Ilyodrilus hammoniensis (Michaelsen) 1901, I .vejdovskyi(Hrabe, 1941), I. moldaviensis, (Vejdovsky et Mrazek,1902), A. pluriseta (Piguet,1906), Rhycodrilus coccineus (Vejdovsky,1875), Psammoryctides albicola (Micahaelsen 1901), Ps.barbatus (Grube 1861), Ps.moravicus (Hrabe,1934), Potamothrix bavaricus (Oschmann/Brinkhurst,1913), P. isochaetus (Hrabe,1934), Peloscolex velutina (Grube)Ude,1873), P.speciosus (Hrabe,1931), Subfam.Rhyacodrilinae (Hrabe,1963), Rhyacodrils falciformis, Fam.Naididae, Subfam Chetogastrine, Chetogaster diastrophus (Gruithuesen 1828), Ch.langi (Bretscher,1896), Ch.limnaei, (Baer,1827) ,Subfam.Naidinae, (Lastockin1924), Spercaria josinae (Vejdovski) Sperber,1883),Uncinais uncinata (Levinsen,1842), Nais communis,(Piguet,1906), N.simplex (Piguet,1906), N. bretscheri (Michaelsen,1899), N. barbata (Muller,1773), N. behningi, (Michaelsen,1923) Stylaria lacustris (Linne) Johnston, 1767), Dero digitata (Muller) Grube,1773), D. obtusa (d'Udekem,1855), Subfam. Pristininae Lastockin,1924,(Piguet)*

Michaelsen, 1906, P. bilobata (Bretscher) Michaelsen, 1903), P. aeguiseta Bourne,1891 Fam. Aeolosomatidae, Aeolosoma hemprichi (Ehrenberg,1828), Subfam. Paranaidinae Paranais friei (Hrabe,1941), Fam. Enchytraeidae Proppapus volki (Michaelsen,1915), Henlea ventriculosa (Udekem,1854), H. stolli (Bretscher,1900), Fridericia callosa (Eisen , 1878),F.bulbosa (Rosa,1887), F. zykofi (Vejdovsky,1903), Enchytraeus albidus (Henle,1837), E. buchholzi (Vejdovsky,1879), Marionina argentea (Michaelsen,1889), M. riparia (Bretscher,1899), M. lobata (Bretscher,1899), M. sphagnetorum (Vejdovsky,1877), M. glandulosa (Michaelsen,1888), Fam. Lumbriculidae. Lamprodrilus pygmaeus, (Michaelsen,1901), .L. semenkewichi (Michaelsen, 1901), Bythonomus subcarpaticus (Hrabe,1929), Rhynchelmis limosella (Hoffmeister,1843,) R. vejdovsky (Hrabe et Cernosvitov,1925), Fam.Lumbricidae. Eiseniella tetraedra f.typica (Savigny,1826), Allolobophora chlorotica (Sav. 1826), A.dubiosa (Orley),1880, A.antipai (Mich.)1891, A.rosea (Sav.)1826, Octodrilus transpadanus (Rosa) 1884,Octolasium lacteum (Orly) 1885 (Savigny,1826). So, study of (*Annelida*), and (*Olgochaeta*) taxonomic structure of the river Prut (as well as the small rivers: Larga, Lopatnic, Drabişte, Cugur, Camenca, Boldureşti , Nîrnova, Lăpuşna, Sarata) hidrographic network, have shown that it is formed of 65 species, among which 9 species are from the small rivers, 11 species - from ponds, 39 species - from barage lakes and 5 species are from springs. In interior department of interference frontier bottling of Prut river in delta of Dunarea was inregistrated *Oligochaeta* fauna richer from point of view special and numerous, thanks to ecotone influence of both hydrografic basine.

SPECIES OF PREDATORY MITES (ARACHNIDA, ACARI) ASSOCIATED WITH THE PLANT *TANACETUM VULGARE* (L.) (ASTERALES, ASTERACEAE) IN THE NORTH– EAST OF ROMANIA

OTILIA IVAN [1], ADINA CĂLUGĂRU[1], ANGELICA LILIANA CHIRILIUC [2], IONEL D. ANDRIESCU [3]*

[1.] Biological Research Institute, Iasi, Romania
[2.] Gymnasial School of Burla, (Suceava) Romania
[3.] "Alexandru I. Cuza" University Iasi, Faculty of Biology, Iasi, Romania

In the catalogue of Arthropods associated with the plant *Tanacetum vulgare* appears until now only a phytophagous species of mites. There were obtained 20 species of Acari through the growth of hibernant stems of *T.vulgare* in „Schmitz" tubes, of which six phytophagous and phyto-saprophagous species and 14 predatory species of the phyto and phyto-saprophagous species. These species were multiplied in the „Schmitz" tubes from the eggs laid on the stems of *T.vulgare* in the previous autumn. From a faunistic point of view, among predatory taxa, the folowing are pointed out for the first time in the fauna of Romania. *Androlelaps casalis* Berl., *Hypoaspis sp*. (Fam. Lelapidae), Fam Bdellidae with the species *Bdellodes longirostris* (Herm.) and *Bdella sp*., *Anystis sp*. (Family *Anystidae*); the family *Cunaxidae* with the species *Cunaxa sp*. and the family Eupodidae with *Eupodes sp*. Other species from the fauna of Romania were pointed out: *Euseius sp* (Family Phytoseidae), *Leptus sp* (Family Erytraeidae) and *Allotrombium fuliginosus* (Family Trombidiidae).There are also pointed out the values of some ecological parameters such as numerical abundance and the quantitative prey- predator ratio and also the trophic relationships of the predatory mites with other groups of arthropods associated with *Tanacetum vulgare*. There is also mentioned the ecological and economic importance of the plant *Tanacetum vulgare* through the diversity of predatory mites and the favour of this plant in the surrounding environment.

POSTERS

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

CONTRIBUTIONS TOWARD A REVISION OF THE EUROPEAN SPECIES OF *DICOPUS ENOCK* (HYMENOPTERA: MYMARIDAE)

EMILIAN PRICOP

"Alexandru Ioan Cuza" University of Iasi, Faculty of Biology, Iaşi, Romania

All representatives of the family Mymaridae are cosmopolitan egg parasitoids, with more than 102 valid genera and more than 1400 valid species worldwide. This parasitic group belonging to the Hymenoptera is poorly known and studied not only in Romania but also in most European countries. This paper contributes to a revision of the genus *Dicopus* Enock. The taxonomy of *Dicopus* Enock has long been neglected, the re-descriptions of the type material are not yet available. Identification keys to the species of *Dicopus* are also not available. In this moment, to identify or describe a new species of *Dicopus*, especially from a single specimen certainly does not help the taxonomy of this group. A revision of at least all the European species of *Dicopus* is most certainly necessary. Four species previously treated as belonging to *Dicopus* Enock were described and recorded from Europe: *Dicopus minutissimus* Enock, 1909 and *Dicopus cervus* Morley, 1930 from UK; *Dicopus citri* Mercet, 1912 from Spain and *Dicopus moscovit* Triapitsyn, 2015 from Russia. We discuss the status of each European species adding new data to the knowledge of these species. Most certainly the species *D. cervus* does not belong to the Mymaridae, but belongs to the Eulophidae. *Dicopus moscovit* is most probably a synonym of *D. citri*. We also propose and provide an identification key to the European species of *Dicopus* Enock. The following species are identified and recorded also from Romania: *Dicopus minutissimus* and *D. citri*. This rare species - *Dicopus citri* is newly recorded from Romania. We also provide new data regarding the distribution of *D. minutissimus.* This two species of *Dicopus* were collected using the entomological sweep net and a few sticky traps from different locations in the Carpathian Mountains, above 700m elevation, in Eastern Romania. Acknowledgements: This work was supported by the strategic grant POSDRU/159/1.5/S/133391, Project "*Doctoral and Post-doctoral programs of excellence for highly qualified human resources training for research in the field of Life sciences, Environment and Earth Science"* cofinanced by the European Social Fund within the Sectorial Operational Program Human Resources Development 2007 – 2013.

WILD PLANTS AND ANIMALS AS SUBSISTENCE RESOURCES IN CHALCOLITHIC SETTLEMENTS (MIDDLE HOLOCENE, 4500-3500 CAL. BC) TO THE EAST OF CARPATHIANS

LUMINIȚA BEJENARU[1, 2], MIHAELA DANU[1, *]

[1] "Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Romania

[2] Romanian Academy-Iasi Branch, Department of Anthropological Research, Romania

This study, concerning the Cucuteni culture (4500-3500 cal. BC), is focused on wild plants and animals used as food resources in three Chalcolithic settlements located to the east of Carpathians: Hoisești (Iași County, Romania), Costești (Iași County, Romania), and Poduri (Bacău County, Romania). Plant and animal remains, discovered in the archaeological sites, have

been analysed according to archaeobotanical and archaeozoological methods (i.e. sampling, preparation, identification, and quantification). The subsistence practices of Chalcolithic peoples are generally based on farming, but a variety of other food provision practices have been used considering some wild plants and animals. So that, besides plant cultivation (especially cereals) and animal husbandry (e.g. cattle, sheep/goat, pig), the hunting (*Cervus elaphus*, *Sus scrofa*, *Capreolus capreolus*, *Bos primigenius*, etc.) and gathering of animals (*Helix*, *Unio*) and plants with alimentally potential (*Corylus avellana*, *Cornus mas*, *Rubus idaeus*, *Sambucus nigra*, *Chenopodium album*, *Rumex acetosa*) represented important resources for subsistence in the mentioned Chalcolithic settlement. For instance, the wild resources constituted a significant part of the diet for the Cucuteni community from Hoisești, which was a group of small-scale agriculturalists. The hunting almost equalizes the husbandry in importance, according to animal remains' frequencies, and the gathering of mollusks was also important.

