ACCADEMIA
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Verbale della Cerimonia di consegna dei Premi di studio A.A. 2020

Venerdì, 23 ottobre 2020, alle ore 16.00 presso la Sede dell'Accademia in via Etnea, 29 – Catania, su invito del Presidente, ha avuto luogo la cerimonia di consegna dei Premi di studio banditi dall'Accademia per il corrente Anno Accademico.

Per l'Accademia sono presenti: il Presidente prof. Mario Alberghina, il vicepresidente prof. Sebastiano Barbagallo e il Segretario generale prof. Antonino Lo Giudice.

Sono presenti i vincitori dei Premi banditi e precisamente:

- per la tematica *Recenti sviluppi della ricerca nel campo dell'Igiene e Medicina preventiva* il dott. Maugeri Andrea Giuseppe;
- per la tematica *Recenti sviluppi della ricerca nel campo delle Scienze agronomiche, alimentari e ambientali* il dott. Scavo Aurelio;
- per la tematica *Recenti sviluppi della ricerca nel campo dell'Ingegneria dei rischi urbani, territoriali e ambientali* la dott.ssa Giuffrida Nadia.

È presente un limitato numero di accompagnatori.

In ottemperanza alle vigenti disposizioni anti-epidemiche, tutti i presenti sono stati sottoposti al controllo della temperatura corporea, hanno effettuato la disinfezione delle mani, indossano la mascherina protettiva e rispettano il distanziamento sociale di almeno un metro.

Presiede il Presidente dell'Accademia, prof. Mario Alberghina; svolge le funzioni di segretario verbalizzante il Segretario generale dell'Accademia, prof. Antonino Lo Giudice.

Il Presidente, porge un messaggio di benvenuto ai presenti, si congratula con i vincitori dei premi per l'ottimo lavoro svolto e comunica che provvederà a chiamarli uno per volta invitandoli a svolgere una breve esposizione del lavoro svolto e dei risultati ottenuti.

Il Presidente comunica che i riassunti dei lavori premiati saranno pubblicati sul *Bolletino on line* dell'Accademia, anno 2020.

Il Presidente chiama a ritirare il premio il dott. Maugeri Andrea Giuseppe che illustra il lavoro svolto ed i risultati ottenuti come di seguito riportato.

DNA METHYLATION AND RETINAL DEGENERATIVE DISEASES: AT THE CROSSROAD BETWEEN GENES AND DIET

Andrea Maugeri
Department of Medical and Surgical Sciences and Advanced Technologies "GF Ingrassia", University of Catania

Retinal degenerative diseases are the leading causes of blindness and low vision among working-age and older adults worldwide, with 170 and 130 million individuals suffering from age-related macular degeneration (AMD) and diabetic retinopathy, respectively. Although several studies began to show benefits from dietary interventions against retinal degenerative disease, an integrated approach is needed to understand molecular mechanisms underpinning the protective or risky effect of dietary factors. A specific area of

research that elucidates mechanisms involved in gene-diet interaction is the Nutri-epigenomics, the study of the impact of diet on gene expression by modulating epigenetic mechanisms. The present research investigated the role of DNA methylation – one of the most commonly analysed epigenetic mechanisms – in the pathophysiology of retinal degenerative diseases, by exploiting a multiple integrated approach. In vitro studies initially helped us to understand how pathological features of retinal degeneration (e.g. oxidative stress, inflammation and hyperglycaemia) modulated functions of enzymes involved in the methylation of Long Interspersed Nuclear Element 1 (LINE-1) sequences in retinal cells. We also proved that some nutrients (e.g. resveratrol and curcumin) might counteract these effects and restore DNA methylation level in retinal cells under oxidative, inflammatory and high glucose conditions. We further analysed whether LINE-1 methylation level differed between patients with AMD and controls without posterior segment eye diseases. Interestingly, we noted a significant difference between the two groups, with higher LINE-1 methylation level in blood samples from AMD patients. This evidence – albeit promising for biomarker discovery – requires confirmation by further large-size prospective studies taking into account different factors. Our research, in fact, also suggested that the risk of retinal degenerative diseases derives from the combination of genetic risk variants, clinical characteristics, environmental exposures and unhealthy lifestyles, which in turn are interrelated. Thus, it would be interesting to study how the exposome – the totality of exposures individuals experience over the course of life – might induce epigenetic mechanisms able to reduce or increase the risk for retinal degenerative diseases.