DATA CONCERNING THE ICHTHYOFAUNA IN THE MIDDLE SECTION OF THE RIVER BUZĂU (ROMANIA)

DOREL URECHE[1*], CAMELIA URECHE[1], ROXANA VOICU[1], MARIUS NĂDEJDE[2]
[1] "Vasile Alecsandri" University of Bacău, Faculty of Sciences, Bacău, Romania
[2] "Vasile Alecsandri" University of Bacău, Faculty of Engineering, Bacău, Romania

The aim of our study was to assess the state of the fish communities in the study area, based on biodiversity indices, species frequency, numerical stock, and weight stock in sampling sites. Our research study was carried out over the year 2011 in the middle section of the River Buzau. The biological material was sampled by electrofishing, from 36 sampling sites. The fish individuals were determined and than biometricaly processed. Some of the ecological indices were calculated, as well as biodiversity indices (Margalef, Menhinik, Shannon-Wiener), evenness (equitability), numerical and weight stocks and similarity indices. The taxonomic analysis of the biological material highlights the presence of 13 fish species. Since the study area overlaps the chub zone, 3 of the fish species are characteristics, and consequently they have recorded the highest values of the frequency in sampling sites: *Squalius cephalus*, *Romanogobio kesslerii*, and *Sabanejewia vallachica*. The numerical stock in sampling sites ranged between 0.18 (*Chondrostoma nasus*), and 59.72 ind./100 m^2 (*Squalius cephalus*), while the weight stock ranged between 0.02 (*Romanogobio kesslerii*), and 1181.56 g/100 m^2 (*Squalius cephalus*). In eight of the sampling sites the species richness indices, the biodiversity indices, and also the equitability index have reached high levels.

DATA CONCERNING THE STRUCTURE OF BENTHIC MACROINVERTEBRATES COMMUNITIES IN MURES LOWER GORGE (ROMANIA)

ROXANA VOICU[1*], CAMELIA URECHE[1], PETRONELA BRAN[2], DOREL URECHE[1]
[1] "Vasile Alecsadri" University of Bacău, Faculty of Sciences, Bacău, Romania
[2] "Vasile Alecsadri" University of Bacău, Faculty of Engineering, Bacău,Romania

The structure of the freshwater benthic macroinvertebrate communities is an excellent, effective tool often used for water quality assessment, as well as an important indicator of water pollution extent. The study was carried out in Mures lower gorge, during the year 2011. The biological material was sampled from 18 sampling sites placed on 15 tributaries of the River Mures. An amount of 20,485 individuals belonging to 14 taxonomic groups of benthic

macroinvertebrate has been processed. Six of the taxonomic groups have been identified in all of the sampling sites, having a frequency of 100 % (Amphipoda, Ephemeroptera, Plecoptera, Trichoptera, Diptera, Coleoptera). Two of the taxonomic groups have recorded the highest relative abundance in 14 of the sampling sites: Amphipoda 92.28% in Valea Tiganului, and Ephemeroptera 39.18% in Valea Craciuneasca. In the rest of the sampling sites, the highest relative abundance has been recorded by dipterans (58.18% in Troas, downstream Temesesti; 58.40% in Valea Almasului, downstream Cerbia village). The increasing of the relative abundance of some of the dipteran groups in some of the sampling sites placed downstream human settlements suggests the decrease of water quality as a consequence of anthropic influences.

FEEDING ECOLOGY OF BROWN TROUT (*SALMO TRUTTA* L.) IN TROTUȘ RIVER, ROMANIA

MARIUS ANDREI RĂU[1*], GABRIEL PLAVĂN[1], MIRCEA NICOARĂ[1], DOREL URECHE[2]

[1]Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bd. Carol I, No. 20A, code 700505, Iași, Romania rau_m2002@yahoo.com

[2]Faculty of Science, University "Vasile Alecsandri" of Bacău, Str. Mărăşeşti 157, code 600115, Bacău, Romania

The main objective of this study is to investigate the diet, the characteristics of the prey and the feeding behavior of the Brown trout on the studied ecosystem. All the fish (122 individuals) were capturated by electrofishing in 3 sampling sites on the river during the summer and autumn of 2009 and were measured, weighed and eviscerated. The sampling sites have been established to intercept as accurate as possible the hydrobiological aspects, the aquatic vegetation (periphyton, macrophytes), riparian vegetation (shrubs, reed, herbaceous plants) and substrate structure (rockfill, gravel, sand, mud). We calculated the abundance of prey and prey diversity (Shannon index). To estimate the dietary importance of each prey category, we calculated the percent number or proportion of each food and the frequency of occurrence. The Costello (1990) graphical method was applied to describe the feeding strategy and prey importance. A total number of 23 taxa of benthic macroinvertebrates were identified, summing a total of 1850 individuals. For 8 individuals of Brown trout the digestive tract was empty. The most frequent Brown trout prey items, were *Baetis* spp. and *Hydropsyche* spp. Feeding strategy and macroinvertebrates traits were the main points that we covered within the study of Brown trout feeding behavior.

Key words: diet, feeding mode, Brown trout, macroinvertebrates

SECTION OF MOLECULAR INTERACTIONS IN THE LIVING WORLD

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Hall B 339: $12^{20} – 14^{30}$; $16^{00} – 19^{00}$

MODERATORS:
Prof. univ. dr. Lucian HRIȚCU
Conf. dr. Lucian GORGAN

Alin-Constantin DIRTU, Aurel PUI, Daniela DIRTU, Adrian COVACI
HUMAN EXPOSURE TO PERSISTENT ORGANIC POLLUTANTS. CURRENT EXPOSURE OF ROMANIAN POPULATION TO ORGANOCHLORINE PESTICIDES

Lucian HRITCU, Eyup BAGCI, Emel AYDIN, Calin MANIU, Marius MIHASAN
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Radu IONIȚĂ, Lucian GORGAN, Oana CIOANCĂ, Lucian HRIȚCU
EFFECTS OF INHALED *ORIGANUM MAJORANA* L. ESSENTIAL OIL ON BDNF mRNA EXPRESSION IN AMYLOID BETA (1-42) RAT HIPPOCAMPUS

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Gabriela VOCHIȚA, Manuela OPRIȘAN, Igor V. KOSHLAN, Alexandru NIȚĂ, Gherghel DANIELA
THE ASSESSMENT OF RADIOTHERAPY EFFECTS ON PROGENIES FROM SUCCESSIVE GENERATIONS OF V79 CELLS

Simona MATIUȚ, Lucian HRIȚCU
RAPID DIAGNOSIS OF *HELICOBACTER PYLORI* INFECTION - IMMUNOCHROMATOGRAPHIC TEST

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MODELING THE SUPERSPECIES COMPLEX *ACROCEPHALUS SCIRPACEUS* TEMPORAL EVOLUTION

POSTERS

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

Ioana-Miruna BALMUȘ, Radu LEFTER, Alin Stelian CIOBICĂ
IS ANIMAL MODELLING STILL USEFUL IN ALZHEIMER'S DISEASE RESEARCH?

Iulia ANTIOCH, Alin-Stelian CIOBÎCĂ
PAIN REACTIONS IN ANIMAL MODELS OF PARKINSON DISEASE INDUCED WITH MPTP

Elena TODIRAŞCU-CIORNEA, Gabriela DUMITRU, Elena Violeta AXINTE, Anca Mirela AMARIEI, Silvia DUMITRAŞCU
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Stela PAPA, Mitică CIORPAC, Lucian D. GORGAN, Ariola BACU
GENETIC VARIATION BETWEEN SOME NATURAL POPULATIONS OF *SALVIA OFFICINALIS* OF NORTHERN ALBANIA BASED ON RFLP AND RAPDS MARKERS.

ABSTRACTS

ORAL PRESENTATIONS
Hall B 339: $12^{20} – 14^{30}$; $16^{00} – 19^{00}$

HUMAN EXPOSURE TO PERSISTENT ORGANIC POLLUTANTS. CURRENT EXPOSURE OF ROMANIAN POPULATION TO ORGANOCHLORINE PESTICIDES

ALIN-CONSTANTIN DIRTU[1*], AUREL PUI[1], DANIELA DIRTU[1,2], ADRIAN COVACI[3]

[1]Department of Chemistry, "Alexandru Ioan Cuza" University of Iași, Romania, Carol I Blvd. No 11, 700506, Iasi, Romania

[2]Public Health Institute, Regional Center of Public Health Iasi, Street V. Babes No 14, 700465, Iasi, Romania

[3]Toxicological Centre, University of Antwerp, Universiteitsplein 1, 2610, Wilrijk, Antwerp, Belgium

[*]corresponding author: Tel: +40232201308; Fax: +40232201313; e-mail: alin.dirtu@chem.uaic.ro

Persistent organic pollutants are ubiquitous presences in the environment and humans. Only limited information concerning human exposure to such contaminants is available from Eastern European countries, such as Romania. This study aimed on estimation of the exposure of general population from Eastern Romania to halogenated contaminants including organochlorine pesticides, such as DDT and metabolites, hexachlorocyclohexane isomers, hexachlorobenzene, chlordanes and metabolites. Therefore, multiple biological samples (serum and hair) were collected from general population (clinical healthy) as well as from children (overweight and obese) in order to evaluate the contamination status with such anthropogenic compounds. Additionaly, food (commercialy available and from rural environment) and indoor dust samples collected from the same geographical region were also analyzed. The obtained results evidenced that all matrices contained high levels of targeted contaminants, while ocasionally fresh DDT was present at higher levels compared to its metabolites. Some food samples collected from rural environment exceeded maximum acceptable levels for these contaminants according to Romanian and European legislation. Based on accepted intake scenarios for humans of food and indoor dust, our findings suggested that both adults and children are currently exposed to high levels of chemicals officially banned in Romania multiple years ago.

Acknowledgements: This work was supported by the strategic grant POSDRU/159/1.5/S/133652, co-financed by the European Social Fund within the Sectorial Operational Program Human Resources Development 2007 – 2013.

MEMORY-ENHANCING EFFECTS OF *FERULAGO ANGULATA* ESSENTIAL OIL ON SCOPOLAMINE-INDUCED AMNESIA IN RATS

LUCIAN HRITCU[1*], EYUP BAGCI[2], EMEL AYDIN[2], CALIN MANIU[1], MARIUS MIHASAN[1]

[1]Department of Biology, "Alexandru Ioan Cuza" University of Iași, Iasi, Romania
[2]Department of Biology, Faculty of Science, Firat University, 23119 Elazig, Turkey
**Corresponding author: Lucian Hritcu, Department of Biology, "Alexandru Ioan Cuza" University of Iasi, Bd. Carol I, No. 11, Romania, E-mail address: hritcu@uaic.ro, Tel. +40-232-201666, Fax. +40-232-201472*

Ferulago angulata subsp. *carduchorum (*Apiaceae) is a shrub indigenous to western Iran, Turkey and Iraq. In traditional medicine, *F. angulata* is recommended for treating digestive pains, hemorrhoids, snake bites, ulcers and as sedative. This study was undertaken in order to evaluate the possible cognitive-enhancing, anxiolytic, antidepresant and antioxidative effects of the inhaled *F. angulata* essential oil in scopolamine-induced mild amnesia in rats. The effect of the essential oil (1% and 3%, daily, for 21 continuous days) on spatial memory performance was assessed using Y-maze and radial arm-maze tasks, as animal models of spatial memory. Rat models of anxiety and depression including elevated plus-maze (EPM) and forced swimming test (FST) were used. Also, the oxidative stress status in the rat hippocampus and amygdala was assessed using superoxide dismutase, glutathione peroxidase and catalase specific activities, the total content of the reduced glutathione, protein carbonyl and malondialdehyde levels. Furthermore, *in silico* studies carried out by employing molecular docking experiments pointed out to existence of strong interactions of monoterpenes from *F. angulata* essential oil with anxiolytic and antidepressant effects with $GABA_A$ receptor. Inhalation of the essential oil improved spatial memory formation, exhibited anxiolytic- and antidepressant-like effects and showed potent antioxidant activities in in the rat hippocampus and amygdala, respectively.

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NOOTROPIC EFFECTS OF THE *ORIGANUM MAJORANA* L. ESSENTIAL OIL IN AN AB(1-42) RAT MODEL OF ALZHEIMER'S DISEASE

PAULA POSTU[1], LUCIAN HRITCU[1*]

[1]Department of Biology, "Alexandru Ioan Cuza" University of Iași, Iasi, Romania
**Corresponding author: Lucian Hritcu, Department of Biology, "Alexandru Ioan Cuza" University of Iasi, Bd. Carol I, No. 11, Romania, E-mail address: hritcu@uaic.ro, Tel. +40-232-201666, Fax. +40-232-201472*

Alzheimer's disease (AD) is a progressive disorder characterized by a decline in memory or other cognitive functions that affects a person's ability to perform everyday activities. AD is an irreversible and incurable condition and many efforts are required for discovering a cure. In the present study, it was used an essential oil of *Origanum majorana* L. (1% and 3%) in order to assess the antidepressant and anxiolytic effects. *Origanum majorana* L., also known as sweet marjoram and belonging to the Lamiaceae family is one of the most popular spice products in Mediterranean countries. In traditional medicine, sweet marjoram is recommended for the treatment of anxiety, and also as anti-inflammatory, anti-depressant and antioxidant agent. We used forced swimming task as an animal model of depressive behavior and elevated plus task as

an animal model of anxiety. The Aβ (1-42)-treated rats exhibited increase of depressive behavior in forced swimming test and also increase of anxiety in elevated plus maze task. Inhalation of the essential oil significantly improved these parameters, suggesting positive effects on antidepressive-anxiolytic-like behaviors. Our results suggest that the essential oil of *Origanum majorana* L. may be used as a complementary and alternative methods to improve depression and anxiety associated with Alzheimer's disease.

EFFECTS OF INHALED *ORIGANUM MAJORANA* L. ESSENTIAL OIL ON BDNF MRNA EXPRESSION IN AMYLOID BETA (1-42) RAT HIPPOCAMPUS

RADU IONIȚĂ[1]*, LUCIAN GORGAN[1], OANA CIOANCĂ[2], LUCIAN HRIȚCU[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi
[2]Faculty of Pharmacy, University of Medicine and Pharmacy "Gr. T. Popa" – Iasi
**radu.ionita09@yahoo.com*

Brain-derived neurotrophic factor (BDNF) is important in neuronal growth and neuronal survival, participating in the synaptic processes of memory. Cognitive deficit is related to alterations of neurotrophic factors level such as BDNF. This impairment, was observed in male Wistar rats received an intracerebroventricular injection of amyloid beta (1-42)- induced a rat model of Alzheimer's disease (AD). BDNF mRNA in the rat hippocampus was assessed using RT-PCR and specific primers. Rats given essential oil (ORG1% and ORG3%) were found to have significantly increase of BDNF mRNA expression as compared to amyloid beta (1-42) group. Taken together, these data indicate that inhalation of *Origanum majorana* L. essential oil influences the induction of BDNF within hippocampus area which could contribute for improvement of cognitive deficits close related to AD.

CYTOSTATIC AND/OR CYTOTOXIC EFFECTS OF SOME PRIMARY POLYPHENOLIC EXTRACTS OBTAINED FROM THE GRAPES SEEDS

DANIELA GHERGHEL[1,*], COSMIN-TEODOR MIHAI[1, 2], GABRIELA VOCHITA[1], PINCU ROTINBERG[1], RODICA PASA[3], ANCUȚA NECHITA[3], BOGDAN NECHITA[4]

*[1]Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania, *daniela_gherghel@yahoo.com*
[2] Interdisciplinary Research Department – Field Science, "Al. I. Cuza" University of Iasi, Bd. Carol I, no. 20A, Iasi, Romania
[3]Research and Development Station for Viticulture and Vinification Iasi, Aleea Mihail Sadoveanu, no. 48 , Iasi, Romania.
[4] Research Center for Oenology, branch of Romanian Academy, Aleea Sadoveanu no.9, Iasi, Romania

The objective of the present study is the evaluation of the possible oncotherapeutic property of some primary polyphenolic extracts, obtained from Vitis vinifera seeds waste, which is a rich bank of bioactive proanthocyanidin structures unexploited today but which will be soon chemotherapeutic capitalized. Consequently, we have preliminary investigated the in vitro effects of five total polyphenolic bioextracts, (P1-P5), in different doses (50-300 µg/mL), upon cell protein synthesis (estimated by methylen blue method) and viability (MTT assay) of the

Vero healthy and HeLa neoplastic cells, results being statistically analyzed by Student's"t" test. It has been observed that the P4 and P5 products induced: a significant inhibitory impact upon cell protein synthesis; a significant decrease of the cell viability, comparatively with the control cultures, the effects potential being correlated with the incubation dose. It should be noted that the reactivity of the healthy cells to the bioactive extracts was smaller, revealing a reduced cytotoxic impact upon the normal cells. Therefore, our results highlight the cytostatic and/or cytotoxic effects of these natural polyphenolic bioproducts, their reproducible and dose - effectiveness dependence, suggesting the necessity of some complementary investigations upon their action mechanisms.

ACTION MECHANISMS OF SOME NEW POLYPHENOLIC EXTRACTS FROM SEEDS OF *VITIS VINIFERA*

COSMIN-TEODOR MIHAI[1,2*], GABRIELA VOCHITA[1], DANIELA GHERGHEL[1], RODICA PAȘA[3], BOGDAN NECHITA[3], ANCUȚA NECHITA[4], PINCU ROTINBERG[1]

1Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania

2 Interdisciplinary Research Department – Field Science, "Al. I. Cuza" University of Iasi, Bd. Carol I, no. 20A, Iasi, Romania

3 Research Center for Oenology, branch of Romanian Academy, Aleea Sadoveanu no.9, Iasi, Romania

4 Research and Development Station for Viticulture and Vinification Iasi, Aleea Mihail Sadoveanu, no. 48 , Iasi, Romania

** email: mihai.cosmin.teo@gmail.com*

Identification and validation of new compounds with therapeutic potential is a current concern of the biopharmaceutical research and industry, nowadays being reevaluated the old sources or exploited unconventional resources of active substances. Vitis vinifera seeds are very rich in bioactive compounds, especially polyphenols, the probability to identify new actively biopreparations being highly elevated. In this paper are presented the results focused on identification of the possible action mechanisms of some compounds (P4, P5 in doses of 200 and 300 µg/mL) proven already in our previous tests as cytostatic/cytotoxic. Tests were performed on HeLa and Vero cells and analysis of apoptosis (Annexin V-PI assay) was performed as well as the levels of ROS (DCFH-DA assay) were registered. After treatment period (48 hours), the apoptosis process was stimulated in HeLa cell cultures, maximum effect being in the case of the bioproduct coded P4, at a dose of 300 µg/mL. In Vero cell cultures, the intensity of apoptosis was similar to the control group. No variations in ROS levels, as compared with control group, were registered in both cell cultures. This preliminary test suggests that possible mechanism of action of selected compounds to induce cytotoxic effect is apoptosis.

EVALUATION OF CARBENDAZIM ACTION UPON SOME METABOLIC PROCESSES IN RYE (*SECALE CEREALE* L.) SEEDLINGS

GABRIELA VOCHITA [1,*], DANIELA GHERGHEL [1], DORINA IUREA [1], COSMIN-TEODOR MIHAI [1,2]

1Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania
2 Interdisciplinary Research Department – Field Science, "Al. I. Cuza" University of Iasi, Bd. Carol I, no. 20A, Iasi, Romania
**gabriela.vochita@icbiasi.ro*

Although the fungicides are generally used for increasing yield of crop, they can induced changes which may be detrimental both for the plants and their consumers (grazing livestock and man). In this study we used the carbendazim, a benziimidazole group fungicide, to evaluate its effects on some metabolic processes of rye seedlings (14 days old). Four different concentration of fungicide were used viz. 0.1, 0.2, 0.5 and 1% for 6 and 12 hours. The physiological parameters studied were: germination rate and germination capacity, total assimilatory pigments content, photosynthesis and dry matter content. The germination process was found to decrease with increase in concentration of fungicide, the declining rate being similar for the two treatment period, and more intense at 0.5 and 1% of carbendazim (three times smaller than in controls). Decreased of assimilating pigments content and reducing of chlorophyll and carotenoid ratio prove the existence of reactive oxygen species, a phenomenon associated with diminishing of photochemical conversion efficiency. Inhibition of photosynthesis process is associated with a reduction in stomatal conductance and transpiration, proving the affecting of the photosystem II activity. All these issues may be arguments in explaining the harmful effects that this fungicide exerts upon growing crops.