Ultimata la breve relazione al dott. Maugeri vengono consegnati il premio dell'Accademia e alcune pubblicazioni da quest'ultima curate.

Il Presidente chiama a ritirare il premio il dott. Scavo Aurelio che illustra il lavoro svolto e i risultati ottenuti come di seguito riportato.

ALLELOPATHIC EFFECTS OF CYNARA CARDUNCULUS L. EXTRACTS

Aurelio Scavo
Department of Agriculture, Food and Environment, University of Catania

Weeds are recognized as the most important biotic factor affecting yields in agroecosystems. The negative effects derived from the irrational use of herbicides have led to an increasing interest to eco-friendly practices for weed control, including the manipulation of allelopathic mechanisms. The present study aims to explore the potential use of Cynara cardunculus L. leaf extracts for the biological control of weeds and pathogen microorganisms. In a first trial, the allelopathic effects of its leaf aqueous extracts were demonstrated on seed germination of six common weeds. Secondly, the set-up of the most efficient extraction method of its allelochemicals in terms of costs, yields and inhibitory activity was realized, selecting dried leaves as the best plant material and ethanol and ethyl acetate as the best solvents. Moreover, new C. cardunculus allelochemicals (cynaratriol, desacylcynaropicrin, 11,13-dihydro-desacylcynaropicrin and pinoresinol) were purified. Third, the effect of genotype, harvest time and light stress (by plant shading) was evaluated on the phytotoxicity, quantity and composition of sesquiterpene lactones in C. cardunculus leaf extracts through a new UHPLC-MS/MS analysis method. Wild and cultivated cardoon showed the highest concentrations, while spring was the best harvest time. Moreover, light stress stimulated the synthesis of these allelochemicals. In a second trial, the effects resulting from 3-years cultivation, in two different areas, with globe artichoke, cultivated and wild cardoon were studied on the

quali/quantitative composition of the weed soil seed bank and on soil eubacterial communities. In both areas, C. cardunculus reduced the weed seed bank size compared to controls. Nevertheless, the presence of cultivated cardoon had a negative influence towards Bacillus subtilis and a positive one on Pseudomonas putida and Azospirillum brasilense. Lastly, cultivated cardoon leaf extracts were assessed in vitro for the control of several microorganisms of agriculture and food interest. All the extracts showed an important antimicrobial activity, especially when using ethanol as extracting solvent.

Ultimata la breve relazione al dott. Scavo vengono consegnati il premio dell'Accademia e alcune pubblicazioni da quest'ultima curate.

Il Presidente chiama a ritirare il premio la dott.ssa Giuffrida Nadia che illustra il lavoro svolto e i risultati ottenuti come di seguito riportato.

A PUBLIC PARTICIPATORY GIS AND MULTI CRITERIA DECISION ANALYSIS FRAMEWORK FOR THE EVALUATION OF TRANSPORT SCENARIOS

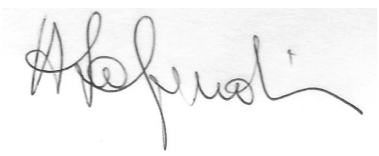
Nadia Giuffrida
Department of Civil Engineering and Architecture, University of Catania

The decision-making process of transport projects is very complex, especially for public administrations which have to take into account often incomparable criteria of judgment. In addition, in order to achieve a good social sharing and robustness of the decision, policy makers have to include in the process not only the transport planning experts but also the stakeholders of the community. The purpose of this study is to propose an evaluation framework to support the decision making process, able to allow public participation in the assessment of transport planning and design scenarios while, at the same time, ensuring a high level of technical quality of the final decision. The designed framework includes a method to analyze monetary and non-monetary parameters, easily understandable for all decision makers. It is based on the application of Multi Criteria Decision Analysis (MCDA) techniques, an evaluation process that can take into account different quantitative and qualitative objectives and criteria; in order to favor public participation, the implementation of this technique takes advantage of Geographic Information System (GIS) for its ability to easily represent the impact of spatially based alternative project scenarios. The analysis of several case studies on transport planning and design scenarios allowed to assess the level of implementation of the three main ingredients of the framework: MCDA, GIS and public participation.

Ultimata la breve relazione alla dott.ssa Giuffrida vengono consegnati il premio dell'Accademia e alcune pubblicazioni da quest'ultima curate.

Alle ore 16.45 il Presidente dichiara conclusa la cerimonia di cui al presente verbale.

Il Segretario
Prof. Antonino Lo Giudice



Il Presidente
Prof. Mario Alberghina