THE ASSESSMENT OF RADIOTHERAPY EFFECTS ON PROGENIES FROM SUCCESSIVE GENERATIONS OF V79 CELLS

GABRIELA VOCHIȚA [1,*], MANUELA OPRIȘAN[2], IGOR V. KOSHLAN[3], ALEXANDRU NIȚĂ[4], GHERGHEL DANIELA[1]

[1]Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania
[2]St. Spiridon Emergency County Hospital, Iasi, Romania
[3]JINR Dubna, Laboratory of Radiation Biology
[4] Faculty of Biology, "Al. I. Cuza" University of Iasi, Bd. Carol I, no. 20A, Iasi, Romania

Radiotherapy is widely used in clinic, being part of cancer treatment alongside chemotherapy and surgery. Besides the beneficial effect of radiotherapy, there are evidences that radiation-induced injuries may subsequently induce persistent destabilization of the cellular genome. In this paper are presented the results obtained in the conditions of evaluation of the clonogenic ability of V79 cell line after their exposure to different doses of ionizing radiation by analysis, along 12 generations, of the plating efficiency and the surviving fraction of irradiated cells. V79 cells (Chinese hamster cell line) were exposed to different doses of ionizing radiation (1, 2, 3 and 5Gy) produced by a linear particle accelerator. Consequences of different doses of radiation in V79 cells were registered along 12 generations by clonogenic assay. The data registered over 12 generations of V79 cells have shown that there aren't significant differences between the irradiated cells and control group. Notwithstanding, the progeny of the cells exposed

to lower doses of radiation (1 and 2 Gy) were more able to proliferate and form colonies than their counterparts from control or higher doses treated groups. Conclusive, supplementary data are necessary to identify the effects of low doses of irradiation on nuclear structure.

RAPID DIAGNOSIS OF *HELICOBACTER PYLORI* INFECTION - IMMUNOCHROMATOGRAPHIC TEST

SIMONA MATIUT[1,2]*, LUCIAN HRITCU[3]

[1]Praxis Laboratory, Iasi, Romania
[2]Laboratory of Diagnosis and Investigation in Public Health, Iasi, Romania
[3]Department of Biology, AlexandruIoanCuza University, Iasi, Romania

The presence of *Helicobacter pylori* in the stool is particularly important due to its involvement in the gastrointestinal pathology (stomach and duodenum) as manifested by gastritis, peptic ulcer, and gastric cancer. The detection of *H. pylori* in the stool indicate an active process of bacteria proliferation in the gastric mucosa as a marker of acute infection, a reinfection or in the control of treatment effectiveness. Rapid tests for the detection of *H. pylori* in the stool and immunocromatographic stool test were used. Among 1231 patients (598 females, 479 men and 154 children) investigated within Praxis Laboratory during the period between 01.01.2015 - 30.09.2015 there were infected 408 patients (33.14%). Among 408 infected patients there were 217 females (53.18%), 168 men (41.17%) and 23 children (5.63%). The detection limit of the assay is $6.25x10^3$, 99% specificityand sensitivity of 94%, without interfering with other enteric pathogens which gives a higher rate of detection of *H. pylori*as compared to other methods for rapid diagnosis. The highest incidence was among female. The results in the detection of *H. pylori* infection in adults and children creates the premise use as a diagnostic rapid test.

GENETIC STUDIES REGARDING CONGENITAL ANOMALIES OF THE GASTROINTESTINAL TRACT

CRISTIAN TUDOSE[1]*

[1] University "Al. I. Cuza" Iaşi, Faculty of Biology
**cristian.tudose@uaic.ro*

The gastrointestinal tract may be subject to a variety of congenital anomalies that arise during embryological development. Specific patterns of malformations of the gastrointestinal tract include abnormal lumenisation (stenosis and atresia), duplications, abnormal rotation and fixation, abdominal defects and a variety of others associated with persistence of embryonic structures (e.g. Meckel's diverticulum) or abnormal formation of specific regions of the gastrointestinal tract (e.g. microgastria) or its cellular components (e.g. nerves in Hirschsprung's disease). These disorders primarily result in symptoms of intestinal obstruction, effects on surrounding structures or of associated anomalies that are most likely to have a poor prognosis 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 57 children with congenital anomalies of the upper and lower gastrointestinal tract, both syndromic and unsyndromic, born during the years 2009-2013 in Iaşi 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 (71%) which corresponds to a small risk degree; in

22% of cases the risk varied between 6 – 15% which corresponds to a medium risk degree and only in 7% of cases (all syndromic) the risks varied between 25 – 100% (big and major risk).

GENETIC DIVERSITY OF *SCARDINIUS ERYTHROPHTHALMUS* (PISCES: CYPRINIFORMES) INFERRED BY CYTOCHROME C OXIDASE I GENE ANALYSIS

OVIDIU POPESCUL[1], MITICĂ CIORPAC[1,2], DUMITRU COJOCARU[1], LUCIAN D. GORGAN[1*]

*[1] "Alexandru Ioan Cuza" University, Faculty of Biology, Str. Carol I 20A, Iași, Romania, *lucian.gorgan@uaic.ro*

[2] "Alexandru Ioan Cuza" University, Interdisciplinary Research Department, Str. Carol I 20A, Iași, Romania.

The common rudd (*Scardinius erithrophthalmus*) is a bentho-pelagic freshwater fish that occurs mainly in nutrient-rich, well vegetated lowland rivers, backwaters, oxbows, ponds and lakes and it is widespread in Europe and middle Asia. It has a medium length of 20-30 cm, but it can reach 50 cm. The rudd skin is yellowish green and it can be identified by the yellow eye colour. The aim of this study was to identify the genetic diversity and the molecular phylogeny of the rudd (*S. erythrophthamus*) inferred by the mitochondrial cytochrome c subunit I (COI) gene analysis. *S. erythrophthalmus* and *Carassius carassius* (used as outgroup) COI sequences were downloaded from GenBank and aligned using ClustalW method from MEGA 6 software. Phylogenetic trees were constructed using BEAST v1.7.5 (Bayesian Evolutionary Analysis Sampling Trees) and the optimum substitution model was determined using jModelTest. Data validation consisted in estimating the convergence of posterior distributions using Tracer v1.5 and the trees were visualized and edited in FigTree v1.4.0. Genetic diversity parameters were quantified using Arlequin v3.5. Our results indicate a low number of haplotypes with a low mean distance which indicate a low genetic diversity. The ML phylogenetic tree obtained, supports the low genetic diversity found in the previous analysis.

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MODELING THE SUPERSPECIES COMPLEX *ACROCEPHALUS SCIRPACEUS* TEMPORAL EVOLUTION

MITICĂ CIORPAC[1,2], RADU DRUICĂ[1], CONSTANTIN ION[1], GOGU GHIORGHIȚĂ[1], DRAGOS LUCIAN GORGAN[1*]

*[1] "Alexandru Ioan Cuza" University, Faculty of Biology, Str. Carol I 20A, Iași, Romania, *lucian.gorgan@uaic.ro*

[2] "Alexandru Ioan Cuza" University, Interdisciplinary Research Department, Str. Carol I 20A, Iași, Romania.

Genetic distances interpretation can be difficult when there are usually affected by demographic processes, involving migration and population dynamics. The ancestral and also modern species have important parameters such as the effective population size used in population genetic evolution models, but the inference of effective population sizes based on standing levels of variation, strongly affect the levels of variability, because of the demographic

events such as population bottlenecks, admixture, and population subdivision. The aim of this study was to infer a population's change model through the time, calculating the ancestral population size, divergence times and lineages evolution, using mitochondrial markers. Using these tools we estimated the history of five subspecies from *Acrocephalus scirpaceus* complex: *A. s. scirpaceus*, *A. s. fuscus*, *A. s. ambiguous*, *A. s. avicenniae* and *A. s. baeticatus*. Our results reveal that *A. scirpaceus* complex evolution, follows different paths for each subspecies, in addition with the populations admixture and the limiting factors.

POSTERS

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

IS ANIMAL MODELLING STILL USEFUL IN ALZHEIMER'S DISEASE RESEARCH? POSTER PRESENTATION

IOANA-MIRUNA BALMUȘ[1*], RADU LEFTER[2], ALIN STELIAN CIOBICĂ[1,2]

[1] Department of Animal Physiology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași

[2] Center of Biomedical Research, Romanian Academy, Iași Branch

As Alzheimer's disease (AD) is the most severe form of dementia in human and it became more aggressive than AIDS and cancer, it seems that AD research must be an important area of research worldwide. Since its discovery, several forms of research addressed and approached this disease. While at the beginning the knowledge in life sciences allowed only rudimentary research, it seems that now, with the great advance in techniques, AD research even moved in Petri dishes (Choi et al., 2014). This would be the case of the induced-pluripotent stem cells (iPSC) research in which functionally active neurons can grow from dedifferentiated skin cells. Or even the case of the advanced molecular prion protein studies on patients (Jaunmuktane et al., 2015) in which it has been suggested that AD could have a pattern of transmission similar to Creutzfeldt-Jakob disease. Giving all of these studies, one would say that animal modelling and research based on animal models may not be useful anymore. While, no AD animal model have shown itself to be a perfect one, resembling all the features seen in human and there are several serious issues regarding the results of the behavioural and biochemical studies, one may consider preferable to use other means of research. In this way, this paper aims to present arguments and counter arguments on the relevance of animal modelling in AD research.

PAIN REACTIONS IN ANIMAL MODELS OF PARKINSON DISEASE INDUCED WITH MPTP

IULIA ANTIOCH[1], ALIN-STELIAN CIOBÎCĂ[1]

[1] Department of Biology, "Alexandru Ioan Cuza" University of Iași, Romania

It was observed that Parkinson's disease (PD) is less widely appreciated as a condition responsible for pain experiences, even though pain is found in 40-80 % of PD patients, as exhibited by the very few existing reports in this field of expertise. Even though some of the PD patients encounter severe intractable pain which often hides the motor symptoms characteristic to this disorder, pain in PD is still being often underdiagnosed and undertreated. Moreover, there are very few studies in concern to pain perception in the context of animal models of PD. By injecting subcutaneously one dose of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP), we experimentally induced the PD model in rats, using a 20mg/kg dose, while the control group received a similar amount of saline solution. Afterwards, reactions to pain were followed utilizing the hot-plate behavioural test for pain assessment performed 7 days after MPTP injection. In the given situation, our Parkinson rat model acquired after an acute injection with a low dose of MPTP, presented with an increased sensitivity response to pain stimulation, highlighted by the significant decrease in the values of the latency time in the hot-plate test for rats treated with MPTP, in contrast with the controls. The latency time is expressed in seconds

and it is referring to the reaction time from the begging of the test until two specific types of pain behaviour are encountered: paw licking and jumping (11.33 s ± 2.1 in controls vs. 6.8 s ± 4.1 in MPTP group). The obtained data suggests, for the first time to the best of our knowledge, an increased sensitivity to pain in a MPTP-induced rat model of PD. Therefore, further studies in this area of research seem warranted.

HEMATOLOGICAL AND BIOCHEMICAL MODIFICATIONS IN VIRAL HEPATITIS B AT MALE PATIENTS

ELENA TODIRAŞCU-CIORNEA[1], GABRIELA DUMITRU [1*], ELENA VIOLETA AXINTE [2], ANCA MIRELA AMARIEI [1], SILVIA DUMITRAŞCU [3]

[1] "Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Bvd. 20A Carol I, 700505, Romania

[2] Technological High School Petru Rares, Botosani, Calugareni Street, No 9, 710256, Romania

[3] Comprehensive School Nr. 1 Ramnicelu, Buzau

**gabriela.dumitru@uaic.ro*

The study systematizes the values of main hematological and biochemical parameters at male persons wearers of hepatic B virus, monitorized in the Emergency County Hospital Mavromati Botosani, by echeloning on age groups, following these ones deviation from the physiologic-ordinary interval. The results of clinic tests showed that, excepting the number of leucocytes and blood platelets, all the hematological and biochemical indicators kept in view got out of the normality interval's sphere, the highest pathological values registering at the most aged age category.

THE ULTRASOUND SCAN ASPECT CORRELATED WITH THE POLYCYSTIC OVARY SYNDROME

RALUCA GRIGORIU[1], DIANA POPOVICI[1], MARIANA BRATU[2], OVIDIU TOMA[3], DRAGOŞ CRAUCIUC[1], EDUARD CRAUCIUC[1*]

[1] "Gr.T. Popa" University of Medicine and Pharmacy, Iasi, Romania, „Elena Doamna" Iaşi Clinical Hospital

[2] County Emergency Hospital Galati

[3] "Alexandru Ioan Cuza" University of Iași, Iasi, Romania

**raluca_grigoriu75@yahoo.com – PhD UMF IASI*

**crauciuc@yahoo.com*

The Polycystic Ovary Syndrome is one of the most frequently met endocrine diseases when talking about women who reached the reproduction age, having an incidence that is estimated between 5 and 40% and it represents 75% of the cases of anovulatory infertility. This personal study represents a retrospective analysis of a total number of 321 patients diagnosed with polycystic ovary syndrome (PCOS) in the period of time between 2010 and 2014from the clinical, paraclinical and statistical point of view. The patients were systematically assessed in time and underwent a medical therapeutic method in the Clinic of Obstetrics-Gynaecology of the Emergency County Hospital Bacău. The patients included in the study were followed during their hospitalization, but also after that, in order to study the evolution of the case. They were performed transabdominal and transvaginal ultrasonography scans, as they are extremely important in the algorithm of paraclinical diagnostic. Based on the data we collected we can now

state that in 69% of the cases the ultrasound scan was the predominant criterion for diagnosing polycystic ovaries. For the rest of the cases, including the ones with a normal ultrasound scan of the ovaries, the diagnostic was established after correlating the clinical data with the other paraclinal ones, as agreed in the Rotterdam consensus. About 7-8% of the women having a reproductive age are affected by the polycystic ovary syndrome, so this is considered to be the main cause of infertility in women, and also the most frequently met endocrine disease in women.

Keywords: PCOS- Polycystic Ovary Syndrome, echography, infertility

CYTO-HISTOPATHOLOGICAL CORRESPONDENCES IN INTRAEPITHELIAL LESIONS OF THE *CERVIX UTERI*

NICOLETA SIMION[1], IRINA-DRAGA CARUNTU[1], CORNELIA AMALINEI[1], IOANA PAVALEANU[1], VLAD GHEORGHITA[2], EDUARD CRAUCIUC[1], OVIDIU TOMA[3], RALUCA BALAN[1*]

[1] University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Romania
[2] Obstetrics and Gynecology Clinic of the University Hospital "Elena Doamna" Iasi, Romania
[3] "Alexandru Ioan Cuza" University of Iași, Iasi, Romania
**raluca.balan@umfiasi.ro*

Our research focused on the evaluation of the correlation degree between the cytological and histopathological exam, with the aim to identify the advantages and limitations in the application of the two methods. The study group consisted of 28 patients diagnosed by conventional Papanicolaou cytology and routine histopathology exam. The results showed a correspondence between diagnoses with the association of benign cervical, uterine, and ovarian pathologies, sometimes with an upgrade of the intraepithelial lesions in histopathological exam. Conventional and liquid based cytology represent two accessible and well tolerated methods of diagnosis as well as of post-therapy monitorization. The histopathological examination is absolutely mandatory for confirmation of the diagnosis, for upgrade of intraepithelial high grade lesions to carcinoma, and for initiation of any therapeutic scheme.

Keywords: HPV infection, squamous intraepithelial lesions, endocervical lesions, uterine cervix

THE COMPLEX ORGANIZATION OF EUKARYOTIC CELL NUCLEUS (IV): THE NUCLEAR ENVELOPE

CRISTIAN S. CÎMPEANU[1]*, MIRELA M. CÎMPEANU[2]

[1]Cell and Molecular Biology Laboratory, Faculty of Biology, "Alexandru Ioan Cuza" Univeristy of Iași, Iasi, cristiansorin.cimpeanu@gmail.com*
[2]Genetics Laboratory, Faculty of Biology, "Alexandru Ioan Cuza" Univeristy of Iași, Iasi

Although the nuclear bodies, the chromosome territories, the interchromatin domains, the nuclear matrix and the nuclear lamina, defined as nucleoplasm (nuclear content) are essential, they could not properly function in eukaryotic nuclei without the presence of the nuclear envelope. Primary, the nuclear anvelope constitutes a physical barrier which separates the nucleoplasm from the cytosol, and also interconnect them by means of complex molecular exchanges. The apparition of nuclear envelope in eukaryotic cells represents a crucial landmark in cellular evolution and has important consequences in general biological systematics.

FOOD ADDITIVES INFLUENCE ON CELL DIVISION AND CHROMOSOMES IN *SECALE CEREALE* L. (2N = 14)

MIRELA M. CÎMPEANU [*1], CRISTIAN S. CÎMPEANU[2], IULIANA C. BARA[1]
*[1]Genetics Laboratory, Faculty of Biology, "Alexandru Ioan Cuza" Univeristy of Iași, Iasi, *mirela.cimpeanu@gmail.com*
[2]Cell and Molecular BiologyLaboratory, Faculty of Biology, "Alexandru Ioan Cuza" Univeristy of Iași, Iasi

In the present work, we aimed to investigate and compare the results obtained by exposure of the *Secale cereale* root meristems, to the influence of two types of food additives – sodium benzoate (E211) and potassium benzoate (E212), additives often used in food industry. The study highlights the effect of these additives on the rate of mitotic division and the ability to induce chromosomal aberrations in ana - telophase in root meristems of *Secale cereale L*.

"IN VITRO" MULTIPLICATION OF *CALENDULA OFFICINALIS* L.

SMARANDA VANTU [1*]
*[1] "Alexandru Ioan Cuza" Univeristy of Iași, Faculty of Biology, B-DUL CAROL I, 20 A, 700505 IASI, ROMANIA,*s_vantu@yahoo.com*

The regenerative potential of meristematic explants from *Calendula officinalis* L was evaluated for the establishment of a clonal propagation protocol, as an alternative for biomass production. *Calendula officinalis L.*(Asteraceae) is an important medicinal plant that contains various classes of compounds (volatile oil, carotenoids, flavonoids, terpenoids, coumarins carbohydrates, lipids, amino acids) with multiple pharmacological activities. Meristematic explants, taken from seedlings of *Calendula officinalis* L., germinated in aseptic conditions were tested for their regenerative potential. The procedure involved shoot tip cultures, followed by rapid shoot multiplication, rooting and finally establishment of plantlets in soil. Murashige-Skoog medium has been diversified according to hormonal balance, using benzylaminopurine in combination with 2,4 dichlorophenoxyacetic acid. The agar solidified MS medium containing 0,2 mg/l benzylaminopurine and 0,05 mg/l 2,4 dichlorophenoxyacetic acid was optimum for shoot proliferation at.*Calendula officinalis* L. and allowed the development of large number of cloned shoots. The regeneration of whole plants was obtained in two steps: the shoots were excised and transferred to fresh medium and then rooting of these shoots was achieved on the same medium with 0,02 mg/l benzylaminopurine and 1 mg/l 2,4 dichlorophenoxyacetic acid. In each variant of MS basal medium studied it has worked on every 10 samples. The samples were kept in growth chamber at 23±1o C and a photoperiod of 16 hours. The excised shoots were subcultured for roots induction. Regenerated plants were transferred to ex vitro conditions for an acclimatisation period.

HETEROLOGUS OVER-EXPRESSION AND CHARACTERISATION OF A PUTATIVE 2-KETO-GLUCONATE DEHYDROGENASE FROM *ARTHROBACTER NICOTINOVORANS* pAO1

BRÎNDUŞA CHEORBEJA[1], MĂDĂLINA BIANCA BUJDER[1], CLAUDIU-ROBERT ARNĂUTU[1], MARIUS MIHĂŞAN[1]*

[1] Faculty of Biology, "Alexandru Ioan Cuza" University of Iaşi, Iaşi, Romania, *marius.mihasan@uaic.ro*

Arthrobacter nicotinovorans is a gram positive soil actinobacteria which is able to grow on nicotine contaminated soils due to the presence of a large plasmid - pAO1. It has been shown that pAO1 encodes not only the pathway for nicotine mineralization, but also newly described oxidative xylose-catabolic pathway. Part of the genes cluster encoding this last pathway is also orf38, a putative 2-keto-gluconate dehydrogenase with no experimentally shown function. The homology model of ORF38 was build using Swiss-model Server and visualized using PyMol. For protein expression, an *E. coli* XL1 strain harboring the pH6EX3orf38 recombinant plasmid was grown on LB or YZP5052 medium with appropriate antibiotics. The cells were lysed using a combination of osmotic-shock/detergents treatment and the levels of protein expression and protein solubility was monitored using standard SDS-PAGE. Based on sequence homology, a 3D model of the ORF38 protein could be generated. The protein over-expression was tested on two growth mediums, but was found to be satisfactory only on LB medium when using 0.1 mM IPTG. A 3D homology model was successfully generated indicating a possible function of the ORF38 protein. The conditions for heterologus expression of ORF38 were also established, indicating that the protein might be purified by immobilized metal affinity chromatography.

Keywords: *Arthrobacter*, homology modeling, over-expression, growth medium.

THE CHEMICAL COMPOSITION ASSESSMENT OF THE FETEASCĂ NEAGRĂ GRAPE POMACE AND ITS FRACTIONS OBTAINED FROM WINE INDUSTRY IN DIFFERENT YEARS

SILVIA MARIANA PASCARIU[1]*, IOAN MIRCEA POP[1]

[1] Faculty of Animal Sciences, "Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania

** pascariu_silvia@yahoo.com*

The aim of the hereby study was to analyze and to compare the chemical content of the grape pomace and its fractions: skins and seeds from the red grape variety Fetească neagră (from Iaşi area), obtained in different years 2013 and 2014 respectively, from the winemaking process. Measurements targeted the dry matter content (DM%), organic matter (OM%), crude ash (CA%), crude protein (CP%), crude fat (EE%), crude fiber (CF%), neazotate extractive substances (SEN%), total polyphenols (TP%) and tannins (Ta%). The results obtained showed significant differences in the chemical composition in favour of the grape pomace obtained in the 2014 climatic conditions: in the case of the seed for the content of DM%, SEN%, TP% and Ta%, in the case of the skins for the content of DM%, OM%, CF%, TP%, Ta% and in the case of the grape pomace for the content of DM%, OM%, CF%, SEN%, TP%, and Ta%. Comparative analysis of the chemical composition showed an annual variation of the chemical components, which may be due to climatic conditions and winemaking process. Therefore, an annual chemical quality assessment of the grape pomace is necessary, for the efficient use in the animal feed.

Keywords: grape pomace, fractions, chemical content, polyphenols, tannins.

IDENTIFICATION OF ZEIN PROTEINS BY PEPTIDE MASS FINGERPRINTING

PAULA ALEXANDRA POSTU[1], MICHAEL GLOCKER[2], ALINA PETRE[3*]

[1]Department of Biology, Alexandru Ioan Cuza University of Iasi, Romania
[2]Department for Proteome Research, University Rostock Medical Center and Natural Science Faculty, Germany
[3]Department of Chemistry, Alexandru Ioan Cuza University of Iasi, Romania,
**brindusa.petre@uaic.ro*

Zea mays, also known as maize or corn and belonging to the Poaceae family, is a large grain plant domesticated by indigenous people in Mesoamerica during prehistoric times. Zein proteins are the main prolamin compunds in maize kernels and represent more than 50% of their protein mass. The aim of this study was to extract a large variety of zein proteins using a protocol based on alkaline alcohol solution and to characterize the composition of the extracted products. Using mass spectrometry associated techniques (SDS PAGE, 2D gel analysis, "in gel" digestion, MALDI-MS analysis of peptide mixtures) we successfully identified and characterized the protein composition for extracted products. Our results suggest that the extracted products represent a complex mixture of alpha zein proteins and the extraction protocol used allows the extraction of large amounts of zein proteins.

GENETIC VARIATION BETWEEN SOME NATURAL POPULATIONS OF *SALVIA OFFICINALIS* OF NORTHERN ALBANIA BASED ON RFLP AND RAPDS MARKERS.

STELA PAPA[1], MITICĂ CIORPAC [2,3], LUCIAN D. GORGAN[2], ARIOLA BACU[1]

[1] Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, Albania. Blv "Zogu I", Tirana, Albania
[2] "Alexandru Ioan Cuza" University, Faculty of Biology, Str. Carol I 20A, Iași, Romania
[3] "Alexandru Ioan Cuza" University, Interdisciplinary Research Department, Str. Carol I 20A, Iași, Romania.

Garden sage (Salvia officinalis L.), Lamiaceae grows naturally in Albania and is one of the most important medicinal and aromatic plants. Previous works have demonstrated that Albania is rich in natural populations of sage, and that they display a great genetic diversity estimated via RFLPs, RAPDs, AFLPs and SSRs molecular markers for populations of Southern and Central Albania. Remain much less exploited the populations of north of the country, which are grown in geographically isolated areas, and because of this are expected to display polimorphisms in DNA level. Genomic DNA was isolated based on a modified CTAB protocol. The template was used for the amplification of a truncated portion of MTP coding fragments cut with Sau3A restriction enzyme. The RAPD-PCR reactions were performed in a total reaction volume of 25 ml, using 3 RAPD primers: OPA06, OPA 14, S2134. RFLP and RAPD markers are proved to be very efficient and precise for the genetic diversity evaluation among Salvia officinalis, collected from different populations of northern Albania.

THE BIOLOGY STUDENTS SCIENTIFIC SESSION (SSSB)

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B2 Amphitheater: $10^{00} – 11^{00}$

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Conf. dr. Smaranda VÂNTU
Conf. dr. Lacramioara IVĂNESCU
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Brînduşa CHEORBEJA, Mădălina Bianca BUJDER, Claudiu-Robert ARNĂUTU, Marius MIHĂŞAN
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HISTOLOGICAL INVESTIGATIONS OF THE CEREBRAL CORTEX IN RATS WITH INDUCED DEMENTIA AND TREATED WITH SOME VOLATIL OILS

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COMPARATIVE HISTOLOGY OF THE EYEBALL IN VERTEBRATES

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INTEGUMENTARY SYSTEM AND EYE DEVELOPMENT OF CHICKEN EMBRYO

ABSTRACTS

ORAL PRESENTATIONS
B2 Amphitheater: $10^{00} – 11^{00}$

HETEROLOGUS OVER-EXPRESSION AND CHARACTERISATION OF A PUTATIVE 2-KETO-GLUCONATE DEHYDROGENASE FROM *ARTHROBACTER NICOTINOVORANS* PAO1

CHEORBEJA BRÎNDUŞA[1], BUJDER MĂDĂLINA BIANCA[2], ARNĂUTU CLAUDIU-ROBERT[3], MIHĂŞAN MARIUS*
Faculty of Biology, Alexandru I Cuza University of Iaşi, Iaşi, Romania

Introduction: *Arthrobacter nicotinovorans* is a gram positive soil actinobacteria which is able to grow on nicotine contaminated soils due to the presence of a large plasmid - pAO1. It has been shown that pAO1 encodes not only the pathway for nicotine mineralization, but also newly described oxidative xylose-catabolic pathway. Part of the genes cluster encoding this last pathway is also orf38, a putative 2-keto-gluconate dehydrogenase with no experimentally shown function. **Material and Methods:** The homology model of ORF38 was build using Swiss-model Server and visualized using PyMol. For protein expression, an *E. coli* XL1 strain harboring the pH6EX3orf38 recombinant plasmid was grown on LB or YZP5052 medium with appropriate antibiotics. The cells were lysed using a combination of osmotic-shock/detergents treatment and the levels of protein expression and protein solubility was monitored using standard SDS-PAGE. **Results and Discussions:** Based on sequence homology, a 3D model of the ORF38 protein could be generated. The protein over-expression was tested on two growth mediums, but was found to be satisfactory only on LB medium when using 0.1 mM IPTG. **Conclusions:** A 3D homology model was successfully generated indicating a possible function of the ORF38 protein. The conditions for heterologus expression of ORF38 were also established, indicating that the protein might be purified by immobilized metal affinity chromatography.

Key words: *Arthrobacter*, homology modeling, over-expression, growth medium.
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VERTICAL DISTRIBUTION AND MIGRATION OF *CHAOBORUS FLAVICANS* LARVAL INSTARS IN LAKE MINDELSEE (GERMANY)

ROXANA CUIBARI [1*], GHEORGHE FLORIN BODNAR[2]
[1] Faculty of Biology, "Alexandru Ioan Cuza" University, Bd. Carol I, No. 11, Iasi 700506, Romania.*
** cuibari_roxana@yahoo.com, Telephone: 0040757210442;*
2 Faculty of Biology, "Alexandru Ioan Cuza" University, Bd. Carol I, No. 11, Iasi 700506, Romania.

In this study we wanted to examine the vertical migration behavior of *Chaoborus flavicans* larval instars in a small mesotrophic dimictic lake. This research was conducted in Lake Mindelsee (Radolfzell, Germany) between April and June, 2015. The pattern of diel vertical migration exhibited by *Chaoborus flavicans* in Lake Mindelsee was studied by sampling larvae with a biconical closing net (Apstein's type) and by acoustic backscatter measurements from an upward-looking 600 kHz Acoustic Doppler Current Profiler (ADCP). The acoustic

backscatter signals recorded were compared with the zooplankton samples collected. Marked differences were noted in vertical distribution and diel vertical migration of the four instars. We expected the largest larvae to dwell deeper by day and have a higher amplitude migration, thus increase their chances of survival. Body size of *Chaoborus* larvae increased with daytime depth and consequently the four instars have different amplitude of migration. All fourth instar larvae underwent normal diel vertical migration and a strong pattern of diel vertical migration has been evident for the larger larvae.

HISTOLOGICAL INVESTIGATIONS OF THE CEREBRAL CORTEX IN RATS WITH INDUCED DEMENTIA AND TREATED WITH SOME VOLATIL OILS

IOANA MARTIN[1], ANCA NEAGU[1]
Faculty of Biology, Alexandru Ioan Cuza University, Bd. Carol I 11, 700506 Iaşi, Romania,
Email: martin_ioana09@yahoo.com Tel:0748769699

Alzheimer dementia is one of the most common types of neurodegeneration, caused by the extracellular accumulation of the β-amyloid peptide and the intracellular accumulation of tau protein. The aim of this study was to emphasis the structural changes that appear during dementia in the brain tissue of the lab rat models. For that purpose, the brain tissue of Wistar rats individuals with induced amiloidic dementia was criosectioned, after they received a treatment consisting of different volatile oils administrated trough inhalation. The sections obtained were stained using the hematoxylin-eosin and cresyl-violet techniques, in order to evidentiate the neurons and distinct features of the tissue. The final step was to observe under the microscope, photograph and compare the different stages of tissue damage in each case. Microphotographs reflecting the damage caused by administration of β-amyloid on the brain tissue structure, especially the vacuolization degree of the cerebral cortex, were described.

COMPARATIVE HISTOLOGY OF THE EYEBALL IN VERTEBRATES

OZANA - MARIA PETRARU[1], ANCA NEAGU[1]
Faculty of Biology, Alexandru Ioan Cuza University, Bd. Carol I 11, 700506 Iaşi, Romania,
ozyk_ozyk@yahoo.com

This paper presents the adaptative morphology and structure of the eyeball in vertebrates. Some specific parts of the eye were studied: in fish *(Cyprinus carpio)* - the argenteea membrane, the choroidal vascular body, the annular ligament and the Erdl gland; in amphibians (*Rana ridibunda)* - the orbital gland; in reptiles *(Lacerta sp.) - conus papillaris*; in birds (*Gallus gallus domesticus* and *Columba livia)- pecten oculi*; some common structural characteristics of cornea, lens and retina in mammals (*Ovis aries* and *Bos taurus)* were also compared with similar structures from the previous presentated vertebrate groups. The biological material was prepared by paraffin embedding or directly sliced using criosections method. The frontal, sagittal or transverse sections were stained with hematoxylin & eosin (HE). The microphotographs were taken by a Confocal Laser Scanning Microscope CLSM - Leica TCS SPE DM 5500Q.

Keywords: vertebrate eye, *conus papillaris*, *pecten oculi*, melanosomes, cornea, choroidal vascular body, lens, retina.

INTEGUMENTARY SYSTEM AND EYE DEVELOPMENT OF CHICKEN EMBRYO

SORIN LAZĂR[1], TEODORA MOLDOVAN[1], ANCA NEAGU[1]
Faculty of Biology, Alexandru Ioan Cuza University of Iași, Romania, Phone number: 0742082793; E-mail: lazar_sorin93@yahoo.com.

Chicken is known as an important biological model, especially in the embriology or developmental biology. The aim of this study was to provide a description of macro and microscopic aspects of integument and eyes in chicken embryo (*Gallus gallus domesticus*). 41 fertilized eggs from domestic chicken were incubated and in each day of incubation were preserved 2 embryos. In each day of incubation, we observed an exponential growth of eyes and skin covered with feathers, cornification of beak and claws. Microscopic aspects of integumentary system emphasized a graduate stratification of epidermis and a reach vascularization and developing feathers. Since the early stages of embryonic development, eyes are well developed. The lens, pecten oculi and retina differentiation are described.

Keywords: chicken, eye, integument, development, embryo.

SOME COMPOUNDS FROM *THUJA OCCIDENTALIS* AS INHIBITORS FOR PROTEASOMES: AN IN SILICO DOCKING APPROACH

DANIEL-MIHAI PINTILESCU[1*], CĂLIN LUCIAN MANIU[1]
Faculty of Biology, "Alexandru Ioan Cuza" University, Iași, Romania, dan_pintilescu@yahoo.com

The proteasome is a multicatalytic protease complex that breaks down misfolded or damaged endogenous proteins, including some components of important cellular regulatory mechanisms such as cell cycle progression, cell growth or gene expression. Immunoproteasomes resemble constitutive proteasomes, though they own specialized catalytic activities that promote the generation of peptide antigens for presentation by Major Histocompatibility Complex class I molecules. Proteasome inhibitors can be used as novel drugs for prevention or treatment of some diseases like cancer, inflammatory, autoimmune and neurodegenerative disorders. The purpose of this study is to identify novel proteasome inhibitors originating from *Thuja occidentalis* by performing *in silico* docking experiments. The crystal structures of the murine constitutive proteasome and of the immunoproteasome were used as receptors; 34 compounds from *Thuja occidentalis* were tested and thereafter compared to withaferin A and cinnabaramide E, which are known inhibitors of the proteasome. Our data suggest that several compounds from *Thuja occidentalis*, namely beyerene, isokaurene, totarol, rimuene and monogynol, have good binding energies and could act as potent inhibitors of the proteasomal activity. These compounds could be used by themselves for further experiments, or they could provide valuable scaffolds for *de novo* drug design.

A COMPARATIVE VIRTUAL SCREENING APPROACH IN IDENTIFYING THE STRUCTURAL FEATURES OF SPECIFIC HEAG AND HERG POTASSIUM CHANNELS BLOCKERS

DANIEL ŞTERBULEAC[1*], CĂLIN LUCIAN MANIU[1]

*[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, *sterbuleacdaniel@yahoo.com*

The voltage-dependent hEAG and hERG channels are members of the same family of potassium channels involved primarily in cellular excitability and have important, and potential different roles in diseases such as long QT syndrome, schizophrenia and cancer. Due to the high sequence homology of their transmembrane pore-forming domains, almost all known hEAG blockers also reduce the hERG conductance, leading to serious side effects. In the present study, a combination of homology modeling, virtual screening and molecular dynamics was employed to identify the structural features of a potential blocker of hEAG that has lower affinity for the closely related hERG channel. Until now, no crystal structure is available for any of the channels, therefore, the crystal structure of the bacterial KcsA potassium channel was used in order to create the starting atomic positions of hERG and hEAG. Molecular dynamics simulations were carried afterwards, allowing the structures to attain a more natural positioning of the constituting aminoacids and to determine the structural differences between the channels. Virtual screening of a database of more than 30000 natural derivatives was used on 3 frames obtained from the molecular dynamics simulation from each channel. Only 21 molecules showed higher and significant affinity for hEAG over hERG. Further docking calculations were performed on these molecules, revealing that only 10 out of 21 were correctly selected by the virtual screening method, among which 5 ligands show very good binding capacity to hEAG over hERG. The common structural features and docking positions of the best ranking ligands is analyzed, and their potential application in further refinement or testing is discussed.

AUTHORS

AMALINEI Cornelia - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.
AMARIEI ANCA MIRELA - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
ANASTASIU Paulina - University of Bucharest, Faculty of Biology & Botanic Garden „D. Brandza", Bucureşti, Romania, paulina.anastasiu@bio.unibuc.ro
ANDRIESCU Ionel D. - „Alexandru I. Cuza" University Iasi, Faculty of Biology, Bd. Carol I, 20 A, 700505 Iasi, Romania;
ANTIOCH Iulia - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
ARNĂUTU Claudiu-Robert - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
AXINTE Elena Violeta - Technological High School Petru Rares, Botosani, Calugareni Street, No 9, 710256, Romania.
AYDIN Emel - Department of Biology, Faculty of Science, Firat University, 23119 Elazig, Turkey
BACU Ariola - Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, Albania. Blv "Zogu I", Tirana, Albania
BAGCI Eyup - Department of Biology, Faculty of Science, Firat University, 23119 Elazig, Turkey
BALAN Raluca - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.
BALMUȘ Ioana-Miruna - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania. balmus.ioanamiruna@yahoo.com
BĂDĂLUȚĂ Nicoleta - „Vasile Alecsandri" University of Bacău, Department of Biology, Bacău, Romania
BĂRA Iuliana - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
BEJENARU Luminița - "Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, Romanian Academy-Iasi Branch, Department of Anthropological Research, Romania;
BIȚĂ Andrei - Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania
BODNAR Gheorghe Florin - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
BOIERIU Adela - University of Bucharest, Botanic Garden „D. Brandza", Bucureşti, Romania
BRAN Petronela - "Vasile Alecsadri" University of Bacău, Faculty of Engineering, 157 Marasesti Street, 600115 Bacău, Tel. (004) 0234- 542. 411; petronelabran@yahoo.com
BRATU Mariana - County Emergency Hospital Galati, Romania.
BREABĂN Iuliana Gabriela - „Alexandru Ioan Cuza" University of Iaşi, Faculty of Geography and Geology, Department of Geography, Iași, Romania
BUBULICĂ Maria-Viorica - Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania
BUJDER Mădălina Bianca - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
BURDUCEA Marian - Department of Biology, "Alexandru Ioan Cuza" University of Iaşi, Carol I Blvd. No. 11, 700506, Iasi, Romania.
CALUGARU Adina - Biological Research Institute, Lascar Catargi 47, 700107 Iasi, Romania;

CARUNTU Irina-Draga - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.

CHEORBEJA Brînduşa - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

CHIRILIUC Angelica Liliana - Gymnasial School of Burla, no 371; 727616; (Suceava), Romania

CIOANCĂ Oana – Faculty of Pharmacy, University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.

CIOBICĂ Alin Stelian - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

CIORPAC Mitică - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. mitica.ciorpac@uaic.ro

CÎMPEANU Cristian - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. cristiansorin.cimpeanu@gmail.com

CÎMPEANU Mirela - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. mirela.cimpeanu@gmail.com

CÎȘLARIU Alina - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania

COJOCARU Dumitru - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

COMĂNESCU Petronela - University of Bucharest, Botanic Garden „D. Brandza", Bucureşti, Romania, vpetronela@yahoo.com

COSTICĂ Mihai - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania

COVACI Adrian - Toxicological Centre, University of Antwerp, Universiteitsplein 1, 2610, Wilrijk, Antwerp, Belgium

CRAUCIUC Dragoş - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania, „Elena Doamna" Iaşi Clinical Hospital

CRAUCIUC Eduard - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania, „Elena Doamna" Iaşi Clinical Hospital. crauciuc@yahoo.com

CRUCEANU Alexandrina – „Alexandru Ioan Cuza University" of Iasi, Faculty of Geography and Geology, Department of Geography, Bd. Carol I, 20A, 700505, Iasi, Romania;

CUIBARI Roxana - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania, cuibari_roxana@yahoo.com

DANU Mihaela - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania;

DIRTU Alin-Constantin - Department of Chemistry, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. alin.dirtu@chem.uaic.ro

DIRTU Daniela - Public Health Institute, Regional Center of Public Health Iasi, Street V. Babes No 14, 700465, Iasi, Romania

DRUICĂ Radu - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

DUMITRAȘCU Silvia - Comprehensive School Nr. 1 Ramnicelu, Buzau, Romania.

DUMITRU Gabriela - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. gabriela.dumitru@uaic.ro

FEDORIAK Mariia - Department of Ecology and Biomonitoring, Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine. m.m.fedoriak@gmail.com

GHEORGHITA Vlad - Obstetrics and Gynecology Clinic of the University Hospital "Elena Doamna" Iasi, Romania.

GHERGHEL Daniela - Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania.

GHIORGHIȚĂ Gogu - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

GLOCKER Michael - Department for Proteome Research, University Rostock Medical Center and Natural Science Faculty, Germany

GORGAN Lucian - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. lucian.gorgan@uaic.ro

GRIGORIU Raluca - "Gr.T. Popa" University of Medicine and Pharmacy, Iasi, Romania, „Elena Doamna" Iași Clinical Hospital. raluca_grigoriu75@yahoo.com

HRITCU Lucian – „Alexandru Ioan Cuza University" of Iasi, Department of Biology, Romania; hritcu@uaic.ro, Tel. +40-232201666, Fax +40-232201472

ION Constantin - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

IONIȚĂ Radu - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. radu.ionita09@yahoo.com

IUREA Dorina - Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania.

IVAN Otilia - Biological Research Institute, Lascar Catargi 47, 700107 Iasi, Romania;

IVĂNESCU Lăcrămioara Carmen - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania, ivanescu67@yahoo.com

KOSHLAN Igor - JINR Dubna, Laboratory of Radiation Biology.

LAZĂR Sorin - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. lazar_sorin93@yahoo.com

LEFTER Radu - Center of Biomedical Research, Romanian Academy, Iași Branch.

LOBIUC Andrei - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

MANIU Calin - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

MARTIN Ioana - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. martin_ioana09@yahoo.com

MATIUT Simona - Laboratory of Diagnosis and Investigation in Public Health, Iasi, Romania.

MÂNZU Ciprian - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania, ciprian.manzu@uaic.ro

MIHAI Cosmin-Teodor - Interdisciplinary Research Department – Field Science, "Al. I. Cuza" University of Iasi, Bd. Carol I, no. 20A, Iasi, Romania. mihai.cosmin.teo@gmail.com

MIHĂŞAN Marius - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. marius.mihasan@uaic.ro

MIRON Ionel - Member of the Academy of Romanian Scientists, Iaşi;

MOGLAN Ioan –„Alexandru Ioan Cuza University" of Iași, Faculty of Biology, Carol I Blvd. No 20A, 700505, Iași, Romania;

MOGOŞANU George Dan - Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania

MOLDOVAN Teodora - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

NAGODĂ Eugenia - University of Bucharest, Botanic Garden „D. Brandza", Bucureşti, Romania

NEAGU Anca-Narcisa – „Alexandru Ioan Cuza University" of Iasi, Department of Biology, Romania;

NEAMŢU Johny - Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania

NECHITA Ancuța - Research and Development Station for Viticulture and Vinification Iasi, Aleea Mihail Sadoveanu, no. 48 , Iasi, Romania.

NECHITA Bogdan - Research Center for Oenology, branch of Romanian Academy, Aleea Sadoveanu no.9, Iasi, Romania.

NICOARA Mircea – „Alexandru Ioan Cuza Univeristy" of Iasi, Department of Biology, Laboratory of Aquatic Ecology and Ecotoxicology, B-dul Carol I, no. 20A, 700505 Iasi, Romania;

NICUȚĂ Daniela - „Vasile Alecsandri" University of Bacău, Department of Biology, Bacău, Romania, danan@ub.ro, dana_nicuta@yahoo.com

NIȚĂ Alexandru - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

NIȚĂ Eugenia - University of Bucharest, Botanic Garden „D. Brandza", București, Romania

OANCEA Carmen Nicoleta - Faculty of Faculty of Pharmacy, University of Medicine and Pharmacy Craiova, Romania, paunescuacarmen@yahoo.com

OLTEANU Zenovia - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

OPRIȘAN Manuela - St. Spiridon Emergency County Hospital, Iasi, Romania.

PAPA Stela - Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, Albania. Blv "Zogu I", Tirana, Albania

PASCARIU Silvia Mariana - Faculty of Animal Sciences, "Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania. pascariu_silvia@yahoo.com

PAȘA Rodica - Research Center for Oenology, branch of Romanian Academy, Aleea Sadoveanu no.9, Iasi, Romania.

PAVALEANU Ioana - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.

PETRARU Ozana – Maria - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. ozyk_ozyk@yahoo.com

PETRE Alina - Department of Chemistry, "Alexandru Ioan Cuza" University of Iasi, Romania. brindusa.petre@uaic.ro

PINTILESCU Daniel-Mihai - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. dan_pintilescu@yahoo.com

PLAVAN Gabriel – „Alexandru Ioan Cuza Univeristy" of Iasi, Department of Biology, Laboratory of Aquatic Ecology and Ecotoxicology, B-dul Carol I, no. 20A, 700505 Iasi, Romania;

POP Ioan Mircea - Faculty of Animal Sciences, "Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania.

POPESCUL Ovidiu - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. popescul.ovidiu.alex@gmail.com

POPOVICI Diana - "Gr.T. Popa" University of Medicine and Pharmacy, Iasi, Romania, „Elena Doamna" Iași Clinical Hospital

POSTU Paula - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

PRELIPCEAN (BOSOVICI) Elena-Daniela –„Alexandru Ioan Cuza University" of Iași, Faculty of Biology, Carol I Blvd. No 20A, 700505, Iași, Romania;

PRICOP Emilian - "Alexandru Ioan Cuza" University of Iasi, Faculty of Biology, Carol I Blvd. Nr. 20 A, 700506, Iaşi, Romania; E-mail: pricopemilian@yahoo.com;

PUI Aurel - Department of Chemistry, "Alexandru Ioan Cuza" University of Iași, Romania, Carol I Blvd. No 11, 700506, Iasi, Romania.

RAICU Maria - University of Bucharest, Botanic Garden „D. Brandza", București, Romania

RĂU MARIUS ANDREI - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

ROTINBERG Pincu - Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania.

ROXANA Voicu - "Vasile Alecsandri" University of Bacău, Faculty of Engineering, 157 Marasesti Street, 600115 Bacău, Tel. (004) 0234-542.411, e-mail: nadejdemariusionel@yahoo.ro

SECU Cristian Vasilică - „Alexandru Ioan Cuza" University of Iași, Faculty of Geography and Geology, Department of Geography, Iași, Romania

SIMION Nicoleta - University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania.

SIMONA MATIUT - Praxis Laboratory, Laboratory of Diagnosis and Investigation in Public Health, Iasi, Romania;

STOLERIU Cristian - „Alexandru Ioan Cuza" University of Iași, Faculty of Geography and Geology, Department of Geography, Iași, Romania

STOLERU Toma - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

STRUNGARU Stefan-Adrian – „Alexandru Ioan Cuza Univeristy" of Iasi, Department of Biology, Laboratory of Aquatic Ecology and Ecotoxicology, B-dul Carol I, no. 20A, 700505 Iasi, Romania; E-mail: stefan.strungaru@uaic.ro;

SURUGIU Victor - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania

ŞTERBULEAC Daniel - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. sterbuleacdaniel@yahoo.com

TODIRAŞCU-CIORNEA Elena - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

TOMA Constantin - „Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania

TOMA Ovidiu - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

TUDOSE Cristian - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania. cristian.tudose@uaic.ro

URECHE Camelia - Vasile Alecsandri" University of Bacău, Faculty of Sciences, 157 Marasesti Street, 600115 Bacău, Tel. (004) 0234-542.411, e-mail: dureche@ub.ro

URECHE Dorel - Vasile Alecsandri" University of Bacău, Faculty of Sciences, 157 Marasesti Street, 600115 Bacău, Tel. (004) 0234-542.411, e-mail: dureche@ub.ro

VÂNTU Smaranda - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

VITION P. - The Institute of Genetics, Physiology and Plant Protection of ASM, Republic of Moldova.

VOCHITA Gabriela - Institute of Biological Research Iasi, branch of National Institute of Research and Development for Biological Sciences, 47 Lascar Catargi, Iasi, Romania.

VOLOSHYN Volodymyr - Department of Medical Biology and Genetics, Bukovinian State Medical University, Chernivtsi, Ukraine.

ZAMFIRACHE Maria-Magdalena - Department of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Blvd. No. 11, 700506, Iasi, Romania.

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